# Thailand's National Biodiversity Action Plan 2023-2027

Office of Natural Resources and Environmental Policy and Planning
Ministry of Natural Resources and Environment

# Thailand's National Biodiversity Action Plan 2023-2027

Supported by the Global Environment Facility (GEF) 7th Replenishment under the Global Biodiversity Framework Early Action Support (GBF-EAS) Project

# Preface

Thailand's National Biodiversity Action Plan 2023-2027 is the country's master plan on biodiversity that integrates the joint efforts of relevant agencies. It is developed in compliance with Article 6 of the Convention on Biological Diversity, which requires parties to develop national strategies or plans for the conservation and sustainable use of biodiversity. The Action Plan is in line with and translates the Kunming-Montreal Global Biodiversity Framework, which was adopted by the 15th Conference of the Parties to the Convention on Biological Diversity, into national plans and targets with an intention to cooperate with the global community in halting biodiversity loss.

The Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment, has formulated the Action Plan with the support from the Global Environment Facility (GEF) under the Global Biodiversity Framework Early Action Support (GBF-EAS) Project, in cooperation with the United Nations Development Programme (UNDP) Thailand, United Analyst and Engineering Consultant Co., Ltd., and the Biodiversity Finance Initiative (BIOFIN), UNDP Thailand. The Action Plan was developed through participatory process to engage various sectors in all stages of development, including government sector, academia, private sectors and financial institutions, local community groups, ethnic groups, youth, women, gender diversity, and national lead agencies for relevant international conventions.

Thailand's National Biodiversity Action Plan 2023-2027 and the National Biodiversity Targets to be achieved in year 2030 was approved by the Cabinet on October 29, 2024. The Ministry of Natural Resources and Environment, by the Office of Natural Resources and Environmental Policy and Planning (ONEP), is assigned to submit the Action Plan and the National Biodiversity Targets to the Secretariat of the Convention on Biological Diversity and drive the implementation of the Action Plan to achieve the targets set. ONEP has already submitted the Action Plan and the National Biodiversity Targets to the Convention Secretariat on October 31, 2024.

The Office of Natural Resources and Environmental Policy and Planning would like to thank the National Committee on Conservation and Utilization of Biodiversity, the Sub-committee on Integrated Biodiversity Management, as well as experts and representatives from relevant agencies and sectors who participated in the preparation of this Action Plan. We sincerely hope that all sectors will cooperate to drive and push for the implementation of the Plan to achieve tangible results in order to reduce the rate of biodiversity loss, promote the conservation and sustainable use of biodiversity, and aim for operations toward nature positive, which can create a good quality of life along with sustainable abundance nature, while preserving ecosystem services that are essential for human livelihood.

*Office of Natural Resources and Environmental Policy and Planning*

*February 2025*

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# Section 1

## Executive Summary

Thailand's National Biodiversity Action Plan B.E. 2566-2570 (2023-2027) is a strategic document designed and developed to guide Thailand's comprehensive efforts in protecting, conserving, and promoting the sustainable use of biodiversity. This plan is the result of a rigorous study, analysis, and assessment of past situations, current circumstances, and anticipated future scenarios, aimed at refining the country's biodiversity operations while keeping pace with global developments. Developed through extensive consultations with stakeholders and leveraging collaborative inputs from all societal sectors, including government, private sector, and civil society, it seeks to foster understanding and awareness of the importance of biodiversity, and to collectively set goals that address critical issues that impact ecosystems and biodiversity, ultimately promoting long-term sustainable development.

This Action Plan has been designed to align with the Kunming-Montreal Global Biodiversity Framework (GBF), which was adopted at the 15$^{th}$ Conference of the Parties to the Convention on Biological Diversity (CBD COP 15) in December 2022, and the Sustainable Development Goals (SDGs). This alignment not only ensures that Thailand's efforts are supported by global biodiversity conservation initiatives but also reinforces Thailand's commitment to international agreements and facilitates the country's significant participation in global biodiversity conservation efforts. Furthermore, this Action Plan transforms national policies, strategies, and plans related to natural resources and biodiversity into actionable measures at various levels, including government agencies, the private sector, and the public. It also ensures coherence and integration between national and international obligations for effective action.

The process for drafting this Action Plan involved gathering information from various sources, both academic data from government agencies, and collecting input from experts and stakeholders. These consultations were conducted through meetings, seminars, and surveys to obtain comprehensive and diverse information. Additionally, the implementation results of the Biodiversity Management Action Plan 2017-2022 were reviewed to identify existing gaps and challenges, along with utilizing risk analysis tools and opportunities for the protection, conservation, and sustainable use of biodiversity.

The guiding principles used in developing this Action Plan include the principle of sustainability, which emphasizes the balanced use of natural resources with consideration for environmental impacts; the principle of participation, which prioritizes the involvement of all sectors of society; the principle of integration, which focuses on linking and coordinating policies and plans at all levels; the principle of resilience, which enhances the ability to adapt

to environmental changes; and the principle of equity, which emphasizes fair benefit-sharing and equal access to resources.

This Action Plan has established three key national strategies. **Strategy 1** focuses on strengthening conservation efforts by enhancing habitat and key species protection through improved management approaches, expanding protected areas, and developing various measures to safeguard threatened species. **Strategy 2** promotes the sustainable and equitable use of biodiversity resources to benefit local communities, including sustainable management of agricultural lands, forests, tourism, and fisheries to ensure balanced utilization without harming nature. **Strategy 3** integrates biodiversity considerations into national policies, sectoral strategies, planning processes, and development projects by mainstreaming biodiversity into policies and plans across all development sectors, including tools, financial support mechanisms, incentives, and legislation.

Furthermore, the Action Plan has established 12 national biodiversity targets. These targets have been developed to address the implementation gaps identified from the results of the previous action Plan. The details of each target are as follows:

**Target 1** aims to reduce the loss of important biodiversity areas through effective spatial planning.

**Target 2** seeks to increase protected areas of biodiversity importance and restore degraded ecosystems, ensuring the existence of well-preserved natural areas that can support species conservation. This will be achieved by increasing other effective area-based conservation measures (OECMs) and establishing appropriate restoration and management measures.

**Target 3** aims to enhance the conservation status of threatened species by establishing appropriate protection and management measures.

**Target 4** focuses on strengthening ecosystem resilience to climate change and pollution through the development of suitable adaptation and management measures.

**Target 5** aims to increase the value and income of local communities from biological resources by promoting a bio-based economy.

**Target 6** seeks to improve sustainable management in production and service sectors, including tourism, by establishing appropriate management measures, promoting sustainable agriculture, forestry management, fishery resource management, and tourism.

**Target 7** aims to establish measures and mechanisms for access and benefit-sharing of genetic resources by promoting the implementation and enforcement of access and benefit-sharing mechanisms and regulations.

**Target 8** focuses on integrating biodiversity into the operations of all sectors by developing guidelines for incorporating biodiversity management into various sector operations and creating local-level biodiversity management plans.

**Target 9** aims to mobilize financial resources for biodiversity conservation from both domestic and international sources.

**Target 10** seeks to develop biodiversity data and knowledge systems, as well as promote awareness, by developing data systems to support decision-making and enhancing awareness across various sectors.

**Target 11** aims to develop capacity and cooperation in technology transfer, including research, through knowledge exchange and fostering academic cooperation both domestically and internationally.

**Target 12** focuses on strengthening policy and legal frameworks for biodiversity by developing appropriate policy and legal frameworks.

This Action Plan has set challenging targets for each strategy to help address the gaps identified from the DPSIR (Driving forces, Pressures, State, Impact, Responses) assessment. **Strategy 1** aims to increase protected areas to at least 30 percent of the country's total area by 2030 to enhance the conservation of important habitats and endangered species. **Strategy 2** aims to increase the value and income of local communities from biological resource-based goods and services, enforce access and benefit-sharing regulations, and promote sustainable agriculture and forest management for balanced and sustainable use of natural resources. **Strategy 3** focuses on integrating biodiversity into policies and plans across all sectors, pushing for at least five local-level biodiversity management plans, and disclosing at least 20 percent of biodiversity-related data to ensure national development and planning can effectively coordinate and promote biodiversity conservation.

To ensure effective implementation, the Action Plan outlines approaches for driving the plan's execution, including the use of financial mechanisms and funding support. It specifies measures and actions that various stakeholders must undertake and establishes a plan for monitoring and evaluating performance with clear responsibilities and timeframes. Key measures include developing a national biodiversity action plan monitoring system to track progress, identify emerging threats, and provide information for adaptive measures; strengthening community participation to empower local communities through participation and benefit-sharing mechanisms; promoting public-private partnerships to support cooperation between government agencies, the private sector, civil society organizations, community organizations, and educational institutions; and securing sustainable financial resources from domestic and international sources to support biodiversity conservation efforts.

Successful implementation of the Action Plan requires cooperation from multiple stakeholders, including government agencies leading in coordination and enforcement of biodiversity laws and policies; local communities playing a crucial role in grassroots conservation and sustainable use; the private sector participating in sustainable development through social responsibility and environmentally friendly business practices; civil society organizations supporting awareness promotion and local conservation; and educational and research institutions providing scientific knowledge and innovation for biodiversity management.

This Action Plan is not merely a planning document but serves as a catalyst and call to action for all sectors of society to collaborate in protecting and preserving the natural heritage of biodiversity—an urgent matter. The Action Plan calls upon all stakeholders to cooperate, share resources, and commit to implementation to ensure progress toward a sustainable future for Thailand's biodiversity.

# Section 2

## Biodiversity State and Related Policies

### 2.1 State and Threats to Biodiversity

#### 2.1.1 Biodiversity State

**1) Global Biodiversity State**

(1) *Forest Resources*: In 2020, the world's forest area was approximately 4,000 million hectares or 25,000 million rai. Over the past 30 years, 420 million hectares or 2,625 million rai of forest area have been converted for other purposes. One of the main reasons for forest area loss is deforestation. Although the global deforestation rate has decreased, there is still a loss rate of 10 million hectares or 62.50 million rai each year due to deforestation (FAO, 2024).

(2) *Marine and Coastal Resources*: The driving factors causing changes in marine and coastal resources are global warming and ocean acidification. Additionally, the rate of greenhouse gas emissions caused by humans has resulted in rising sea levels, changes in seawater temperature, and increased acidity of seawater. These factors have led to greater destruction of coral reefs. The issue of marine debris, including plastic waste and microplastics, has been found to affect all depths of the sea. Currently, around 8 million tons of plastic waste end up in the ocean each year, the majority of which comes from land (UN Environment, 2019).

(3) *Biodiversity*: Regarding the global biodiversity state, critical areas for biodiversity (Biodiversity hotspots) have been identified worldwide. Currently, six areas have been identified as biodiversity hotspots, mostly located in tropical forests, covering about 2.3 percent of Earth's land surface. However, these areas host up to 50 percent of endemic plant species and 42 percent of terrestrial vertebrate species. In addition, there is a trend of potential extinction that may be caused by climate change (Overland, Indra, 2017).

(4) *Future Trends in Biodiversity*: It has been found that the species extinction rate is likely to increase. Currently, the extinction rate for terrestrial invertebrates, freshwater invertebrates, and marine invertebrates have extinction rates of 42 percent, 34 percent, and 25 percent, respectively, which are classified as vulnerable. Between 1970 and 2014, it was found that the vertebrate population worldwide decreased by an average of 60 percent. The report also indicates that the main direct causes of biodiversity loss are habitat change, loss and degradation, unsustainable agriculture, the spread of invasive alien species, as well as pollution including microplastic waste, illegal trade of wildlife, fisheries, and forestry. Additionally, there is evidence indicating that climate change will pose a threat to future crop productivity (UN Environment, 2019).

**2) Regional Biodiversity State**

(1) *Forest Resources*: The ASEAN region is rich in plant species diversity and is home to tropical forest ecosystems, which include about half of the world's highland forests. In 2015, forests covered 45 percent of the total land area. Brunei Darussalam had the greatest forest cover at 75 percent of its total land area, followed by Malaysia at 55 percent, and Indonesia at 51 percent, respectively. However, Thailand had a forest cover of 32 percent (ASEAN Secretariat, 2017).

(2) *Marine and Coastal Resources*: ASEAN's seas are in the tropical zone which hosts higher biodiversity than seas in the temperate and polar zones, especially in coral reef ecosystems. Indonesia has the longest coastline (55,000 kilometers), followed by the Philippines (36,000 kilometers). Due to more than half of the ASEAN's total population living in the coastal zone and the capitals of almost all its countries being located on or near the sea, there is a high utilization of coastal and marine resources for economic purposes, especially in fisheries and aquaculture. However, rapid urbanization and increased production, particularly in the fishing industry, have led to threats to marine and coastal resources. Additionally, the increase in temperature by 0.14–0.3 degrees Celsius over the past 10 years has significantly impacted the productivity of marine and coastal resources in the region, especially the rise in sea levels and the effects on coral reefs, which are highly sensitive to temperature changes. If the temperature increases by more than 5 degrees Celsius, it will cause the global sea-level to rise by an average of 86 centimeters by 2100. Moreover, pollution from waste, especially plastic debris, has a significant impact on rare marine species through entanglement and ingestion, leading to loss of life (ASEAN Secretariat, 2017a).

(3) *Biodiversity*: The ASEAN region is home to four out of 34 world's recognized biodiversity hotspots. Three out of 17 mega-diverse nations in the world are in this region: Indonesia, Malaysia, and the Philippines. The region has the highest proportion of endemic bird and mammal species (9 percent and 11 percent) and the second highest proportion of endemic vascular plant species (25 percent) compared to the tropical regions of Meso-America, South America, and sub-Saharan Africa. More than two thousand species have been discovered in the ASEAN region over the past two decades (ASEAN Secretariat, 2017). The International Union for Conservation of Nature (IUCN) provides summaries of the number of threatened species (mammals, birds, reptiles, amphibians, fish, mollusks, other animals, plants, and microorganisms) by country, with 1,332 species in Indonesia, 1,301 species in Malaysia, and 780 species in the Philippines being classified as threatened species (IUCN, 2018).

(4) *Current state and future trends of biodiversity*: The ASEAN region is rich in wildlife, which includes at least 6 of the world's 25 biodiversity hotspots. This region contains the world's third-largest tropical forest. In addition to this existing biodiversity, this region has an extraordinary rate of species discovery, with more than 2,216 new species described between 1997 and 2014.

The ASEAN Biodiversity Outlook (2017) report reflects the trend of changes in forest area in the ASEAN region, which has been continuously decreasing over the past 15 years. Future trends indicate that the higher demand for construction timber, biomass energy, and paper products has resulted in forest encroachment due to infrastructure development and agricultural expansion. The ASEAN region is estimated to lose 70-90 percent of habitats and 13-42 percent of species by 2100. This biodiversity loss in the ASEAN region is caused by weak governance and inappropriate development, which are drivers of habitat loss, climate change, overexploitation of resources, pollution, and poverty (ASEAN Centre for Biodiversity, 2017).

### 3) The State of Thailand's Biodiversity

#### 3.1) Biodiversity State

Thailand is one of the most biodiversity-rich countries in Southeast Asia. It is situated within two major biogeographical regions: the Indochinese region in the north and the Sundaic region in the south. In 2022, Thailand was ranked 20th among countries globally in terms of the rate of biodiversity, having previously been ranked 18th in 2016 (Mongabay, 2024). The state of biodiversity in Thailand is as follows (Office of Natural Resources and Environmental Policy and Planning, 2020):

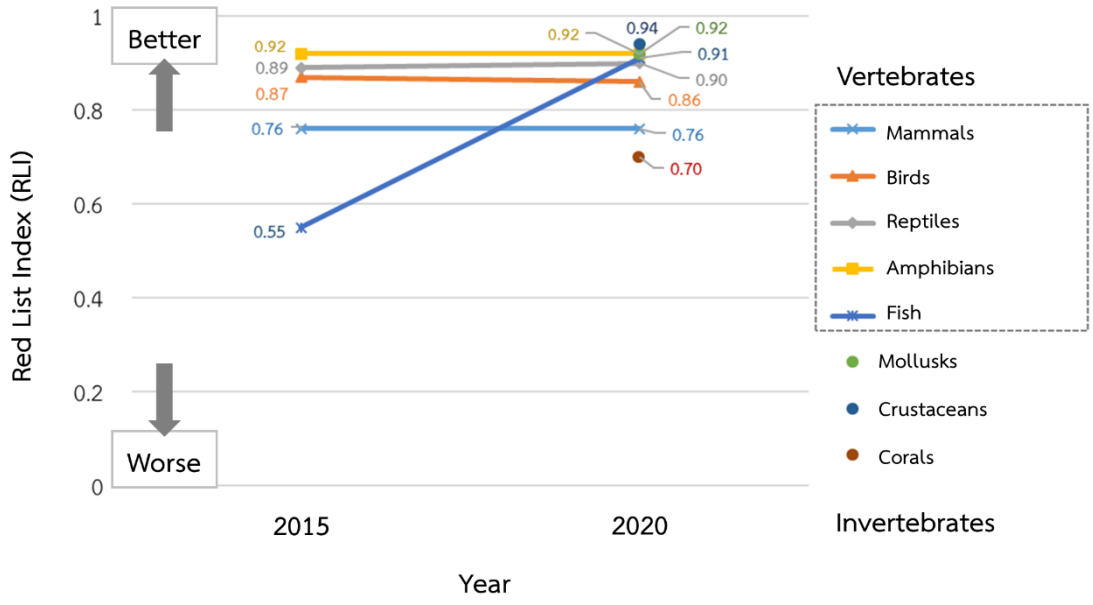
**(1) Ecosystem diversity:** Agricultural and forest ecosystems are the primary ecosystems in Thailand. Agricultural areas take up to 55.50 percent of the country's territory, with the majority being monoculture economic crops. As for forest areas, in 2021, the remaining forest areas covered up to 31.59 percent of the country's territory, which slightly decreased from 2020 due to encroachment for forest products, logging, and forest fires. In 2020, the mangrove forests covered an area of 1.74 million rai, accounting for 0.54 percent of the country's territory. Wetlands are distributed across the country, covering roughly 22.88 million rai, accounting for 6.75 percent of the country's territory. These wetlands are divided into 44.8 percent freshwater and 55.2 percent saltwater. There are 15 wetlands of international importance listed under the Ramsar Convention.

**(2) Diversity of species:** It is estimated that Thailand is home to approximately 15,000 plant species, representing 8 percent of total plant species on Earth. According to the Flora of Thailand Project, in 2017, there are roughly 12,050 vascular plant species (662 fern species, 26 gymnosperm species, 3,045 monocot species, and 6,798 dicot species). Between 2014-2020, 239 new plant species were discovered in Thailand. Additionally, in 2020, an **assessment of plant species status** in Thailand was conducted for endemic and rare species. In 2001, the status of 1,185 plant species was evaluated, with 999 species categorized as threatened species (an increase from 2015); 647 species listed as Vulnerable (VU) species (a decrease from 2015), 259 species listed as Endangered (EN) species (an increase from 2015), and 93 species listed as Critically Endangered (CR) species (an increase from 2015), representing 9.08 percent of all categorized plant species (Office of Natural Resources and Environmental Policy and Planning, 2020).

According to the diversity of five groups of **vertebrate** (mammals, birds, reptiles, amphibians, and fish), in 2020, there were 5,005 species, an increase of 274 species from 2017. Among these species, 676 species were threatened (CR, EN, VU), including 122 mammal species, 189 bird species, 51 reptile species, 19 amphibian species, and 295 fish species, an increase from 569 threatened species in 2017. A survey of invertebrates during 2022-2023 (as of August 2023) found 31 new species in Thailand (Office of Natural Resources and Environmental Policy and Planning, 2024).

The status of **invertebrate** in Thailand (mollusks, crustaceans, and corals) was evaluated in 2020. A total of 3,203 species were recorded, which includes 2,583 mollusk species (116 cephalopod species, 1,504 marine mollusk species, and 963 freshwater mollusk species), 194 crustacean species, and 426 coral species. Among these, 302 species were threatened, including 181 mollusk species, 14 crustacean species, and 107 coral species (Office of Natural Resources and Environmental Policy and Planning, 2024).

Furthermore, the **Red List Index (RLI)** for threatened animal species was evaluated for both vertebrates and invertebrates in 2020. It was found that vertebrates had an average RLI of 0.87, indicating a low risk of extinction. Mammals were at the highest risk of extinction. Compared to 2015, the average RLI increased from 0.80 to 0.87, indicating the risk of extinction has decreased. For invertebrates (mollusks, crustaceans, and corals), in 2020, the average RLI was 0.85, indicating a low risk of extinction. Among invertebrates, corals were at the highest risk of extinction (Office of Natural Resources and Environmental Policy and Planning, 2024).




Remark: - The RLI value ranges between 0-1. When the RLI value approaches 1 indicating species has a low risk of extinction. Meanwhile, when the RLI value approaches 0 indicating species has a high risk of extinction.

**Figure 2-1: Red List Index (RLI) of threatened species in 2015 and 2020**

Thailand is home to more than 200,000 species of **microorganisms**. Between 2018-2020 (as of September 2020), 98 new microorganism species were discovered in Thailand, including 14 yeast species, 49 filamentous fungi species, 9 mushroom species, 22 actinomycete species, and 4 bacterial species. Between 2022-2023 (as of August 2023), 14 new microorganism species were discovered in Thailand (Office of Natural Resources and Environmental Policy and Planning, 2024).

### 3.2) The State of Research and Knowledge on Biodiversity

The Thailand Science, Research and Innovation has assessed the knowledge gaps in biodiversity and ecosystem services in Thailand. They identified five key areas: 1) Studies on the economic value of biodiversity resources and ecosystem services, especially marine and coastal resources, 2) Biodiversity resilience related to marine and coastal resources, 3) Management and control of invasive alien species, 4) Taxonomic knowledge, and 5) Integration of environmental problem-solving based on the approaches to the three main interconnected crises currently facing humanity (Triple Planetary Crisis). Research on biodiversity and ecosystem services needs to be driven forward to address these gaps. In the fiscal year 2022, 206,945,263 million baht was funded by the Thailand Science, Research and Innovation for biodiversity and ecosystem services research projects, an increase of 19.39 percent from the previous fiscal year.

### 3.3) The State of Funding for Biodiversity

According to the Biodiversity Expenditure Review of Thailand 2016-2021 and 2022-2024 conducted by the Biodiversity Finance Initiative (BIOFIN) under the United Nations Development Programme (UNDP), the majority of Thailand's biodiversity funding comes from the national budget. In the fiscal years 2018-2022, the government allocated 558.3 billion baht for conservation and research related to the country's biodiversity. However, the proportion of the allocated budget has been continuously decreasing when compared to the total national annual budget. It dropped from 0.46-0.38 percent of government expenditure between 2018-2021 to 0.16 percent in 2022 (Figure 2-2). Important external funding sources come in the form of Official Development Assistance (ODA), which is allocated from the Global Environment Facility (GEF) and other funding sources (the private sector and non-governmental organizations). For this reason, the promotion of investments that create positive impacts on nature can be part of crucial measures to reduce the financial gap for biodiversity and support the long-term conservation and restoration of the country's biodiversity.

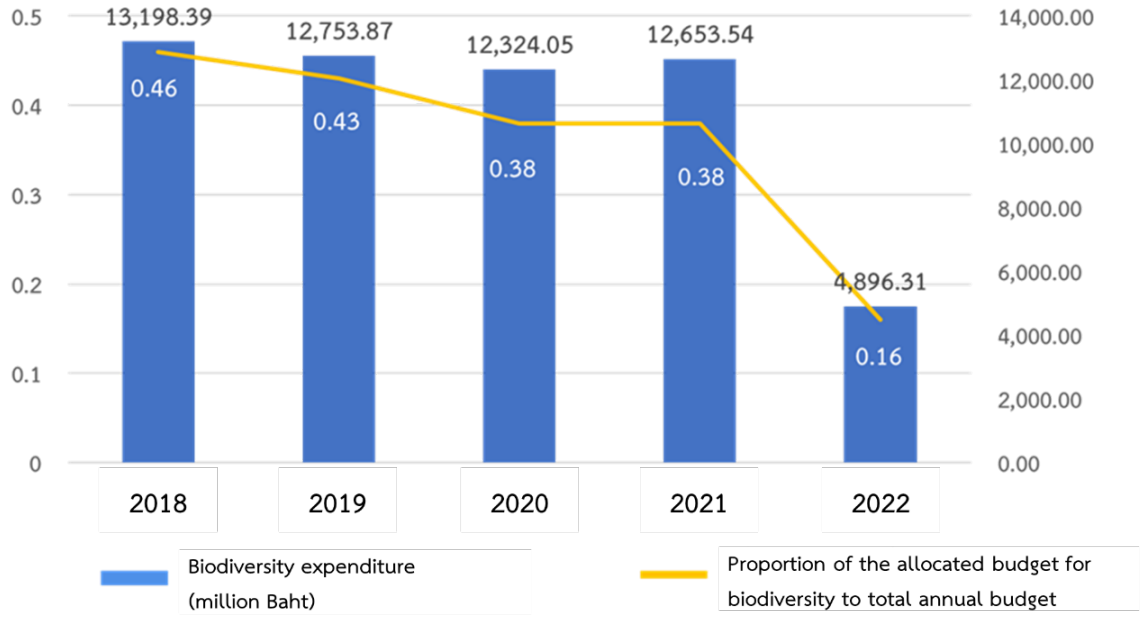



**Figure 2-2: The biodiversity expenditure in the fiscal year 2018-2022**

Source: BIOFIN Thailand, 2024.

### 2.1.2 Threats to Biodiversity

Biodiversity in Thailand has been continuously threatened for a long time due to the exploitation and dependence on natural resources and living organisms for national development. This utilization often exceeds the carrying capacity of nature and disregards the impacts on ecosystems and the environment, without considering the limits and potential for recovery. The loss of natural habitats due to population growth has led to urban expansion, forest encroachment, wetland reclamation, changes in land use, illegal harvesting of wild plants and wildlife hunting for consumption and trade, invasive alien species, pollution, as well as climate change and natural disasters which continue to be significant threats affecting ecosystems, which are habitats for various species. These factors cause the loss and degradation of environments, making them unsuitable for the survival of living organisms, leading to a continuous decline in Thailand's biodiversity. As a result, the populations of various plant and animal species have decreased or become extinct.

Currently, Thailand is facing problems related to climate change and disasters, which are consequences of key factors including urban expansion; land-use changes due to the expansion of agricultural and community areas; an increase in greenhouse gas emissions (in 2024, 372.12 million tons of $CO_2$ equivalent of greenhouse gases have been emitted, with an average increase of 2.21 percent from 2000); an increase in plastic waste (in 2022, there were 25.70 million tons of solid waste, with a generation rate of 1.07 kg. per capita each day, an increase of 2.88 percent from 2021) which has resulted in the deaths of rare marine animals caused by marine debris; the use of chemicals to increase agricultural productivity; and the increase of variability of climate conditions which are clearly affecting occupations and human existence, both in terms of human settlements and food security. These factors also lead to the degradation of both terrestrial and marine ecosystems, resulting in the loss of habitats for living organisms (Office of Natural Resources and Environmental Policy and Planning, 2024).

The invasion of alien species impacts biodiversity in the area, reducing the balance of ecosystems. Invasive alien species exploit native species through competition, displacement, predation, or acting as parasites and disease vectors. These impacts lead to reduced growth rates, population declines, potentially leading to local extinction, or hybridization between alien and native species. The main impacts of alien species invasion are on ecosystems, changing the community of living organisms in the area, and on the economy, resulting in the loss of existing resources and affecting the quality and quantity of agricultural and fishery products. This leads to food shortages and reduced food security. Thailand has developed measures to prevent, control, and eradicate invasive alien species, which were approved by the Cabinet on February 20, 2018.

Additionally, changes in land use cause habitat loss due to encroachment, infrastructure development, and mining activities which alter the landscape, making it difficult to fully restore ecosystems in the post-operation phase. Forest fires also damage ecosystems and living organisms in the area in both short-term and long-term. Unsustainable resource use from non-environmentally friendly tourism activities, commercial exploitation, or overexploitation, especially in fisheries where inappropriate fishing equipment is used, contributes to the destruction or reduction of species in ecosystems. All these factors pose significant threats to biodiversity.

## 2.2 International Development Policies and Directives

### 2.2.1 Convention on Biological Diversity (CBD)

The Convention has three main objectives: (1) the conservation of biological diversity, (2) the sustainable use of the components of biological diversity, and (3) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Currently, there are 196 countries that are Parties to the Convention. Thailand became a party to the Convention on January 29, 2004. In addition, there is the Cartagena Protocol on Biosafety, which focuses on the management and utilization of genetically modified organisms that may affect the conservation and use of biological diversity. The Nagoya Protocol on Access and Benefit-Sharing establishes a legal framework that provides clarity for both users and providers of genetic resources.

### 2.2.2 Biodiversity Related Conventions

Various conventions related to the management of natural resources and biodiversity include: **the Ramsar Convention** to conserve wetland habitats, emphasizing the conservation and wise use of wetlands in all aspects; **the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** to protect endangered wildlife and plants, or those threatened to the point of declining numbers leading to extinction, by managing the international trade of endangered wild plants and animals; **the Convention on Migratory Species (CMS)** to conserve migratory species of wild animals, including terrestrial, marine, and avian species; **the United Nations Framework Convention on Climate Change (UNFCCC)** to maintain the concentration of greenhouse gases at levels that do not interfere with food production and sustainable development; **the United Nations Convention to Combat Desertification (UNCCD)** to improve the ecosystems affected by desertification/land degradation by promoting sustainable land management, improving the living conditions of affected populations, mitigating, adapting to, and managing the impacts of drought to enhance the resilience of vulnerable populations and ecosystems.

### 2.2.3 Kunming-Montreal Global Biodiversity Framework (KM-GBF)

This is the operational strategy of the Convention on Biological Diversity to accelerate actions across all sectors to halt biodiversity loss, aiming to achieve the vision of living in harmony with nature by 2050. By then, people will recognize the value of biodiversity, conserve, restore, and utilize it wisely, while maintaining ecosystem services for a prosperous world that benefits people sustainably. The framework consists of four main goals for 2050:

Goal A: Maintain and restore ecosystems, and increase protected areas or areas with effective biodiversity management measures.Goal B: Sustainably use biodiversity and ecosystems for human well-being.Goal C: Share benefits from the use of genetic resources and related technologies, both in monetary and non-monetary forms.

Goal D: Increase financial resources to support biodiversity conservation and sustainable use.

The framework also sets 23 targets divided into three main groups to achieve the 2030 mission: (1) Eight targets related to reducing threats to biodiversity, (2) Five targets related to sustainable use of biodiversity and benefit-sharing to meet people's needs, and (3) Ten targets related to tools and solutions for implementation and mainstreaming (Figure 2-3), as follows:

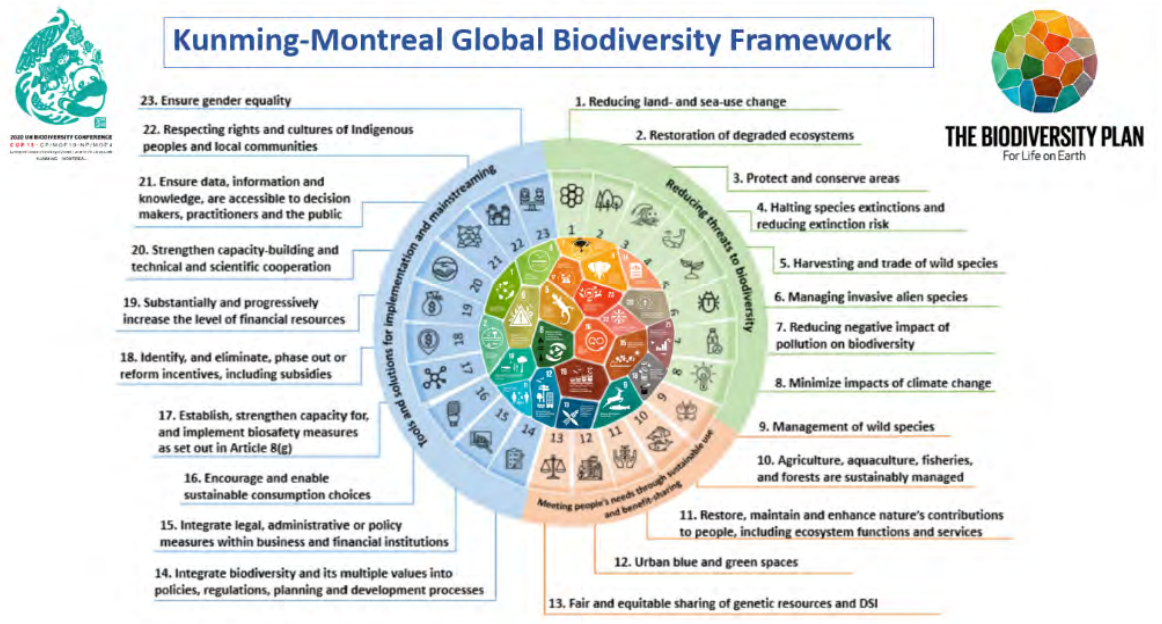



**Figure 2-3: Kunming-Montreal Global Biodiversity Framework targets**

**Group 1: Reducing threats to biodiversity**, consisting of 8 targets:

Target 1: Develop spatial biodiversity plans to reduce loss and change in land use on land and in the sea.

Target 2: Restore terrestrial, inland water, marine and coastal ecosystems by at least 30 percent.

Target 3: Increase protected areas on land, inland waters, marine and coastal areas, and areas with effective conservation measures, by at least 30 percent.

Target 4: Restore and conserve threatened plant and animal species to halt human-caused extinctions and significantly reduce extinction risk.

Target 5: Reduce exploitation of species in the wild.

Target 6: Prevent, control and eliminate invasive alien species, or reduce their introduction by at least 50 percent.

Target 7: Reduce pollution, plastic waste and excess nutrients by at least half.

Target 8 Reduce the impacts of climate change using nature-based solutions and ecosystem-based approaches.

**Group 2: Sustainable use and benefit-sharing to meet people's needs**, consisting of 5 targets:

Target 9 Manage wild species to produce products, services, and sustainably use biological resources.

Target 10 Manage agricultural, fishery and forestry areas in an environmentally friendly manner.

Target 11 Maintain and conserve ecosystems for sustainable use.

Target 12 Increase green spaces and water resources in urban areas.

Target 13 Promote fair and equitable benefit-sharing from genetic resources.

**Group 3 Tools and solutions for implementation and mainstreaming**, consisting of 10 targets:

Target 14 Integrate the value of biodiversity into policies, regulations, plans, and development projects.

Target 15 Implement measures to promote and monitor the operations of the business sector and financial institutions that negatively impact biodiversity.

Target 16 Increase environmentally friendly consumption options.

Target 17 Prevent, manage and control the negative impacts from biotechnology.

Target 18 Eliminate incentives and subsidies that harm biodiversity.

Target 19 Increase funding sources to support implementation efforts.

Target 20 Enhance capacities, promote technology transfer and support scientific and academic cooperation.

Target 21 Ensure sufficient information for determining management guidelines.

Target 22 Support the participation of all sectors in society.

Target 23 Promote the rights of women and children and consider gender equality in implementation efforts.

## 2.3 National Policies, Plans, and Laws Related to Biodiversity

Thailand has several policies, plans, and laws related to biodiversity. In the **National Strategy,** the aspect most directly relevant to biodiversity focuses on fostering growth based on environmentally friendly quality of life. The goal is to conserve and preserve natural resources, the environment, and culture for future generations to use sustainably and in balance, while restoring and rebuilding the natural resource base and the environment to mitigate negative impacts of the country's socio-economic development. The **Master Plan under the National Strategy** includes issues related to sustainable growth, with sub-plans for promoting sustainable growth within a green economy society, creating sustainable growth in a maritime economy society, and addressing agricultural issues. The **thirteenth National Economic and Social Development Plan (2023-2027)** includes a milestone directly related to biodiversity: Milestone 10, which aims for Thailand to achieve a circular economy and low-carbon society, Target 2 of this milestone focuses on the conservation, restoration, and sustainable use of natural resources.

The **Government Policy** (by Prime Minister Paetongtarn Shinawatra, dated September 12, 2024) sets out the policy related to biodiversity, focusing on the restoration of natural resources, the conservation of biodiversity, and the preservation of local ecosystem balance. The goal is to establish a solid foundation for sustaining life and enhancing the capacity of local areas and communities to manage the environment and adapt to climate change. The government will promote public participation in addressing natural disasters, particularly tackling the PM2.5 issue and water management, which requires international cooperation. Additionally, the government will enforce strict measures to combat the illegal disposal or burial of industrial waste and hazardous materials and will support community involvement in the conservation, restoration, and management of natural resources and the environment, including marine and coastal resources in their entirety. Additionally, there are other policies, plans, and laws related to biodiversity, such as, Action Plan for Driving Thailand's Development with the BCG Economic Model 2021-2027, Conservation of National Environmental Quality Policy and Planning 2017-2037, National Maritime Security Plan 2023-2027, Climate Change Master Plan 2015-2050, (Draft) National Policy and Plan for Marine and Coastal Resource Management 2023-2027, Environmental Quality Management Plan 2023-2027, (Draft) Biodiversity Act B.E. ....

## 2.4 Proposed Guidelines for Biodiversity Management

Based on the analysis of the state and threats to biodiversity (Office of Natural Resources and Environmental Policy and Planning, 2020 and 2024), the following biodiversity management approaches in the three areas have been proposed as follows:

### 2.4.1 Biodiversity Threat Reduction

**- Habitat Loss Prevention and Reduction**

This involves implementing urban planning measures and establishing systematic and clear demarcation of various land types to prevent and address encroachment on natural habitats for plant and animal species. This includes clearly designating areas for critical infrastructure development, considering potential environmental and biodiversity impacts, establishing conditions for strategic environmental impact assessments, and reviewing and clearly delineating forest land boundaries to reduce conflicts and overlap with agricultural lands. It also includes promoting biodiversity management in agricultural areas and urban green spaces through the use of religious sites, advocate for participatory policies and measures to increase green areas outside conservation zones, develop guidelines and measures for maintaining and managing limestone mountain areas, which are habitats for endemic species at risk of threats.

**- Pollution Prevention and Reduction**

This approach focuses on fostering understanding and cooperation with industrial and service entrepreneurs in producing goods and providing services. This includes planning and designing to minimize post-consumption waste, seeking alternatives by using substitute substances or substitute plants, and supporting systematic reduction of chemical use in specific areas to enhance the capacity of local government agencies, fishermen, and coastal networks in managing marine accidents and oil spills.

**- Resource Utilization Control and Regulation**

This effort centers on continuous supervision of fishing gear usage to protect aquatic animals and controlling commercial fishing to prevent overexploitation that could harm resources, enhancing law enforcement efficiency and strengthening networks to prevent illegal trade of wild plants and animals, limiting the number of tourists and restricting tourism seasons in sensitive areas.

**- Invasive Alien Species Control and Management**

This involves disseminating information about types of invasive alien species and impacts of alien species and invasive alien species, supporting research on their spread patterns, mapping invasion pathways, and implementing appropriate surveillance, control and management measures based on this knowledge.

**- Climate Variability and Natural Disasters Impact Reduction**

This approach focuses on flood management planning in high-risk areas, strengthening community-level flood management mechanisms, promoting cultivation of short-lived and low-water-consumption crops, and conducting research to develop resilient varieties suitable for climate conditions, especially drought-resistant plants.

### 2.4.2 Biodiversity Conservation and Sustainable Use

- **Species Survey and Living Organism Assessment System Development**

This involves advocating for budget support for annual species studies and surveys, and developing a unified national system for assessing the threat levels of living organisms, particularly plant and animal species, to ensure up-to-date information.

- **Control Measure Establishment for At-Risk Areas**

This includes limiting the number of tourists and tourism-related activities in significant areas that are at risk or in critical condition.

**- Important Species and Genetic Diversity Conservation**

This approach prioritizes seed stock of key species and promotes breeding and conservation efforts for important living organisms both within their natural habitats (in-situ) and outside habitats (ex-situ) with reintroduction programs. It supports initiatives to restore populations of endangered plants and animals, endemic species, and species at risk.

**- Environmental-Friendly Production and Services Promotion**

This approach supports and encourages the development of agricultural, industrial, and tourism services that are environmentally sustainable.

**- Biodiversity Conservation and Sustainable Use Research**

This initiative aims to reduce data gaps and ensure sufficient knowledge for the planning and management of ecosystems, species, and genetics. This includes studying the impacts of climate change on various ecosystems, plants, animals, and microorganisms, studying indicators of ecosystem integrity, and establishing database systems for monitoring.

**- Local Participation and Management Capacity Development**

This approach emphasizes engaging local communities who are closely connected to and directly benefit from ecosystems. It recognizes their accumulated local wisdom and supports the transfer of this knowledge in caring for and utilizing various local species.

### 2.4.3 Development of Tools and Mechanisms for Biodiversity Management

- **Biodiversity Data System Development** This involves creating efficient data storage systems for relevant agencies to facilitate information exchange between organizations, compilation of national-level biodiversity data, and support for monitoring and evaluation. It aims to expand the database to be more comprehensive, covering various aspects of biodiversity while enhancing database management efficiency.

**- Biodiversity Management Through Integrated Action Plans** This approach focuses on developing integrated action plans for threat management, conservation and sustainable use. It includes developing concrete management tools and mechanisms by establishing appropriate indicators that reflect the current situations and creating databases to support future evaluations.

- **Cooperative Mechanism Development for Overlapping Areas Management**

This approach establishes clear designation of primary responsible agencies for unified action plan development and budget allocation, especially in areas evaluated as critical and of high importance, to effectively manage areas with overlapping jurisdictions.

- **Environmental Monitoring and Surveillance Technology Implementation**

This involves leveraging technology to benefit natural resource management at the local level, particularly wildfire surveillance, monitoring open-area burning, tracking weather data, environmental condition modeling, monitoring environmental quality data to prevent impacts on biodiversity in a timely manner.

- **Strategic Environmental Assessment Tool Adaptation**

This approach supports decision-making in policy, plan, or program formulation, with emphasis on participation and balanced integration of economic, social, and environmental aspects.

- **Biodiversity Conservation Incentive Tools Implementation**

This approach considers a variety of instruments, including economic tools and other non-economic mechanisms to encourage biodiversity-related private sector businesses and small and medium-sized industries.

# Section 3

## Advancements in the Implementation of the Biodiversity Management Action Plan B.E. 2560-2565 (2017-2022)

The Biodiversity Management Action Plan B.E. 2560-2565 (2017-2022) is a plan used to drive the implementation of the Master Plan for Integrated Biodiversity Management B.E. 2558-2565 (2015-2021). It operates under four strategies and twenty-five targets, which consist of Strategy 1: Integrate biodiversity values and management through participation at all levels, Strategy 2: Conserve and restore biodiversity, Strategy 3: Protect and safeguard national rights and benefits, and manage to enhance and share benefits from biodiversity in line with the green economy approach, and Strategy 4: Develop biodiversity knowledge and database systems to meet international standards. The implementation of this Action plan involves various sectors and agencies, including government agencies, private sector, educational/research institutions, non-governmental organizations, and local communities. Among government agencies, several ministries are involved, which are Ministry of Natural Resources and Environment, Ministry of Agriculture and Cooperatives, Ministry of Higher Education, Science, Research and Innovation, together with Ministry of Public Health, Ministry of Transport, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Commerce, Ministry of Tourism and Sports, Ministry of Energy, Ministry of Culture, Ministry of Industry, Ministry of Interior, and Office of the Prime Minister.

According to monitoring the implementation of the Action Plan, it was found that the most projects were carried out under Strategy 2, followed by Strategy 1, Strategy 4, and Strategy 3, respectively. The area with the most implementation was the promotion of the participation of communities and various sectors in the conservation, restoration, and sustainable use of biodiversity. When considering the performance results according to the 25 targets and 32 indicators under the Action Plan, it was found that most of the operations achieved the targets within the specified time. There were 21 targets that achieved the evaluation results (levels 4-5), and 4 targets that showed progress but did not achieve the targets (Figure 3-1). Efforts are being made to achieve these targets in the preparation of the next plan.


**Figure 3-1: Summary of target achievement according to the Biodiversity Management Action Plan 2017-2022**

The targets that showed progress but are unlikely to be achieved within the specified time can be summarized as follows:

**Target 1**: By 2020, all sectors, especially the public and local communities, will have fundamental knowledge of biodiversity and demonstrate understanding and awareness of the importance of biodiversity conservation and sustainable use.

A survey on biodiversity awareness and value perception was conducted across five sectors: education, public, private, government, and academic communities. The findings revealed that none of the sectors achieved a 'good' level score (defined as above 60 percent), with most sectors scoring at a moderate level. Regarding understanding of biodiversity conservation and sustainable use, only the government sector achieved a 'good' level score (above 60 percent). The survey identified knowledge gaps across other sectors, particularly in understanding the impact of infrastructure development on biodiversity, recognizing the benefits of sustainable biodiversity management, and appreciating the fundamental importance of biodiversity. The survey also found that each sector had different levels of knowledge, understanding, and awareness across various issues.

Approaches to create appropriate knowledge and awareness for each sector:

1) Support knowledge and experience transfer from experts or local wisdom holders to various sectors, especially the educational sector, to address teaching limitations and enhance student engagement.
2) Provide knowledge to the public about local biodiversity, its benefits, awareness of infrastructure development impacts on biodiversity, and benefits of sustainable biodiversity management by collaborating with relevant agencies, such as the Department of Climate Change and Environment, Department of Local Administration, and Community Development Department.
3) Strengthen technical and academic expertise within government agencies to improve biodiversity management effectiveness, as the government sector plays a crucial role in implementing biodiversity policies and plans. Examples include biosafety, invasive alien species management, development of biosafety infrastructure, and the role of local administrative organizations in biodiversity management and management of high-biodiversity areas.
4) Raise awareness among the private sector about the impacts of inappropriate development on biodiversity, activities in high-biodiversity areas, and guidelines for sustainable use.

**Target 2**: By 2021, biodiversity topics will be integrated into curricula across all educational institutions and levels.

Currently, biodiversity-related content has been incorporated into various educational institutions' curricula, including some higher education programs. However, a survey on awareness and knowledge of biodiversity values in the education sector revealed that the level of understanding is mostly concerning, with only a few areas scoring well.

Recommendations for Integrating Biodiversity into Educational Curricula are as follows:

1) At the basic education levels: Teachers should receive additional training to enhance their knowledge and understanding of biodiversity, enabling them to teach more effectively. Schools should organize out-of-classroom activities to promote biodiversity learning, and invite experts to share their knowledge and experiences with students.
2) At the higher education levels: Case studies should be introduced for students to analyze collectively, allowing them to better understand the context of biodiversity or its issues, as well as management. Group discussions on management approaches should be encouraged, so students can apply the knowledge and experience gained to their future careers.

**Target 4**: By 2020, various mechanisms were developed to drive the protection, conservation, restoration, and sustainable use of biodiversity.

Financial mechanisms supporting biodiversity operations in the country include the Environmental Fund, Tree Bank, Green Bond, Payment for Ecosystem Services (PES). Additionally, there are other financial mechanisms that are not widespread, such as tax deductions for businesses that conduct research, develop knowledge, or carry out activities related to conservation and sustainable use of biodiversity, or fiscal mechanisms like Forest Bonds, etc.

The guidelines for promoting financial mechanisms to drive biodiversity management are as follows:

1) Seeking funding support from various sources and disseminating information about financial mechanisms to target groups and the public to raise awareness and understanding, support the access to funding sources and various financial mechanisms, and create incentives for the activities linked to biodiversity.
2) Driving the implementation of Payment for Ecosystem Services (PES) measures by expanding to neighboring areas or adapting the operational model in other areas with similar contexts. This includes preparing studies to determine approaches for using PES in conservation areas and high-potential areas, especially for tourism businesses and enterprises benefiting from water resources, such as the Provincial Waterworks Authority and Provincial Electricity Authority.

**Target 20**: By 2020, various mechanisms were integrated for managing access, benefit-sharing, and monitoring the utilization of genetic resources.

The mechanisms for managing access, benefit-sharing, and monitoring the utilization of genetic resources encompass various types of data, including resources and research studies that comply with relevant regulations, laws, and measures related to access and benefit-sharing, prepared and improved by responsible agencies appropriately. These ensure that the utilization for research purposes aligns with the objectives. Data and results are submitted to the responsible government agencies, and agreements are made if the information is to be used for commercial purposes. These agreements also cover intellectual property management and the resulting benefits.

The guidelines for integrating mechanisms for managing access, benefit-sharing, and utilization of genetic resources are as follows:

1) Integrating cooperation between agencies, considering the authority for approval and permits, examining the consistency of existing laws, and ensuring the linkage of data to gather essential information related to the access and benefit-sharing of the country's genetic resources.

2) Advocating the (Draft) Biodiversity Act B.E. .... to unify the management of biodiversity, access, benefit-sharing, and monitoring of genetic resource utilization, in order to reduce redundancy and inconsistencies in existing laws.

However, to enhance operational efficiency in achieving goals, various support measures should be implemented. These include increasing communication and outreach to target groups, such as the new generation, local administrators, and teachers/instructors in educational institutions, regarding the importance of biodiversity. This should be done using appropriate communication methods and channels for each target group, such as online media, two-way communication, and video clips for students. Efforts should also be made to ensure effective law enforcement, foster cooperation between agencies both within and outside the Ministry of Natural Resources and Environment to integrate plans and budgets, along with enhancing collaboration, particularly in advancing targets related to knowledge, understanding, awareness, and incorporation into policies and plans at all levels. Additionally, a joint effort should be made to develop a biodiversity database system, integrating relevant agencies to facilitate data input and retrieval, ensuring efficient use of the data.

# Section 4

## Alignment with the Three-Level Plans According to the Cabinet Resolution of December 4, 2017

### 4.1 Level 1 Plan: The National Strategy

The directly relevant strategy is the National Strategy for Eco-Friendly Development and Growth, which aims to conserve and preserve natural resources, the environment, and culture for sustainable use by future generations. It seeks to achieve balance, restore, and rebuild the natural resource bases and the environment to reduce negative impacts from the country's socio-economic development. Key developments include: creating sustainable growth in a green economy society, focusing on developing a society and economy that grows equitably while maintaining balance of natural resource base and healthy environmental quality through a bioeconomy; creating sustainable growth in the marine economy, focusing on the importance of growing the country through diverse marine activities, alongside the management of marine and coastal resources.

Additionally, the National Strategy for Competitiveness Enhancement also promotes the utilization of the country's biodiversity to create added value in the production sector, which is related to biodiversity. (Source: National Strategy (2018-2037), 2018)

### 4.2 Level 2 Plans

#### 4.2.1 Master Plans under the National Strategy

1) Sustainable Growth Issue: The goal is for Thailand's environmental quality to improve sustainably. The key performance indicator is that Thailand's global ranking in sustainability and environmental quality should be among the top 20 countries in the world by 2037. The Sub-plan for creating sustainable growth in a green socio-economic society involves conserving and restoring ecosystems and natural habitats with high biodiversity. The plan aims to conserve and restore ecosystems and habitats while reducing threats to areas, wild species, and endemic plants, preventing and eliminating invasive alien species in natural habitats, and managing potential conflicts between wildlife, people, and communities.

In addition, economic mechanisms and incentive measures should be developed for the conservation and utilization of biodiversity. The mechanisms for sustainable use and equitable and fair benefit-sharing at the local level should also be established, along with the promotion of integrated cooperation between sectors to achieve the sustainable use of biodiversity, including maintaining and increasing green areas and environmentally friendly spaces. Sub-plans for creating sustainable growth in the marine economy sector involve managing waste and effluents discharged into the sea comprehensively; restoring and preserving the country's beach forests; reducing the amount of waste, especially plastic waste, entering the sea; conserving marine ecosystems and endangered marine animals; and improving and restoring marine and coastal resources by preserving crucial coral reefs and seagrass beds that are important for fisheries and

rare marine animals, as well as preserving mangrove forests that are important for absorbing greenhouse gases, and increasing marine protected areas to meet Sustainable Development Goals (Office of the National Economic and Social Development Council, 2022)

2) Agriculture Issue: The goals are to increase the Gross Domestic Product (GDP) in the agricultural sector and improve agricultural productivity. The sub-plans for bio-agriculture involve supporting the utilization of conserved biological resources, including plant varieties, animal breeds, and microorganisms, to lead to production and expansion that creates added value. It also promotes and supports the production, processing, and development of agricultural goods and products derived from agricultural and biological resource bases, considering ecosystems, the environment, and biodiversity.

#### 4.2.2 Thirteenth National Economic and Social Development Plan (2023-2027)

The plan sets the development direction for Thailand to become a secure, prosperous, and sustainable country through the Sufficiency Economy Philosophy, which relies on four key principles and concepts comprising: 1) Sufficiency Economy Philosophy, 2) Resiliency, 3) The United Nations Sustainable Development Goals (SDGs), and 4) Bio-Circular-Green Economy Model (BCG Model). The objective is to transform Thailand into a progressive society with a sustainable value-creating economy. It sets five main development targets which include 1) Restructuring the manufacturing and service sectors towards an innovation-based economy, 2) Developing human capital for the new global era, 3) Creating a society of opportunities and fairness, 4) Ensuring the transition of production and consumption towards sustainability, and 5) Enhancing Thailand's capability to cope with changes and risks in the new global context. These five main development targets clearly translate to 13 milestones, divided into 4 development areas, to drive the main targets into practical actions that agencies and various sectors can implement concretely. (Office of the National Economic and Social Development Council, 2022)

The directly relevant main development target related to biodiversity is milestone 10: Thailand is a circular economy and low-carbon society under target 2: To sustainably conserve, rehabilitate and utilize natural resources, the following indicators have been set.

1) Thailand's Environmental Performance Index ranks higher–among Southeast Asia's top 3 countries with a score of 55 or higher by 2027.

2) Forest coverage increases by 33 percent for natural forests and 12 percent for forest plantations for economic value by 2027.

These indicators are linked to development strategies, which include:

1) Strategy 3: Rehabilitating natural resources and increasing resource efficiency based on the Sufficiency Economy Philosophy.

Sub-strategy 3.1: Building sufficient natural resource bases for efficient production and utilization. Exploiting natural resources with mindfulness of the ecological limits and self-healing capacity. Forging a balance between conservation and sustainable utilization and equitable benefits sharing. Conducting a value evaluation of natural resources to increase the efficiency of natural resource management.

Sub-strategy 3.3: Managing economic activities within the capacity of natural resources in the area. Ensuring efficient and sustainable resource management. Resolving conflicts related to natural resources and the environment. Defining appropriate land use within the capacity of natural resources. Developing and enhancing land management standards. Establishing an environmental management system in the area, as well as fostering a balance between conservation and sustainable utilization.

2) Strategy 5: Encouraging a shift in economic behaviors and lifestyles towards sustainable ways of living

Sub-strategy 5.1: Raising social awareness. Advocating for living in harmony with nature. Promoting awareness, conscience, and attitudes across all sectors towards the importance and comprehensive realization of the circular economy and a low-carbon society. Nurturing eco-friendly consumer characteristics and behaviors.

Sub-strategy 5.6: Stimulating the use of local wisdom and culture in line with circular economy approaches. Promoting approaches to community use of limited resources with maximum efficiency. Supporting the use of local wisdom in creating products and services with innovation and creativity for self-reliance. Reviving, developing, and facilitating knowledge transfers to raise public awareness and understanding of the values and benefits of protecting local wisdom and culture.

#### 4.2.3 National Security Policy and Plan (2023-2027)

The directly relevant Security Policy and Plan related to biodiversity is Security Policy and Plan No. 4: The Maintenance of Maritime Security and National Interests.

This relevant key strategy includes strategy 2: Promoting balanced and sustainable use of marine resources under the blue economy concept. This strategy comprises four sub-strategies including:

Sub-strategy 2.1: Promote environmentally friendly marine economic activities, particularly in tourism, fisheries, maritime commerce, and undersea energy exploration or extraction.

Sub-strategy 2.2: Promote legal and sustainable management of fisheries and marine aquaculture to maintain the balance of aquatic resources, as well as conserve, restore, and protect the marine environment, particularly in addressing marine pollution and marine debris issues.

Sub-strategy 2.3: Promote and develop approaches to prevent and address coastal erosion issues to preserve marine and coastal ecosystems, as well as areas of marine and coastal utilization.

Sub-strategy 2.4: Promote the participation of stakeholders and communities in coastal and island areas to sustainably utilize marine resources for economic benefits, without compromising national maritime security and interests. (Office of the National Security Council, 2023)

#### 4.2.4 National Reform Plan on Natural Resources and Environment

The plan consists of 6 reform issues, 1) Land resources 2) Water resources 3) Marine and coastal resources 4) Biodiversity 5) Environment and 6) Natural resources and

environmental management system, which was set to be implemented between 2018-2022. The key aspects of the reform issues regarding biodiversity include six topics as follows: (Office of the National Economic and Social Development Council, 2018)

1) Reform the biodiversity mechanisms at both national and local levels by increasing the efficiency of biodiversity operations through the establishment of national and provincial committees, and the enactment of the Biodiversity Act as the country's main law covering key issues such as management of species and habitats, access and benefit-sharing, biosafety, and mechanisms for public participation and various sectors.

2) Reform the biodiversity research system by restructuring the research and development system to cover basic research and taxonomy, innovation and economic applications, ecosystem economics and biodiversity, as well as a clear and continuous budget and funding support system. Additionally, establish a biodiversity research institute to oversee and determine policies for biodiversity research and development.

3) Develop and link national biodiversity databases for conservation, protection, utilization, and fair benefit-sharing. Additionally, develop and link biodiversity databases to enable agencies and communities to access biodiversity data and samples. This information can then be used to build knowledge. Furthermore, the establishment of a central biodiversity information center would facilitate management, benefit-sharing, and monitoring of illegal exploitation.

4) Reform the systems and networks of local resource bases to cover the entire country, including national and ASEAN-level networks. This involves integrating local resource databases and developing networks of Local Resource Conservation and Development Centers at the sub-district level, initiated by Her Royal Highness Princess Maha Chakri Sirindhorn. The aim is to implement the King's Philosophy and the Civil State approach, while also expanding the Local Resource Conservation and Development Centers to cover every sub-district throughout the country.

5) Reform the biodiversity personnel system by promoting and supporting the development of professionals in biodiversity conservation and utilization to align with various aspects of national development, as well as current and future changes. This includes education, basic and in-depth research, advanced technology and innovation, and economic development, especially in relevant interdisciplinary fields. The reform will attract personnel into the system by creating incentives for education and learning and defining clear workforce requirements and career paths.

6) Reform the system and mechanisms to support sustainable use and conservation of biodiversity, increase the value of biological resources, and progress towards developing a Bio Economy under Thailand 4.0 to enhance the country's competitiveness. The reform includes applying tools, mechanisms, and guidelines for sustainable use of biodiversity across all sectors, implementing economic measures and mechanisms, and accelerating the development of a Bio Economy action plan.

## 4.3 Level 3 Plans

### 4.3.1 National Policy and Plan for the Promotion and Conservation of Environmental Quality (2017-2037)

The vision is that Thailand has a balanced and sustainable natural resource base and is an environmentally friendly society. The emphasis is placed on the participation of all sectors to implement the National Policy and Plan for the Promotion and Conservation of Environmental Quality, 2017-2037, efficiently and effectively. The goal is to transform Thailand into a country with a balanced and sustainable natural resource base. This policy consists of 4 main policies:

Policy 1: Manage the natural resource base securely for balance, fairness, and sustainability

Policy 2: Create environmentally friendly growth for prosperity and sustainability

Policy 3: Enhance the efficiency of natural resource and environmental management

Policy 4: Build partnerships in the management of natural resources and the environment.

The main policy aligning with biodiversity is Policy 1, whose objective is to have abundant natural resources and biodiversity, maintaining ecosystem balance, and serving as a foundation for food, water, and energy security. It focuses on achieving balance in coexisting harmoniously with nature by preserving and conserving areas that still have natural abundance and high biodiversity to maintain a balanced ecosystem. It also aims to establish a system for fair access, sharing, and utilization of natural resources, and limiting the use of natural resources to not exceed the resource regeneration rate for sustainability. (Office of Natural Resources and Environmental Policy and Planning, 2018)

### 4.3.2 National Land and Soil Resources Management Policy and Plan (2023-2027)

The vision is defined as the management of the country's land and soil resources to achieve maximum benefits, balance, fairness and sustainability. It consists of four main policy issues:

Policy Issue 1: Efficient reservation and protection of state lands and maintenance of natural balance, with the integration of biodiversity-related issues into the main development approach 3: Conservation, maintenance and restoration of forests to maintain natural balance through participatory processes.

Policy Issue 2: Maximum benefit from land and soil resource utilization.

Policy Issue 3: Fair distribution of land ownership to improve people's quality of life.

Policy Issue 4: Integration and promotion of participation for unified land and soil resource management. (Office of the National Land Policy Board, 2023)

### 4.3.3 National Maritime Security Plan (2023-2027)

Developed by the Office of the National Security Council, the plan focuses on protecting national interests in the maritime domain, encompassing security, economic, and environmental dimensions. It emphasizes the enhancement of comprehensive security to

protect, preserve, and strengthen national security and interests in the maritime sphere by defining operational guidelines for the conservation and utilization of marine natural resources and the environment. The plan also aims to protect, preserve, and restore marine resources and ecosystems, while promoting balanced and sustainable exploitation of the sea. (Office of the National Security Council, 2023)

#### 4.3.4 Environmental Quality Management Plan (2023–2027)

The vision is defined as abundant resources and a safe environment through holistic cross-dimensional management. The plan comprises 5 strategies, 13 strategic actions, and 33 indicators. The strategies directly related to biodiversity are as follows:

Strategy 1: Management of terrestrial natural resources and biodiversity for growth and fairness based on a balanced natural resource base

- Goal: Ensure that natural resource base and biodiversity are promoted through conservation, restoration, and balanced utilization to achieve equity and security
- 2 Strategic Actions:
  1. Sustainable conservation, restoration, and utilization of natural resources
  2. Preparation for supporting sustainable bio-based economic development
- The strategy includes 5 indicators, with 3 directly related to biodiversity: Indicator 1.1: Proportion of green areas that are forests, at 45 percent, consisting of 33 percent natural forest and 12 percent economic forest; Indicator 1.2: Thailand Red List Index (0-1); and Indicator 1.5: Number of financial mechanisms and projects supporting the conservation, restoration, and utilization of natural resources and biodiversity.

Strategy 2: Conservation and restoration of marine ecosystems for sustainable marine resource utilization

- 2 Strategic Actions:
  1. Conservation, restoration, and utilization of marine and coastal resources and ecosystems
  2. Preparation for sustainable marine and coastal resource-based economic development
- Total of 6 indicators, but 3 indicators related to biodiversity: Indicator 2.1: Increase in marine and coastal protected areas, Indicator 2.4: Maintain healthy coral reef areas at no less than 30 percent, and Indicator 2.5: Increase in mangrove forest areas. (Office of Natural Resources and Environmental Policy and Planning, 2023)

#### 4.3.5 (Draft) National Marine and Coastal Resources Management Policy and Plan (2023–2027)

The vision is established as abundant marine and coastal resources, creating a balance for sustainable and equitable utilization. The plan comprises sub-plans covering 5 issues: 1) Conservation, protection, restoration, and prevention of marine and coastal resources;

2) Promotion and support of blue economy development approaches based on the balanced and sustainable use of marine and coastal resources; 3) Enhancement of the effectiveness of tools and mechanisms supporting integrated marine and coastal resource management; 4) Development of efficient coastal erosion prevention management, adaptation, and mitigation of climate change impacts; and 5) Strengthening international cooperation for the sustainable use of oceans and marine and coastal resources. (Department of Marine and Coastal Resources, 2024)

#### 4.3.6 Bio-Circular-Green (BCG) Economy Action Plan (2021-2027)

The plan sets the vision as quality and sustainable economic growth, where citizens enjoy good income and quality of life, while maintaining and restoring high-quality natural resource bases and biodiversity through the application of knowledge, technology, and innovation. The BCG model has 3 objectives, which comprise: 1) Conservation, restoration, management of the utilization of biological and cultural resources 2) Value creation from biological and cultural resources 3) Development of self-reliance. The goal related to biodiversity is sustainability of resources and the environment, with relevant indicators that include: reducing natural resource consumption by one-fourth from the current level and increasing forest land by at least 3.2 million rai (0.5 million ha). In addition, the strategy for driving the country's development with the BCG model consists of 4 strategies:

Strategy 1: Ensuring the sustainability of resource bases and biodiversity Strategy 2: Strengthening communities and grassroots economy Strategy 3: Enhancing industrial development under the BCG (Bio-Circular-Green) economy model to achieve sustainable competitiveness

Strategy 4: Building resilience to global changes

(National Science and Technology Development Agency, 2022)

#### 4.3.7 Master Plan for Climate Change Adaptation (2015-2050)

The Master Plan for Climate Change Adaptation (2015-2050) serves as a policy framework that directs the country towards climate change resilience and sustainable low-carbon growth by 2050. The framework consists of three main approaches: 1) Adaptation to climate change impacts, 2) Greenhouse gas reduction and promotion of low-carbon growth, and 3) Capacity building for climate change management. The plan has led to the development of **the National Adaptation Plan (NAP)**, which provides a framework for integrating climate change adaptation into sectoral and spatial planning strategies across 6 key areas: 1) Water management 2) Agriculture and food security 3) Tourism 4) Public health 5) Natural resource management and 6) Human settlement and security.

In the natural resource management sector, the goal is to sustainably manage natural resources and biodiversity to cope with climate change impacts. In addition, the plan also aims to reduce negative impacts and enhance positive impacts of climate actions on biodiversity. This is achieved through coordinated planning, local implementation, and operational guidelines, incorporating Nature-based Solutions (NbS) and/or Ecosystem-based Adaptation (EbA) approaches, especially in water management and natural resource management. (Office of Natural Resources and Environmental Policy and Planning, 2015)

#### 4.3.8 National Science, Research and Innovation Plan (2023–2027)

Prepared by the Thailand Science, Technology and Innovation (TSRI), the plan consists of 4 strategies, 25 programs, and 14 flagship programs, which aim to define and guide the direction, goals, and resource allocation for the development of science, research, and innovation for 2023-2027, aligning with national development policies, strategies, and goals.

According to the information of flagship programs, these programs and sub-programs include biodiversity-related activities under Strategy 2: Elevating society and the environment for sustainable development, addressing challenges, and adapting to global dynamic changes through science, research, and innovation. This strategy includes 3 flagship programs, 9 programs, and 24 sub-programs. Notably, Program 15 (P15) focuses on developing and urgently addressing natural resource and environmental issues in agricultural ecosystems (water, forests, and land), marine and coastal resources, and ecology and pollution in the industrial sector. The program also aims to enhance resource utilization and waste materials for sustainable consumption in communities and areas. Additionally, it involves developing prototype networks of volunteers using knowledge, technology, and innovation to address environmental problems. (Thailand Science Research and Innovation, 2023)

#### 4.3.9 Twenty-Year Master Plan of the Ministry of Natural Resources and Environment (2018-2037)

The vision is defined as people enjoying good quality through a new way of life, supported by sustainable natural resources and a healthy environment. The objective of this plan is to ensure resilient ecosystems, allowing citizens to benefit from them abundantly and sustainably. The plan consists of five strategies: 1) Drive a new paradigm to accommodate future changes, 2) Manage natural resources for balanced benefits, 3) Create balance and sustainability in water resources for all people and preserve ecosystems, 4) Promote and maintain environmental quality to elevate good quality of life, and 5) Increase organizational capacity to support new ways of living and new innovations. (Ministry of Natural Resources and Environment, 2021)

#### 4.3.10 Five-Year Action Plan of the Biodiversity-based Economy Development Office (Public Organization) (2023-2027)

The plan focuses on developing a bio-based economy founded on biodiversity data, knowledge, innovation, and intellectual property, coupled with conservation and benefit-sharing. Its vision is to develop the bioeconomy through mechanisms for sustainable conservation and utilization of biodiversity. The plan consists of four programs, comprising: 1) Strengthening community economies and business sectors following the BEDO-BCG approach for sustainable development, 2) Developing databases, knowledge, and innovations related to biodiversity and local wisdom for protection, conservation, dissemination, and utilization of biodiversity, 3) Enhancing participation with domestic and international sectors for conservation, restoration, and utilization of biodiversity, and 4) Developing quality management systems to efficiently support the new paradigm. (Biodiversity-Based Economy Development Office (Public Organization), 2022)

# Section 5

## Concepts, Methodologies, Strategies, and National Targets for Biodiversity

### 5.1 Assessment of Situations and Issues Related to Biodiversity Management in Thailand

Thailand's biodiversity management has been influenced by various factors that need to be carefully considered through the Drivers-Pressure-State-Impact-Response (DPSIR) framework. The main drivers include economic development, population growth, global trade, scientific and technological advancements, policy and administrative factors, legal issues, financial constraints, and limited knowledge and innovation.

Thailand's economic development remains a significant **driver**. Urban expansion, national infrastructure development projects, increased agricultural production, and various industrial activities lead to substantial changes in natural landscapes and ecosystems. Additionally, population growth further intensifies these pressures, resulting in increased demand for land, water, and natural resources, as well as causing human encroachment on natural habitats of various living organisms.

Thailand's international trade and global market demands play a crucial role in driving the utilization of biodiversity-related products, such as timber and wildlife. Furthermore, scientific and technological advancements, beneficial for exploring biological resources, can also lead to overexploitation. Examples include improved fishing methods and modern agricultural practices.

In addition to the main direct drivers, there are other factors that Thailand employs in managing biodiversity which include policy and administrative factors that continue to drive biodiversity challenges. Lax-enforcement of environmental regulations, policies that favor short-term economic benefits over long-term sustainability, and the absence of integrated cross-sector planning contribute to biodiversity degradation.

Furthermore, some legal frameworks are inadequate, with gaps in legislation. Certain laws lack effective enforcement or have inconsistent or conflicting enforcement approaches. These issues hinder efforts to conserve and protect biodiversity, preventing the full achievement of national goals.

Financial constraints are another driving factor and a significant challenge, due to limited government budget allocation for management, conservation, and utilization of biodiversity. Funding support from international sources and private sector contributions is insufficient, and the high costs required for implementing conservation measures result in biodiversity management falling short of many national targets as initially expected.

Furthermore, progress in implementing bio-based economic policies to achieve economic and social outcomes, and generate income, has been relatively slow. This is due to limited scientific research and technological innovation, making sustainable use of genetic resources difficult.

These drivers create **pressures** that include destruction and fragmentation of natural ecosystems, habitats for wildlife, plants, and animals; overexploitation of biological resources beyond their carrying capacity; increasing environmental pollution; intensifying climate change; more frequent invasive alien species; economic and social pressures; financial constraints; technological and knowledge limitations; habitat destruction from deforestation; encroachment on protected areas; degradation of wetlands; and coastal development which remain significant pressures. Overexploitation of resources beyond carrying capacity from unsustainable fishing, wildlife poaching, and deforestation still occurs. Overharvesting of medicinal plants and non-timber forest products, as well as agricultural pollution and industrial waste discharge, continue to cause ecosystem degradation.

Climate change creates additional pressure by affecting precipitation patterns and increasing the frequency of extreme weather events, such as floods, which impact species distribution and ecosystem health. Invasive alien species continue to spread and compete with native species, exacerbating biodiversity loss.

Economic and social pressures arising from poverty and lack of sustainable livelihood options lead to increased exploitation of natural resources. Meanwhile, migration and urban expansion result in unsustainable land use practices.

Financial constraints, arising from insufficient resources to implement previous national biodiversity action plans, and high costs of conservation efforts add another level of pressure. Technological and knowledge limitations, especially in advancing the bio-based economy, slow the full utilization of genetic resources for sustainable development.

The **state** of biodiversity in Thailand reflects these pressures, showing significant biodiversity loss, ecosystem degradation, genetic erosion, and the decline in natural species. The high number of threatened species and reduced genetic diversity is also noticeable. Additionally, ecosystem services such as water purification and carbon absorption have diminished, which highlights the urgent need for an effective, actionable, and timely response through action plans to address these various pressures.

**Impacts** occur in economic, social, cultural, health, and environmental domains. Economically, there is reduced production in agriculture, fisheries, and forestry sectors, coupled with loss of income and livelihoods for communities dependent on biodiversity. These impacts also pose social and cultural challenges. The loss of knowledge and good practices related to biodiversity affects communities and cultural heritage. Health impacts include increased vulnerability to

diseases due to the loss of medicinal plants and reduced ecosystem resilience. Meanwhile, environmental impacts are associated with decreased ecosystem resilience to environmental changes and increased greenhouse gas emissions from deforestation and habitat degradation.

**Responses** to the situation, issues, and challenges in managing Thailand's biodiversity require urgent and continuous action. Thailand needs to strengthen policies and laws related to biodiversity conservation; improve enforcement mechanisms and develop new policies to address emerging threats; expand and efficiently manage protected areas; promote sustainable resource management; and enhance research and monitoring efforts. In addition, public awareness campaigns and education are necessary, along with international cooperation. Moreover, diverse financial strategies will support conservation efforts. The emphasis on science, technology, and innovation through investment in research and development, promoting innovation in sustainable use of genetic resources, and capacity building in biodiversity-related technologies will drive progress towards a sustainable bio-based economy.

This DPSIR analysis highlights the critical need for Thailand to align its biodiversity management approach with the Kunming-Montreal Global Biodiversity Framework and relevant national policies. Responding to these drivers and pressures will help Thailand achieve its national biodiversity goals, as well as promote conservation and sustainable use of biodiversity. Integrating global frameworks and national policies will enhance Thailand's capacity to conserve, protect, and sustainably use biodiversity. This integration will promote sustainable development and improve the well-being of people who depend on the country's biological resources.

## 5.2 Principles and Guidelines

### 5.2.1 Sufficiency Economy Philosophy (SEP)

This philosophy guides the way of living and practices for people at all levels, as well as national development and administration along the middle path, especially economic development. It enables keeping pace with global trends based on moderation, reasonableness, and appropriate preparedness within societal contexts to build resilience. Therefore, Thailand's National Biodiversity Action Plan 2023-2027 has adopted the principles of the Sufficiency Economy Philosophy as a guiding concept, considering balanced management of biodiversity and ecosystems. It focuses on establishing the foundation for a self-reliant society and ensuring security, which can lead to economic growth that benefits the country sustainably. This involves the moderate and appropriate use of biodiversity according to each area's potential, reducing dependency on external sources, whether international or outside the local areas, based on developing the quality of the people through increasing their knowledge, capacity building, and fostering a sense of social responsibility. The government's role is to support and regulate the

allocation of biodiversity utilization without destroying ecological balance, enabling people to coexist sustainably with nature.

### 5.2.2 Urgent Commitment

Thailand recognizes that the situation of biodiversity loss and threats in the country is urgent and highly challenging. The country must work with the global community in alignment with the Kunming-Montreal Global Biodiversity Framework, while also meeting the important and urgent national goals. Thailand's approach and principles acknowledge the urgency and challenges within both the global and national timeframes simultaneously. As a result, Thailand's National Biodiversity Action Plan 2023-2027 sets ambitious national targets that address the urgency of reducing biodiversity loss in the country. It also fosters the sustainable use and value addition of biodiversity, ensuring that ecosystem services are provided to the public in a fair, equitable, and appropriate manner.

### 5.2.3 Transformation Change

The assessment of progress and success towards national targets under the Biodiversity Management Action Plan 2017-2022, covering 4 strategies and 25 targets, found that most targets showed progress but were not fully achieved as planned. The evaluation identified gaps and challenges in academic, organizational, mechanism, and legal aspects that need improvement and acceleration to bring about transformational change in a timely manner and in line with the rapid loss of biodiversity, ecosystems, and climate change that the global community is experiencing at an accelerating rate.

Therefore, there is an urgent need to reform the country's biodiversity management approach to be consistent with the vision, mission, and goals of the global community and the country's important contexts. The transformational change in Thailand's National Biodiversity Action Plan 2023-2027 includes new approaches, initiatives, and drives, along with improvements to previous approaches, as follows:

**1) Whole-of-Government and Whole-of-Society approach**

The urgency and challenges of implementing Thailand's National Biodiversity Action Plan 2023-2027 can only be achieved through the active involvement of all sectors of society. The importance of non-governmental sectors, including private businesses, education and research, finance and funding sources, as well as civil society, is essential to ensure implementation at all levels and in all areas, both centrally and regionally. In addition, analyzing and involving stakeholders, including those who will be positively and negatively affected, to jointly drive the plan, benefit from it, and manage risks, is one of the most crucial approaches in the plan's implementation.

**2) National Circumstance Priorities and Capacities**

The national goals and targets in the plan must be appropriately set according to the priorities and capabilities of all sectors in society. This is to ensure that the achievement of the country's biodiversity goals is timely, urgent, progressive, practical, and beneficial, in line with the situation of addressing and mitigating biodiversity loss. The goals are not merely set to align with the Convention on Biological Diversity guidelines, but also to correspond with and respond to the global community. The method of considering the context of needs and suitability for Thailand is one of the plan's operational approaches that leads to actual implementation.

**3) Balanced Implementation of Conservation and Utilization**

Following the Kunming-Montreal Global Biodiversity Framework, which set new goals in 2022, the country's approach to developing the action plan must clearly demonstrate that it has considered balanced outcomes for both conservation and utilization of biodiversity, without emphasizing one aspect over the other. This is to ensure that the plan's implementation benefits the economy by creating value and income from biodiversity and ecosystem services, benefits society, supports the well-being of nature-dependent people, and contributes to the conservation and protection of biodiversity. This approach will lead to more balanced national targets in the plan.

**4) Combination of Ecosystem Approach and Integrated Spatial Planning Approach**

The ecosystem approach has been the primary method used by the Convention on Biological Diversity for ecosystem management (COP Decision V/6), considering the protection, conservation, and utilization of ecosystem services. However, it has not fully considered the importance of social geography and local stakeholders. Incorporating an integrated spatial planning approach alongside the ecosystem approach will support the effective inclusion of roles and participation of various stakeholders in areas of significant biodiversity in the planning process.

**5) Human Rights-Based Approach with Respect to Gender-sensitive and Vulnerable Groups**

The action plan recognizes the importance of respecting, protecting, and upholding human rights to create a country with a good, sustainable, and healthy environment. It also emphasizes the rights, roles, and responsibilities of citizens and communities to support society, including the specific rights and roles of women, youth, the elderly, persons with disabilities, and other vulnerable groups in the protection, conservation, and sustainable use of biological resources.

**6) Cooperation with Other Biodiversity-Related Conventions and Agreements**

The country has to fulfill obligations related to biodiversity, ecosystems, and species, as well as those addressing the impacts on biodiversity loss, especially under the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Convention on Wetlands, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and others. These commitments encompass operations, activities, national targets, monitoring and evaluating progress and achievement, identifying indicators, and reporting to enhance cooperation, efforts, and resource sharing in joint initiatives.

**7) Communication, Education, and Awareness for Increased Uptake**

A crucial necessity for changing people's behavior and perspectives is increasing awareness and education. This includes fostering an understanding of the value of biodiversity and nature's contributions to everyone, of the importance of conservation and sustainable use of biodiversity, as well as of the role of science, technology, and innovation in enhancing biodiversity management capabilities. These should be considered as essential approaches that need to be implemented continuously over time.

**8) Access to Innovative: Financial Mechanisms and Financial Resources Mobilization**

The limitations and challenges for the action plan to achieve national goals include the need to initiate access to additional funding sources, financial innovations, and new financial and fiscal instruments to diversify budget allocation. It is crucial to encourage the financial sector and private businesses to work towards sustainability goals that incorporate biodiversity issues as the foundation for economic and social development. This approach is an initiative that must be implemented alongside other approaches to ensure the successful execution of the action plan within its timeframe.

## 5.3 Methods and Processes for Developing Thailand's National Biodiversity Action Plan (B.E. 2566-2570) (2023-2027)

The process of developing Thailand's National Biodiversity Action Plan 2023-2027 (Figure 5-1) began after reviewing and summarizing key issues and indicators for each target according to the Kunming-Montreal Global Biodiversity Framework (KM-GBF). Following this review, consultation workshops were organized to analyze and develop stakeholder mapping, identifying stakeholder groups, responsible agencies, and sectors related to each target. This preliminary stakeholder mapping was then used to create communication plans to provide knowledge and raise awareness about biodiversity in accordance with the KM-GBF.

Subsequently, the First National Consultation Workshop on the Development of Thailand's National Biodiversity Action Plan Aligned with the KM-GBF was organized. This workshop aimed to exchange opinions and build understanding of Thailand's biodiversity goals in response to the global biodiversity framework, discuss and prioritize national goals and strategic issues for Thailand's National Biodiversity Action Plan 2023-2027 and long-term strategies. This included identifying national targets and indicators for the Action Plan that align with the headline indicators of the global monitoring framework.

Following this workshop, focus group meetings were organized to gather feedback on national targets from various stakeholders, including government agencies, the private sector, businesses, educational institutions, civil society, independent organizations, ethnic groups, local communities, women and youth groups, and representatives from domestic agencies under the Convention on Biological Diversity (CBD). The objectives were to clarify details of national targets and to discuss flagship projects and key indicators for each target.

After gathering feedback and suggestions from all sectors, a draft of Thailand's National Biodiversity Action Plan 2023-2027 was prepared. This was followed by the Second National Consultation Workshop, titled "Public Hearing on Thailand's National Biodiversity Action Plan 2023-2027." The purpose was to discuss and gather opinions from various agencies on the plan's implementation, targets, indicators, and supporting mechanisms. The feedback and suggestions received were used to further improve and complete the draft plan.

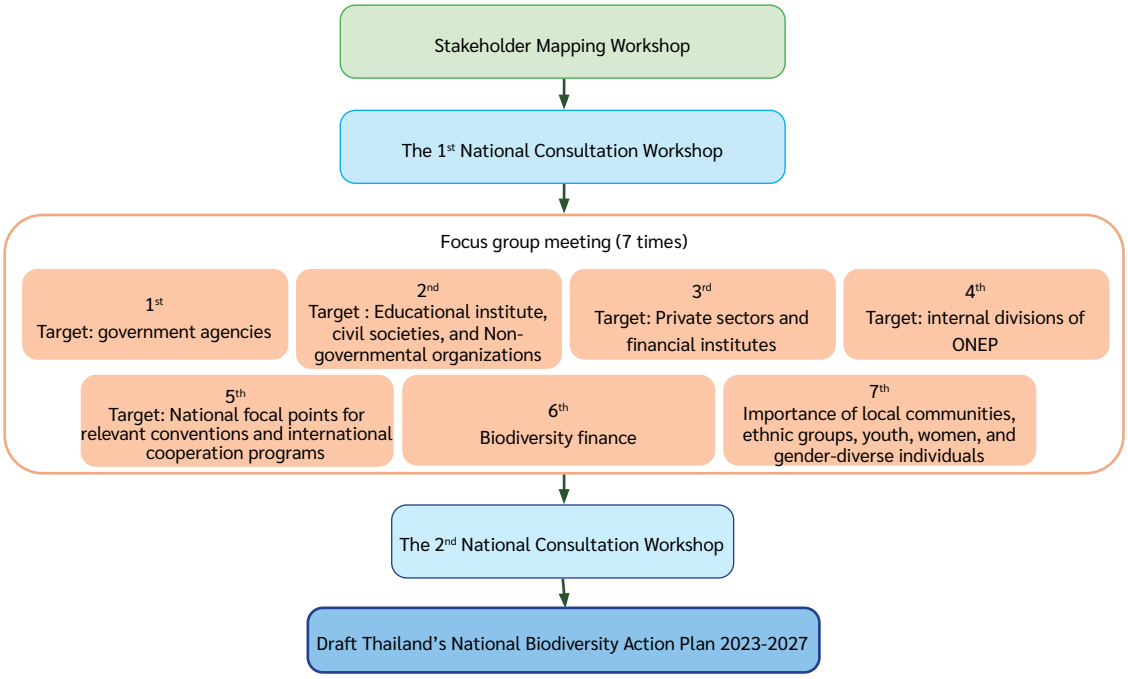



**Figure 5-1: Stakeholder mapping workshop for developing Thailand's National Biodiversity Action Plan 2023-2027**

## 5.4 Strategies and National Targets

The strategies under Thailand's National Biodiversity Action Plan serve as a practical implementation framework with clear direction and are capable of driving biodiversity management to achieve goals and targets concretely. The plan also promotes integrated operations among relevant agencies while responding to the multi-dimensional changes in natural resources and environmental situations. It consists of three strategies and twelve national targets (Figure 5-2) as follows:

- **Strategy 1: Conserve, Restore, and Eliminate Threats to Biodiversity to Maintain Ecosystem Services**

This strategy aims to address and mitigate the loss of biodiversity in Thailand through conservation, restoration, and elimination of threats. It addresses both spatial dimensions (ecosystems, natural habitats) and species-specific considerations, including threatened native species, those nearing extinction, and invasive alien species.

Additionally, this strategy focuses on protecting biodiversity from threats including, pollution, climate change, and human land use in urban communities. It comprises four targets as follows:

**Target 1:** Reduce the loss of important biodiversity areas both in landscape and seascape through effective spatial planning.

**Target 2:** Conserve, restore, and expand protected areas, increase other effective area-based conservation measures (OECMs) to enhance ecosystem integrity and connectivity.

**Target 3:** Conserve and protect threatened and wild species, reduce human-wildlife conflict, and increase the efficiency of invasive alien species management.

**Target 4:** Reduce threats to biodiversity arising from climate change and pollution, including increasing urban green spaces, to restore and maintain ecosystem services.

- **Strategy 2: Promote Bio-Based Economy and Sustainable Use of Biodiversity**

This strategy aims to ensure that biodiversity creates value and benefits from ecosystem services for the people and the country. It promotes sustainable, equitable, and fair utilization of biological and genetic resources as a driving force for the country's bio-based economy, significantly contributing to the well-being of society and people, especially those who depend on biological resources. Additionally, it ensures that various production sectors utilizing biological resources create sustainable benefits and value for future generations. The strategy comprises 3 targets as follows:

**Target 5** Promote and support a bio-based economy, based on ecosystem services to improve people's living conditions and income.

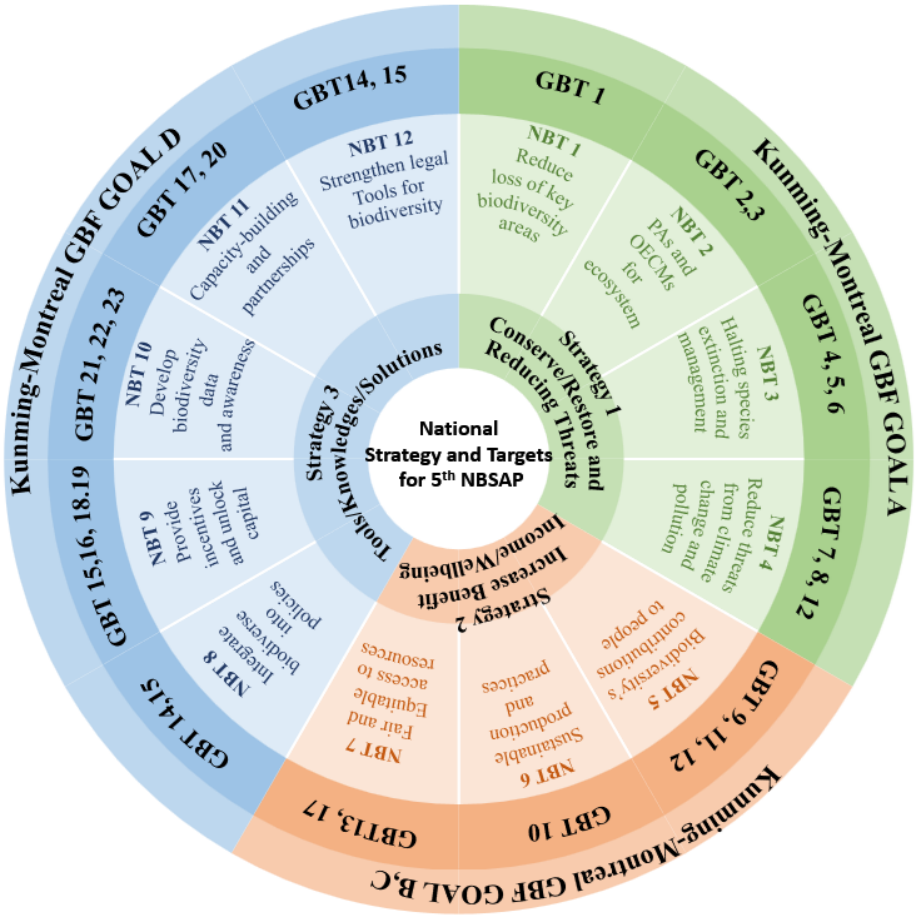
**Target 6** Promote sustainable practices in production and service sectors, including agriculture, aquaculture, fisheries, livestock, forestry, and tourism.

**Target 7** Establish comprehensive mechanisms and measures to ensure equitable access and benefit-sharing and consideration of biosafety for the utilization of genetic resources.

- **Strategy 3: Enhance Capacity and Participation in Biodiversity Management**

This strategy aims to facilitate and support biodiversity management by creating necessary and appropriate conditions for all sectors and stakeholders to jointly drive the success and progress of the Action Plan. The strategy focuses on developing, reviewing, and implementing both non-financial mechanisms (tools, knowledge, information, laws, regulations, and guidelines) and financial mechanisms (funding sources, and incentives). Additionally, it emphasizes enhancing the capacity and capabilities of all sectors supporting the implementation of the plan. The strategy comprises 5 targets as follows:

| | |
|---|---|
|  | **Target 8** Mainstream biodiversity into policies, plans, and operations of all sectors at all levels, while fostering multi-sectoral engagement and participation. |
|  | **Target 9** Expand channels and funding support from various sectors, as well as promote financial mechanisms, economic instruments, and incentive measures to support biodiversity conservation and sustainable use. |
|  | **Target 10** Develop a biodiversity data system and knowledge connected with all sectors, to support decision-making and operation in biodiversity management, and raise public awareness regarding biodiversity and ecosystem. |
|  | **Target 11** Strengthen and develop capabilities and partnerships, including technology transfer in research, science, and innovation for biodiversity. |
|  | **Target 12** Develop and improve existing legal tools and regulations to effectively support the achievement of national biodiversity targets. |




Note: GBT stands for Global Biodiversity Target

**Figure 5-2: National strategy and targets under Thailand's National Biodiversity Action Plan 2023-2027**

## 5.5 Alignment with the Sustainable Development Goals (SDGs) and the Kunming-Montreal Global Biodiversity Framework (KM-GBF)

### 5.5.1 2030 Agenda for Sustainable Development and the Sustainable Development Goals

The 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), which were approved by the 70th session of the United Nations General Assembly in September 2015, include 16 development goals related to biodiversity. These are Goals 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17, as detailed in **Appendix A** and **Figure 5-3**. Biodiversity, including ecosystem services, serves as a critical foundation for economic and social development, especially in terms of food security, and is therefore fundamental to almost all SDGs. Achieving the Sustainable Development Goals requires the integration of social and economic development with the conservation and restoration of ecosystems, including biodiversity, concurrently.


**Figure 5-3: Sustainable Development Goals (SDGs) related to biodiversity**

### 5.5.2 Alignment of Thailand's National Biodiversity Action Plan 2023-2027 with the Kunming-Montreal Global Biodiversity Framework and the Sustainable Development Goals

Thailand's National Biodiversity Action Plan 2023-2027 has been developed with content and key elements that align with the Kunming-Montreal Global Biodiversity Framework (KM-GBF) and support the Sustainable Development Goals (SDGs). It comprises 3 strategies and 12 national targets that translate the global targets of the KM-GBF for implementation at the national level, with the aim of achieving the targets of both the KM-GBF and SDGs. The linkage of this Action Plan can be summarized as shown in **Appendix B** and **Figure 5-4.**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Level 1 Plan** | **National Strategy 2018-2037** | | | | | |
| **Level 2 Plans** | **Master Plan under the Natlonal Strategy (2023-2037)** | **The thirteenth Natlonal Economk and Soclal Development Plan (2023-2027)** | **National Reform Plan on Natural Resources and Environment** | | | |
| **Level 3 Plans** | National Policy and Plan for the Promotion and Conservation of Environmental Quality (2017-2037) | Bio-Circular-Green (BGC) Economy Action Plan (2021-2027) | Environmental Quality Management Plan (2023-2027) | Five-year Action Plan (2023-2027) of the Biodiversity-based Economy Development Office (Public Organization) | National Adaptation Plan (2018-2037) | |
| **Thailand's National Biodiversity Action Plan 2023-2027** | | | | | | |
| **Strategies** | **1. Conserve, restore, and elminate threats to blodiversity to maintain ecosystem services.** | | **2. Promote blo-based economy and sustainable use of blodiversity.** | | **3. Enhance capacity and participation In blodiversity management.** | |
| **Targets** | Target 1: Reduce the loss of important biodiversity areas both in landscape and seascape through effective spatial planning. | | Target 5: Promote and support a bio-based economy, based on ecosystem services to improve people's living conditions and income. | | Target 8: Mainstream biodiversity into policies, plans, and operations across all sectors and levels, while fostering multi-sectoral engagement and participation. | |
| | Target 2: Conserve, restore, and expand protected areas, increase other effective area-based conservation measures (OECMs) to enhance ecosystem integrity and connectivity. | | Target 6: Promote sustainable practices across production and service sectors, including agriculture, aquaculture, fisheries, livestock, forestry, and tourism. | | Target 9: Expand funding channels and financial support from various sectors, and establish financial mechanisms, economic instruments, and incentive measures to support biodiversity conservation and sustainable use. | |
| | Target 3: Conserve and protect threatened and wild species, reduce human-wildlife conflict issues, and enhance the efficiency of invasive alien species management. | | Target 7: Establish comprehensive mechanisms and measures to ensure equitable access and benefit-sharing and consideration of biosafety for the utilization of genetic resources. | | Target 10: Develop a biodiversity data system and knowledge connected with all sectors, to support decision-making and implementation in biodiversity management, and raise public awareness regarding biodiversity and ecosystem services. | |
| | Target 4: Reduce threats to biodiversity from climate change and pollution, including increasing urban green spaces, to restore and maintain ecosystem services. | | | | Target 11: Strengthen and develop capabilities and partnership, including technology transfer in research, science, and innovation for biodiversity. | |
| | | | | | Target 12: Develop and improve existing legal tools and regulations to effectively support the achievement of national biodiversity targets. | |

**Figure 5-4: The linkages between Thailand's National Biodiversity Action Plan 2023-2027, the National Plans (Level 1-3), and the Sustainable Development Goals**

# Section 6

## Thailand's National Biodiversity Action Plan B.E. 2566-2570 (2023-2027)

### Strategy 1: Conserve, Restore, and Eliminate Threats to Biodiversity to Maintain Ecosystem Services

This strategy aims to address and mitigate the loss of biodiversity in Thailand through conservation, restoration, and elimination of threats. It addresses both spatial dimensions (ecosystems, natural habitats) and species-specific considerations, including threatened native species, those nearing extinction, and invasive alien species.

Additionally, this strategy focuses on protecting biodiversity from threats including pollution, climate change, and human land use in urban communities.


#### Target 1: Reduce the Loss of Important Biodiversity Areas both in Landscape and Seascape Through Effective Spatial Planning

- **Target Description**

Ensure that all areas are under integrated spatial planning and biodiversity inclusive spatial planning and/or effective management processes addressing land and sea use change, aiming to increase coverage of and reduce the loss of areas with high biodiversity importance by 2027. This target shall be achieved through participatory and integrated spatial planning of high biodiversity areas and implementing effective management strategies to curtail land-use changes in both terrestrial and marine environments, including ecosystems of high ecological integrity, while respecting the rights and duties of ethnic groups and local communities who occupy or care for these areas.

- **Importance of the Target**

Land-use change is a significant direct drivers of biodiversity loss. Land-use change has the largest relative negative impact on the country's terrestrial and freshwater ecosystems, primarily due to agricultural sector expansion that has extensively transformed land use patterns. Marine and coastal ecosystems have also been substantially affected by human activities, including coastal settlements, expansion of coastal transportation infrastructure, coastal fishing, and tourism and recreational area development. These factors contribute to the increasing cumulative impacts of human activities in coastal zones. The increasing land use demands by the public and various sectors have resulted in conflicts with conservation and protection of ecosystem areas. This necessitates the use of integrated cross-sectoral land

management that allows for the consideration of multiple interests, values and types of use. Integrated spatial planning and/or effective management processes allow countries to analyze and then effectively allocate the spatial distribution of activities in each environment to achieve various social, ecological and economic objectives. Integrated spatial planning helps bring together all stakeholders for a particular space, ensuring the prioritization and proper allocation of various activities while maintaining a balance between nature conservation imperatives and sustainable socioeconomic development and concurrently safeguarding food security and human well-being.

- **Recommended Actions**

Implementation of integrated spatial planning to address negative drivers of land and sea use change, which cause the loss of areas with high biodiversity importance, with the target of significantly reducing such loss by 2027, and continuing toward greater achievement of targets by 2030. The recommended actions are as follows:

1) Integrated spatial planning –This serves as a method or process for analyzing and distributing land use benefits among stakeholders to achieve social, economic, and ecological objectives within a defined area, utilizing approaches such as environmental impact assessments and strategic environmental impact assessments, etc.

2) Effective spatial management processes – In addition to integrated spatial planning, other spatial management processes may be used as alternatives or supplements, such as coastal area management plans, wetland management plans, and watershed management plans, etc.

3) Expand and increase coverage of areas of biodiversity importance. Spatial planning and/or management approaches should be applied to all areas. In other words, the aim should be that, by 2027, the entire territory of each country has been subject to some degree of spatial planning or effective management. This includes all terrestrial and aquatic ecosystems—both freshwater and marine—as applicable.

4) Emphasize the participation of stakeholders in the area to ensure effective spatial planning and management processes in addressing habitat loss, ecosystems, and native species. This includes considering and acknowledging land-use practices of stakeholders, including indigenous peoples and local communities utilizing resources in those areas. This is essential for understanding the context of the area, which is crucial for participatory spatial planning.

- **Target Values**

1) The rate of natural habitats loss, both on land and along coastal areas, is reduced by 50% (including wetlands, forest areas, mangrove forests, and coastal areas).

2) The integrity status of important natural habitats (coral reefs, seagrass beds) will be improved.

3) At least 15% of significant biodiversity areas are included in the integrated and participatory spatial plans

- **Indicators**

1) Percentage rate of natural habitats loss

2) The integrity status of important natural habitats

3) Percentage of significant biodiversity areas that are included in integrated and participatory spatial plans being implemented.

**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Reduce the loss rate of natural biodiversity areas to preserve their capacity to provide ecosystem services, supporting adaptation to climate change. | 1.1 Conduct surveys and compile a list of areas with significant biodiversity in Thailand, including wetlands of various levels of importance, and prioritize areas of exceptional biodiversity and ecosystem significance. | MNRE (DNP/RFD/DMCR/ DWR/ONEP) | OPM (ONLB)<br>RSPG<br>Educational Institutions<br>Civil Society<br>Community<br>Organizations<br>International<br>Organizations | 2023-2027 |
| | 1.2 Study, survey, and assess the status and potential of areas important to biodiversity, as well as the components of biodiversity in various ecosystems, to effectively plan the management of important natural habitats, encompassing all terrestrial and aquatic ecosystems in both freshwater and marine environments. | MNRE (DNP/RFD/DMCR/ DWR)<br>MOAC (LDD/HRDI) | MNRE (ONEP/DCCE)<br>MOAC (OAE/DOA)<br>MOI (DPT)<br>MHESI (GISTDA)<br>OPM (ONWR)<br>Educational Institutions<br>Civil Society<br>Community<br>Organizations<br>International<br>Organizations<br>Private sector | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Promote integrated and participatory spatial planning for areas of significant biodiversity. | 2.1 Prepare mechanisms and tools to facilitate integrated spatial planning. | MNRE (DNP/RFD/DMCR/ ONEP)<br>MOAC (LDD)<br>OPM (ONWR/ONLB/ NESDC) | MNRE (DCCE/FIO)<br>MOAC (HRDI)<br>MHESI (GISTDA)<br>OPM (EEC)<br>International Organizations | 2023-2027 |
| | 2.2 Integrate biodiversity management into spatial planning to enhance the efficiency of area management and promote participation in spatial planning processes. | MOAC (LDD)<br>MOI (DPT/DOPA/LAO)<br>OPM (ONWR/ONLB)<br>MIND (IEAT) | MNRE (ONEP/DCCE/FIO)<br>MOAC (HRDI)<br>MHESI (GISTDA)<br>Civil Society Community Organizations<br>International Organizations<br>Private sector | 2023-2027 |
| | 2.3 Support relevant sectors in developing management plans for areas of significant biodiversity and wetlands of international importance, national importance, and/or Ramsar sites. Additionally, encourage relevant agencies to incorporate these plans into policies and plans at provincial, local, and community levels. | MNRE (DNP/RFD/DMCR/ DWR)<br>OPM (Thai-MECC)<br>MOI (DLA) | MNRE (ONEP/ DCCE/ FIO)<br>MOAC (HRDI)<br>MHESI (GISTDA) | 2023-2027 |


## Target 2: Conserve, Restore, and Expand Protected Areas, Increase Other Effective Area-Based Conservation Measures (OECMs) to Enhance Ecosystem Integrity and Connectivity

- **Target Description**

Prioritize the conservation, protection, and restoration of areas of high biodiversity importance to maintain effective ecosystem services across terrestrial, inland waters, and marine/coastal ecosystems. Ensure areas of particular importance for biodiversity and ecosystem services receive effective conservation and management to establish functional ecological connectivity networks. Recognize both legally protected areas and other effective area-based conservation measures (OECMs). Consider broader landscape and seascape approaches, while facilitating appropriate sustainable use by stakeholders that remains consistent with biodiversity conservation targets. Respect the rights and responsibilities of indigenous peoples and local communities in areas under their stewardship or traditional management.

Restore degraded ecosystem areas to their original integrity and ecosystem service capacity prior to human-induced changes. Restoration efforts should aim to reestablish ecosystem connectivity that has been disrupted or fragmented due to negative drivers. Furthermore, focus on expanding conservation areas through multi-sectoral participation, encompassing law enforcement in legally protected areas and other effective area-based conservation measures (OECMs), with particular emphasis on private sector and civil society engagement.

This target aims to ensure that 30 percent of all degraded terrestrial, inland waters, and coastal ecosystems will be effectively conserved, protected, and restored, with progress made by 2027 and completion by 2030.

- **Importance of the Target**

Well-governed, effectively managed, and representative protected areas and OECMs are a proven method for safeguarding both habitats and populations of species and for delivering important ecosystem services and multiple benefits to people. These areas are a central element of biodiversity conservation strategies at local, national, and global levels. Protected areas and OECMs can take various forms, ranging from strictly protected areas to areas that allow sustainable use, consistent with the protection of species, habitats, and ecosystem processes.

The degradation of habitats for various species and ecosystems is primarily the result of human activities, leading to a reduction in biodiversity and ecosystem services. Globally, including in Thailand, important biodiversity areas have degraded. It is estimated that between 20 percent and 40 percent of the world's areas with significant biodiversity have already deteriorated, impacting the well-being of at least 3.2 billion people. Although Thailand has not yet clearly estimated the extent of degraded areas, the country's biodiversity situation mirrors the global trend.

The main direct drivers of land degradation are increased demand for land use, the expansion of agricultural areas, livestock farming, fisheries, urban communities, industry, and unsustainable infrastructure in areas of natural habitats, including forests and wetlands. This is further exacerbated by emerging pressures from climate change. Habitat loss through land-use changes and the decline in the suitability of the remaining habitats are significant causes of biodiversity loss. Ecosystems most affected by land degradation include forests, and wetlands. Studies estimate that wetlands are particularly degraded, with 87 percent lost globally in the last 300 years and 54 percent since 1900. Marine ecosystems are experiencing high rates of habitat loss and degradation as well, particularly along coastlines, mangrove forests, and coral reefs.

- **Recommended Actions**

Enhance the efficiency of conservation, protection, and restoration efforts for biodiversity protected areas, while expanding their coverage. This is in response to negative drivers of land use in areas of high biodiversity, aiming to significantly reduce area loss by 2027, with continued progress towards achieving more ambitious targets by 2030. The following actions needs to be considered to accomplish this:

1) Expand and improve protected areas and other effective area-based conservation measures (OECMs) which include:

1.1) Legally protected areas–These are areas defined by Thai law, including relevant regulations and legislation. They are specifically designated areas that align with the recommendations of the Convention on Biological Diversity. These areas are regulated and managed to achieve specific conservation objectives, as defined by the International Union for Conservation of Nature (IUCN), which has established a classification system for protected areas.

1.2) Other effective area-based conservation measures (OECMs)–These are geographically defined areas other than protected areas, which are governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services. Additionally, where applicable, these measures support cultural, spiritual, socio–economic, and other locally relevant values.

1.3) Conservation areas utilized by indigenous peoples and local communities–In some cases, there are areas occupied for conservation and utilization by indigenous peoples and local communities, in the form of owning, occupying, and/or managing areas with unique and significant biodiversity. However, any decisions regarding these areas must recognize and respect the rights and responsibilities of indigenous peoples and local communities.

2) Prioritize areas of biodiversity importance and ecosystem services, and/or those representative of the country's crucial ecosystems, to determine appropriate operational guidelines/measures.

Areas particularly important for biodiversity include areas high in species richness, habitats for threatened species and rare species, endemic species, endangered species, and threatened habitats, specific critical habitats, and areas important for ecosystem services. These areas should be prioritized in achieving this target.

3) Conserve and manage protected areas and other effective area-based conservation measures (OECMs) for sustainable and efficient utilization.

Protected areas and OECMs that have the primary objective of achieving positive outcomes for biodiversity require effective management. To ensure sustainable positive outcomes for biodiversity conservation, appropriate objectives, management processes, governance systems, adequate and suitable resources, and regular monitoring are essential.

4) Expand/designate legally protected areas and propose additional OECMs to establish ecosystem connectivity and enhance biodiversity protection efficiency.

Connect legally protected areas and OECMs into networks that enhance biodiversity protection through corridors, allowing these areas to more effectively respond to threats of biodiversity loss, including risks from climate change.

5) Emphasize and recognize the participatory role of various sectors and relevant stakeholders in the management and governance of protected areas and OECMs.

Promote genuine participation in the management and governance of protected areas and OECMs to achieve sustainable, equitable, transparent, and fair management and benefit-sharing, while maintaining biodiversity conservation objectives in potentially conflicting situations, including rights to co-manage and utilize these areas.

6) Continuous restoration and implementation

Restoration refers to the active, serious, and urgent process of managing the recovery of degraded, damaged, or destroyed ecosystems. Restoration activities should be conducted continuously. Ecosystem restoration efforts aim to increase the area and integrity of natural ecosystems by rehabilitating degraded or destroyed ecosystems, including those altered by various threats outside of natural cycles, to restore them to their natural ecosystem state. Conversely, ecosystem restoration includes efforts to restore altered ecosystem services to their natural state. Restoration should focus on achieving long-term effectiveness, requiring appropriate resources and monitoring of restoration outcomes.

7) Elevate/focus on biodiversity conservation and ecosystem service provision

In considering activities to achieve this goal, key issues should be addressed in designing conservation, protection, and restoration methods and formats. Although various activities can be conducted for different purposes, the focus should be on effectiveness, namely enhancing biodiversity and improving ecosystem services. Furthermore, the management goals

for biodiversity conservation and protected areas should emphasize ecosystem connectivity and integrity. Areas of high ecological integrity are those with components, structures, functions, and ecological processes similar to natural ecosystems. Connectivity helps maintain natural habitats for living organisms.

- **Target Values**

1) At least 23% of the country's terrestrial area and 15% of marine area are designated as protected areas and OECMs.

By 2030, at least 30% of both terrestrial and marine areas are designated as protected areas and OECMs.

2) At least 30% of degraded natural habitats are restored.

- **Indicators**

1) Percentage of protected areas and OECMs in both terrestrial and marine environments.

2) Percentage of degraded natural habitats that have been restored (forests/ mangrove forests/beaches/wetlands).


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Enhance the efficiency and strengthen the management of protected areas and legally designated conservation areas. | 1.1 Establish measures and designate protected and conserved areas to safeguard areas with natural ecosystems and high biodiversity. Develop mechanisms and plans for managing protected areas and conservation zones through the participation of stakeholders and local communities. | MNRE (DNP/RFD/DMCR/ ONEP)<br>MOAC (DOF)<br>Community Organizations | OPM (ONLB)<br>MSDHS (CODI/DCY)<br>NHRC | 2023-2027 |
| | 1.2 Evaluate the management efficiency of legally protected and conserved areas and implement improvements to enhance their effectiveness in appropriately preserving these areas. | MNRE (DNP/RFD/DMCR/ ONEP)<br>MOAC (DOF) | Civil Society<br>Community Organizations<br>International Organizations | 2023-2027 |
| | 1.3 Develop the capacities of personnel and civil society networks to increase the effectiveness of law enforcement related to the conservation and protection of ecosystems and biodiversity. | MNRE (DNP/RFD/DMCR/ DWR)<br>MOI (LAO)<br>Community Organizations | Educational Institutions<br>Civil Society<br>Community Organizations<br>International Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Promote the conservation, restoration, and sustainable utilization of areas of significant biodiversity importance, and support the establishment of other effective area-based conservation measures (OECMs). | 2.1 Develop criteria and mechanisms for establishing OECMs, with the participation of stakeholders and local communities. Apply these criteria to identify potential OECM sites for the country, involving all sectors. | MNRE (ONEP) | MNRE (BEDO)<br>OPM (ONWR/NOB)<br>MOI (DPT/LAO)<br>MIND (DPIM)<br>MOD (RTN/RTA)<br>Educational Institutions<br>Civil Society<br>Community Organizations<br>International Organizations<br>Private sector | 2025 |
| | 2.2 Implement pilot projects for important biodiversity areas located outside conservation areas, both terrestrial and marine. Develop participatory management approaches for biodiversity areas that are suitable for Thailand. Establish management strategies to incrementally expand these areas towards the target through collaborative management involving the government, the private sector, and the public. | MNRE (DNP/RFD/DMCR/DWR/DMR/BEDO)<br>MOI (LAO)<br>OPM (NOB)<br>MOD (RTN/RTA)<br>CIPT<br>Educational Institutions<br>Private sector | MNRE (ONEP)<br>OPM (ONWR)<br>MIND (DPIM)<br>MOI (DPT)<br>Civil Society<br>Community Organizations<br>International Organizations | 2025-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 2.3 Connect networks of protected areas and legally designated conservation areas, including OECMs, to enhance management efficiency at the local level. Link fragmented and disconnected ecosystems and maintain the integrity of natural habitats and ecosystems. | MNRE (DNP/RFD/DMCR/ DWR)<br>MOAC (DOF) | MNRE (ONEP/DMR/ BEDO)<br>OPM (ONLB/ONWR/ NOB)<br>MOI (DPT/LAO)<br>MIND (DPIM)<br>MOD (RTN/RTA)<br>Private sector<br>Civil Society<br>Community Organizations<br>International Organizations | 2025-2027 |
| 3. Promote the restoration of all types of degraded ecosystems, including terrestrial, inland waters, marine, and coastal areas. Continuously monitor and evaluate areas of degraded biodiversity in both terrestrial and marine environments. | 3.1 Encourage the assessment of degraded areas or areas where land use has changed due to various development projects, encompassing terrestrial, inland waters, marine, and coastal regions. Promote appropriate and continuous ecosystem restoration activities nationwide, particularly focusing on critical ecosystems. | MNRE (DNP/RFD/DMCR/ DWR) | OPM (ONLB) | 2023-2027 |
| | 3.2 Support relevant sectors in conducting activities aimed at restoring degraded ecosystems, enhancing biodiversity and ecosystem services, and increasing the integrity and connectivity of ecosystems. | MNRE (DNP/RFD/DMCR/ DWR) | MNRE (BEDO)<br>MSDHS (CODI/DCY)<br>Educational Institution<br>Civil Society<br>Community Organizations<br>International Organizations<br>Private sector | 2023-2027 |

## Target 3: Conserve and Protect Threatened and Wild Species, Reduce Human-Wildlife Conflict Issues, and Increase the Efficiency of Invasive Alien Species Management

- **Target Description**

Implement urgent management actions to halt the extinction of threatened species, ensure their recovery and conservation to significantly reduce extinction risk. Maintain and restore genetic diversity within and between populations of native and domesticated species to preserve their adaptive potential, through both in situ and ex situ conservation and sustainable management practices. Effectively manage human-wildlife interactions to minimize conflict and promote coexistence.

Eliminate, reduce, and/or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by: identifying and managing introduction pathways of alien species; preventing the introduction and establishment of high-priority invasive species; reducing rates of introduction and establishment of other invasive or potentially invasive alien species; and eliminating or controlling invasive alien species, especially in important and sensitive areas such as national parks and their surroundings, islands, etc.

- **Importance of Target**

Invasive alien species are one of the main direct drivers of biodiversity loss. In some ecosystems, such as islands, invasive alien species are the leading cause of biodiversity decline. Invasive alien species affect biodiversity by competing with native species for resources, by direct predation, or by introducing pathogens. They also modify the composition and structure of ecosystems, reducing the services they provide. In addition to their environmental impacts, invasive alien species pose a threat to food security, human health, and economic activities. Globalization and an associated increase in human-mediated activities, such as international transport, trade, and tourism, have made the movement of species beyond natural bio-geographical barriers easier and quicker, by creating new introduction pathways. Due to the wide and crosscutting impacts of invasive alien species, including environmental, economic, health, social, and cultural impacts, it is necessary to strengthen collaboration across sectors and government agencies at all levels and areas to ensure that this threat is managed effectively.

This target focuses on eliminating, reducing, or mitigating the impacts of invasive alien species in two main ways: (a) by identifying and managing pathways to prevent their introduction and establishment, and (b) by eradicating or controlling invasive alien species that have been introduced and established.

- **Recommended Actions**

Implement measures to halt the extinction of native and threatened species, enhance the management of invasive alien species, and reduce human-wildlife conflicts to preserve the country's genetic diversity. These efforts should commence by 2027, with continued progress towards more ambitious targets by 2030. To achieve this, the following actions should be considered:

1) Assessment of threatened species status and focus on threatened species management and restoration

Implementation should include periodic assessments of the threat status for species listed in the national threatened species inventory. Management should focus on the recovery of threatened species, which may include species reintroductions, species recovery actions, and conservation of genetic resources within species. Both in-situ and ex-situ conservation approaches should be applied to species within the country, including on-farm conservation for domesticated species.

2) Halt human-induced extinction, reduce the risk of biodiversity and ecosystem loss, and conserve the genetic diversity of native species

Consider conservation, in terms of the protection, care, management, and maintenance of ecosystems, habitats, wild species, and populations, both within and outside their natural environments, to safeguard the natural conditions for their long-term sustainability. Furthermore, conservation of genetic diversity of native species helps maintain ecosystem stability, secure benefits from ecosystem services, and support species survival and adaptation, which clearly connects ecosystems and species.

3) Enhance the efficiency of invasive alien species management and implement continuous measures

The implementation of control or eradication strategies for high-priority invasive alien species in Thailand can be conducted with reference to the guidelines and registry of alien species that should be prevented, controlled, and eradicated in Thailand, as approved by the Cabinet resolution on February 20, 2018. Implementation should include risk analysis prior to the introduction of any alien species, and prioritization of pathways, areas, and invasive alien species that require management.

Management approaches should build knowledge and understanding of processes while fostering community participation in the management of invasive alien species, ultimately creating effective participatory management of alien species.

4) Reduce human-wildlife conflict

Some human-wildlife interactions can lead to conflicts, including over excessive resource and space use, resulting in adverse effects on human life, health, well-being, and/or livelihoods. As a result of these actions and threats, humans may damage or eliminate wildlife, either intentionally or unintentionally. Many types of human-wildlife conflicts can be mitigated or avoided through appropriate planning, management, and compensation measures.

- **Target Values**

1) The conservation and protection status of threatened and endemic species increase by 25% (for threatened animal species).

2) The Red List Index does not decrease from the 2020 baseline data,

and by 2030, the Red List Index does not decrease from the 2025 baseline data.

3) The number of wild species found in natural habitat surveys does not decrease.

4) The trend of human-wildlife conflicts decreases, and measures to address these conflicts have been increased.

5) Management measures are in place for at least 30% of high-priority invasive alien species,

and by 2030, management measures are in place for at least 35% of high-priority invasive alien species.

- **Indicators**

1) Population numbers of endangered and endemic species, and plans/measures for conservation and protection of their habitats

2) Red List Index of threatened species

3) Number of wild species found in natural habitat surveys

4) Number of human-wildlife conflict cases and conflict resolution measures

5) Number of plans/measures for managing high-priority invasive alien species


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Establish mechanisms, plans, and/or measures, and support the implementation of protection, conservation, and restoration efforts for wild species, endemic species identified in surveys, and threatened species in Thailand Red Data. | 1.1 Conduct studies and surveys of wild species, endemic species, and threatened species. Develop management plans and measures for species conservation and habitat protection. | MNRE (DNP/RFD/ZPO/ BGO/DMCR) | MNRE (ONEP)<br>MOAC (DOF)<br>MHESI (NRCT/NSM/ NSTDA)<br>RSPG<br>Civil Society<br>Community Organizations<br>International Organizations | 2023-2027 |
| | 1.2 Formulate/update Thailand Red Data, establish mechanisms and prioritize management strategies for protection, restoration, and prevention of extinction. | MNRE (ONEP/DNP) | MNRE (RFD/DMCR/BGO/ ZPO)<br>MOAC (DOF/DOA/DLD)<br>MHESI (TISTR/BIOTEC)<br>MOPH (DTAM)<br>Educational Institutions<br>Civil Society<br>International Organizations | 2025 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 1.3 Promote the operational roles of relevant agencies and establish networks for the care, conservation, restoration, and protection of wild species, endemic species, and threatened species, both in-situ and ex-situ. Encourage dissemination, public relations, and training to educate local communities and relevant stakeholders. | MNRE (DNP/RFD/ZPO/ BGO/DMCR)<br>MOAC (DOF)<br>MOI (DLA) | MNRE (ONEP)<br>MHESI (NRCT/NSM/ NSTDA)<br>MSDHS (CODI)<br>RSPG<br>Educational Institutions<br>Civil Society<br>Community Organizations<br>Private sector | 2023-2027 |
| | 1.4 Conserve, safeguard, and protect the genetic diversity of plants, animals, and microorganisms used in agriculture, livestock, aquaculture, pets, wild and native species, microorganisms, and other species of economic, social, cultural, and ecological value. | MNRE (DNP/RFD/ZPO/ BGO/DMCR)<br>MOAC (DOF/DOA/DLD/ QSDS)<br>MHESI (TISTR/ BIOTEC)<br>MOI (DLA) | MNRE (BEDO)<br>MOPH (DTAM)<br>RSPG<br>Educational Institutions<br>Civil Society<br>Private sector<br>Community Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Support initiatives to sustainably resolve coexistence issues between humans and wildlife, maintaining a balanced relationship. | 2.1 Develop measures for monitoring and tracking wildlife movement patterns and habitats. Establish remediation measures for those affected by human-wildlife cohabitation to reduce conflicts and promote coexistence between humans and wildlife. | MNRE (DNP)<br>MOI (DLA/LAO) | MNRE (RFD)<br>Civil Society<br>International Organizations | 2023-2027 |
| 3. Develop and promote management strategies for the prevention, control, eradication, and/or utilization of invasive alien species, with participation from all sectors. | 3.1 Formulate and advocate for the implementation of measures to prevent, control, eradicate, and/or utilize alien species and invasive alien species in conservation areas, regions of high biodiversity, and areas used for agriculture, livestock, fisheries, and aquaculture. | MNRE (DNP/RFD)<br>MOI (DLA/LAO)<br>MOAC (DOF/DOA/RID)<br>MOT (MD/DOH) | MNRE (ONEP/DMCR)<br>MHESI (NSTDA)<br>MOAC (DLD)<br>Educational Institutions<br>Civil Society | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 3.2 Conduct studies, surveys, and analyses of pathways and/ or methods of spread and establishment of high-priority invasive alien species. This is to support the management of alien species and to establish measures for managing the spread and establishment of invasive alien species. | MNRE (DNP/RFD/DMCR)<br>MOAC (DOF/DOA/RID)<br>MOT (MD/DOH/PAT/AOT)<br>MOI (DLA/LAO)<br>Private sector | MNRE (ONEP)<br>MHESI (NSTDA)<br>MOAC (DLD)<br>Educational Institutions<br>Civil Society | 2023-2027 |
| | 3.3 Disseminate knowledge regarding the management of invasive alien species. Enhance the capacities of government agencies and officials, local administrative organizations, and the public in the inspection, prevention, surveillance, control, and eradication of invasive alien species. | MNRE (ONEP/DNP)<br>MOAC (DOF/DOA)<br>MOI (DLA/LAO)<br>Educational Institutions | MNRE (RFD/DMCR/ZPO/ BGO)<br>MHESI (NRCT/NSM/ NSTDA)<br>MSDHS (CODI)<br>MOT (MD)<br>MOAC (RID/DLD) | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 4. Develop and support management to manage hybrid wildlife, prevent, control, and/or utilize hybrid wildlife with the participation of all sectors. | 4.1 Develop and ensure the operation to prevent, control, and/or utilize hybrid wildlife in breeding facilities. | MNRE (DNP)<br>MOAC (DOF)<br>OPM (NED) | MNRE (ONEP)<br>MOAC (DLD)<br>MOT (AOT/PAT/SRT)<br>MOI (LAO) | 2023-2027 |
| | 4.2 Disseminate knowledge about hybrid wildlife management and enhance the capacity of government agencies, officials, and the public in inspecting, preventing, monitoring, controlling, and managing hybrid wildlife. | MNRE (DNP)<br>MOAC (DOF)<br>Educational Institutions | MNRE (ONEP)<br>OPM (PRD)<br>MOI (DLA) | 2023-2027 |


## Target 4: Reduce Threats to Biodiversity from Climate Change and Pollution, Including Increasing Urban Green Spaces, to Restore and Maintain Ecosystem Services

- **Target Description**

Reduce and mitigate climate change impacts on biodiversity and enhance climate resilience by promoting and building capacity for mitigation, adaptation, and disaster risk reduction. Implement nature-based solutions and/or ecosystem-based adaptation approaches to minimize negative impacts while enhancing positive outcomes of climate action on biodiversity.

Reduce pollution risks and the negative impacts from all sources to levels that are not harmful to biodiversity and ecosystem functions and services by: reducing excess nutrients entering ecosystems; improving efficient nutrient cycling and use; reducing risks from pesticides and highly hazardous chemicals; implementing pest management; considering food security and livelihoods; reducing; and controlling plastic pollution.

Sustainably maintain and increase green spaces in urban and densely populated areas to promote biodiversity conservation and sustainable use, and urban planning that considers the importance of biodiversity. Enhance biodiversity in urban areas, improve ecosystem connectivity and integrity, and support healthcare and nature accessibility for urban residents. This will improve well-being, nature conservation, and ecosystem services for urban communities.

- **Importance of target**

Climate change is one of the main direct drivers of biodiversity loss. In addition to climate change, rising atmospheric carbon dioxide concentrations have also resulted in ocean acidification. Various mitigation, adaptation, and disaster risk reduction measures, including nature-based solutions and/or ecosystem-based adaptation approaches, have the potential to increase the resilience of ecosystems and human livelihoods to climate change impacts. These approaches can reduce emissions from deforestation and other land-use changes and enhance carbon sinks, while also delivering social, economic, and environmental benefits.

Pollution is one of the main direct drivers of biodiversity loss and can take various forms. Globally, particular attention is given to pollution from nutrients released into ecosystems (such as nitrogen and phosphorus), pesticides, hazardous chemicals, and plastics, as these forms of pollution have especially harmful impacts on biodiversity and ecosystem services.

Green and blue spaces have significant positive effects on human physical and mental well-being. Access to and interaction with such spaces is particularly important as increasing urbanization trend risk disconnecting people from nature, potentially harming human health and reducing public understanding of biodiversity's importance and the ecosystem services it provides. Furthermore, green spaces can serve as critical habitats for species, improve

habitat connectivity, provide ecosystem services, and help reduce climate-related risks to cities, such as flooding and extreme heat. The importance of biodiversity-inclusive urban planning and creating natural spaces within built landscapes helps protect public health and quality of life while reducing the environmental impact of cities and infrastructure. This approach also recognizes the interdependence between urban communities and ecosystems, and the importance of spatial planning to reduce the negative impacts on biodiversity from urban expansion, roads, and other infrastructure.

- **Recommended Actions**

1) Climate Change on Biodiversity

1.1) Reduce the impacts of climate change and ocean acidification on biodiversity and increase its climate resilience. This requires actions to reduce greenhouse gas emissions, including nature-based solutions and ecosystem-based adaptation approaches for designating protected areas, conservation areas, and species recovery programs that may be affected by climate change.

1.2) Nature-based solutions refer to actions to protect, conserve, restore natural ecosystems or modify them to effectively address social, economic, and environmental challenges while simultaneously enhancing human well-being, ecosystem services, and resilience to biodiversity challenges. This includes mitigation, adaptation, and disaster risk reduction related to climate change.

1.3) Ecosystem-based adaptation approaches refer to the use of biodiversity and ecosystem services as part of an overall strategy to help address the adverse effects of climate change. Ecosystem-based mitigation refers to the use of ecosystems for their carbon storage and sequestration service to aid climate change mitigation. Ecosystem-based adaptation aims to maintain and increase the resilience and reduce the vulnerability of ecosystems and people in the face of the adverse effects of climate change. Such approaches can include sustainable management, conservation, and restoration of ecosystems, as part of an overall adaptation strategy that takes into account the multiple social, economic, and cultural co-benefits for local communities. Ecosystem-based disaster risk reduction is the sustainable management, conservation, and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development.

1.4) Minimize negative and promote positive impacts of climate action on biodiversity. While efforts to address climate change have the potential to generate significant benefits for biodiversity and the people who depend on it, they may unintentionally cause harm if not appropriately designed and implemented. Taking biodiversity into consideration when designing, implementing, and monitoring climate change adaptation and mitigation activities

can deliver not only multiple benefits but also help avoid adverse outcomes for biodiversity and ecosystems.

2) Pollution to Biodiversity

2.1) Reduce pollution risks and negative impacts—Focus on the risks and impacts of pollution rather than the absolute amounts of pollutants, considering the different toxicity and/or hazards posed by different types of pollutants. For example, some types of pesticides can be used in large quantities with relatively small impacts on the environment, while others can have particularly detrimental impacts even with limited use. This approach prioritizes addressing risks and impacts rather than simply measuring pollution quantities.

2.2) Reduce pollution from all sources—Pollution refers to contaminants introduced to the environment, resulting in instability or harm. It can take numerous forms, as various chemical compounds, types of light and sound, and products can cause environmental damage depending on their properties and concentrations. All sources of pollution should be considered when addressing this target.

2.3) Control the risks and negative impacts of pollution to levels that are not harmful to biodiversity and ecosystem services. This target does not require the elimination of all pollutants, but rather their reduction to levels at which they do not adversely affect biodiversity.

2.4) Reduce excess nutrients released into the environment—Excess nutrients, especially nitrogen and phosphorus, are significant types of pollution that impacts biodiversity. For example, when excessive nitrogen and phosphorus from agricultural sources enter water bodies, they can cause rapid plant growth or algal blooms in marine ecosystems, altering ecosystem composition and function.

2.5) Reduce risks from pesticides and hazardous chemicals—Pesticides are any substance, or mixture of substances of chemical or biological ingredients intended for repelling, destroying, or controlling unwanted living organisms that are harmful to human health. Hazardous chemicals are chemicals that pose significant acute or chronic risks to the environment or people.

2.6) Integrated pest management—Integrated pest management is an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides.

2.7) Prevent issue and ensure sustainable food security—Actions to reduce pollution impacts should consider potential effects on food security and livelihoods. Consider the importance of sustainable agriculture and food system transitions, including safeguards for food security that is safe and free from pollution. Special attention should be given to farmers and those who depend on agricultural food systems for their livelihoods, such as small-scale farmers and local communities.

2.8) Prevent, reduce, and work towards eliminating plastic pollution—Plastic pollution is accumulating across terrestrial, inland waters, and marine ecosystems, with microplastics entering food chains and circulating in the atmosphere. It is increasingly recognized as an important type of pollution with significant impacts on biodiversity.

3) Green Spaces and Urban Planning for Biodiversity

3.1) Increase the size and quality of urban green spaces—These areas provide habitat for species and ecosystems in urban and coastal waters near cities and other densely populated areas. Focus on enhancing connectivity, accessibility, and benefits from these areas, particularly to increase biodiversity and improve ecological connectivity and habitat integrity. Additionally, these spaces help support human health and well-being by creating opportunities for urban residents to connect with nature.

3.2) Urban planning that considers the importance of biodiversity—Urban planning is a technical and political process for managing urban land use. This process calls for the specific inclusion of biodiversity considerations and urban planning to incorporate the concept of using biodiversity in the context of green and blue spaces. It should be appropriately and adequately considered in urban planning policies and practices.

- **Target Values**

1) At least 6 pilot areas implementing nature-based solutions to reduce climate change impacts

2) Reduce the amount of marine debris entering the sea from major rivers flowing into the upper Gulf of Thailand

3) Increase in standard criteria for controlling pollution that threatens biodiversity

4) Increase the proportion of green space in urban areas to at least 5% of the total urban area

5) At least 80% of local government organizations have efficient green space plans and layouts incorporated into urban development plans

- **Indicators**

1) Number of pilot areas implementing nature-based solutions to reduce climate change impacts

2) Amount of marine debris entering the sea from major rivers flowing into the upper Gulf of Thailand

3) Standard criteria for controlling pollution that threatens biodiversity

4) Proportion of green space in urban areas relative to the total urban area

5) Percentage of local government organizations with green space plans and layouts incorporated into urban development plans

**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Capacity building in preparing for the management of natural resources and biodiversity in response to climate change. | 1.1 Study and promote the implementation of nature-based adaptation approaches and/ or ecosystem-based adaptation approaches to address climate change impacts. Apply these approaches across various sectors and to communities dependent on biodiversity. | MNRE (DCCE/ONEP/ DNP/DMCR/DWR)<br>MOAC (OAE)<br>MOTS (OPS-MOTS)<br>MOI (DDPM/DPT/DLA/ LAO)<br>OPM (ONWR) | MNRE (RFD/DWR/BEDO/ TGO)<br>MOPH (ANAMAI)<br>International Organizations<br>Private sector | 2023-2027 |
| | 1.2 Build knowledge and understanding of the situation, impacts, and risks of climate change impacts on biodiversity, and enhance the capacity of all relevant sectors by using nature-based solution principles and ecosystem-based adaptation approaches. | MNRE (DCCE/DNP/ DMCR/ONEP)<br>MOI (DLA/LAO)<br>OPM (ONWR)<br>International Organizations<br>Private sector | MNRE (RFD/DWR/BEDO/ TGO)<br>International Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Control and protect terrestrial areas, marine and coastal areas, wetlands, and other vulnerable ecosystems that may be affected by human activities. | 2.1 Study and assess threats from pollution, including plastic waste, heavy metals, pesticides, and excess nutrients in water sources, that impact biodiversity and ecosystems. | MNRE (DCCE/PCD/ONEP/ DNP/DMCR)<br>MIND (DIW)<br>MOAC (DOA) | International Organizations<br>Private sector | 2023-2027 |
| | 2.2 Improve criteria, regulations, and establish mechanisms to control and monitor pollution threats to ecosystems and biodiversity. | MNRE (DCCE/PCD/ONEP/ DNP/DMCR/RFD)<br>MIND (DIW)<br>MOPH (ANAMAI)<br>MOT (MD) | MNRE (DWR/BEDO)<br>Private sector | 2023-2027 |
| | 2.3 Conduct research and implement plastic waste management, especially for plastics that affect marine and coastal ecosystems and organisms. | MNRE (PCD/DMCR/DNP)<br>Educational Institutions | MHESI (NRCT/NSTDA)<br>International Organizations<br>Civil Society | 2023-2027 |
| | 2.4 Control the use of chemicals and chemical fertilizers in agriculture and fisheries to prevent severe damage to habitats and biodiversity in ecosystems. | MOAC (DOA/DOF/ OPS-MOAC) | MOAC (ACFS)<br>Private sector | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 2.5 Develop mechanisms that promote the role of communities with ecological lifestyles in the conservation and preservation of natural resources. | MNRE (BEDO/DNP/ DMCR/RFD)<br>MOI (DLA/LAO) | MNRE (DCCE/DWR/ ONEP) | 2023-2027 |
| 3. Support the increase of green spaces and efficiency in managing green areas in urban zones. | 3.1 Support and develop tools, mechanisms, and incentive measures to increase and manage urban green spaces at national, community, and local levels, such as carbon business mechanisms. | MNRE (ONEP/DCCE)<br>MOI (DLA/LAO) | MNRE (RFD/DWR/BEDO)<br>MHESI (GISTDA)<br>Private sector | 2023-2027 |
| | 3.2 Mainstream the integration of green spaces for biodiversity into concrete urban development plans by incorporating the target for increasing the proportion of green spaces in the plans. | MNRE (ONEP/DCCE)<br>MOI (DLA/DPT/LAO) | MNRE (RFD/DWR/BEDO)<br>Private sector | 2023-2027 |
| | 3.3 Promote participation and roles of communities, public, private sector, and networks in managing green spaces and urban community forestry. | MNRE (DCCE/ONEP)<br>MOI (DLA/LAO) | MNRE (RFD/DWR/BEDO)<br>Private sector | 2023-2027 |

## Strategy 2: Promote Bio-Based Economy and Sustainable Use of Biodiversity

This strategy aims to leverage biodiversity to create value from ecosystem services, benefiting both the public and the nation. It promotes sustainable, equitable, and fair use of biological and genetic resources while driving the country's bio-based economy. The strategy seeks to significantly improve societal and individual well-being, especially those who depend on biological resources. Additionally, it ensures that production sectors utilizing biological resources create sustainable benefits and value for future generations.


### Target 5: Promote and Support a Bio-Based Economy, Based on Ecosystem Services to Improve People's Living Conditions and Income

- **Target Description**

Sustainably manage and utilize biological and genetic resources to generate value that benefits society, the economy, and the environment for the populace, with particular emphasis on vulnerable groups who depend on biodiversity for their livelihoods and occupations. The utilization of biological resources shall foster a bio-based economy in the production of various goods and services. Furthermore, sustainable use shall enhance biodiversity while protecting and promoting utilization in accordance with the customs and traditional ways of life of local communities.

- **Importance of Target**

Biodiversity serves as a source of numerous goods and services on which people depend. Maintaining both the quantity and quality of benefits derived from biodiversity provides a crucial incentive for its conservation and sustainable use. This is particularly important for ecosystem services that ensure food security, livelihoods, health, and well-being. Biodiversity is not only vital for preserving ecosystems and human living conditions but also forms an essential foundation for developing the country's bio-based economy.

The bio-based economy emphasizes the sustainable use of biological resources in producing goods and services, with the goal of reducing dependence on high-carbon natural resources and creating added value from biological resources. The social, economic, and environmental benefits derived from the value of terrestrial and aquatic organisms contribute to human well-being in various aspects, including food security, medicine, and cultural traditions and lifestyles. Therefore, the use and management of natural organisms must consider the social, economic, and environmental benefits they provide to those who depend on and inhabit these ecosystems.

Conservation and sustainable use of biodiversity are essential to ensure its vital role in maintaining ecosystem balance and sustainable production of biological resources, which form the basis of a sustainable bio-based economy. Utilization of biodiversity can lead to new

discoveries and innovations, such as novel food products and medicines, bioenergy production technologies, and biomaterials, which add value to the national economy. Moreover, the development of a bio-based economy can create jobs and income for people, especially in rural areas and local communities that have a high diversity of biological resources. Importantly, this supports food security and health. Biodiversity plays a significant role in supporting food security and public health, such as providing diverse nutrition and contributing to the development of new medicines from plants and animals.

- **Recommended Actions**

1) Develop policies and legal frameworks that support the conservation and sustainable use of biodiversity, including granting rights and support to indigenous peoples and local communities in the utilization of biological resources.

2) Invest in research and development related to biodiversity and the bio-based economy to enhance innovation and the development of new technologies that support the sustainable use of biological resources.

3) Foster collaboration between government, private sector, and communities to drive the bio-based economy, especially in supporting the development of small and medium-sized bio-businesses in rural areas.

4) Promote education and awareness about the importance of biodiversity and the bio-based economy at the public and youth levels to enhance support and participation in the conservation and sustainable use of biological resources.

- **Target Values**

1) Increase the income of local communities and private businesses from goods and services derived from biological and genetic resources, through the promotion of a bio-based economy in food, medicine, herbs, and health products, by no less than 100 million baht per year (for local communities).

2) Increase the number of products that have been upgraded from local biological resources by local communities and private businesses.

3) Increase the valuation of ecosystem services provided by local communities and private businesses.

- **Indicators**

1) Income of local communities and private businesses from goods and services utilizing biological and genetic resources

2) Number of products that have been upgraded, including goods and services derived from local biological resources and the private sector

3) Data on the valuation of ecosystem services provided by local communities and private businesses


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Enhance capabilities in bio-based economy development. | 1.1 Develop the country's competitive potential by utilizing biological and genetic resources as a basis for production, green consumption, innovation creation, and economic value addition. | MNRE (BEDO)<br>MHESI (NSTDA)<br>MOAC (RICE/DLD/DOA/ARDA)<br>MOI (CDD)<br>MOC (DIP) | MOAC (DOF/HRDI)<br>MOPH (DTAM)<br>Educational Institutions<br>Civil Society<br>International Organizations<br>Private sector | 2023-2027 |
| | 1.2 Create identity, differentiation, and distinctiveness of products from biological and genetic resources in each locality, linking to the origin of bio-based products. | MNRE (BEDO)<br>MOI (CDD)<br>MOC (DIP) | MOAC (DOA/ARDA/ACFS)<br>MOC (DCP)<br>Educational Institutions | 2023-2027 |
| 2. Strengthen community economies and business sectors based on sustainable biodiversity use and conservation. | 2.1 Strengthen community self-reliance in technology, production, and marketing for appropriate utilization and creation of products from biological and genetic resources. Particularly focus on developing strong community enterprises, small and medium-sized businesses to produce standardized goods and services. | MNRE (ONEP/BEDO)<br>MOAC (DLD/DOA)<br>MOI (DLA/LAO/CDD)<br>MOC (DIP)<br>OPM (OSMEP) | MOAC (HRDI)<br>MOC (SAC)<br>The Royal Project Foundation<br>Educational Institutions<br>Civil Society<br>Community Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 2.2 Support the development of bio-business entrepreneur networks to foster cooperation, social responsibility, business partnerships, and create opportunities for exchanging information and technology related to production, marketing, and products, including benefit-sharing. | MNRE (BEDO/FIO)<br>MOAC (DOAE/DLD)<br>MOI (DLA/LAO/CDD)<br>OPM (OSMEP) | Educational Institutions<br>Civil Society<br>Community Organizations<br>Private sector | 2023-2027 |
| | 2.3 Promote and support farmers, communities, local areas, and entrepreneurs to produce quality standard goods and services from biological resources in agriculture and food sectors, while supporting the conservation and sustainable use of biodiversity. | MOAC (ACFS)<br>MNRE (BEDO) | Educational Institutions<br>Civil Society<br>Community Organizations<br>Private sector | 2023-2027 |


## Target 6: Promote Sustainable Practices in Production and Service Sectors, Including Agriculture, Aquaculture, Fisheries, Livestock, Forestry, and Tourism

- **Target Description**

Ensure that agriculture, aquaculture, fisheries, livestock, and forestry, which generate products and services from biological resources, are managed sustainably. This should be achieved particularly through the sustainable use of biodiversity with increased application of biodiversity-friendly practices, such as sustainable agriculture and innovations that enhance resilience and efficiency of production systems. These approaches should aim for food security, biodiversity conservation and restoration, and maintenance of ecosystem functions and services for people.

- **Importance of Target**

These critical production and service systems have varying impacts on ecosystems and biodiversity. The biological resources, biodiversity, and all types of utilized species constitute crucial components of the country's biodiversity. They are also key elements of human well-being and economic development. However, increasing demand for food, fiber, and fuel is leading to greater losses of biodiversity and ecosystem services, making sustainable management in these systems an urgent priority. On the other hand, sustainable management not only supports biodiversity protection and conservation but also delivers benefits to production systems through ecosystem services such as soil fertility, erosion control, enhanced pollination, and reduced pest outbreaks. It also contributes to the well-being and sustainable livelihoods of people engaged in the mentioned production and service sectors.

- **Recommended Actions**

To manage areas used for agriculture, aquaculture, fisheries, livestock, forestry, and tourism sustainably, the following actions are recommended:

1) Sustainable management of production and services that rely on biodiversity—particularly by utilizing biodiversity components within their capacity—and in a manner and at a rate that does not lead to biodiversity decline.

2) Use and promotion of biodiversity-friendly production and services—Employ methods and practices that are biodiversity-friendly to help increase positive effects and reduce the negative impacts on biodiversity. Examples include sustainable agricultural approaches, increasing productivity through the maintenance of sustainable ecosystem functions, enhancing agricultural biodiversity, practicing organic farming, using a variety of well-adapted plant and animal species, utilizing biological pest control organisms and soil organisms that promote nutrient cycling, thereby reducing the need for chemical inputs. Biodiversity-friendly practices

are important for maintaining resilience—the ability of production systems to recover from stress or disturbance. They can also help address the conservation and restoration of biodiversity.

- **Target Values**

1) Percentage of production and service areas using best practices and approaches for sustainability should be no less than 10% of the total area (forestry, agriculture, and fisheries).

2) Increase the proportion of production and service areas using sustainable approaches relative to the total number (livestock and tourism).

3) At least 20 tourism areas or communities should implement sustainable tourism management approaches.

- **Indicators**

1) Percentage of production and service areas using best practices and approaches for sustainability, relative to the total area (agriculture and fisheries)

2) Percentage of production and service areas using best practices and approaches for sustainability, relative to the total number (livestock and tourism)

3) Number of tourism areas or communities that have achieved sustainable tourism management standards


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Promote sustainable management of agricultural, aquaculture, fisheries, livestock, and forestry activities, ensuring they do not exceed capacity, to reduce ecosystem degradation and biodiversity loss. | 1.1 Promote adherence to standards for agricultural crop cultivation, livestock, aquaculture, fisheries, and forestry, considering the conservation and sustainable use of biodiversity. | MNRE (RFD/FIO)<br>MOAC (DOA/DOF/DOAE/ RICE/DLD/ACFS)<br>MIND (TISI) | Educational Institutions<br>Civil Society<br>Community Organizations<br>Private sector | 2023-2027 |
| | 1.2 Promote sustainable use of plant biodiversity, including control measures to ensure sustainable production of non-timber forest products. | MNRE (DNP/RFD/FIO)<br>MOAC (DOA/RICE) | Educational Institutions<br>Civil Society<br>Community Organizations<br>Private sector | 2023-2027 |
| | 1.3 Promote the use of modern technologies to reduce environmental impacts in agricultural production industries. | MOAC (DOA/DOF/DOAE/ DLD)<br>Private sector | Educational Institutions<br>Civil Society<br>Community Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Support the use and promotion of biodiversity-friendly services, employing biodiversity-friendly methods and practices. | 2.1 Promote the sustainable development and use of tourist attractions and environmentally friendly tourism that considers the conservation, protection, and restoration of biodiversity in both the tourist sites and their surrounding communities. | MNRE (DNP/RFD)<br>MOTS (DOT/OPS-MOTS/ TAT/DASTA)<br>MOAC (LDD/DOA) | MNRE (BGO/ZPO)<br>MOI (CDD/LAO)<br>MOAC (DLD)<br>MSDHS (DCY/DOP/DWF/ DSDW/CODI)<br>Educational Institutions<br>Civil Society<br>Community Organizations<br>Private sector | 2023-2027 |
| | 2.2 Promote the use of modern technologies to reduce environmental impacts in the tourism industry and tourist areas. | MNRE (DNP/RFD)<br>MOTS (DOT/OPS-MOTS/ TAT/DASTA)<br>MOAC (LDD/DOA)<br>Private sector | MOI (CDD/LAO)<br>MIND (TISI)<br>MOAC (DLD)<br>Educational Institutions<br>Civil Society<br>Community Organizations | 2023-2027 |


## Target 7: Establish Comprehensive Mechanisms and Measures to Ensure Equitable Access and Benefit-Sharing and Consideration of Biosafety for the Utilization of Genetic Resources

- **Target Description**

Implement and utilize various mechanisms, including legal measures, policies, administration, and capacity-building that are effective at all levels and across all appropriate sectors, to ensure the fair and equitable sharing of benefits arising from the utilization of genetic resources and from digital sequence information on genetic resources, as well as traditional knowledge associated with genetic resources. Facilitate appropriate access to genetic resources and increase shared benefits in accordance with international access and benefit-sharing instruments.

- **Importance of Target**

The sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge is one of the three objectives of the Convention on Biological Diversity and a key pillar for successful implementation. It establishes equity between providers/holders and users/requestors of biodiversity, with the dual objective of creating incentives for conservation and sustainable use of biodiversity, while facilitating access and sharing. Additionally, it encourages the equitable sharing of benefits arising from the use of knowledge, innovations, and practices with local communities. Enhance capabilities and implement biosafety measures, as well as measures for managing biotechnology and benefit distribution. Biosafety measures are essential in ensuring that genetically modified organisms resulting from biotechnology are managed and used with necessary safety precautions. The use of genetically modified organisms presents opportunities for economic and social development, however their use and release require regulations, management, and control of associated potential risks.

Support research using biotechnology for the country. Providing genetic resources for such research will allow researchers and academics to study conveniently and transparently. Moreover, equal access has positive effects and creates benefits from the use of biotechnology from genetic resources without obstacles and in a timely manner. Additionally, it will help in gaining benefits from advancements in biotechnology that use genetic resources as a basis, ultimately resulting in incentives for biodiversity conservation.

- **Recommended Actions**

This target includes measures and operational guidelines, consisting of legal, policy, and administrative measures, as well as capacity building. The details are as follows:

1) Legal, policy and administrative measures—The country needs to employ legal, policy, and administrative measures to implement access and benefit-sharing (ABS) of genetic

resources. This includes establishing institutional structures such as agencies for notification and authorization, among others. These are necessary to follow the steps required to comply with international treaty obligations at the national level and to have a fully functional system and mechanism. For example, administrative measures for issuing permits or the operation of import-export checkpoints in accordance with these measures will help increase the possibility of managing access and benefit-sharing fairly and equitably, and facilitate appropriate access to genetic resources.

2) Capacity-building measures—there is a need to build knowledge and understanding of access and benefit-sharing (ABS) management across all sectors and levels. This includes developing capacity for managing genetic resources, digital sequence information (DSI), and associated traditional knowledge.

- **Target Values**

1) Establish mechanisms and regulations for access and benefit-sharing of genetic resources that all responsible agencies adopt as the country's standard.

2) All responsible agencies enforce the mechanisms and regulations for access and benefit-sharing.

3) Users, possessors, and relevant stakeholders have the capacity for fair and equitable access and benefit-sharing.

4) Increased benefits, both in monetary forms generating income and non-monetary forms (knowledge, information, and cooperation), from the use of the country's genetic resources

5) All responsible agencies have established biosafety measures, and 50% of educational institutions with institutional biosafety committees have established biosafety mechanisms and guidelines.

- **Indicators**

1) Mechanisms and regulations for access and benefit-sharing of genetic resources that are the country's standard

2) Number of responsible agencies that have enforced the mechanisms and regulations for access and benefit-sharing

3) Capacity for fair and equitable access and benefit-sharing of users, possessors, and relevant stakeholders

4) Benefits, both in monetary forms generating income and non-monetary forms (knowledge, information, and cooperation), from the use of the country's genetic resources

5) Number of educational institutions with institutional biosafety committees that have established biosafety mechanisms and guidelines.

**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Promote and encourage the concrete implementation of mechanism for access and benefit-sharing of genetic resources. | 1.1 Integrate management mechanisms for access and benefit-sharing and develop a system to monitor the utilization of biological and genetic resources. | MNRE (DNP/BEDO/ONEP)<br>MOAC (DOA/RICE/DLD/QSDS/DOF)<br>MOPH (DTAM)<br>MOC (DIP)<br>MHESI (TISTR/BIOTEC)<br>MIND (DIW)<br>Educational Institutions | MNRE (RFD/DMCR)<br>MOC (SAC)<br>MHESI (NSTDA)<br>OPM (EEC)<br>RSPG<br>International Organizations<br>Civil Society | 2023-2027 |
| | 1.2 Promote and encourage access and the creation of benefit-sharing agreements for biological and genetic resources. | MNRE (BEDO/ONEP)<br>MOAC (DOA/RICE/DLD/QSDS/DOF)<br>MOPH (DTAM)<br>MOC (DIP)<br>MHESI (TISTR/BIOTEC)<br>MIND (DIW) | MNRE (DNP/RFD/DMCR)<br>MOAC (OPS-MOAC)<br>MFA (DTLA)<br>MSDHS (DCY/DOP/DWF/DSDW/CODI)<br>MOC (SAC)<br>RSPG<br>Educational Institutions<br>International Organizations<br>Private sector<br>Civil Society | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Build capacity, knowledge, and understanding in managing access and benefit-sharing among all sectors and at all levels. | 2.1 Enhance the capacity of relevant sectors, especially research groups, local communities, and the private sector, in developing mechanisms and regulations regarding access and benefit-sharing of genetic resources and related local knowledge. | MNRE (DNP/RFD/DMCR/ BEDO/ONEP)<br>MOAC (DOA/ LDD/DOF)<br>MOPH (DTAM/DMSC/ GPO)<br>MHESI (TISTR/BIOTEC)<br>MIND (DIW)<br>Educational Institutions | MHESI (NSTDA)<br>MSDHS (DCY/DOP/DWF/ DSDW/CODI)<br>MOC (SAC)<br>Educational Institutions<br>Civil Society | 2023-2027 |
| 3. Strengthen biosafety measures and capabilities to support sustainable use and conservation of biodiversity. | 3.1 Support the implementation and development of biosafety mechanisms and guidelines. | MOAC (DOA/DOF/DLD)<br>MIND (DIW)<br>MOPH (DMSC)<br>MHESI (BIOTEC)<br>Educational Institutions | MOAC (OPS-MOAC)<br>MOPH (OPS-MOPH)<br>MHESI (NSTDA)<br>RSPG | 2023-2027 |
| | 3.2 Elevate biosafety control mechanisms of agencies responsible for overseeing and implementing the country's biosafety measures. | MOAC (DOA/DOF)<br>MOPH (DMSC)<br>MHESI (BIOTEC)<br>Educational Institutions | MOAC (OPS-MOAC)<br>MOPH (OPS-MOPH)<br>MHESI (NSTDA)<br>RSPG | 2023-2027 |

## Strategy 3: Enhance Capacity and Participation in Biodiversity Management

This strategy aims to facilitate and support biodiversity management by establishing necessary and appropriate conditions for all sectors and stakeholders to collectively drive the plan towards success and progress. This will be achieved through creating, reviewing, and implementing various mechanisms, including non-monetary tools, knowledge, information, laws, regulations, practical guidelines, as well as financial mechanisms, funding sources, and incentives, along with enhancing the capabilities and capacities of all sectors supporting the implementation of the plan.


### Target 8: Mainstream Biodiversity into Policies, Plans, and Operations of All Sectors at All Levels, While Fostering Multi-Sectoral Engagement and Participation

- **Target Description**

Article 6 (b) of the Convention on Biological Diversity (CBD) calls for Parties to integrate conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs, and policies as appropriately as possible. "Biodiversity mainstreaming" ensures that biodiversity's multiple values are appropriately taken into account in decision-making and policy formulation across all sectors, both private and public, including government, economic sectors, and broader society. Since many activities that rely on or impact biodiversity fall outside biodiversity policy frameworks, implementing this target is critical for achieving the Convention's objectives. Nevertheless, biodiversity's multiple values are not widely reflected in decision-making processes. Integrating and reflecting the contributions of biodiversity and ecosystem services into relevant strategies, policies, programs, and reporting systems is essential to ensure that biodiversity's diverse values and the opportunities from its conservation and sustainable use are recognized and reflected in decision-making.

- **Importance of Target**

The aim of this target is to ensure that the values of biodiversity are fully reflected or mainstreamed in all relevant decision-making frameworks so that it is given proper attention in decision-making, leading to alignment of all activities, and of all financial flows, with the targets of the framework. The target has several specific elements:

1) Multiple values—Biodiversity underpins a wide range of services that support economies, food production systems, secure living conditions and human health. In addition, biodiversity is central to many cultures, spiritual beliefs and worldviews and has intrinsic value. As such, biodiversity has multiple values, some of which can be quantified in monetary terms and others that are more abstract.

2) Policies, regulations, processes, strategies, assessments, and national accounts, as well as decision-making frameworks at national and local levels, and in the private sector, do not appropriately reflect the importance and values of biodiversity in relevant processes. This includes regulations, planning and development processes, poverty eradication strategies, strategic environmental assessments, environmental impact assessments, and national accounts.

3) Action to fully integrate biodiversity and its multiple values should be taken across all levels of government and sectors, thus reflecting the fact that many decision-making frameworks, processes and policies relevant to biodiversity take place at different levels of public and private decision-making. The target further specifies that a specific focus should be given to those sectors that have significant impacts on biodiversity, and that public and private fiscal and financial flows should be gradually aligned with the Kunming-Montreal Global Biodiversity Framework.

- **Recommended Actions**

1) Identify national planning tools and processes, and reflect on the consideration of biodiversity and its multiple values within these tools and processes. Evaluate the opportunities and constraints in their implementation.

2) Identify gaps in terms of tools, laws, and processes for reflecting the value of biodiversity in decision-making processes. Consider how these gaps can be addressed.

3) Promote effective reflection of biodiversity and its multiple values in decision-making processes within the business and financial sectors. Explore how this can be enhanced, considering existing gaps and needs.

4) Identify sectors that significantly impact biodiversity. Encourage these sectors to effectively reflect biodiversity considerations in relevant decision-making processes by strengthening capabilities, addressing gaps, and meeting needs.

5) Assess the potential ecological, economic, and social benefits and costs of integrating biodiversity and its multiple values into relevant decision-making processes. Identify stakeholders who will be affected and explore how they can be engaged and their needs addressed. Consider trade-offs, including additional resources (financial, human, and technical) required to achieve this goal, and explore how these additional resources can be mobilized.

- **Target Values**

1) At least 5 collaborative programs and activities involving at least 2 different sectors to support and contribute to achieving national biodiversity targets

2) Number of policies, plans, and operational guidelines from various sectors that incorporate biodiversity management issues increase at least 10 policies/plans.

3) At least 5 local-level biodiversity management plans (at the provincial level).

4) At least 20% of SET50 companies listed on the stock exchange voluntarily disclose information on business operations linked to biodiversity.

By 2030, at least 30% of SET50 companies listed on the stock exchange voluntarily disclose information on business operations linked to biodiversity.

- **Indicators**

1) Number of collaborative programs and activities among various sectors.

2) Number of policies, plans, and operational guidelines from various sectors that incorporate biodiversity management issues

3) Number of local-level biodiversity management plans

4) Number of SET50 companies listed on the stock exchange that disclose information on business operations linked to biodiversity

**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Promote the integration of biodiversity into policies and plans at national, sectoral, organizational, provincial, local, and community levels, including in the national accounting system. | 1.1 Integrate biodiversity into national policies and plans, specific plans, guidelines, and operations of relevant sectors, including government, private sector, civil society, and educational institutions. | MNRE (RFD/ONEP/ DMCR/PCD/DWR/DNP/ DCCE)<br>MOAC (DOF/DOA/OAE/ LDD)<br>MIND (DIW)<br>OPM (ONWR/NESDC/ ONLB)<br>MOPH (DTAM)<br>MOTS (OPS-MOTS)<br>BOT/SEC<br>MOI (DLA/DOPA/DPT)<br>Private sector | OPM (BB)<br>MDES (NSO)<br>MOAC (RID/DLD/HRDI)<br>Civil society<br>Educational Institutions | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 1.2 Integrate operations between conventions and international agreements related to biodiversity, including the United Nations Framework Convention on Climate Change and the Convention to Combat Desertification. | MNRE (ONEP/DMCR/ DWR/DNP/DCCE)<br>MOAC (DOA/LDD)<br>MOC (DIP) | MNRE (PCD)<br>MOAC (OPS-MOAC/DLD) | 2023-2027 |
| | 1.3 Support the development of biodiversity plans or activities in various sectors at all levels, especially at provincial, local, and community levels. | MNRE (RFD/ONEP/ DMCR/DWR/DNP/BEDO)<br>MOAC (DOF/DOA/OAE/ LDD)<br>MIND (DIW)<br>OPM (ONWR/NESDC/ ONLB)<br>MDES (NSO)<br>MOI (DLA/DOPA/DPT) | MNRE (PCD)<br>OPM (BB)<br>MOTS (DOT)<br>MOAC (DLD)<br>Private sector<br>Civil Society<br>International Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 2. Promote participation of the private sector, civil society, communities, and various sectors in the conservation, restoration, and sustainable use of biodiversity. | 2.1 Support the private sector developing business plans and funds that support operations for the conservation and sustainable use of biodiversity, including activities that support community or local organizations, or networks of community organizations. | MNRE (ONEP)<br>BOT/SEC<br>MOTS (DASTA)<br>OPM (OSMEP)<br>MOI (DLA)<br>Private sector | MNRE (BEDO)<br>MSDHS (CODI)<br>MOTS (DOT)<br>SET<br>Educational Institutions<br>Civil Society<br>International Organizations | 2023-2027 |
| | 2.2 Support the private sector in conducting business in accordance with relevant legal criteria for the conservation and protection of biodiversity, as well as promote the disclosure of information regarding dependence, impacts, risks, and opportunities related to biodiversity. | MNRE (ONEP)<br>Private sector | BOT/SEC<br>SET<br>International Organizations | 2023-2027 |


## Target 9: Expand Channels and Funding Support from Various Sectors, as well as Promote Financial Mechanisms, Economic Instruments, and Incentive Measures to Support Biodiversity Conservation and Sustainable Use

- **Target Description**

**Incentive Mechanism**

Eliminate, phase out or reform incentives, including subsidies, that are harmful to biodiversity, in a proportionate, just, fair, effective, and equitable way, while substantially and progressively reducing them throughout the plan period. Start with eliminating or phasing out the most harmful incentives for biodiversity loss, and scale up positive incentives for the conservation and sustainable use of biodiversity.

Incentives, including subsidies that are harmful to biodiversity, are an important underlying driver of biodiversity loss. Substantial and widespread changes to subsidies and other incentives that are harmful to biodiversity are required to ensure sustainability. Eliminating, phasing out or reforming harmful incentives is a critical and necessary step that would also generate socioeconomic benefits. The creation or further development of positive incentives for the conservation and sustainable use of biodiversity would also help reach the biodiversity targets by providing financial resources or other motivation to encourage actors to undertake actions that would benefit biodiversity.

It is important to adopt, as far as possible and as appropriate, economically and socially sound measures that create incentives for the conservation and sustainable use of biodiversity. These measures include actions to reduce incentives that are harmful to biodiversity. Studies and assessments predict that harmful subsidies cause significant damage to biodiversity due to land use and ecosystem destruction, damage, or degradation. The amount spent on negative incentive measures significantly exceeds that spent on positive incentive measures. Therefore, this target serves as a key mechanism for addressing this imbalance by reducing negative incentives while enhancing positive ones.

**Financial Mechanisms and Investment**

The importance and necessity of increasing financial resources from all sources to higher levels, making them more efficient, timely, and easily accessible, from both domestic and international sources, and from both public and private sectors, focusing on implementation.

- **Importance of Target**

Incentives, including subsidies that are harmful to biodiversity, are significant drivers of biodiversity loss. Therefore, it is necessary to review and implement changes to subsidies and other incentives that are detrimental to biodiversity in a more significant and extensive manner to ensure sustainability. The elimination, cessation, or modification of harmful incentives is a crucial and necessary step that also brings economic and social benefits.

Creating or developing positive incentives for the conservation and sustainable use of biodiversity will contribute to achieving biodiversity targets. This can be accomplished by providing financial resources or other incentives to encourage key stakeholders to take actions beneficial to biodiversity.

- **Recommended Actions**

**Incentive Mechanism**

The first measure involves the elimination, phase out or reform of incentives, including subsidies, that are harmful to biodiversity. The second measure focuses on expanding positive incentives for the conservation and sustainable use of biodiversity. The details are as follows:

1) Identify negative incentives—There are various negative incentives that need to be identified, including subsidies which have diverse impacts on biodiversity. Furthermore, the harmful effects of some incentive measures may or may not be readily apparent and detectable. As such, the first element of this target calls for the identification of incentives that are harmful to biodiversity by 2025. However, this identification step should not preclude immediate action to eliminate, phase out or reform harmful incentives where possible.

2) Eliminate, phase out or reform negative incentives— Implement concrete and potentially gradual elimination, phasing out, or reform of harmful subsidies. Both the elimination and phasing out of harmful incentives require ending support for such incentives. For some types of incentives, it may be possible to eliminate them outright. However, for most incentives, a more scaled or gradual approach may be required as different sectors or groups in society have come to depend on them. In some cases, it may not be possible to eliminate or phase out harmful incentives, as they are deemed important for other societal objectives. In these cases, incentives harmful to biodiversity should be reformed so that their negative impacts are reduced as much as possible.

3) Accelerate the elimination, phasing out, or reform of the most harmful incentives—Prioritize action on incentives with the most severe negative impacts on biodiversity.

4) Scale up and create positive incentives—Positive incentives are economic, legal, or institutional measures designed to encourage activities beneficial to biodiversity. Examples include public land acquisition, grant-aided conservation projects, and conservation easements.

**Financial Mechanisms and Investment**

There are measures and operational guidelines as follows:

5) Significantly increase domestic resource mobilization—Facilitate this through developing, implementing, and redesigning national biodiversity financial plans and budgets, such as budget plans of responsible agencies, budget plans of local government organizations, etc.

6) Increase international financial resources related to biodiversity, including official development assistance and voluntary contributions from donor countries, to supplement domestic budgets during the initial phase of the plan implementation.

7) Mobilize financial sector engagement and private business participation to promote blended finance solutions, combining private, public, and international funding. Implement strategies to secure new and additional financial resources, particularly by encouraging private sector investment in biodiversity protection, conservation, and sustainable use through dedicated funds and financial instruments.

8) Stimulate innovative financing mechanisms, including payment for ecosystem services, green bonds, biodiversity offsets and credits, and benefit-sharing arrangements, while ensuring appropriate environmental and social safeguards.

9) Enhance the efficiency of financial support from diverse funding sources to promote co-benefits and collaboration across financial sectors targeting shared priorities, such as addressing biodiversity loss and climate change crises.

10) Enhance the role of collective actions, including by indigenous peoples and local communities, through non-business approaches, such as community-based natural resource management and civil society partnerships focused on biodiversity conservation.

- **Target Values**

1) The proportion of the budget for biodiversity is not less than 0.3% of the total budget.

2) At least 1 mechanism to support and access biodiversity funding sources is implemented.

3) At least 1 sector has adjusted its operational guidelines to reduce impacts, threats, and harm to biodiversity.

4) The number of incentive measures that positively affect biodiversity increases by at least 3 measures, while incentive measures that negatively affect biodiversity are reduced.

5) Financial mechanisms to support operations for protection, conservation, and utilization of biodiversity increase by no fewer than 5 mechanisms.

- **Indicators**

1) Budget for biodiversity

2) Number of mechanisms to support and access biodiversity funding sources that are implemented

3) Results of operational changes to reduce impacts, threats, and dangers to biodiversity in various sectors

4) Number of incentive measures that positively affect biodiversity that are implemented, and number of incentive measures that negatively affect biodiversity

5) Number of financial mechanisms to support operations for protection, conservation, and utilization of biodiversity


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Mainstream and support the implementation of Thailand's National Biodiversity Action Plan to promote biodiversity conservation and sustainable use. | 1.1 Support the study and identification of positive and negative incentives for biodiversity management. | MNRE (ONEP/DWR)<br>MOAC (DOF/RID)<br>MOI (DPT/LAO)<br>MOT (MD)<br>Educational Institutions | MNRE (RFD/DMCR)<br>OPM (ONWR/Thai-MECC)<br>International Organizations<br>Private sector<br>Civil Society | 2023-2027 |
| | 1.2 Support mechanisms for resource mobilization from the financial sector and private businesses, and stimulate new innovative funding approaches for biodiversity conservation. | MOF (FPO/ExD/PDMO)<br>BOT/SEC<br>OPM (BOI/BB)<br>Private sector<br>Financial institutions<br>The Thai Chamber of Commerce<br>The Thai Bankers Association | MNRE (ONEP)<br>International Organizations | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 1.3 Increase the efficiency of financial support mechanisms and funding from various financial sectors. | MOF (FPO)<br>BOT/SEC<br>OPM (BOI/BB)<br>Financial institutions<br>The Thai Chamber of Commerce<br>The Thai Bankers Association | International Organizations<br>Thai General Insurance Association<br>Private sector | 2023-2027 |
| | 1.4 Support the use of financial mechanisms for biodiversity with the participation of the public sector, including local communities, indigenous peoples, youth groups, and civil society organizations, in the conservation, restoration, and sustainable use of biodiversity. | MNRE (ONEP/DNP/RFD/ DMCR/BEDO/DWR)<br>MOI (DLA/LAO) | MOF (FPO)<br>SEC<br>SAO<br>Educational Institutions<br>Private sector<br>International Organizations<br>Civil Society | 2023-2027 |


## Target 10: Develop a Biodiversity Data System and Knowledge Connected with All Sectors to Support Decision-Making and Operations in Biodiversity Management, and Raise Awareness about Biodiversity and Ecosystems

- **Target Description**

**Data, Databases, and Knowledge**

Ensure that the best available data, information, and knowledge are accessible to decision makers, practitioners, and the public to guide effective and equitable governance, integrated and participatory management of biodiversity, and to strengthen communication, awareness-raising, education, monitoring, research, and knowledge management. In this context, traditional knowledge, innovations, practices, and technologies of indigenous peoples and local communities should be accessed only with their free, prior and informed consent, in accordance with national legislation.

All countries need data and knowledge to identify biodiversity threats, determine needs and priorities, plan and take evidence-based decisions and actions, set benchmarks and monitor and report on progress for the conservation and sustainable use of biodiversity and the fair and equitable sharing of benefits arising from the utilization of genetic resources. Accessible biodiversity-related data and knowledge are critical for creating baselines, regularly assessing progress, and taking necessary action. This issue is cross-cutting, with implications for all the goals and targets of the Kunming-Montreal Global Biodiversity Framework.

**Awareness of the Roles and Rights of Local Communities, Indigenous Peoples, Women, Youth, and Vulnerable Groups in the Conservation and Protection of Biodiversity**

Recognize the roles and rights of these groups, ensuring full gender responsiveness, equality, and effective inclusion of vulnerable groups. Support equitable access to decision-making, justice, and biodiversity-related information for local communities and indigenous peoples, women, youth, and vulnerable groups, while respecting their cultures and rights to lands, resources, and traditional knowledge, as well as addressing the specific needs of women, children, youth, and persons with disabilities.

- **Importance of Target**

**Data, Databases, and Knowledge**

Countries require data and knowledge to identify biodiversity threats, determine needs and priorities, plan and make decisions, implement evidence-based actions, establish criteria and standards, and monitor and report progress on the conservation and sustainable use of biodiversity, as well as the fair and equitable sharing of benefits arising from the use of genetic resources. Accessible biodiversity-related data and knowledge are important for building

a foundation, regularly assessing progress, and taking necessary actions. This cross-cutting issue has implications for all the goals and targets of the Kunming-Montreal Global Biodiversity Framework.

The main objective of this target is to ensure that available biodiversity data is academically validated and readily accessible to decision-makers and other relevant stakeholders. This will support biodiversity policy, planning, and decision-making processes, as well as for monitoring and reporting implementation progress.

**Awareness of the Roles and Rights of Local Communities, Indigenous Peoples, Women, Youth, and Vulnerable Groups in the Conservation and Protection of Biodiversity**

Indigenous peoples and local communities possess cultural and holistic understanding of nature based on their traditional knowledge, practices, and innovation. This biodiversity knowledge plays a crucial role in conservation and sustainable use efforts. Their insights into local ecosystems serve as the foundation for developing conservation initiatives that integrate cultural values and traditional governance systems, including sustainable practices, such as resource management techniques, traditional hunting and fishing, and selective harvesting. Furthermore, their lands encompass diverse ecosystems—from forests and wetlands to mountains and coastal areas —with high biodiversity concentrations. These indigenous peoples and local communities often promote sustainable land-use practices, including agroforestry, rotational farming, and community-based conservation management systems. Involving indigenous peoples and local communities in biodiversity conservation and recognizing their perspectives and expertise can contribute to the development of context-specific and effective conservation strategies.

The target also recognizes the importance of meaningful participation of women and girls, as well as the inclusion of children, youth, and persons with disabilities, in promoting social equity and empowering these groups to actively contribute to biodiversity conservation. It also highlights the need to protect environmental human rights defenders, as they are at the forefront of protecting biodiversity by monitoring and exposing environmental violations, promoting sustainable practices and advocating for a human rights-based approach to conservation efforts.

- **Recommended Actions**

  **Data, Databases, and Knowledge**

To ensure that the best available biodiversity data and knowledge are readily accessible to decision-makers and other relevant stakeholders to support biodiversity policy, planning and decision-making processes, as well as for monitoring and reporting implementation progress. This target contains several elements that provide further specificity on how to accomplish this, with the following implementation guidelines:

1) Improved accessibility to relevant biodiversity data and knowledge—Decision-makers, practitioners, and the general public should be able to access relevant biodiversity data and knowledge easily, efficiently, and in a timely manner, and in appropriate formats. Enhanced accessibility can be achieved through various approaches, including increasing standardization and interoperability among existing data systems, tools, and platforms; digitizing existing information; and implementing policies that promote open-access and open-data principles, to facilitate and support easier information access.

2) Communication, awareness-raising, and education—Biodiversity data, information, and knowledge are essential elements for effective communication, awareness-raising, and educational initiatives. Understanding, awareness, and appreciation of biodiversity's diverse values underpin individuals' willingness to make the necessary changes and take action, while also enhancing the political will of governments and other stakeholders to implement biodiversity conservation measures.

3) Knowledge management—Knowledge management refers to the processes for creating, discovering, collecting, organizing, curating, storing, sharing, and utilizing relevant knowledge, information, and data. Capacity-building efforts in this area are essential. These may include initiatives to enhance institutional capabilities, facilitate access to and training in relevant digital technologies, and establish formalized systems for data and knowledge management.

4) Monitoring—Effective monitoring, including the use of indicators, fundamentally depends on the availability of high-quality data, information and knowledge. There is a need to establish or strengthen existing national biodiversity information systems, biodiversity observatory centers, and networks capable of supporting both national and international biodiversity monitoring needs and commitments.

5) Research—Greater support for research and innovation is essential to generate the necessary data, information, and knowledge required to achieve most biodiversity targets. This includes research efforts aimed at addressing biodiversity knowledge gaps and major imbalances in geographic and taxonomic focus of biodiversity studies and monitoring. There is a need to conduct information gap analyses and establish research projects and guidelines to generate missing information and to enhance both the quantity and quality of biodiversity information available for planning, decision-making, monitoring, and reporting.

6) Knowledge, innovations, practices, and technologies of indigenous peoples and local communities—Many indigenous peoples and local communities possess unique traditional biodiversity knowledge. Similarly, many have developed innovations, practices and technologies relevant to biodiversity conservation and sustainable use. This knowledge and these innovations, practices, and technologies should only be accessed with the free, prior, and informed consent of indigenous peoples and local communities, in accordance with national legislation.

**Awareness of the Roles and Rights of Local Communities, Indigenous Peoples, Women, Youth, and Vulnerable Groups in the Conservation and Protection of Biodiversity**

Recognizing the roles and rights of local communities, indigenous peoples, women, youth, and vulnerable groups in biodiversity conservation and protection is essential to ensuring full, equitable, and inclusive representation and participation of indigenous peoples and local communities in decision-making processes related to biodiversity. This recognition also aims to promote an inclusive, rights-based approach to participation in biodiversity conservation. Achieving this target involves addressing several key components.

7) Ensuring the active participation and engagement of indigenous peoples and local communities in decision-making processes—It recognizes their rights to participate in decisions that affect their way of life, customs, and resources.

8) Access to justice and information—Strengthened access to judicial systems and information on environmental matters is a key element in ensuring full, equitable, and inclusive representation and participation of indigenous peoples and local communities, as well as protecting environmental human rights defenders. This part of the target calls for measures to be put in place to ensure transparency, accountability, and participation in decision-making processes.

9) Rights of indigenous peoples and local communities over their cultures, land, territories, resources, and traditional knowledge—This part of the target pertains to recognizing and upholding the rights of indigenous peoples and local communities, as outlined in other international frameworks, such as the United Nations Declaration on the Rights of Indigenous Peoples and human rights law. This includes respecting their right to own, use, develop and control their lands, territories, and resources.

10) Rights of women and girls, children and youth, and persons with disabilities—Individuals living in vulnerable situations often do not enjoy the same rights or access to biodiversity and resources. In many places, this includes women and girls, children and youth, and persons with disabilities. This target calls for measures to ensure that individuals belonging to these groups enjoy the same rights and access as others.

11) Full protection of environmental human rights defenders—This refers to measures that can be taken to safeguard individuals or groups who work to protect the environment, advocate for environmental justice, and defend the rights of indigenous peoples and local communities. Key aspects of protecting environmental human rights defenders could include, but are not limited to: preventing violence and intimidation by providing legal protection, effective remedies, and ensuring the secure exercise of their rights free from reprisals and retaliation, as well as raising awareness about the important role of environmental human rights defenders.

- **Target Values**

1) Establish at least 3 national biodiversity data management systems to support decision-making and operations in biodiversity management.

2) Ensure at least 15% of local administrative organizations (LAOs) can systematically collect standardized data on biological and genetic resources.

3) At least 50% of educational institutions in the RSPG university networks support local communities in verifying the accuracy of local biological and genetic resource data.

4) Implement at least 50 activities/projects/plans per year related to the preparation, dissemination, and communication of biodiversity knowledge in various sectors.

5) All sectors (central and local government, private business sector, education sector, public sector, including local communities, vulnerable groups, youth, women, and indigenous peoples) are aware of the importance of the country's biodiversity and ecosystems for sustainable national development.

- **Indicators**

1) Biodiversity data management systems supporting decision-making and operations in biodiversity management

2) Number of local administrative organizations capable of systematically collecting local biological and genetic resource data according to established standards

3) Number of local biological and genetic resource data items verified by educational institutions in the RSPG university networks

4) Number of activities/projects/plans implemented to communicate biodiversity knowledge in various sector plans

5) Level of awareness among various sectors (central and local government, private business sector, education sector, public sector, including local communities, vulnerable groups, youth, women, and indigenous peoples) regarding the importance of the country's biodiversity and ecosystems for sustainable national development


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Develop and improve the country's biodiversity database systems to link and cover important sectors that support progress reporting on biodiversity targets. | 1.1 Continuously update database information on status, boundaries, buffer zones, and maps of areas with biodiversity significance, ensuring accessibility at all levels and for all relevant sectors. | MNRE (DMCR/ONEP/ DNP/RFD/BEDO)<br>MOAC (DOA/DO F)<br>RSPG<br>Educational Institutions<br>Bird Conservation Society of Thailand | MDES (NSO)<br>International Organizations<br>Civil Society | 2023-2027 |
| | 1.2 Support the development of databases for local communities, indigenous peoples, women, youth, and vulnerable groups regarding biodiversity conservation and protection. | MNRE (DMCR/ONEP/ DNP/RFD/BEDO)<br>MOI (DLA/DOPA/LAO)<br>MOC (DCP)<br>MSDHS (DCY/DOP/DWF/ DSDW/CODI)<br>NHRC<br>RSPG | MDES (NSO)<br>MOJ (RLPD)<br>International Organizations<br>Civil Society<br>Private sector | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 1.3 Support the development of database systems for biodiversity surveys, inventories of biological resources, genetic resources, and associated traditional knowledge according to international standards. These databases should be referenceable and indicate sources to protect and safeguard national interests. | MNRE (DMCR/ZPO/ ONEP/DNP/RFD/BGO/ DWR/BEDO)<br>MOAC (RD/DOA/DOF/ QSDS)<br>MOPH (DTAM)<br>MOI (LAO)<br>RSPG<br>Bird Conservation Society of Thailand | MOAC (DLD)<br>International Organizations<br>Private sector<br>Civil Society | 2023-2027 |
| | 1.4 Support the exchange of biodiversity data and knowledge, and establish links with databases of biodiversity research projects or initiatives to increase the quantity and quality of national biodiversity data. | MNRE (DMCR/ONEP/ DNP/RFD/BEDO/DCCE)<br>MOAC (RD/DOA/DOF/ QSDS/ARDA)<br>MHESI (TISTR/TSRI/ NSTDA/NRCT/NSM/NIA) | MOAC (DLD)<br>International Organizations<br>Private sector<br>Civil Society | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 1.5 Develop mechanisms to link the reporting of operations under various conventions and international agreements related to biodiversity, ensuring coherent and aligned implementation. | MNRE (ONEP/DNP/RFD/ DWR DCCE)<br>MOAC (DOA/LDD) | International Organizations | 2023-2027 |
| 2. Raise awareness and provide education about the importance of biodiversity. | 2.1 Promote and provide media and/or activities to disseminate knowledge, understanding, and awareness of the value and importance of biodiversity. This includes building knowledge and understanding among relevant officials, local communities, indigenous peoples, women, youth, vulnerable groups, and the public about the sustainable conservation and utilization of biodiversity and associated traditional knowledge. | MNRE (DCCE/DMCR/ ONEP/DNP/RFD/BEDO)<br>MOAC (RD/DOA/DOF/ QSDS)<br>MHESI (TISTR/TSRI/ NSTDA/NRCT/NSM)<br>Educational Institutions | MOAC (DLD)<br>RSPG<br>International Organizations<br>Civil Society<br>Private sector | 2023-2027 |

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| | 2.2 Organize academic conferences, campaign activities, and youth camps to build knowledge, awareness, and promote participation of all sectors in sustainable biodiversity conservation and utilization. | MNRE (DCCE/DMCR/ ONEP/DNP/RFD/BEDO)<br>MHESI (TISTR/NSTDA/ NRCT/NSM) | Educational Institutions<br>International Organizations<br>Private sector<br>Civil Society | 2023-2027 |
| | 2.3 Enhance awareness of the importance and roles of local communities and traditional knowledge, especially the roles of women, youth, and indigenous peoples, in sustainable biodiversity conservation and utilization. | MNRE (DCCE/ONEP/ DNP/RFD)<br>MOI (LAO)<br>OPM (Thai-MECC/ OSMEP)<br>MIND (DIP)<br>MSDHS (DCY/DOP/DWF/ DSDW/CODI)<br>NHRC<br>Educational Institutions | MOJ (RLPD)<br>International Organizations<br>Civil Society | 2023-2027 |


## Target 11: Strengthen and Develop Capabilities and Partnerships, Including Technology Transfer in Research, Science, and Innovation for Biodiversity

- **Target Description**

To achieve the goals and targets of the Kunming-Montreal Global Biodiversity Framework (KM-GBF), Thailand needs technical expertise and operational capacity, knowledge, tools, technologies, and institutional capabilities of organizations and stakeholders to prioritize, plan, mobilize resources, implement, and monitor relevant strategies, programs, and activities. Capacity development, technical and scientific cooperation, technology transfer, and innovation are crucial for enhancing the capabilities, resilience, and effectiveness of individuals, institutions, and systems at various levels to improve biodiversity-related decision-making, implementation, and outcomes.

- **Importance of Target**

This target aims to provide all sectors with the necessary capabilities, knowledge, technologies, and tools to effectively implement biodiversity conservation actions in alignment with national frameworks and global biodiversity goals. This includes:

- Capacity-building and development—Creating an enabling environment for effective operations and strengthening the ability of individuals and institutions to contribute to halting and reversing biodiversity loss. This can be achieved through: (1) improving the knowledge, skills, competencies and attitudes of various stakeholders, including policymakers, planners, practitioners, and the public; (2) strengthening organizational capacity, including enhancing biodiversity governance, cross-sectoral coordination, multi-stakeholder engagement, partnership development, networking, and knowledge management; and (3) strengthening the enabling environment by enhancing policy and regulatory frameworks, mobilizing and leveraging resources, and building political support.

- Access to and transfer of technologies—Many technologies have the potential to address ongoing biodiversity loss. However, access to and transfer of these technologies, including the skills to use and benefit from them, remain limited in Thailand and need to be improved as part of the implementation strategy. Examples of relevant technologies include: (1) technologies for spatial planning and biodiversity management, including geospatial technology, remote sensing, and geographic information systems; (2) technologies for biodiversity monitoring, such as DNA technologies, camera traps, acoustic recording devices, smartphone applications for citizen science, drones, and satellite technologies; (3) decision support technologies, such as early warning systems, digital technologies for complex data aggregation and data visualization; and (4) technologies, innovations, and practices of indigenous peoples and local communities used with their free, prior and informed consent.

- Development of and access to innovation—The development of new, transformative, and innovative solutions for biodiversity-related challenges needs to be fostered, and access to these innovations improved. There should be a focus on investing in research and development to address biodiversity challenges. Harnessing emerging technologies, such as artificial intelligence, along with the innovations and practices of indigenous peoples and local communities (with their free, prior, and informed consent), may create new opportunities to improve biodiversity conservation, sustainable use, and the fair and equitable sharing of benefits arising from biodiversity.

- Technical and scientific cooperation—Thailand should establish cooperation to build scientific and technical knowledge and expertise, including traditional knowledge and technologies. When leveraged through collaboration, this offers opportunities for the co-creation and/or exchange of knowledge, data, expertise, resources, technologies, and technical know-how. This can occur through joint technology development, collaborative scientific research, and strengthening scientific research capabilities through human resources development, institution building, joint personnel training, and expert exchanges.

- **Recommended Actions**

**Biosafety**

The first aspect relates to biosafety measures, and the second addresses participation in biotechnology research and the distribution of benefits from biotechnology:

1) Strengthening of biosafety measures and capacities for their implementation—Biosafety measures are implemented to regulate, manage, and control the risks associated with the use and release of living modified organisms derived from biotechnology. These measures aim to contribute to the sustainable use and conservation of biological diversity.

2) Equitable access to results and benefits—Biotechnology can generate numerous potential benefits. Promoting participation in biotechnological research using genetic resources provided by Thailand enables the country to gain equitable access to the results and benefits arising from biotechnology based on these genetic resources.

**Research, Science and Innovation**

3) Enhancing capacity building and development, and promoting access to innovations, as well as technical and scientific cooperation, to meet effective operation requirements.

4) Promoting joint technology development among the public sector, private businesses, and collaborative scientific research projects for the conservation and sustainable use of biodiversity, while strengthening scientific capabilities to achieve outcomes aligned with national biodiversity targets.

- **Target Values**

1) Increased research outcomes on technologies and innovations for national biodiversity management

2) Implementation of at least 10 biodiversity-focused activities/research projects annually that produce datasets and knowledge

3) Increased implementation of both domestic and international activities/projects that facilitate knowledge exchange, technology transfer, and academic collaboration supporting biodiversity

- **Indicators**

1) Number of technologies and innovations developed for national biodiversity management

2) Number of biodiversity-supporting activities/research projects implemented

3) Number of implemented domestic and international activities/projects involving knowledge exchange, technology transfer, and academic collaboration supporting biodiversity conservation


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Enhancing organizational capacity, cross-sector collaboration, stakeholder engagement, and development of biodiversity networks. | 1.1 Promote and support research on biological resources with economic development potential, including enhancing existing biological resources by integrating local knowledge with modern technology. | MOAC (DOA/DLD/DOF/ ARDA)<br>MHESI (OPS-MHESI/ TSRI/NRCT/PMU-B/ BIOTEC) | MOPH (DTAM/NIH) | 2023-2027 |
| 2. Supporting the exchange of knowledge, expertise, resources, and transfer of new technologies related to biological resources, genetic resources, and biotechnology. | 2.1 Promote cooperation that facilitates resource sharing and technology transfer related to scientific research in innovations or biotechnology among government agencies, academic institutions, and private sector businesses. | MOAC (DOA/DOF)<br>MHESI (OPS-MHESI/ TSRI/NRCT PMU-B/ NSTDA/ BIOTEC/GISTDA)<br>MIND (DIW) | MNRE (ONEP/DNP/ DMCR)<br>MOAC (DLD)<br>MOPH (DTAM/FDA/NIH)<br>MOC (DBD)<br>MHESI (NSM)<br>International Organizations<br>Private sector | 2023-2027 |
| | 2.2 Support the development of bio-business entrepreneur networks to foster collaboration, promote responsibility, establish business partnerships, and create opportunities for exchanging information and technology related to production, marketing, and products, including the equitable sharing of benefits. | MOAC (DOA/DLD/DOF)<br>MHESI (OPS-MHESI/ TSRI/NRCT/PMU-B/ NSTDA/BIOTEC)<br>MIND (DIW) | Private sector | 2023-2027 |


## Target 12: Develop and Improve Existing Legal Tools and Regulations to Effectively Support the Achievement of National Biodiversity Targets

- **Target Description**

The (Draft) Biodiversity Act B.E. [Year], which the Office of Natural Resources and Environmental Policy and Planning (ONEP) has been developing since 2017, has undergone extensive stakeholder consultations and received feedback from all sectors, including public hearings conducted in 2021-2022. The Cabinet approved its principles on February 22, 2022, and it is currently under consideration by the Council of State.

Additionally, preparations for implementation are underway, including the drafting of essential subsidiary legislation to align with current situations and urgent commitments to support Thailand's obligations under the Kunming-Montreal Global Biodiversity Framework. Therefore, mainstreaming the enforcement of this (Draft) Act is necessary to achieve effective biodiversity management.

- **Importance of Target**

One of the limitations and gaps in Thailand's biodiversity management, identified over the past decade and through monitoring reports on the implementation of the Biodiversity Management Action Plan 2017-2022, is the absence of legislation specifically addressing the obligations of party countries under the Convention on Biological Diversity and its various protocols.

Although Thailand has many laws, regulations, and guidelines for managing biodiversity across various acts, and the development of existing legislation has progressed gradually, these measures are still not comprehensive enough to cover biological resources in alignment with all three objectives of the Convention. Moreover, current legislation cannot encompass all species and biodiversity areas, and nor can it facilitate utilization and oversight in a unified, fair, and equitable manner, especially for the public and private sectors.

Therefore, this target aims to push forward the draft Biodiversity Act B.E. ...., which has been developed and received Cabinet approval. This legislation represents a critical milestone that will drive the plan towards effective enforcement and implementation with stakeholders from all sectors.

- **Recommended Actions**

1) Continue efforts to build understanding of the importance and necessity of enacting the Biodiversity Act to address gaps and establish concrete legal enforcement mechanisms for effective management, while supporting policy-level implementation of Thailand's National Biodiversity Action Plan.

2) Support the review of various Acts related to biodiversity conservation and sustainable use by responsible agencies to ensure alignment with the Biodiversity Act B.E. [Year], to ensure benefits and eliminate redundancy.

3) Improve, amend, or supplement legislation related to national strategies, goals, and targets in Thailand's National Biodiversity Action Plan to enable legal mechanisms to establish appropriate regulations, measures, and guidelines for implementation.

- **Target Values**

1) Enact the Biodiversity Act to address gaps and enhance the effectiveness of the country's biological resource management by 2027.

2) Review and improve at least 3 laws and regulations related to the protection, conservation, and sustainable use of biodiversity to increase enforcement effectiveness.

- **Indicators**

1) The Biodiversity Act is enforced.

2) The number of laws and regulations related to the protection, conservation, and sustainable use of biodiversity that have been reviewed and improved.


**Measures, Operative Guidelines, and Responsible Agencies**

| Measures | Operative guidelines | Responsible agencies | Supporting agencies | Period (years) |
|---|---|---|---|---|
| 1. Promote and improve legal tools for the management of the biological resources. | 1.1 Accelerate the advocation of rules, regulations, laws, and operational procedures related to biodiversity management. | MNRE (ONEP)<br>OPM (NESDC) | MNRE (DNP/BEDO)<br>OPM (BB)<br>MSDHS (DCY/DOP/DWF/ DSDW/CODI)<br>International Organizations<br>Civil Society<br>Private sector | 2023-2027 |
| | 1.2 Improve rules, regulations, laws, and operational procedures related to biodiversity management. | MNRE (ONEP)<br>OPM (NESDC) | MNRE (DNP/BEDO) | 2023-2027 |
| 2. Establish national biodiversity management mechanisms. | 2.1 Appoint a National Biodiversity Committee to develop and issue policies on national biodiversity management. | MNRE (ONEP/RFD/PCD/ DWR)<br>MOAC (DOF/DOA)<br>MIND (DIW)<br>MOTS (OPS-MOTS)<br>OPM (ONWR/NESDC/ ONLB)<br>BOT<br>MOPH (DTAM)<br>NHRC<br>Private sector | MNRE (DNP/BEDO)<br>International Organizations<br>Civil Society<br>Private sector | 2023-2027 |

# Section 7

## Approaches for Mainstreaming and Monitoring and Evaluation of the Plan

### 7.1 Approaches for Mainstreaming the Plan

The successful implementation of Thailand's National Biodiversity Action Plan 2023-2027 requires a robust framework that integrates the National Biodiversity Targets across all sectors. The strategy for integrating these targets employs both whole-of-government and whole-of-society approaches to foster cooperation, transparency, and shared responsibility. The mechanisms and implementation drivers will systematically and efficiently integrate National Biodiversity Targets into the policies and joint operations of stakeholders from the public, private, and civil sectors by enhancing cooperation, building capacity, and ensuring transparency as follows:

**1) Inter-sectoral Plan Integration**

Integrating various policies by initiating and promoting the incorporation of the national biodiversity targets into plans and policies of sectors related to biodiversity protection, conservation, and sustainable use. This includes policies and plans that support various mechanisms and tools. The process of securing funding and budgets focuses on proposing integration into financial, investment, agriculture, forestry, fisheries, and tourism policies, extending to provincial and local levels, in alignment with biodiversity targets. Emphasis is placed on concrete coordination between ministries and responsible agencies for various targets, using the mechanism of the Subcommittee on Integrated Biodiversity Management and related committees/subcommittees. Special task forces or ad hoc inter-ministerial working groups may be established to promote cross-sectoral cooperation and policy coherence, to prioritize and develop action plans, and to initiate capacity building for responsible agencies, as well as to support implementation measures, operational guidelines, and performance monitoring and evaluation.

**2) Raising Awareness and Stakeholder Participation**

Continuously raising awareness about the importance of implementing the plan nationwide to increase knowledge and understanding of biodiversity, with a focus on broad outreach to citizens and communities through initiatives, such as disseminating knowledge at the community level. This aims to encourage stakeholder participation and cooperation with local communities, indigenous peoples, civil society organizations, the private sector, and educational institutions to gather implementation data aligned with national targets and build support for the plan implementation. This also involves enhancing stakeholder participation through regular consultations and initiating collaborations among the public sector, private sector, and other organizations. Efforts to integrate biodiversity into private businesses, finance, and investment sectors will be expanded, along with strengthening incentives and support mechanisms to increase private sector participation.

**3) Utilizing Financial Mechanisms and Funds to Support Implementation**

Employing various financial mechanisms and funds designed to support the budget by implementing the Biodiversity Finance Plan 2023-2027 to mobilize resources from various sources, increase resource efficiency, and establish and promote operations according to the finance plan throughout the duration of the action plan. This also includes increasing the participation of financial mechanisms and funds from the private sector and international sources.

**4) Monitoring and Evaluating the Plan's Implementation**

Monitor, evaluate, and summarize the integration of Thailand's National Biodiversity Targets in all relevant policies and plans. Ensure that biodiversity considerations are integrated into the decision-making processes of all sectors by collecting performance results from all responsible and supporting agencies using a continuous monitoring and evaluation platform. Compile the results of considerations and approvals from various committees and subcommittees, including gathering information on the collaborative efforts of the private sector, education sector, and civil society.

The significant limitations and lessons from monitoring and evaluating previous action plans in Thailand include insufficient and inconsistent data collection for national reporting, lack of data for certain targets and indicators, and the absence of a systematic information management system for collecting data from responsible agencies and other sectors. Therefore, this Action Plan has improved its tools by implementing an information system approach (Figure 7-1). This approach aims to address the challenges faced by agencies and partners jointly responsible for the plan's implementation, enabling them to report their activities systematically and in real-time through online forms. It allows for quick and timely aggregation of reported data, monitoring, and evaluation. Various sectors can participate periodically and consistently, ensuring continuous operations. It also addresses delays and reduces the time required for the national coordinating agency to collect information with both the National Biodiversity Targets and global goals, using appropriate indicators for reporting into the country's information system.

Consequently, monitoring and evaluating operations to support the National Biodiversity Targets throughout the period of the Action Plan between 2023-2027 and beyond will be conducted through an information system. This will enable all sectors implementing the Action Plan to connect and transfer operational results data more efficiently.

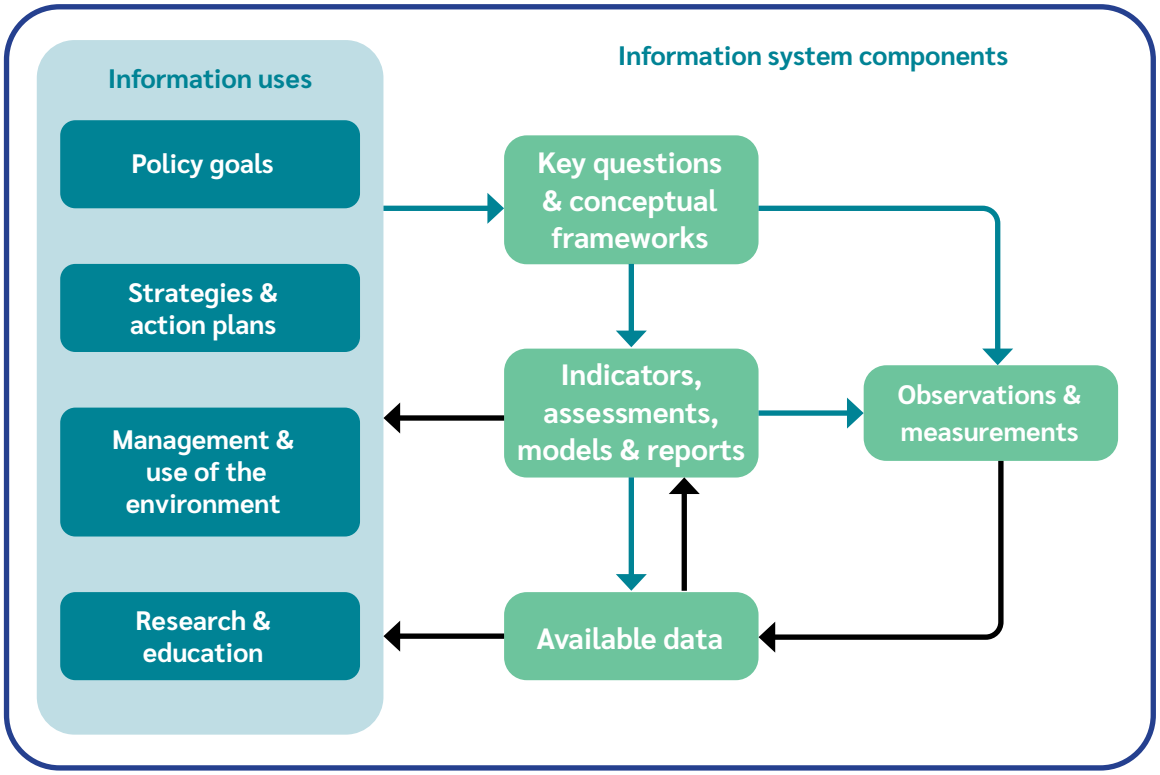



**Figure 7-1: Information system approach for data collection, monitoring, and evaluation of implementation**

## 7.2 Monitoring and Evaluation Plan for Implementation of Thailand's National Biodiversity Action Plan 2023-2027

In monitoring and evaluating the plan's implementation, the Office of Natural Resources and Environmental Policy and Planning (ONEP) coordinates with agencies and organizations from the public, private, civil society, education, and public sectors, including both primary and supporting agencies implementing the plan, to continuously monitor performance using an information system approach through a digital platform. This platform is jointly developed by all agencies in accordance with the steps for developing a biodiversity information system, and is conducted alongside training and capacity building for sectors working together to achieve national goals according to the 2023-2027 Action Plan and beyond.

The plan for monitoring and evaluating the Action Plan's implementation is carried out by adopting an information system approach to support operations. This must be done in parallel with reforming the country's biodiversity information system to respond to national reporting requirements and the Kunming-Montreal Global Biodiversity Framework, continuously and in alignment with the current biodiversity situation. It is necessary to establish a monitoring and evaluation plan alongside reforming the format, methods, and steps for capacity building. The plan is set in phases as follows:

**Phase 1 (Year 2024 or within 1 year after the Action Plan is approved)**

Activities to reform the development of biodiversity information systems across all sectors, agencies, and organizations, both public and private, include:

- Initiating activities/projects to develop a central information system for reporting the country's Action Plan, with the Office of Natural Resources and Environmental Policy and Planning as the coordinating unit, working with agencies and organizations from all sectors.

- Piloting the system by agencies, organizations, and sectors with shared missions, according to their responsibilities and participation, while assessing gaps and capabilities of each sector and the need for capacity building.

- Creating a plan for the development of the information system to monitor and evaluate the Action Plan.

**Phase 2 (Year 2025 or the 2nd year after the Action Plan is approved)**

Activities conducted by ONEP and agencies in line with the information system development plan to enhance capabilities and additional skills, address data gaps related to biodiversity, and prepare for creating databases for monitoring national targets and indicators across various agencies and sectors, include:

- Implementing the information system development plan for monitoring and evaluating the Action Plan.

- Adapting the format for continuous online data collection and reporting by agencies and various sectors.

- Monitoring and evaluating the Action Plan's implementation through a mid-term review (2023-2025) and preparing the National Report required by the Convention on Biological Diversity.

**Phase 3 (Year 2025-2027 or 3-5 years after the Action Plan is approved)**

Operational activities of all agencies and sectors, with participation according to jointly defined missions and roles, include:

- Analyzing and reporting the Action Plan's implementation results from the country's developed information system, with participation in data collection and provision from all sectors.

- Assessing the need for increased capacity in using the biodiversity information system to respond to national target reporting and indicators, in line with the Kunming-Montreal Global Biodiversity Framework.

- Monitoring and evaluating the achievement of the Action Plan's implementation, as well as preparing reports on the country's biodiversity status, based on the national biodiversity information system, created through cooperation and coordination of annual data collection from 2023-2027.

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# Appendix

**Appendix A:** **Alignment with the Sustainable Development Goals (SDGs)**

**Appendix B:** **Alignment of Thailand's National Biodiversity Action Plan B.E. 2566-2570 (2023-2027) with the Kunming-Montreal Global Biodiversity Framework (KM-GBF) and Sustainable Development Goals (SDGs)**

**Appendix C:** **Roles of Agencies and Sectors Involved in Biodiversity Management**

**Appendix D:** **Indicator Descriptions**

# Appendix A

## Alignment with the Sustainable Development Goals (SDGs)

| Main Goals | Description |
|---|---|
|  | SDG 1.4: By 2030, ensure that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership, and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services, including microfinance.<br>SDG 1.5: By 2030, build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.<br>SDG 1.a: Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions. |
|  | SDG 2.3: By 2030, double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.<br>SDG 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality.<br>SDG 2.5: By 2020, maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional, and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed. |

| Main Goals | Description |
|---|---|
|  | SDG 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination. |
|  | SDG 4.7: By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development. |
|  | SDG 5.1: End all forms of discrimination against women and girls everywhere.<br>SDG 5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life.<br>SDG 5.a: Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources, in accordance with national laws.<br>SDG 5.c: Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels. |
|  | SDG 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.<br>SDG 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes**,** as part of ensuring availability and sustainable management of water and sanitation for all. |
|  | SDG 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation in accordance with the 10-year Framework of Programs on Sustainable Consumption and Production, with developed countries taking the lead. |

| Main Goals | Description |
|---|---|
|  | SDG 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities. |
|  | SDG 10.2: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.<br>SDG 10.3: Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and actions in this regard. |
|  | SDG 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage.<br>SDG 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management.<br>SDG 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels. |
|  | SDG 12.1: Implement the 10-Year Framework of Programs on Sustainable Consumption and Production Patterns (10YFP), all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.<br>SDG 12.2: By 2030, achieve sustainable management and efficient use of natural resources.<br>SDG 12.3: By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including, post-harvest losses. |

| Main Goals | Description |
|---|---|
| | SDG 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.<br>SDG 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.<br>SDG 12.6: Encourage companies, especially large and trans- national companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.<br>SDG 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.<br>SDG 12.a: Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.<br>SDG 12.c: Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities. |
|  | SDG 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.<br>SDG 13.2: Integrate climate change measures into national policies, strategies, and planning. |

| Main Goals | Description |
| --- | --- |
|  | SDG 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution.<br>SDG 14.2: By 2020, sustainably manage, and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and taking action for their restoration in order to achieve healthy and productive oceans.<br>SDG 14.3: Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.<br>SDG 14.4: By 2020, effectively regulate harvesting and end overfishing, illegal, unreported, and unregulated (IUU) fishing, and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.<br>SDG 14.5: By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.<br>SDG 14.6: By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.<br>SDG 14.7: By 2030, increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.<br>SDG 14.a: Increase scientific knowledge, develop research capacity, and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries. |

| Main Goals | Description |
| --- | --- |
|  | SDG 15.1: By 2020, ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains, and drylands, in line with obligations under international agreements.<br>SDG 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and substantially increase afforestation and reforestation globally.<br>SDG 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods, and strive to achieve a land degradation-neutral world.<br>SDG 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.<br>SDG 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.<br>SDG 15.6: Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources, and promote appropriate access to genetic resources, as internationally agreed.<br>SDG 15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.<br>SDG 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems, and control or eradicate the priority species.<br>SDG 15.9: By 2020, integrate ecosystems and biodiversity values into national and local planning, development processes, and poverty reduction strategies, and accounts.<br>SDG 15.a: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.<br>SDG 15.b: Mobilize significantly resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance sustainable forest management, including for conservation and reforestation. |

| Main Goals | Description |
|---|---|
| | SDG 15.c: Enhance global support to efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities. |
|  | SDG 16.3: Promote the rule of law at the national and international levels and ensure equal access to justice for all.<br>SDG 16.7: Ensure responsive, inclusive, participatory, and representative decision-making at all levels.<br>SDG 16.10: Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements. |
|  | SDG 17.3: Mobilize additional financial resources for developing countries from multiple sources.<br>SDG 17.7: Promote the development, transfer, dissemination, and diffusion of environmentally sound technologies to developing countries on favorable terms, including on concessional and preferential terms, as mutually agreed.<br>SDG 17.18: By 2020, enhance capacity building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location, and other characteristics relevant in national contexts. |

# Appendix B

## Alignment of Thailand's National Biodiversity Action Plan B.E. 2566-2570 (2023-2027) with the Kunming-Montreal Global Biodiversity Framework (KM-GBF) and the Sustainable Development Goals (SDGs)

Table Appendix B-1: The alignment of Thailand's National Biodiversity Action Plans B.E. 2566-2570 (2023-2027) with the Kunming-Montreal Global Biodiversity Framework (KM-GBF) and Sustainable Development Goals (SDGs)

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 1: Reduce the loss of important biodiversity areas both in landscape and seascape through effective spatial planning. | GBT 1: Land and Sea-use planning | Goal A, GBF target 2, 3, 5, 10 and 12 | GBF targets 14, 19, 20, 21, 22 and 23 | SDG targets 14.2, 15.1, 15.2, 15.5 and 15.9 |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 2: Conserve, restore, and expand protected areas, increase other effective area-based conservation measures (OECMs) to enhance ecosystem integrity and connectivity. | GBT 2: Ecosystem Restoration | Goal A, GBF target 3, 8, 11 and 12 | GBF targets 1, 14, 19, 20, 21, 22 and 23 | SDG targets 6.6, 14.2, 15.1 and 15.3 |
| | GBT 3: Protection and Conservation of 30 % of Land and Sea | Goal A, GBF target 4, 9 and 11 | None | SDG targets 6.6, 11.4, 14.5 and 15.4 United Nations Convention to Combat Desertification (UNCCD) related to land degradation neutrality and associated target setting, the Global Forest Goals and targets of the United Nations Strategic Plan for Forests developed under the United Nations Forum on Forests, Ramsar Resolution VII.17 as well as to the United Nations Decade on Ecosystem Restoration |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 3: Conserve and protect threatened and wild species, reduce human-wildlife conflict, and increase the efficiency of invasive alien species management. | GBT 4: Active Management of Species and Genetic Diversity | Goal A, GBF target 1, 2, 3, 5, 6, 7 and 8 | None | SDG targets 2.5 and 15.5 |
| | GBT 5: Sustainable Harvest, Trade and Use of Wild Species | Goal A and B, GBF target 4, 6, 9 and 11 | GBF targets 14, 15, 16, 18, 21 and 22 | SDG targets 12.2, 14.4, 14.7, 15.2, 15.7 and 15.C<br>Support to Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) species classification, Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat |
| | GBT 6: Invasive Alien Species | Goal A, GBF target 2, 3, 4, 10, and 12 | GBF targets 1, 14, 17, 19, 20, 21, 22 and 23 | SDG targets 15.8 |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 4: Reduce threats to biodiversity arising from climate change and pollution, including increasing urban green spaces, to restore and maintain ecosystem services. | GBT 7: Pollution | Goal A, GBF target 4 and 10 | GBF targets 1, 11, 14, 16, 18, 19, 20, 21, 22 and 23 | SDG targets 3.9, 6.3, 11.6, 12.4, 12.5 and 14.1 |
| | GBT 8: Impact of Climate Change | Goal A and B, GBF target 2, 3, 4, 10, 11 and 12 | GBF targets 1, 10, 14, 19, 20, 21, 22 and 23 | SDG targets 13.1, 13.2 and 14.3<br>Related to the Paris Agreement under the UNFCCC, as well as the Sendai Framework for Disaster Risk Reduction |
| | GBT 12: Access to Green and Blue Spaces | Goal A and B, GBF target 2, 3, 4, 8 and 11 | GBF targets 1, 14, 19, 20, 21, 22 and 23 | SDG targets 11.7 and 11.b |
| Target 5: Promote and support a bio-based economy, based on ecosystem services to improve people's living conditions and income. | GBT 9: Sustainable Use of Species and Benefit Sharing | Goal A and B, GBF target 4, 5, and 11 | GBF targets 5, 14, 16, 18, 19, 20, 21, 22 and 23 | SDG targets 12.2, 14.7 and 15.7 |
| | GBT 11: Nature's contribution to people | Goal A and B, GBF target 2, 3, 5, 6, 7, 8, 9, 10 and 12 | None | SDG targets 1.5 and 15.4 |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 6: Promote sustainable practices in production and service sectors, including agriculture, aquaculture, fisheries, livestock, forestry, and tourism. | GBT 10: Sustainable Management of Agriculture, Aquaculture, Fisheries and Forestry | Goal A and B, GBF target 2, 4, 6, 7, 8, 9, 11 and 16 | GBF targets 1, 14, 17, 19, 20, 21, 22 and 23 | SDG targets 2.3, 2.4, 12.1, 12.2, 14.7 and 15.2 |
| Target 7: Establish comprehensive mechanisms and measures to ensure equitable access and benefit-sharing and consideration of biosafety for the utilization of genetic resources. | GBT 13: Access and Benefit Sharing | Goal C, GBF target 15 and 19, 4 and 9 (indirectly) | GBF targets 14, 19, 20, 21, 22 and 23 | SDG target 15.6 |
| | GBT 17: Biosafety Measures and Benefits of Biotechnology | Goal A, B, C and D GBF targets 4, 6, 7, 8, 10 and 13 | GBF targets 14, 15, 18, 19, 20, 21, 22 and 23 | None |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 8: Mainstream biodiversity into policies, plans, and operations of all sectors at all levels, while fostering multi-sectoral engagement and participation. | GBT 14: Mainstreaming Biodiversity | Goal B and D, GBF target 15, 16 and 18 (in particular) | None | SDG target 15.9 |
| | GBT 15: Sustainable Production and Supply Chains | Goal A, B, C, D GBF target 4, 5, 6, 7, 9, 10, 13, 14, and 16 | GBF targets 18, 19, 20, 21, 22 and 23 | SDG targets 9.4 and 12.6 |
| | GBT 23: Gender Equity | Goal A and B GBF targets 9, 10 and 11 (in particular) | None | SDG targets 5.1, 5.5 and 5.c |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 9: Expand channels and funding support from various sectors, as well as promote financial mechanisms, economic instruments, and incentive measures to support biodiversity conservation and sustainable use. | GBT 15: Sustainable Production and Supply Chains | Goal A, B, C, D GBF target 4, 5, 6, 7, 9, 10, 13, 14, and 16 | GBF targets 18, 19, 20, 21, 22 and 23 | SDG targets 9.4 and 12.6 |
| | GBT 16: Sustainable Consumption | Goal A and B GBF target s 4, 5, 6, 7, 8, 9, 10 and 11 | GBF targets 14, 15, 18, 19, 20, 21, 22 and 23 | SDG targets 4.7, 8.7, 9.4, 12.1, 12.2, 12.3, 12.5, 12.8 and 12.a UNEA resolution 5/14 to develop an international legally binding instrument on plastic pollution. 10-Year Framework of Programmes on Sustainable Consumption and Production |
| | GBT 18: Eliminate Harmful Incentives | Goal A, B and D GBF targets 5, 7, 9, 10, 16 and 19 | GBF targets 14, 15, 20, 21, 22 and 23 | SDG targets 12.c and 14.6 |
| | GBT 19: Resource Mobilization | Goal D, GBF all targets | GBF targets 14, 15 and 18 | SDG targets 1.a, 10.b, 15.6, 15.b and 17.3 |

| National Biodiversity Targets | The alignment with National Targets and Global Targets | GBF targets directly affected by national targets | GBF targets that support the achievement of national targets | The alignment of National targets with SDGs and other agreements |
|---|---|---|---|---|
| Target 10: Develop a biodiversity data system and knowledge connected with all sectors, to support decision-making and operation | GBT 21: Knowledge Management, Awareness-Raising, Education and Research | Goal A, B, C and D<br>All GBF targets | GBF target 19 | SDG targets 14.a, 17.6, 17.7 and 17.18 |
| in biodiversity management, and raise public awareness regarding biodiversity and ecosystem. | GBT 22: Equitable, Inclusive, and Effective Participation in Decision-Making | Goal A, B, C and D GBF targets 1, 3, 5, 9, 13, 21 and 23 (in particular) | GBF targets 21 and 23 | SDG targets 1.4, 5.5, 5.a, 10.2, 10.3, 16.3, 16.7, and 16.10 |
| Target 11: Strengthen and develop capabilities and partnerships, including technology transfer in research, science, and innovation for biodiversity. | GBT 20: Capacity Development and Technical and Scientific Cooperation | Goal A, B, C<br>All GBF targets | GBF target 19 | None |
| Target 12: Develop and improve existing legal tools and regulations to effectively support the achievement of national biodiversity targets. | None<br>Country specific target | Goal C, D<br>All GBF targets | GBF target 22 | None |

# Appendix C

## Roles of Agencies and Sectors Involved in Biodiversity Management

Agencies involved in biodiversity management in Thailand come from five main sectors: government, private sector, educational institutions, civil society, and public sector. Each sector has important roles as follows:

**The government sector** plays a role in formulating policies and plans, measures, and regulations; overseeing their enforcement and implementing actions to conserve, protect, restore, and sustainably utilize of biodiversity. It also enhances knowledge, understanding, and awareness in various sectors of the country.

**The private sector** plays a role in promoting and supporting the conservation, restoration, and sustainable use of biodiversity, integrating biodiversity issues into operational processes, as well as participating in raising awareness and providing knowledge about the conservation, restoration, and sustainable use of biodiversity.

**The education sector** plays a role in studying, researching, and providing education by integrating biodiversity issues into curricula and teaching. It also formulates policies, educational development plans, supports implementation, and provides academic recommendations to various sectors of society.

**The civil society** plays a role in coordinating with both public and private organizations, cooperating with individuals, organizations, agencies, or various groups to promote and support biodiversity conservation and sustainable use. It also participates in raising awareness and educating the public on the conservation, restoration, and sustainable use of biodiversity.

**The public sector** is important as the owner of naturals resources, playing a role in participating in the protection, conservation, restoration, and sustainable use of biodiversity. Additionally, it contributes to data survey and collection, monitoring, and surveillance of natural resources, environment, and biodiversity.

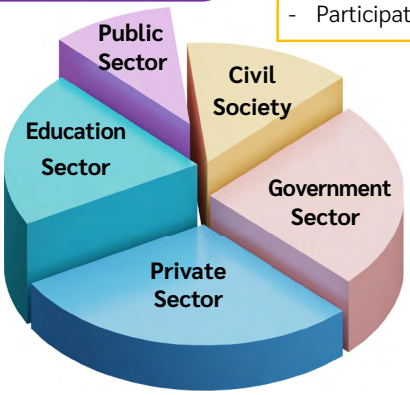
Besides central government agencies, local government units at the regional/district level—such as the environmental and pollution control offices, provincial administrative organizations, municipalities, and sub-district administrative organizations, which are responsible for developing, overseeing, and implementing biodiversity management in their respective areas of responsibility. These local agencies are essential in ensuring effective biodiversity management.

## Roles of Involved Sectors in Biodiversity Management

- Participate in protecting, conserving, restoring, and sustainably using biodiversity.
- Participate in surveying, data collection, monitoring, and surveillance.

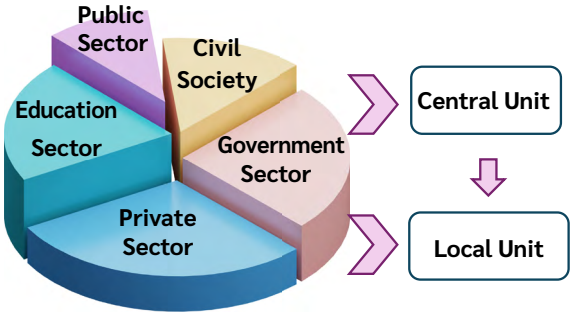
- Coordinate with both public and private organizations, cooperate with individuals, organizations, agencies, or various groups to promote and support sustainable conservation and use of biodiversity.
- Participate in raising awareness and educating.

- Conduct research and education by integrating biodiversity into curricula and teaching , formulating policies, and educational development plans.
- Conduct research, support implementation, and provide academic recommendations.




- Develop policies, plans, measures, and regulations; oversee regulatory compliance; and implement actions to conserve, protect, restore, and sustainably utilize biodiversity.
- Raise awareness and provide knowledge and understanding.

- Promote and support conservation, restoration, and sustainable use of biodiversity.
- Integrate biodiversity issues into operational processes.
- Participate in raising awareness and providing knowledge.




Central Unit

Local Unit

**Regional/District Offices (EPO, Fisheries, Agriculture, Livestock) Develop and oversee policies, and plans at the regional/zone level**

**Province/Provincial Administrative Organization (PAO) Develop, oversee, and implement biodiversity management at the provincial level**

**Municipality/Sub-district Administrative Organization (SAO) Develop, oversee, and implement biodiversity management at the municipal/ sub-district level**

## Central Government Agency

## Responsible Agencies

### Central Government Agency

**Office of the Permanent Secretary for Ministry of Natural Resources and Environment**
Develop strategies and turn policies into plans of action for managing the environment and natural resources.

**Department of Climate Change and Environment**
Propose policies, plans, and drive the management of climate change.

**Pollution Control Department**
Formulate policies and plans to promote and maintain environmental quality in pollution control.

**Department of Marine and Coastal Resources**
Conserve, restore, and manage marine and coastal resources.

**Department Of Mineral Resources**
Preserve, conserve, restore, and manage geological resources.

**Department of Water Resources**
Develop, manage, maintain, restore, and conserve water resources.

**Royal Forest Department**
Conserve, preserve, protect, restore, maintain, promote, cultivate forests, and conduct forestry-related implementations.

**Department of National parks Wildlife and Plant Conservation**
Conserve, promote, and restore forest resources, wildlife, and plant species in forest conservation areas.

**Office of Natural Resources and Environmental Policy and Planning**
Formulate policies and plans for the conservation and management of natural resources and the environment.

**The Botanical Garden Organization**
Conduct research studies and collect data on Thailand's flora.

**The Zoological Park Organization of Thailand**
Conserve wildlife for the purposes of study, research, and reintroduction to nature.

**Forest Industry Organization**
Provide services to the government and public in the forestry industry, and engage in forestry-related businesses.

**Biodiversity-based Economy Development Office (Public Organization)**
Study and analyze data about biological resource-based economic development..

**Thailand Greenhouse Gas Management Organization (Public Organization)**
Establish standards for measuring, reporting, verifying, and certifying greenhouse gas emissions, reductions, and offsets.

### Ministry of Agriculture and Cooperatives

**Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives**
Study, analyze, and prepare information to advise the Minister for use in determining the ministry's policies, goals, and achievements.

**Rice Department**
Conserve of genetic resources and protect of rice varieties

**Royal Irrigation Department**
Develop water sources according to the potential of river basins to ensure sufficiency, and allocate water to all types of users.

**Department of Fisheries**
Study, research, and develop in the field of fisheries.

**Department of Livestock Development**
Determine directions and policies for control, supervision, promotion, research, technology transfer, and development of livestock-related technologies.

**Land Development Department**
Establish policies and plan land usage in agricultural areas.

**Department of Agriculture**
Study, research, and develop plants to obtain improved plant varieties.

**Department of Agricultural Extension**
Promote and develop farmers, farming families, farmer organizations, and community enterprises.

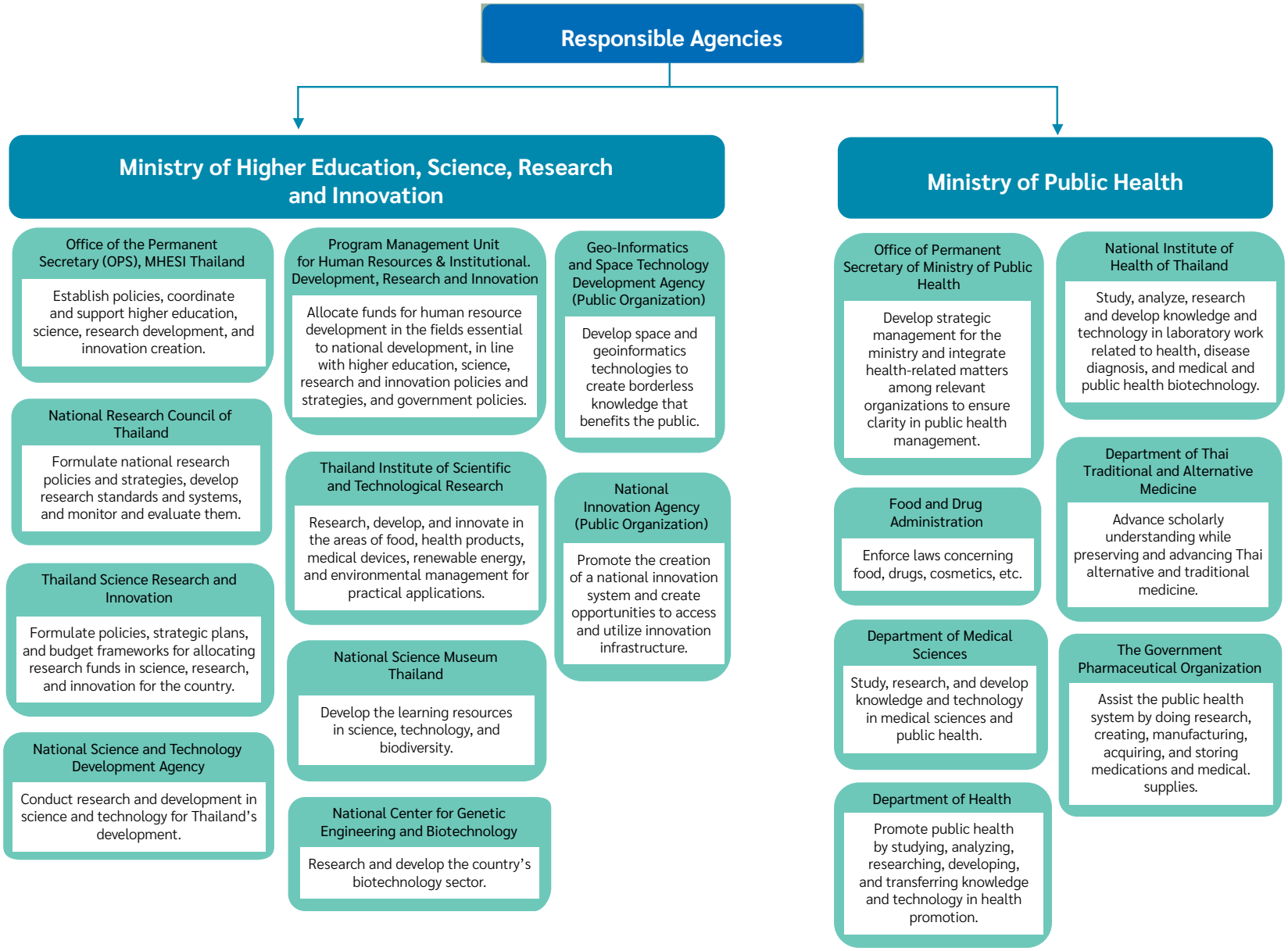
**The Queen Sirikit Department of Sericulture**
Develop varieties, conserve, and protect the genetic resources of silkworms for farmers and community enterprises.

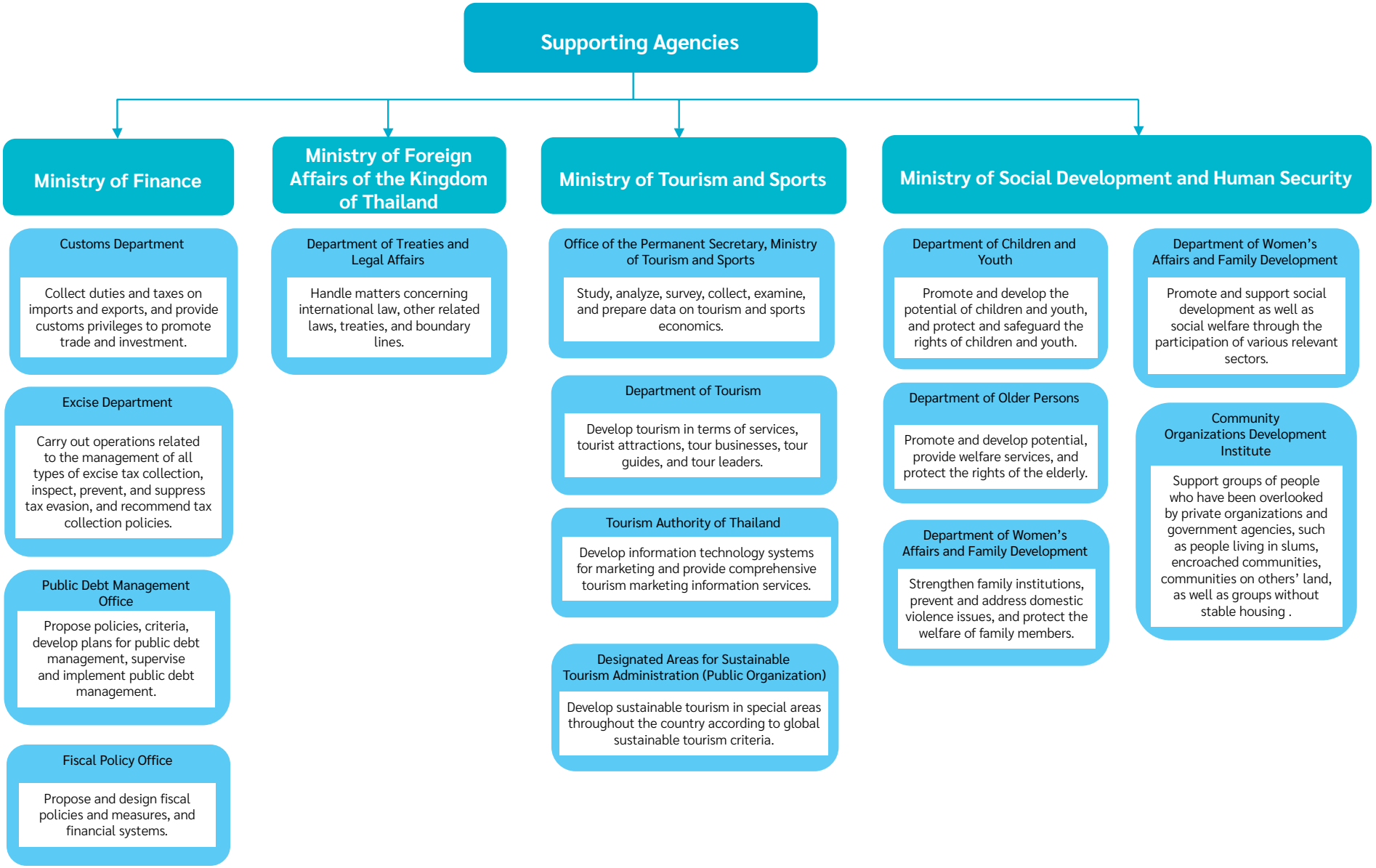
**Office of Agricultural Economics**
Study, analyze, and research about agricultural economics, monitor and evaluate to ensure the country's agriculture is ready for competition in the global market.

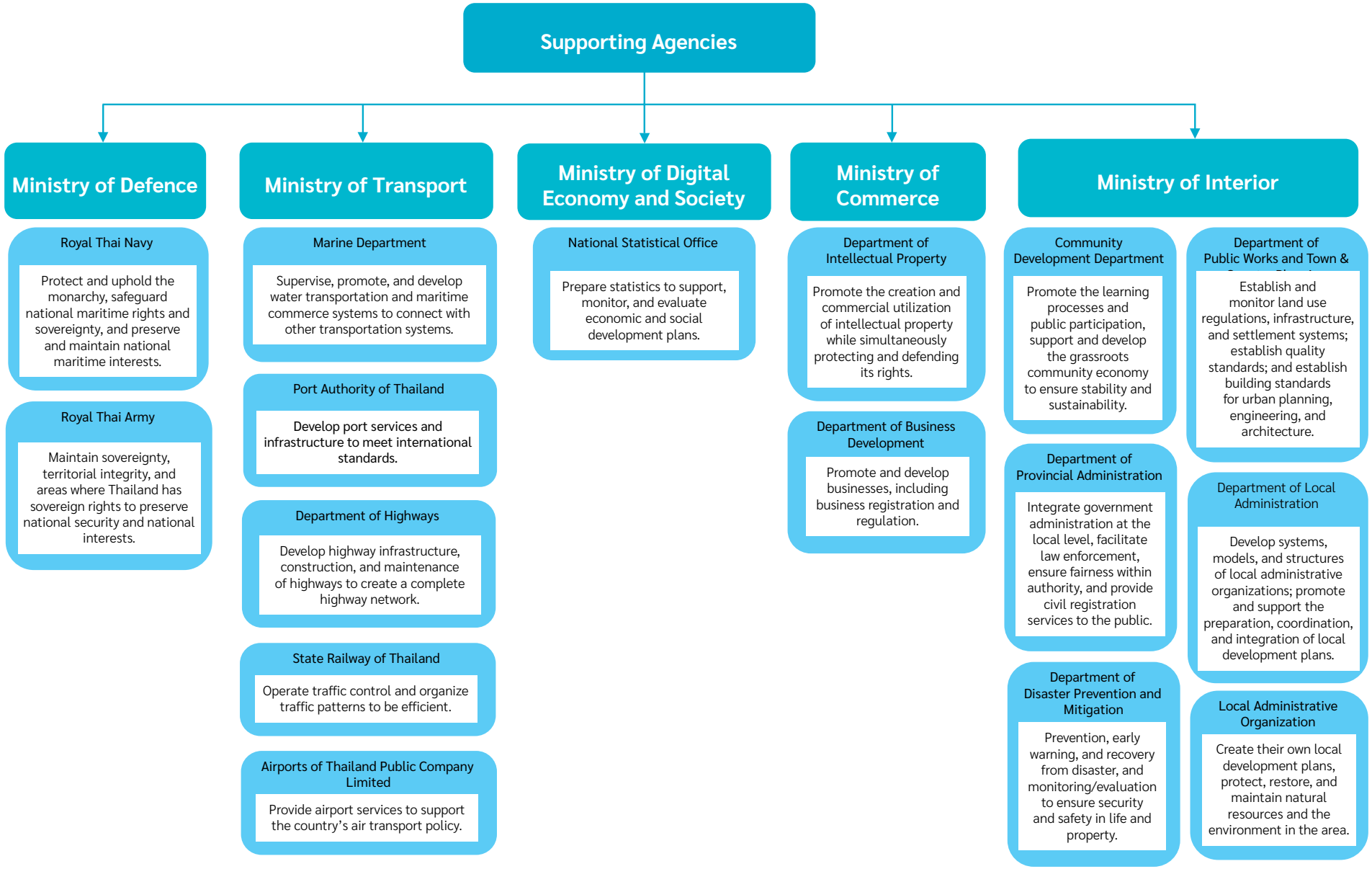
**The Agricultural Research Development Agency (Public Organization)**
Promote, support, and develop agricultural research, and personnel development in agricultural research.

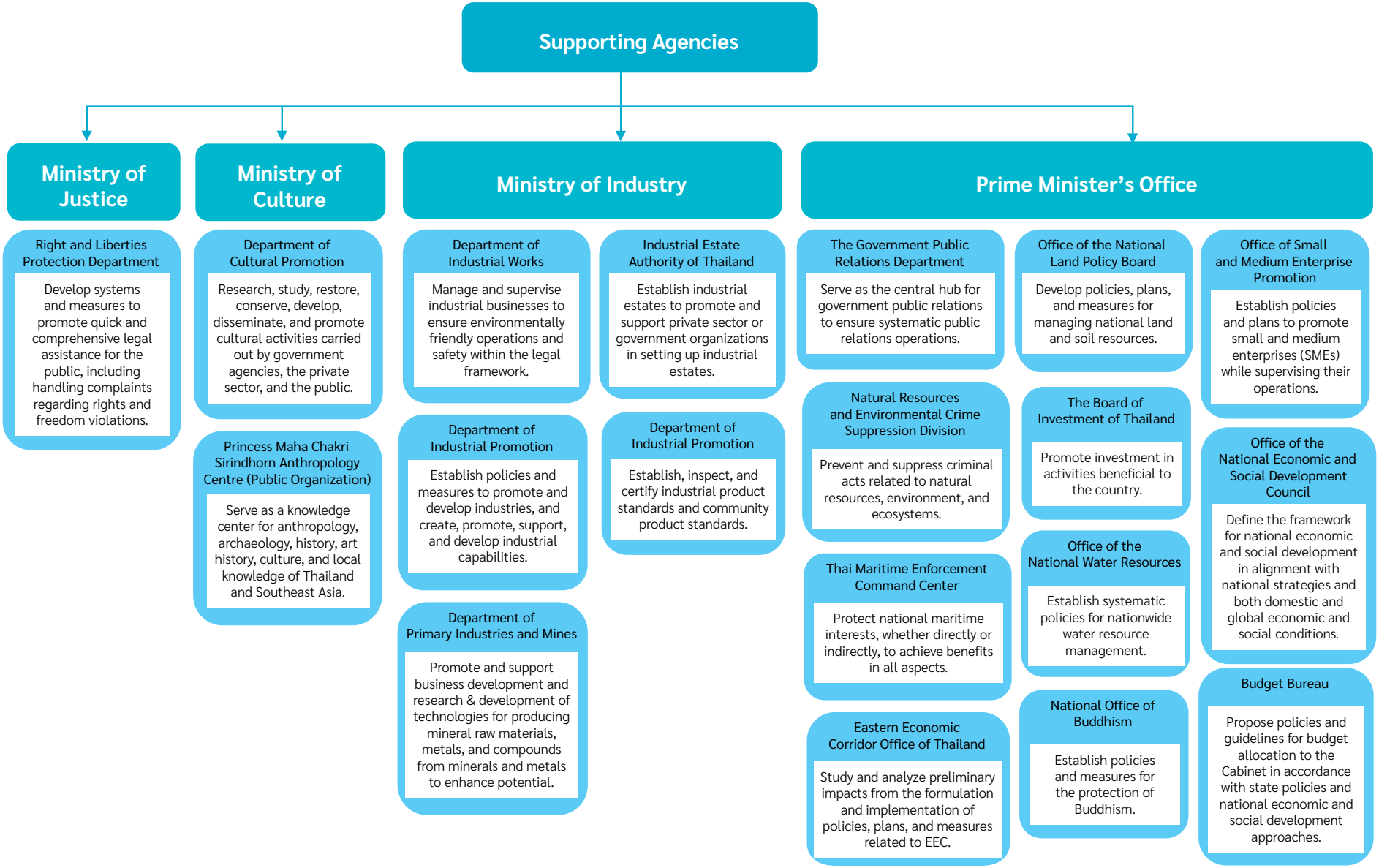
**Highland Research and Development Institute (Public Organization)**
Promote and support research, develop Royal Project initiatives in creating knowledge and new innovations.

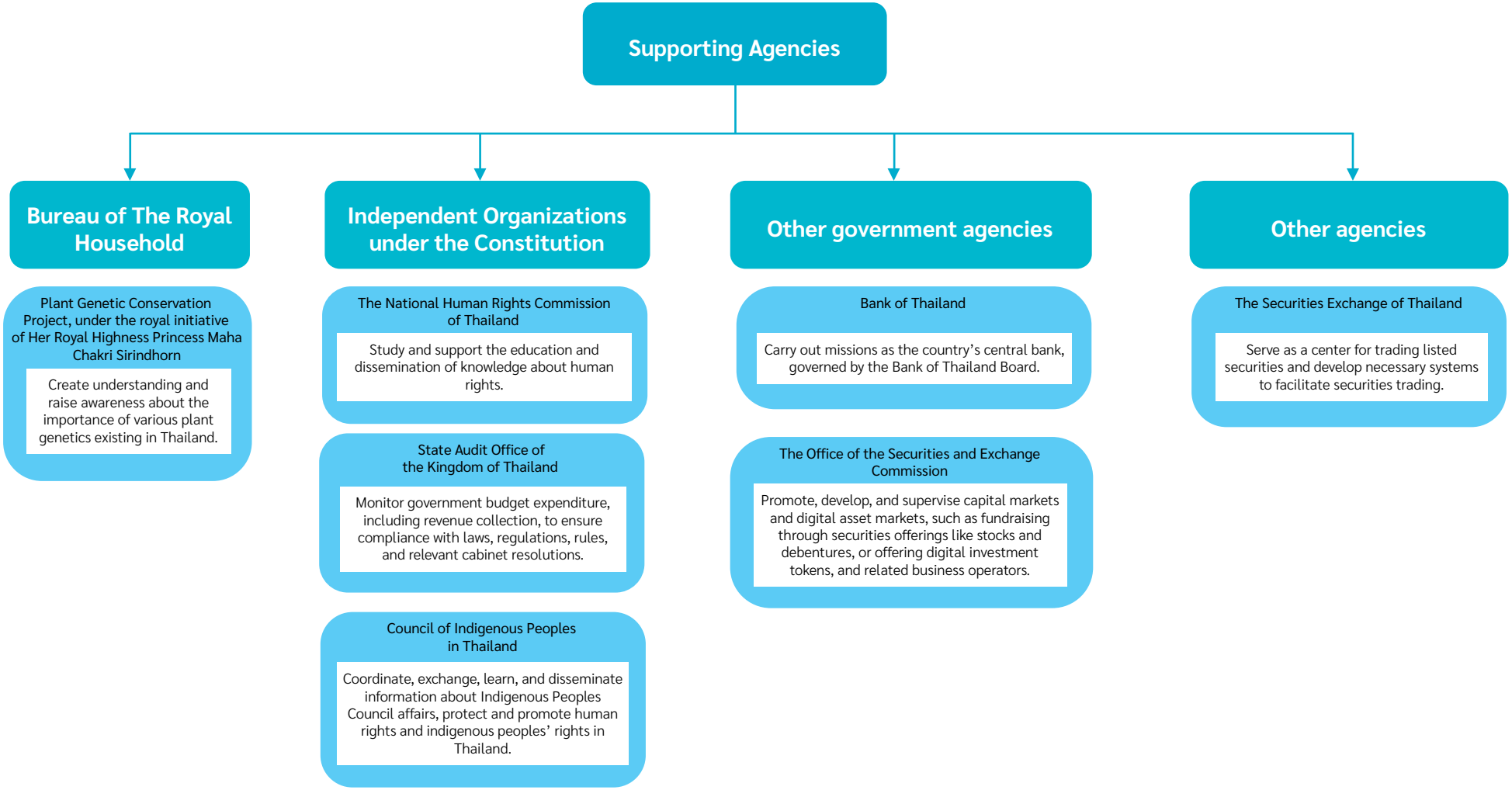
**National Bureau of Agricultural Commodity and Food Standards**
Serve as a central hub for coordinating and developing agricultural product standards in the country to align with international standards.


Responsible Agencies
Ministry of Higher Education, Science, Research and Innovation
Office of the Permanent Secretary (OPS), MHESI Thailand
Establish policies, coordinate and support higher education, science, research development, and innovation creation.
Program Management Unit for Human Resources & Institutional. Development, Research and Innovation
Allocate funds for human resource development in the fields essential to national development, in line with higher education, science, research and innovation policies and strategies, and government policies.
Geo-Informatics and Space Technology Development Agency (Public Organization)
Develop space and geoinformatics technologies to create borderless knowledge that benefits the public.
National Research Council of Thailand
Formulate national research policies and strategies, develop research standards and systems, and monitor and evaluate them.
Thailand Institute of Scientific and Technological Research
Research, develop, and innovate in the areas of food, health products, medical devices, renewable energy, and environmental management for practical applications.
National Innovation Agency (Public Organization)
Promote the creation of a national innovation system and create opportunities to access and utilize innovation infrastructure.
Thailand Science Research and Innovation
Formulate policies, strategic plans, and budget frameworks for allocating research funds in science, research, and innovation for the country.
National Science Museum Thailand
Develop the learning resources in science, technology, and biodiversity.
National Science and Technology Development Agency
Conduct research and development in science and technology for Thailand's development.
National Center for Genetic Engineering and Biotechnology
Research and develop the country's biotechnology sector.
Ministry of Public Health
Office of Permanent Secretary of Ministry of Public Health
Develop strategic management for the ministry and integrate health-related matters among relevant organizations to ensure clarity in public health management.
National Institute of Health of Thailand
Study, analyze, research and develop knowledge and technology in laboratory work related to health, disease diagnosis, and medical and public health biotechnology.
Department of Thai Traditional and Alternative Medicine
Advance scholarly understanding while preserving and advancing Thai alternative and traditional medicine.
Food and Drug Administration
Enforce laws concerning food, drugs, cosmetics, etc.
Department of Medical Sciences
Study, research, and develop knowledge and technology in medical sciences and public health.
The Government Pharmaceutical Organization
Assist the public health system by doing research, creating, manufacturing, acquiring, and storing medications and medical. supplies.
Department of Health
Promote public health by studying, analyzing, researching, developing, and transferring knowledge and technology in health promotion.


Supporting Agencies
Ministry of Finance
Customs Department
Collect duties and taxes on imports and exports, and provide customs privileges to promote trade and investment.
Excise Department
Carry out operations related to the management of all types of excise tax collection, inspect, prevent, and suppress tax evasion, and recommend tax collection policies.
Public Debt Management Office
Propose policies, criteria, develop plans for public debt management, supervise and implement public debt management.
Fiscal Policy Office
Propose and design fiscal policies and measures, and financial systems.
Ministry of Foreign Affairs of the Kingdom of Thailand
Department of Treaties and Legal Affairs
Handle matters concerning international law, other related laws, treaties, and boundary lines.
Ministry of Tourism and Sports
Office of the Permanent Secretary, Ministry of Tourism and Sports
Study, analyze, survey, collect, examine, and prepare data on tourism and sports economics.
Department of Tourism
Develop tourism in terms of services, tourist attractions, tour businesses, tour guides, and tour leaders.
Tourism Authority of Thailand
Develop information technology systems for marketing and provide comprehensive tourism marketing information services.
Designated Areas for Sustainable Tourism Administration (Public Organization)
Develop sustainable tourism in special areas throughout the country according to global sustainable tourism criteria.
Ministry of Social Development and Human Security
Department of Children and Youth
Promote and develop the potential of children and youth, and protect and safeguard the rights of children and youth.
Department of Older Persons
Promote and develop potential, provide welfare services, and protect the rights of the elderly.
Department of Women's Affairs and Family Development
Strengthen family institutions, prevent and address domestic violence issues, and protect the welfare of family members.
Department of Women's Affairs and Family Development
Promote and support social development as well as social welfare through the participation of various relevant sectors.
Community Organizations Development Institute
Support groups of people who have been overlooked by private organizations and government agencies, such as people living in slums, encroached communities, communities on others' land, as well as groups without stable housing .


Supporting Agencies
Ministry of Defence
Royal Thai Navy
Protect and uphold the monarchy, safeguard national maritime rights and sovereignty, and preserve and maintain national maritime interests.
Royal Thai Army
Maintain sovereignty, territorial integrity, and areas where Thailand has sovereign rights to preserve national security and national interests.
Ministry of Transport
Marine Department
Supervise, promote, and develop water transportation and maritime commerce systems to connect with other transportation systems.
Port Authority of Thailand
Develop port services and infrastructure to meet international standards.
Department of Highways
Develop highway infrastructure, construction, and maintenance of highways to create a complete highway network.
State Railway of Thailand
Operate traffic control and organize traffic patterns to be efficient.
Airports of Thailand Public Company Limited
Provide airport services to support the country's air transport policy.
Ministry of Digital Economy and Society
National Statistical Office
Prepare statistics to support, monitor, and evaluate economic and social development plans.
Ministry of Commerce
Department of Intellectual Property
Promote the creation and commercial utilization of intellectual property while simultaneously protecting and defending its rights.
Department of Business Development
Promote and develop businesses, including business registration and regulation.
Ministry of Interior
Community Development Department
Promote the learning processes and public participation, support and develop the grassroots community economy to ensure stability and sustainability.
Department of Provincial Administration
Integrate government administration at the local level, facilitate law enforcement, ensure fairness within authority, and provide civil registration services to the public.
Department of Disaster Prevention and Mitigation
Prevention, early warning, and recovery from disaster, and monitoring/evaluation to ensure security and safety in life and property.
Department of Public Works and Town &
Establish and monitor land use regulations, infrastructure, and settlement systems; establish quality standards; and establish building standards for urban planning, engineering, and architecture.
Department of Local Administration
Develop systems, models, and structures of local administrative organizations; promote and support the preparation, coordination, and integration of local development plans.
Local Administrative Organization
Create their own local development plans, protect, restore, and maintain natural resources and the environment in the area.


Supporting Agencies
Ministry of Justice
Right and Liberties Protection Department
Develop systems and measures to promote quick and comprehensive legal assistance for the public, including handling complaints regarding rights and freedom violations.
Ministry of Culture
Department of Cultural Promotion
Research, study, restore, conserve, develop, disseminate, and promote cultural activities carried out by government agencies, the private sector, and the public.
Princess Maha Chakri Sirindhorn Anthropology Centre (Public Organization)
Serve as a knowledge center for anthropology, archaeology, history, art history, culture, and local knowledge of Thailand and Southeast Asia.
Ministry of Industry
Department of Industrial Works
Manage and supervise industrial businesses to ensure environmentally friendly operations and safety within the legal framework.
Industrial Estate Authority of Thailand
Establish industrial estates to promote and support private sector or government organizations in setting up industrial estates.
Department of Industrial Promotion
Establish policies and measures to promote and develop industries, and create, promote, support, and develop industrial capabilities.
Department of Industrial Promotion
Establish, inspect, and certify industrial product standards and community product standards.
Department of Primary Industries and Mines
Promote and support business development and research & development of technologies for producing mineral raw materials, metals, and compounds from minerals and metals to enhance potential.
Prime Minister's Office
The Government Public Relations Department
Serve as the central hub for government public relations to ensure systematic public relations operations.
Office of the National Land Policy Board
Develop policies, plans, and measures for managing national land and soil resources.
Office of Small and Medium Enterprise Promotion
Establish policies and plans to promote small and medium enterprises (SMEs) while supervising their operations.
Natural Resources and Environmental Crime Suppression Division
Prevent and suppress criminal acts related to natural resources, environment, and ecosystems.
The Board of Investment of Thailand
Promote investment in activities beneficial to the country.
Office of the National Economic and Social Development Council
Define the framework for national economic and social development in alignment with national strategies and both domestic and global economic and social conditions.
Thai Maritime Enforcement Command Center
Protect national maritime interests, whether directly or indirectly, to achieve benefits in all aspects.
Office of the National Water Resources
Establish systematic policies for nationwide water resource management.
Eastern Economic Corridor Office of Thailand
Study and analyze preliminary impacts from the formulation and implementation of policies, plans, and measures related to EEC.
National Office of Buddhism
Establish policies and measures for the protection of Buddhism.
Budget Bureau
Propose policies and guidelines for budget allocation to the Cabinet in accordance with state policies and national economic and social development approaches.


Supporting Agencies
Bureau of The Royal Household
Plant Genetic Conservation Project, under the royal initiative of Her Royal Highness Princess Maha Chakri Sirindhorn
Create understanding and raise awareness about the importance of various plant genetics existing in Thailand.
Independent Organizations under the Constitution
The National Human Rights Commission of Thailand
Study and support the education and dissemination of knowledge about human rights.
State Audit Office of the Kingdom of Thailand
Monitor government budget expenditure, including revenue collection, to ensure compliance with laws, regulations, rules, and relevant cabinet resolutions.
Council of Indigenous Peoples in Thailand
Coordinate, exchange, learn, and disseminate information about Indigenous Peoples Council affairs, protect and promote human rights and indigenous peoples' rights in Thailand.
Other government agencies
Bank of Thailand
Carry out missions as the country's central bank, governed by the Bank of Thailand Board.
The Office of the Securities and Exchange Commission
Promote, develop, and supervise capital markets and digital asset markets, such as fundraising through securities offerings like stocks and debentures, or offering digital investment tokens, and related business operators.
Other agencies
The Securities Exchange of Thailand
Serve as a center for trading listed securities and develop necessary systems to facilitate securities trading.

| Agencies | Roles/Responsibilities |
|---|---|
| **Government agencies** | |
| **Ministry of Natural Resources and Environment** | |
| Office of the Permanent Secretary, Ministry of Natural Resources and Environment | Develop strategies and translate policies into action plans. Establish policies, positions, and guidelines for cooperation with foreign countries and international organizations in natural resource and environmental management. Develop and apply digital technology, information network systems, and remote sensing for administration and services of agencies under the ministry in managing natural resources and the environment. |
| Department of Climate Change and Environment | Propose policies, plans, and drive climate change management. Implement international commitments, then monitor and evaluate climate change operations. Develop and provide knowledge and information services, communicate, raise awareness, and increase the capacity of people to be ready to adapt to climate change and environmental changes. Create cooperation networks and promote multi-sectoral participation in climate change and environmental issues. Additionally,, study, research, develop technologies and innovations related to climate change and the environment. |
| Pollution Control Department | Provide opinions for formulating policies and plans to promote and maintain environmental quality in pollution control. Recommend the establishment of environmental quality standards and pollution control standards from sources. Develop environmental quality management plans and measures to control, prevent, and solve environmental problems caused by pollution. Monitor environmental quality and prepare pollution situation reports. |
| Department of Marine and Coastal Resources | Conserve, restore, and manage marine and coastal resources, including preventing and addressing coastal erosion problems, to ensure the prosperity, balance, and sustainability of Thai seas, thereby strengthening the country's social and economic security. |
| Department of Mineral Resources | Preserve, conserve, restore, and manage geological resources, fossils, environmental geology, and geological hazards. This involves surveying, inspecting, studying, and researching geological conditions and mineral resources, evaluating the potential of mineral resource sites, designating and supervising reserved areas, geological resource conservation areas, and areas at risk of geological hazards. The aim is to maximize benefits while developing mineral resources, the economy, society, and quality of life in sustainable ways. |

| Agencies | Roles/Responsibilities |
|---|---|
| Department of Water Resources | Develop, manage, maintain, restore, and conserve water resources. This includes water allocation, water use, and the prevention and mitigation of damages caused by water resources, which will benefit public utilities and other public interests. |
| Royal Forest Department | Conserve, preserve, protect, restore, maintain, and promote forests, and conduct forestry operations including logging, forest product collection, utilization of forest lands, and other forest and forest industry-related activities in accordance with relevant regulations and laws. This is primarily achieved through strategies that enhance public cooperation, aiming to increase the country's economic value and improve the quality of life for the public. |
| Department of National parks Wildlife and Plant Conservation | Conserve, preserve, protect, restore, maintain, and promote forests, and conduct forestry operations including logging, forest product collection, utilization of forest lands, and other forest and forest industry-related activities in accordance with relevant regulations and laws. This is primarily achieved through strategies that enhance public cooperation, aiming to increase the country's economic value and improve the quality of life for citizens. |
| Office of Natural Resources and Environmental Policy and Planning | Formulate policies and plans for conservation and management of natural resources and the environment. Provide opinions to support the consideration of policies and plans for sustainable conservation and utilization of biodiversity. Also, implement obligations under international agreements related to biodiversity. |
| The Botanical Garden Organization | Implement botanical gardens operations, conduct research and studies, and compile data on Thailand's plant species, biodiversity, and environmental conservation. |
| The Zoological Park Organization of Thailand | Conserve wildlife for study, research, and reintroduction to nature. Promote the well-being of wildlife, provide integrated wildlife learning, develop management and administrative standards, and enhance recreational activities to establish genuine eco-tourism destinations. Additionally, provide education, conservation, and breeding, and operate zoos as recreational places for the public. |

| Agencies | Roles/Responsibilities |
|---|---|
| Forest Industry Organization | Provide services to the government and the public in the forestry industry. Conduct business related to the forestry industry, and engage in industries related to wood or forest products. Establish forest plantations, protect and conserve forests, and restore forests. Research, study, and experiment on products and by-products in the forestry industry. Disseminate knowledge, instill awareness, and raise a sense of responsibility for the protection, conservation, restoration, and development of forest resources. |
| Biodiversity-based Economy Development Office (Public Organization) | Collect, study, analyze, and evaluate data, including the needs related to bio-based economic development, to propose policies and measures related to bio-economy development. Compile and create inventories of plants, animals, and microorganisms native to or found in the country, along with traditional knowledge from communities and localities, to serve as a database for managing the economic use of biodiversity and indigenous wisdom. Promote and support research to advance knowledge on the utilization of biodiversity and wisdom. Support and promote the sustainable use of biodiversity resources for economic benefits alongside conservation to foster research and development of products and services, create business opportunities, and generate income at both community and commercial business levels. |
| Thailand Greenhouse Gas Management Organization (Public Organization) | Oversee and establish standards related to the measurement, reporting, verification, and certification of greenhouse gas emissions, reductions, and offsets. Promote the development of projects and markets for trading certified greenhouse gas quantities. Serve as a central information hub for greenhouse gas-related situations and operations. Promote and develop capabilities, as well as provide advice to government agencies and the private sector regarding greenhouse gas management. |
| **Ministry of Agriculture and Cooperatives** | |
| Office of the Permanent Secretary, Ministry of Agriculture and Cooperatives | Develop strategies, transform ministry policies into action plans, allocate resources, and manage general administration tasks that are not specifically assigned to any particular agency within the ministry. Additionally, supervise, expedite, inspect, and monitor the performance of agencies under the ministry to ensure goal achievement and mission success. |

| Agencies | Roles/Responsibilities |
|---|---|
| Rice Department | Improve and develop rice cultivation to increase yield per area and enhance quality. Focus on variety development, conservation and protection, seed production, inspection, and certification standards. Promote, support, and disseminate knowledge to improve farmers' quality of life. Advance rice processing, and other value-added management strategies, as well as marketing and promotion of local culture and traditional wisdom related to rice. |
| Royal Irrigation Department | Develop water sources and increase irrigated areas according to the potential of river basins to achieve balance. Implement integrated water management to ensure sufficiency, accessibility, and fairness. Prevent water-related damages and enhance public participation in water resource development processes. |
| Department of Fisheries | Study, research, and develop fisheries for the management of aquatic resources. Regulate fisheries and ensure the production of aquatic animals and fishery products that meet hygiene standards, ensuring sufficient quantity for domestic consumption and competitiveness in the global market. Prevent illegal fishing, conserve, and manage fishery and aquatic resources for sustainable use. |
| Department of Livestock Development | Determine directions and policies for the regulation, supervision, promotion, research, technology transfer, and development of livestock-related technologies. Manage genetic resources and biodiversity in livestock to ensure sufficient animal quantity that meets hygienic standards, is free from diseases, residues, and contaminants, and is safe for consumers and the environment. Additionally, enhance competitiveness at the international level. |
| Land Development Department | Formulate policies and plan land use in agricultural areas, conduct soil surveys and classification, and designate land use zones. Implement soil and water conservation and soil improvement. Produce maps and conduct land censuses, providing service and technology transfer in land development to increase agricultural productivity and ensure sustainable land use. |
| Department of Agriculture | Study, research, and develop plants to obtain improved varieties in order to transfer plant production technology to target groups in the public and private sectors, as well as farmers. Provide analysis, testing, inspection, certification, and advice services related to soil, water, fertilizers, plants, agricultural materials, plant products, and by-products to support the export of quality agricultural goods. |

| Agencies | Roles/Responsibilities |
|---|---|
| Department of Agricultural Extension | Promote and develop farmers, farming families, farmer organizations, and community enterprises. Enhance production potential, processing, value addition, and quality improvement of agricultural goods and products through study, research, development, and establishment of measures and guidelines for agricultural promotion. Additionally, transfer agricultural technology and provide agricultural services. |
| The Queen Sirikit Department of Sericulture | Develop varieties, conserve and protect genetic resources of silkworms, inspect and certify mulberry and silk standards. Promote, support, and disseminate knowledge about sericulture. Additionally, build value and promote the identity of silkworms. |
| National Bureau of Agricultural Commodity and Food Standards | Establish agricultural and food product standards as needed, develop and improve accreditation systems for agricultural and food product standards in alignment with market conditions and international guidelines. Develop systems and create networks for legal compliance, and promote and drive participatory implementation of standards throughout the value chain. |
| Office of Agricultural Economics | Propose policies, measures, and plans for agricultural and cooperative development. Provide accurate, rapid, and comprehensive agricultural information services by studying, analyzing, and researching agricultural economics, monitoring, and evaluating to ensure the country's agriculture is ready for global market competition and to improve farmers' quality of life. |
| Highland Research and Development Institute (Public Organization) | Promote and support the Royal Project's research and development in order to create knowledge and innovations, and position the Royal Project as a model and learning hub for sustainable highland development. Strengthen cooperation networks and exchange research and development of highland areas both domestically and internationally to become a center for highland development and King's philosophy research, development, and education. Increase the Royal Project's success by developing and uplifting remote highland communities following the Royal Project guidelines. |
| The Agricultural Research Development Agency (Public Organization) | Promote, support, and develop agricultural research and human resources in agricultural research. Studying, researching, developing, and disseminating agricultural data and information are included. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Ministry of Higher Education, Science, Research and Innovation** | |
| Office of the Permanent Secretary (OPS), MHESI Thailand | Formulate policies, coordinate and support higher education, science, research development, and innovation creation for business competition, alongside human development. Create positive impacts on the economy and society, eliminate poverty at the local level, and strengthen national competitiveness. Additionally, develop Thai citizens with essential skills and knowledge, ensuring income security and improved quality of life. |
| National Research Council of Thailand | Formulate national research policies and strategies, develop research standards, research systems, and conduct monitoring and evaluation. Serve as a central research database with a nationwide information network to support government recommendations and stakeholder services. Promote research cooperation both domestically and internationally. Encourage and support research, invention, innovation, and technology transfer to society, industry, and commercial sectors. |
| Thailand Science Research and Innovation | Develop policies, strategic plans, and budget frameworks for allocating research funds in science, research, and innovation for the country. Study the overall situation of research and innovation, creating cooperation with agencies both domestically and internationally. |
| National Science and Technology Development Agency | Research, develop, and implement engineering projects, and support research, development, and engineering of government, private sector, and educational institutions. Promote the development of scientific and technological infrastructure of the country, including developing human resources in science and technology. Support services in product quality analysis and testing, standard calibration, and equipment accuracy. |
| National Center for Genetic Engineering and Biotechnology | Conduct biotechnology research and development, prepare the nation's biotechnology-related infrastructure, develop cooperation with network institutions, the private sector, and foreign countries, and transfer relevant technology to public and industrial sectors. |
| Program Management Unit for Human Resources & Institutional. Development, Research and Innovation | Allocate funding for human resource development in fields necessary for national policies and strategies in higher education, science, research, and innovation, as well as government policies. This includes providing scholarships, researcher support funds, funding for developing higher education, institutions, research and innovation institutes, and support for scientific and technological infrastructure development. |

| Agencies | Roles/Responsibilities |
|---|---|
| Thailand Institute of Scientific and Technological Research | Integrate research, development, and innovation in food, health products, medical devices, renewable energy, and environmental management for practical application. Provide scientific and technological services in analysis, testing, calibration, system quality certification, and consulting services with international quality standards. Drive research, innovation, and services that meet the needs of target groups in both production and service sectors for self-reliance in the country and aim towards ASEAN with strong business and marketing management. |
| National Science Museum Thailand | Promote learning and capacity development for youth and the general public by fostering knowledge, understanding, and awareness of the importance of science, technology, and innovation. Encourage lifelong learning to enhance knowledge and skills in these fields, keeping pace with rapid changes. Additionally, prepare individuals of all ages with the knowledge, skills, and experience necessary to become key contributors to national development. |
| Geo-Informatics and Space Technology Development Agency (Public Organization) | Develop space and geoinformatics technologies to create knowledge that benefits the public. Study and analyze data from satellite imagery and serve as a geoinformatics data center for satellite data and survey data from other sources. Provide services of data obtained from space and geoinformatics technologies, including mapping and other related services. Procure tools, design, or provide any services using knowledge of space and geoinformatics technologies for government agencies. Provide consultation and develop personnel in space and geoinformatics technologies. Study, research, develop, and conduct other related or continuous activities with space and geoinformatics technologies, including procurement, development, and creation of satellite systems. Promote cooperation and provide services in space and geoinformatics technologies both domestically and internationally. |
| National Innovation Agency (Public Organization) | Promote the creation of a national innovation system and create opportunities to access and utilize innovation infrastructure. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Ministry of Public Health** | |
| Office of Permanent Secretary of Ministry of Public Health | Formulate policies, goals, and achievements of the ministry to align with the Royal Initiatives, government policies, and national circumstances. Drive policy implementation through strategic and operational plans to promote health development and integration among relevant organizations. Ensure clarity in public health management during normal conditions, emergencies, or crises. Protect consumer rights and foster participation between the public and private sectors. |
| Department of Thai Traditional and Alternative Medicine | Develop academic knowledge in Thai traditional medicine and alternative medicine by protecting, conserving, and promoting Thai traditional medicine wisdom. Promote and develop knowledge systems and create standards in Thai traditional medicine and alternative medicine to be on par with modern medicine and to be used in the health system with quality and safety, providing options for people in health care. |
| Department of Medical Sciences | Determine and develop quality standards, systems, and methods for analyzing health-related products, including food, drugs, narcotics, psychotropic substances, volatile substances, cosmetics, medical devices, radiation, hazardous public health materials, biologics, herbs, and disease diagnostics. Conduct research and develop knowledge and technology in medical and public health sciences to improve health products, assess risks, and provide health hazard warnings. |
| Department of Health | Promote public health by studying, analyzing, researching, developing, and transferring knowledge and technology in health promotion, managing health risk factors, and managing environmental health conducive to good health. This includes health impact assessments, focusing on empowering people with knowledge and skills in self-care, family, and community care. Support regional agencies, local government organizations, and network partners from both public and private sectors to participate in health promotion and environmental health management to promote good health for all Thai citizens. |
| National Institute of Health of Thailand | Study, analyze, research, and develop knowledge and technology in laboratory work related to health, disease diagnosis, and medical and public health biotechnology. Develop systems and set standards for laboratory analysis in health, disease diagnosis, and medical and public health biotechnology. |

| Agencies | Roles/Responsibilities |
|---|---|
| Food and Drug Administration | Implement laws concerning food, drugs, cosmetics, hazardous substances, psychotropic substances, narcotics, medical devices, prevention of volatile substance abuse, and other related laws. This includes monitoring, regulating, and inspecting the quality standards of products, establishments, and advertising, as well as adverse effects of products. Additionally, monitor or surveil health product information from both domestic and international sources. |
| The Government Pharmaceutical Organization | Produce, distribute, and provide health products that meet international standards. This includes researching and developing new drugs and medical supplies to meet societal needs and necessities. Additionally, maintain reserves of medicines and medical supplies for emergencies to ensure national security. |
| **Ministry of Finance** | |
| Customs Department | Facilitate trade and customs control to protect society, the economy, and the environment., Collect duties and taxes from imports and exports, and provide customs privileges to promote trade and investment. |
| Excise Department | Collect excise tax as government revenue on specific goods and services that have special necessity. Conduct inspections, prevent, and suppress violations of excise laws. |
| Public Debt Management Office | Propose policies and guidelines, develop plans for public debt management, as well as supervise and oversee its administration, including debts incurred by government agencies or state enterprises, or loans guaranteed or re-lent by the Ministry of Finance. This includes overseeing compliance with legally binding agreements and related regulations while monitoring and evaluating outcomes. Support fundraising for environmental projects through the issuance of green bonds and sustainability bonds, ensuring efficient resource allocation to create positive environmental and social impacts. |
| Fiscal Policy Office | Propose and design fiscal and financial systems, macroeconomic, and international economic policies and measures for the Ministry of Finance to promote sustainable development. Develop standardized and modernized management systems based on good governance principles. Additionally, enhance knowledge, understanding, and acceptance of policies and achievements among target groups, individuals, and organizations both domestically and internationally. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Ministry of Foreign Affairs** | |
| Department of Treaties and Legal Affairs | Responsible for matters related to international law, other relevant laws, treaties, and national border issues, as well as compiling studies, conducting research, monitoring, and analyzing trends and developments in international law within the framework of the United Nations and international organizations. |
| **Ministry of Tourism and Sports** | |
| Office of the Permanent Secretary of Ministry of Tourism and Sports | Serve as the ministry's administrative center in developing strategic master plans for tourism, sports, and recreation development. Operate the information technology system development and serve as the central data center to support the ministry's administration and provide research services to government agencies and the public. |
| Department of Tourism | Develop tourism in the areas of travel services, tourist attractions, tour businesses, tour guides, tour leaders, tourism industry standards, and safety measures. Support foreign film production in the country in accordance with the National Tourism Policy, the Tour Business and Guide Act, and the Film and Video Act, specifically related to film production. Ensure that tourism development benefits the economy, society, culture, natural resource conservation, and the environment while promoting sustainable tourism. |
| Tourism Authority of Thailand | Promote marketing and public relations to expand quality market base and build confidence to deliver value and tourism experiences in Thailand. Create standardized tourism products with quality and responsibility towards society and the environment to increase tourist spending. Drive the tourism ecosystem to be ready to sustainably accommodate quality tourists. Develop marketing information technology systems and comprehensive tourism marketing data services to meet tourist needs. Strengthen TAT (Tourism Authority of Thailand) as a high-performance organization based on innovation and good governance. |
| Designated Areas for Sustainable Tourism Administration (Public Organization) | Develop integrated tourism areas by serving as a central organization responsible for policies and strategic planning. Coordinate with local authorities or tourism destinations, or promote and develop high-potential areas to achieve quality tourism management. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Ministry of Social Development and Human Security** | |
| Department of Children and Youth Affairs | Promote and develop the potential of children and youth, protect children, and uphold the rights of children and youth,, and promote the welfare of children and families by formulating policies, measures, and mechanisms to support both the public and private sectors. Monitor and evaluate the implementation of specified policies and measures to ensure that children and youth have good quality of life and security in their livelihood. |
| Department of Older Persons | Promote and develop potential, provide welfare services, and protect the rights of the elderly by proposing policies, developing academic work on measures, mechanisms, knowledge, and innovation under the integrated cooperation of all relevant sectors to ensure good quality of life and strengthen security guarantees in the lives of the elderly. |
| Department of Women's Affairs and Family Development (DWF) | Develop the women's potential, promote gender equality and equity, support and strengthen families, and protect the rights of women, rights of gender non-conforming individuals, and family members. Strengthen family institutions, prevent and address domestic violence, protect the welfare of family members, and ensure fair investigation, compensation, and remedies for gender-based discrimination. Additionally, protect and develop the careers of those affected by prostitution. |
| Department of Social Development and Welfare | Social development, social welfare services, social work, rights protection, and the provision of social welfare services to the homeless, beggars, members of self-reliant settlements, highland communities, and special target groups. This includes promoting and supporting social development and welfare through the participation of relevant sectors and organizing activities under special projects. |

| Agencies | Roles/Responsibilities |
|---|---|
| Community Organizations Development Institute (Public Organization) | Operate to support and assist community organizations and networks in areas such as employment, career development, income generation, housing and environmental improvement, and overall livelihood enhancement for community members in both urban and rural areas, following holistic or integrated development principles. |
| **Ministry of Defense** | |
| Royal Thai Army | Promote and support operations in environmental conservation, human resource development, area development, and environmental management in military zones, contributing to the security of society, economy, politics, environmental conditions, and natural resources, primarily for national interests. |
| Royal Thai Navy | Support and conduct activities related to environmental preservation, conservation, and restoration of coastal environments, marine environments, and marine life, and protect national maritime interests, as well as maintain internal peace and order. |
| **Ministry of Transport** | |
| Marine Department | Regulate, promote, and develop water transportation systems and maritime commerce to connect with other transportation systems, including passenger and cargo transport, ports, shipyards, Thai fleet operations, and related activities, to provide convenient, comprehensive, and safe services to the public, as well as strengthen the export sector. |
| Department of Highways | Carry out activities related to expressways, national highways, and concession roads, as well as other relevant laws. Conduct research and development in construction, restoration, and maintenance. Cooperate and coordinate with relevant organizations and agencies both domestically and internationally. Additionally, study and analyze data, prepare environmental assessment reports, and conduct preliminary environmental impact assessments for highway projects. Provide environmental education to promote and support sustainable highway development. |

| Agencies | Roles/Responsibilities |
|---|---|
| Port Authority of Thailand | Develop port services and infrastructure to meet international standards to support and drive the economic system while promoting national competitiveness. Emphasize environmental impacts alongside port operations by preparing for challenges related to greenhouse gas emissions, which contribute to Thailand's environmental goals. |
| State Railway of Thailand | Plan, direct, control, supervise, and manage operations while proposing policies and action plans for electric train services according to international standards. Oversee train operation control and service patterns to ensure efficiency. |
| Airports of Thailand Public Company Limited | Serves as Thailand's national airport management organization that prioritize community, social, and environmental responsibility alongside airport business operations, with a strong commitment to sustainable development. |
| **Ministry of Digital Economy and Society** | |
| National Statistical Office | Prepare statistics to support, monitor, and evaluate economic and social development plans; create indices, indicators, trend data, and forecasts of economic and social conditions; analyze, develop, and promote the use of data, statistical trends, and forecasts of economic and social conditions to support policies and strategies. |
| **Ministry of Commerce** | |
| Department of Business Development | Promote and develop businesses, including registration services and promotion of trade associations and chambers of commerce transferred from the Department of Internal Trade. Additionally, it has new missions, including the promotion of service businesses and e-commerce, which are integrated with its original missions of business registration, business supervision, and business services. |
| Department of Intellectual Property | Promote the creation and commercial utilization of intellectual property while ensuring the protection and enforcement intellectual property rights to enhance trade competitiveness and national economic development. |
| **Ministry of Interior** | |
| Department of Provincial Administration | Integrate government administration at the local level, uphold and honor the nation's main institutions, foster reconciliation and unity, enforce law, and ensure justice within the scope of authority. Provide civil registration services for the public, manage technology systems, develop a centralized database,and enhance organizational efficiency. Strengthen the roles in supervising local administrative organizations. |

| Agencies | Roles/Responsibilities |
|---|---|
| Community Development Department | Promote learning processes and public participation while supporting and developing a stable and resilient grassroots community economy. Facilitate the collection and utilization of information, conduct studies, analyses, and research, and formulate community strategies. Provide training and development for personnel involved in community development to create sustainable and strong communities. |
| Department of Disaster Prevention and Mitigation | Develop master plans, establish measures, promote and support prevention, mitigation, and recovery from disasters by setting safety policies, creating prevention systems, warning systems, post-disaster recovery, and monitoring and evaluation to ensure security and safety of life and property. |
| Department of Public Works and Town & Country Planning | Civil engineering, design, construction, and building supervision. Support and assist local administrative organizations in urban and rural development by establishing and supervising land use policies, settlement systems, and infrastructure. Establish quality and construction standards in architecture, engineering, and urban planning to ensure a safe, orderly, and well-organized built environment. Establish public safety standards, orderly urban development, and adherence to proper urban planning systems, leading to sustainable development. |
| Department of Local Administration | Develop the systems, models, and structures of local administrative organizations. Promote and support the formulation, coordination, and integration of local development plans while establishing systems for monitoring and evaluating their implementation. Draft, amend, and improve relevant laws and regulations, as well as provide consultation, guidance, and supervision to ensure compliance with assigned responsibilities. Set guidelines and prepare general standards for personnel administration in local governance. Promote, support, and coordinate financial management, budgeting, procurement, revenue collection, and commercial operations of local administrative organizations. Facilitate and enhance public service management while encouraging public sector participation in the administration and monitoring of local administrative organizations. Develop information technology systems to improve the efficiency and effectiveness of local administrative organizations services. |

| Agencies | Roles/Responsibilities |
|---|---|
| Local Administrative Organization | Develop local development plans, protect, restore, and maintain natural resources and the environment in the area, including the sustainable use of natural resources. Oversee public spaces, maintain roads, waterways, and drainage systems and ensure orderliness while preventing and addressing pollution. Monitor, inspect, and safeguard the environment while promoting public participation in local development and natural resource management. Promote knowledge and understanding about the environment among local residents and organizational members. |
| **Ministry of Justice** | |
| Department of Rights and Liberties Protection | Develop systems and measures to promote that citizens receive legal assistance promptly and equitably. Handle complaints related to violations of rights and freedom, provide legal advice and consultation, and refer cases to relevant agencies when necessary. Additionally, collect and analyze legal case data to improve and amend laws, and regulations, and policies related to the protection of rights and freedoms. Monitor and evaluate the effectiveness of rights and freedoms protection operations. |
| **Ministry of Culture** | |
| Department of Cultural Promotion | Promote and preserve Thai culture through education, research, investigation, restoration, conservation, development, and dissemination, as well as support government agencies, private sectors, and citizens working in cultural activities, as well as coordinate and facilitate cultural exchanges. |
| Princess Maha Chakri Sirindhorn Anthropology Centre (Public Organization) | A knowledge center for anthropology, archaeology, history, art history, culture, and local wisdom of Thailand and Southeast Asia. The functions are to collect and record knowledge in various forms, support the creation of new knowledge, and disseminate research findings to the public. |
| **Ministry of Industry** | |
| Department of Industrial Works (DIW) | Manage and regulate industrial businesses to ensure environmentally friendly, safe, and legally compliant in line with national laws and international agreements. Promote and support industrial operations in areas such as business management, production processes, machinery capitalization, energy management, pollution control, and hazardous materials management through technology and innovation for sustainable industrial and social development. |

| Agencies | Roles/Responsibilities |
|---|---|
| Department of Industrial Promotion | Provide recommendations for policies and measures to promote and develop industries. Support, enhance, and strengthen the capabilities of industries, small and medium enterprises (SMEs), community enterprises, entrepreneurs, and industrial service providers. Foster collaboration between public and private sector organizations related to workforce development, management, technology advancement, and academic research. |
| Department of Primary Industries and Mines | Promote and support business development and technological research and development in the production of metal ore raw materials, minerals, and metal compounds to achieve potential that meets industrial raw material demands. In addition, enhance and increase the efficiency of licensing and supervision systems for mineral industry and basic industry operations to ensure legal compliance with standards through modern, transparent, quick processes and technologies. |
| Thai Industrial Standards Institute | Establish, inspect, and certify industrial product standards, community product standards, and other relevant standards as assigned.. Control, promote, support, and develop industrial and community products to gain acceptance, enhancing the competitiveness of Thai industries in the global market. In addition, protect the environment and ensure consumers rights are upheld, providing fairness, safety, and security life and property. |
| The Industrial Estate Authority of Thailand | Establish industrial estates to promote and support private sectors or government organizations in setting up industrial estates or engaging in other beneficial businesses related to the Estate Authority of Thailand (IEAT). Provide and offer essential public facilities and services necessary for industrial operations, as well as promote and support private investment and services in utility systems and public facilities essential for industrial operations. In addition, establish environmental management systems and industrial accident prevention and mitigation measures. Grant and approve industrial operations within industrial estates, offering additional benefits, incentives, and facilitation for industrial operations. |
| **Prime Minister's Office** | |
| Government Public Relations Department | The central government public relations agency that ensures systematic communications. It provides policy recommendations on public relations to the government and various agencies and implements public relations efforts to ensure citizen participation in national development and promote Thailand's positive image. |

| Agencies | Roles/Responsibilities |
|---|---|
| Natural Resources and Environmental Crime Suppression Division | Prevent and suppress criminal activities related to natural resources, the environment and ecosystems, especially those occurring within national parks and forests, including forest and wildlife protection, investigation of illegal logging operations and wildlife trafficking networks, as well as preventing and suppressing activities that damage ecosystems and the environment, such as illegal disposal of chemical waste or hazardous substances, unauthorized construction, and other related environmental violations. |
| Thailand Maritime Enforcement Coordination Center | Protect and maintain national maritime interests, both directly and indirectly, to ensure comprehensive benefits across multiple domains, including security, economy, society, science and technology, natural resources, and environmental preservation. |
| Office of the Eastern Special Development Zone Policy Committee | Study and analyze the preliminary impacts of the implementation of policies, plans, and measures related to the development of the Eastern Economic Corridor (EEC), including approaches or measures to prevent, mitigate, or compensate for such impacts. Present findings to the policy committee, oversee, track, and report progress in the development of the EEC to the policy committee. Examine the feasibility and suitability of establishing special economic promotion zones, and invest or co-invest with individuals both domestically and internationally for business activities that are beneficial to the development of the EEC and special economic zones. |
| National Land Policy Committee Office | Develop and implement national policies, plans, and measures for land and soil resource management; ensure fair access to land management opportunities based on area potential; enhance management efficiency through improved mechanisms and tools; coordinate stakeholder cooperation in policy implementation; and strengthen organizational and personnel capabilities to achieve high-performance status. |
| Office of the Board of Investment | Promote investments that benefit national development by providing investment incentives and privileges, creating supportive investment conditions, facilitating investment services, and strengthening the country's overall economic and social system. |
| Office of National Water Resources | Formulate systematic national water resource management policies, screen water-related programs and projects for alignment with national strategies, monitor and evaluate water resource management effectiveness, and promote integrated management and stakeholder participation based on good governance principles. |

| Agencies | Roles/Responsibilities |
|---|---|
| National Office of Buddhism Thailand | Establish policies and measures for protecting Buddhism, maintain Buddhist temples and artifacts to develop knowledge alongside moral values, support Buddhist propagation both domestically and internationally, and develop Thailand's role as a world Buddhist center. |
| Office of Small and Medium Enterprises Promotion | Formulate SME promotion policies and plans, establish criteria for SME classification in accordance with economic and social conditions, and coordinate action plans with government agencies, state enterprises, and relevant private organizations for effective SME development. |
| Office of the National Economic and Social Development Council | Establish national economic and social development frameworks aligned with national strategies and global conditions; draft national development plans; provide advisory services to the Prime Minister and Cabinet on development implementation and legal reforms; and oversee state enterprise budget proposals for fixed assets and development expenditures, submitting recommendations for Cabinet approval. |
| Bureau of the Budget | Implement budgetary laws, propose allocation policies, prepare national budgets with fiscal discipline, manage budget allocation efficiently, and monitor and evaluate budget implementation while ensuring alignment with national economic and social development goals and providing regular performance reports to the Cabinet. |
| **The Bureau of the Royal Household** | |
| Plant Genetic Conservation Project under the Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn | It was founded with the goal of increasing understanding and awareness of the importance of various plant species in Thailand, as well as developing activities that stimulate collaboration and practical application, all of which will benefit Thai citizens. This includes creating a widespread plant genetic database system that is easily accessible and integrated across the country in order to promote the protection of national resources such as biological, physical, cultural, and intellectual. The knowledge gained from studying plant species research and biodiversity will serve as the foundation for scientific understanding that leads to long-term conservation and development, according with the Philosophy of Sufficiency Economy. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Independent Constitutional Organizations** | |
| Office of the National Human Rights Commission | Study and support the education and dissemination of knowledge about human rights, and coordinate with government agencies, non-governmental organizations, or other organizations in human rights matters to implement human rights protection. |
| Office of the Auditor General | Audit government budget expenditures and revenue collection to ensure compliance with laws, regulations, rules, and relevant cabinet resolutions. Examine budget spending for value, achievement of objectives, and efficiency. |
| Council of Indigenous Peoples in Thailand | Coordinate, exchange, learn, and disseminate information about Indigenous Peoples' Council affairs. Protect and promote human rights and indigenous peoples' rights in Thailand, including conservation, promotion, and restoration of indigenous identity, languages, cultural heritage, wisdom, and traditional livelihood areas. Protect and promote occupations and environmental management in accordance with cultural ways of life. In addition, promote and support conflict management and peaceful coexistence. |
| **Other government agencies** | |
| Bank of Thailand | Carries out its mission as the country's central bank, with the Bank of Thailand Board (BOT Board) overseeing general operations within their authority framework, to achieve objectives of maintaining financial stability, financial institution system stability, and payment systems stability. |
| Securities and Exchange Commission | Promote, develop, and regulate the capital markets and digital asset markets, such as fundraising through securities offerings like stocks and bonds, or the offering of digital tokens for investment, and related business operators. |
| **Other independent organizations** | |
| Stock Exchange of Thailand | Serves as the central securities trading hub and develops necessary systems to facilitate the securities trading, as well as conducts any business related to securities trading, such as functioning as a clearing house, securities depository center, securities registration, or other related activities. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Education sector** | |
| Educational institute | Conduct research, provide integrated education, develop learning curricula and instruction, and formulate policies and educational development plans for educational institutes in alignment with the policies and plans of the Ministry of Education and the Ministry of Higher Education, Science, Research, and Innovation. |
| **Private sector** | |
| Private sector: for example, private sector organizations such as Global Compact Network Thailand (GCNT), The Federation of Thai Industries (FTI), Thai Chamber of Commerce (TCC), Thai Listed Companies Association (TLCA), The Stock Exchange of Thailand (SET), and private companies both listed on the stock exchange and registered with the Department of Business Development. | Promote and support the conservation and sustainable use of biodiversity, as well as raise awareness and provide knowledge and understanding about the value and importance of biodiversity, via exhibitions, projects, or activities to disseminate work related to biodiversity. Additionally, support efforts to prevent and solve problems, restore environmental quality, and create consciousness in preserving natural resources and biodiversity. |

| Agencies | Roles/Responsibilities |
|---|---|
| **Civil Society Organization (CSO)** | |
| Civil Society Organization: for example, Green World Foundation, Bird Conservation Society of Thailand (BCST), and Thailand Environment Institute (TEI) | It plays a role in civil society and public participation, contributing to development and problem-solving alongside government agencies. Their functions include monitoring, surveillance, and promoting social justice. These agencies coordinate with both public and private sector organizations, collaborating with individuals, organizations, agencies, or various groups to promote and support the conservation and sustainable use of biodiversity. Examples of their activities include organizing exhibitions, projects, or events to disseminate work related to biodiversity and presenting the operations of agencies involved in biodiversity management. |
| **International Organization** | |
| International Organization: for example, World Wildlife Fund (WWF), United Nations Development Programme (UNDP), Biodiversity Finance Initiative (BIOFIN), and The International Union for Conservation of Nature (IUCN) | A mechanism for conducting international relations that supports cooperation and develops various activities for economic and social benefits. It plays a vital role in addressing social, cultural, and humanitarian issues arising from industrial and technological advancement, with the aim of fostering progress and ensuring the well-being of humanity. |
| **Community-Based Organization (CBO)** | |
| Community-Based Organization | This includes civil society and local communities who participate in the protection, conservation, restoration, and utilization of biodiversity within their own local areas. |

# Appendix D

## Indicator Descriptions

| **Strategy 1: Conserve, restore, and eliminate threats to biodiversity to maintain ecosystem services.** | |
|---|---|
| **Target 1** | **Reduce the loss of important biodiversity areas both in landscape and seascape through effective spatial planning.** |
| Target value | 1.1 The rate of natural habitats loss, both on land and along coastal areas, is reduced by 50% (including wetlands, forest areas, mangrove forests, and coastal areas). |
| Indicator | 1.1 Percentage rate of natural habitats loss |
| Definition | **Natural habitat** refers to natural living areas that maintain ecological balance, serve as repositories for plant and animal species, and have ecological and nature conservation significance. This indicator considers habitats across terrestrial, marine, and coastal ecosystems, including forest areas, wetlands (specifically wetlands of international and national importance as per Cabinet resolutions), and marine and coastal resource areas.<br>**Forest areas** refer to green areas that are natural forests on state land, including national parks, wildlife sanctuaries, non-hunting areas, forest parks, botanical gardens, arboretums, national reserved forests, etc.<br>**Marine and coastal resource areas** refer to ecosystems of great importance that serve as habitats and abundant food sources for marine animals and aquatic life. Marine and coastal resources include mangrove forests, coral reefs, and seagrass beds.<br>**Wetlands** refer to areas as defined by the Ramsar Convention in Articles 1.1 and 2.1, which are ecosystems vital to the survival of humans, plants, and animals, and are of national and international importance according to Cabinet resolutions dated November 3, 2009, and May 12, 2015. |
| Scope/target group | Natural habitats throughout the country, including forest areas, wetlands (specifically wetlands of international and national importance as per Cabinet resolutions), national parks, wildlife sanctuaries, non-hunting areas, forest parks, botanical gardens, arboretums, national reserved forests, mangrove forests, coral reefs, and seagrass beds. |

| | |
|---|---|
| Data compilation and calculation | Data collection and calculation through review of relevant documents, literature, and statistics, and monitoring via questionnaires and operational tracking.<br>Percentage of loss = 100 x (Current year area - Base year area)/Base year area<br>*Base year refers to the most recent data available between 2017-2022. |
| Supporting data | - Natural forest area, base year and current year<br>- Mangrove forest area, base year and current year<br>- Coral reef area, base year and current year<br>- Seagrass bed area, base year and current year<br>- Registered wetland area, base year and current year<br>- Country area |
| Data source | MNRE (RFD/DNP/DMCR/DWR)<br>MOI (DOPA) |
| Measurement unit | Natural biodiversity area size (sq.km.) |
| Target value | 1.2 The integrity status of important natural habitats (coral reefs, seagrass beds) will be improved. |
| Indicator | 1.2 The integrity status of important natural habitats |
| Definition | **The integrity of important natural habitats** refers to the study of the status of living organisms' habitats or places where living organisms exist in their natural state. This places emphasis on important marine and coastal resource areas, including mangrove forests, coral reefs, and seagrass beds. |
| Scope/target group | Important natural habitats that have been assessed for their integrity level according to the assessment criteria for mangrove forests, coral reefs, and seagrass beds established by responsible agencies. |
| Data compilation and calculation | Review of relevant data, documents, and statistics, and monitoring through operational tracking questionnaires |
| Supporting data | - Status of intact mangrove forest areas, base year and current year<br>- Status of coral reef areas, base year and current year<br>- Status of seagrass bed areas, base year and current year<br>*Base year refers to the most recent data available between 2017-2022. |
| Data source | MNRE (DMCR/DNP) |

| | |
|---|---|
| Measurement unit | Percentage of integrity of important natural habitats |
| Target value | 1.3 At least 15% of significant biodiversity areas are included in the integrated and participatory spatial plans. |
| Indicator | 1.3 Percentage of significant biodiversity areas that are included in integrated and participatory spatial plans being implemented. |
| Definition | Development plans and/or area management plans, particularly for natural biodiversity areas including forest areas, marine and coastal resource areas, and wetlands, have been managed through integration and participation to address negative drivers of land and marine use changes that cause loss of areas with high biological significance. The plans include operational methods and processes for analyzing and allocating land use benefits to stakeholders to achieve objectives.<br>These areas should benefit society, economy, and diverse ecosystems, with stakeholder participation processes in the area, or the implementation of Strategic Environmental Assessment (SEA) in planning related to significant biodiversity areas at all levels. |
| Scope/target group | Biodiversity areas included in spatial plans and the number of management plans for significant biodiversity areas |
| Data compilation and calculation | Review of relevant data, documents, and monitoring through operational tracking questionnaires |
| Supporting data | - Spatial plans addressing biodiversity issues<br>- Entire spatial plans |
| Data source | MNRE (RFD/DNP/DMCR/DWR)<br>MOAC (LDD)<br>MOI (DPT)<br>OPM (ONWR/ NESDC) |
| Measurement unit | Percentage of spatial plans addressing biodiversity issues |

| **Target 2** | **Conserve, restore, and expand protected areas, increase other effective conservation measures (OECMs) to enhance ecosystem integrity and connectivity.** |
|---|---|
| Target value | 2.1 At least 23% of the country's terrestrial area and 15% of marine area are designated as protected areas and OECMs.<br>By 2030, at least 30% of both terrestrial and marine areas are designated as protected areas and OECMs. |
| Indicator | 2.1 Percentage of protected areas and Other Effective area-based Conservation Measures (OECMs) in both terrestrial and marine environments. |
| Definition | **Protected areas**<br>The International Union for Conservation of Nature (IUCN) has provided a comprehensive definition stating that protected areas are clearly defined geographical spaces on land and/or sea, specifically dedicated to the protection and maintenance of biological diversity, natural resources, and associated cultural resources, managed through legal or other effective means. Protected areas in Thailand consist of seven types: national parks, forest parks, wildlife sanctuaries, non-hunting areas, marine and coastal protected areas, environmental protected areas, and aquatic animal sanctuaries.<br>**Other Effective Area-based Conservation Measures (OECMs**) refers to areas other than protected areas (as defined by IUCN categories) that are managed to achieve long-term positive and sustained outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services, and where applicable, cultural, spiritual, socio-economic, and other locally relevant values. |
| Scope/target group | Protected areas and OECMs across the country, both terrestrial and marine |
| Data compilation and calculation | Review of relevant data, related documents, and monitoring through operational tracking questionnaires |
| Supporting data | - Legally protected areas<br>- Other Effective Area-based Conservation Measures (OECMs) |

| | |
|---|---|
| Data source | Legally protected areas<br>MNRE (DNP/DMCR/ONEP)<br>MOAC (DOF)<br>Other Effective area-based Conservation Measures (OECMs)<br>MNRE (ONEP)<br>Relevant agencies including government sector, private sector, educational institutions, civil society organizations, and community organizations |
| Measurement unit | Percentage of protected areas and OECMs |
| Target value | 2.2 At least 30% of degraded natural habitats are restored. |
| Indicator | 2.2 Percentage of degraded natural habitats that have been restored (forests/ mangrove forests/beaches/wetlands). |
| Definition | **Degraded biodiversity areas** refer to natural habitats of ecological and conservation significance within terrestrial, marine, and coastal ecosystems that have become degraded. These areas are surveyed and assessed for their integrity status and percentage of area coverage using scientific methods to determine the boundaries of ecosystem areas in each location that require restoration. This includes areas reclaimed by government agencies from encroachment through legal enforcement operations. |
| Scope/target group | Degraded biodiversity areas or areas where land use has changed, such as forest areas, mangrove forests, beach forests, coral reefs, seagrass beds, and wetlands, etc. throughout the country |
| Data compilation and calculation | Review of relevant data, documents, and statistics, and monitoring through operational monitoring questionnaires |
| Supporting data | - Size of degraded forest areas and restored areas<br>- Size of changed mangrove areas and restored areas<br>- Size of degraded coral reef areas and restored areas<br>- Size of degraded seagrass areas and restored areas |
| Data source | MNRE (RFD/DNP/DMCR/DWR)<br>Private sector<br>Civil society organizations<br>Community organizations |
| Measurement unit | Percentage of degraded natural habitats that have been restored |

| **Target 3** | **Conserve and protect threatened and wild species, reduce human-wildlife conflict issues, and increase the efficiency of invasive alien species management.** |
|---|---|
| Target value | 3.1 The conservation and protection status of threatened and endemic species increase by 25% (for threatened animal species). |
| Indicator | 3.1 Population numbers of endangered and endemic species, and plans/measures for conservation and protection of their habitats |
| Definition | **Threatened Species** refers to species of plants, animals, and microorganisms that are at risk of extinction from their distribution areas due to threatening factors. These species are categorized by their risk of extinction from highest to lowest: Critically Endangered, Endangered, and Vulnerable. Urgent guidelines and measures are required for the restoration, protection, and conservation of these species.<br>Thailand has compiled a list of species at risk of extinction, which includes vertebrates and invertebrates. Vertebrates include mammals, birds, fish, amphibians, and reptiles, while invertebrates include crustaceans, corals, and mollusks. These are classified according to their conservation status.<br>**Endemic Species** refers to plant or animal species that naturally occur in a specific geographical area of the world and have a relatively limited geographical distribution range, rather than being widely distributed. |
| Scope/target group | Threatened species and endemic species at risk of extinction, which have the following conservation status: **Critically Endangered (CR)**: At extremely high risk of extinction, **Endangered (EN)**: At high risk of extinction, and **Vulnerable (VU)**: At risk of extinction, respectively. |
| Data compilation and calculation | Review of relevant data, documents, and statistics, and monitoring through operational monitoring questionnaires |
| Supporting data | - Number of threatened species and endemic species<br>- Threatened species, endemic species, and their species-specific management plans/measures |
| Data source | MNRE (ONEP/DNP/DMCR/RFD)<br>MOAC (DOA/DLD/DOF) |

| | |
|---|---|
| Measurement unit | A count/inventory of threatened and endemic species<br>Species-specific management plans/measures |
| Target value | 3.2 The Red List Index does not decrease from the 2020 baseline data.<br>By 2030, the Red List Index does not decrease from the 2025 baseline data. |
| Indicator | 3.2 Red List Index of threatened species |
| Definition | **The IUCN Red List of Threatened Species (IUCN Red List)** is considered the world's most comprehensive source of information on the conservation status of species, including animals, plants, and fungi, as well as their connection to human livelihoods. The IUCN Red List serves as a systematic tool for assessing the extinction risk of species. |
| Scope/target group | Status list of threatened species (both vertebrates and invertebrates, and plants) nationwide (Thailand Red Data) |
| Data compilation and calculation | Review of relevant data, documents, and statistics |
| Supporting data | - Number of species in each category of species lists (vertebrates, invertebrates, and plants)<br>- Red List Index (status index of threatened species) |
| Data source | MNRE (ONEP/DNP) |
| Measurement unit | None |
| Target value | 3.3 The number of wild species found in natural habitat surveys does not decrease. |
| Indicator | 3.3 Number of wild species found in natural habitat surveys |
| Definition | Wild species of Thailand are living organisms that exist in nature, which can be divided into three groups: plants, animals, and microorganisms. |
| Scope/target group | Wild species of Thailand (vertebrates, invertebrates, and plants) nationwide |
| Data compilation and calculation | Review of data, documents, and statistics related to the number of wild species that have been surveyed and collected in the national biodiversity database, then monitored through operational monitoring questionnaires/tracking forms. |

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| Supporting data | - List and number of plant, animal, and microorganism species (Thai Biodiversity Information Facility: TH-BIF)<br>- List and number of plant and wild species in areas under Department of National Parks, Wildlife and Plant Conservation (DNP) supervision<br>- List and number of marine animal species |
| Data source | MNRE (ONEP/DNP/RFD/DMCR) |
| Measurement unit | Number of species |
| Target value | 3.4 The trend of human-wildlife conflicts decreases, and measures to address these conflicts have been increased. |
| Indicator | 3.4 Number of human-wildlife conflict cases and conflict resolution measures |
| Definition | **Human-wildlife conflict** refers to the loss of resources or life resulting from interactions between humans and wildlife. The causes of conflict stem from the reduction of suitable wildlife habitat and foraging areas, combined with forest edges being surrounded by monoculture agricultural areas such as corn, cassava, or sugarcane fields. This leads some wild species to seek food in agricultural areas and communities surrounding the forest instead, resulting in damage to vegetation and valuable property. In many incidents, there have also been human injuries and fatalities. |
| Scope/target group | Reduction of complaint cases arising from human-wildlife conflicts both on land and in marine areas nationwide (such as wild elephants, gaur, otters, etc.) and management measures or promotion of coexistence between humans and wildlife, such as wildlife monitoring, enhancement of food sources, and promotion of community cooperation, etc. |
| Data compilation and calculation | Review of relevant data, documents, and statistics, and monitoring through operational tracking questionnaires |
| Supporting data | - Number of human-wildlife conflict cases/public complaints affected by wildlife<br>- Number of conflict management measures/coexistence promotion initiatives |
| Data source | MNRE (DNP/DMCR)<br>MOAC (DOF) |

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| Measurement unit | Number of conflict or complaint incidents |
| Target value | 3.5 Management measures are in place for at least 30% of high-priority invasive alien species,<br>and by 2030, management measures are in place for at least 35% of high-priority invasive alien species. |
| Indicator | 3.5 Number of plans/measures for managing high-priority invasive alien species |
| Definition | **Alien Species refers** to species of living organisms that have never appeared in a particular biogeographical area before but have been introduced or entered by any means from other areas, whether they can survive and reproduce depends on the suitability of environmental factors and the adaptation of that species.<br>**Invasive Alien Species (IAS)** refers to alien species that have established and can naturally spread, becoming dominant species in the new environment. These species may cause native species to become extinct and pose threats to biodiversity, resulting in environmental, economic, and health losses.<br>**Invasive Alien Species Management Measures** are specifications, directives, regulations, or laws for managing alien species that have established and can spread well in nature until they become invasive alien species in the ecosystem.<br>**High-Priority Invasive Alien Species** refers to alien species that are prioritized according to criteria for ranking high-priority invasive alien species that require urgent management. |
| Scope/target group | Specifications, directives, regulations, or laws announced by relevant agencies and sectors |
| Data compilation and calculation | Review of literature and documents, and monitoring through operational tracking questionnaires |
| Supporting data | - Number of high-priority invasive alien species<br>- Invasive alien species and their species-specific management plans/measures |
| Data source | MNRE (ONEP/DNP/DMCR)<br>MOAC (DOF/DOA) |
| Measurement unit | Number of plans/ measures |

| **Target 4** | **Reduce threats to biodiversity from climate change and pollution, including increasing urban green spaces, to restore and maintain ecosystem services.** |
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| Target value | 4.1 At least 6 pilot areas implementing nature-based solutions to reduce climate change impacts |
| Indicator | 4.1 Number of pilot areas implementing nature-based solutions to reduce climate change impacts |
| Definition | **Nature-based Solutions (NbS)** refers to actions aimed at sustainably managing, protecting, and restoring ecosystems, which can effectively address societal challenges and adapt to situations to enhance human well-being while maintaining biodiversity benefits.<br>Ecosystem-based Adaptation (EbA) is one approach within NbS that uses biodiversity and ecosystem services to support communities in adapting to climate change impacts through ecosystem conservation, management, and restoration. For a measure to be considered as EbA, it must meet three key criteria: 1) The measure must focus on addressing climate-related threats; 2) The proposed or implemented measures must consider ecosystem restoration, conservation, and management components to maintain and improve ecosystem services; and 3) The measures must provide benefits to biodiversity. |
| Scope/target group | Pilot areas across the country that implement nature-based solutions to reduce climate change impacts, which are targets driven through Thailand's National Adaptation Plan |
| Data compilation and calculation | Collection of data, documents, and information about pilot areas implementing nature-based solutions to reduce climate change impacts, and monitoring through operational tracking questionnaires |
| Supporting data | Number of pilot areas implementing nature-based solutions to reduce climate change impacts |
| Data source | MNRE (DCCE/ONEP/DWR)<br>OPM (ONWR)<br>MOAC (OAE)<br>MOTS (OPS-MOTS)<br>MOPH (DOH)<br>MOI (DDPM/DPT/DLA/LAO)<br>And other related agencies, such as LAO/BMA |

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| Measurement unit | Number of pilot areas (units) |
| Target value | 4.2 Reduce the amount of marine debris entering the sea from major rivers flowing into the upper Gulf of Thailand |
| Indicator | 4.2 Amount of marine debris entering the sea from major rivers flowing into the upper Gulf of Thailand |
| Definition | **Marine Debris** refers to solid materials discarded from industrial or manufacturing processes, either intentionally disposed of or abandoned in marine and coastal environments. Marine debris consists of human-made or used items intentionally discarded into seas, rivers, or beaches, or entering the marine environment directly through rivers, sewage, strong currents, or winds. This includes objects lost at sea during severe weather conditions (fishing gear, cargo ship goods), or intentionally discarded by humans on beaches and coastlines. While marine debris may be found near its source, most is transported long distances by ocean currents and winds. Consequently, marine debris is found in all seas across the world, not only in coastal areas but also in remote locations, such as on mid-ocean islands and polar regions. Marine debris can be found floating on the surface, in the water body, and on the seabed at various depths.<br>**Plastic Waste** refers to plastic waste collected from households, hotels, restaurants, hospitals, shops, offices, and industrial factories, consisting of used or deteriorated plastic items or parts that are no longer usable or desired, without separation, mixed with other materials, or contaminated. |
| Scope/target group | Amount of marine debris/plastic waste |
| Data compilation and calculation | Collection of data, documents, and information on marine debris situations and implementation results according to the Plastic Waste Management Roadmap (2018-2030) |
| Supporting data | - Marine debris situation/Amount of marine debris data collected by DMCR<br>- Implementation results of the Plastic Waste Management Action Plan Phase 2 (2023-2027) and monitoring by using questionnaires. |
| Data source | MNRE (DMCR/PCD/DNP) |
| Measurement unit | Amount of marine debris (million tons) |

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| Target value | 4.3 Increase in standard criteria for controlling pollution that threatens biodiversity |
| Indicator | 4.3 Standard criteria for controlling pollution that threatens biodiversity |
| Definition | **Environmental Pollution Control Standards** are established to limit the risks and negative impacts of pollution on biodiversity and ecosystem services. These include controlling excess nutrients, especially nitrogen and phosphorus in water sources, pesticides, and hazardous chemicals, or other parameters that affect the survival of organisms in ecosystems, such as water quality parameters for aquatic life, or parameters for monitoring eutrophication in freshwater and marine waters. |
| Scope/target group | Pollution control standards that cover biodiversity impact assessments, specifically those that have not established control values or criteria for biological water quality measurements (Bioindicators) in important water sources across the country |
| Data compilation and calculation | Review of relevant data, documents, and statistics, and monitoring through operating questionnaires |
| Supporting data | - Pollution control standards that cover biodiversity impact assessments<br>- Biological water quality measurement data (Bioindicators) in important water sources |
| Data source | MNRE (PCD) |
| Measurement unit | Number of criteria or number of indicators (criteria/ indicators) |
| Target value | 4.4 Increase the proportion of green space in urban areas to at least 5% of the total urban area |
| Indicator | 4.4 Proportion of green space in urban areas relative to the total urban area |
| Definition | **Green Space** refers to natural areas or human-made/designated areas in cities or communities that are primarily covered with vegetation as their main component. These areas benefit the environment, ecosystems, living conditions, and quality of life for citizens. Green spaces are divided into six types: public green spaces, utility green spaces, green spaces along infrastructure, community economic green spaces, natural green spaces, and unused green spaces. |
| Scope/target group | Green space in urban area |

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| Data compilation and calculation | Data collection and relevant statistics from data collection agencies, and monitoring through operational tracking questionnaires. Percentage of green space to urban area = 100 x Size of all types of green spaces (sq.km.) / Total municipal area size (sq.km.) |
| Supporting data | - Total area of all types of green spaces/green space ratio |
| Data source | MNRE (DCCE/ONEP)<br>MOI (DLA/LAO) |
| Measurement unit | Percentage of green space |
| Target value | 4.5 At least 80% of local government organizations have efficient green space plans and layouts incorporated into urban development plans |
| Indicator | 4.5 Percentage of local government organizations with green space plans and layouts incorporated into urban development plans |
| Definition | **Urban Green Space** refers to open spaces within municipal areas with vegetation as their main component, managed according to silvicultural principles and landscape architectural principles. These spaces are designed to enhance the landscape for recreational purposes and to improve the urban environment, making urban communities green, shady, beautiful, and permanently livable. This may include land owned by the government, private entities, or special category lands, but does not include natural areas, such as rivers, canals, ponds, lakes, mountains, and forests, as these areas should be protected and preserved in their natural state without development for other purposes.<br>**Local Administrative Organizations** refers to government organizations established under the principle of decentralization of administration to provide public services that address the needs of or solve problems for local residents. They are divided into four types: Provincial Administrative Organizations, Municipalities, Subdistrict Administrative Organizations, and Special Local Administrative Organizations. |
| Scope/target group | Local Administrative Organizations nationwide (Provincial Administrative Organizations, Municipalities (Subdistrict/Town/City Municipalities), Subdistrict Administrative Organizations, and Special Local Administrative Organizations (Bangkok Metropolitan Administration/Pattaya City)) |

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| Data compilation and calculation | Review of relevant data and urban development plans, and monitoring through operational tracking questionnaires |
| Supporting data | - Number of Local Administrative Organizations that have green space plans and maps included in their development plans |
| Data source | MNRE (ONEP/DCCE)<br>MOI (DLA/LAO) |
| Measurement unit | Number of Local Administrative Organizations that have green space plans and maps included in their development plans |

| Strategy 2: Promote bio-based economy and sustainable use of biodiversity | |
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| **Target 5** | **Promote and support a bio-based economy, based on ecosystem services to improve people's living conditions and income.** |
| Target value | 5.1 Increase the income of local communities and private businesses from goods and services derived from biological and genetic resources, through the promotion of a bio-based economy in food, medicine, herbs, and health products, by no less than 100 million baht per year (for local communities). |
| Indicator | 5.1 Income of local communities and private businesses from goods and services utilizing biological and genetic resources |
| Definition | **Bio-economy** refers to an economic system that applies knowledge and innovation, particularly in life sciences, to develop and add value to biological resources and agricultural products, transforming them into goods and services for various uses, such as agriculture, food, health, medicine, and energy. This system aims to maintain a balance between economic, social, and environmental aspects, with a strategic focus on systematically developing and increasing the value of biological and agricultural resources. In improving the living standards and income of people, especially in rural areas and local communities, the focus is on enhancing value addition from biological resources at the grassroots economic level, giving primary importance to communities and localities.<br>**Assessment of Local Community Revenue from Biological and Genetic Resource Products and Services** refers to the income of local communities obtained from developing and selling products and services based on the bio-economy. This process necessarily requires supporting and strengthening communities in generating income from biodiversity, founded on principles of sustainable utilization and conservation of biological diversity. Examples include income from processed agricultural products (such as food, health products, herbs, etc.) and ecotourism or tourism that connects with local identity, way of life, and local wisdom.. |
| Scope/target group | Local communities across the country that process agricultural products into goods and services for various uses, such as agriculture, food, health, and medicine, by utilizing local biological resources, including tourism connected to local identity, way of life, and local wisdom |

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| Data compilation and calculation | Review of relevant data and documents, and monitoring through operational tracking questionnaires |
| Supporting data | - Local community income from processed agricultural products and bio-tourism / Community economic value<br>- OTOP product revenue, focusing on community enterprise groups utilizing biological resources<br>- Revenue generated from Fish Home and Crab Bank initiatives |
| Data source | MNRE (BEDO/DMCR)<br>MOAC (DOAE)<br>MOI (CDD) |
| Measurement unit | Million Baht each year |
| Target value | 5.2 Increase the number of products that have been upgraded from local biological resources by local communities and private businesses. |
| Indicator | 5.2 Number of products that have been upgraded, including goods and services derived from local biological resources and the private sector |
| Definition | **Upgraded Products** refers to the elevation of product standards, goods, and services derived from local biological resources to meet standardized criteria. This includes food and beverages, skincare and beauty products, health products, and various utilities. These products must be certified by relevant agencies as products derived from biological resources or local wisdom, produced through biodiversity-friendly processes, with income sharing for conservation and natural resource restoration. They may also be based on quality agricultural products, handicrafts, and processed agricultural goods that are renowned for their quality and connected to geographical locations, such as those with the Bioeconomy Promotion Mark and Geographical Indication (GI) certification. |
| Scope/target group | Upgraded products and services derived from local biological resources across the country through projects supported by relevant agencies |

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| Data compilation and calculation | Monitoring through operational tracking questionnaires. |
| Supporting data | - Number of products received the Bioeconomy Promotion Mark<br>- Number of goods that have received GI certification |
| Data source | MNRE (BEDO)<br>MOC (DIP)<br>Private sector |
| Measurement unit | Number of products / goods |
| Target value | 5.3 Increase the valuation of ecosystem services provided by local communities and private businesses. |
| Indicator | 5.3 Data on the valuation of ecosystem services provided by local communities and private businesses |
| Definition | The value of ecosystem services in local communities refers to the assessment of both direct and indirect ecosystem service values derived from the ecosystems within local communities. This is achieved through the promotion of projects related to natural resource and environmental management, based on Community-Based Management, such as Community Forest Projects and Family Forest Projects. |
| Scope/target group | Assessment of local community ecosystem service values from projects that strengthen public participation in managing local biological resources |
| Data compilation and calculation | Monitoring through operational tracking questionnaires |
| Supporting data | Ecosystem service values from Family Forest Projects (2020-2022 and the current year)<br>Ecosystem service values from Community Forest Projects |
| Data source | MNRE (BEDO/DMCR/RFD) |
| Measurement unit | Baht |

| **Target 6** | **Promote sustainable practices in production and service sectors, including agriculture, aquaculture, fisheries, livestock, forestry, and tourism.** |
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| Target value | 6.1 Percentage of production and service areas using best practices and approaches for sustainability should be no less than 10% of the total area (forestry, agriculture, and fisheries). |
| Indicator | 6.1 Percentage of production and service areas using best practices and approaches for sustainability, relative to the total area (agriculture and fisheries) |
| Definition | Production and service areas, including forestry, agriculture, and fishery production areas that employ sustainable practices aligned with conservation and sustainable utilization of biodiversity in ecosystems, while helping to reduce impacts on biodiversity. |
| Scope/target group | Production areas in forestry, agriculture, and fisheries that employ sustainable approaches |
| Data compilation and calculation | Data collection of total production areas in forestry, agriculture, and fisheries, as well as sustainable production areas across the country, through monitoring using operational tracking questionnaires<br>**Percentage Area Ratio** = Size of production area using sustainable approaches (Rai or sq.km.) / Total production area (Rai or sq.km.) |
| Supporting data | - Areas of sustainable forestry practices<br>- Areas of sustainable agriculture and organic farming<br>- Areas of sustainable fisheries practices |
| Data source | MNRE (RFD / FIO)<br>MOAC (DLD / DOA / DOF) |
| Measurement unit | Percentage |
| Target value | 6.2 Increase the proportion of production and service areas using sustainable approaches relative to the total number (livestock and tourism). |
| Indicator | 6.2 Percentage of production and service areas using best practices and approaches for sustainability, relative to the total number (livestock and tourism) |
| Definition | Number of livestock farms using sustainable practices aligned with conservation and the sustainable utilization of biodiversity in ecosystems, while helping to reduce impacts on biodiversity |
| Scope/target group | Number of livestock farms using sustainable practices nationwide. |

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| Data compilation and calculation | Data collection on the number of livestock farms adopting sustainable practices through monitoring using an operational tracking questionnaire<br>**Percentage of areas** = Number of farms using sustainable practices (Rai or sq.km.) / Total number of farms (Rai or sq.km.) |
| Supporting data | - Total number of livestock farms<br>- Number of livestock farms using sustainable practices |
| Data source | MOAC (DLD) |
| Measurement unit | Number of livestock farms using sustainable practices |
| Target value | 6.3 At least 20 tourism areas or communities should implement sustainable tourism management approaches. |
| Indicator | 6.3 Number of tourism areas or communities that have achieved sustainable tourism management standards |
| Definition | **Sustainable Tourism** refers to tourism operations that consider the carrying capacity of nature, communities, traditions, and ways of life related to tourism, in order to protect, preserve, and develop these elements for future generations. This requires raising awareness among stakeholders, including tourists, local communities, operators, and tourism-related agencies. Currently, several forms of tourism promote sustainable tourism, such as community-based tourism and ecotourism. |
| Scope/target group | Tourism areas or communities that implement sustainable tourism management approaches, which consider the environment and ecosystems, such as the Global Sustainable Tourism Criteria for Destination (GSTC-D) and management according to Sustainable Tourism Management Standard (STMS) |
| Data compilation and calculation | Data collection on sustainable tourism areas through monitoring using an operational tracking questionnaire |
| Supporting data | Tourism areas or communities that have certified STMS |
| Data source | MOTS (DASTA) |
| Measurement unit | Number of tourism areas or communities that have certified Sustainable Tourism Management Standard (tourism areas/communities) |

| **Target 7** | **Establish comprehensive mechanisms and measures to ensure equitable access and benefit-sharing and consideration of biosafety for the utilization of genetic resources.** |
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| Target value | 7.1 Establish mechanisms and regulations for access and benefit-sharing of genetic resources that all responsible agencies adopt as the country's standard. |
| Indicator | 7.1 Mechanisms and regulations for access and benefit-sharing of genetic resources that are the country's standard |
| Definition | **Mechanisms and regulations for access and benefit-sharing of genetic resources** refers to mechanisms and regulations that implement international principles referenced in the Nagoya Protocol on Access and Benefit-sharing, including procedures for Prior Informed Consent (PIC) and establishing Mutually Agreed Terms (MAT) for communicating consent on material usage and negotiating sharing agreements between providers and users of genetic resources. |
| Scope/target group | Providers, holders, custodians of genetic resources and those requesting to use genetic resources for research, development, or commercial purposes |
| Data compilation and calculation | Collection from permit application documents, consent forms, and benefit-sharing agreements and terms |
| Supporting data | Applications for access and utilization of genetic resources from users, permits and benefit-sharing agreement terms, including access consent from providers, holders, and custodians |
| Data source | Agencies responsible for reviewing and granting permits for the use of genetic resources, including plants, animals, aquatic animals, and microorganisms, with laws and regulations governing access and/or benefit-sharing |
| Measurement unit | Number of responsible agencies, number of relevant mechanisms and regulations |

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| Target value | 7.2 All responsible agencies enforce the mechanisms and regulations for access and benefit-sharing. |
| Indicator | 7.2 Number of responsible agencies that have enforced the mechanisms and regulations for access and benefit-sharing. |
| Definition | **Responsible agencies** refer to government agencies with legal authority as well as government agencies that possess genetic resources.<br>**Genetic resources** refer to components of plants, animals, microorganisms, or any other source that contain inherited genetic units from ancestors and have actual value or potential future value.<br>**Access to biological resources** refers to surveying, studying, collecting or gathering genetic resources for the utilization of genetic resources or associated traditional knowledge.<br>**Benefit-sharing** refers to a mutual agreement between owners or sources of genetic resources or traditional knowledge and those who wish to utilize such resources or knowledge. |
| Scope/target group | Operations of agencies implementing mechanisms and regulations for access and benefit-sharing |
| Data compilation and calculation | Monitoring through operational tracking questionnaires conducted by relevant agencies |
| Supporting data | - Number of agencies responsible for access and benefit-sharing under the (draft) Biodiversity Act B.E. ....<br>- Number of agencies implementing mechanisms and regulations for access and benefit-sharing |
| Data source | MNRE (ONEP / DNP / RFD / DMCR / BEDO)<br>MOAC (DOF / DOA / DLD)<br>MOPH (DTAM / DMSC)<br>MHESI (BIOTEC)<br>Educational Institutions |
| Measurement unit | Percentage of responsible agencies |

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| Target value | 7.3 Users, possessors, and relevant stakeholders have the capacity for fair and equitable access and benefit-sharing. |
| Indicator | 7.3 Capacity for fair and equitable access and benefit-sharing of users, possessors, and relevant stakeholders |
| Definition | **Access and Benefit-sharing Capacity** refers to the necessary and sufficient capabilities across various dimensions, including understanding the importance of genetic resources for conservation and their appropriate, balanced, and sustainable utilization. It encompasses negotiation and benefit-sharing skills for both providers and users to ensure fair and equitable arrangements, the ability to manage both monetary and non-monetary benefits, and the institutional capacity of regulatory authorities to issue permits and promote knowledge among communities, the public, and business sectors. |
| Scope/target group | Permitting agencies, communities, researchers, investors involved in permitting, conservation, and utilization of genetic resources. |
| Data compilation and calculation | Collection of operational activities/projects aimed at increasing and building capacity for appropriate, fair, and equitable access and benefit-sharing from permitting agencies or organizations supporting capacity building |
| Supporting data | Outputs from capacity-building activities/projects in the form of knowledge, information, practical guidelines, and recommendations |
| Data source | All sectors that initiate and implement capacity-building activities/projects |
| Measurement unit | Number of activities/projects each year. |

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| Target value | 7.4 Increased benefits, both in monetary forms generating income and non-monetary forms (knowledge, information, and cooperation), from the use of the country's genetic resources |
| Indicator | 7.4 Benefits, both in monetary forms generating income, and non-monetary form (knowledge, information, and cooperation), from the use of the country's genetic resources |
| Definition | **Monetary benefits from genetic resources** refer to benefits in the form of fees, research funding, revenue, and joint ownership of intellectual property rights arising from the use of genetic resources through mutual agreements between owners or sources of genetic resources.<br>**Non-monetary benefits from genetic resources** refer to benefits that facilitate cooperation, technology transfer, research development, training, and various forms of knowledge. |
| Scope/target group | - Monetary benefits derived from benefit-sharing agreements for the use of genetic resources including plants, animals, and microorganisms, which fall under the responsibility of agencies involved in access and benefit-sharing under relevant acts and regulations<br>- Knowledge, information, and cooperation developed between agencies, educational institutions, and research institutes both domestically and internationally |
| Data compilation and calculation | - Collection of benefit data from benefit-sharing agreements from relevant agencies through monitoring with operational tracking questionnaires<br>- Collection of knowledge, research, cooperation, and technology data from agencies gathering information under relevant acts and regulations, and from related research institutions |
| Supporting data | - Income from benefit-sharing agreements<br>- Knowledge, data, and collaboration in research and development arising from access to genetic resources |
| Data source | MNRE (DNP/ RFD/ DMCR)<br>MOAC (DOA/ DOF/ DLD)<br>MOPH (DTAM/ DMSC)<br>MHESI (TISTR/ BIOTEC)<br>Research units and relevant educational institutions |

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| Measurement unit | - Baht<br>- Topics/datasets/projects |
| Target value | 7.5 All responsible agencies have established biosafety measures, and 50% of educational institutions with institutional biosafety committees have established biosafety mechanisms and guidelines. |
| Indicator | 7.5 Number of educational institutions with institutional biosafety committees that have established biosafety mechanisms and guidelines |
| Definition | **Responsible agencies** refer to agencies responsible for supervising and implementing biosafety operations under relevant laws.<br>**Institutional Biosafety Committee (IBC)** is an operational mechanism to prepare for biosafety control, covering both utilization and control of related research processes. |
| Scope/target group | Institutional biosafety committees across the country that have developed biosafety guidelines or implemented biosafety practices for biotechnology operations |
| Data compilation and calculation | Data collection on agencies that have established Institutional biosafety committees with biosafety measures from data collection agencies |
| Supporting data | - Number of agencies responsible for biosafety specified by relevant laws<br>- Number of educational institutions that have established Institutional biosafety committees<br>- Number of responsible agencies that have developed biosafety measures<br>- Number of educational institutions with Institutional Biosafety Committees that have established biosafety mechanisms and guidelines |
| Data source | MHESI (BIOTEC) |
| Measurement unit | Percentage of agencies |

| Strategy 3: Enhance capacity and participation in biodiversity management. | |
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| **Target 8** | **Mainstream biodiversity into policies, plans, and operations of all sectors at all levels while fostering multi-sectoral engagement and participation.** |
| Target value | 8.1 At least 5 collaborative programs and activities involving at least two different sectors designed to support and contribute to achieving national biodiversity targets |
| Indicator | 8.1 Number of collaborative programs and activities among various sectors. |
| Definition | Project and activity plans developed for collaborative implementation to effectively achieve the country's biodiversity targets |
| Scope/target group | Programs or projects that involve management or support operations related to any one of the biodiversity targets in this action plan, with cooperation between two relevant sectors, namely government agencies, private sector, communities, and educational/research institutions |
| Data compilation and calculation | Collection of data on plans or projects related to biodiversity management or supporting biodiversity operations from relevant agencies according to the plan |
| Supporting data | - Number of plans and activities that represent cooperation between at least two sectors |
| Data source | Relevant agencies specified in the plan |
| Measurement unit | Number of plans and activities |
| Target value | 8.2 Number of policies, plans, and operational guidelines from various sectors that incorporate biodiversity management issues, increased by 10 documents. |
| Indicator | 8.2 Number of policies, plans, and operational guidelines from various sectors that incorporate biodiversity management issues. |
| Definition | Policy refers to principles and practices established as operational guidelines. Plan refers to what is designated as a framework or direction. Operational guidelines refer to methods established as rules, regulations, protocols, or laws, etc. |
| Scope/target group | Nationwide by covering policies, plans, and operational guidelines of various sectors |

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| Data compilation and calculation | Review of data and documents, policies, plans, and operational guidelines of various sectors |
| Supporting data | - Number of policies, plans, and operational guidelines from various sectors that incorporate biodiversity management issues |
| Data source | Agencies related to the plan. |
| Measurement unit | Number of policies, plans, and operational guidelines. |
| Target value | 8.3 At least 5 local-level biodiversity management plans (at the provincial level) |
| Indicator | 8.3 Number of local-level biodiversity management plans |
| Definition | Provincial development plans are comprehensive plans covering all dimensions of development, aimed at addressing needs and solving important problems of the province while driving provincial development issues that align with national strategies, national plans, government policies, and regional development plans according to the potential and opportunities of the area. |
| Scope/target group | Provincial development plans that clearly establish policies regarding biodiversity management, and include projects or budgets for conservation, restoration, and utilization of biological resources or biodiversity of the province |
| Data compilation and calculation | Review of targets and work plans under Provincial Development Plans across the country |
| Supporting data | - Number of projects, budgets, or work plans related to local-level biodiversity management |
| Data source | MOI (DLA/ LAO) |
| Measurement unit | Number of local biodiversity management plans (plans) |

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| Target value | 8.4 At least 20% of SET50 companies listed on the stock exchange voluntarily disclose information on business operations linked to biodiversity.<br>And by 2030, at least 30% of SET50 companies listed on the stock exchange voluntarily disclose information on business operations linked to biodiversity. |
| Indicator | 8.4 Number of SET50 companies listed on the stock exchange that disclose information on business operations linked to biodiversity |
| Definition | Biodiversity disclosure refers to the disclosure of information linked to biodiversity and ecosystems, or information about risks, dependencies, and impacts on biodiversity through diverse channels, including policies, plans, strategies, risk and impact management, reports, and websites. |
| Scope/target group | Voluntary disclosure of information by companies listed in the SET 50 index of the Stock Exchange of Thailand |
| Data compilation and calculation | Collection of data from companies that publish biodiversity-related information through diverse channels |
| Supporting data | - Number of companies listed in the SET 50 index in 2022<br>- Number of companies that publish biodiversity-related information through diverse channels |
| Data source | Other government agencies (SEC, BOT)<br>Other agencies (SET) |
| Measurement unit | Percentage of listed companies in the SET 50 index |

| **Target 9:** | **Expand channels and funding support from various sectors, as well as promote financial mechanisms, economic instruments, and incentive measures to support biodiversity conservation and sustainable Use.** |
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| Target value | 9.1 The proportion of the budget for biodiversity is not less than 0.3% of the total budget. |
| Indicator | 9.1 Budget for biodiversity |
| Definition | **Total Budget** refers to Thailand's annual expenditure budget, which is the budget plan for funding operations of government agencies, state enterprises, and other agencies to be used as a basis in each fiscal year, starting from October 1st each year until September 30th of the following year.<br>**Biodiversity Budget** refers to Thailand's annual expenditure budget related to biodiversity. |
| Scope/target group | Government agencies with operations related to biodiversity |
| Data compilation and calculation | Data collection from government agencies with biodiversity-related operations, following the BIOFIN process according to the formula specified in the Financial Need Assessment and results from the Biodiversity Expenditure Report covering 2023 and the current year. |
| Supporting data | - Thailand's annual expenditure budget for 2023 and the current year<br>- Biodiversity expenditure budget for 2023 and the current year of relevant central and local government agencies |
| Data source | MNRE (ONEP.)<br>OPM (BB)<br>International Organizations (BIOFIN) |
| Measurement unit | Percentage of total budget |

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| Target value | 9.2 At least 1 mechanism to support and access biodiversity funding sources is implemented. |
| Indicator | 9.2 Number of mechanisms to support and access biodiversity funding sources that are implemented |
| Definition | Supporting mechanisms that enhance opportunities for entrepreneurs to access funding sources for operations related to conservation, management, or adoption of ecosystem-friendly approaches, or reduction of impacts on biodiversity |
| Scope/target group | Establishment of mechanisms or measures by relevant government agencies and financial institutions to help increase access to domestic and international funding sources for all levels of entrepreneurs |
| Data compilation and calculation | Collection of data on mechanisms or measures that help increase access to biodiversity funding sources from relevant government agencies and financial institutions |
| Supporting data | Number of supporting mechanisms and access to biodiversity funding sources |
| Data source | Relevant government agencies and financial institutions |
| Measurement unit | Number of supporting mechanisms (mechanisms/measures) |
| Target value | 9.3 At least 1 sector has adjusted its operational guidelines to reduce impacts, threats, and harm to biodiversity. |
| Indicator | 9.3 Results of operational changes to reduce impacts, threats, and dangers to biodiversity in various sectors |
| Definition | Operational guidelines for reducing harm to biodiversity involve implementing new approaches to problem-solving or development that prioritize natural resources and the environment, with the aim of mitigating impacts and promoting sustainable ecosystem protection and restoration. |
| Scope/target group | Relevant sectors, including natural resource conservation agencies and national development agencies that have adopted environmentally friendly operational guidelines to replace existing guidelines that cause biodiversity loss |

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| Data compilation and calculation | Data collection from relevant government agencies |
| Supporting data | Operations of relevant sectors in reducing harmful to biodiversity |
| Data source | MNRE (ONEP)<br>International Organizations (BIOFIN) |
| Measurement unit | Number of sectors/types of agencies (branches) |
| Target value | 9.4 The number of incentive measures that positively affect biodiversity increases by at least 3 measures, while incentive measures that negatively affect biodiversity are reduced. |
| Indicator | 9.4 Number of incentive measures that positively affect biodiversity that are implemented, and number of incentive measures that negatively affect biodiversity |
| Definition | Incentives for biodiversity conservation refer to encouraging cooperation among public sector, private sector, and civil sector in conserving biodiversity or using it sustainably. Incentive measures are typically take the form of policy, legal, economic, or social measures. |
| Scope/target group | Biodiversity conservation incentives implemented across the country, covering all sectors including public sector, private sector, educational institutions, and civil society organizations |
| Data compilation and calculation | Document review and surveys through operational tracking questionnaires |
| Supporting data | Number of incentive measures that positively impact biodiversity |
| Data source | Relevant agencies and financial institutions |
| Measurement unit | Number of incentive measures (items) |

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| Target value | 9.5 Financial mechanisms to support operations for protection, conservation, and utilization of biodiversity increase no less than 5 mechanisms. |
| Indicator | 9.5 Number of financial mechanisms to support operations for protection, conservation, and utilization of biodiversity |
| Definition | Financial mechanisms for biodiversity include:<br>- Direct market mechanisms, such as fees, taxes, tolls, concession fees, payments for ecosystem services (PES), green/blue bonds, offset systems or cap-and-trade systems, biological resource utilization permits.<br>- Indirect market mechanisms, such as green products.<br>- Other mechanisms, such as environmental funds, tax deduction measures, subsidies, trust funds, and mitigation banks. |
| Scope/target group | Domestic financial mechanisms that have been formally implemented |
| Data compilation and calculation | Document review and monitoring through operational tracking questionnaires |
| Supporting data | Number of financial mechanisms for biodiversity |
| Data source | Relevant agencies and financial institutions |
| Measurement unit | Number of financial mechanisms (mechanisms). |

| **Target 10** | **Develop a biodiversity data system and knowledge connected with all sectors to support decision-making and operations in biodiversity management, and raise awareness about biodiversity and ecosystems.** |
|---|---|
| Target value | 10.1 Establish at least 3 national biodiversity data management systems to support decision-making and operations in biodiversity management. |
| Indicator | 10.1 Biodiversity data management systems to support decision-making and operations in biodiversity management |
| Definition | Number of databases that display information to support community work in each locality for data collection and storage, as well as creating biodiversity database networks, local wisdom, traditional knowledge, local culture, and community technology. This enables the collection and organization of biodiversity data, local wisdom, and data storage that can be either publicly accessible or confidential. The data that supports decision-making and implementation in biodiversity management, such as statistical data, spatial data, and searchable information. |
| Scope/target group | Biological and genetic resource databases of animals, plants, and microorganisms from relevant local and national agencies |
| Data compilation and calculation | Collection of biodiversity database systems from relevant agencies and data access sources (for public data) by using operational tracking questionnaires |
| Supporting data | Number of biodiversity data systems used to support decision-making and implementation in biodiversity management |
| Data source | MNRE (ONEP /DMCR /BEDO)<br>MHESI (NSTDA)<br>RSPG |
| Measurement unit | Number of database systems |

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| Target value | 10.2 Ensure at least 15% of local administrative organizations (LAOs) can systematically collect standardized data on local biological and genetic resources. |
| Indicator | 10.2 Number of LAOs that can systematically collect standardized data on local biological and genetic resources |
| Definition | LAOs participating in the Plant Genetic Conservation Project under the Royal initiative of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG) to support local resource conservation in provinces, including surveying and creating databases of local biodiversity resources |
| Scope/target group | LAOs across the country that participate in the RSPG to support provincial biodiversity resource conservation |
| Data compilation and calculation | Collection of LAO data from the RSPG member database and monitoring the number of LAOs that submit reports according to RSPG's criteria |
| Supporting data | - Number of LAOs participating in the RSPG<br>- Number of LAOs that have created local resource and biodiversity databases |
| Data source | RSPG<br>MOI (DLA / LAO) |
| Measurement unit | Number of LAOs that submit reports according to RSPG's criteria |
| Target value | 10.3 At least 50% of educational institutions in the RSPG university networks support local communities in verifying the accuracy of local biological and genetic resource data. |
| Indicator | 10.3 Number of local biological and genetic resource data items verified by educational institutions in the RSPG University Networks |
| Definition | Local resource and biodiversity data surveyed and recorded by LAOs that are RSPG members under the supervision of the RSPG university networks |
| Scope/target group | Local communities that are RSPG members under the supervision of the RSPG university networks across the country |

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| Data compilation and calculation | Data monitoring through operational tracking questionnaires |
| Supporting data | - Number of RSPG University Networks<br>- Number of local resource and biodiversity data entries from LAOs that are RSPG members that have been academically verified by the RSPG university Networks (2022 and present) |
| Data source | RSPG<br>RSPG University Networks |
| Measurement unit | Number of data entries that have verified |
| Target value | 10.4 Implement at least 50 activities/projects/plans per year related to the preparation, dissemination, and communication of biodiversity knowledge in various sectors. |
| Indicator | 10.4 Number of activities/projects/plans implemented to communicate biodiversity knowledge in various sector plans |
| Definition | Activities/projects/plans for disseminating and communicating biodiversity knowledge in various sectors' work plans, used for raising awareness and studying biodiversity data. Information and knowledge are essential components for effective communication awareness and educational measures, aimed at building understanding, awareness, and appreciation of the diverse values of biodiversity as a foundation for individuals' willingness to change and take necessary actions |
| Scope/target group | Nationwide activities/projects/plans for creating, disseminating and communicating biodiversity knowledge, spanning the public, private, and education sectors, as well as civil society organizations |
| Data compilation and calculation | Data and document review, and monitoring through operational tracking questionnaires |
| Supporting data | Number of activities/projects/plans for creating, disseminating and communicating biodiversity knowledge |

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| Data source | MNRE (ONEP /DCCE)<br>MHESI (TISTR /TSRI /NSTDA /NRCT /NSM) and relevant agencies |
| Measurement unit | Number of activities/projects/plans for creating, disseminating and communicating biodiversity knowledge |
| Target value | 10.5 All sectors (central and local government, private business sector, education sector, public sector, including local communities, vulnerable groups, youth, women, and indigenous peoples) are aware of the importance of the country's biodiversity and ecosystems for sustainable national development. |
| Indicator | 10.5 Level of awareness among various sectors (central and local government, private business sector, education sector, public sector, including local communities, vulnerable groups, youth, women, and indigenous peoples) regarding the importance of the country's biodiversity and ecosystems for sustainable national development |
| Definition | Key sectors can articulate the value and importance of biodiversity and demonstrate an understanding of the benefits of biodiversity's existence. |
| Scope/target group | Nationwide, sampled using academically rigorous sampling methods, covering representatives from four key sectors: government, private sector, education sector, and public sector |
| Data compilation and calculation | Survey using questionnaires, with random sampling from representatives of each sector |
| Supporting data | Survey results assessing the awareness of various sectors regarding biodiversity, including awareness of national biodiversity targets |
| Data source | MNRE (ONEP) |
| Measurement unit | Percentage of survey respondents with awareness of biodiversity and national biodiversity targets |

| **Target 11** | **Strengthen and develop capabilities and partnerships, including technology transfer in research, science, and innovation for biodiversity.** |
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| Target value | 11.1 Increased research outcomes on technologies and innovations for national biodiversity management |
| Indicator | 11.1 Number of technologies and innovations developed for national biodiversity management |
| Definition | **Technology** refers to the application of scientific knowledge and other disciplines combined to serve specific human needs by utilizing various resources throughout the production and distribution process. It is the practical application and adaptation of scientific knowledge to assist in implementation or problem-solving.<br>**Innovation** refers to new ideas, practices, or inventions that have not been used before, or developments and modifications of existing items to be more modern and achieve better results. When implemented, innovations help improve the implementation efficiency and effectiveness beyond previous methods. |
| Scope/target group | Technologies and innovations developed by public/private research organizations to support sustainable production and consumption goals, climate change adaptation, biodiversity conservation, with the aim to enhance the efficiency of biodiversity management |
| Data compilation and calculation | Data monitoring through operational tracking questionnaires |
| Supporting data | - Number of research, technologies, and innovations in agriculture<br>- Number of research, technologies, and innovations in climate change adaptation<br>- Number of research, technologies, and innovations in biodiversity conservation |
| Data source | MHESI (TISTR /TSRI /NSTDA /NRCT /NSM)<br>MOAC (DOA) and relevant agencies |
| Measurement unit | Number of research, technologies, and innovations |

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| Target value | 11.2 Implementation of at least 10 biodiversity-focused activities/research projects annually that produce datasets and knowledge |
| Indicator | 11.2 Number of biodiversity-supporting activities/research projects implemented |
| Definition | Activities/projects that produce datasets and knowledge related to biodiversity, including guidance, best practices, information technology media, and research conducted under biodiversity management activities by relevant government agencies, educational institutions, and research institutes |
| Scope/target group | Activities/projects that produce biodiversity-related datasets and knowledge nationwide, covering activities of public and private sectors, educational institutions, and civil society organizations |
| Data compilation and calculation | Collection of data on activities/projects that produce biodiversity-related datasets and knowledge from relevant agencies |
| Supporting data | Number of research activities/projects supporting biodiversity |
| Data source | MNRE (ONEP /RFD)<br>MHESI (TISTR /TSRI /NSTDA /NRCT /NSM) and relevant agencies |
| Measurement unit | Number of research activities/projects each year |
| Target value | 11.3 Increased implementation of both domestic and international activities/projects that facilitate knowledge exchange, technology transfer, and academic collaboration supporting biodiversity |
| Indicator | 11.3 Number of implemented domestic and international activities/projects involving knowledge exchange, technology transfer, and academic collaboration supporting biodiversity |
| Definition | Activities/projects involving knowledge exchange, technology transfer, and academic collaboration supporting biodiversity, promoting the exchange of research, academic knowledge, environmental technologies, and biological resource innovations both domestically and internationally among agencies, educational institutions, and relevant research institutes |

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| Scope/target group | Research collaboration activities and projects, as well as national and international academic conferences related to and supporting biodiversity organized by agencies, educational institutions, and relevant research institutes across the country |
| Data compilation and calculation | Data collection on research collaboration activities and projects, national and international academic conferences |
| Supporting data | Projects involving biodiversity knowledge exchange and biodiversity cooperation agreements |
| Data source | MHESI (TISTR /TSRI /NSTDA /NRCT /NSM)<br>and relevant agencies |
| Measurement unit | Number of projects/activities for knowledge exchange, technology transfer, and other cooperation |

| **Target 12** | **Develop and improve existing legal tools and regulations to effectively support the achievement of national biodiversity targets.** |
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| Target value | 12.1 Enact the Biodiversity Act to address gaps and enhance the effectiveness of the country's biological resource management by 2027. |
| Indicator | 12.1 The Biodiversity Act is enforced. |
| Definition | Advocacy for the enactment of the (Draft) Biodiversity Act aims to establish comprehensive legal enforcement through a central law that promotes and conserves biodiversity. The draft legislation seeks to address existing legal gaps by creating robust mechanisms for sustainable biological resource utilization, ensuring fair and equitable benefit-sharing, and implementing effective controls on biodiversity impacts. |
| Scope/target group | (Draft) Biodiversity Act B.E. .... |
| Data compilation and calculation | Collection of data on the status of consideration and enactment of the Biodiversity Act. |

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| Supporting data | Biodiversity Act |
| Data source | MNRE (ONEP) |
| Measurement unit | None |
| Target value | 12.2 Review and improve at least 3 laws and regulations related to the protection, conservation, and sustainable use of biodiversity to increase enforcement effectiveness. |
| Indicator | 12.2 Number of laws and regulations related to the protection, conservation, and utilization of biodiversity have been reviewed and improved. |
| Definition | Laws and regulations related to biodiversity management refer to subordinate legislation associated with biodiversity management by responsible agencies, which are reviewed or updated and enacted to enhance and expand the coverage of biological resource operations within current organizational mandates. |
| Scope/target group | Subordinate legislation of responsible agencies participating in the National Biodiversity Conservation and Utilization Committee, under the Prime Minister's Office Regulation on Biodiversity Conservation and Utilization B.E. 2563 (2020), and agencies under the (Draft) Biodiversity Act B.E. ... |
| Data compilation and calculation | Data collection on the amendment and enactment of subordinate legislation by relevant agencies |
| Supporting data | Subordinate legislation amended and enacted |
| Data source | Relevant government authorities |
| Measurement unit | Number of laws and regulations (acts/ regulations) |

# Organization Abbreviations

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| **MNRE** | **Ministry of Natural Resources and Environment** |
| OPS-MNRE | Office of the Permanent Secretary, Ministry of Natural Resources and Environment |
| DCCE | Department of Climate Change and Environment |
| PCD | Pollution Control Department |
| DMCR | Department of Marine and Coastal Resources |
| DMR | Department of Mineral Resources |
| DWR | Department of Water Resources |
| RFD | Royal Forest Department |
| DNP | Department of National Parks Wildlife and Plant Conservation |
| ONEP | Office of Natural Resources and Environmental Policy and Planning |
| BGO | Botanical Garden Organization |
| ZPO | Zoological Park Organization of Thailand |
| FIO | Forest Industry Organization |
| BEDO | Biodiversity-based Economy Development Office (Public Organization) |
| TGO | Thailand Greenhouse Gas Management Organization (Public Organization) |
| **MOAC** | **Ministry of Agriculture and Cooperatives** |
| OPS-MOAC | Office of the Permanent Secretary, Ministry of Agriculture and Cooperatives |
| RICE | Rice Department |
| RID | Royal Irrigation Department |
| DOF | Department of Fisheries |
| DLD | Department of Livestock Development |
| LDD | Land Development Department |
| DOA | Department of Agriculture |
| DOAE | Department of Agricultural Extension |
| QSDS | Queen Sirikit Department of Sericulture |
| ACFS | National Bureau of Agricultural Commodity and Food Standards |
| OAE | Office of Agricultural Economics |
| HRDI | Highland Research and Development Institute (Public Organization) |
| ARDA | Agricultural Research Development Agency (Public Organization) |
| **MHESI** | **Ministry of Higher Education, Science, Research and Innovation** |
| OPS-MHESI | Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation |
| NRCT | National Research Council of Thailand |

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| STI | National Science, Technology and Innovation Policy Office |
| NSTDA | National Science and Technology Development Agency |
| BIOTEC | National Center for Genetic Engineering and Biotechnology |
| PMU-B | Program Management Unit for Human Resources & Institutional. Development, Research and Innovation |
| TISTR | Thailand Institute of Scientific and Technological Research |
| NSM | National Science Museum Thailand |
| OPS-MHESI | Office of the Permanent Secretary (OPS), MHESI Thailand |
| NRCT | National Research Council of Thailand |
| TSRI | Thailand Science Research and Innovation |
| NSTDA | National Science and Technology Development Agency |
| GISTDA | Geo-Informatics and Space Technology Development Agency (Public Organization) |
| NIA | National Innovation Agency (Public Organization) |
| **MOPH** | **Ministry of Public Health** |
| OPS-MOPH | Office of the Permanent Secretary, Ministry of Public Health |
| DTAM | Department of Thai Traditional and Alternative Medicine |
| DMSC | Department of Medical Sciences |
| DOH | Department of Health |
| NIH | National Institute of Health of Thailand |
| FDA | Food and Drug Administration |
| GPO | Government Pharmaceutical Organization |
| **MOF** | **Ministry of Finance** |
| ExD | Excise Department |
| Customs | Customs Department |
| PDMO | Public Debt Management Office |
| FPO | Fiscal Policy Office |
| **MFA** | **Ministry of Foreign Affairs** |
| DTLA | Department of Treaties and Legal Affairs |
| **MOTS** | **Ministry of Tourism and Sports** |
| OPS-MOTS | Office of the Permanent Secretary, Ministry of Tourism and Sports |
| DOT | Department of Tourism |
| TAT | Tourism Authority of Thailand |
| DASTA | Designated Areas for Sustainable Tourism Administration (Public Organization) |

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| **MSDHS** | **Ministry of Social Development and Human Security** |
| DCY | Department of Children and Youth |
| DOP | Department of Older Persons |
| DWF | Department of Women's Affairs and Family Development |
| DSDW | Department of Social Development and Welfare. |
| CODI | Community Organizations Development Institute |
| **MOD** | **Ministry of Defence** |
| RTN | Royal Thai Navy |
| RTA | Royal Thai Army |
| **MOT** | **Ministry of Transport** |
| MD | Marine Department |
| DOH | Department of Highways |
| PAT | Port Authority of Thailand |
| SRT | State Railway of Thailand |
| AOT | Airports of Thailand Public Company Limited |
| **MDES** | **Ministry of Digital Economy and Society** |
| NSO | National Statistical Office |
| **MOC** | **Ministry of Commerce** |
| DIP | Department of Intellectual Property |
| DBD | Department of Business Development |
| **MOI** | **Ministry of Interior** |
| DOPA | Department of Provincial Administration |
| CDD | Community Development Department |
| DDPM | Department of Disaster Prevention and Mitigation |
| DPT | Department of Public Works and Town & Country Planning |
| DLA | Department of Local Administration |
| LAO | Local Administrative Organization |
| **MOJ** | **Ministry of Justice** |
| RLPD | Right and Liberties Protection Department |
| **MOC** | **Ministry of Culture** |
| DCP | Department of Cultural Promotion |
| SAC | Princess Maha Chakri Sirindhorn Anthropology Centre (Public Organization) |
| **MIND** | **Ministry of Industry** |
| DIW | Department of Industrial Works |
| DIP | Department of Industrial Promotion |
| DPIM | Department of Primary Industries and Mines |

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| TISI | Thai Industrial Standards Institute |
| IEAT | Industrial Estate Authority of Thailand |
| **OPM** | **Office of the Prime Minister** |
| PRD | Government Public Relations Department |
| NED | Natural Resources and Environmental Crime Suppression Division |
| Thai-MECC | Thai-Maritime Enforcement Command Center |
| EECO | Eastern Economic Corridor Office of Thailand |
| ONLB | Office of the National Land Policy Board |
| BOI | Thailand Board of Investment |
| ONWR | Office of National Water Resources |
| NOB | National Office of Buddhism |
| OSMEP | Office of Small and Medium Enterprises Promotion |
| NESDC | Office of the National Economic and Social Development Council |
| BB | Budget Bureau |
| **Bureau of The Royal Household** | |
| RSPG | Plant Genetic Conservation Project Under the Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn |
| **Independent Constitutional Organizations** | |
| NHRC | Office of the National Human Rights Commission of Thailand |
| SAO | State Audit Office of the Kingdom of Thailand |
| CIPT | Council of Indigenous Peoples in Thailand |
| **Other Government Agencies** | |
| BOT | Bank of Thailand |
| SEC | Securities and Exchange Commission, Thailand |
| **Other Organizations** | |
| SET | Stock Exchange of Thailand |

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**Prepared by** Biodiversity Management Division
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