

THAILAND INNOVATION TOOLKIT

**THE BOARD OF INVESTMENT
OF THAILAND (BOI)**



Table of Contents

<u>PART 1: INTRODUCTION TO INNOVATION</u>	3
• Innovation Ecosystem in Thailand	3
• Innovation Support and Key Innovation Institutions Profile	5
• Map of Other Organizations Driving Innovation in Thailand	10
<u>PART 2: WHY CHOOSE THAILAND TO HOST YOUR INNOVATION?</u>	31
• Global Megatrends Impacting Thailand's Innovation Policies	31
• Thailand's Competitiveness	35
• Innovation Showcases	36
<u>PART 3: HOW WE CAN HELP</u>	37
• Thailand 4.0 and S-curve industries	37
• How the BOI supports innovation	38

INTRODUCTION TO INNOVATION

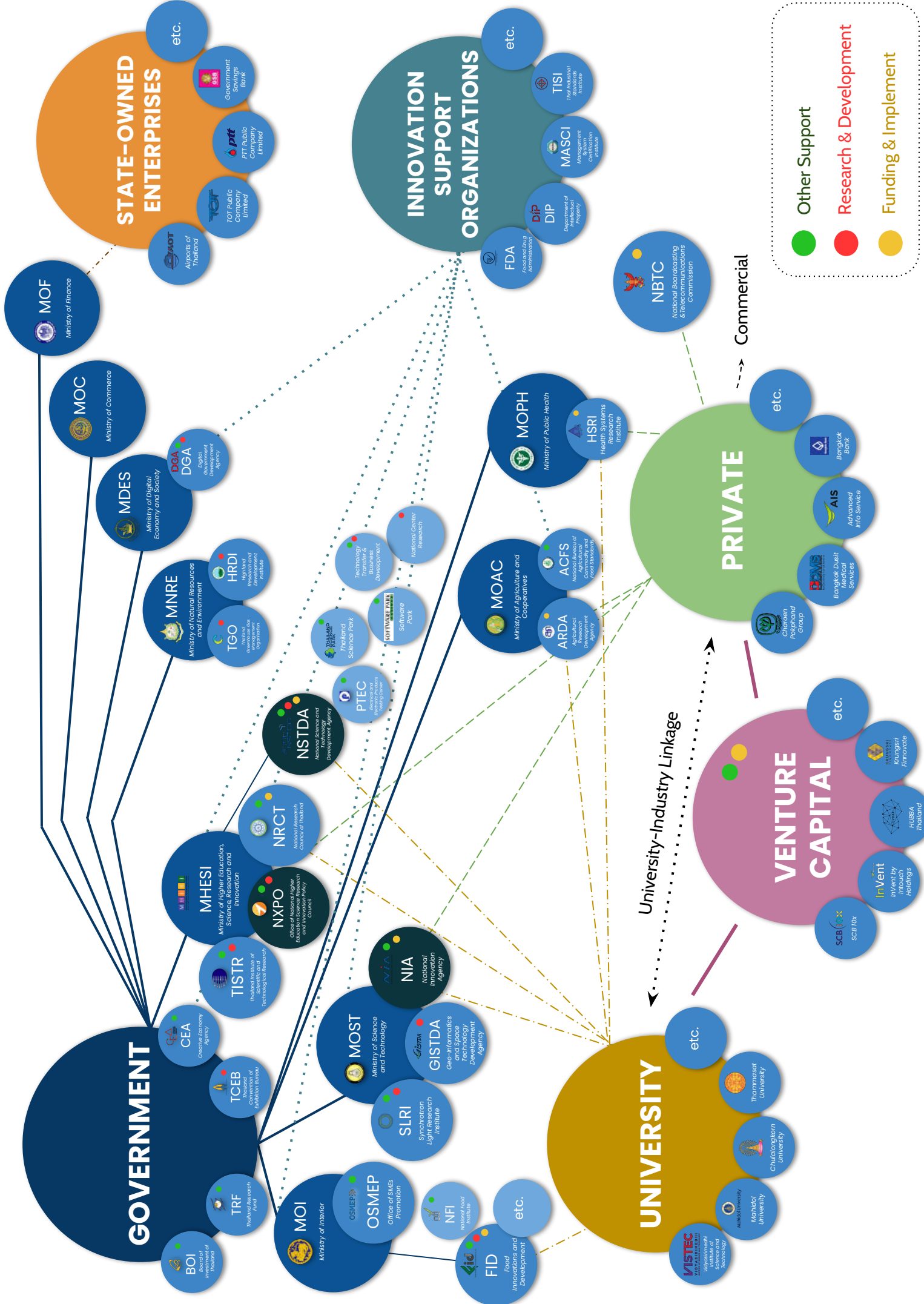
Welcome to the Thailand Innovation Toolkit!

As businesses continuously seek to further improve and develop, Thailand is also advancing, focused on becoming one of the most attractive destinations for investments and innovations through its well-developed infrastructure.

This toolkit will provide you with useful information on the country's innovation landscape, megatrends, innovation showcases, together with policies and incentives aimed at driving innovation in Thailand.

1.1 Innovation Ecosystem in Thailand

Thailand has an extensive innovation network made up of various supporting parties, from government bodies, the private sector, to venture capital and other organizations including research laboratories and academic institutions.



STATE-OWNED ENTERPRISES

- etc.
- Government Savings Bank
- PTT Public Company Limited
- TOT Public Company Limited
- Airports of Thailand

INNOVATION SUPPORT ORGANIZATIONS

- etc.
- FDA Federal Drug Administration
- DIP Department of Intellectual Property
- MASCI Measurement Certification Institute
- TISI The Thailand Standards Institute

GOVERNMENT

- MOF Ministry of Finance
- MOC Ministry of Commerce
- MDES Ministry of Digital Economy and Society
 - DGA Digital Government Agency
- MNRE Ministry of Natural Resources and Environment
 - TGO Thailand Government Organization
 - HRDI High Road Research and Development Institute
- MOPH Ministry of Public Health
 - HSRI Health Systems Research Institute
- MOAC Ministry of Agriculture and Cooperatives
 - ARDA Agricultural Research Agency
 - ACFS Agricultural Cereals Food Standards
- MOI Ministry of Interior
 - OSMEP Office of SMEs Promotion
 - NFI National Food Institute
 - FID Food Innovations and Development
- MOST Ministry of Science and Technology
 - GISTDA Geo-Informatics and Space Technology Development Agency
 - SLRI Synchrotron Light Research Institute
 - NIA National Innovation Agency
- MHEI Ministry of Higher Education, Science, Research and Innovation
 - TISTR Technological Research Institute
 - NXPO Office of National Higher Education and Innovation Policy
 - NRCT National Research Council of Thailand
 - NSTDA National Science and Technology Development Agency
 - PTC Protein and Technology Center
 - Thailand Science Park
 - Software Park
 - National Center Research
- CEA Creative Economy Agency
- TCEB Thailand Exhibition Bureau
- TRF Thailand Research Fund
- BOI Board of Investment of Thailand

PRIVATE

- etc.
- Bangkok Bank
- AIS Advanced Info Service
- BKMS Bangkok Dusit Medical Services
- Charoen Pokphand Group
- NBTC National Boarding and Reservation Commission

VENTURE CAPITAL

- etc.
- SCB iQX SCB iQX
- InVent InVent by InTouch Holdings
- HubBA Thailand
- Industry Kungsi Innovate

UNIVERSITY

- etc.
- VISTEC Vidyasarakulrajavidyalaya University Science and Technology
- Mahidol University
- Mandala University
- Chulalongkorn University
- Thammasat University

Other Support

Research & Development


Funding & Implement


University-Industry Linkage


Commercial


1.2 Innovation Support and Key Innovation Institutions Profile


The Thai government has established several agencies that focus on creating technology and country innovation frameworks to improve efficiency and value through innovation. These organizations have expanded the center of Thailand's innovation in all aspects, including research and development, commercialization, funding, and international collaborations. (Organizations are arranged in alphabetical order)

 Digital Economy Promotion Agency (DEPA)	
MISSION and ROLE <ul style="list-style-type: none"> • An entity under the Ministry of Digital Economy and Society of Thailand (MODES) • Promotes and supports the application of digital technology and innovation in business across industries • Innovation support via incentives 	APPROACH <ul style="list-style-type: none"> • Develops and supports farmers, entrepreneurs, the food industry, and businesses in agricultural areas in the central region of the EEC • Creates policies, development strategies, and innovation support programs to digitalize businesses and the economy
INNOVATION EXAMPLE <ul style="list-style-type: none"> • Smart Pier at the Phuket sandbox • Thailand Digital Valley, EEC Digital Park • TECHHUNT, a digital startup platform for investors and customers • TRANSFORM, an online marketplace • eatsHUB, a national delivery platform 	INTERNATIONAL COLLABORATION <ul style="list-style-type: none"> • Promotes entrepreneurs of digital startups to expand the market and develop international competitiveness, e.g. depa JumpStart, depa Accelerator Program x Techsauce, depa Tech Tycoon+ • Promoted Thai innovations at the Thailand Pavilion at the World EXPO 2020 in Dubai, boosting market growth in the Middle East
Website: Digital Economy Promotion Agency (DEPA)	

	National Food Institute (NFI)	
MISSION and ROLE <ul style="list-style-type: none"> An entity under the Ministry of Industry (MOI) Provides the government with recommendations for the food industry Stimulates food industry competition, creates value in academia, technology, and information 	APPROACH <ul style="list-style-type: none"> Provides food trade and technological information Conducts food lab laboratory testing and analysis Provides funding for SMEs 	
INNOVATION EXAMPLES <ul style="list-style-type: none"> Nfi SmartClub, activities and links to communities Food Intelligence Center (FIC), promoting food development and export capacity Plant-based foods, vEggie and VRIMP substitutes for eggs and shrimp 	INTERNATIONAL COLLABORATIONS <ul style="list-style-type: none"> Partnered with the JETRO Business Support Centre to establish THE NFI-JAPAN DESK which supports the food industry between Thailand and Japan Contributes to the UN Food and Agriculture Organization's internationally recognized Codex food safety standards 	
Website: National Food Institute (NFI)		

	National Innovation Agency (NIA)*	
MISSION and ROLE <ul style="list-style-type: none"> An entity under the Ministry of Science and Technology (MOST) Acts as the center of innovation, innovation policy, and funding support for Thailand Enhances the National Innovation System (NIS) of Thailand to the international level and promotes the country's position as an "Innovation Nation" Promotes, supports, and implements the country's innovation development, from development to commercial use 	APPROACH <ul style="list-style-type: none"> Acts as an incubator/accelerator with universities and the private sector Offers innovation support via incentives Provides innovation funding Behind the Yothi innovation district, which focuses on developments in medical science innovations 	
INNOVATION EXAMPLES <ul style="list-style-type: none"> Open Innovation, innovation funding Single Sign-On system SPACE-F, innovation accelerator programs Startup x Innovation Thailand Expo 2021, Thailand innovation showcase Startup Thailand, a platform to support startup enterprises 	INTERNATIONAL COLLABORATIONS <ul style="list-style-type: none"> International innovation diplomacy to encourage foreign investment and international cooperation with 43 countries Collaborates with the Ministry of Foreign Affairs to promote market information and knowledge creation 	
Website: National Innovation Agency (NIA)		

 National Research Council of Thailand (NRCT)	
MISSION and ROLE <ul style="list-style-type: none"> • An entity under the Ministry of Higher Education, Science, Research, and Innovation (MHESI) • Promotes and transfers knowledge for the benefit and development of research and innovation personnel • Promotes research and innovation-related laws and supporting measures 	APPROACH <ul style="list-style-type: none"> • Funds research and innovation • Coordinates research and innovation projects • University-industry knowledge transfer • Accreditations, e.g. SIDCER, Animal Use License
INNOVATION EXAMPLES <ul style="list-style-type: none"> • Smart Farmer, develops technologies in local agriculture, e.g. melon farm technology development consulting • Food Innovation BootCamp, understanding of how to apply food innovations in everyday life 	INTERNATIONAL COLLABORATIONS <ul style="list-style-type: none"> • The Centre for Covid-19 Situation Administration (CCSA) works domestically and internationally for Covid-19 management • Cooperation Program to train researchers from other countries in support of the Sustainable Development Goals (SDGs)
Website: National Research Council of Thailand (NRCT)	

 National Science and Technology Development Agency (NSTDA)*	
MISSION and ROLE <ul style="list-style-type: none"> • An entity under the Ministry of Higher Education, Science, Research, and Innovation (MHESI) • Acts as the center of innovation, innovation policy, research, and development for Thailand • Develops research, engineering, human resources, and infrastructure in Thailand 	APPROACH <ul style="list-style-type: none"> • Accelerates science, technology, and innovation development in Thailand to respond to the needs of the industry while enhancing the country's competitiveness • Collaborates with academia, governments, and businesses at the national and global levels • Acts as a center for the development of various subsidiaries, i.e. NECTEC, MTEC, BIOTEC, NECTEC, etc.
INNOVATION EXAMPLES <ul style="list-style-type: none"> • µTherm FaceSense, a multi-person temperature screening system • SARS-CoV-2 RNA extraction, and COXY-AMP: Rapid one-step COVID-19 colorimetric detection kit • AI Innovation JumpStart, presents innovations for Thailand 4.0 	INTERNATIONAL COLLABORATIONS <ul style="list-style-type: none"> • Collaborating on COVID-19/SARS-CoV-2 research with the e-Asia Joint Research Program, which includes Japan, the United States, the Philippines, and Vietnam • Formed an alliance with the World Business Angels Investment Forum (WBAF)
Website: National Science and Technology Development Agency (NSTDA)	



Office of Higher Education Science Research and Innovation Policy Council (NXPO)*

<p>MISSION and ROLE</p> <ul style="list-style-type: none"> • An entity under the Ministry of Higher Education, Science, Research, and Innovation (MHESI) • Acts as center of innovation policy for Thailand • Designs the national HESRI policy to enable HESRI to offer solutions to challenges for all sectors • Creates, maintains, and enables public access to integrated databases • Designs policies on education, science, research, and innovation 	<p>APPROACH</p> <ul style="list-style-type: none"> • Assists the Research and Innovation Policy Council in establishing, implementing, and monitoring national policies • Reforms the higher education system • Initiates ideas and conveys their potential to the public • Stem Plus Package, offers measures and incentives to support the relocation of foreign investors' production bases with exemptions from income tax
<p>INNOVATION EXAMPLES</p> <ul style="list-style-type: none"> • Post-COVID Scenarios and recommendations • STEMLAB, laboratory for students can exercise creativity and innovation skills with a fully equipped facility • BCG circular economy model, economy model for Thailand to develop to value-based and innovation-driven economy 	<p>INTERNATIONAL COLLABORATIONS</p> <ul style="list-style-type: none"> • Participated in the OECD Country Program to support structural reform efforts since 2018 • NXPO works closely with UNESCO and is a member of global networks concerned with S&T ethics
<p>Website: Office of Higher Education Science Research and Innovation Policy Council (NXPO)</p>	



Software Park Thailand

<p>MISSION and ROLE</p> <ul style="list-style-type: none"> • An entity under the NSTDA • Promotes technology transfer and IT management • Promotes quality standards at the international level • Supports collaborations domestically and internationally • Provides facilities and space for software companies 	<p>APPROACH</p> <ul style="list-style-type: none"> • Acts as a center to promote and support the sustainable development of IT professionals and organizations • Offers IT advisory services • Offers rental space for training and offices • Provides technology/management Seminars
<p>INNOVATION EXAMPLES</p> <ul style="list-style-type: none"> • AI Innovation JumpStart, presents innovations for Thailand 4.0 • Tech Trends, technology seminars • Big Data Upskill Reskill, analyzes big data with the Power BI training program 	<p>INTERNATIONAL COLLABORATIONS</p> <ul style="list-style-type: none"> • Participates in various international events with software companies, such as CommunicAsia in Singapore
<p>Website: Software Park Thailand</p>	



Thailand Institute of Scientific and Technological Research (TISTR)

<p>MISSION and ROLE</p> <ul style="list-style-type: none"> • A state-owned-enterprise under the Ministry of Higher Education, Science, Research, and Innovation (MHESI) • TISTR aims to transfer innovation and technology to both the public and private sectors • Conducts R&D in science, technology, and innovation for value-adding of products and services to enhance national competitiveness 	<p>APPROACH</p> <ul style="list-style-type: none"> • Conducts R&D in science, technology, and innovation for value-adding of products and services • Provides services in analysis, testing, calibration, inspection, certification of quality management systems, training, and consultancy services • One-Stop services
<p>INNOVATION EXAMPLES</p> <ul style="list-style-type: none"> • One-Stop Service (OSS) for science and technology information • TISTR JUMP, joint unit multi-tasking platform • MEHSI OSS, identifies and certifies chemicals 	<p>INTERNATIONAL COLLABORATIONS</p> <ul style="list-style-type: none"> • WAITRO hosted a webinar on BCG and the Resilient Economy, with participants from 19 countries • TISTR and Thai-Chinese Alliances joined forces to develop high-speed railways • TISTR hosted the 23rd IAPRI World Conference on Packaging to demonstrate packaging performance
<p>Website: Thailand Institute of Scientific and Technological Research (TISTR)</p>	

*Note: These key innovation organizations act as centers for research and development, innovation policy creation, and innovation funding in Thailand.




1.3 Map of Other Organizations Driving Innovation in Thailand

In addition to key innovation-focused government agencies, there are various types of organizations at every level that can support your areas of interest across a range of innovations in Thailand including agriculture, industrial, and service. The details and differences in innovation support provided by the organizations are as follows:

Public organizations are government agencies controlled directly by their related ministries. Most public organizations exist to provide financing, consulting, and services in support of society and sustainability in Thailand. Public organizations play a critical role in encouraging the private sector and universities to drive innovation. (Organizations are arranged in alphabetical order)

Organizations	Economic Sectors			Roles	Key Innovations	Subsidiaries
	Agriculture	Industrial	Service			
Digital Government Agency (DGA) 	✓	✓	✓	- R&D - Consultant	- Digital ID and signature - e-Payment and wallet system	- Data Innovation and Governance Institute (DIGI): digital data management organization - DGTi Center: an innovation organization
Designated Areas for Sustainable Tourism Administration (DASTA) 	✓	✓	✓	- Consultant - Service Provider	- Innovative Tourism Project Pitching: innovation competition for tourists	- STMS: tourism management standard
Geo-Informatics and Space Technology Development Agency (GISTDA) 	✓	✓	✓	- R&D	- THEOS-2 satellites - PM2.5 detection system	N/A
Highland Research and Development Institute (HRDI) 	✓	—	✓	- R&D	- Hemp R&D - Agricultural R&D	N/A







Hydro and Argo Informatics Institute (HAI) 	—	—	✓	<ul style="list-style-type: none"> - R&D - Service Provider - Information Center 	<ul style="list-style-type: none"> - Automatic telemeter station - ThaiWater: water situation monitoring 	N/A
National Astronomical Research Institute of Thailand (NARIT) 	—	—	✓	<ul style="list-style-type: none"> - R&D - Service Provider - Information Center 	<ul style="list-style-type: none"> - Study of near-earth objects: space conditions and earth's climate - Innovation Communication Awards 	- Princess Sirindhorn AstroPark
National Vaccine Institute (NVI) 	—	—	✓	<ul style="list-style-type: none"> - Policy - Supports R&D 	<ul style="list-style-type: none"> - Developing mRNA vaccines - Generation of the S-glycoprotein vaccine for Covid-19 	N/A
Office of Knowledge Management and Development (OKMD) 	—	—	✓	<ul style="list-style-type: none"> - Consultant - Service Provider 	<ul style="list-style-type: none"> - The Knowledge Talk: The Knowledge Innovation Series 	N/A
Synchrotron Light Research Institute (SLRI) 	—	—	✓	<ul style="list-style-type: none"> - R&D - Synchrotron Services - Information Center 	<ul style="list-style-type: none"> - KSP polymer - Diamond-Like Carbon (DLC) 	N/A
Thailand Convention and Exhibition Bureau (TCEB) 	—	—	✓	<ul style="list-style-type: none"> - Service Provider 	<ul style="list-style-type: none"> - Biz Connect: an event management application - Thai MICE CONNECT a service platform connecting businesses and customers 	- MICE Intelligence Center: a virtual data platform

Thailand Center of Excellence for Life Sciences (TCELS) 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Information Center 	<ul style="list-style-type: none"> - APEC Life Sciences Innovation Forum (LSIF) 	N/A
Thailand Greenhouse Gas Management Organization (TGO) 	—	—	✓	<ul style="list-style-type: none"> - Business Development - Consultant - Supports R&D 	<ul style="list-style-type: none"> - Carbon4Thai: application providing information and news about the greenhouse gas situation - CF scanner: a carbon footprint checker - Carbon market: carbon credit trading 	N/A
Thailand Institute of Nuclear Technology (TINT) 	✓	✓	✓	<ul style="list-style-type: none"> - R&D 	<ul style="list-style-type: none"> - Radioactive R&D - Fusion plasma innovation - Calibration of radiation measuring instruments 	N/A

A full listing of all public organizations in Thailand is available at the Office of Public Sector Development Commission, please check [OPDC website](#).

State-owned enterprises are government companies controlled by the Ministry of Finance and related ministries. Most state-owned enterprises were created to leverage the stability of Thailand’s infrastructure and utilities. Innovation is essential to drive the growth of these infrastructure businesses. (Organizations are arranged in alphabetical order)

Organizations	Economic Sectors			Roles	Key Innovations	Subsidiaries
	Agriculture	Industrial	Service			
Aeronautical Radio of Thailand (Aerothai) 	—	✓	✓	<ul style="list-style-type: none"> - Commercialize - Service Provider 	<ul style="list-style-type: none"> - Interference signal detector for pilots and air traffic controllers - Innovation 4.0: Digital transformation, innovation showcase 	<ul style="list-style-type: none"> - AEROTHAI innovation
Airports of Thailand Public Company Limited (AOT) 	—	✓	✓	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - Sawasdee by AOT: customer service application 	<ul style="list-style-type: none"> - Suvarnabhumi Airport Hotel - Suvarnabhumi Airport - Don Mueang International Airport - Phuket International Airport - Chiang Mai International Airport - Mae Fah Luang Chiang Rai International Airport - Hat Yai International Airport
Bank for Agriculture and Agricultural Cooperatives (BAAC) 	✓	—	✓	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - BAAC A-Mobile: financial service application - Smart farming developments 	N/A
CAT Telecom Public Company Limited 	✓	—	✓	<ul style="list-style-type: none"> - Commercialize 	N/A	<ul style="list-style-type: none"> - CAT Buzz, telecommunications news website

Expressway Authority of Thailand (EXAT) 	—	—	✓	- Service Provider	- M-Flow system: free flow fee collection system	N/A
Government Pharmaceutical Organization (GPO) 	—	✓	✓	- R&D - Distributor	- Cancer drug - Pharmaceutical product chain - Equipment and medical tools, plastic rubber gloves, disinfectants	N/A
Government Savings Bank (GSB) 	—	—	✓	- Bank	- Mymo by GSB: mobile banking application - GSB SMEs Startup	- Sala@Sathorn, Property Fund - MFC Asset Management, fund company
Krung Thai Bank Public Company Limited (KTB) 	—	—	✓	- Bank	- Pao Tung: health wallet application - Krungthai NEXT: mobile banking application - Tung-Ngern: business payment platform - Krungthai Connex: money tracking via LINE	- Infinita, innovation development - Arise by Infinitas. - Xspring Capital, venture capital
MCOT Public Company Limited 	—	—	✓	- Commercialize	- U ME IDEA: innovation awards - ABU Robocon: robot contest	- Thai News Agency - Panorama Worldwide, television program
Mass Rapid Transit Authority of Thailand (MRTA) 	—	—	✓	- R&D - Commercialize	- MRT application - Video analytics and processing	N/A
Metropolitan Electricity Authority (MEA) 	—	—	✓	- R&D	- MEA EV charger - MEA application: monitoring electricity use	N/A

Metropolitan Waterworks Authority (MWA) 	—	—	✓	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - Salt-board: water analysis system 	N/A
National Science Museum (NSM) 	—	—	✓	<ul style="list-style-type: none"> - R&D - Service Provider 	<ul style="list-style-type: none"> - Aurora of Innovation: innovation aspect light show 	<ul style="list-style-type: none"> - Science Museums - Natural History Museum - Information Technology Museum - Rama 9 Museum
Police Printing Bureau 	—	—	✓	<ul style="list-style-type: none"> - Service Provider 	<ul style="list-style-type: none"> - Development of dual-use technology roadmap 	N/A
Provincial Electricity Authority (PEA) 	—	—	✓	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - PEA Smart Plus: monitoring electricity use - PEA VOLTA: EV charger search - PEA IHAPM: Intelligent Home Appliances Power Monitoring 	<ul style="list-style-type: none"> - PEA ENCOM International: clean energy and innovation development
Provincial Waterworks Authority (PWA) 	—	—	✓	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - MN-Aqua8 test, water cleanliness test 	N/A
PTT Public Company Limited 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator / Accelerator 	<ul style="list-style-type: none"> - EV charger and development - Agribiotech product - Plant-based protein 	<ul style="list-style-type: none"> - Wangchan Valley: innovation ecosystem - IRPC, innovation product company - Innobic (Asia): life science company - Innopolymed: medical device company - Arun Plus: EV car producer

SME Development Bank of Thailand 	✓	✓	✓	- Venture capital	- Inno Consult: innovation consulting on finance	N/A
State Railway of Thailand (SRT) 	✓	✓	✓	- R&D - Commercialize	- Rail innovation development	N/A
TOT Public Company Limited 	✓	—	✓	- Commercialize	- IDC Cloud: data center - 5G - Mobile charger - 5G-based smart city	- National Broadband Network: internet provider
Thai Airways International Public Company Limited 	—	✓	✓	- Commercialize	- Fuel management system - Flight route optimization - Puff&Pie: food catering	- Thai Smile: low-cost carrier - Wingspan Services: HR management - Thai-Amadeus Southeast Asia: tourism technology company
The Transport Company Limited 	—	—	✓	- Commercialize	- Full transportation service with online management	N/A



A full listing of all state-owned enterprises in Thailand is available at the State Enterprise Policy Office, please check [the SEPO website](#).

Private firms are companies that are held under private or public ownership. Most private companies are constantly driving innovation through improvements in their products and services, which leads to research and development in other fields. (Organizations are arranged in alphabetical order)

Organizations	Economic Sectors			Roles	Key Innovations	Subsidiaries
	Agriculture	Industrial	Service			
Advanced Info Service 	✓	—	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator/Accelerator 	<ul style="list-style-type: none"> - Digital Lending - Robotic Process Automation (RPA) - 5G - DEVIO BEACON: advertising support product 	<ul style="list-style-type: none"> - Intouch: holding company - AISCB: digital financial services - Advanced mPAY: complete financial services - Advanced Internet Revolution: R&D - Advanced Contact Center - Fax Lite - Amata Network
BMW Manufacturing Thailand 	—	✓	—	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - e-mobility - Driving assistance system 	N/A
Bangkok Bank 	—	—	✓	<ul style="list-style-type: none"> - Commercialize - Venture capital 	<ul style="list-style-type: none"> - Bangkok Bank Mobile Banking 	<ul style="list-style-type: none"> - Bualuang Securities: capital market - Bualuang Ventures
Bangkok Dusit Medical Services 	—	✓	✓	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - Telemedicine: online health service - BDMS digital ecosystem 	<ul style="list-style-type: none"> - National Healthcare Systems - BNH Medical Centre
Bank of Ayudhya 	—	—	✓	<ul style="list-style-type: none"> - Commercialize - Venture capital 	<ul style="list-style-type: none"> - Krungsri Mobile Banking - Krungsri iFIN: credit management application - Krungsri i-CONFIRM: identity verification 	<ul style="list-style-type: none"> - Krungsri Ayudhya AMC: business matching - Krungsri Nimble: IT solutions hub - Krungsri Finnovate: venture capital - Ayudhya Development Leasing




<p>Banpu</p> 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - Smart Energy: renewable power generation system - Banpu NEXT e-PromptMove: all-in-one mobile for clean electricity - Banpu NEXT EV Car Sharing - MuvMi: local ridesharing service - Banpu NEXT e-Ferry: marine tour by electric ferry 	<ul style="list-style-type: none"> - BKV Corporation: diversified product stream - Banpu Power: electric power company - Banpu Next: clean energy provider - Banpu Minerals: energy company - BLCP Power: energy factory
<p>CP Group</p> 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator/Accelerator 	<ul style="list-style-type: none"> - 7-Eleven Delivery - Vending Machines 	<ul style="list-style-type: none"> - Siam Makro: wholesale store - GoSoft: technology system consulting - Thai Smart Card: credit card system - Lotus's: grocery store - CPALL: food company - CPF: feed company
<p>Energy Absolute</p> 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - EA Anywhere 	<ul style="list-style-type: none"> - EA Bio Innovation: produces and distributes biodiesel - Amita Technology (Thailand): produces batteries - MINE Mobility: EVs - EA BVI Holding
<p>Garena Online (Thailand)</p> 	✓	✓	—	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - PC and mobile games 	N/A
<p>Kasikornbank</p> 	—	—	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator / Accelerator - Venture capital 	<ul style="list-style-type: none"> - K PLUS: mobile banking - MAKE by KBank: cloud pocket 	<ul style="list-style-type: none"> - KBTG: financial technology - K-SME Venture Capital - Beacon Venture Capital
<p>Mitr Phol Group</p> 	✓	—	—	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - Unmanned Aerial Vehicle (UAV) - Near Infrared Spectroscopy (NIR) - Bacteria Microcapsule - High-grade yeast animal feed 	<ul style="list-style-type: none"> - Mitr Phol Innovation & Research Center - Mitr Phol Plantation: modern farm





						<ul style="list-style-type: none"> - Mitr Phol Biofuel - Mitr Phol Bio Power
Osotspa 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - Osotspa Innovation Center 	<ul style="list-style-type: none"> - M-150: beverage - C-vitt: beverage - Babi mild: personal care
Seagate Technology 	—	✓	—	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - Lyve mobile: mass data management system - Visiologix: video capturing and data management 	<ul style="list-style-type: none"> - LaCie: hard drive - Seagate technology international: cloud storage and service system
Siam Cement Group 	✓	✓	—	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator/Accelerator 	<ul style="list-style-type: none"> - SCG Green Polymer - Hybrid Cement - Packaging Solutions 	<ul style="list-style-type: none"> - Nexter Digital: management system - CPAC: construction tool store - SCGC: chemical innovations - SCG Packaging
Siam Commercial Bank 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator/Accelerator 	<ul style="list-style-type: none"> - SCB Easy: mobile banking - StartBiz: banking system for business 	<ul style="list-style-type: none"> - SCB 10X, venture capital - MONIX: FinTech company - SCB Abacus: digital lending platform - Digital Ventures - Purple Ventures
Thai Union 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - ZEA vita supplement - OMG alternative meat protein - Sustainable packaging - SPACE-F: incubator program 	<ul style="list-style-type: none"> - Thai Union Online Shop - Thai Union Investment Holding - Thai Union Manufacturing - I-Tail Corporation - Thai Union Graphic - Thai Union Feedmill - Pakfood: manufacturer and distributor of frozen foods
 TMBThanachart Bank	—	—	✓	<ul style="list-style-type: none"> - Commercialize 	<ul style="list-style-type: none"> - ttb spark: digital hub - Business One: business management software - ttb touch: mobile banking 	<ul style="list-style-type: none"> - TMB Bank Public

<p>Toyota Thailand</p> 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize 	<ul style="list-style-type: none"> - CU Toyota Ha:mo: autonomous driving vehicle hub - Toyota e-Palette: autonomous vehicle for disabled 	<ul style="list-style-type: none"> - Lexus: vehicle manufacturer - Hino Motors: vehicle manufacturer - Toyota Tsusho: product imports and exports
<p>True Corporation</p> 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Commercialize - Incubator/Accelerator 	<ul style="list-style-type: none"> - True HEALTH: health service platform - True Virtual World: online meeting platform - True Drone: autopilot drone - 5G Robo-serve: servicing robot - True Money Wallet: mobile banking 	<ul style="list-style-type: none"> - TrueMove H: telecommunications company - TrueMoney: top-up company - TrueVisions: cable TV service provider - True Digital Group: digital transformation in communications - Ascend Group: innovative financial services

A full listing of the BOI’s supported companies can be found at [BOI database website](#).




Key universities can be public or private with support from the government, and aim to enhance knowledge, research, development, and human resource innovation. Thailand's universities have succeeded in becoming the foundations of education and innovation. (Key universities are arranged in alphabetical order)

Organizations	Economic Sectors			Roles	Key Innovations	Subsidiaries
	Agriculture	Industrial	Service			
Asian Institute of Technology 	✓	✓	—	- R&D - Educator	- Energy supply in an isolated area - AI	- Bangchak Initiative and Innovation Center - Aqua-center - Ostrom Center for the Advanced Study of Natural Resources Governance (OCeAN) - NATS lab - AIT Open Cellular Training Center
Burapha University 	✓	✓	✓	- R&D - Education	- EEC Automation Park - Eastern Science and Technology Park	- Advance Innovation Centre (AIC) - Science Innovation Facility (SIF)
Chiang Mai University 	✓	✓	✓	- R&D - Education	- Plasma Activated water	- Science and Technology Park, Chiang Mai University (STeP) - Science and Technology Service Center - Materials Science Research Center - Multidisciplinary Science Research Center - Doi Suthep Nature Study Center - Data Science Research Center - Research Center for Quantum Technology - Agriculture and Bio Plasma Technology Center

<p>Chulalongkorn University</p> 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Green Mining Management (GMM) - Chula Innovation Hub - Siam Innovation District 	<ul style="list-style-type: none"> - The Scientific and Technological Research Equipment Centre (STREC) laboratory - ERIC central lab - Basic Neuroscience Laboratory - Innovation in Arts and Culture Lab - Pharmaceutical Chemistry and Pharmaceutical Analysis Lab - Pharmacogenomics Laboratory - The Petroleum and Petrochemical College
<p>Kasetsart University</p> 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Smart sensors for agriculture and food - Molecular biology and genetic engineering - An innovation hub 	<ul style="list-style-type: none"> - Material Innovation Center - Horticulture Innovation Lab Regional Center
<p>Khon Kaen University</p> 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Cancer detection toolkit - Animal feed 	<ul style="list-style-type: none"> - Cholangiocarcinoma Research Institute - Protein and Proteomics Center for Commercial and Industrial Purposes (ProCCI) - Materials Chemistry Research Center (MCRC) - Institute of Nanomaterials Research and Innovation for Energy (IN-RIE) - Khon Kaen University Science Park
<p>King Mongkut's Institute of Technology Ladkrabang</p> 	✓	✓	—	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Blockchain Lab 	<ul style="list-style-type: none"> - Nanotechnology Research Center (NRC) - Data Storage Technology and Applications Research Center (DSTAR) - Research Center for Communications and Information






						Technology (ReCCIT) - College of Advanced Manufacturing Innovation (AMI)
King Mongkut's University of Technology Thonburi 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - AI-generated X-ray - AI/Robotics 	<ul style="list-style-type: none"> - Research Center for Advanced Lightweight Design and Manufacturing - Center for Agricultural Systems Biology - Conservation Ecology Program - Research Center on LCA for Sustainable Development - Lighting Research Innovation Centre (LRIC)
Mae Fah Luang University 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Critical Success Factors and Processed Fruit Export Supply Chain Improvement - Anomaly detection using AI, big data, and cybersecurity technologies 	<ul style="list-style-type: none"> - Medicinal Plant Innovation Center of Mae Fah Luang University - Center of Excellence in Natural Products Innovation (CENPi) - Center of Innovative Materials for Sustainability (iMatS) - Center of Chemical Innovation for Sustainability (CIS) - Business Excellence and Logistics Research Centre (BE-Logist) - Center of Excellence in Artificial Intelligence and Emerging Technologies (AIE)
Mahidol University 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Incubator/Accelerator - Education 	<ul style="list-style-type: none"> - COVID-19 detection and heatmap generation in chest X-ray images - Hemophilia A and B diagnostic kit - Cardiopulmonary bypass model 	<ul style="list-style-type: none"> - SCG-MUSC Innovation Research Center - The Digital Forensics and Innovation Training Center (DFIT) - i-Cube Lab: Image Information and Intelligence Laboratory

						<ul style="list-style-type: none"> - Mahidol-AIST Research Unit (MARU) Clock Technology Laboratory - The National Laboratory Animal Center - Mahidol-Bremen Medical Informatics Research Unit (MIRU)
Panyapiwat Institute of Management 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Pants for the disabled - Disinfectant spray 	<ul style="list-style-type: none"> - Panyapiwat Technological College - Clock Technology Laboratory
Phramongkutklo College of Medicine 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Training-IC Eye Model simulation - VR 	<ul style="list-style-type: none"> - Office of Research and Development, Phramongkutklo Hospital and Phramongkutklo College of Medicine (ORD PMK/PCM)
Prince of Songkla University 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Development of solar cells - Sustainable developments in the agricultural sector 	<ul style="list-style-type: none"> - Prince of Songkla University Business Incubation Center (PSUBIC) - The Center for Genomics and Bioinformatics Research (GNOME) - Nutraceutical and Functional Food R&D Center - Cranio-Maxillofacial Hard Tissue Engineering Center
Rangsit University 	✓	✓	—	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Test set of waves, sound, and light 	<ul style="list-style-type: none"> - Social Innovation , Research and Development Institute (SIRDI)
Sasin School of Management 	—	✓	✓	<ul style="list-style-type: none"> - R&D - Education - Consulting 	<ul style="list-style-type: none"> - Design thinking Sasin Experience 	<ul style="list-style-type: none"> - Bangkok Business Challenge

Srinakharinwirot University 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Electrochemical sensor for measurement proteins - Energy risk management and analysis - Innovative learning center 	N/A
Thammasat University 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Education 	<ul style="list-style-type: none"> - Thammasat Innovation Hub - Data Mining - Artificial Intelligence Lab 	N/A
Vidyasirimedhi Institute of Science and Technology (PTT's school and university) 	✓	✓	✓	<ul style="list-style-type: none"> - R&D - Incubator/Accelerator - Education 	<ul style="list-style-type: none"> - Cloud Computing - Blockchain - Drones - Quantum Computing - Artificial Intelligence (AI) 	<ul style="list-style-type: none"> - Frontier Research Center (FRC) - VISAI.AI

A full listing of universities in Thailand is available at SCImago Institution Ranking 2022, please visit [SCImago Institution Ranking](https://www.scimago.institutionranking.com/).

Incubators/CVCs, VCs, Venture builders, and Angel groups are managed by private firms, international firms, and large MNCs. Some are supported with funding by government agencies while a range of ventures assist in Thailand's research output by funding and investing in innovation development. To further drive innovation, it is critical to have financial and commercial support. (Organizations are arranged in alphabetical order)

Organizations	Economic Sectors			Roles	Key Innovations	Subsidiaries
	Agriculture	Industrial	Service			
AddVentures 	✓	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Baania: real estate marketplace using big data and AI - Builk: cloud-based construction 	N/A
Alpha Founders Capital 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Rabbit Care: an online financial service - Chilindo: an auction platform - Property Scout: a property platform 	N/A
Bangkok Bank InnoHub 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - InvoiceInterchange: an invoice finance platform - jumper.ai: omnichannel conversation for companies and customers - VYMO: support application for enterprises 	- Bualuang Ventures
Bangkok Venture Club 	✓	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Innospace: a national startup platform with a developed entrepreneurial ecosystem - Basecamp: a product development Bootcamp 	N/A
Beacon Venture Capital 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Grab: an all-in-one delivery platform - Workmate: a workforce management platform - OOKBEE: a decentralized service platform 	N/A

Disrupt Technology Venture 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Voxy: a learning platform - edverest: a scholarship tracker - insKru: a community sharing platform 	- Strombreaker Venture
Finansa 	✓	✓	—	<ul style="list-style-type: none"> - Private equity 	<ul style="list-style-type: none"> - NEO: a manufacturer and distributor of personal care products - FB Foodservice: a foodservice provider for OEM businesses 	N/A
Galaxy Ventures 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Xcommerce: a multi-channel e-commerce platform - Page365: an e-commerce fulfillment service and inventory management platform - Sokochan: an on-demand logistic platform 	N/A
HUBBA Thailand 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Startup Equity Split: an equity calculator tool - HUBBA Individual Strength Map: mapping individual uniqueness 	- Venture Building
Inspire Ventures 	—	✓	✓	<ul style="list-style-type: none"> - Incubator / Accelerator - Venture capital 	<ul style="list-style-type: none"> - Page365: an e-commerce fulfillment service and inventory management platform 	N/A
InVent 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Shopback: a one-stop shopping portal - Wongnai: a super lifestyle platform - OOKBEE: a decentralized service platform 	N/A
K2 Venture Capital 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Daycash: a wage access platform 	N/A
Krungsri Finnovate 	—	✓	✓	<ul style="list-style-type: none"> - Incubator/Accelerator - Venture capital 	<ul style="list-style-type: none"> - Choco CRM: ecosystem stats analysis - In-tech value: a risk management service platform - Finema: decentralized identity management 	<ul style="list-style-type: none"> - Krungsri Unicorn: a startup bootcamp - Krungsri RISE: a corporate accelerator

Lakeshore Capital 	—	✓	✓	- Private equity	- ReadyPlanet: digital marketing	N/A
LINE Ventures 	—	✓	✓	- Incubator/Accelerator - Venture capital	- Wongnai: a super lifestyle platform - OOKBEE: a decentralized service platform	N/A
Lombard 	—	✓	✓	- Private equity - Hedge fund	- Xplore: service providing space and data for services - STONKS: a platform connecting startups and investors	N/A
N-Vest Venture 	—	✓	✓	- Incubator/Accelerator	- Yggdrasil: VFX, animation, and VR - Molog: logistics management - Choco CRM: ecosystem stats analysis	N/A
Nest 	✓	✓	✓	- Incubator/Accelerator	- Advanced greenfarm: plant-based protein - Dexzpax: eco-friendly food packaging	- Space-F: a food tech innovator - Agrowth: agricultural industry innovations
PlugAndPlay 	—	✓	✓	- Incubator/Accelerator	- Streamr: decentralized real-time data network - Kiana: a smart facility management platform - Haupcar: a car sharing services platform	N/A
SCB 10X 	—	✓	✓	- Incubator/Accelerator	- Flash: e-commerce logistics service - The Sandbox: a community-driven platform on blockchain - Tokenization and financial service	- Digital Ventures - SCB Abacus: a lending platform - Purple Ventures - Token X: digital asset tokenization
Singha Ventures 	—	✓	✓	- Incubator/Accelerator - Venture capital	- DouxMatok: a delivery technology platform - Happyfresh: a grocery delivery platform	N/A

SiriVentures 	—	✓	—	- Venture capital	- AIROVR: self-driving vehicles - Drone Delivery	N/A
Sprint Accelerator 	✓	✓	✓	- Incubator/Accelerator	- algaeba: automated shrimp hatchery	N/A
Stonelotus Ventures 	✓	✓	✓	- Incubator/Accelerator - Venture capital	- Primal Health: a digital health agency - Crition Asia Recruitment: a recruitment platform	N/A
True Incube 	—	✓	✓	- Incubator/Accelerator - Venture capital	- DEX: animal hospital management system - Systemstone: machinery maintenance support - PEAK: accounting software	N/A
Unigin Ventures 	✓	—	✓	- Incubator/Accelerator - Venture capital	- Roadhow: a bus rental service platform - feed2us: business intelligence on a mobile application	N/A
Xspring capital 	✓	—	✓	- Venture capital	- Digital token through Initial Coin Offerings	N/A

A full listing of VCs in Thailand on innovation is available at the Thailand Venture Capital Association, please visit [the TVCA website](#)

Innovation support organizations

Many innovation support organizations in Thailand can help businesses with certification and innovation infrastructure, among other things. The country's infrastructure and industry standards are being improved and elevated by the following organizations:

Examples of Accreditations Support:



[Food and Drug Administration \(FDA\)](#)

Accreditation: FDA



[Management System Certificate Institution \(MASCI\)](#)

Accreditation: TIS, ISO, HACCP, GMP, IMS



[National Bureau of Agricultural Commodity and Food Standards \(ACFS\)](#)

Accreditation: Q mark, TAS license, Halal, CODEX, OIE, IPPC



[Ministry of Public Health \(MOPH\)](#)

Accreditation: Thai Stop Covid Plus, SHA



[Thai Industrial Standards Institute \(TISI\)](#)

Accreditation: IB, CB, LAB, SDOS



[National Institute of Metrology \(Thailand\) \(NIMT\)](#)

Accreditation: NQI

Other innovation support organizations are listed below:

Department of Intellectual Property (DIP)



The [DIP](#) is an agency under the Ministry of Commerce that protects intellectual property and promotes property rights, both domestic and international.

Creative Economy Agency (CEA)



The [CEA](#) is a public organization that promotes and supports the development of creativity and innovation in local communities, and public and educational institutions.

The Office of SMEs Promotion (OSMEP)



The [OSMEP](#) is an agency under the Ministry of Industry that integrates and drives MSME promotion activities in the public and private sectors.

WHY CHOOSE THAILAND TO HOST YOUR INNOVATION?

Thailand offers the most potential in Southeast Asia for developing and investing in a business idea. In addition to major infrastructure improvements, the Thai economy is being further aligned with the global market as the country achieves long-term improvements and higher innovation standards.

Here are some trends, market statistics, and successful innovations in Thailand:

2.1 Global Megatrends Impacting Thailand's Innovation Policies

Ageing Society



Thailand has a rapidly aging population. Since 2005, the percentage of Thais aged 60 and over has increased by 10%. The country is expected to become an “aged” society as early as 2023, with those aged 60 and up expected to account for 20% of the population. As this trend continues, Thailand will soon become a “super-aged” society by 2032 with roughly 28% of the population 60 and older. With this demographic transition, increased funding will be spent on healthcare and product developments, including medtech. This will positively impact the “Medical Hub and Affluent and Medical Wellness Tourism” industry, which is already preparing for this shift. In addition, the “Food for the Future” industry is gearing up as lifestyles change incorporating population aging and the increased focus on health. With the birth rate hitting an all-time low 2020, to maximize productivity, it’s important that the younger generation be highly educated with the requisite skills and qualifications to enter the workforce, which will necessitate a robust “Education and Human Resources Development” industry. And as a larger proportion of the workforce involves senior citizens, upskilling and reskilling will be front and center as companies prioritize employee productivity. Companies are also increasingly looking to robots and technology as workforce numbers gradually decline in the future which puts the spotlight on smart farming and medical robots.

Health

The Covid-19 pandemic has encouraged people to take better care of themselves. And as consumers become more knowledgeable about the products they buy, they are mainly concerned about a product's ingredients and with regards to food, its origin or source. Moreover, there is growing awareness and interest in foods that combine taste and convenience with nutritional benefits which presents opportunities for the "Food for the Future" industry, while the food delivery sector continues from strength to strength, with 31% growth.



Increases in health spending and product advancements are expected to support long-term demand which will in turn, drive growth in the "Medical Hub and Affluent and Medical Wellness Tourism" segment. Thailand is one of Southeast Asia's most appealing locations for medical and wellness tourists, with many private hospitals ranking among the world's

most technologically equipped facilities known for providing high-quality medical services and expertise at an affordable cost, with cutting-edge medical technology. By extension, the pharmaceutical sector can greatly benefit as part of the "Biofuel & Biochemical" industry, given that the biochemical industry contributes to the production of active pharmaceutical ingredients for dialysis solutions, to give one example.

The Covid-19 pandemic is already resulting in a long-term shift in healthcare, with providers devoting greater resources to telehealth and remote patient monitoring due to increased digital adoption during the pandemic. In addition, companies may view current health trends and priorities as a call to increase their adoption of new technologies, stimulating the "Automotive & Robotics" and "Advanced Agriculture & Biotechnology" industries. Finally, ongoing health issues and concerns have accelerated the adoption of online learning, which will further advance the "Education & Human Resources" industry as remote learning for a variety of skills becomes the norm – from any location.

Digitalization and Automation

The pandemic has only accelerated the economy's transition from goods to services with digitalization showing remarkable growth during the COVID-19 period. According to Hootsuite, internet penetration reached 77.8% of the Thai population by 2022. Moreover, 22% of enterprises in Thailand went digital as part of their business operations while 59% of enterprises in Thailand are at the 'gradually embracing digital transformation' stage. Healthcare has changed dramatically as well, with a huge increase in telemedicine use and focus on biopharma. And given health concerns and the lessons from COVID, the next wave of automation will be centered on general-purpose robots impacting services such as food and beverage and healthcare by improving efficiencies. This shift is made possible by digitalization and AI, which enables the Internet of Things. AI and machine learning are better optimizing business operations which is increasing the need for the "Automation & Robotics" industry. "Advanced Agriculture & Biotechnology" is also adopting increased automation with the transition underway from traditional to smart farming. And while the largest AI investments are going to autonomous vehicles, substantial funding is being directed to health tech, facial recognition, e-commerce, augmented reality, and retail fashion. As robots take on more general functions, the upskilling and reskilling of workers can transition them to more advanced tasks with enhanced capabilities. The Education and HR Development industry is also affected by digitalization as the pandemic has expedited the structural shift to online education, with students around the world engaging in various levels of remote learning via the internet, email, and television. This rising digital adoption has had a positive impact on Intelligent Electronics in terms of the increased adoption rate of digital devices.



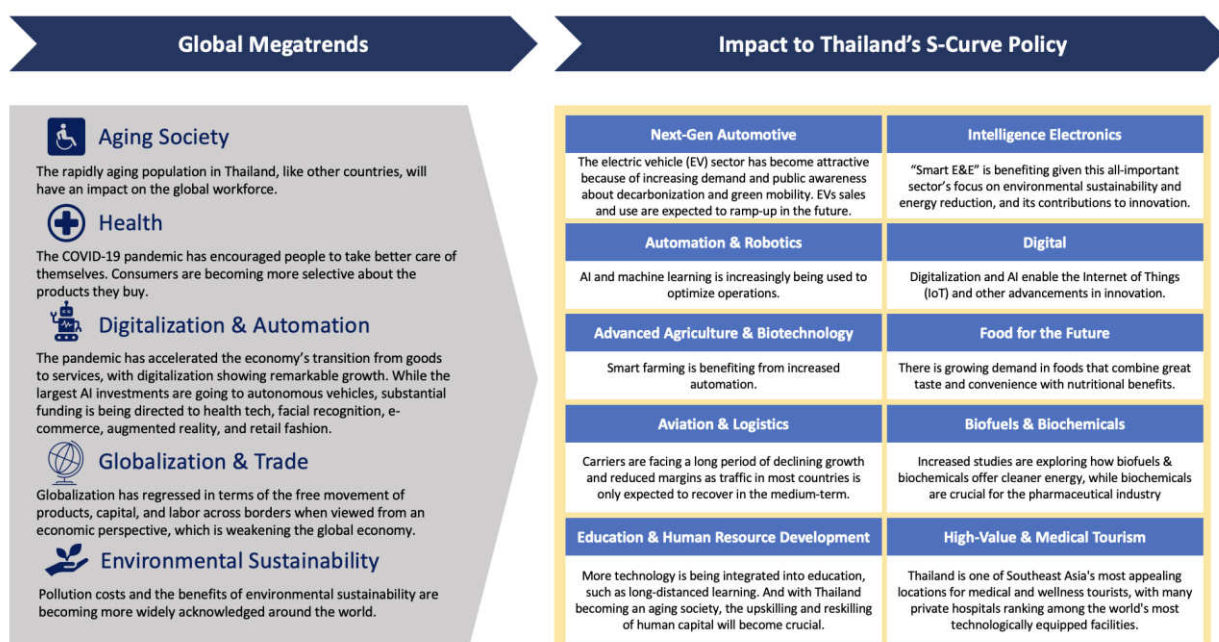
Globalization and Trade

Globalization has regressed in terms of the free movement of products, capital, and labor across borders when viewed from an economic perspective, which is weakening the global economy. The "Aviation and Logistics" industry was one of the most impacted by the COVID-19 pandemic as global air traffic decreased by 65% according to the US Winter Simulation Conference 2021. Carriers are facing a long period of declining growth and reduced margins as traffic in most countries is only expected to recover in the medium-term. On a positive note, Education & HR Development has not been adversely impacted by globalization, if anything, the pandemic has uncovered a new normal among

workers, as well as students, allowing people to learn and work from anywhere in the world irrespective of long distances.

Environmental Sustainability

Pollution costs and the benefits of environmental sustainability are becoming more widely acknowledged around the world. According to a PwC survey, nearly 80% of respondents reported that they were making more environmentally friendly and sustainable choices. Thailand is committed to advancing long-term resilient economic growth and ensuring environmental sustainability through the Bio-Circular-Green (BCG) economy model which includes Biofuels & Biochemicals, and Advanced Agriculture & Biotechnology. Increased growth is expected, as well as a shift towards sustainable energy security and a reduced reliance on fossil fuels which positively impacts “Biofuels & Biochemicals” as Thailand shifts towards cleaner energy. The “Next-Generation Automotive” industry and notably the electric vehicle (EV) sector has become hugely attractive because of increasing social demand and public awareness about the need for decarbonization and green mobility. As a result, electric vehicle purchases and their use are expected to rapidly ramp up in the near future. With the expectations of EVs emerging in 2025, the Thai government aims to have 690 charging stations nationwide. And while interest in EVs is on the rise with, their popularity in Thailand remains low. In response, the government is offering incentives for those who are looking to invest in the EV sector in Thailand. Additionally, “Smart E&E” is benefiting given this all-important sector’s focus on environmental sustainability and energy reduction, and its contributions to innovation. And with the green transition accelerating, “Education & Human Resources Development” will be crucial as millions of jobs will be created requiring more advanced and technical skills and training.



2.2 Thailand's Competitiveness

Thailand is on the verge of becoming Southeast Asia's most creative and inventive country having focused on generating innovative products, increasing research and development expenditures, providing competitive incentives, and creating a competitive environment.

Here are some useful figures and information underscoring Thailand's success on innovation:



Great ecosystem for innovation

Thailand placed 43rd in the Global Innovation Index 2021, rising one place from the previous year. This was due to an increase in human capital and research, as well as improvements in infrastructure, knowledge, and technology outputs.



Access to digital information and technology

Thailand has tremendous potential given its digital competitiveness. The country was ranked 22nd out of 64 countries in technological strength by IMD World Digital. Furthermore, when compared with other members of ASEAN, Thailand placed third in internet penetration.

Positioned for market expansion

Ranking	Country/Economy	Overall GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
1	Singapore	8	1	9	15	5	3	13	17
2	Malaysia	36	41	39	51	30	39	31	37
3	Thailand	43	64	63	61	27	36	40	55
4	Vietnam	44	83	79	79	22	47	41	42
5	Philippines	51	90	80	86	86	33	24	56
6	Brunel Darussalam	82	24	52	46	106	84	130	85
7	Indonesia	87	107	91	68	57	110	74	91
8	Lao People's Democratic Republic	117	130	113	123	103	70	127	90
9	Myanmar	127	123	108	113	124	132	89	131

Thailand offers an attractive market having placed third in ASEAN in market sophistication, and 27th globally, demonstrating a strong performance in terms of loan availability, an investment-friendly environment, market access, competition, and scale.

Thailand continues to focus on generating new and pioneering research to increase its competitiveness in the wake of the COVID-19 pandemic. In addition, the government is considering additional measures along with ways to better collaborate to further develop and expand Thailand's creative environment.

2.3 Innovation Showcases

Thailand offers numerous innovations that benefit both business and everyday life. Here are a few notable examples of Thai inventions that have positively impacted the economy and society. (Innovations are arranged in alphabetical order)



Diesel B10

Diesel B10 is a high-grade pure biodiesel innovated by PPT. Diesel is more affordable and better fuel for the environment.



EA Anywhere

EA Anywhere is a system for electric vehicles (EVs), with over 1,600 charging stations mainly located in Bangkok. Application support and access was innovated by Energy Absolute (EA).



K PLUS

K Plus is Kasikorn Bank's digital banking service. In 2021, the number of users reached over 16.9 million, of which 70-80% use the app regularly, increasing from a customer base of 12.2 million users at the end of 2020.



Morprom

Morprom, a health app from the Thai Ministry of Public Health that serves as a point of contact for vaccination-related information, is used by more than 30 percent of the Thai population.



PEA Smart Plus

This one-touch service for PEA electricity users provides information on services and the option to pay electricity bills online. Over five million customers have registered.



Biodegradable Plastics

PLA, amongst other types of biodegradable plastics, is used as a raw material for plates, bowls, and cups, and was developed by PTTGC.



PromptPay

This service helps facilitate and transfer payments using a Citizen ID or mobile phone number, and reached over 52.7 million users in 2020.



Horizon Plus EV

PTT partnered with Foxconn to create a full EV system in the EEC area. The platform, software services, and hardware will be fully available in 2024.



TrueMoney Wallet

With over 17 million users, TrueMoney Wallet is an electronic wallet that offers complete access to CP Group products as well as many other participating stores.

FIND OUT HOW WE CAN HELP

3.1 Thailand 4.0 and the S-curve industries

Thailand 4.0

Thailand 4.0, the country's current economic model, aims to tackle the previous challenges of Thailand 3.0 which was comprised largely of heavy industries and energy. This upgraded strategy aims to move Thailand from middle-income to high-income status by focusing on value-added products and services and becoming an "Innovation-driven economy."

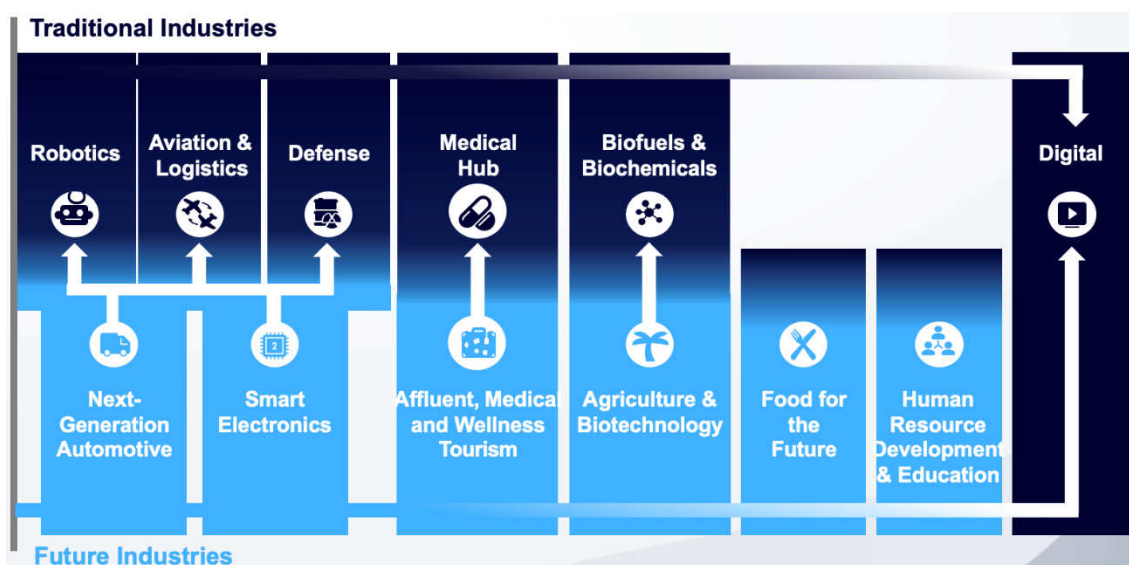
The objectives of Thailand 4.0 are to:

- Create a value-based economy that is driven by innovation, technology, creativity, and increased R&D expenditures.
- Encourage an inclusive society and reduce social disparities, e.g. transform traditional farmers into smart farmers.
- Develop the necessary human capital to achieve an innovative economy.

To achieve the government's Thailand 4.0 vision, 12 targeted industries, or 'S-curve industries' were developed serving as the basis for both education and commerce.

The 12 targeted S-curve industries

The designated 12 S-curve industries for investment, as part of a new smart digital plan, will be critical to the country's future economy. Together, they represent a new movement for businesses as well as an economic transformation for the country, that reflects and builds on Thailand's commercial strengths. The 12 S-curve industries will serve as an important foundation as the country strives to achieve the Thailand 4.0 policy.



3.2 How the BOI supports innovation



What is the Thailand Board of Investment (BOI)?

The BOI, a government agency under the Office of the Prime Minister, promotes foreign investment in Thailand by offering information, services, and business support services for investors.

Learn more about additional incentives and benefits for your company



The Thailand Board of Investment (BOI) offers investment incentives to support your business activities in Thailand. We encourage you to contact us to discuss your investment objectives and stand ready to support you for a brighter and more prosperous future.

BOI incentives	Tax incentives	Non-tax incentives
	<ul style="list-style-type: none"> • CIT exemption of up to 13 years • 50% reduction in CIT for five years • Exemption of import duties on raw materials or essentials used in R&D and producing exported product • Exemption of import duties on machinery 	<ul style="list-style-type: none"> • 100% foreign ownership and property ownership • Permit to bring in skilled workers and experts to work in Thailand • No restriction on foreign currencies
<p>Further incentive details on each category are available on the next page or apply for BOI incentives at E-Investment Promotion</p>		

The BOI offers investment incentives to support your business activities in Thailand. We are ready to support the success of your innovation and encourage you to get in touch to discuss your investment objectives.

Standard incentives	Activity-based incentives	Technology-based incentives
	<ul style="list-style-type: none"> Bio and Medical Industries Advanced Manufacturing Industries Basic and Supporting Industries Digital, Creative Industries, and High-Value Services 	<ul style="list-style-type: none"> Biotechnology Nanotechnology Advanced Material Technology Digital Technology

CIT exemption	Activity	Exemption CIT	Exemption Import duties on machinery	Exemption Import duties on raw materials	Non-tax incentives	
						8 years
8 years	A1	Knowledge-based activities focusing on R&D and designed to enhance the country's competitiveness	8+ Merit*	✓	✓	✓
	A2	Infrastructure activities for the country's development, activities using technology to create value-added, with no or very little existing investments in Thailand	8+ Merit	✓	✓	✓
	A3	High technology activities which are important to the country's development, with few investments already existing in Thailand	5+ Merit	✓	✓	✓
	A4	Activities with lower technology than A1-A3 but which add value to domestic resources and strengthen the supply chain	3+ Merit	✓	✓	✓
	B1	Supporting an industry that does not use high technology, but is still important to the value chain	- + Merit	✓	✓	✓
0 year	B2	Supporting an industry that does not use high technology, but is still important to the value chain	-	✓	✓	✓

Additional incentives	Agenda-based incentives	Technology-based incentives
	<ul style="list-style-type: none"> Investment promotion measures for listed companies Productivity stimulation measures Measures to support grassroots economic development 	<ul style="list-style-type: none"> Biotechnology Nanotechnology Advanced material technology Digital technology

Area-based incentives	
<ul style="list-style-type: none"> EEC 3 provinces SEZ 10 provinces Southern border provinces 20 provinces with the lowest income Industrial estates/zones Science and technology parks 	

Basic Incentives	1 HRD Criteria *		2 Location Criteria		* Human Resource Development Criteria
	All EEC Areas	EECI / EECa	EECd / EECmd	Industrial Estates or BOI Promoted Industrial Parks	
CIT Exemption 8 years (A1 / A2)	+ 50% Reduction in CIT for 3 years	+ 50% Reduction in CIT for 2 years	-	-	<ul style="list-style-type: none"> Must establish cooperation with institutions or organizations to develop human resources in science & technology. Training participants must not be less than 10% of the total number of employees or more than or equal to 40 participants.
CIT Exemption 5 years (A3)	+ 50% Reduction in CIT for 3 years	+ 50% Reduction in CIT for 2 years	OR	+ CIT Exemption for 1 year	
CIT Exemption 10 years (Section 8)	+ CIT Exemption for 2 years	+ CIT Exemption for 1 year	OR	+ CIT Exemption for 1 year	

Work Integrated Learning (WIL)

Dual Vocational Training (DVT) Cooperative Education (CoE)

Other incentives

Long-Term Resident Visa

- 10-year visa
- Permission to work in Thailand
- Visa for spouses and children
- Reporting extended to one-year

Long-Term Resident Visa

Long-term Resident Visa: New type of visa to attract 4 targeted groups

- Wealthy global citizens
- Wealthy pensioners
- Work-from-Thailand professionals
- Highly-skilled professionals

Long-Term Resident Visa Privileges

- 10-year visa & Permission to work in Thailand
- Spouse & children < 20-yrs old (max. 4 dependents)
- 90-day report extended to 1-year report and exemption of re-entry permit

Further details are available at [Thai Visa Information](#)

NXPO & BOI

- Re-entry permit exemption
- STEM job-matching
- Short-term training
- Industrial training center
- Financial support

Training Grants

Condition

- Must be skills development courses for Thai employees
- Training courses:
 - Advanced Technology Skills Development Courses which are approved by MHESI (Ministry of Higher Education, Science, Research and Innovation).
 - The proposed HRD expenses are not supported by other agencies/measures under the same project.

Financial Support

1. Vocational qualification or higher
2. The training participants must not be less than 10% of the total number of employees or at least 30 employees.
3. The training participants must not be less than 10% of the total number of employees or at least 30 employees.

Type of Training: External
 ≤ 50% of Training expenses costed by the external training provider*

Type of Training: In-house
 ≤ 50% of Training expenses*

- Training must be completed within two years
- ≤ 100,000 baht/employee
- ≤ 5 million baht/company

Targeted Industries

- Digital Economy
- Smart Electronics
- Auto & Robotics
- Next-Gen Automotive
- Agro & Biotech
- Biofuels & Biochem
- Medical Hub
- Med & Wellness Tourism
- Food for the Future
- Aviation & Logistics
- Circular Economy
- HRD
- Defense

Further details are available at the [STEMPlus website](#)

depa incentives	NIA incentives	NSTDA industry support
<ul style="list-style-type: none"> • Tax exemption • Startup and R&D funding 	<ul style="list-style-type: none"> • Innovation and Start-up funding • SME consulting 	<ul style="list-style-type: none"> • Tax exemption • R&D funding
Further details are available at the depa website	Further details are available at the NIA website	Further details are available at the NSTDA website

THERE ARE COUNTLESS REASONS TO INVEST IN THAILAND

The Office of the Board of Investment is a government agency that promotes investment in Thailand. The BOI acts as a professional contact point for investors on business support and investment incentives, both inbound to Thailand and for Thai overseas investments.

Explore more at boi.go.th

Head Office, Office Of The Board Of Investment

555 Vibhavadi-Rangsit Road, Chatuchak, Bangkok 10900, Thailand
Tel: (+66) 2553 8111 Fax: (+66) 2553 8315 Email: head@boi.go.th

One Stop One Stop Investment Center (OSOS)

Chumchuri square 18th Floor 254 Phaya Thai Rd, Phatum Wan, Bangkok 10330, Thailand
Tel: (+66) 2209 1100 Fax: (+66) 2209 1199
E-mail : osos@boi.go.th

Los Angeles

Thailand Board of Investment,
Los Angeles Office
Royal Thai Consulate-General,
611 North Larchmont Blvd, 3rd Floor
Los Angeles, CA 9004, USA
Tel: +1 323 960-1199
Fax: +1 323 960-1190
E-mail : boila@boi.go.th

New York

Thailand Board of Investment,
New York Office
7 World Trade Center
250 Greenwich Street, Suite 34F
New York, NY 10007, USA
Tel: +1 212 422 9009
Fax: +1 212 422 9119
E-mail: nyc@boi.go.th

Stockholm

Thailand Board of Investment,
Stockholm Office
Stureplan 4C, 4th Floor
114 35 Stockholm, Sweden
Tel: +46 8 463 1158, +46 8 463 1174
Fax: +46 8 463 1160
stockholm@boi.go.th

Frankfurt

Thailand Board of Investment,
Frankfurt Office
Investment Section,
Royal Thai Consulate-General
Bethmannstr. 58,5.0G 60311
Frankfurt am Main
Federal Republic of Germany
Tel: +49 (069) 92 91 230
Fax: +49 (069) 92 91 2320
Email: fra@boi.go.th

Paris

Thailand Board of Investment,
Paris Office
8 Rue Greuze, 75116 Paris, France
Tel: 33(0)1 56 90 26 00-01
Fax: 33(0) 1 56 90 26 02
E-mail: par@boi.go.th

Mumbai

Thailand Board of Investment,
Mumbai Office
Royal Thai Consulate-General
12th Floor, Express Towers,
Barrister Rajni Patel Marg, Nariman
Point Mumbai 400021, India
Tel: +91-22-2204-1589
+91-22-2204-1590
Fax: +91-22-2282-1525
Email: mumbai@boi.go.th

Osaka

Thailand Board of Investment,
Osaka Office
Royal Thai Consulate-General
Bangkok Bank Building, 7th Floor
1-9-16 Kyutaro-Machi, Chuo-ku
Osaka 541-0056, Japan
Tel: (81-6) 6271-1395
Fax: (81-6) 6271-1394
E-mail: osaka@boi.go.th

Tokyo

Thailand Board of Investment,
Tokyo Office
8th Floor, Fukuda Building West,
2-11-3 Akasaka, Minato-ku,
Tokyo 107-00 52 Japan
Tel: +81 3 3582 1806
Fax: 81 3 3589 5176
E-Mail: tyo@boi.go.th

Seoul

Thailand Board of Investment,
Seoul Office
#1804, 18th floor, Koryo Daeyeongak
Center, 97 Toegye-ro, Jung-gu,
Seoul, 100-706, Republic of Korea
Tel: (+82)2 319 9998
Fax: (+82)2 319 9997
E-mail: seoul@boi.go.th

Taipei

Thailand Board of Investment,
Taipei Office
Room 3E40, No.5, Sec. 5, Xinyi Rd.,
Taipei 110, Taiwan R.O.C.
Tel: (886)-2-2345-6663
FAX: (886) 2-2345-9223
E-mail: taipei@boi.go.th

Guangzhou

Thailand Board of Investment,
Guangzhou Office
Royal Thai Consulate-General
No.36 Youhe Road,
Haizhu District, Guangzhou 510310,
P.R. China
Tel: +86-20-8385-8988 ext. 220-225,
+86-20-8387-7770 (Direct Line)
Fax: +86-20-8387-2700
E-mail: guangzhou@boi.go.th

Shanghai

Thailand Board of Investment,
Shanghai Office
Royal Thai Consulate-General,
No. 18, Wanshan Road, Changning
District, Shanghai 200336,
P.R. China
Tel: +86-21-5260-9876,
+86-21-5260-9877
Fax: +86-21-5260-9873
Email: shanghai@boi.go.th

Beijing

Thailand Board of Investment,
Beijing Office
No.21 Guanghua Road, Chaoyang
District, Beijing, P.R. China 100600
Tel: +86 10 85318755-57,
+86 10 85318753
Fax: +86 10 85318758
E-mail: beijing@boi.go.th

Sydney

Thailand Board of Investment,
Sydney Office
Suite 101, Level 1, 234 George Street,
Sydney, NSW 2000, Australia
Tel: +61 2 9252 4884
E-mail: sydney@boi.go.th

Jakarta

Thailand Board of Investment,
Jakarta Office
Royal Thai Embassy,
Jl. DR Ide Anak Agung Gde Agung
Kav. E.3.3 No.3 (Lot 8.8), Kawasan
Mega Kuningan, Jakarta 12950,
Indonesia
Email: jkt@boi.go.th

Hanoi

Thailand Board of Investment,
Hanoi Office
26 Phan Boi Chau Str., Hoan Kiem,
Hanoi, Vietnam
Tel: (84) 24 3823 5092-4
Email: hanoi@boi.go.th

