

Working Draft 2022

Kingdom of Thailand

Country Profile and Context

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Abbreviations and Acronyms

ACIAR	Australian Centre for International Agricultural Research
ADORC	Acid Deposition and Oxidant Research Center
AFoCO	Asian Forest Cooperation Organization
APAFRI	Asia Pacific Association of Forestry Research Institutions
ASEAN	Association of Southeast Asian Nations
AusAID	Australian Agency for International Development
B.E.	Buddhist Era
B2B	Business-to-Business
BCG	The Boston Consulting Group
BMA	Bangkok Metropolitan Administration
BoP	Balance of Payments
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CHM	Clearing-House Mechanism of the Convention on Biological Diversity
CIDA	Canadian International Development Agency
CIF	Cost, Insurance and freight
CIFOR	Center for International Forestry Research
CIT	Corporate Income Tax
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COVID-19	Coronavirus Infectious Disease-19
CSIRO	Australia's Commonwealth Scientific and Industrial Research Organization
DANIDA	Danish International Development Agency
DDPM	Department of Disaster Prevention and Mitigation
DMC	Destination Management Company
DNP	Department of National Parks, Wildlife and Plant Conservation
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EANET	Acid Deposition and Monitoring Network in East Asia
EDI	Electronic Data Interchange
EU	European Union
FAO	Food and Agriculture Organization
FBA	Foreign Business Act
FDI	Foreign Direct Investment
FFPRI	Forestry and Forest Products Research Institute
FINNIDA	Finnish International Development Agency
FIO	Forest Industry Organization
FoB	Free on Board

FRA	Forest Resources Assessment
FRIM	Forest Research Institute Malaysia
FTE	Full-Time Equivalents
GAP	Good Agricultural Practice
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GVCs	Global Value Chains
GVW	Gross Vehicle Weight
HS	Harmonized System
ICRAF	International Centre for Research in Agroforestry
INBAR	International Network on Bamboo and Rattan
INC	Initial National Communication
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
ITTO	The International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
IUFRO	International Union of Forest Research Organizations
JICA	Japan International Cooperation Agency
JIFPRO	Japan International Forestry Promotion & Cooperation Centre
JIRCAS	Japan International Research Center for Agricultural Sciences
LDC	Least Developed Countries
LDD	Land Development Department
MDF	Medium-Density Fibreboard
MNRE	Ministry of Natural Resources and Environment
MOAC	Ministry of Agriculture and Cooperatives
NAP	National Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NESDP	National Economic and Social Development Plan
NGO	Non-Governmental Organization
NTFPs	Non-Timber Forest Products
OECD	Organisation for Economic Co-operation and Development
PFE	Permanent Forest Estate
PIT	Personal Income Tax
PPP	Purchasing power parity
REDD	Reducing Emission from Deforestation and Degradation
RFD	Royal Forest Department
RRR-DFE	Reclamation, Rehabilitation & Restoration of Degraded Forest Ecosystems
RS	Remote Sensing

RWE	Round-Wood Equivalent
SFDRR	Sendai Framework for Disaster Risk Reduction
SFM	Sustainable Forest Management
SIDA	Swedish International Development Cooperation Agency
SLM	Sustainable Land Management
SME	Small and Medium Enterprises
SNC	Second National Communication
TBCA	Trans-boundary Biodiversity Conservation Area
UNCCD	United Nation Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UTC	Universal Time Coordinated
VAT	Value-Added Tax
VPAs	Voluntary Partnership Agreements
WB	The World Bank
WDCD	World Day to Combat Desertification (World Desertification Day)

1. Introduction

The Kingdom of Thailand (hereinafter referred to as Thailand) has achieved notable success in economic growth and human development in the last few decades. The country attained the status of an upper-middle-income country in 2020 and is now the second-largest economy in the Association of Southeast Asian Nations (ASEAN), with an estimated gross domestic product (GDP) of USD 544.5 billion in 2019.^{1 2}

However, despite rapid economic growth, Thailand has considered climate change as the priority task requiring urgent action. The key goals of the new national development of the National Strategy (2018–2037) are: “A Secure Nation, Contented People, Continued Economic Growth, An Equal Society, and Sustainable Natural Resources”. In pursuit of these goals, Thailand is trying to boost multi-dimensional national competitiveness to ensure consistent economic growth; empower human beings at every stage of life to:

1. produce a competent and moral citizenry;
2. broaden opportunities to improve social equality;
3. promote environmentally sustainable growth with improved quality of life; and
4. develop the administrative efficiency of government for greater public benefits.³

In forestry, the processes to support Clean Development Mechanism (CDM) Project have been prepared. Also, it supports the policy in Reducing Emission from Deforestation and Degradation in Developing Countries (REDD). Thailand has also collaborated with more than 20 other countries and international organizations at bilateral, regional, and international levels for several forestry activities.⁴

This document aims to provide a general overview of Thailand and relevant contexts and baseline information to assist the designing of the cooperation framework under AFoCO. The information contained in this document has been gathered mainly through desk-based research and review of available national statistics, national laws and policies, technical reports, and other secondary data sources, and subsequently validated by the focal agency of Thailand. Should there be significant changes in national forest policy or context, they will be reflected accordingly.

¹ United Nations Country Team Thailand, *United Nations Partnership Framework for Thailand 2017-2021* (n.p.: The United Nations Country Team Thailand, n.d.), 12.

² "Thailand | Data," *Data.worldbank.org*, last modified n.d., accessed May 17, 2021, <https://data.worldbank.org/country/Thailand>.

³ National Strategy Committee, *NATIONAL STRATEGY 2018 – 2037* (n.p.: The National Strategy Committee, 2019), 6.

⁴ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 43.

2. Country Overview

2.1. Geographic Profile

Thailand is located in Southeast Asia, bordering Cambodia, Lao People's Democratic Republic, Malaysia, and Myanmar, between the Gulf of Thailand and the Andaman Sea. Geographic coordinates are the 5° 37' and 20° 15' North latitudes and the 97° 22' and 105° 37' East longitudes.⁵ Thailand has a total area of 513,120 km² (land: 510,890 km², water: 2,230 km²).⁶ Thailand's capital is Bangkok, a city with a population of more than 10 million.⁷ The south coast of Thailand faces the Gulf of Thailand, while the Isthmus of Kra is bordered on the west by the Andaman Sea (part of the Indian Ocean) and the east by the Gulf of Thailand. Thailand also has coastal islands in the Andaman Sea and the Gulf of Thailand. The largest, with provincial status, is Phuket, off the west coast; on the gulf side, the largest islands are Samui and Pangan.⁸



Figure 1: Thailand is highlighted in orange⁹

⁵ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 5.

⁶ "Thailand-The World Factbook," *Cia.gov*, last modified May 03, 2021, accessed May 17, 2021, <https://www.cia.gov/the-world-factbook/countries/thailand/>.

⁷ ADB, *Civil Society Briefs Thailand* (Bangkok: The ADB (Thailand Resident Mission), 2011), 1.

⁸ UNHCR, *Country Profile: Thailand* (n.p.: The UNHCR, 2007), 8-10.

⁹ "Thailand," *Encyclopedia Britannica*, last modified n.d., accessed May 17, 2021, <https://www.britannica.com/place/Thailand/images-videos#Images>.

Table 1: Summary of the Country Profile

Official name (ISO 3166 code)	Kingdom of Thailand (TH) ¹⁰
Capital	Bangkok
Population	66,171 thousand (2021)
Language	Thai
Currency (ISO 4217 code)	Baht (THB) ¹¹
Land Area	51,089 thousand ha (2019, FAO)
Forest Area	19,909 thousand ha (2019, FAO) ¹²
GDP per capita (PPP)	19,228 USD (2019)
HDI	0.777, 79 th rank (2020, UNDP) ¹³
DAC-ODA Recipients	Upper Middle-Income Countries and Territories which are not LDCs
Time zone	UTC +7
Calling code	+66

2.2. Government and Administration

Thailand is a constitutional monarchy, whereby the Prime Minister is the head of government and a hereditary monarch is head of state. Under the present Constitution, the Prime Minister must be a Member of Parliament. Cabinet members do not have to be Members of Parliament. The legislature can hold a vote of no confidence against the Premier and members of the Cabinet if it has sufficient votes. The judiciary is independent of the executive and the legislative branches. Thailand's first Constitution was promulgated in 1932 at the crux of a democracy movement, but this Constitution was not long-lasting and has since been changed by interim charter or formal constitutional promulgation 18 times. For most of the 60 years following the 1932 democracy movement, Thailand was under military rule. From 1973, the country began the transition to civilian rule, although at times the military again took control of the country. The first democratically elected Prime Minister came to power in 1988; and up to 1997, when a new Constitution was adopted, there was several leaders and coalition governments. The 1997 Constitution brought reforms in government institutions and the relationship between the state and the people.¹⁴

Constitution

1. History: many previous; latest drafted and presented March 29, 2016, approved by referendum August 7, 2016, signed into law by the king April 6, 2017

¹⁰ "TH-Thailand," *Iso.org*, last modified n.d., accessed May 17, 2021,

<https://www.iso.org/obp/ui/#iso:code:3166:TH>.

¹¹ "Data Standards," *SIX*, last modified n.d., accessed May 17, 2021, <https://www.currency-iso.org/en/home/tables/table-a1.html>.

¹² "general profile," *Food and Agriculture Organization of the United Nations*, last modified n.d., accessed May 17, 2021, <http://www.fao.org/countryprofiles/index/en/?iso3=THA>.

¹³ "Human Development Reports," *Hdr.undp.org*, last modified n.d., accessed May 17, 2021, <http://hdr.undp.org/en/countries/profiles/THA>.

¹⁴ ADB, *CIVIL SOCIETY BRIEFS Thailand* (Bangkok: The ADB (Thailand Resident Mission), 2011), 1.

2. Amendments: proposed as a joint resolution by the Council of Ministers and the National Council for Peace and Order (the junta that has ruled Thailand since the 2014 coup) and submitted as a draft to the National Legislative Assembly; passage requires a majority vote of the existing Assembly members and presentation to the monarch for assent and countersignature of the prime minister

Legal system

Civil law system with common law influences

● **Executive branch**

1. Chief of state: King His Majesty King Maha Vajiralongkorn Phra Vajiraklao Chaoyuhua
2. Head of government: Prime Minister Prayut Chan-o-cha (since August 2014)
3. Cabinet (Box 1): Council of Ministers nominated by the prime minister, appointed by the king; a Privy Council advises the king
4. Elections/appointments: the monarchy is hereditary; the House of Representatives and Senate approves a person for Prime Minister who must then be appointed by the King (as stated in the transitory provision of the 2017 constitution); the office of the prime minister can be held for up to a total of 8 years

Legislative branch

1. bicameral National Assembly or Ratthasapha consists of:
 - A. Senate or Wuthissapha (250 seats; members selected by National Council for Peace and Order (NCPO) and appointed by King of Thailand to serve 5-year terms)
 - B. House of Representatives or Saphaphuthan Ratsadon (500 seats; 350 members directly elected in single-seat constituencies by simple majority vote and 150 members elected in a single nationwide constituency by party-list proportional representation vote; members serve 4-year terms)
2. elections: Senate - last held on May 14, 2019 (next to be held in 2024), House of Representatives - last held on March 24, 2019 (next to be held in 2023)

Judicial branch

1. highest courts: Supreme Court of Justice (consists of the court president, 6 vice presidents, 60-70 judges, and organized into 10 divisions); Constitutional Court (consists of the court president and 8 judges); Supreme Administrative Court (number of judges determined by Judicial Commission of the Administrative Courts)
2. judge selection and term of office: Supreme Court judges selected by the Judicial Commission of the Courts of Justice and approved by the monarch; judge term determined by the monarch; Constitutional Court justices - 3 judges drawn from the Supreme Court, 2 judges drawn from the Administrative Court, and 4 judge candidates

selected by the Selective Committee for Judges of the Constitutional Court, and confirmed by the Senate; judges appointed by the monarch serve single 9-year terms; Supreme Administrative Court judges selected by the Judicial Commission of the Administrative Courts and appointed by the monarch; judges serve for life

3. subordinate courts: courts of the first instance and appeals courts within both the judicial and administrative systems; military courts

Administrative divisions

Thailand consists of 77 provinces (*changwat*, singular and plural) and 878 districts (*Amphoe*) and 1 municipality* (*Bangkok*). Each district is further divided into sub-districts (*Tambons*).¹⁵

Thailand is divided into four provinces, five provinces, and six provinces depending on their use. Its main use is divided into six geographical regions and four political regions (Figure 2).

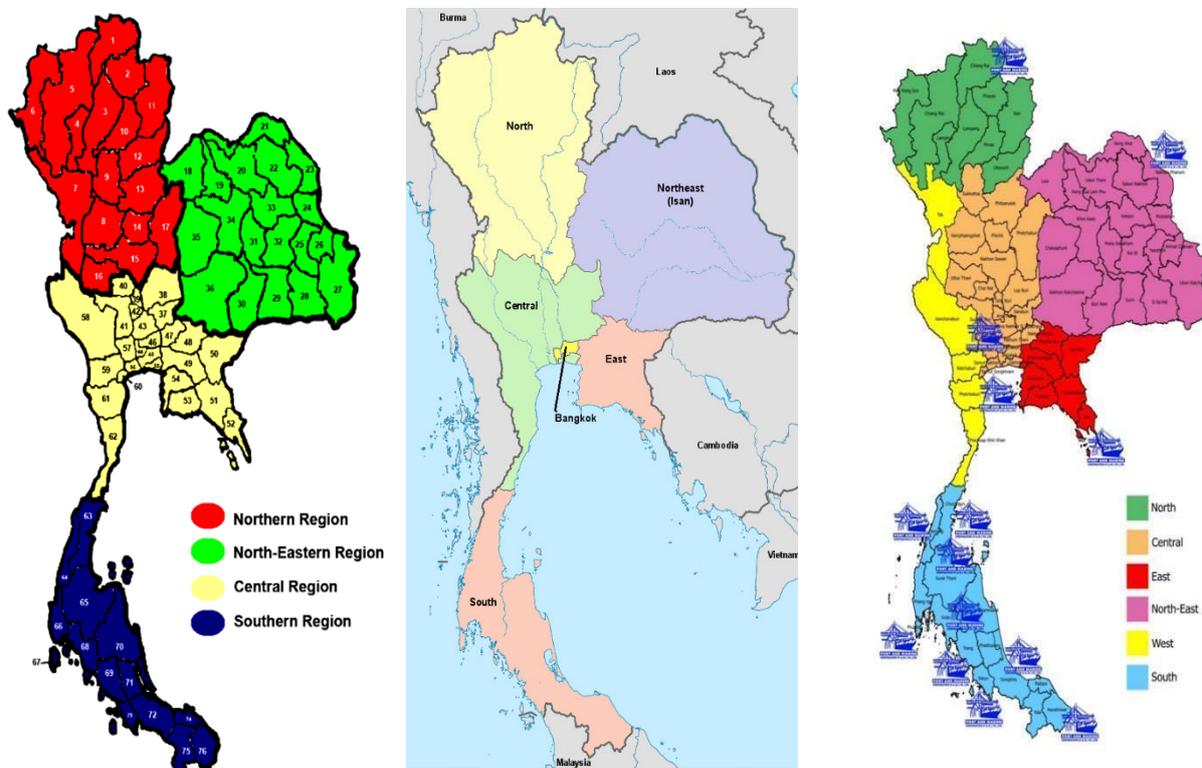


Figure 2: Different Divisions of the Provinces^{16 17 18}

¹⁵ Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, *Working Paper No. APFSOS II/WP/2009/22 THAILAND FORESTRY OUTLOOK STUDY* (Bangkok: FAO, 2009), 7.

¹⁶ Beaver Roger, Sittichaya Wisut and Lan-Yu Liu, *Synopsis of the Scolytine Ambrosia Beetles of Thailand* (n.p.: Zootaxa, 2014), 1-82.

¹⁷ "Thailand's Regions," *Asia for Visitors - Your complete online travel resource for Southeast Asia*, last modified n.d., accessed May 17, 2021, <http://thailandforvisitors.com/general/regions.html>.

¹⁸ "Know that Thailand is divided into 6 regions," *Stationremodel*, last modified n.d., accessed May 17, 2021, <https://stationremodel.com/2019/01/28/know-that-thailand-is-divided-into-6-regions/>.

Box 1: Current cabinet (persons) ¹⁹

Prime Minister
Deputy Prime Minister (6)
Minister Attached to the Prime Minister's Office
Minister of Defence
Deputy Minister of Defence
Minister of Finance
Deputy Minister of Finance
Minister of Foreign Affairs
Minister of Tourism and Sports
Minister of Social Development and Human Security
Minister of Higher Education Science Research and Innovation
Minister of Agriculture and Cooperatives
Deputy Minister of Agriculture and Cooperatives (3)
Minister of Transport
Deputy Minister of Transport (2)
Minister of Digital Economy and Society
Minister of Natural Resources and Environment
Minister of Energy
Minister of Commerce
Deputy Minister of Commerce
Minister of Interior
Deputy Minister of Interior (2)
Minister of Justice
Minister of Labour
Deputy Minister of Labour
Minister of Culture
Minister of Education
Deputy Minister of Education (2)
Minister of Public Health
Deputy Minister of Public Health
Minister of Industry

2.3. People and Population

Population

Thailand's population was estimated at 66,171 thousand in 2021²⁰ making it the 20th most populous country in the world. The population growth rate was estimated in 2019 at 0.30 percent. In 2005, 68 percent of the population lived in rural areas and 32 percent in urban areas.²¹

¹⁹ "Royal Thai Government-About US," *Thaigov.go.th*, last modified n.d., accessed May 17, 2021, <https://www.thaigov.go.th/aboutus/current/cabinet>

²⁰ *The Royal Gazette* No.139 special 12 ,Dec 31 ,2021

²¹ UNHCR, *Country Profile: Thailand* (n.p.: The UNHCR, 2007), 10.

But, in 2019, 49 percent of the population lived in rural areas and 51 percent in urban areas.²² The largest population, according to 2019 census data, was in the northeast, with 22,014,248 inhabitants and a population density of 130.4 persons per km². Bangkok and Vicinities had a population of 10,944,863 inhabitants and a population density of 1,410.1 persons per km². The mountainous north had nearly 12,119,572 people, with a density of 71.4 persons per km², while the south had 9,493,757 people and a density of 134.3 persons per km².²³

2.4. Sociocultural Context

Society

Throughout the 1990s the dynamics of civil society changed, parallel to economic growth. Thai civil society is now varied and diverse and coexists with strong constitutional guarantees of direct political participation, freedom of assembly, requirements for government consultation, and local determination of community rights. ‘Civil society,’ in the Thai context, covers citizen organizations with both political, as well as social and economic motivations, and groups are often active around several sets of issues.²⁴

Religions

The predominant religion is Theravada Buddhism, representing about 94 percent of the practicing population and about 90 percent of all Thai people. Muslims represent 4.6 percent; Christians 0.7 percent; Hindus, 0.1 percent; and Sikhs, Baha’i Faith, and others, 0.6 percent. Section 73 of the constitution states that the state shall patronize and protect Buddhism and other religions, promote harmony among the followers of all religions, and encourage the application of religious principles “to create virtue and develop the quality of life”. Religious instruction is required in public schools at both the primary and secondary education levels.²⁵

2.5. Economic Situation

Economy Overview (GDP– growth, contributions by sector)

Over the last four decades, Thailand has made remarkable progress in social and economic development, moving from a low-income to an upper-income country in less than a generation. As such, Thailand has been a widely cited development success story, with sustained strong growth and impressive poverty reduction.

In recent years, economic growth slowed from -6.4% in 2020 to -0.3% in 2021 (Coronavirus pandemic) The key drivers of slowing growth were weaker demand for exports reflecting the impact of US-China trade tensions, slowing public investments, and a drought, impacting

²² "Thailand | UNESCO UIS," *Uis.unesco.org*, last modified n.d., accessed May 17, 2021, <http://uis.unesco.org/country/TH>.

²³ "Statistical Yearbook Thailand 2020," *Service.nso.go.th*, last modified n.d., accessed May 17, 2021, <http://service.nso.go.th/nso/nsopublish/pubs/e-book/SYB-2563/files/assets/basic-html/index.html#79>.

²⁴ ADB, *CIVIL SOCIETY BRIEFS Thailand* (Bangkok: The ADB (Thailand Resident Mission), 2011), 1-2.

²⁵ UNHCR, *Country Profile: Thailand* (n.p.: The UNHCR, 2007), 11.

agricultural production. Key development challenges also pose a risk to Thailand’s future growth if it wants to attain high-income status by 2037. These include weakness in education outcomes and skills matching, which risk future productivity and chances of the younger generation, and increasing spatial inequality, with remote areas falling behind in economic and welfare indicators.

Since the economy lost momentum at the end of 2019, the starting point for 2020 was already weak. The pandemic and the introduction of travel restrictions devastated Thailand’s large tourism sector, causing one of Emerging Asia’s steepest declines in second and third-quarter GDP. Thai GDP contracted by 6.4% year-on-year in the third quarter of 2020, after a contraction of 12.1% in Q2 and 1.8% in Q1 (Figure 3).²⁶ While Thailand has been successful in stemming the tide of COVID-19 (coronavirus) infections over the last few months, the economic impact has been severe and has led already to widespread job losses, affecting middle-class households and the poor alike and threatening hard-won gains in poverty reduction. Economic growth in Thailand is expected to contract in 2020, which is among the sharpest projected declines in the East Asia and Pacific region, due to a decline in external demand affecting trade and tourism, supply chain disruptions, and weakening domestic consumption.²⁷

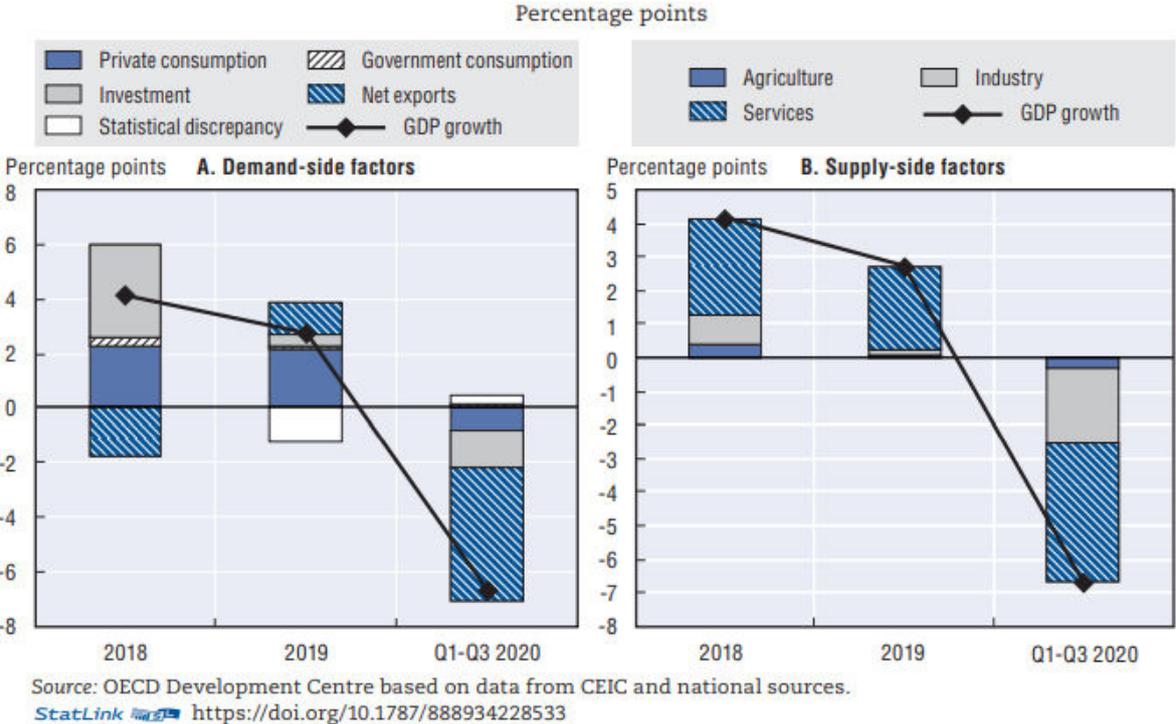


Figure 3: Contribution to GDP growth in Thailand, 2018-2020

The results of the 2012 Business and Industrial Census, there were totally 424,196 manufacturing establishments in the Whole Kingdom. The highlight industries of this region

²⁶ OECD, *Economic Outlook for Southeast Asia, China and India 2021: Reallocating Resources for Digitalisation* (Paris: OECD, 2021), 65-66.

²⁷ "Overview," *World Bank*, last modified n.d., accessed May 17, 2021, <https://www.worldbank.org/en/country/thailand/overview#1>.

were the manufacture of food products and the manufacture of wearing apparel, which had a proportion, of about 24.9 and 17.1 percent respectively. The followings were the manufacture of wood and products of wood and cork (except furniture); the manufacture of articles of straw and plaiting materials (about 14.3 percent), manufacture of textiles (13.9 percent). The other divisions of industry, not mentioned above, each division had less than 8.0 percent (Table 2).²⁸

Table 2: Percentage of Manufacturing Establishments by Division of Industry

Division	Percentage (Establishments)
Total	100 (424,196)
Manufacture of food	24.9
Manufacture of textiles	13.9
Manufacture of wearing apparels	17.1
Manufacture of wood and products of wood and cork (except furniture), manufacture of articles of straw and plaiting materials	14.3
Printing and reproduction of recorded media	1.5
Manufacture of other non-metallic mineral products	2.9
Manufacture of fabricated metal products (excepts machinery and equipment)	7.7
Manufacture of furniture	2.3
Other manufacturing	5.4
Repair and installation of machinery and equipment	1.5
Others	8.5

Trade

In 2018, The total value of exports (FoB) was 252,485 million. The total value of imports (CIF) was 249,174 million. At the HS6 digit level, 4,356 products were exported to 229 countries, and 4,476 products were imported from 230 countries.

The top five exported HS-6 digit level products to the world by Thailand along with trade value are:

1. Thailand exported Parts and accessories of automatic data process, worth US\$ 17,336,849.67 million.
2. Thailand exported Petroleum oils, etc, (excl. crude); preparation, worth US\$ 8,252,832.79 million.

²⁸ http://web.nso.go.th/en/census/bi/data/2012/2012_w_MI_Executive%20Summary.pdf NSO, *Census: Executive Summary* (n.p.: The NSO, 2012), 1-2.

3. Thailand exported Monolithic integrated circuits, digital, worth US\$ 7,865,940.73 million.
4. Thailand exported Diesel-powered trucks with a GVW not exceeding, worth US\$ 7,338,464.96 million.
5. Thailand exported Semi-milled or wholly milled rice, worth US\$ 5,028,594.94 million.

The top five imported HS-6 digit level products from the world by Thailand along with trade value are:

1. Thailand imported Petroleum oils and oils obtained from, bituminous, worth US\$ 27,799,102.62 million.
2. Thailand imported Gold in unwrought forms non-monetary, worth US\$ 11,158,204.29 million.
3. Thailand imported Monolithic integrated circuits, digital, worth US\$ 8,222,092.02 million.
4. Thailand imported Transmission apparatus, for radioteleph incorpo, worth US\$ 5,963,578.69 million.
5. Thailand imported Petroleum oils, etc, (excl. crude); preparation, worth US\$ 5,364,922.34 million.

The top five countries to which Thailand exported in 2018 are below, along with the percent of total exports that went to that country (Table 3):

1. Thailand exports to China worth US\$ 30,175 million, with a partner share of 11.95 percent.
2. Thailand exports to the United States worth US\$ 28,123 million, with a partner share of 11.14 percent.
3. Thailand exports to Japan worth US\$ 24,942 million, with a partner share of 9.88 percent.
4. Thailand exports to Vietnam worth US\$ 12,958 million, with a partner share of 5.13 percent.
5. Thailand exports to Hong Kong, China worth US\$ 12,523 million, with a partner share of 4.96 percent.

The top five countries from which Thailand imported goods in 2018 are below, along with the percent of total imports that came from the country (Table 3):

1. Thailand imports from China worth US\$ 49,953 million, with a partner share of 20.05 percent.

2. Thailand imports from Japan worth US\$ 35,260 million, with a partner share of 14.15 percent.
3. Thailand imports from the United States worth US\$ 15,201 million, with a partner share of 6.10 percent.
4. Thailand imports from Malaysia worth US\$ 13,350 million, with a partner share of 5.36 percent.
5. Thailand imports from the United Arab Emirates worth US\$ 10,695 million, with a partner share of 4.29 percent.

Table 3: Thailand Top 5 Export and Import Partners²⁹

Importer (Market)				Exporter			
Rank	Country	Trade (in million USD)	Partner share(%)	Rank	Country	Trade (in million USD)	Partner share(%)
1 st	China	30,175	11.95	1 st	China	49,953	20.05
2 nd	United States	28,123	11.14	2 nd	Japan	35,260	14.15
3 rd	Japan	24,942	9.88	3 rd	United States	15,201	6.10
4 th	Vietnam	12,958	5.13	4 th	Malaysia	13,350	5.36
5 th	Hong Kong	12,523	4.96	5 th	United Arab Emirates	10,695	4.29

Foreign investment

Thailand has had an impressive economic development trajectory over the past decades. Foreign direct investment (FDI) and integration in global value chains (GVCs) have been important enablers of this success. Inward FDI's share in GDP has increased to above 50% today. The emerging global economic crisis related to the COVID-19 pandemic is expected to bring this long period of growth to a sudden halt. According to the OECD, the economy is predicted to contract by approximately 7% in 2020, where exports and FDI are likely to slow even more. Thailand's experience of severe floods in 2011, which also resulted in a sudden—but only temporary—interruption of GVC networks, provides some hope that Thailand's GVC integration is quite resilient.

With the creation of the Foreign Business Act (FBA) in 1999, Thailand was early in opening up to foreign investment in manufacturing but has not liberalized further since then.

²⁹ "Thailand Trade Summary | WITS Data," *Wits.worldbank.org*, last modified n.d., accessed May 17, 2021, <https://wits.worldbank.org/CountryProfile/en/Country/THA/Year/LTST/Summary>.

Thailand's primary and services sectors remain particularly restrictive to foreign investment, according to the OECD FDI Regulatory Restrictiveness Index.

Thailand's vision of transitioning into a resilient, innovative, and technology-driven economy will not be achieved without significant progress towards green growth, especially in a post-COVID-19 context. Recognizing these challenges, Thailand has made strides in developing a comprehensive and consistent policy framework for green growth and the environment and in promoting green investment. The BCG economy model puts green growth-related concepts at the heart of continued development.³⁰

*Table 4: The Flow of Foreign Direct Investment*³¹

	2017	2018	2019
Foreign direct investment, net (BoP, current US\$)	5,931,879,643	4,181,659,339	5,327,519,459
Foreign direct investment, net inflows (% of GDP)	1.82	2.60	0.89
Foreign direct investment, net inflows (BoP, current US\$)	8,285,169,820	13,186,328,518	4,816,635,832
Foreign direct investment, net outflows (BoP, current US\$)	14,217,049,463	17,367,987,857	10,144,155,290

Labor & taxation

The employment to population ratio is 66.8 % (ages 15 and older). The female labour force participation rate is 59.2% (ages 15 and older). The skilled labour force is 38.8% of labour force.³²

Labour Costs in Thailand decreased to 102.30 points in the third quarter of 2020 from 106.47 points in the second quarter of 2020. And, in 2020, Wages is 14,620.50 THB/month. Wages in Manufacturing is 13,316.60 THB/month.³³

Thailand's tax system can be categorized into four categories:

1. Personal Income Tax

Personal Income Tax (PIT) is a direct tax levied on the income of a person. A person means an individual, an ordinary partnership, a non-juristic body of the person, and

³⁰ "Executive Summary | OECD Investment Policy Reviews: Thailand," *Oecd-ilibrary.org*, last modified n.d., accessed May 17, 2021, <https://www.oecd-ilibrary.org/sites/c4e4ee1c-en/index.html?itemId=/content/publication/c4e4ee1c-en>.

³¹ "World Development Indicators | DataBank," *Databank.worldbank.org*, last modified Apr 26, 2021, accessed May 17, 2021, <https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.PCAP.PP.CD&coentry=>.

³² "Human Development Reports," *Hdr.undp.org*, last modified n.d., accessed May 17, 2021, <http://hdr.undp.org/en/countries/profiles/THA>.

³³ "Thailand Unit Labour Cost | 2001-2020 Data | 2021-2023 Forecast | Historical | Chart," *Tradingeconomics.com*, last modified n.d., accessed May 17, 2021, <https://tradingeconomics.com/thailand/labour-costs>.

an undivided estate. In general, a person liable to PIT has to compute his tax liability, file tax return, and pay tax, if any, accordingly on a calendar year basis.

2. Corporate Income Tax

Corporate Income Tax (CIT) is a direct tax levied on a juristic company or partnership carrying on business in Thailand or not carrying on business in Thailand but deriving certain types of income from Thailand.

3. Value Added Tax

Value Added Tax (VAT) has been implemented in Thailand since 1992 replacing Business Tax (BT). VAT is an indirect tax imposed on the value-added of each stage of production and distribution.

4. Stamp Duty

Stamp duties are taxed on instruments and not on transactions or persons. For stamp duty, an instrument is defined as any document chargeable with duty under the Revenue Code. The stamp duty rules are contained in Chapter VI of Title II of the Revenue Code.³⁴

Infrastructures

Where topography allows it, Thailand has an extensive network of roads and railroads. Rapid transit is burgeoning in Bangkok and vicinities. Tourism and improved economic development led Bangkok to become a major regional air hub. New technology development has brought some improvements to the nation's telecommunications network.

Roads: Estimates vary on the length of roads in Thailand. According to a U.S. government estimate in 2000, Thailand had 57,403 kilometers of roads, 56,542 kilometers of which were paved and 861 kilometers, unpaved. Other sources indicate a lower total of fewer than 45,000 kilometers. Streets in Bangkok are frequently gridlocked, with an overabundance of motor vehicles flowing into the central city via expressways.

Railroads: Railroads are operated under the auspices of the State Railway of Thailand. In 2005 the system totaled an estimated 4,071 kilometers of narrow-gauge (1,000-meter gauge) track. The system currently has some 270 diesel locomotives and nearly 250 diesel railcars or multiple unit cars. According to figures provided for 2002, 55.7 million passenger journeys occurred, and the rail system hauled 9.9 million tons of freight. Freight traffic is considered an important part of Thailand's domestic container transport to and from seaport and inland terminals.

Rapid Transit: The Mass Rapid Transit Authority of Thailand operates a full metro service in Bangkok and vicinities consist 3 categories as follows:

³⁴ "Stamp Duty," *rd.go.th*, last modified n.d., accessed May 17, 2021, <https://www.rd.go.th/english/21986.html>.

- a. Bts Sky train Su-khumwit line consist 44.12 kilometer-long, 40-station line and Bts Sky train Silom line consist 14 kilometer-long, 13-station line.
- b. MRT The Mass Rapid Transit blue line consist 48 kilometer-long, 38-station line and Purple line consist 48 kilometer-long, 38-station line and under construction consist four lines totaling 122 kilometers, 101-station line.
- c. Airport rail link route from Phayathai station to Suwannaphumi airport on 28 kilometer-long, 6-station.

In the future there are regional mass transit in 4 provinces namely Phuket, Chaingmai, Nakorn-rachasima and Phitsanulok.

Ports: Thailand's ports in order of size are Bangkok, Laem Chabang, Pattani, Phuket, Sattahip, Si Racha, and Songkhla. The Thai merchant fleet comprises 400 ships of 1,000 gross registered tons or more, including 145 cargo carriers, 91 petroleum tankers, 60 bulk carriers, 32 refrigerated cargo ships, 29 liquefied gas ships, 21 container ships, 14 chemical tankers, 6 passenger/cargo ships, 1 passenger ship, and 1 specialized tanker.

Inland and Coastal Waterways: Thailand has some 4,000 kilometers of navigable inland waterways, 92 percent of which, or 3,701 kilometers, are navigable by boats with drafts up to 0.9 meters. Thailand's long coastlines lend themselves to intercoastal trade.

Civil Aviation and Airports: Thailand had an estimated 108 airports and three heliports. Sixty-six of the airports had paved runways, including eight of more than 3,047 meters in length. In 2021, Suvarnabhumi airport (Bangkok airport) at Samut-prakan province, is an important regional hub for pass-through flights and as a destination. About 80 airlines provide service to the Suvarnabhumi airport and carry a reported 5.9 million passengers and 1,057,588 tons of cargo a year. Don Muang International Airport at Bangkok, 24 kilometers north of the capital. About 5 airlines (Low cost airline) provide service to the Don Muang International Airport and carry a reported 7.1 million passengers and 22,926 tons of cargo a year. Other major airports are at Chiangmai, Hat Yai, Phuket, Mae Fah Lhuang-Chaingrai. Thai Airways International, founded in 1906, offers domestic and worldwide coverage with a fleet of 81 passenger and cargo aircraft. Since 1977, Thai Airways has been fully owned by the Thai government. Bangkok Airways is a privately owned company founded in 1968 as an air taxi company; since 1986, it has served primarily as a domestic carrier. It also flies to Phnom Penh, Cambodia, and offers charter flights to Burma; it has a fleet of 11 aircraft.

Pipelines: In 2006 Thailand had 3,760 kilometers of gas pipelines and 379 kilometers of refined products pipelines.³⁵

³⁵ UNHCR, *Country Profile: Thailand* (n.p.: The UNHCR, 2007), 17-18.

The infrastructure quality score is 67.8 (0-100 best).



Figure 4: Comparison of the Asia Average and Thailand's Infrastructure Scale³⁶



Figure 5: Infrastructure Compass in Thailand

It categorizes each country’s driver performance on a scale from “Emerging” (score from 0-20) to “Global Leader” (score from 80-100).

The strengths of infrastructure in Thailand are as follows (Figure 6):

³⁶ "Compare Countries," *Infracompass.gihub.org*, last modified n.d., accessed May 17, 2021, <https://infracompass.gihub.org/compare-countries/?country=THA%2cAsia>.

1. Cost to start a business

According to the World Bank, the cost of starting a business in Thailand is equal to 3% of income per capita, which is below the average of 11% for Upper Middle-Income Countries, easing the entry of new firms.

2. Financial stability

Thailand is the second most financially stable country among Upper Middle-Income Countries. Thailand's financial sector is well-positioned to withstand wider economic shocks. However, the impacts of the COVID-19 pandemic are a concern.

3. Registering property

It takes nine days to register a property in Thailand, less than half the Upper Middle Income Countries' average of 21.5 days. As infrastructure projects often involve property rights, the shorter the time to register properties, the less costly and risky the project.

Opportunities to Grow are as follows (Figure 6):

1. Post-completion reviews

Thailand does not undertake post-completion reviews infrastructure projects. The implementation of post-completion reviews could help determine whether projects have achieved their objectives efficiently, and identify areas for improvement.

2. Long term GDP growth trend

Thailand's long-term GDP growth trend is 3.3%, slightly higher than the Upper Middle Income Countries average of 3.1%. Combined with the uncertain impact of the COVID-19 pandemic, this low growth trend may hamper Thailand's ability to borrow and build more infrastructure.

3. Value of close infrastructure deals with foreign equity sponsorship

Thailand has a low value of closed infrastructure deals with foreign equity sponsorship, at only 0.03%. A low value may reflect a limited scale of infrastructure investment opportunities available for foreign investors and may increase financing costs as a result of lower levels of competition.³⁷

³⁷ "Thailand - Set your infrastructure policies in the right direction," *Infracompass.gihub.org*, last modified n.d., accessed May 17, 2021, https://infracompass.gihub.org/ind_country_profile/tha/.

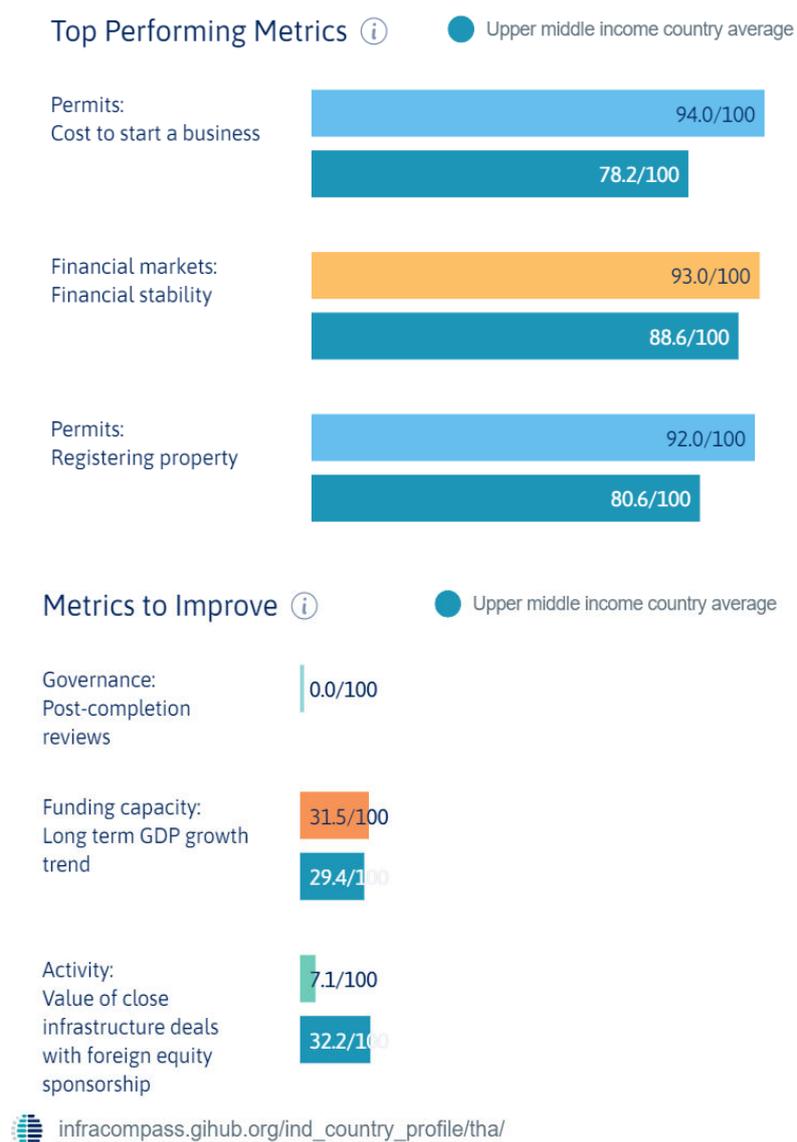


Figure 6: Thailand's Strength Compared to the Average of Similar Countries

2.6. Climate and Biodiversity

Climate Change

Thailand is located in the Monsoon region, although there are three distinct seasons in Thailand. The first is a hot and dry season from February to May, with an average temperature of 34°C and 75 percent relative humidity. This season is followed by a rainy, cooler season brought by the southwest monsoon from June to September, with an average daily temperature of 29°C and 87 percent relative humidity. A cooler, dry season, caused by the northeast monsoon, lasts from November to January, with temperatures ranging from 32°C to less than 20°C and lower relative humidity. The Isthmus of Kra is always hot and humid and has the heaviest rainfall. The lightest rainfall is in the northeast.

The mean annual temperature is between 22-32°C. Temperatures in Bangkok range between 20°C and 35°C.³⁸

Biodiversity

Thailand is among a few countries in the world that possess tropical forests. There are many types of tropical forests scattering in different regions throughout the country. With its diverse geographic characteristics, Thailand is, therefore, one of the countries in the world that is rich in biodiversity.³⁹ It is located within two major biogeographical regions – the Indochinese region in the north and the Sundiac region in the south. With 15 mountain ranges throughout the country, the watersheds and main river basins connected to the Mekong River, Gulf of Thailand, and the Andaman Sea form a juncture of distribution for various plant species, such as temperate plant species and sub-alpine flora species from China and the Himalayas, tropical plant species from Indo-China and tropical species from other parts of Asia. In consequence, this area is one of the most biodiverse in the world. Thailand contains around 15,000 plant species, representing 8% of the world's total. Forest area covers at least 33% of the country's total area, with at least 18% comprised of conserved forests.

Threatened species in Thailand are numerous, consisting of 121 mammals, 184 birds, 33 reptiles, 5 amphibians, 218 fishes, and no fewer than 1,131 plants. For instance, the number of wild elephants is between 1975 and 2380, wild buffaloes remain between 50 and 70, tigers between 200 and 500, while guars and bantengs remain at around 200. The kouprey, eld's deer, and java rhino have not been reported in the wild for a long time. The number of Irrawaddy dolphins is plummeting as well. Some freshwater fish species have become extinct and there are more than 20 endangered species. The number of indigenous livestock is also decreasing due to the introduction of alien animals.

Thailand possesses unique coastal and marine biodiversity. Along the coastline, mangrove forests comprise approximately 36% of the coastline.

Thailand derives large benefits from ecosystems. In particular, the country recognizes the important environmental role performed by watersheds, river basins, and coastal areas, as well as their significance in supporting livelihoods linked to fisheries, recreation, and tourism, among many others. For instance, a watershed with adequate forest cover provides water that supports lowland agriculture, sustains the supply of surface and groundwater for domestic use, and prevents soil erosion and the siltation of coasts and water bodies. Likewise, the forest ecosystem provides ecological services that benefit agriculture, industries, water, and power needs.⁴⁰

³⁸ UNHCR, *Country Profile: Thailand* (n.p.: The UNHCR, 2007), 9-10.

³⁹ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 28.

⁴⁰ "Main Details," *Cbd.int*, last modified n.d., accessed May 17, 2021, <https://www.cbd.int/countries/profile/?country=th>.

3. Major Trends and Issues in Forest and Forestry

3.1.State of Forest

3.1.1. Land Use and Forest Cover

Thailand is one of the major exporters of rice in the world and has about 24 % of the total country area under paddy cultivation (Table 5).⁴¹

Table 5: Land Use Types of Thailand in 2009-2012

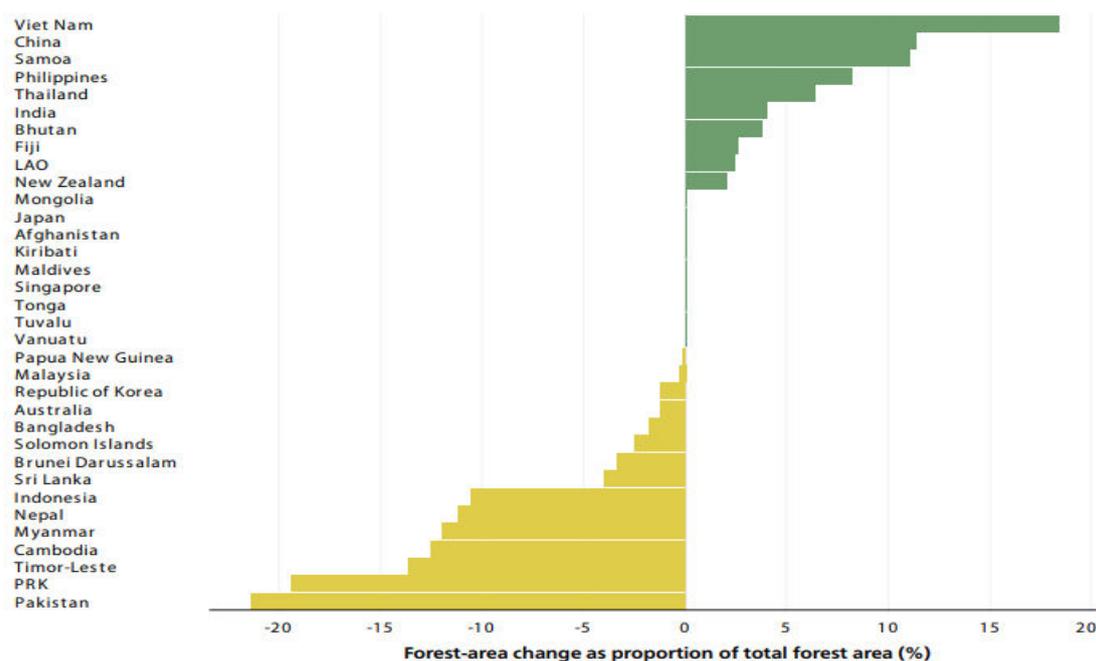
Land Use Types		Area (ha)						Percentage (%)
		North	Central	East	Northeast	South	Total	
Urban and Built-up land		602,595	617,160	235,302	868,307	265,561	2,588,925	5.05
Agricultural land	Sub-total	6,368,630	3,425,687	2,148,501	11,415,132	4,192,861	27,550,812	53.69
	Paddy field	2,626,859	1,424,131	487,680	7,340,859	381,946	12,261,476	23.90
	Field crop	2,034,620	1,078,111	556,024	2,602,142	2,875	6,273,771	12.23
	Perennial	400,501	264,070	638,567	1,164,471	3,310,694	5,778,303	11.26
	Orchard	569,159	357,444	319,702	188,193	404,495	1,838,993	3.58
	Horticulture	37,289	72,557	4,127	23,572	3,921	141,466	0.28
	Swidden cultivation	652,700	-	-	-	-	652,700	1.27
	Pasture and farm house	32,194	29,145	15,428	71,494	1,860	150,121	0.29
	Agquatic plant	105	2,041	108	44	20	2,319	0.00
	Aquacltural land	12,003	198,188	126,847	20,738	86,845	444,620	0.87
	Integrated farm/Diversified farm	3,201	-	17	3,619	206	7,043	0.01
Forest land	Sub-total	9,266,830	2,385,482	787,994	3,148,446	2,062,725	17,651,478	34.40
	Disturbed forest	617,359	403,974	744,602	2,272,487	198,819	4,237,240	8.26

⁴¹ "Land Development Department," *Ldd.go.th*, last modified n.d., accessed May 17, 2021, http://www.ldd.go.th/web_eng56/Land Resources/Landuse Data in Thailand/Land-Use-Types-of-Thailand.html.

	Dense forest	8,649,471	1,981,508	43,392	741,979	1,863,906	13,280,257	25.88
Water Body		228,892	232,473	84,449	562,607	296,219	1,404,639	2.74
Miscellaneous land	Sub-total	497,482	291,268	181,804	890,941	254,152	2,115,648	4.12
	Other miscellaneous land	451,556	254,084	160,450	752,732	203,407	1,822,229	3.55
	Marsh and swamp	45,926	37,184	21,354	138,210	50,745	293,419	0.57
Total		16,964,429	6,952,070	3,438,050	16,885,434	7,071,519	51,311,502	100.00

Forest Area

The forest area has been slightly decreasing recently, but it has increased by about 7 percent compared to 1990 (Figure 7 and Table 6).^{42 43}



Note: LAO = Lao People's Democratic Republic; PRK = Democratic People's Republic of Korea.
Source: FAO (2015a).

Figure 7: Forest-area Change in the Asia-Pacific region, by country, 1990-2015

⁴² FAO. *Forest futures – Sustainable pathways for forests, landscapes and people in the Asia-Pacific region. Asia-Pacific Forest Sector Outlook Study III.* (Bangkok : FAO, 2019), 28-29.

⁴³ "World Development Indicators | DataBank," *Databank.worldbank.org*, last modified Apr 26, 2021, accessed May 17, 2021, [https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.PCAP.PP.CD&country=.](https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.PCAP.PP.CD&country=)

Table 6: Recent Forest Area

	2016	2017	2018
Forest area (km ²)	200,170	199,810	199,450
Forest rents (% of GDP)	0.46	0.52	0.40
Forest area (% of land area)	39.18	39.11	39.04

Forest areas by region are as shown in the following Table 7.

Table 7: Forest Land Assessment by Province in 2020⁴⁴

Province / Region		Forest Area	
		2020	
		Forest Area (ha)	Percentage of Province Area (%)
Whole Kingdom		16,376,557.56	31.64
North	Sub-total	9,008,736.52	52.38
	Kamphaeng Phet	199,760.66	23.47
	Chiang Rai	456,811.14	39.71
	Chiang Mai	1,533,796.64	69.29
	Tak	1,244,877.53	71.95
	Nakhon Sawan	92,827.92	9.75
	Nan	742,519.56	61.22
	Phayao	318,423.45	51.45
	Phichit	1,711.93	0.40
	Phitsanulok	395,223.10	37.32
	Phetchabun	401,586.10	32.54
	Phrae	420,412.35	64.85
	Mae Hong Son	1,087,228.92	85.17
	Lampang	873,904.50	69.98
	Lamphun	258,950.81	57.82
	Sukhothai	197,724.63	29.64
Uttaradit	441,091.02	55.79	

⁴⁴ Royal Forest Department, *Forestry Department statistics 2020* (n.p.: The Royal Forest Department, 2021), 1-168.

	Uthai Thani	341,886.26	51.43
North-east	Sub-total	2,514,887.95	14.99
	Kalasin	75,787.19	10.93
	Khon Kaen	122,167.25	11.46
	Chaiyaphum	398,153.64	31.35
	Nakhon Phanom	78,009.35	13.84
	Nakhon Ratchasima	318,958.12	15.38
	Bueng Kan	27,828.84	6.95
	Buri Ram	88,544.80	8.78
	Maha Sarakham	21,300.61	3.80
	Mukdahan	136,010.27	32.96
	Yasothon	35,467.97	8.59
	Roi Et	34,472.61	4.38
	Loei	337,836.67	32.18
	Si Sa Ket	102,297.46	11.45
	Sakon Nakhon	168,315.72	17.57
	Surin	74,649.74	8.43
	Nong Khai	23,092.81	7.05
	Nongbua Lumphoo	48,002.86	11.71
	Umnad Chareun	31,229.80	9.49
	Udon Thani	112,839.45	10.19
Ubon Ratchathani	279,922.79	17.91	
Central	Sub-total	2,237,208.36	33.16
	Bangkok	624.29	0.40
	Kanchanaburi	1,199,459.34	61.88
	Chai Nat	6,439.80	2.57
	Nakhon Pathom	183.15	0.09
	Nonthaburi	-	

	Pathum Thani	-	
	Prachuap Khiri Khan	248,640.74	38.77
	Phra Nakhon Si Ayutthaya	4.58	0.000
	Phetchaburi	355,878.01	57.66
	Ratchaburi	170,821.03	32.92
	Lop Buri	96,416.70	14.85
	Samut Prakan	2,873.83	3.03
	Samut Songkhram	3,129.52	7.57
	Samut Sakhon	4,321.80	4.99
	Saraburi	85,211.03	24.35
	Sing Buri	42.43	0.05
	Suphan Buri	63,162.09	11.67
	Ang Thong	-	
	Sub-total	820,208.76	22.40
East	Chanthaburi	207,825.70	32.40
	Cha Choeng Sao	80,216.39	15.52
	Chon Buri	55,005.75	12.20
	Trat	89,849.17	31.34
	Nakhon Nayok	64,281.11	30.02
	Prachin Buri	143,501.50	28.55
	Rayong	29,011.69	7.91
	Sa Kaew	150,517.44	22.03
	Sub-total	1,795,515.98	24.31
South	Krabi	91,478.86	17.18
	Chumphon	128,555.73	21.43
	Trang	109,281.40	23.13
	Nakhon Si Thammarat	181,866.75	18.40
	Narathiwat	119,412.07	26.59

Pattani	10,969.01	5.55
Phang Nga	177,994.94	32.39
Phatthalung	62,793.52	16.26
Phuket	11,217.30	20.51
Yala	145,435.72	32.49
Ranong	172,486.42	53.41
Song Khla	86,564.16	11.18
Satun	121,167.54	10.13
Surat Thani	376,292.56	28.77

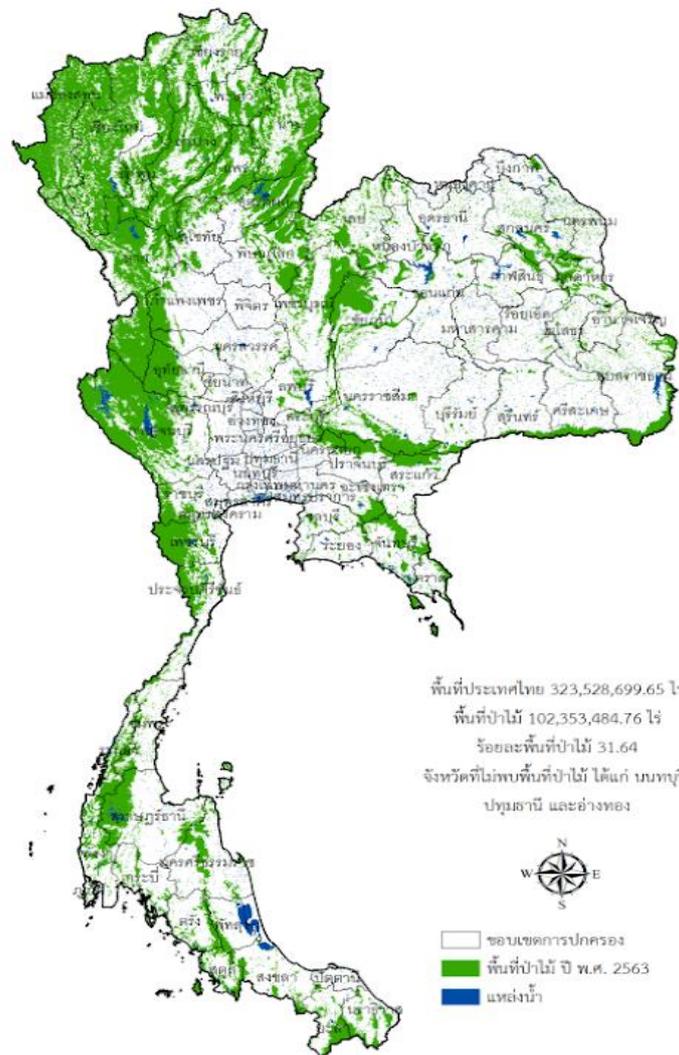


Figure 8: Forest Area Map (2020)⁴⁵

⁴⁵ Royal Forest Department, *Forestry area in Thailand 2020* (n.p.: The Royal Forest Department, 2020), 8.

Forest Growing Stock and Carbon Stock

In 2020, the total forest growing stock is 1,892 million m³(over bark), and the forest growing stock per hectare is 95m³/ha (over bark) (Table 8).

Table 8: Growing Stock⁴⁶

FRA categories		Growing stock (million m ³) (over bark)	Growing stock per hectare (m ³ /ha) (over bark)
		2020	
Total (Forest)		1,891.90	95.20
Naturally regenerating forest		1,538.20	94.16
Planted forest	Sub-total	353.70	100.00
	plantation forest	353.70	100.00
	other planted forest	0	0

Forest carbon and biomass stock are shown in the following Table 9.

Table 9: Biomass stock and Carbon stock⁴⁷

FRA categories	Forest Biomass or Carbon (tonnes/ha)
	2020
Above-ground biomass	142.50
Carbon in above-ground biomass	66.98
Below-ground biomass	34.23
Carbon in below-ground biomass	16.09

Forest Types and Tree Species

The forest composition is shown in the following Table 10 and Figure 9.⁴⁸

Table 10: Forest Characteristics

FRA categories		Forest area (in thousand ha)
		2020
Total		19,873
Naturally regenerating forest		16,336
Planted forest	Sub-total	3,537
	Plantation forest (introduced species)	3,537
Other planted forest		0

⁴⁶ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 23-24.

⁴⁷ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 27-32.

⁴⁸ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 11-12.

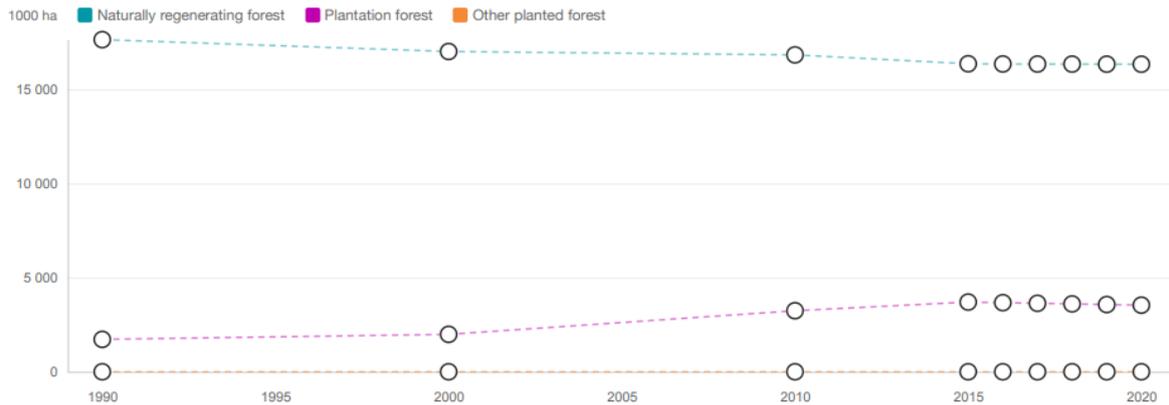


Figure 9: Forest Change Flow

In 2020, The mangrove forest is 244 thousand ha and the rubberwood is 3,537 thousand ha.⁴⁹

There are two main types of forests in Thailand: (1) evergreen forest and (2) deciduous forest.

1. Evergreen forest

The evergreen forest is subdivided into the tropical evergreen forest, pine forest, mangrove forest, and beach forest. Tropical evergreen forest is found all over the moist part of the country. This type of forest is also subdivided into the tropical rain forest, the semievergreen forest, and the hill evergreen forest. The tropical rain forest is characterized by very rich flora and very dense undergrowth. This type of forest is commonly found in the Southern and the Eastern regions where rainfall is above 2,000 mm. It is also found along rivers and/or in valleys in other parts of the country. The predominant species (the top storey species) are, for example, *Dipterocarpus* spp, *Hopea* spp, *Lagerstroemia* spp, and *Shorea* spp, whereas the lower storey species are bamboos, palms, and rattans.

The semi-evergreen forest is scattered all over the country where the rainfall is between 1,000- 2,000 mm. The predominant species are *Dipterocarpus* spp, *Hopea* spp, *Diospyros* spp, *Azelia* spp, *Terminalia* spp, and *Artocarpus* spp. The main undergrowth species consist of bamboo and rattan.

Hill evergreen forest is found on the highlands (above 1,000 metres from sea level) where the climatic condition is the humid subtropical type. The presence of mosses and lichens on trees and rocks is the indicator of this forest type. The predominant species are oaks (*Quercus* spp) and chestnuts (*Castanopsis* spp, and *Lithocarpus* spp).

Pine forest has two species of tropical pines, *Pinus merkusii* locally called Son Song Bi (the two-needle pine) and *P. kesiya* locally called Son Sam Bi (the three-needle pine). *P. merkusii* is found in the northern and the western part of the Central region where the soil

⁴⁹ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 15.

is poor, lateritic, and podzolic. *P. kesiya* is found only in the highlands of the Northern and Northeastern regions.

Mangrove forests occur along with the coastal areas of the Eastern, Central, and Southern regions. The mangrove forest is scattered along the estuaries of rivers and seashores where the soil is muddy and influenced by the tide. The predominant species are *Rhizophora* spp, *Xylocarpus* spp, *Avecennia* spp, *Bruguiera* spp, and *Nypa* spp.

Beach forests occur along the sandy coastal plains especially on the eastern coast of the Southern region. The main species in this type of forest are *Diospyros* spp, *Croton* spp, *Lagerstroemia* spp, and *Casuarina* spp.

2. Deciduous forest

Deciduous forest is characterized by the presence of deciduous tree species and is commonly found throughout the country. It is broadly subdivided according to the species composition into the mixed deciduous forest (with and without teak) and the dry dipterocarp forest.

Mixed deciduous forest is commercially among the most valuable forest of Thailand. In the Northern Region, this type of forest is called the teak forest with *Tectona grandis*, *Xylia kerrii*, *Pterocarpus marcrocarpus*, *Azalia xylocarpus*, and *Dalbergia* spp (rosewood) as dominant/common species.

Dry dipterocarp forest is commonly found in the dry area (rainfall below 1,000 mm) with sandy or gravelly lateritic fertile soils. The predominant species are mainly *Dipterocarpaceae* such as *Dipterocarpus tuberculatus*, *D. obtusifolius*, *Shorea obtusa*, *S. siamensis* with the presence of *Dalbergia* spp, *Lagerstroemia* spp, *Terminalia* spp, and other species.⁵⁰

3.1.2. Forest Use Categories

Forest areas for each objective shall be as shown in the following Table 11.

Table 11: Primary Designated Management Objective⁵¹

FRA 2020 categories	Forest area (in thousand ha)
	2020
Total	19,873
Production	3,537
Protection of soil and water	0
Conservation of biodiversity	16,336
Social Services	0
Multiple-use	0

⁵⁰ Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, *Working Paper No. APFSOS II/WP/2009/22 THAILAND FORESTRY OUTLOOK STUDY* (Bangkok: FAO, 2009), 13-14.

⁵¹ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 33-34.

Other (specify in comments)	0
None/unknown	0

In 2020, the protected area is 103,810,00 Ha. Protection area classified by type shall be as follow Table 12.⁵²

Table 12: Protected Area by Type of Area

Type	Unit	Area (km ²)	Area (ha)
	2020		
National Forest Reserves ⁵³	1,221	120,295	12,029,567.65
National park	133	63,532.49	6,353,248.80
Forest park	91	1,051.94	105,100.94
Wildlife conservation area	60	37,377.12	3,737,711.56
Non-hunting area	88	6,513.76	651,375.87
Botanical garden	16	49.27	4,926.72
Arboretum	52	34.35	3,434.72
Sum		228,854.59	22,885,459.28

3.1.3. Main Drivers of Forest Changes

The Past

Thailand has suffered from severe deforestation during the last century. Forest cover has declined drastically both in terms of area and quality, mostly due to the expansion of human activities. Much of the deforested area has been used for agricultural purposes, but much has also been left in a degraded condition. In the late 1980s, the forest declined to a point where the nation decided that the remaining forest should be kept for conservation rather than further exploitation. Consequently, forest policy has shifted its focus from exploitation to sustainable management and protection. Thailand has set a goal of increasing its forest area to 40% of the total land area, To retain most of the remaining forest as protected areas and, at the same time, achieve the goal set, reforestation and rehabilitation initiatives have been implemented, especially on those lands in a degraded condition. This paper focuses on the significant issues affecting both the policy and practice of forest rehabilitation. Given that the large number of people whose livelihood depends on the forests for subsistence and other purposes normally has been excluded from the decision-making process in forest management, most important among these issues are the integration of the socio-economic and environmental needs into rehabilitation initiatives together with the active participation of local communities in the rehabilitation program. Case studies of reforestation and rehabilitation initiatives are also discussed.

⁵² Department of National parks, wildlife and plant conservation https://catalog.dnp.go.th/dataset/forest_area

⁵³ Royal Forest Department <http://forestinfo.forest.go.th/Content.aspx?id=10064>

In general, Thai forestry has undergone four stages as follows:

1. Early exploitation stage (the mid-1890s to the early 1930s)
Logging for commercial purposes started when teak was in demand here and abroad.
2. Forest exploitation and management stage (the 1930s to the early 1960s)
Logging became an important economy-building activity. Royal Forest Department (RFD), as the government agency responsible, attempted to put forest exploitation under management by enacting important forest laws, opening a school to train foresters, and putting them to work to implement forestry laws and regulations.
3. Peak exploitation decline stage (the 1960s to the mid-1980s)
Logging peaked, export-oriented agriculture expanded, and national economic development gained momentum. As the forests diminished, a growing awareness of the link between the forest and national well-being emerged.
4. Exploitation closing stage and the beginning of a new forestry era (from the late 1980s)
People developed a high awareness of the adverse effects of forest exploitation.⁵⁴

The Present

In Thailand, forest encroachment continues in many areas and results from both direct and indirect factors, including investment for hotel and resort development, land clearance for tourism activities, golf course development, and agricultural expansion. Encroachment can also result purely from land speculation. Poverty, population increase, national development policy, and logging contribute to the problem. Some government initiated mega-projects have also led to massive forest disturbance through e.g. construction of roads, dams, power transmission lines, and associated infrastructure. The conflict between communities and the Government has continued over a long period, much of it connected with cold war struggles between democratic and communist ideologies. To dilute opposition in the communism seized zone, the Government encouraged local people to settle and provided infrastructure and household-level support. The policy brought conflict and precipitated widespread slash and burn activities which continued for a decade before ending in 1985. Following the cessation of conflict, illegal logging expanded and continued until 1989 when the Government imposed a ban on logging in a terrestrial natural forest following devastating floods in the southern part of the country in 1988. Although logging has been banned since deforestation and forest degradation still pose critical threats. In response, the 11th NESDP (2012-2016) reiterated the 40% national forest cover target and it has since been stressed by the Internal Security Operation Command of the Ministry of Natural Resources and Environment that it should be attained by 2024.

And, dry season fires are a significant direct cause of forest degradation in Thailand and many forest ecosystems are vulnerable. The average annual area of forest damaged by fire between 1992 and 1999 was greater than 480,000 ha. In 1992, one of the worst years in recent history, 1,920,000 ha were damaged by fire. In 2012, RFD reports show that 5475 ha of national forest were lost as a result of the fire. The North of Thailand encountered the largest loss (2374 ha) followed by the Northeast (2206 ha), the South (608 ha), and the Central and East (287 ha). In upland areas, fire is the cheapest method for clearing land for farming and fire can also be used

⁵⁴ Alice Sharp and Nobukazu Nakagoshi, *Rehabilitation of degraded forests in Thailand: policy and practice* (n.p.: International Consortium of Landscape and Ecological Engineering and Springer, 2006), 1-2.

to stimulate fresh growth of vegetation for cattle rearing. In addition, hunters often burn the forest to aid the capture of wild animals. Uncontrolled and unmanaged fires lead to large-scale forest damage every year. Fire control activities undertaken with participation from local communities are implemented as one of the RFD's most important, and most costly, initiatives and have reduced losses of forest land. By contrast, burning activities conducted by rural people to prepare land for new crops have continued.⁵⁵

The current status of forest fires in the last five years is shown in the following Table 13.

Table 13: Area Affected by Fire⁵⁶

FRA categories		Area (in thousand ha)				
		2013	2014	2015	2016	2017
Land area affected by fire	Total	117.23	121.48	87.20	220.69	2,357.63
	on forest	11.89	10.54	16.58	30.16	18.10

The current status of forest fires by region in 2020 is as follows Table 14.⁵⁷

Table 14: Forest Fires by Region in 2020 (information from Royal Forest Department only)

Region	Frequency (Time)	Damaged areas (ha)	Damaged areas (km ²)
Total	1,555	10,224	102.24
Central and East	37	331	3.31
North-east	52	3,061	5.75
North	3,061	8,252	92.12
South	8	740	0.24

3.2. Forest Policy Direction and Strategies

3.2.1. Forest Legislations

The Royal Forest Department was founded by King Rama V in 1896 and the first Forest Act was passed in 1941.⁵⁸ The National Forest Policy 2020 required Thailand to have at least 40% of the country's area under forest cover; for 2 purposes as follows: 1. Conservation forests set out to conserve the environment, soil, water, plant species, rare animal species and prevent

⁵⁵ Royal Forest Department, *USAID Lowering Emissions in Asia's Forests (USAID LEAF) Drivers of Forest Change in the Greater Mekong Subregion: Thailand Country Report* (n.p.: The Royal Forest Department, 2015), 9-10.

⁵⁶ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 44-45.

⁵⁷ Royal Forest Department, *Forestry Department statistics 2020* (n.p.: The Royal Forest Department, 2019), table 12.

⁵⁸ Royal Forest Department, *USAID Lowering Emissions in Asia's Forests (USAID LEAF) Drivers of Forest Change in the Greater Mekong Subregion: Thailand Country Report* (n.p.: The Royal Forest Department, 2015), 5.

natural disasters from floods and soil erosion throughout for the benefit of research studies and recreation of the people at the rate of 25% of the country's area and 2 Economic forests designated for the production of timber and of forests for economic benefits at the rate of 15% of the country's area⁵⁹

The Ministry of Natural Resources and Environment was established in 2000 and has been instrumental in developing strategies for forest conservation and management. The Departments develop plans based on the strategies developed by the Ministry of Natural Resources and Environment. The forest laws are being implemented to regulate forestry activities in Thailand;

1. Forest Act B.E. 2484 (1941) and subsequent amendment B.E. 2562 (2019)
2. National Reserved Forest Act B.E. 2507 (1964) and subsequent amendments B.E. 2522 (1979) and B.E. 2528 (1985)
3. Forest Plantation Act B.E. 2535 (1992)
4. Chainsaw Act B.E. 2545 (2002)
5. Elephant Ivory Tusks Act. B.E. 2558 (2015)
6. Marine and coastal resources management promotion B.E.2558 (2015)
7. Community Forest Act B.E. 2562 (2019).⁶⁰
8. National Park Act B.E. 2562 (2019)
9. Wildlife Preservation and Protection Act B.E. 2562 (2019)

Major legislation related to natural resources conservation and forest management is outlined in the follows:

1. The 1941 Forest Act (amended in 1948, 1982, 1989 and subsequent amendment B.E. 2562 (2019))

The 1941 Forest Act is the first national legislation dealing with forest management. At the time the function and activities of the RFD, which was founded in 1896, were mainly related to forest resource extraction and from the outset, the main purpose of the Act was to control harvested forest products. The 1941 Act expressed the need to conserve national forests while the country was still covered with abundant and vibrant forests. However, the success of the First National Plan (1961) in accelerating economic growth came with substantial declines in forest areas and conservation of forest areas was thenceforth considered to be of high importance. In 2019

2. The 1964 National Forest Reserve Act

Act covers the determination of National Reserve forests. The responsibility for control and maintenance is with the RFD

3. The 2019 Wildlife Preservation and Protection Act

⁵⁹ Royal Forest Department , <https://www.forest.go.th/forest-national-policies/>

⁶⁰ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 4.

This Act is under the authority of the Department of National Parks, Wildlife and Plant Conservation (DNP). The first Act is announced in 1960 and amended in 1992 and this Act lays out five categories of wildlife —preserved wildlife, protected wildlife, controlled wildlife, dangerous wildlife, and wildlife carcasses—and adds new species to the list of preserved wildlife for the first time (Bryde’s whales, Omura’s whales, leatherback turtles, and whale sharks).

Under the new act, the following violations are punishable by substantially increased prison terms, fines, or both:

- Import, export, or transfer of preserved wildlife, carcasses of preserved wildlife, or products made from preserved wildlife;
- Collection, endangerment, or keeping of preserved wildlife;
- Hunting preserved wildlife or protected wildlife;
- Keeping preserved wildlife that can be propagated (to be named by ministerial notification) without the proper certificate; and
- Trading preserved wildlife or preserve
- wildlife that can be propagated without the proper certificate.

4. The 2019 National Parks Act

This supersedes the National Park Act B.E. 2504 (1961) as amended, although provisions of the old act remain in force unless they conflict with the new act. The new act extends protection to forest parks, botanical gardens, and arboretums (also called “nature learning parks”), increases existing penalties, and introduces some new penalties and bounties for catching violators. The new act notably prohibits the following activities in these areas:

Holding, building on, clearing, burning, degrading, or changing land in a protected the area (punishable by imprisonment for 5 to 20 years, a fine of THB 400,000 to 2 million, or both);

Collecting, extracting, endangering, or causing deterioration to wood, soil, rock, gravel, sand, minerals, petroleum, or other natural resources, or taking any other action that affects the ecology, biodiversity, or natural resources and environment;

- Luring or taking wildlife out of the area, or causing any danger to wildlife;
- Changing, closing, or obstructing a waterway, or causing the water in a river, creek, swamp, marsh, or ocean to overflow, dry up, or become putrid or toxic;
- Entering into and carrying out any activity for the purpose of obtaining benefits;
- Bringing in weapons or gear for hunting or trapping animals;
- Shooting guns, causing explosions, or lighting fireworks;
- Disposing of fuel that may be flammable; and
- Moving, damaging, or destroying official boundary signs.⁶¹

⁶¹ Royal Forest Department, *USAID Lowering Emissions in Asia’s Forests (USAID LEAF) Drivers of Forest Change in the Greater Mekong Subregion: Thailand Country Report* (n.p.: The Royal Forest Department, 2015), 10-12.

3.2.2. Institutional Settings for National Forest Management

Past of RFD

In the years preceding the creation of the Royal Forest Department (RFD), the forests were under the control of local chiefs. They allowed concessionaires to exploit exploitation. The RFD was therefore founded by King Rama V in 1896 to consolidate the exploitation of these forests. Three years after the RFD was established, ownership and control of all forests were transferred from the feudal chiefs to the government. During the same period, several laws, rules, and regulations on forest protection were promulgated. More forestry laws were passed from 1910 up to the early 1960s, as new forest protection problems arose. The administration of the Kingdom's forest resources has been regulatory in nature. This has been because a single agency, the RFD, is supposed to take responsibility for more than half of the Kingdom's land area. Because its administrative resources were limited, it had to rely on concessionaires for most of the forest management and utilization functions, such as logging, natural regeneration, tree planting, and protection. Forests that were not under concessions had to be protected by controlling their utilization and by punitive actions, which had been defined in the forestry laws, such as the Forest Act and the National Reserved Forest Act. The RFD expanded its administrative functions over the years, as technical aspects of forestry development were assigned to it. Its organizational structure evolved in response to changes in administrative requirements and conditions, such as the ban on logging concessions and the instruction to give priority to forest conservation. It was reorganized under the Ministry of Agriculture and Cooperatives (MOAC) and has five technical bureaus, seven administrative divisions, and 21 regional offices. Local forestry administration is being handled through 75 provincial forestry offices and 524 district forest offices.

Forest territories are administered by:

1. A network of national parks, wildlife reserves, and other protected areas, which are directly linked to the Natural Resources Conservation Bureau. The field forestry offices address territories outside the protected areas;
2. The other RFD technical bureaus are not concerned with administering territories.

They provide different technical services:

1. forest protection (by the Protection and Suppression Bureau);
2. resource inventory, silviculture, forest management, and technology development (the Technical Forest Bureau);
3. promotion of forest plantation activities of development partners (the Plantation Promotion Bureau); and
4. management information systems (the Information Service Bureau).

Current of RFD (Government's reorganization)

To improve its bureaucracy, the Thai government has introduced structural and administrative reform that has resulted in the establishment of 21 ministries. It has been effective since 2

October 2002. The Ministry of Natural Resources and Environment (MNRE), a newly established ministry, has been given responsibility for natural resources and the environment. Regarding the aforementioned restructuring, the RFD was divided into three departments. The original RFD was attached to the MOAC. The two newly established National Park, Wildlife, and Plant Conservation Department and the Marine and Coastal Resources Department were attached to the newly set up MNRE. The RFD takes responsibility for forest areas outside protected areas. Later a Royal Decree, effective on 1 October 2003 was issued. The RFD with its new structure (Figure 10) was transferred to be under the supervision of the MNRE. In 2019, The RFD established a newly division is Bureau of Foreign Forestry, Forest Economics Bureau, Information and Communication Technology Center and Recreational Forest Management Bureau in 2021 (Figure 11). (<https://www.forest.go.th/history/>)

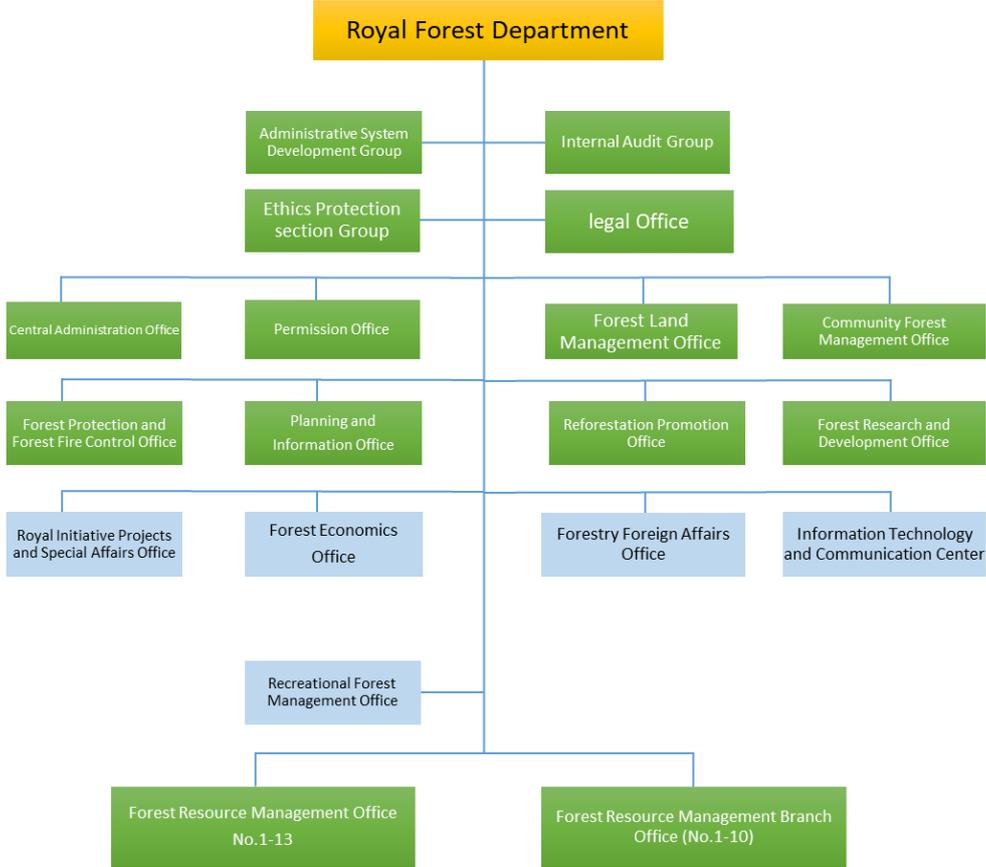


Figure 10: Government Organization of the Royal Forest Department

Department of National Parks, Wildlife and Plant Conservation

This department administers forest resources, wildlife, and plants in protected areas in parallel with the rehabilitation of degraded forests. Tasks include conservation, promotion, strategy application, and public awareness building. Resource protection and community participation: These sustain the ecological systems, the environment, and biological diversity required to maintain productive watersheds, wildlife, nutrition sources, public recreational and tourism sites. Details are listed below:

1. Conserve, protect, oversee and preserve forests, wildlife, and plants to be productive and balance ecological systems with sustainable and maximum benefit from natural resource utilization.
2. Rehabilitate and solve the problem of degraded natural resources and the environment. This includes control of fires and other catastrophes, which destroy the forest ecology.
3. Control, supervise, oversee and prevent forest encroachment and deterioration. Enforce the law against committing wrongful acts under the law relating to National Forest Reserves, National Parks, Wildlife Conservation and Protection, and other related law.
4. Study, conduct research, and develop the conservation, administrative management, and rehabilitation of forest resources, wildlife, plants, and biological diversity.
5. Develop and set measures and standards for the conservation, administrative management, and use of forest resources and wildlife.
6. Provide services on forestry information and transfer of forest technology.
7. Perform other functions as required by law to be the authority and duty of the Office of the Permanent Secretary of Natural Resources and Environment or as designated by the Ministry or the Cabinet Ministry of Natural Resources and Environment

At present, the Ministry has one Minister with one Permanent Secretary and four Deputy Permanent Secretaries. The Minister oversees the ministry and its component organizations. Administrative supervision over the entire ministry is undertaken by a Permanent Secretary and four Deputy Permanent Secretaries who have responsibilities for Environment Affairs, Natural Resources Affairs, Inland Water Affairs, and Administrative Affairs.

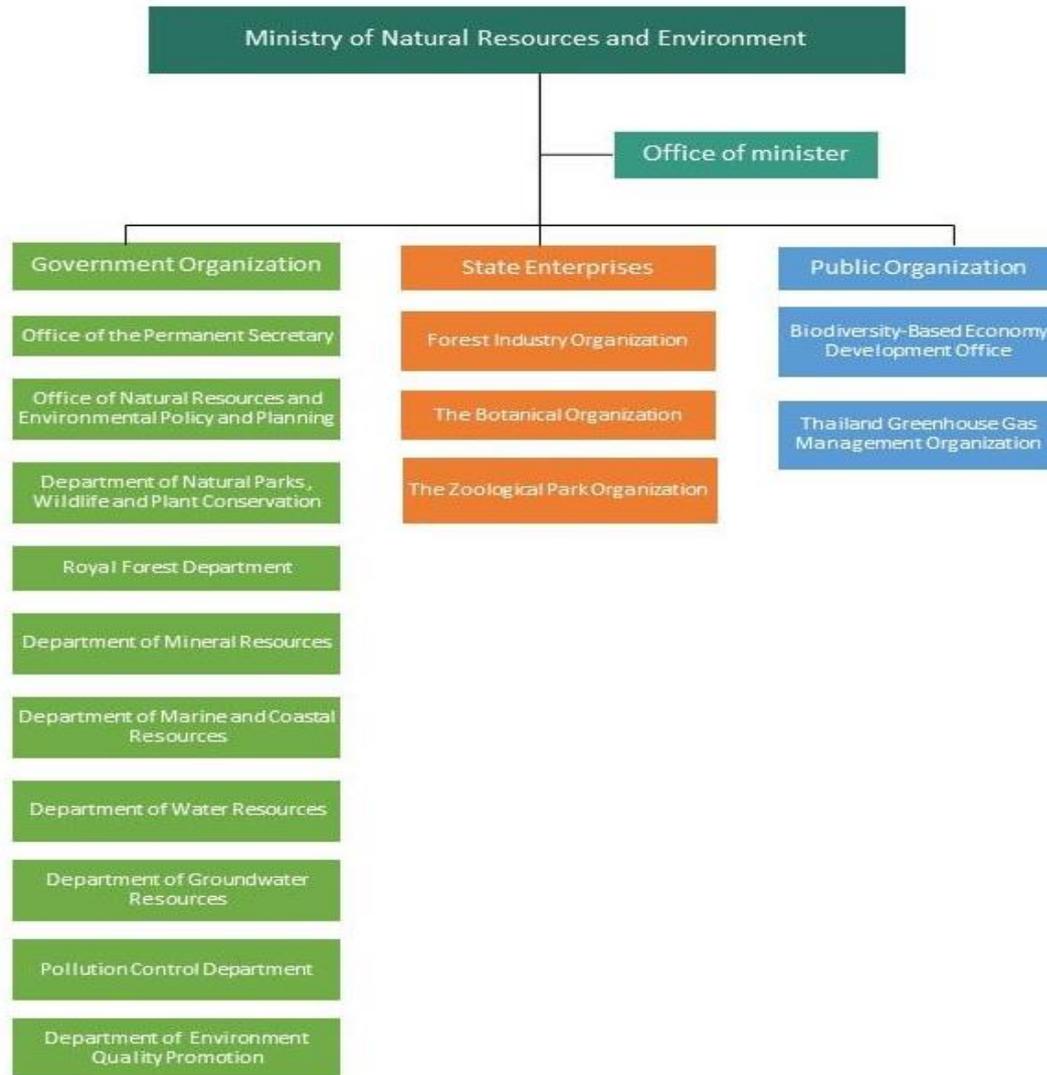


Figure 11: Government Organization of the Ministry of Natural Resources and Environment

Forest Industry Organization (FIO)

The FIO is an autonomous state corporation, which was set up to harvest teak forest and to process wood into usable forms. Subsequently, the FIO became widely involved in reforestation, under the government policy to reforest logged-over areas. In its reforestation program, the FIO applies the forest village system, which employs landless villagers as workers and allows them to interplant crops between the rows of a newly established trees. The FIO forest village system covers 53 forest areas (24 in the north, 16 in the northeast, and 13 in the central and southern regions). The FIO will have to evolve into an organization responsible for providing support to forest-based communities and villagers in forest management. Depending on the decision of the government, the expanded functions of the FIO may include supplying quality planting materials, piloting new processes for raising source plants for non-timber forest products (NTFPs), channeling funds for tree planting, and developing markets and providing market guarantees for forest products.

Thai Plywood Company Limited (currently liquidation)

This state enterprise was established to make more efficient use of forest resources by producing plywood and other wood products of standard quality. This company is already partly owned by the private sector.

Non-government and secular organization and schools

Many non-governmental organizations involved in forestry activities. Some concern themselves with environmental matters, some focus on rural development, while others support forest rehabilitation. These organizations, to name just a few, include Thailand Development Research Institute, Thailand Environmental Institute, Foundation for Ecological Recovery, Andaman Project for Participatory Restoration of Natural Resources, etc. Moreover, several local communities throughout the country also play a crucial role in supporting forest-based rural development at the grassroots level.

Private forest-based industry organizations

Organizations concerned with the forest-based industry are typically associations of industry operators including those for furniture-making, sawmilling, panel manufacturing, pulp and paper manufacturing, and rubberwood product manufacturing. These associations keep a registry of their members, as well as statistics on product types, capacity, and actual production; conduct periodic assessment of the state and problems of their industry; and lobby for incentives and other support from the government.⁶²

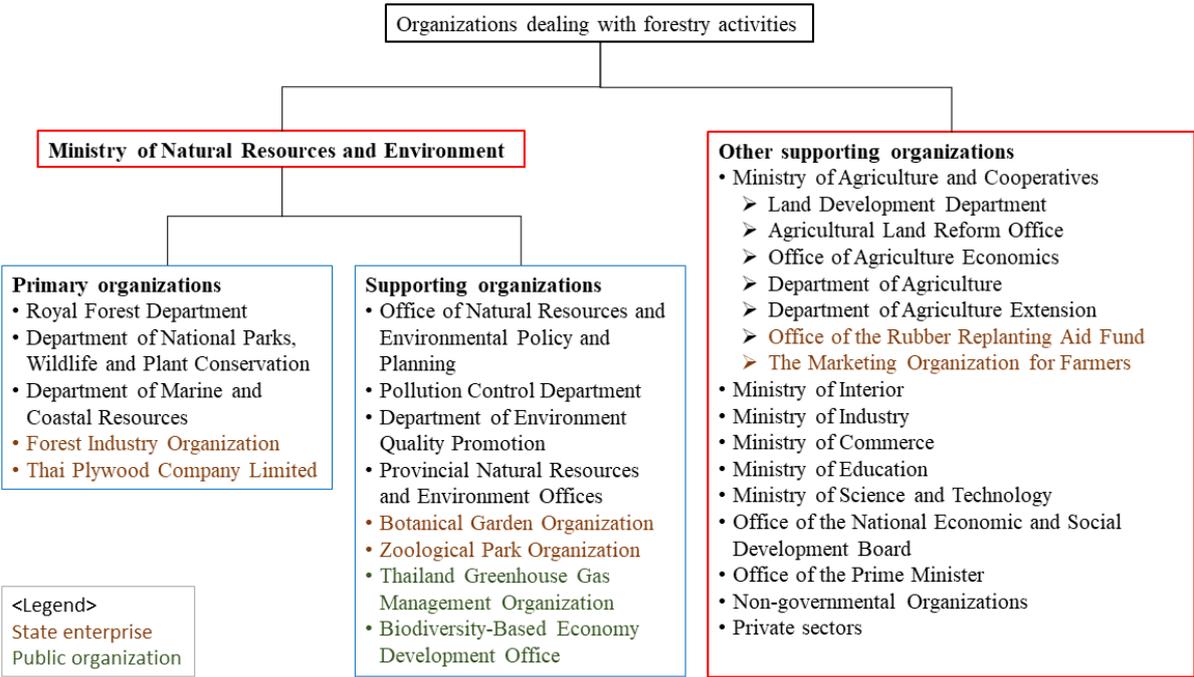


Figure 12: Organization Dealing with Forest Activities⁶³

⁶² Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, *Working Paper No. APFSOS II/WP/2009/22 THAILAND FORESTRY OUTLOOK STUDY* (Bangkok: FAO, 2009), 75-83.

⁶³ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 37.

3.2.3. Forest Tenure and Governance

Practically all the natural forests are owned by the state and managed by the RFD, DNP, or the DMRC. The forest areas under the State’s jurisdiction have been increased by annexing various forest resource types, as follows:

1. The conserved area under laws and cabinet resolutions
 - A. National Park
 - B. Wildlife sanctuary
 - C. Forest Park
 - D. Banned for hunting area
 - E. Watershed class 1
 - F. Mangrove conserved forest
2. Additional conservation areas by other regulations

Forest resources and land areas are likely to remain under State ownership because there is no way of changing this at present.⁶⁴

Table 15: Forest Ownership in the Asia-Pacific Region, Selected Countries, 2002 and 2017⁶⁵

	Government-administered	Designated for indigenous peoples and local communities	Owned by indigenous peoples and local communities	Owned by individuals and firms
	(In million ha)			
2002	17.0	0	0	0
2017	15.9	0.48	0	0

The area of permanent forest estate (PFE) reported in 1991 was 23.5 million hectares, much of it already without forest cover. PFE had shrunk by almost 50 percent to 12 million hectares in 2001. About 1.15 million hectares of the original PFE had been converted to agriculture, 8.3 million hectares to settlements and infrastructure, and 1.1 million hectares to other uses. The balance now available comprises about 10 million hectares of protected forest area (Table 16) and 1.9 million hectares of plantations. The production of PFE now is found only in planted forests on government land. Theoretically, forest reserves should be classified as PFE, but they do not have effective protection despite their legal status, so many of them have lost

⁶⁴ Sureeratna Lakanavichian, *Trends in forest ownership, forest resources tenure and institutional arrangements: are they contributing to better forest management and poverty reduction?: Case study from Thailand* (n.p.: Chiang Mai University, n.p.), 336-339.

⁶⁵ FAO. *Forest futures – Sustainable pathways for forests, landscapes and people in the Asia-Pacific region. Asia-Pacific Forest Sector Outlook Study III*. (Bangkok : FAO, 2019), 208-210.

their forest cover and there are no management plans; thus they have not been classified as part of PFE.

Privately owned forests are mostly plantations but are not accounted as part of PFE. The government has issued various types of tenure rights for people living in forest reserves.⁶⁶

Table 16: Permanent Forest Estate (PFE)

Estimated total forest area (in million ha)	Total closed natural forests (in thousand ha)	PFE (in thousand ha)			
		Sub-total	Production	Protection	
13.0-16.8	10,127	11,988.8	Sub-total	1,870	10,118.8
			Natural	0	
			Planted	1,870	

3.2.4. Government Budget Allocation for Forest and Forestry Sector

The cabinet, in its meeting in January 2021, has made an approval on the fiscal 2022 budget of 3.1 trillion Baht, which is down from the fiscal 2021 blueprint by 185,962.5 million Baht.⁶⁷ Expenditure from 2020 and 2021 is shown in the following Table 17.⁶⁸

Table 17: Expenditure by Functions of Government

Expenditure by functions of government	Central Government – Budgetary (in million Baht)		
	2020	2021	Percentage in 2021 (%)
Total	3,200,000	3,285,962.5	100
General public services	750,642.7	736,951.5	22.4
Defense	228,545.0	210,203.3	6.4
Public order and safety	200,662.8	202,022.7	6.2
Economic affairs	683,204.4	669,622.6	20.4
Environmental protection	12,689.4	16,143.4	0.5
Housing and community amenities	103,316.3	147,594.8	4.5
Health	292,391.4	343,906.2	10.4
Recreation, culture and religion	20,997.7	20,438.9	0.6
Education	493,822.7	482,764.5	14.7
Social protection	413,727.6	456,674.6	13.9

⁶⁶ Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, *Working Paper No. APFSOS II/WP/2009/22 THAILAND FORESTRY OUTLOOK STUDY* (Bangkok: FAO, 2009), 14-15.

⁶⁷ "Royal Thai Government-Government News-PM: FY2022 budget deficit will not impact fiscal discipline and sustainability," *Thaigov.go.th*, last modified n.d., accessed May 17, 2021, <https://www.thaigov.go.th/news/contents/details/38233>.

⁶⁸ Thailand'd budget in brief fiscal year 2021 P 66 <http://www.bb.go.th/topic-detail.php?id=12371&mid=312&catID=0>

The budget allocated to the Royal Forest Department in 2020 was 5,375 million THB. Allocation by sector is as Figure 13.⁶⁹

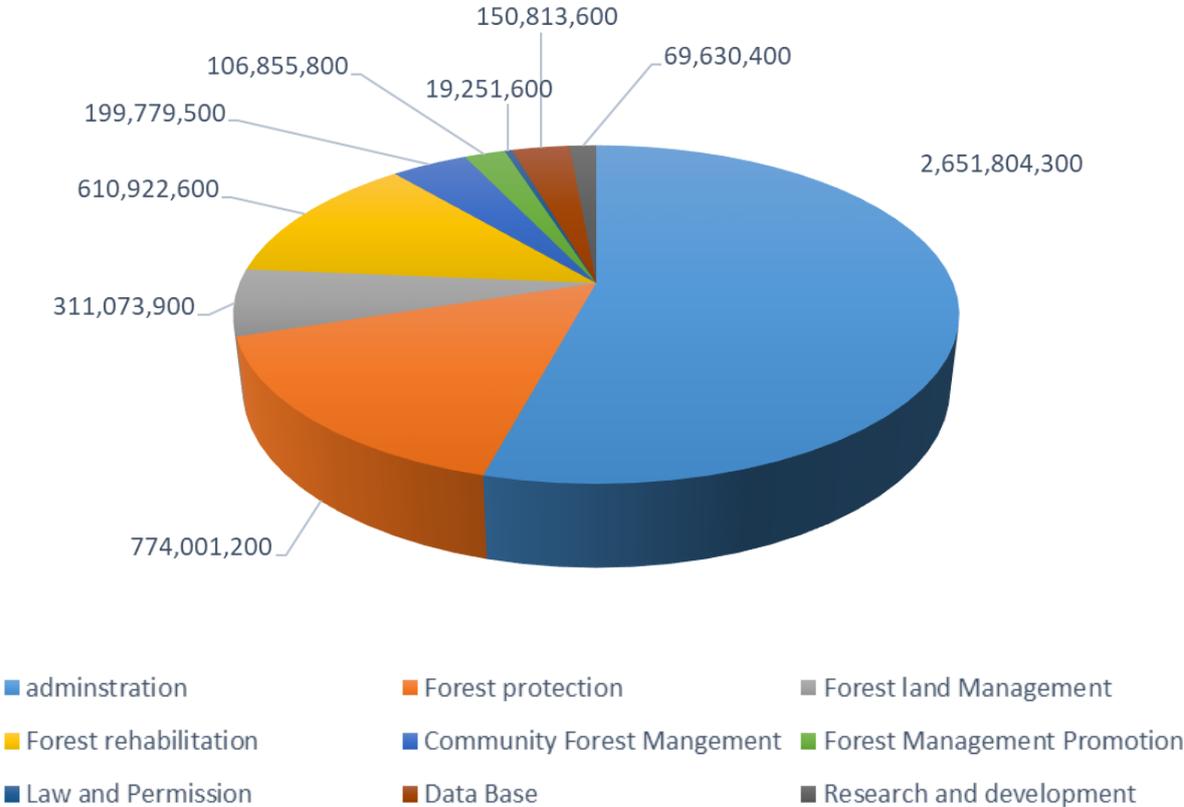


Figure 13: Budget Allocation for 2020 Forest Management Programme (THB)

Revenue from the Royal Forest Department in 2020 is shown in the following Table 18.⁷⁰

Table 18: Revenue in 2020

Item	Revenue (Baht)
Total	74,932,068.61
Royalty of Teak	209,771.82
Royalty of Other Woods	404,031.74
Royalty of Firewood, Charcoal and Others	190,993.80
License Fee	38,338,567.02
Other License Fees	2,038,412.12

⁶⁹Statistic 2020 Royal Forest Department .(<http://forestinfo.forest.go.th/Content.aspx?id=10400>

⁷⁰ Royal Forest Department, *Forestry Department statistics 2020*, table 4.(<http://forestinfo.forest.go.th/Content.aspx?id=10400>

Forest improvement Fee	2,407,859.17
Other service Fee	1,009,545.95
Sale of Timber	1,436,351.40
Sale of Miscellaneous	792,440.00
Sales of Procurement Documents	84,100.00
Real-Estate Rental-Outsiders	13,770.00
Revenue from sales Buildings and Structures	4,000.00
Revenue from sales of Equipment	5,200.00
Income from interest on Deposits at Financial Institutions	37,799.86
Income from case fines	25,753,898.93
Income from Forfeiture and Compensation	61,430.00
Income from others fines	2,143,896.80

3.2.5. Key National Forest Policies and Programs

The National Forest Policy

The National Forest Policy was established in 1985. In 2017 the government issued the Notification of the Office of the Prime Minister on the National Forest Policy Committee B.E. 2560 on October 30, 2017. The Committee had duties such as prepare the National Forest Policy and strategy or master plan to guide the forest development to achieve conservation, utilization and development of natural resources, economy and society.

The Committee has issued an order appointing a sub-committee on drafting the national forest policy and drafting a development national policy master plan on December 12, 2018. To prepare a draft national forest policy and draft a national forest development master plan as soon as possible and review it every 3 years, which the sub-committee The National Forest Policy has been drafted by analyzing and synthesizing data for consideration. Prepared from many sources, such as academic documents or research results related to forestry situations of all dimensions, both in the country. and international historical data and past lessons of forestry, information on national and agency-level policies and plans, information from consultation meetings with target groups, various sectors, information from inviting individuals or collective agencies, information from the public hearing through the Internet media, etc.

The National Forest Policy was approved by the Cabinet meeting on 6 November 2019. The National Forest Policy has 4 objectives covering 3 dimensions: a. Forest management, b. Utilization of forest products and forest industry, c. Development of forestry management, and organization including information on national forest policy proposals. And The National

Forest Policy requires that at least 40 percent of the country's area be divided into 25 percent for protection and conservation and 15 percent for economic forest and community forest.⁷¹

- **The Government Program; Community Forest Program**

Forest resources have been an integral part of Thailand's rural life, involving all aspects of local people's activities, thereby contributing to their social, economic, cultural, environmental, and political objectives, in 2005, some 1.2 to 2 million people are reported to be living in and around protected areas (national parks and wildlife sanctuaries) and rely on forests for livelihoods. In addition, another 20 to 25 million people are reported to live near national forest reserves and use them for forest products both for household consumption and to sell them in markets for cash income. As early as the 1970s, the RFD recognized community (or village) forestry as a strategy for sustainable management of the nation's forest resources. In 1991 a Community Forestry Division, now renamed as the Office of Community Forest Management, was created with a mandate to plan and promote community forestry, and to involve local communities, local organizations, NGOs and other civil society organizations, and various other institutions in local forest management. The Thai Forestry Sector Master Plan of 1992 recognized community forestry as one of the main strategies. In 1993, drafting a legislative framework known as the Community Forestry Bill was initiated to provide a legal framework to promote community forestry in the country. The establishment of government-supported community forests is at present allowed in two types of legally categorized forests:

1. national forest reserves, under formal management by the RFD,
2. other forests (i.e. any forests not yet occupied or developed for any use by Thai citizens, according to the Forest Act of 1941).

According to the draft of the Community Forestry Bill (1993 version, community forest would not be allowed in the following categories of land:

1. where use permits have been given to individuals and/or any government agencies for residential purposes, afforestation, and other types of use,
2. government afforestation areas, state parks, and botanical gardens, and
3. protected areas declared by the Cabinet.

In 2005, some 11,400 villages (or 15.5 percent of all the villages) are involved in managing community forests in the country, of which about a half (5,331 villages) are reported to have formally registered their community forest with the RFD. These community forests are reported to cover an area of 196,667 hectares in both national forest reserves (112,869 hectares) and other forest areas (83,798 hectares), accounting for about 1.2 percent of the total forest area. It can be extrapolated that if all the villages were involved in community forestry, the total area covered could be in the range of 1.1 million hectares. The majority (72 percent)

⁷¹ Royal Forest Department <https://www.forest.go.th/blog/3d-flip-book/national-forest-policy/> .

of existing community forests is concentrated in the Northeast and North regions where most natural forests are located.⁷²

Forest Economic promotion

RFD has incentivized people to plant economic forests on their land through the project to promote economic planting in private areas. Starting in 2014, it promoted long-term logging and in 2018 started a program to support the short-term logging economy. RFD provides funding for forest plantation and supports tree seedlings according to the project, such as teak, rosewood, redwood, acacia, eucalyptus, etc (RFD 123 years). In 2020, there are 58,722 rai of land participating in the project, divided into 44,033 rai of slow-growing trees and 14,689 rai of fast-growing trees across the country (Forest Statistic 2020). In addition, RFD supported information related to forest plantation management, establish law tax relief, conducted source of wood, including supported quality tree seedlings to people who attend the project by specifying types and quantities in accordance with market demands.

- Forest Land management (Kor Tor Chor)

Ministry of Natural Resources and Environment has a proactive policy to established "National Land Policy Committee in the National Reserved Forest Area" to be an operational unit to build understanding with the people were implementing the measures and expedite the arranging of arable land for correction problems of living and farming in the National Reserved Forests to achieve the goals. As for the remaining area of 8.6 million rai, RFD has proceeded accordingly, framework for solving the problems of living and farming in forest areas (all types). People have to cooperate with officials in forest protection and conservation. No more forest invasion Including having to plant trees around the edge of the land plot in the amount determined according to the slope conditions of each area in accordance with the conditions set forth in living legally in the area. If there is a further invasion of the area after this will be arrested and prosecuted. Along with bringing in the King's science to solve problems and restore forest areas, and have carried out the project "Building forests, generating income", which is a project under the Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn. Department of Her Royal Highness Princess Maha Chakri Sirindhorn, Her Royal Highness Princess Maha Chakri Sirindhorn bestowed the principle on the restoration of watershed forests. The stream combines forest planting activities with economic tree planting. planting characteristics Multi-level, multi-tiered canopy cascades down to the lower ground level to modify the planting style of the people from monoculture to afforestation and economic to restore the ecosystem.⁷³

⁷² Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, *Working Paper No. APFSOS II/WP/2009/22 THAILAND FORESTRY OUTLOOK STUDY* (Bangkok: FAO, 2009), 27-29.

⁷³ RFD Strategic 20 years

• [ยุทธศาสตร์กรมป่าไม้ ระยะ 20 ปี พ.ศ. 2560-2579](#)

3.2.6. Forest Sector's Alignment to National Imperatives

20 Year National Strategy (2017-2036)

Referred to as the “6-6-4 plan”, the 20-year national strategic plan consists of six areas, six primary strategies, and four supporting strategies. The six areas include:

1. Security
2. Competitiveness enhancement
3. Human resource development
4. Social equality
5. Green growth, and
6. Rebalancing and public sector development.

The six primary strategies seek to:

1. enhance and develop the potential of human capital;
2. ensure justice and reduce social disparities;
3. strengthen the economy and enhance competitiveness on a sustainable basis;
4. promote green growth for sustainable development;
5. bring about national stability for national development toward prosperity and sustainability; and
6. enhance the efficiency of public sector management and promote good governance.

As for the four supporting strategies for efficient national development, they involve:

1. infrastructure development and the logistics system;
2. science and technology, research, and innovation;
3. urban, regional, and economic zone development; and
4. international cooperation for development.⁷⁴

20 Year Strategic Plan for The Ministry of Natural Resources and Environment (2017-2036)

Their missions are:

⁷⁴ "Policy Framework | FAO | Food and Agriculture Organization of the United Nations," *Fao.org*, last modified n.d., accessed May 17, 2021, <http://www.fao.org/in-action/fapda/forestry-tool/framework/en/>.

1. Push forward the strategies and measures for conservation, restoration, and control of natural resources and the environment that are associated with the sustainable creation of social and economic values.
2. Integrate and build the participation of all parties and sectors in the management of natural resources and environment both in ASEAN and international countries.
3. Enhance proactive capabilities, systems, mechanisms, and data in the administration and management of the organization in which includes the effective execution of law enforcement.

The first of the six strategies are deeply related to forestry. Among them, only relevant detailed strategies are shown below.

The First Strategy: Forest and Biodiversity Management

1. Forest

Goal

- A. Protect forest areas.
 - i. conservation forests of 12.94 million ha
 - ii. national conservation forests of 8.608 million ha
 - iii. mangrove areas of 0.25 million ha
- B. Increase forest and green areas with a target of the country's forest coverage to 40 percent.
 - i. increase conservation forests of 3.63 million ha
 - ii. increase national conservation forests of 2.24 million ha
 - iii. increase mangrove areas of 22,400 million ha
 - iv. increase economic forest areas of 1.39 million ha
 - v. increase green areas by 20 percent in the communities of local governments

Work Plan

- A. Work plan for prevention of forest intrusion.
- B. Work plan for restoration of forest and watershed resources.
- C. Work plan for planting an economic forest.
- D. Work plan for the management of people living in the forest sites.
- E. Work plan for enhancement of increasing green areas in communities.
- F. Work plan for the development of forest protection officers. (government, private, public sectors)

2. Marine and Coastal Resources

• Goal

Increase abundance of coastal areas, seagrasses, marine ecosystems (increase seagrass areas of 2,000 rai/ increase natural coral reef resources of 3,600 rai / determine marine protected areas to be not less than 10 percent to achieve the 14 SDGs)

• Work Plan

1) Work plan for management of marine and coastal resources.

3. National Parks

Goal

National parks are managed effectively to provide ecosystem services and tourist attractions in the parks on the international quality level for the public and local communities. (170 national parks)

Work Plan

Work plan for the management of national parks.

4. Biodiversity

Goal

Reduce loss of natural resources and biodiversity.

- i. national bio-resource archives covering every province
- ii. 50 kinds of bio-resources for economic use
- iii. protected marine lives which are rare ensured survival rates by 10 percent
- iv. at least 1,300 kinds of rare conserved plants

Work Plan

Work plan for enhancement and conservation of biodiversity.

5. Wildlife

Goal

- A. Balance numbers and kinds of wild animal species with natural resources in the areas
- B. Restore species of rare and near-extinct wildlife. (5,000 animals out of 40 species)

Work Plan

Work plan for protection and conservation of wildlife.

6. Land Management

Goal

Manage national conservation forest lands, degraded mangrove forests, and other lands for providing the surrounding community sustainable human habitats and uses.

- i. national conservation forests of 0.54 million ha
- ii. mangrove forests of 8000 ha
- iii. other areas outside the forests covering 0.34 million ha

Work Plan

Work plan for sustainable management of lands and communities.⁷⁵

Royal Initiative Projects

The Royal Project is an initiative of His Majesty, King Bhumibol Adulyadej of Thailand. It was founded in 1969 to solve the problems of deforestation, poverty, and opium production by promoting alternative crops. It was the world's first project to replace drug crops with legal crops and is one of the most successful projects of this type. The Royal Project Operation Area has a total of 28 centers located in five provinces, including Chiang Mai, Chiang Rai, and Mae Hong Son with an average altitude of 800 meters above the sea. Those Hill Tribe centers are mainly located in remote rural areas away from civilization. The program has a target population of 44,710 people from 12,300 households.⁷⁶

In 2008, there were 137 Royal Initiative Projects in forestry context carried out throughout the country; i.e. 65 projects in the northern region, 21 projects in the northeastern region, 25 projects in the southern region, 26 projects in the central, eastern, and western regions.⁷⁷

Their objectives are as follows:

1. To extend and support the research and development activities of the Royal Project.
2. To support conservation and sustainable utilization of the biodiversity inherent to the Thai highlands by researching, recording, conserving, and developing local knowledge.
3. To support and work with the Royal Project Foundation and related agencies in strengthening highland communities and environmental education ensuring sustainable co-existence with the environment that is in line with the philosophy of a sufficient economy.

⁷⁵ "20-Year Strategic Plan for the Ministry of Natural Resources and Environment (B.E. 2560 – 2579) - Ministry of Natural Resources and Environment," *Mnre.go.th*, last modified n.d., accessed May 17, 2021, <http://www.mnre.go.th/en/about/content/1065>.

⁷⁶ "The Royal Project Area: HRDI," *Hrdi.or.th*, last modified n.d., accessed May 17, 2021, <https://www.hrdi.or.th/en/WhereWeWork/TheRoyalProjectArea>.

⁷⁷ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 41-42.

4. To investigate, research, and disseminate data and information related to highland development and to act as a research and extension coordination center.
5. To build up cooperative networks, both domestically and internationally, to exchange best practice research and development in the highlands.
6. To establish the Royal Park Rajapruek as a learning center of excellence in horticulture and biodiversity and as a tourist attraction for agriculture and culture.⁷⁸

The National Economic and Social Development Plan (NESDP)

The main objective of NESDP is to provide direction for, and coordination of, public expenditure for economic and social development. The Twelfth National Economic and Social Development Plan (2017-2021) was formulated during a period when the world was experiencing rapid change and becoming even more integrated, whilst Thailand itself was undergoing reforms. Since the Ninth Plan, the principles of the “Sufficiency Economy Philosophy” have been and continue to be a vital element of development strategy as they underpin the promotion of moderation, reasonableness, and resilience. These principles have significantly contributed to balanced and sustainable development in Thailand.

The Plan consists of 10 strategies. Forest management comes under sections covering environmental considerations and sustainable development. In addition, the Plan also has a separate chapter on people and community participation. It specifies that “opportunities must be given to citizens and communities to participate in the planning, decision making, and evaluation of government projects that could have an impact on natural resources and the environment”. The Plan also emphasizes the rights of local people, including ethnic minority groups, to engage in managing natural resources and commits government authorities to involve such groups in participatory processes.⁷⁹

Development strategies are as follows.

Strategy 1: Strategy for Strengthening and Realizing the Potential of Human Capital

Strategy 2: Strategy for Creating a Just Society and Reducing Inequality

Strategy 3: Strategy for Strengthening the Economy, and Underpinning Sustainable Competitiveness

Strategy 4: Strategy for Environmentally-Friendly Growth for Sustainable Development

Strategy 5: Strategy for Reinforcing National Security for the Country’s Progress towards Prosperity and Sustainability

⁷⁸ "Mission and Vision: HRDI," *Hrdi.or.th*, last modified n.d., accessed May 17, 2021, <https://www.hrdi.or.th/en/WhoWeAre/MissionAndVision>.

⁷⁹ Royal Forest Department, *USAID Lowering Emissions in Asia’s Forests (USAID LEAF) Drivers of Forest Change in the Greater Mekong Subregion: Thailand Country Report* (n.p.: The Royal Forest Department, 2015), 12-13.

Strategy 6: Strategy for Public Administration, Corruption Prevention, and Good Governance in Thai Society

Strategy 7: Strategy for Advancing Infrastructure and Logistics

Strategy 8: Strategy for the Development of Science, Technology, Research, and Innovation

Strategy 9: Strategy for Regional, Urban, and Economic Zone Development

Strategy 10: Strategy for International Cooperation for Development⁸⁰

National Strategy on Social Cohesion and Equity

Distributing land ownership and resource access on an equitable basis by finding resolutions to disputes where forest areas overlap farmland; certifying communal land-use rights; setting up measures to promote the fair use of land with ownership and distribute land with plot sizes appropriate to the owner's profession to create more fairness in ownership; adjusting land ownership documents system so that low-income earners and those without land can use these documents as supporting evidence to acquire loans from financial institutions; amending regulations related to the use of public land for various occupations to allow low-income earners fair access to public land for productive use and the opportunity to own permanent residences.⁸¹

The Strategy on Eco-Friendly Development and Growth

Natural resources and the environment are vitally essential for human life, growth, and development. However, such elements are generally limitedly available, thus, it is crucially important to have the strategy Growth to ensure that the country can concretely achieve all development goals over the next 20 years. The key objectives of the strategy are to provide comprehensive guidelines to solve the problem of deteriorating and depleting natural resources and environment that the country has been facing, including foresting, degradation of soil quality, and threats to biodiversity, mismanagement of water resources that may result in water shortage risk in the future.⁸²

3.2.7. International Engagement & commitment to International/Regional Goals

Rio-Conventions (UNFCCC, CBD, UNCCD)

UNFCCC

⁸⁰ Office of the National Economic and Social Development Board and Office of the Prime Minister, *The Twelfth National Economic and Social Development Plan (2017-2021)* (Bangkok: Office of the National Economic and Social Development Board, Office of the Prime Minister, n.d.), 3.

⁸¹ National Strategy Committee, *NATIONAL STRATEGY 2018 – 2037* (n.p.: The National Strategy Committee, 2019), 43-59.

⁸² National Strategy Committee, *NATIONAL STRATEGY 2018 – 2037* (n.p.: The National Strategy Committee, 2019), 43-59.

Thailand is a Non-Annex I party. The current ratification state of Thailand is as follows.

1. Party to Paris Agreement (Date of signature: 22 April 2016, Date of ratification: 21 September 2016)
2. Party to Kyoto Protocol (Date of signature: 02 February 1999, Date of ratification: 28 August 2002)⁸³

Thailand submitted its initial national communication (INC) to the UNFCCC in 2000. The second national communication (SNC) is being prepared using the UNFCCC reporting guidelines and the IPCC technical guidelines, including the good practice guidelines and uncertainty management. Besides the national inventory for 2000, in connection with the COP decision, the SNC focuses on climate change developments in Thailand for the period following the INC.

Economic, social, and natural resources and environmental concerns have been integrated into Thailand's sustainable development. Environmental quality promotion and conservation have been implemented in parallel with economic and social development since the 7th Plan. Two policy committees are working in parallel and are coordinating closely to ensure consistency and balance between economic and social development and resource conservation and environmental protection. Thailand's development vision has increasingly emphasized the social dimension to cope with the effects of globalization. The preparation and estimation approaches followed the reporting guidelines of the UNFCCC and technical guidelines of the IPCC, including good practice guidance and uncertainty management.⁸⁴

CBD

Thailand joined the party on 29 January 2004 (Ratification). And, it joined the Cartagena Protocol on 08 February 2006 (Accession).

The following publications are published with CBD:

1. National Biodiversity Strategy and Action Plan (v.4):
The Master Plan for Integrated Biodiversity Management (2015-2021), including the Action Plan on Biodiversity Management (2015-2016) and national biodiversity targets⁸⁵
2. Sixth National Report, Published on the CHM
3. Measures to Enhance Implementation of the Convention
4. Implementation of the NBSAP
5. Actions were taken to achieve the 2020 Aichi Biodiversity Targets
6. Support mechanisms for national implementation (legislation, funding, capacity-building, coordination, mainstreaming, etc.)
7. Mechanisms for monitoring and reviewing implementation⁸⁶

⁸³ "Thailand | UNFCCC," *Unfccc.int*, last modified n.d., accessed May 17, 2021, <https://unfccc.int/node/61213>.

⁸⁴ Office of Natural Resources and Environmental Policy and Planning, *Thailand's Second National Communication under the United Nations Framework Convention on Climate Change* (Bangkok: Ministry of Natural Resources and Environment, 2011), 8-10.

⁸⁵ "Latest NBSAPs," *Cbd.int*, last modified n.d., accessed May 17, 2021, <https://www.cbd.int/nbsap/about/latest/#th>.

⁸⁶ "Country Profiles," *Cbd.int*, last modified n.d., accessed May 17, 2021, <https://www.cbd.int/countries/?country=th>.

UNCCD

Thailand submitted the “Instrument of Accession” in March 2000 and fully entered into force of the United Nations Convention to Combat Desertification (UNCCD) in June 2001 becoming the 174th member of the Convention. According to the definition of the United Nations Convention to Combat Desertification, Thailand is classified as an affected country although it is located in a monsoon climate. Also, Thailand is Annex II: Asia.⁸⁷ The provision, according to section 9 of the Convention, obliges every affected country party to prepare a NAP in responding with the objectives provided in section 10 of which the causes of desertification must be defined together with measures for implementation to combat desertification and the effects of drought. Thailand’s NAP preparation is the implementation regarding the obligation of the Convention.⁸⁸

In addition, Thailand recently held the “2018 World Desertification Day (WDCD) National Campaign”, co-sponsored by the Land Development Department (LDD), the Ministry of Agriculture and Cooperatives, and Thailand Soil Commission, to raise people's awareness on land degradation and promote sustainable land management (SLM) practices.⁸⁹

UNFF and Global Forest Goals

Regional and subregional bodies are working to advance the implementation of the UN Strategic Plan for Forests 2030 and the achievement of the Global Forest Goals and targets.⁹⁰ According to the regional reports to UNFF15, FAO Asia-Pacific Forestry Commission Supported the development, improvement, and implementation of the Timber Legality Assurance Systems in the context of VPA negotiations or implementation in Thailand and support of good forest governance, sector-wide legal compliance, and SFM (through the FAO-EU FLEGT Programme).⁹¹

On 18 February 2020, over forty representatives from leading private sector companies in Thailand gathered to discuss new approaches for sustainably managing and restoring Thailand’s forests. This one-day workshop, hosted by the International Union for Conservation of Nature (IUCN), the United Nations Forum on Forests (UNFF), and Royal Forest Department (RFD), was an important opportunity to showcase examples of successful private-sector-led sustainable forest management and forest landscape restoration initiatives in Thailand and to share ideas for scaling up these approaches.⁹² And, the UNFF Secretariat is currently seeking the services of a national consultant for a capacity development project in

⁸⁷ "Thailand | Knowledge Hub," *Knowledge.unccd.int*, last modified n.d., accessed May 17, 2021, <https://knowledge.unccd.int/countries/thailand>.

⁸⁸ Land Development Department, *Kingdom of Thailand National Action Programme for Combating Desertification* (n.p.: Ministry of Agriculture and Cooperatives, 2004), 1.

⁸⁹ "Thailand celebrates 2018WDCD | UNCCD," *Unccd.int*, last modified n.d., accessed May 17, 2021, <https://www.unccd.int/news-events/thailand-celebrates-2018wdcd>.

⁹⁰ "United Nations Forum on Forests » UNFF15 – regional reports," *Un.org*, last modified n.d., accessed May 17, 2021, <https://www.un.org/esa/forests/documents/regional-reports/unff15/index.html>.

⁹¹ UNFF, *FAO Asia-Pacific Forestry Commission: Thailand* (n.p.: The UNFF, 2019), 14.

⁹² "Private sector role in sustainable management and restoration of Thailand’s forests," *IUCN*, last modified Apr 22, 2020, accessed May 17, 2021, <https://www.iucn.org/news/asia/202004/private-sector-role-sustainable-management-and-restoration-thailands-forests>.

Thailand who knows forest management, national policies, and frameworks guiding forest management and climate change mitigation and adaptation in Thailand to collect additional baseline data for a pre-feasibility study. (Deadline for application: 19 February 2021)⁹³

Supports international cooperation programs (FAO, ITTO, AFoCO, etc.)

FAO

The FAO is committed to agroecology and agricultural innovation in Thailand, along with the collaboration mentioned in the **UNFF part** [FAO Asia-Pacific Forestry Commission].

Among them, the main project is as follows.

1. Organic Agriculture Project in Sukhothai

This Organic Agriculture Project started about ten years ago, initially to promote social benefits, and has been gradually converting an area near Sukhothai Airport into a green and environmentally friendly landscape. The project promotes organic agriculture for the production of safe food for consumption within the local community and is scaling up to supply airline catering companies and is expanding its market to the general public. In addition, the project helps conserve local Thai wisdom and innovations of rice farming using traditional human and animal labour forces. The project produces a variety of brown/unpolished rice and organic vegetables. Many organic fruits are available seasonally such as mango, papaya, pumpkin, banana, and mango plum. Duck eggs from free-range ducks raised with natural feed without any antibiotics and hormones are also available.

2. ThaiTrade

ThaiTrade.com is an official Business-to-Business (B2B) electronic mall established by the Ministry of Commerce's International Trade Promotion Department. The main purpose of ThaiTrade.com is to boost trade opportunities for Thai exporters, particularly small and medium-sized enterprises. This electronic market platform enables international trading partners to connect with over 5,000 Thai business exporters from various sectors for example organic food and agricultural products, jewelry, home decoration, textiles, cars, and automobile parts. In the fiscal year 2016, Thai SMEs and exporters could manage to ink deals with up to 766 buyers from 61 countries. The value of business transactions was up to 69.93 million baht (USD 2.2 million).

3. I.P.M. Pomelo Group

A dozen orchard growers in Nakhon Nayok's Sarika district, have adopted the integrated pest management (IPM) method for planting pomelo in their 16-hectare land areas. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. They use bio-fermented fertilizer and natural herb-based chemicals to ensure that the comprehensive IPM method is put into practice for environmental and

⁹³ "United Nations Forum on Forests » Consultancies," *Un.org*, last modified n.d., accessed May 17, 2021, <https://www.un.org/esa/forests/forum/unffs/consultancies/index.html>.

ecosystem benefits. Located about two hours away from the capital city of Bangkok, this orchard community also provides other agritourism activities for visitors, such as the pomelo buffet, which can be freshly picked from the pomelo trees.⁹⁴

ITTO

Thailand is a member of the ITTO (Asia & Pacific Group).

The project with ITTO is as follows.

1. Management of the emerald triangle protected forests complex to promote cooperation for transboundary biodiversity conservation between Thailand, Cambodia, and Lao PDR (phase ii-Completed)

This proposed project constitutes the second phase of PD 15/00 Rev.2 (F):

"Management of the Phatam Protected Forests Complex to Promote Cooperation for Transboundary Biodiversity Conservation between Thailand, Cambodia, and Lao PDR (Phase I)", which is nearing completion. Phase II will extend the lessons learned from Phase I to Cambodia and Lao PDR, while activities in Thailand will focus on biodiversity conservation.

This project aims to conserve transboundary biodiversity in the Emerald Triangle Protected Forests Complex situated between Thailand, Cambodia, and Lao PDR in the framework of a trans-boundary biodiversity conservation area (TBCA). Its specific objectives are:

- A. to strengthen cooperation between Thailand, Cambodia, and Lao PDR for biodiversity conservation in the respective transboundary conservation areas,
 - B. to enhance protection measures and monitoring of the biological resources along the tri-national borders, and
 - C. to strengthen the involvement of local communities and stakeholders to ensure sustainable use and management of natural resources both in community enclaves within the conservation areas and in the buffer zones.⁹⁵
2. ITTO launches project on sustainable teak (*Tectona grandis*) management in Greater Mekong Subregion

The sustainable management of teak forests and the nurturing of legal and sustainable supply chains can make valuable contributions to the Sustainable Development Goals in the Greater Mekong Subregion, according to speakers at the launch of an ITTO teak project in Bangkok, Thailand, on 23 April 2019.

The ITTO project (technically an activity in the Biennial Work Programme), "Enhancing the conservation and sustainable management of teak forests and legal and sustainable wood supply chains in the Greater Mekong Subregion", is funded by the Government of Germany. Among other things, it will assist the five participating countries (Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam) to:

⁹⁴ "Thailand | Food and Agriculture Organization of the United Nations," *Fao.org*, last modified May 22, 2020, accessed May 17, 2021, <http://www.fao.org/country-showcase/tha/en>.

⁹⁵ "Project/activity information," *ITTO (International Tropical Timber Organization)*, last modified n.d., accessed May 17, 2021, https://www.itto.int/project/id/PD289_04-Rev.1-F.

- A. conserve unique natural teak forests and their gene pools;
- B. increase incomes for forest communities and smallholders;
- C. improve wood processing and marketing; and
- D. enhance regional collaboration and coordination in teak management.⁹⁶

AFoCO

Thailand joined the party in 2019. (Deposit of Instrument: 26 June 2019, Date of Entry into Force: 26 July 2019).⁹⁷

The projects related to Thailand are as follows.

1. Domestication of Endangered, Endemic & Threatened Plant Species in Disturbed Terrestrial Ecosystems in Malaysia & Thailand
2016 - 2022 (AFoCO/010/2016)
2. Developing High Valuable Species in Viet Nam & Thailand as a Mechanism for Sustainable Forest Management & Livelihood Improvement for Local Communities
2015 - 2018 (AFoCO/009/2015)
3. Facilitating the Participatory Planning of Community-based Forest Management Using GIS & RS Technologies in Forest Resources Management in the Philippines, Indonesia & Thailand
2014 - 2020 (AFoCO/004/2014)
4. Capacity Building on Improving Forest Resources Assessment and Enhancing the Involvement of the Local Communities to Address the Impact of Climate Change
2013 - 2016 (AFoCO/002/2013)
5. Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand & Viet Nam
2013 - 2016 (AFoCO/002/2013)
6. Reclamation, Rehabilitation & Restoration of Degraded Forest Ecosystems (RRR-DFE) in Mekong Basin Countries
2013 - 2015 (AFoCO/001/2013)⁹⁸

In addition to the international organizations mentioned above, Thailand has also collaborated with other countries and international organizations at bilateral, regional, and international levels for several forestry activities such as forest resources management, reforestation and forest rehabilitation, conservation of forest resources and wildlife, training and personnel development, etc. These collaborations are in the context of financial and technical assistance to Thailand and in the case of Thailand being a member of the international organizations. Thailand has ratified several Conventions and has currently been a member of these Conventions which include:

⁹⁶ "ITTO launches project on sustainable teak management in Greater Mekong Subregion," *ITTO (International Tropical Timber Organization)*, last modified n.d., accessed May 17, 2021, https://www.itto.int/news/itto_launches_project_on_sustainable_teak_management_in_greater_mekong_subregion/.

⁹⁷ "Members," *AFoCO*, last modified n.d., accessed May 17, 2021, <http://afocosec.org/postmembers/>.

⁹⁸ "Programs & Projects," *AFoCO*, last modified n.d., accessed May 17, 2021, http://afocosec.org/category/programs_and_projects/.

1. the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and
2. the Ramsar Convention on Wetlands (Ramsar).

Some of the international organizations with which Thailand has collaborated in forestry activities are as follows:

1. Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO)
2. Australian Centre for International Agricultural Research (ACIAR)
3. Asia Pacific Association of Forestry Research Institutions (APAFRI)
4. Association of Southeast Asian Nations (ASEAN)
5. Australian Agency for International Development (AusAID)
6. Canadian International Development Agency (CIDA)
7. Center for International Forestry Research (CIFOR)
8. Danish International Development Agency (DANIDA)
9. Finnish International Development Agency (FINNIDA)
10. Forest Research Institute Malaysia (FRIM)
11. Forestry and Forest Products Research Institute (FFPRI)
12. Intergovernmental Panel on Climate Change (IPCC)
13. International Centre for Research in Agroforestry (ICRAF)
14. International Network on Bamboo and Rattan (INBAR)
15. International Union for Conservation of Nature (IUCN)
16. International Union of Forest Research Organizations (IUFRO)
17. Japan International Cooperation Agency (JICA)
18. Japan International Forestry Promotion & Cooperation Centre (JIFPRO)
19. Japan International Research Center for Agricultural Sciences (JIRCAS)
20. Swedish International Development Cooperation Agency (SIDA)
21. United Nations Development Programme (UNDP)
22. United Nations Environment Programme (UNEP)
23. The World Bank (WB)
24. Acid Deposition and Monitoring Network in East Asia (EANET)
25. Acid Deposition and Oxidant Research Center (ADORC).⁹⁹

3.3.Forestry and Forest Products

3.3.1. Forest Sector Production

Thailand's logging ban on logging (excluding coastal mangrove forests) has dramatically reshaped the country's forest sector and timber processing industry. The Thai wood processing sector needed to find a new strategy to procure natural forest wood. The demand for natural wood was so high in the 1990s that there were many reported cases of illegal logging within Thailand's borders, as well as logging by Thai companies in the neighboring countries of Myanmar, Cambodia, and Lao PDR. After the logging ban, timber imports increased, culminating in the 1997 "Salween Scandal". In this incident, a Thai company,

⁹⁹ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 43-44.

backed by Thai politicians, was charged with illegal logging in the Salween Wildlife Sanctuary in northern Thailand. The Salween timber was trucked across the Myanmar border, and re-imported back into Thailand via a different route, but stamped as Myanmar timber. This led to a temporary wood import ban from Myanmar, a measure aimed at protecting Thailand's remaining forests. Domestic illegal logging continued to be an issue in the early 2000s. The RFD has subsequently altered its course to promote a strong conservation ethos for protecting remaining natural forests. After the logging ban, the state-owned Forest Industry Organization (FIO) transitioned to focusing on its role in managing tree plantations (especially teak, rubber, and eucalyptus). Increasing environmental awareness and continued strengthening of civil society in the 2000s led to a more stable arena for forest protection, with much-reduced deforestation rates and improvements in watershed conservation. However, new debates developed concerning authoritarian conservation policies, the recognition of the land use rights of upland minority populations. A strong civil society movement focusing on land rights and the development of a Community Forestry Law emerged in the 1990s and continues to the present.¹⁰⁰

Wood

In the pulp sector, there have been no major new pulp and paper expansion projects since before the 1997 economic crisis. For both domestic and export markets, Thailand's industrial wood use in 2003 reached nearly 22 million m³, according to the following percentages by industry: pulp and paper the largest user (48%), followed by furniture (29%), construction (19%), and plywood and veneer (4%) (Table 19). The major timber species used are eucalyptus (48%), rubber (*para*) (28%), teak (*tectona*) (0.3%), and other various hardwood species (23%). For domestic markets, 75% of overall domestic plywood consumption is for construction uses, 20% for furniture, and 5% for packing crates and other uses. Medium-density fibreboard (MDF) and particleboard are primarily used in furniture and cabinet making. Sawmillers and the plywood industry utilize the largest diameter rubber logs, the MDF industry uses medium diameter logs, and particleboard mills can use the branches and thinner logs. The pulp and paper industry relied almost exclusively on eucalyptus planted by farmers and bought by private companies. In 2009, FAO reports that the furniture industry in Thailand was heavily reliant upon rubberwood as raw material and that imported sources of timber were also being used. Total furniture industry consumption was listed at 6 million m³. The construction industry relies on hardwood natural forest species, 93% (almost 4 million m³) of which is imported, mostly consisting of hardwoods such as *Shorea leprosola* and *Dipterocarpaceae* species, such as *Dipterocarpus alatus*. The plywood and veneer industry, while needing smaller volumes of timber, used mostly rubber (94%).¹⁰¹

¹⁰⁰ EU FLEGT Facility, *BASELINE STUDY 5, Thailand: Overview of Forest Law Enforcement, Governance and Trade* (n.p.: The EU FLEGT Facility, 2011), 10.

¹⁰¹ EU FLEGT Facility, *BASELINE STUDY 5, Thailand: Overview of Forest Law Enforcement, Governance and Trade* (n.p.: The EU FLEGT Facility, 2011), 17.

Table 19: Annual Wood Consumption in Thailand by Industry Type

Industry	RWE (m ³) from Timber	RWE (m ³) from Lumber (Sawn wood)	Total (m ³)	Percentage (%)
Pulp & Paper	10,488,022	0	10,488,022	47.8
Furniture	121,533	6,160,618	6,282,151	28.6
Sawmills	5,728,590	0	5,728,590	26.1
Construction	0	4,283,086	4,283,086	19.5
Plywood and Veneer	909,799	0	909,799	4.1
Total	11,519,354	10,443,704	21,963,058	100

Sawmills and Wood Products Factories production by region is as follows Table 20.¹⁰²

Table 20: Sawmills and Wood Products Factories (2019)

Item	Classified by Region						
	Total Mills	Bangkok	Central	North	North-east	East	South
Sawmills	1,093	22	202	73	216	90	490
Sawn timber by Man-power	1,193	0	8	10	510	285	380
Wood Working by Machinery	3,073	772	1,672	626	1	2	0
Wood Working by Man-power	703	5	116	197	323	17	45
Sawn Timber Shop	3,053	439	1,051	476	517	162	408
Wood Products Shop	4,885	732	1,555	1,398	701	216	283
Wood Processing for Commercial Purposes	76	0	14	53	6	1	2
Wood Processing for Non-Commercial Purposes	73	0	6	65	1	1	0
Total	14,149	1,970	4,624	2,898	2,275	774	1,608

Non-Timber Forest Products

Permissions for the utilization of some produce, mainly from non-timber forest products (NTFPs) have been issued.¹⁰³ Rattan and bamboo are the most important marketed NTFPs, but pine resin, lac, and medicinal plants also have considerable commercial value.¹⁰⁴

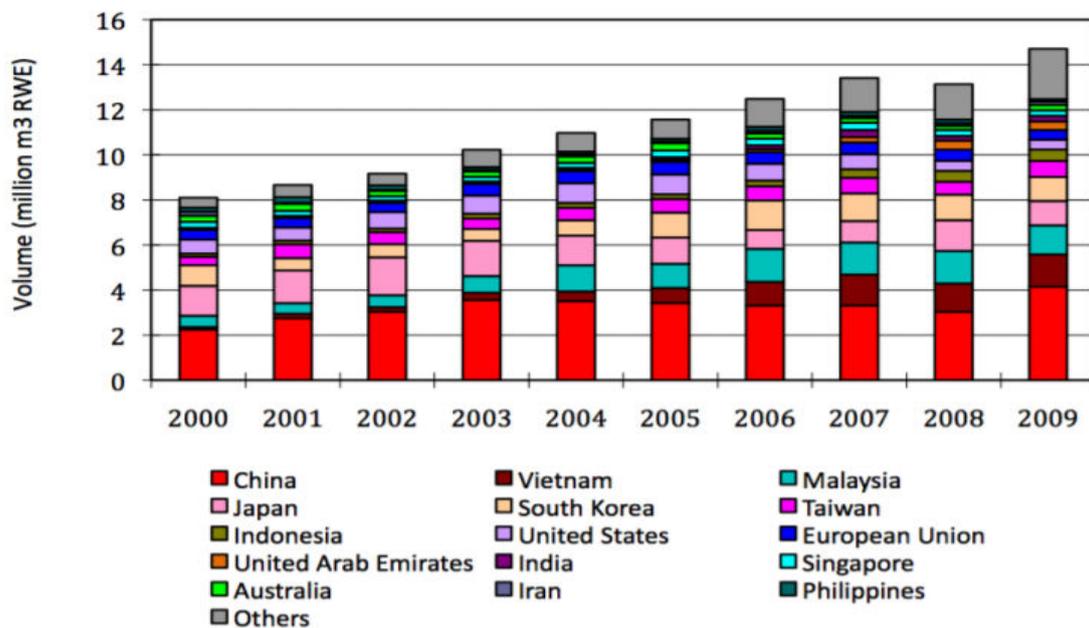
¹⁰² Royal Forest Department, *Forestry Department statistics 2019* (n.p.: The Royal Forest Department, 2019), 1-168.

¹⁰³ Sompetch Mungkorndin and Tuukka Castrén, *TIMBER TRADE AND WOOD FLOW-STUDY: Thailand* (n.p.: Poverty Reduction & Environmental Management in Remote Greater Mekong Subregion (GMS) Watersheds Project (Phase I), 1999), 7.

¹⁰⁴ ITTO, *STATUS OF TROPICAL FOREST MANAGEMENT 2005; Thailand* (n.p.: ITTO (International Tropical Timber Organization), 2005), 189.

3.3.2. Forest Sector Trade

Thailand exports to several regional export platforms including China, Vietnam, and Malaysia (Figure 14). Thus, Thailand is both a global competitor of China, Vietnam, and Malaysia in some forest industry segments, as well as a primary supplier to these countries in other industry segments. China remains the largest destination for Thailand's forestry exports, by both volume and value. Vietnam has become the second-largest destination, increasing dramatically from 1% in 2000 to 10% of Thai exports by volume in 2009. Malaysia surpassed Japan becoming the third-largest destination at 1.29 million m³ RWE, importing large amounts of Thai paper and wood panel products. As China is largely importing semi-processed timber (especially sawn wood and woodchips) from Thailand, this could be taken as an indication that Thailand is moving into a subordinate manufacturing position to China's tertiary manufacturing and export centres. Since the Thai logging ban was enacted in 1989, the export-based wood processing industry has expanded significantly. Paper, wooden furniture, panels, and sawn rubberwood are the primary exports. Minor volumes of round logs are exported each year by the Forest Industry Organization (FIO), the only legally authorized organization able to export logs. The Thai data shows that the EU and USA typically import value-added forest products from Thailand. The EU and the USA both import furniture and paper. US imports, however, dropped by 50% since 2005, by both volume and value. Japan imports large volumes of woodchips from Thailand. In 2009 Thailand sent approximately US\$160 million of wooden furniture to the EU, US\$ 180 million to Japan, and US\$ 180 million to the USA. This represents about US\$ 470 million of exposure in this wood product category to these more environmentally sensitive markets now requiring independent proof of legality and/or sustainability.¹⁰⁵



Source: European Forestry Institute, as compiled by James Hewitt, 2010.

Figure 14: Thailand Forest Products Exports by Country by Value (in million m³ RWE)

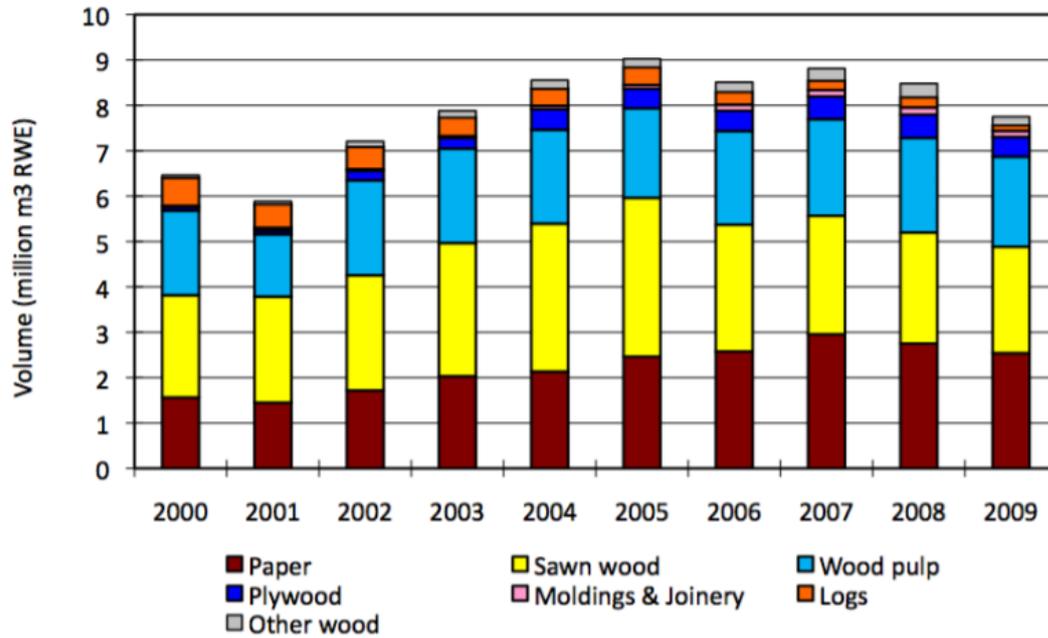
¹⁰⁵ EU FLEGT Facility, *BASELINE STUDY 5, Thailand: Overview of Forest Law Enforcement, Governance and Trade* (n.p.: The EU FLEGT Facility, 2011), 18-19.

In part due to Thailand's significant export-based wood manufacturing industry, Thai industries have developed an elaborate sourcing strategy that links a long list of countries (Malaysia, Myanmar, Lao PDR, and others). Thai firms add value to these raw or semi-processed timber resources, and then the products are consumed nationally or re-exported to the global forest products market, namely China, EU, and North America. When a shipment arrives or leaves Thailand, importers or exporters are required to file a goods declaration form with supporting documents to the Customs for cargo clearance. To speed up and facilitate the flow and movement of legitimate cargo, the Customs Department provides two clearance systems: manual and Electronic Data Interchange (EDI).

Officially reported timber import volumes hovering around 2 million m³ appear to be relatively stable, having leveled off since recovering from the Asian financial crisis. However, this is far below that of pre-crisis volumes (3-4 million m³). For wood imports, very low taxes are levied on logs or rough sawn wood. Other imported wood products incur a tax, however; for example, for smooth sawn wood there is a 5% tax, and wood furniture has a 20-40% tax.

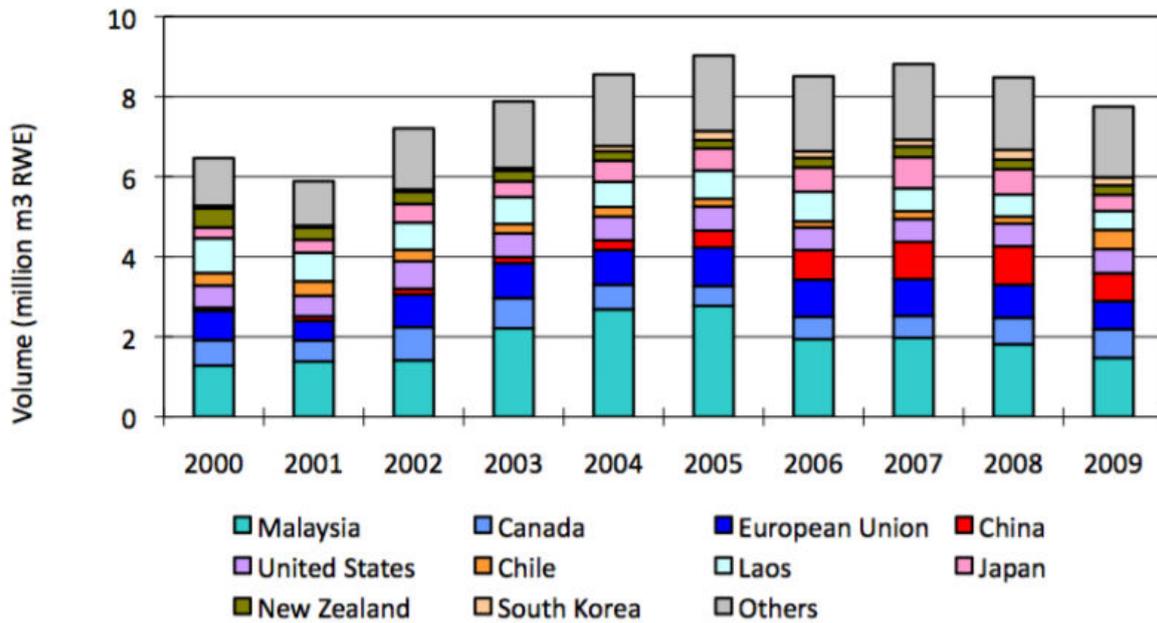
Sawn wood continues to be Thailand's largest solid wood import (i.e. excluding pulp and paper), standing at 2.3 million m³ RWE, and 74% by solid wood volume in 2009. The sawn wood trade (both import and export) is of considerable magnitude for Thailand, as it accounts for 90% of the total solid wood product imports and 54% of total exports. About two-thirds of overall sawn wood consumption is imported, and this is used mostly in the construction industry. The export-oriented wood furniture industry also relies upon sawn wood and log imports, mainly teak from Myanmar, although the volumes imported are much lower. Wood imports dramatically increased in the early 2000s and currently remain relatively stable by volume, with a sharper decline in the value of exports with the global slowdown in 2009 (Figure 15 and 16).¹⁰⁶

¹⁰⁶ EU FLEGT Facility, *BASELINE STUDY 5, Thailand: Overview of Forest Law Enforcement, Governance and Trade* (n.p.: The EU FLEGT Facility, 2011), 28-30.



Source: European Forestry Institute, as compiled by James Hewitt, 2010.

Figure 15: Thailand Forest Products Imports by Product (in million m³ RWE)



Source: European Forestry Institute, as compiled by James Hewitt, 2010.

Figure 16: Thailand Forest Products Imports by Country (in million m³ RWE)

The top five import and export countries and quantities for 2019 are shown in the following Table 21 and 22.

Table 21: Imports and Exports of Wood Products (2019)¹⁰⁷

Item	Unit	Import		Export	
		Quantity	Cost (Baht)	Quantity	Cost (Baht)
Fuelwood	Kg.	27,138,635	26,882,953	632,700	2,560,849
Wood in chips or particles	Kg.	47,029,124	36,859,044	2,492,555,175	8,074,350,833
Wood Charcoal	Kg.	97,168,964	447,011,825	16,890,054	216,104,051
Logs	Cum.	210,357	61,037,420	98,999	116,150,437
Sawnwood	Cum.	2,660,643	6,990,433,540	2,265,751	29,666,893,844
Veneer Sheets	Cum.	17,690,116	912,495,540	93,782,071	214,024,975
Particle Board	Kg.	18,548,760	307,392,762	1,637,099,417	10,249,974,421
Fibreboard	Kg.	18,655,327	425,555,041	2,235,246,850	18,401,969,430
Plywood	Cum.	7,822,838	5,486,897,224	2,190,913	895,054,086
Flooring Panels	Kg.	556,037	132,909,076	204,042	256,153,072
Wooden Furniture	Unit	3,002,637	4,734,589,023	13,629,723	12,116,943,384
Other Wood Products	Kg.	38,145,565	1,577,543,210	49,871,606	3,291,935,881
Wood Pulp	Kg.	567,214,353	13,561,664,146	139,365,302	3,018,894,447
Other Fibre Pulp	Kg.	48,232,566	1,347,007,302	54,213,218	939,834,995

Table 22: Top 5 Logs and Sawn-timber Export and Import Partners (2019)¹⁰⁸

Importer (Market)				Exporter			
Rank	Country	Trade (Baht)	Partner share(%)	Rank	Country	Trade (Baht)	Partner share(%)
1 st	China	29,491,973,410	99.02	1 st	Malaysia	2,970,533,843	41.87
2 nd	Malaysia	104,387,029	0.35	2 nd	New Zealand	905,751,166	12.77
3 rd	India	69,629,392	0.23	3 rd	United States	685,658,246	9.67
4 th	Vietnam	59,701,546	0.20	4 th	Myanmar	408,320,813	5.76
5 th	Taiwan	18,343,891	0.06	5 th	Brazil	405,445,296	5.71

¹⁰⁷ Royal Forest Department, *Forestry Department statistics 2019* (n.p.: The Royal Forest Department, 2019), 1-168.

¹⁰⁸ Royal Forest Department, *Forestry Department statistics 2019* (n.p.: The Royal Forest Department, 2019), 1-168.

3.3.3. Forest Sector Employment

Government forestry workers are as follows Table 23. The number of Employment in forestry and logging was 216.55 thousand FTE (Full-time equivalents) in 2015.¹⁰⁹

Table 23: Number of Forest Officer, Permanent employees, and Government employees of Royal Forest Department¹¹⁰

	2018	2019	2020
	person		
Total	9,682	9,583	1,765
Officer	1,816	1,740	1,090
Permanent employees	1,353	1,214	6,556
Government employees	6,513	6,629	9,411

3.4. Forest and Climate Change

Thailand is a developing country highly vulnerable to the impacts of climate change and is ranked the 13th country in the “extreme risk” category that is most vulnerable to future climate change impacts over the next thirty years. The effects of climate change, including higher surface temperatures, floods, droughts, severe storms, and sea-level rise, but Thailand’s rice crops at risk and threaten to submerge Bangkok within 20 years.¹¹¹

Thailand is exposed to a wide range of hazards, including flooding, storms, and droughts alongside forest fires, landslides, and extreme temperatures. However, their impacts vary; the hilly areas in the north and south, with several communities located in steep and mountainous terrains, are highly susceptible to landslides triggered by heavy precipitation. Conversely, the northern regions are more susceptible to forest fires occurring during the dry season, which illustrates the high spatial variability of disasters that may occur in the country. Adding to the pressures, anthropogenic stressors from improper land use, organic urban expansion, and changes in land use contribute to high risks in areas that are changing the protective environment and ecosystems. Between 1955 and 2009, average annual temperatures in Thailand have increased by 0.95°C, significantly more than the global average of 0.69°C. Furthermore, sea levels in the Gulf of Thailand have risen approximately 3-5 millimeters annually, compared to the global average of 0.7 mm per year between 1993- 2008. While precipitation has not shown significant change over the period of 1955-2014, Bangkok, northeastern provinces, and the Gulf region have experienced increased rainfall. These changes translate to higher hazard risks. For example, between 2006-2010, Thailand experienced longer dry spells in the middle of the rainy season, and more intense rain afterward, exacerbating seasonal stress due to changes in the regional weather patterns. Similarly, between 2015 and 2016, data from the National Hydro informatics and Climate Data Center indicated a series of

¹⁰⁹ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 51-52.

¹¹⁰ Royal Forest Department, *Forestry Department statistics 2020* (<http://forestinfo.forest.go.th/Content.aspx?id=10400>)

¹¹¹ "Climate Change Case Study: Thailand," *Climate.org*, last modified n.d., accessed May 17, 2021, <https://climate.org/archive/topics/international-action/thailand.htm>.

recurring, prolonged droughts which caused water levels to drop to critical levels in reservoirs nationwide. Impacts of such events are particularly severe on the agricultural sector, and also threaten the environment and stability of the ecological systems. Furthermore, sea-level rise is likely to increase the vulnerability of not only coastal agriculture and critical infrastructure located at low-lying coastal areas (including industrial parks and road networks) but also mangrove forests and coral reefs.¹¹²

3.4.1. Roles of Forest Sector in National Climate Change Policy

Thailand has ratified the Paris Agreement which entered into force on 4 November 2016 and is intended to reduce the level of greenhouse gas (GHG) emissions by 20% from the business-as-usual (BAU) level by 2030. The level of the contribution could increase up to 25% subject to adequate and enhanced access to technology development and transfer, financial resources, and capacity building support through a balanced and ambitious global agreement under the United Nations Framework Convention on Climate Change (UNFCCC). The forest-related target baseline (2015) is 14,838,400 ha of forest cover under an in-situ conservation regime, and the target is a positive trend. Thailand has formulated the Climate Change Master Plan B.E. 2558-2593 (2015-2050), which laid out a vision to achieve climate-resilient and low-carbon growth in line with the sustainable development path by 2050. Thailand is mainstreaming disaster risk reduction (DRR) and disaster resilience into development policy by incorporating key elements and indicators of the Sendai Framework in the National Economic and Social Development Plan 2017–2021.¹¹³

National Climate Change Master Plan (2015-2050)

The National Climate Change Master Plan (2015-2050) is designed to help Thailand achieve sustainable low carbon growth and climate change resilience by 2050, by following the below missions: “Building climate resilience into national development policy by integrating directions and measures in all sectors at both national and sub-national levels to ensure country’s adaptability to climate change; Creating mechanisms to reduce GHG emissions, and leading to sustainable low carbon growth; Building readiness of master plan implementation by enhancing potential and awareness of all development partners; and Developing database, knowledge, and technology to support climate change adaptation and sustainable low carbon growth”

Long-Term (2020-2050) targets include:

1. By 2030 reduce energy intensity by at least 25 percent compared to a business as a usual scenario;
2. Increase the proportion of trips made by public transportation;
3. Reduce the proportion of GHG emissions from land transport;

¹¹² Regional Office for Asia and the Pacific, *Disaster Risk Reduction in Thailand: Status Report 2020* (Bangkok: UNDRR, 2020), 11-13.

¹¹³ United Nations Country Team Thailand, *United Nations Partnership Framework for Thailand 2017-2021* (n.p.: The United Nations Country Team Thailand, n.d.), 12-27.

4. Increase the proportion of investment in low carbon and environmentally friendly industries;
5. Reduce open waste dumping area;
6. Reduce the proportion of open burning in agriculture areas;
7. Reduce carbon intensity of the economy.

Master Plan for Integrated Biodiversity Management (2015-2021)

The Master Plan for Integrated Biodiversity Management (2015-2021), including the Action Plan on Biodiversity Management (2015-2016) and national biodiversity targets, was adopted by Cabinet on 10 March 2015. It is aligned with the current global biodiversity agenda and represents Thailand's fourth NBSAP document. Its objectives are to:

1. address the underlying causes of biodiversity loss by mainstreaming biodiversity across public and civil society sectors;
2. reduce direct pressures on biodiversity and promote the sustainable use of biodiversity;
3. improve the status of biodiversity by safeguarding ecosystems, species, and genetic diversity;
4. enable management to enhance the benefits from biodiversity and ecosystem services; and
5. enhance management and implementation of biodiversity-related obligations through participatory planning, knowledge management, and capacity-building.

The Master Plan for Integrated Biodiversity Management (2015-2021) is the principal biological diversity plan of Thailand, developed in compliance with Article 6 of the Convention on Biological Diversity, under which it states that each Contracting Party shall develop national strategies, plans, or programmes for the conservation and sustainable use of biological diversity.¹¹⁴

Moreover, the Royal Forest Department has promoted tree planting in various important events throughout the year and also designated these events as the important days of the Department as follows:

1. National Forest Conservation Day (14 January)
2. World Forestry Day (21 March)
3. Arbor Day (Usually in May)
4. Anniversary of the Royal Forest Department Establishment Day (18 September)

¹¹⁴ "Policy Framework | FAO | Food and Agriculture Organization of the United Nations," *Fao.org*, last modified n.d., accessed May 17, 2021, <http://www.fao.org/in-action/fapda/forestry-tool/framework/en/>.

5. National Annual Tree Care Day (21 October)¹¹⁵

3.4.2. Forest-based Climate Adaptation and Disaster Risk Reduction in Forest Sector

Thailand's mitigation and adaptation efforts include a slow shift to organic agriculture, a tsunami warning system along the Andaman Sea, the construction of a flood prevention wall around Bangkok, and an Action Plan to reduce greenhouse gas emissions from vehicles and energy use.¹¹⁶

Thailand's greenhouse gas (GHG) emissions represent 0.77% of global emissions in 2014, which is lower than the world average. In terms of emission profile, the energy sector has been the largest contributor to Thailand's GHG emission, accounting for 74% of total emission in 2013, as reflected in the country's 3rd National Communication.¹¹⁷

The fifth of the six strategies of **20 Year Strategic Plan for The Ministry of Natural Resources and Environment (2017-2036)** involved climate change mitigation.

The Fifth Strategy: Reduction of Effects of Climate Change and Natural Disasters

Goal

1. Enhance effectiveness, develop mechanisms, create capacity for reducing greenhouse gas, and adapt to climate change in the country. (Results of reducing greenhouse gas monitored through INDCs 111 MtCO₂e)
2. Increase the effectiveness of the management to reduce the risk of disaster losses in lives and property caused by natural disasters.
 - A. provide disaster forecasting and early warning systems and powerful management of natural disasters covering 100 percent of the landslide risk areas
 - B. establish surveillance networks in risk areas covering 100 percent of the 25 main river basin groups
 - C. cope with coastal erosion problems in the 200-kilometer sandbars and develop suitable models for 40 areas

Work Plan

1. Work plan for enhancement and support of capacity in reducing greenhouse gas.
2. Work plan for enhancement and support of preparing for adaption to climate change.

¹¹⁵ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 30-31.

¹¹⁶ "Climate Change Case Study: Thailand," *Climate.org*, last modified n.d., accessed May 17, 2021, <https://climate.org/archive/topics/international-action/thailand.htm>.

¹¹⁷ Office of Natural Resources and Environmental Policy and Planning, *Thailand's Updated Nationally Determined Contribution* (Bangkok: UNFCCC, 2020), 3.

3. Work plan for administration, management, and monitoring on natural disaster warning.¹¹⁸

Climate Change Adaptation and Disaster Risk Reduction in Forest Sector

Thailand has placed adaptation as equally important. Thailand has developed the first National Adaptation Plan to provide a framework towards climate-resilient society with the focus on water management, agriculture and food security, tourism, health, natural resource management, and human settlement and security. The NAP aims to minimize risks and vulnerability as well as to improve the resilience of the country under the sustainable development pathway. Thailand has integrated climate change adaptation into key sectoral policies and plans such as the Strategy for Climate Change in Agriculture (2017-2021), the Climate Change Adaptation Plan on Public Health (2018-2030), the 20-year Water Resource Management Master Plan, and the Spatial Plans.¹¹⁹

Short-term Goals (2016) Adaptation has four following targets:

1. Create comprehensive climate change risk maps which incorporate key socio-economic environmental aspects;
2. Increase the national proportion of biodiversity conservation areas with a minimum conservation area of not less than 19% and an increase of no less than 800 ha per year to mangrove forests;
3. Develop an integrated and ecologically friendly coastal restoration plan in half of the coastal provinces and;
4. Develop composite and sector-specific climate change resilience index.¹²⁰

Medium-term goals (2020) Adaptation has seven following targets:

1. Develop effective and comprehensive early warning measures such as pest and meteorological forecasting for the agricultural sector and natural disaster management;
2. Establish a climate-based agricultural insurance scheme;
3. Establish a national fund for climate change-related recovery, compensation, and adaptation;
4. Increase forest coverage to 40% of the total national area;
5. Maximize the proportion of national biodiversity conservation areas;

¹¹⁸ "20-Year Strategic Plan for the Ministry of Natural Resources and Environment (B.E. 2560 – 2579) - Ministry of Natural Resources and Environment," *Mnre.go.th*, last modified n.d., accessed May 17, 2021, <http://www.mnre.go.th/en/about/content/1065>.

¹¹⁹ "Climate Change Case Study: Thailand," *Climate.org*, last modified n.d., accessed May 17, 2021, <https://climate.org/archive/topics/international-action/thailand.htm>.

¹²⁰ Office of Natural Resources and Environmental Policy and Planning, *Climate Change Master Plan 2015-2050* (n.p.: Ministry of Natural Resources and Environment, 2015), 59.

6. Develop an integrated and ecologically friendly coastal restoration plan for all coastal provinces and;
7. Develop integrated regional climate change action plans for all areas that are at risk.¹²¹

Thailand's prioritized adaptation efforts include:

1. Promote and strengthen Integrated Water Resources Management (IWRM) practices to achieve water security, effective water resource management to mitigate flood and drought
2. Safeguard food security through the guidance of Sufficiency Economy Philosophy e.g. An application of the New Theory in agriculture and land management to promote appropriate resource allocation and economic diversification at the household level and sustainable management of community forests to promote food security at the community level, for instance
3. Promote sustainable agriculture and Good Agricultural Practice (GAP)
4. Increase capacity to manage climate-related health impacts; including through the development of health surveillance and early warning systems, systematic climate risk assessment, and effective disease prevention and response measures to climate change-related health consequences
5. Increase national forest cover to 40% through local community participation, including in particular headwater and mangrove forests to enhance adaptive capacities of related ecosystem.¹²²

Effective disaster management and climate change adaptation also require robust legislative frameworks and operating procedures which support activities under all of the phases in the disaster management cycle from preparedness to mitigation, response, and recovery. In Thailand, disaster risk management (DRM) has a solid legal foundation, supported by a comprehensive policy framework that outlines the roles and responsibilities of the DRM landscape among administrative levels. The Disaster Prevention and Mitigation Act of 2005 provides the main framework for DRM, supported by subsequent regulations. The National Disaster Prevention and Mitigation Plan of 2015 describes a set of strategic objectives to guide the operationalization of DRM, aligned with the 4 Priority Actions of SFDRR. The plan emphasized four inter-related objectives:

1. inclusive disaster risk reduction;
2. integrated emergency management;

¹²¹ Office of Natural Resources and Environmental Policy and Planning, *Climate Change Master Plan 2015-2050* (n.p.: Ministry of Natural Resources and Environment, 2015), 60.

¹²² Office of Natural Resources and Environmental Policy and Planning, *Thailand's Intended Nationally Determined Contribution (INDC)* (Bangkok: UNFCCC, 2015), 5.

3. effective recovery and resilience-building; and
4. strengthened international cooperation, adopting multi-agency and multi-sectoral approaches.

The plan is adopted for 5 years period, and recently it has undergone a review through a participatory process. At sub-national levels, all provinces and local administrative bodies are mandated to develop respective disaster management plans for their jurisdiction. Guidelines for formulating annual action plans are provided by DDPM to ease the process, and to ensure uniformity. As of 2017, all of the provinces in Thailand had a DRM plan in place, while plan formulation at district and sub-district levels was in progress. The National Committee for Disaster Prevention and Mitigation is the main body guiding DRM policy development and decision-making, while the inter-ministerial committee provides technical and managerial support for the implementation activities. The DDPM serves its role in coordinating all activities and facilitates capacity-building for emergency response. DDPM comprises one central office with 16 Bureaus and units, 18 Disaster Prevention and Mitigation Regional Centers, and Provincial Office in 75 provinces (apart from Bangkok, because the metropolitan has a self-administered DRM unit under the BMA). Disaster Prevention and Mitigation Academy of the DDPM also provides training and capacity building for DDPM officials and other relevant government agencies. In terms of mainstreaming risk reduction, a coordination mechanism among concerned government agencies has been established, aiming to support unified action across the country. Key attempts include the development of DRR focal points in line ministries and provincial agencies, responsible for coordinating the implementation of DRM plans, and supporting the mainstreaming of DRR into sectoral interventions. This is a significant step towards achieving the whole-of-society integration of DRR as envisaged under the Sendai framework, and these initiatives provide not only cross-agency support but also the opportunity to identify synergies among sectoral interventions through a collaboration of the relevant authorities.¹²³

3.4.3. Global Partnership for Forest Protection ¹²⁴

Thailand has a mission to drive forestry cooperation. International based on the policy framework of the State, the Charter of International Cooperation and the United Nations involved in cooperation in sustainable environmental development especially in management issues. The role of the Royal Forest Department in the international forestry arena can be divided into 3 tasks as follows:

1. Compliance with international conventions and obligations: As Thailand is part of a global society, such as the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Climate Change biodiversity (United Nations Framework Convention on Biological Diversity (UNCBD), etc. to demonstrate Thailand's cooperation in implementing the agreements of the global society as a whole

¹²³ Regional Office for Asia and the Pacific, *Disaster Risk Reduction in Thailand: Status Report 2020* (Bangkok: UNDRR, 2020), 21-22.

¹²⁴ <http://portal.dnp.go.th/Content/citesdnp?contentId=676> and Cites implementation in thailand

2. Strengthening cooperation with developed countries: Thailand has taken the role of equality in being a negotiator, cooperation by changing the status of the recipient whoever received help from developed countries to become a cooperative partner (Partnership) equal

3. Strengthening cooperation with developing countries: Thailand has transformed its role as a donor country in providing assistance to other developing countries around the world. that have been successful (Best Practice) as an example and then disseminate to other developing countries

3.5.Human Resources and Institutional Capacities in Forest Sector

3.5.1. National Forest Administrative Capacity

The consequence of the Government policy in 2002 to restructure the former RFD into three departments according to the principle of area-based management has intensified the structure of each organization. In 2019, there are total 9,583 forestry workers in RFD (The detailed figures are in [3.3.3. Forest Sector Employment]). The range of qualifications among the government officers is varied. In 2013, 20% of Government officers had a Master's degree, 54% had a Bachelor's degree and 17% had a Technical Certificate.¹²⁵

3.5.2. Research and Development

Forest research in Thailand is carried out by many organizations. Royal Forest Department, Department of National Parks, Wildlife and Plant Conservation, Department of Marine and Coastal Resources are the major government organizations being responsible for forest research of the country. These organizations are attached to the Ministry of Natural Resources and Environment. Moreover, there are several universities, academic institutes, and private sectors that also conduct forest research. Forest research areas consist of silviculture, forest products, and wood industry, forest economy, forest ecology and environment, forest ecophysiology, forest microbiology and insects, forest biodiversity, community forestry, watershed, wildlife, mangrove forest, marine and coastal resources, national park, and other forest-related subjects.

Within the Royal Forest Department, Forest Research and Development Bureau is directly responsible for research, disseminating research findings, technology transfer, and providing technical services on forestry. The Royal Forest Department is always aware of the need to research to apply the research findings for the forestry development of the country. For instance, research on silviculture and genetic improvement to increase plantation yield has been carried out for several valuable tree species particularly for teak, one of the most economically important tree species of Thailand. In 1965, Teak Improvement Centre was established in Ngao District, Lampang Province with the prime mandate to research teak for various aspects, e.g. flower and fruit development, seedling production, silviculture, tree selection, and genetic improvement for superior genotypes, etc. This Centre has been in

¹²⁵ Royal Forest Department, *USAID Lowering Emissions in Asia's Forests (USAID LEAF) Drivers of Forest Change in the Greater Mekong Subregion: Thailand Country Report* (n.p.: The Royal Forest Department, 2015), 9-10.

operation for more than 40 years now. Recently, teak seedlings propagated by tissue culture technique from more than 30 superior genotypes have been distributed to farmers for teak plantation establishment. In addition to teak, some exotic fast-growing tree species which are of economic value, e.g. *Eucalyptus* spp. and *Acacia* spp., are also studied and developed for superior genotypes for commercial plantations. The Royal Forest Department is also aware of the problems of wood shortage associated with the higher price since woods have to be imported from other countries. Hence, the Royal Forest Department has focused on research and development on a wood-substitute composite from small wood debris, agricultural waste materials, and some plants, e.g. waste from oil palm, Vetiver grass, rice straw, cassava stem, water hyacinth fibre, rice husk, tree leaves, etc. It is the process to make use of the waste materials as well as to increase their value. The materials from wood-substitute composite can be used to make furniture, home decorations, and other products.

The Royal Forest Department is the sole organization in the country that has researched lac cultivation and utilization for several decades. The Department has also promoted lac cultivation as a supplementary source of income for farmers by providing brood lac for cultivation to interested farmers. Crude lac is an important raw material used in many industries such as shellac, cloth dye, foods, drugs, cosmetics, ink, etc. Lac is therefore one of the major exported items of the country with the value of several hundred million baht annually.¹²⁶

3.5.3. Forest Education and Training

Several universities in the country offer undergraduate-level programs in forestry and natural resources. These universities, to name just a few, include Kasetsart University, Chiang Mai University, Khon Kaen University, Mae Jo University, Chulalongkorn University, Naresuan University, Sukhothai Thammathirat Open University, Mahidol University, Prince of Songkla University, Thammasat University, Mahasarakham University, etc.

Among them, Kasetsart University has the only full-fledged forestry school in the country. Faculty of Forestry at Kasetsart University offers Bachelor's, Master's, and Doctorate programs in forestry and related subjects such as forest management, forest biology, forest engineering, watershed management, silviculture, forest products, forestry ecology, tropical forestry, etc.¹²⁷ At present, this university consists of 6 departments; Forest Biology, Forest Engineering, Forest Management, Forest Products, Conservation, and Silviculture. Each department provides teaching and laboratory practices to meet the highest academic standard to its students. In addition to the complete learning facilities in Kasetsart University in Bangkok, it has 5 students' practicing stations located in 3 regions of Thailand. Objectives of these stations are 2 folds; training undergraduate students to familiarize themselves with forestry field works and providing research sites to graduate students and faculty staff. The

¹²⁶ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 32-35.

¹²⁷ Royal Forest Department, *Forestry in Thailand* (n.p.: The Royal Forest Department, 2009), 36-37.

faculty, with 78 academic staff, dedicates to teaching and research and more than 80% of them graduated with doctoral degrees from leading universities of the world.¹²⁸

The number of students who graduated with forestry degrees in 2015 is shown in the following Table 24.

Table 24: Graduation of Students in Forest-Related Education¹²⁹

FRA 2020 categories	Number of graduated students		
	2015		
	Total	Female	Male
Total	269	154	115
Doctoral degree	4	2	2
Master's degree	59	29	30
Bachelor's degree	206	123	83
Technician certificate/diploma	0	0	0

4. Challenges and Opportunities in Forest sectors

4.1.Challenges

4.1.1. Forest Protection and Restoration

There is also an invasion of logging, hunting and clearing natural forest areas. For illegal farming, according to the Forest Statistical Report of the Royal Forest Department in 2020, it found that there were 27,114 cases of forest encroachment on forest trespassing, 754,983 rai of land seized.

Forest area in Thailand still has a tendency to decrease every year. In during 1973 - 1998 decreased by average of 366 thousand ha per year, during 2000-2014, the area decreased by 46.4 thousand ha. In 2020, forest area in Thailand was 163.9 thousand ha, approximately 31.68 % of land area. And according to the report on forest conditions in 2021, there were 102.21 million rai of forest remaining, accounting for 31.59% of Thailand's area. So, the area will decrease approximately 0.27 million rai from the year 2020.

The number of officers working in the field of care, protection and patrol in natural forest areas is about 20,000, compared to the forest area of about 102.48 million rai in Thailand, which is found to be very small. Approximately one officer has to take care of about 5,000 rai of forest land.

¹²⁸ "Tropical Forestry Program," *Forest.ku.ac.th*, last modified n.d., accessed May 17, 2021, <http://www.forest.ku.ac.th/edu/tropical/index.php>.

¹²⁹ FAO, *Global Forest Resources Assessment 2020 Report: Thailand* (Rome: The FAO, 2020), 52-53.

4.2. Opportunities

4.2.1. Global Partnership

Thailand has a mission to drive international forestry cooperation. Based on the policy framework of the State, the Charter of International Cooperation and the United Nations involved in cooperation in sustainable environmental development, especially in management issues. The role of the Royal Forest Department in the international forestry arena can be divided into 3 tasks as follows

1. Compliance with international conventions and obligations. As Thailand is part of a global society, such as the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Climate Change biodiversity (United Nations Framework Convention on Biological Diversity (UNCBD), etc. to demonstrate Thailand's cooperation in implementing the agreements of the global society as a whole
2. Strengthening cooperation with developed countries in which Thailand has taken the role of equality in being a negotiator, cooperation by changing the status of the recipient whoever received help from developed countries to become a cooperative partner (Partnership) equal
3. Strengthening cooperation with developing countries. Thailand has transformed its role as a donor country in providing assistance to other developing countries around the world. that have been successful (Best Practice) as an example and then disseminate to other developing countries

4.2.2. Potentials

1. Prevention and suppression

The Royal Forest Department has taken steps to prevent forest encroachment and destruction, and forest fire prevention by working with other agencies such as the military, police, and local authorities, special operations units have been set up. to work in the field of forest protection and forest fire prevention in order to be able to act proactively in a timely manner along with strictly enforcing the relevant laws and applying modern technology in operations such as drones, GIS.

In terms of creating participation in forest protection has organized the Forest Protection Volunteer Project to enhance knowledge and understanding for people living near forest areas to maintain forest areas and make sustainable use of the forest.

2. Promote of economic forest

In 2019, the Royal Forest Department pushed for the Forest Act (No. 8) B.E. 2562, abolishing restricted timber in land ownership so that people can cut down trees for use and trade without asking for permission to the people who plant trees on land that are authorized by the state can use wood to create an incentive for economic logging in both land rights under the Land Code and land that the state allows for use, such as the NESDB, at the estate, at the Raj. NTC supplies, etc.

In 2019, the Royal Forest Department established the Bureau of Forest Economy. To be the main unit of integration with the public, private and community sectors to promote integrated plantation and trade of timber. From planting, taking care and cutting, as well as pushing for exports to sell abroad, both in Europe and China, by reviewing the law, cabinet resolutions and regulations. related to the obstacles to timber exports and timber trade; develop a wood certification system to meet international standards and linked to the NSW system. In addition, there is also training and technology transfer in forestry research. with the general public and various community enterprise groups

3. Promotion of community forest management

In 2019, the Royal Forest Department successfully pushed for the Community Forest Act in order to provide a law to support community-based forest management and allow people who maintain forests to legally use the forest. Create incentives to conserve, restore, manage, maintain and utilize forest resources in a balanced and sustainable manner.

The Royal Forest Department has a goal of Activities to promote community forest management across the country surrounding the area national forest Within a radius of not more than 5 kilometers, an area of approximately 10 million rai, 15,000 community forests, with community participation of 18,000 villages, of which community forests have already been established and the project lifespan is in accordance with the Community Forest Act B.E. 2562 Announced in the Government Gazette As of 29 May 2019, there is an area of 5 million rai, 7,213 community forests with community participation in 8,420 villages.

4. Forest land management

The area of responsibility of the Royal Forest Department is approximately 12.5 million rai. In 2019, the government created the National Land Policy Council Act B.E. maximum benefit, balance, fairness and sustainability. The Royal Forest Department has adopted a guideline for arranging arable land for the community (NTC) to solve the problem of people living and working in National Reserved Forest Areas before the Cabinet resolution of 30 June 1998 in the 3rd, 4th, and 5th floor watershed areas, which the law allows for use in the National Reserved Forests. With a target area of 3.9 million rai, 1.21 million rai has been taken into the process of land allocation for the community. The goal is to be completed by 2022 to solve problems and reduce conflicts. between people and government officials about the problem of state land encroachment by the people who live and work in the aforementioned areas will make a memorandum of agreement. Together with the Royal Forest Department, with the staff to maintain the planted forest, the people request products from the trees they grow. (Without permission to cut perennials) and exploit. The land between the rows of trees. In such operations, the Royal Forest Department has relied on the following academic concepts:

1. Agroforestry system is an agricultural system that adopts the principles of balance, diversity and sustainability of the natural forest system. It is a guideline for farming that does not affect the original forest area, such as not cutting down forest trees. or the use of forest products without affecting the ecosystem, with mixed crops growing in one area until there is diversity. Many biological species closest to nature

2. Planting trees according to the structure of the forest in the house layer, various tops and topography. Especially in high areas, Planting trees must take into account the original area council. and local plant society.

3. Land erosion is the problem of soil erosion. and loss of natural topsoil such as erosion, erosion of water and wind, etc. Especially the problem caused by human actions such as deforestation, forest burning, wrong cultivation methods, etc., resulting in loss of fertility. of the soil. There is a decrease in land use.

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