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THAILAND INVESTMENT REVIEW

Vol. 31 | September 2021



UPSKILLING THAILAND FOR THE FUTURE OF WORK

BOI NET APPLICATION

January – September 2021













Total Investment
1,273 Projects
US\$ 15,500.95 Million

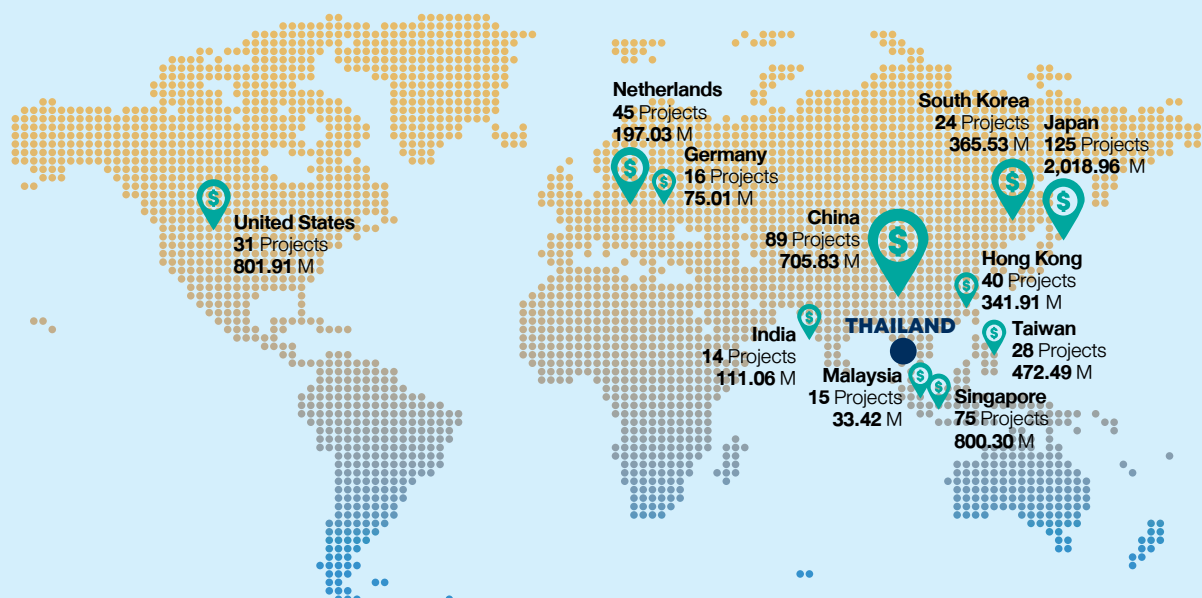


Total Foreign Investment
587 Projects
US\$ 11,076.75 Million

FOREIGN INVESTMENT BY TARGET SECTORS

First S-Curve	New S-Curve
 Electronics 81 Projects 2,176.39 M	 Biotechnology 3 Projects 587.82 M
 Agriculture & Food Processing 54 Projects 457.52 M	 Digital 76 Projects 156.02 M
 Automotive 56 Projects 473.68 M	 Aerospace 2 Projects 3.10 M
 Petrochemicals & Chemicals 39 Projects 1,024.38 M	 Medical 27 Project 939.50 M
 Tourism 8 Projects 360.11 M	 Automation & Robotics 3 Projects 7.32 M

FOREIGN INVESTMENT BY MAJOR ECONOMIES



Unit: US\$ (US\$ = 33.59 as of 20 October 2021)

Note: Investment projects with foreign equity participation from more than one country are reported in the figures for both countries. Statistics on net applications are adjusted whenever applications are returned to applicants due to insufficient information. For more details, please visit www.boi.go.th

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UPSKILLING THAILAND'S HUMAN RESOURCES FOR THE FUTURE OF WORK

As the global value chain sends businesses and consumers worldwide scrambling to keep pace with the Fourth Industrial Revolution (4IR) by deploying deep technologies such as big data and analytics, A.I., and the industrial internet of things, Thailand is gearing up its human resources to meet the fast-evolving needs of the business world with the new skills and global mindset that will help them leverage technology-driven changes.

Thailand's strategies for elevating the skills of its human resources have been driven by collaboration among the public and the private sector and academic institutes, with the transformation towards a target-oriented approach to meet business demand.

Leveraging the country's strengths as a key investment destination in the region, the Thai government has adopted a multi-pronged strategy to ensure the education system reduces skill mismatch of the local human resources. Among key areas are improving the country's primary education curricula so that students

have basic skills in Science, Technology, Engineering and Mathematics (STEM), Science, Technology and Innovation (STI) and data as well as adapting curricula in universities and vocational schools to ensure graduates meet business demand by quantity and quality.

Along with promoting the deployment of 4IR technology among businesses, Thai government agencies including the Thailand Board of Investment (BOI) have implemented incentive schemes that seek to promote the private sector's investment in training of their human resources.

The Eastern Economic Corridor (EEC), Thailand's pilot special economic zone for high-technology industries, located in industrial areas of the Eastern region, have cooperated with academic institutes and industries to implement demand-driven human resource development, with incentives given to industries for their scholarship scheme in universities and vocational schools and expenditure in arranging short courses. The Thai government is considering easing the rules for long-term residence visas to attract international talents and professionals to use Thailand as their workstations.

Based on its survey of multinational companies across 15 industrial sectors in 26 economies, the World Economic Forum concluded in *“The Future of Jobs Report 2020”*¹ that the 4IR technologies, which have been widely deployed by businesses as a productivity enhancement strategy, are bringing sweeping changes to the labor market worldwide and at a faster rate than expected in light of the COVID-19 pandemic.

With the deployment of cloud computing and big data; with e-commerce progressing at an unabated pace; and with the accelerated adoption of encryption, non-humanoid robots, and A.I. by businesses, the global labor market will be transformed to such an extent that the time spent by humans and machines on current tasks will be equal by 2025. The report concluded by predicting that within this timeframe, data science, artificial intelligence, content creation, and cloud computing will be the top emerging professions, while analytical thinking, creativity, and flexibility will be among the top skills needed.

Equipping the Thai Workforce with Industry 4.0 Skills

The Thai government has prioritized attracting tertiary students in STEM and STI in its human resource development plan, as these fields are considered to be necessary for driving the country forward according to the policies to develop 12-targeted industries as the economic driving engines.

A study² by Organization for Economic Co-operation and Development (OECD) showed that the Thai labor force has recorded a sharp increase in the accumulative number of young university graduates holding degrees in the fields of engineering and manufacturing, ICT, healthcare and natural sciences by 70%, 40%, 10% and 35% respectively between 2011 and 2018.

Official data from the Ministry of Higher Education, Science, Research and Innovation (MHESI), showed that Thailand is producing approximately 350,000 graduates annually, with graduates in the fields of biotechnology, mathematics, statistics, engineering, construction and ICT accounted for 20% of the

total in 2018, slightly increased from 18% in 2012. Meanwhile, the EEC expects the demand for workforce in 10 targeted industries³ to stand at approximately 476,000 over the next five years, out of which 54% are from vocational schools.

The MHESI, the agency set up in 2019 and entrusted to reorganize the country’s tertiary education, uses Cooperative and Work-Integrated Education (CWIE) program as the key framework in which the private sector will play an increasing role in upskilling and reskilling the local human resources to cope with constant changes, with incentives and collaboration by the public sector.

Under CWIE framework, the BOI is collaborating with the EEC, MHESI, the Ministry of Labor and the Ministry of Education to ensure the country supports the investor demand for skills and drives forward Thailand’s technology-oriented economy.

The MHESI will also adopt a new framework of ensuring students are equipped with the multi-skill and multi-career adaptability demanded by the global culture and with global skills in communication, digital skill and learning.

The Thai government is also considering initiating more options that increase flexibility for vocational and university students to graduate if their skills and knowledge match the demand and receive training or participate in skill training courses then transfer credits from these activities to the curriculum. MHESI, EEC and related agencies are also creating a database that links the demand and supply of human resources in each field.

The implementation of these policies has already resulted in an overall improvement of Thailand’s labor force on international rankings. In 2021, Thailand was ranked higher



1 <https://www.weforum.org/reports/the-future-of-jobs-report-2020>

2 <https://www.oecd.org/countries/thailand/thailand-s-education-system-and-skills-imbalances-assessment-and-policy-recommendations-b79addb6-en.htm>

3 <https://www.eeco.or.th/en/business-opportunities>



on the Swiss-based Institute for Management Development's World Competitiveness Ranking⁴ at 28th out of 64 economies, compared with 29th place in 2020. Despite being weighed down by harsh economic impacts from the pandemic, Thailand's score improved in several factors including those related to the labor market, such as the growth of the labor force, in-training opportunities for employees in the private sector, scientific infrastructure, increase in scientific research publications, business confidence on collaboration between academia and the private sector and the protection of intellectual property rights.

Ramping up Incentives for Private Sector Collaboration

Developing the ability to upskill human resources has a central role in the BOI's promotional investment incentives. As a focus of its merit-based incentives, the BOI currently allows businesses to add investment in training or internships to develop the skills, technology, and innovation of their human resources into the calculation of corporate income tax exemption (CIT) eligibility with no set minimum amount. Eligible activities include training or internships for developing skills, technology, and innovation for students who are studying in science and technology fields, such as work-integrated learning (WiL) projects, dual vocational education projects, or cooperative education projects.

For more advanced skills, eligible projects must offer advanced technology training as approved by the BOI or targeted advanced technology training as approved by the MHESI or the Board of the Eastern Economic Corridor Policy Committee in cases where the entities are located in the EEC area. Training can be either in-house or arranged by external parties. Businesses are also allowed to submit two amounts of investment capital and job training expenses when applying for additional CIT exemption as approved by the BOI.

While these training subsidies will help address the current skill mismatch in the workforce, the BOI is also offering 5-year investment incentives of CIT exemption and non-tax incentives to entities that establish educational and training institutions for developing highly skilled professionals in STEM. ■

4 <https://worldcompetitiveness.imd.org/countryprofile/overview/TH>

PREPARING HUMAN RESOURCES FOR THE NEW ERA

With its need for a more skilled and technology-oriented workforce, the technological revolution is reshaping the labor market across the world. Building on its remarkable progress in expanding access to education among the population, the Thai government is now focusing on upgrading the country's human resource skills to meet these new demands from the business world of today and tomorrow.

The exponential pace of technological change in the Fourth Industrial Revolution (4IR) presents a great challenge for Thailand and its ambitions of driving forward economic transformation to be more oriented towards high technology. In response to this challenge, the Thai government is implementing comprehensive reforms to the educational system with the aim of ensuring the country's human resources are able not only to keep pace with the new technology but also to deliver their own R&D and innovations.

As Thailand is focusing on attracting investment in high-technology industries to push forward its economic growth, many of the human resource development programs currently being ramped up in the country are designed to meet the new demand from new technologies coming from accelerated investment after the COVID-19 pandemic.

Key approaches at the higher education level include improving the standards of universities as well as vocational and technical schools. This is being achieved

through cooperation with international agencies and the business sector along with promoting the participation of businesses in designing relevant curricula and providing work-based learning programs. Furthermore, the Ministry of Higher Education, Science and Innovation (MHESI), the agency responsible for steering the country's tertiary education, is open to the idea of considering greater flexibility in the curricula as well as introducing new incentives and measures to improve learning efficiency.

Thailand's higher education system currently has around 160 public and private universities, technical schools and vocational schools producing approximately 350,000 university graduates and 200,000 technical school and vocational school graduates each year. Of these, science graduates now account for the majority following the Thai government's sustained support in attracting students to science and technology fields.

Official data from the Ministry of Labor show that 62% of graduates from the vocational and technical school system and 45% from universities were from science-related fields in 2020. Around 60% of students at the higher education level were reported



to be attending universities, with the remainder at vocational and technical schools during 2020 and 2021.

Of the total students in the vocational system, 16% are studying in fields related to industries identified as part of the country's first S-Curve (agricultural and biotechnology, smart electronics, affluent medical and wellness tourism, next-generation automotive and food for the future), with 2% in fields related to the new S-Curve industries (biofuels and biochemicals, digital economy, medical hub, automation and robotics, and aviation and logistics). Meanwhile 8% of the students attending universities in Thailand are studying in fields related to the first S-Curve and 18% in fields related to the new S-Curve industries.

Fostering Collaboration to Meet Demand for Skills

It is estimated that new demand for human resources in the Eastern Economic Corridor (EEC)¹, Thailand's flagship special economic zone for targeted industries, with reach a total of approximately 477,000

positions over the next five years. Of the total new manpower required, 24% will be in the digital sector and 23% in logistics. The remainder will be divided between smart electronics (12%), next-generation automotive (11%), robotics (8%), aviation (7%), the rail system (5%), tourism and wellness (4%), medical hub (3%) and merchant marine (3%).

The results from a survey by World Economic Forum's *"The Future of Jobs 2020"*² showed that Thailand scored 55% for the digital skill of its population and 60.5% for the business relevance of its tertiary education on a weighted average basis in 2019-2020.

Delving into the adjustments made by the surveyed firms' during the COVID-19 pandemic, 84% said they accelerated the digitalization of their work processes, while 75% reported that they provided opportunities for working remotely and 50% indicated that they expedited the automation of tasks.

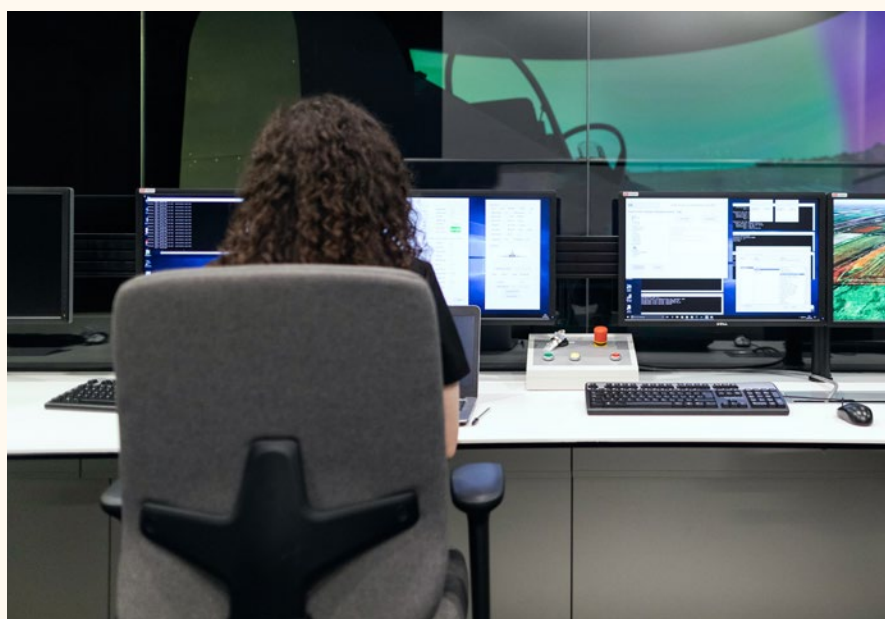
The survey also probed into foreseeable changes in job roles.



The top five emerging job roles identified by the surveyed firms were data analysts and scientists, digital marketing and strategy specialists, big data specialists, A.I. and machine learning specialists in descending order. In terms of the top five redundant skills in the near future, they cited data entry clerks; administrative and executive secretaries; accounting, bookkeeping and payroll clerks; assembly and factory workers; and construction laborers.

For reskilling and upskilling programs, the survey revealed that the top five skills in focus comprised analytical thinking and innovation, active learning and learning strategies, critical thinking and analysis, leadership and social influence, and complex problem solving. Some 90% of the surveyed firms said they expect their employees to pick up the required new skills on the job and 80% said they will either outsource certain functions or hire new staff with relevant skills.

To help Thailand's higher education system cope with the new human resource demands, the Thai government has been



¹ <https://www.eeco.or.th/en/education-and-human-resource-development>

² <https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full/country-and-industry-profiles>

implementing demand-driven human resource development programs to produce highly-skilled and technology-oriented workers. Related government agencies have curated 13 programs that involve the private sector in the education and training of human resources to suit the various needs of businesses moving forward.

Key to this approach is Cooperative and Work Integrated Education (CWIE) which seeks to engage business in jointly designing curricular at universities and vocational schools to better equip students with the skills needed for the modern workplace and in providing cognitive apprenticeships.

CWIE will better prepare students to enter the job market by furnishing them with a detailed understanding of future business demands for expertise and skills, the potential career paths open to

them, and the future challenges they may face. Meanwhile, the business sector will have a better opportunity to improve the competency of its manpower by ensuring they possess the required skills, attitudes and values, while also benefiting from access to incentive programs. The MHESI has set a target of doubling the number of students receiving education through CWIE from 102,000 in 2020 to 205,000 by 2024.

Furthermore, the MHESI expects to drive engagement by the private sector in reskilling and upskilling programs such as Work-integrated Learning (WiL), which incentivizes business to provide education at working facilities by allowing them to deduct associated expenses when calculating their corporate income tax liability. To be eligible for this corporate income tax exemption, companies are required

to recruit students attending universities or vocational schools as staff for at least two years.

Under the Talent Mobility program, personnel with science, technology, and innovation expertise from universities and government research institutions are encouraged to work in the industry temporarily to increase the competitiveness of entrepreneurs. For the Dual Vocational Training Program, students will spend not less than half of their courses training for a career and this will be counted as study time in both the academic institutions and the companies.

Meanwhile the EEC is collaborating with universities and vocational schools located in the special economic zone area on offering incentives to businesses to provide scholarship programs and short-term courses to support manpower development. ■





WELCOMING GLOBAL TALENTS FOR LONG-TERM STAYS

With the relentless advancements in technology constantly churning out new and better innovations, the future job market will look markedly different from the one we know today. Able to transcend borders with ease, digital technology continues to change the way people work, compelling countries to compete for the best and the brightest talents to drive their business strategies and innovations. In the future of work, the most highly sought-after individuals will be in a position to demand that the countries competing for their talent offer an attractive work-life balance.

This already changing landscape has been driven forward by the COVID-19 pandemic which spurred the trend of “working from anywhere” and the “workation” phenomenon among global talents as social distancing regulations forced staff to work remotely.

In line with Thailand’s increased efforts to propel the country’s economic transition towards greater adoption of Fourth Industrial Revolution (4IR) technologies, the Thai cabinet in mid-September

agreed in principle to improve the incentives it is offering to attract international talents with a focus on highly-skilled specialists and globetrotting professionals.

The plan, which is under the cabinet’s consideration, includes offering 10-year long-term resident visas to eligible persons and their families together with privileges such as work permits that are available automatically upon visa approval. The targeted talents will be eligible to pay personal income tax in Thailand

at the same progressive rate as Thai nationals, while also being exempt from tax on income from foreign countries. In addition, they will be afforded property ownership rights and the right to pay personal income tax at a fixed rate on income derived from local sources.

The long-stay visa for highly-skilled professionals is aimed at attracting those who will enter Thailand to work in targeted industries, as identified by a law enacted in 2017 which focuses on enhancing the competitiveness of those targeted industries. Such industries include: 1) agriculture and biotechnology; 2) aviation and logistics; 3) affluent and wellness tourism; 4) next-generation automotive; 5) bio-fuels and biochemicals; 6) medical and comprehensive healthcare; 7) intelligent electronics; 8) circular economy; 9) automation and robotics; 10) digital; 11) food for the future; 12) defense; and 13) human resources development and R&D.

The second group of targeted talents are the so-called 'digital nomads', and employees under corporate retirement programs who are seeking a location for working remotely while enriching their life experience and creativity through travelling.

Thailand is well-positioned to benefit from the growing population of digital nomads worldwide.

Meeting their needs of a "location-independent and technology-enabled" lifestyle, Thailand is equipped with high-quality digital infrastructure while also offering attractive travel opportunities through its famed tourism destinations. Thailand's initiative of easing its long-term stay visa rule is in line with a study by Airbnb¹, released in May 2021, which found that people are looking for new places to travel, partly driven by the COVID-19 pandemic which has forced them to move away from urban areas. More importantly, the study which was based on the Airbnb platform, showed that travelers were staying longer in those places. Average stays of at least 28 nights recorded in Q1 2021 were double the 14 nights typically booked in 2019. The study also showed that 47% of visitors say relationship with the locals matter when planning their travel, against only 27% who placed no importance on such relationships.

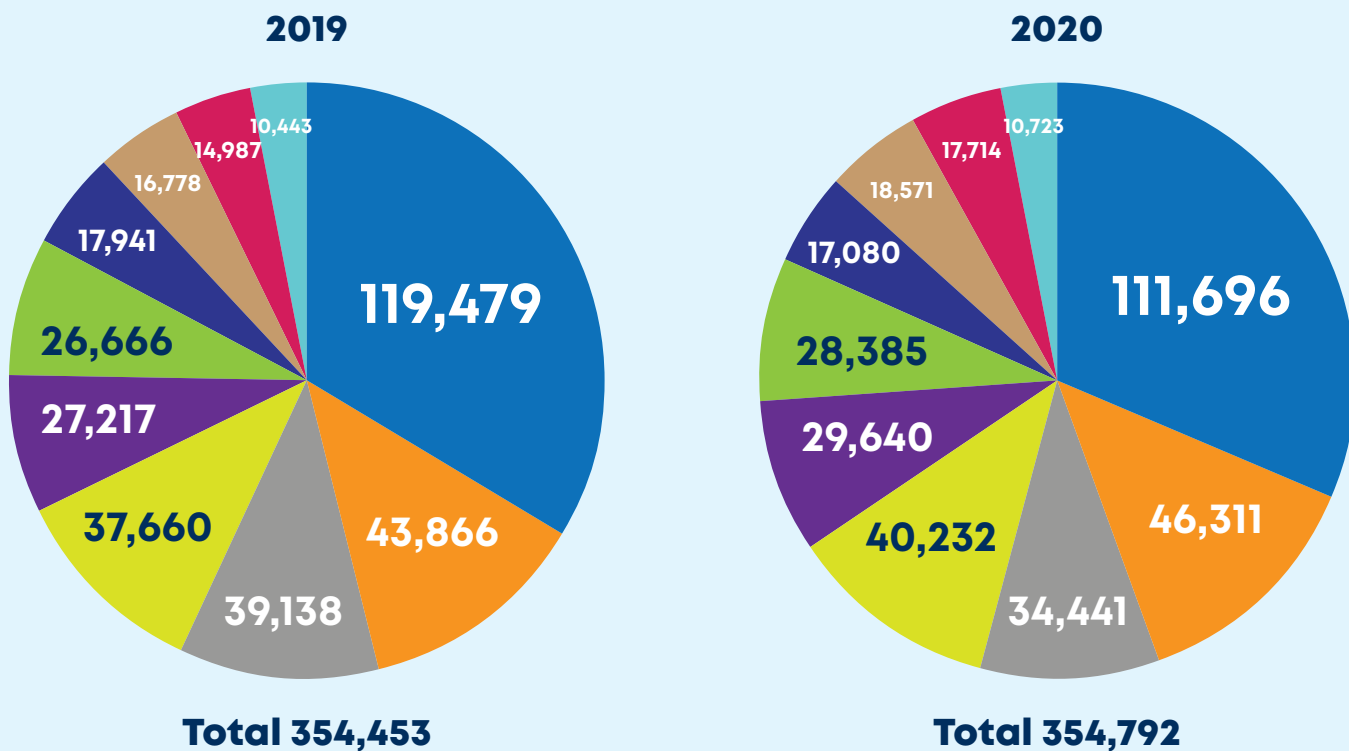
The Holidu² travel website ranked Bangkok as the best city out of 147 countries worldwide for a workation, while Phuket came in at 10th place. These rankings take into consideration factors such as the speed and availability of wi-fi, facilities for international entrepreneurs, the cost of living and tourist attractions. ■

1 <https://news.airbnb.com/wp-content/uploads/sites/4/2021/05/Airbnb-Report-on-Travel-Living.pdf>

2 <https://www.holidu.co.uk/magazine/the-best-cities-for-a-workation>

NUMBER OF NEW GRADUATES IN THAILAND

Approximately 350,000 graduates from colleges and vocational schools in Thailand each year



- Business administration and law
- Engineering, Architecture and Industrial Design
- Education
- Arts and humanity sciences
- Social sciences and communications
- Medical and Healthcare
- Sciences, mathematics and environment
- Tourism, hospitality and aviation
- Computer Sciences and ICTs
- Agriculture, forestry, fisheries and veterinary

Source: Office of the Higher Education Commission



BOI'S INCENTIVES FOR THE WORKFORCE TRAINING



Businesses can add investment capital or expenses on human resource development into the calculation of corporate income tax exemption (CIT) without minimum amount for investment or expenses in cases of

Trainings or Internships to Develop Skills, Technology and Innovation

- Eligible activities include training or internships to develop skills, technology and innovation for students who are studying in science and technology such as Work-Integrated Learning (WiL) project, Dual Vocational Education project, or Cooperative Education Project.
- Businesses are allowed to calculate the full investment capital and job training expenses for an additional CIT exemption as approved by the BOI.



Advanced Technology Training

- Eligible projects must be advanced technology training as approved by the BOI and targeted advanced technology training as approved by the Ministry of Higher Education, Science, Research and Innovation (MHESI) or the Board of eastern economic Corridor Policy Committee in case that the entities are located in the EEC area. Training can be both in-house and arranged by external parties.
- Businesses are allowed to calculate two times of investment capital and job training expenses for an additional CIT exemption as approved by the BOI.



PUSHING FORWARD DEMAND-DRIVEN HUMAN RESOURCE DEVELOPMENT



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To help the investors have appropriate access to skills and labor, the EEC HDC has formed a network of universities and vocational schools located in the EEC area and enabled them to play a leading role in human resource development. Traditionally, the country's educational system is operated by ministries and government agencies. However, industries will play the leading role in our approach because they have a better understanding of the market changes, and they have more flexibility in their operations which enables them to proceed at a more rapid pace than the government can.

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In response to fast global change in technology, the Thailand government has pushed forward investment in Eastern Economic Corridor (EEC) to be the flagship special economic zone. Equipped with upgraded transportation and digital infrastructure and R&D facilities, the EEC will complete Thailand's ecosystem across spectrum of the fourth industrial revolution technologies and attract foreign and local investment in the new S-Curved technologies.

Dr. Apichart Thongyu
Chairman of a Working Committee of
the Eastern Economic Corridor
Human Development Center (EEC HDC)

Thailand has a reliable and competitive global supply chain at strategic location as gateway to ASEAN which will ensure cost effectiveness for global companies which operates their regional headquarter and manufacturing hub here. These factors along with the Thai government's sustained efforts in human resource development and facilitating investment through relaxation of business obstacles will make the country significantly attractive to the international business community. Thailand's investment strategy also focuses on enhancing the country's infrastructure connectivity in Asia and the Pacific region.

The Thai government expects the foreign direct investment to turn around over the near future as the COVID-19 pandemic began to soften. The EEC expects FDI to reach 2.4 trillion from 2022 to 2026, a 25% increase from 1.7 trillion baht the previous target. In preparing to facilitate the investors, the EEC and Thai government agencies has put the demand-driven resource development in place.

Dr Apichart Thongyu, Chairman of a Working Committee of the Eastern Economic Corridor Human Development Center (EEC HDC)

shared with us about the EEC's strategy in ensuring adequate demand and skill of human resources.

Q: What are EEC HDC's strategies for the human resource development in the short and long term?

A: EEC HDC has been prioritizing human resource development to meet business demand in our operation plan to attract investment. The Thai industrial sector is transitioning from 2-2.5 technology which rely on quite intensive use of labour of workforce. But local industries are rapidly progressed toward 4.0 technology in which advanced and digital technologies such as A.I., data analytics and nonhumanoid robotics will replace human in driving productivity and outputs of businesses.

In a survey, we have found that the demand from human resources in 12 targeted industries will reach 475, 674 position over the next five years, out of which 54% will be filled with vocational students.

With the pandemic situation easing, we anticipate pause of FDI to be short-term without lingering effects on the investor's operations. So the EEC has raised the investment

target in the area to 2.4 trillion from 1.7 trillion over the next five years.

We realize that there is a problem of skill mismatch in the Thai labor market which cause the investors to be uncertain whether skill of the workforce can match their demand. The EEC HDC has changed the paradigm from supply-pushed to demand-driven strategies.

Q: How does the demand-driven human resource strategy work?

A: To help the investors have appropriate access to skill and labor, EEC HDC has formed a network with universities and vocational schools located in the EEC area and enabled them to play a leading role. Traditionally, the country's educational system is operated by ministries and government agencies. Industries will play the leading role in our approach because they have better understanding in the market changes, and they have more flexibility in operation that enables them to proceed at a more rapid pace than the government. This approach will be more efficient in helping academic institutes produce human resources to keep pace with technology disruption such as in the digital or the automotive industries. The EEC is committed to pushing forward demand-driven human resource development into the long term.

Under the demand-driven framework which will require more active engagement from the private sector, the EEC has introduced two key measures.

In the first approach, called "Type A Model" will enable students to have access to first-hand training in technical job roles in the industrial sector. For example, companies will introduce scholarships for



students who want to work in the engineering or electronics fields, with a condition that they will be hired upon completion of study for at least one year. In this way, students will have actual work experience and gain know-how from businesses, while businesses can have access to employment qualified students by receiving tax incentives from the government. We help that “Type A” approach will help us transform human resource development mode in preparation for the industry 4.0.

The second approach, or “Type B” Model is a short-term course which calls for businesses to jointly designed training course with the academic institutes and be eligible for claiming 2.5 times expenditure for tax deduction.

Q: What are the strengths and competitiveness of Thai human resource development?

A: The country has a well-established educational system that is adapting to global changes. The EEC is collaborating with the Ministry of Higher Education, Science and Technology (MHESI), Ministry of Education and the Ministry of Labor in revamping how we educate the younger generation to have a global mindset and keep pace with global demand. As part of the plan, we will introduce the Science, Technology, Engineering and Mathematics education and data coding since the primary educational level.

For the vocation school system, we plan to streamline vocational schools located in the EEC area including personnel transfer to upgrade some of them as excellence centers in each field over the next two years. These excellence centers will serve as a bridge between the workforce and industries. The MHESI,



which supervises higher education, is committed to enhance skills of teachers which will be key to drive the approach.

The EEC expects foreign direct investment in Thailand to bounce back strongly after the COVID-19 pandemic. We have been continuously implementing strategies to transform the education ecosystem to support demand for new skills from the investors. The first module is to encourage greater participation from businesses in jointly develop curricular and pay for students’ education with the public sector’s incentives as well as undertaking reskilling programs. We have created credit bank which allows students to register credit from their work-based training. We are also considering options to provide customized facilitation to business’s recruitment.

At present, EEC operates centers which will provide linkage of skill training between academic institutions and businesses and capacity building for industries including infrastructure, logistic, next-generation automotive, smart electronics, digital, aviation, rail systems, affluent travelling and wellness, commercial marine merchant, and comprehensive medical care.

The EEC runs these centers with collaboration from the business sectors and international academic institutes. They are for example Automation Park, Mechatronics Center, Thammasat Medical Center, Rail System Center and Next-Generation Automotive Center.

Thailand has a competitive fundamental for FDI including strategic locations at the center of ASEAN, upgraded air, seaport and rail connectivity infrastructure and disaster free. These factors contributed to making Thailand a secure global value chain. The hospitality of the Thai population is also a further advantage.

Q: What skills do you think are most important to the escalation of human resource skills?

A: The rapid change in technologies could make knowledge students learnt from traditional education system outdated. As the education system under the bureaucracy construct might not be able to equip students with useful skills for businesses, the EEC has changed the paradigm completely by joining hand with the industrial sectors. EEC’s education professionals have had first-hand experience from the private sector and upskilled. We have target-oriented approach. ■

THAILAND'S FIRST 4IR LIGHTHOUSE



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We can clearly see continued improvement from the changes in Thailand's higher education. A key change is the fact that the country's tertiary education is oriented towards competency-based learning, through co-designed courses. I believe these approaches will escalate the quality of human resource development in response to the changes in market demand.

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Dr. Sampan Silapanad
Vice-President for Hard Disk Drive Operations
for Western Digital Storage Technologies (Thailand)

Western Digital (WD), a global leading hard disk drive and data storage manufacturer, and a long-standing investor in Thailand, has scaled up its activities in the country to strengthen its commitment to using Thailand as the company's operations and export base for the ASEAN region. The company's trust and confidence in Thailand has been underscored by its continued investment in upgrading its supply chain technology and human resources.

After twenty years of operations in Thailand, WD has reached a new milestone after being recognized by the prestigious Global Lighthouse Network for its deployment of fourth industrial revolution technology in its Prachinburi factory. It was also commended for its achievements in human resource development which is aimed at ensuring its human capital remains competitive in light of fast-changing technologies and an environment of uncertainty in the world market.

WD is the first company from Thailand to have been recognized by the Global Lighthouse Network, an initiative for shaping the future of advanced manufacturing and value chains conducted collaboration between the World Economic Forum and McKinsey and Company.

Dr. Sampan Silapanad, the Vice-President for Hard Disk Drive Operations for Western Digital Storage Technologies (Thailand), joined us to discuss WD's latest achievements and its human resource development strategy.



What prompted the Global Lighthouse Network to recognize WD for its deployment of technology and human resource development?

Since starting our operations in Thailand more than two decades ago, WD has undergone two major transformations. The former took place ten years ago with an upgrade to industry 3.0 technology which was centered on automation. And the latter occurred 4 to 5 years ago when the company deployed industry 4.0 technology which includes advanced data analytics, machine learning and A.I. This is another advancement. The industry required relatively less investment in assets, but it enabled WD to make better use of data. By deploying data analytics in WD's operations, the company then unlocked five big breakthroughs which can be measured through increased outputs in the factories, annual rates of return for the business, reduced logistics costs, reduced procurement costs and reduced scrap from factories.

These tangible benefits from industry 4.0 technology along with the company's commitment to human resource development have underlined our achievements which have now been recognized by the Global Lighthouse Network. Along with the adoption of technology, WD is also committed to training our staff, companywide, to ensure they keep pace with the 4IR technologies. The recognition reassures us that we are moving in the right direction. As the name of the program suggests, WD is ready to act as a lighthouse in sharing our experience and human resource strategy in a use case with other businesses to help them be more responsive to changes and achieve sustainable growth.

What are your strategies for human resource development?

We believe that industry 4.0 will enable the company to use human resources more productively as our strategy is to limit new hires, while encouraging current employees to develop their functional skills

by expanding their scope of responsibilities and roles.

The company has put in place a plan to train around 10,000 human resources across all levels, from front line staff to high-skilled professionals, such as engineers and staff at the management level over the next 12 months. Focusing on technology 4.0 and data analytics, the goal of the training is to create understanding and reskill our human resources so that they can get full benefit from the new technology.

In the broader picture, WD has been intensively participating in the Thai government's Cooperation and Work-Integrated Learning programs, such as the Talent Mobility and Dual Vocation scheme as well as the promotion of STEM education among students, which allow us to tap into the public sector's public incentives. Overall, we have a solid framework of human resource development. In our Work-integrated Learning training programs, the company recently recruited 25 fresh graduates under the "New College Graduate"

program. This program selects students who are in the final year of their university education and gives them the opportunity to lead a project related to technology 4.0, allowing the company to scale up its employee performance.

The new generation is confident in themselves. They have more awareness about their own well-being and doing less to achieve more so that they can find a better work-life balance. Due to the nature of the industrial revolution 4.0, the changes will fit perfectly with the lifestyles of the new generation and the roles in the new workforce, but there is still a challenge to overcome in terms of the skills required in the industry 4.0 workplace.

How competitive are Thailand's human resources?

Thailand has a strong foundation of human capital. Over the past 4 to 5 years, WD has consolidated its manufacturing bases from four countries to just Thailand. This move underscores the confidence

of WD's executives in the potential of Thailand's human resources. The plants in Prachinburi and Ayutthaya are not only the biggest in Southeast Asia, but also the biggest in the world with over 28,000 employees. Furthermore, the company ranked number one in Thailand in terms of export value. These facts show the company's strong position in the country and the region respectively.

WD's training sessions have blended first-hand experience and academic sessions.

We can clearly see continued improvement from the changes in Thailand's higher education. A key change is the fact that the country's tertiary education is oriented towards competency-based learning, through co-designed courses. I believe these approaches will escalate the quality of human resource development in response to the changes in market demand.

WD emphasize that new hires must be equipped with the new skills required by 4.0 technology, while we also focus on reskilling and upskilling our current employees.

How has Thailand's aging population affected the country's competitiveness in human resources?

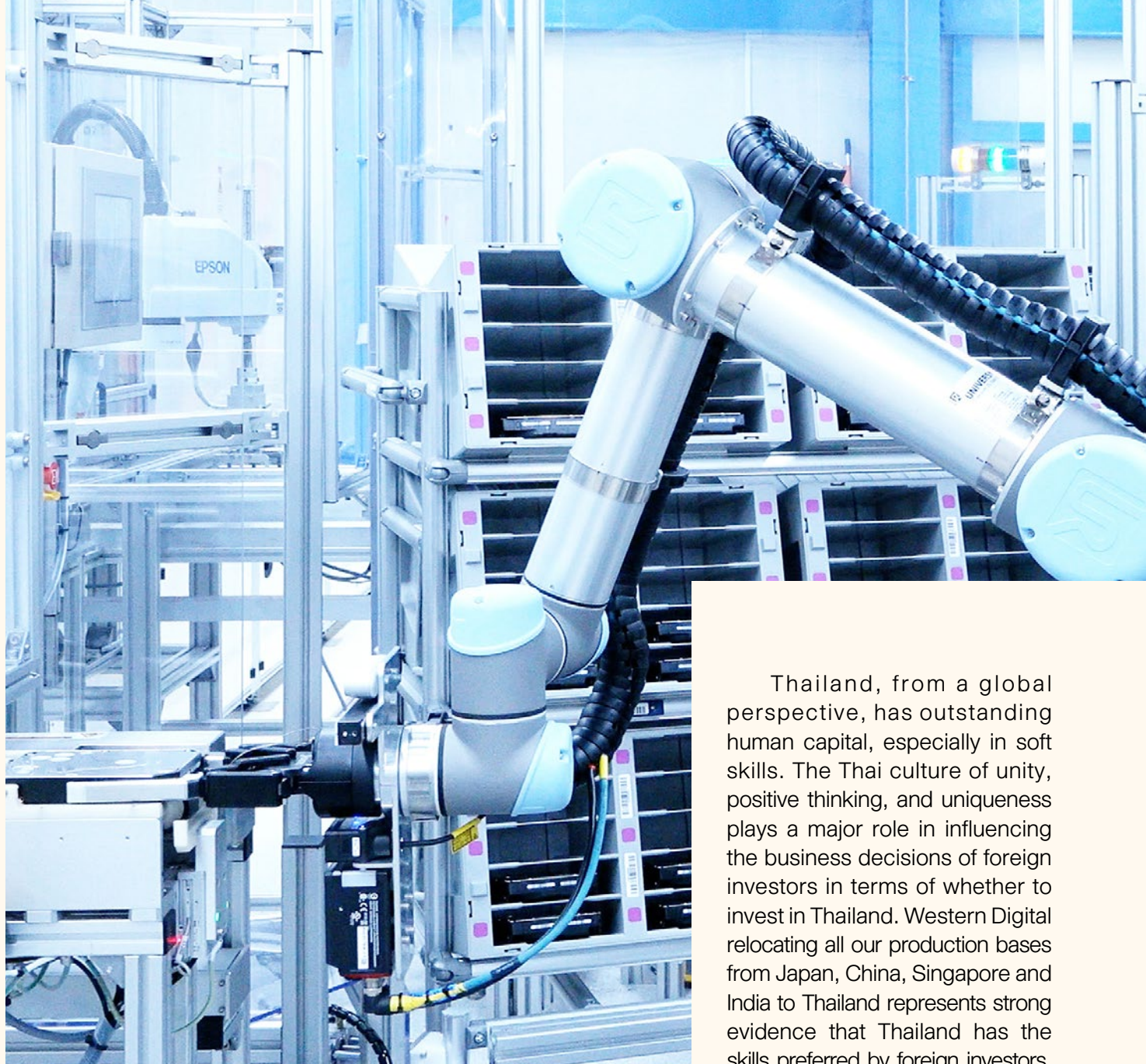
The fact that industry 3.0 and industry 4.0 technology rely less on the use of labor means that they will enable people of older ages or even retirees to continue working productively. This is because technology will play a major role in facilitating the production process and reducing obstacles from aging populations. So there is urgency for Thailand to deploy higher technology in the manufacturing sector and the economy to offset the impacts from a shrinking workforce and maintain higher productivity.

What is WD's strategy for keeping up with fast-paced technology development?

Nowadays, the business landscape comprises a wide variety of internal and external challenges, especially the impacts of the pandemic and government measures to revitalize economic activities. Western Digital categorized the main challenges into 3 factors comprised of labor skills, incentives and measures, and the ability to scale up the business.

Labor skills are recognized as a major factor driving investment in the country. The skills portray the country's readiness to serve huge investment. Higher competition among ASEAN member states leads to an escalation in labor quality to attract foreign investment.

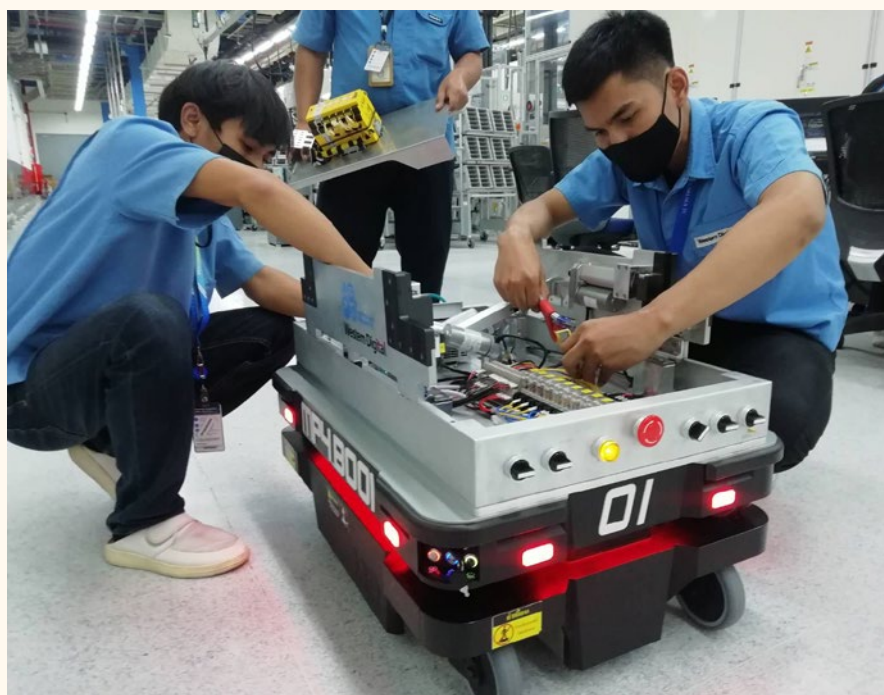




Thailand, from a global perspective, has outstanding human capital, especially in soft skills. The Thai culture of unity, positive thinking, and uniqueness plays a major role in influencing the business decisions of foreign investors in terms of whether to invest in Thailand. Western Digital relocating all our production bases from Japan, China, Singapore and India to Thailand represents strong evidence that Thailand has the skills preferred by foreign investors. Once we add to that hard skills focusing on the technology field, Thailand's labor capabilities will be enhanced even further, and in the future, Thailand will become one of the most attractive destinations for foreign investors.

What support have you received from the BOI?

WD has found the BOI's incentives to be attractive and satisfactory over the past twenty years. The government has treated the company as a partner with a shared vision of escalating Thailand's citizens to have a better standard of living and driving the country's economy through a strong alliance. ■



THAI ECONOMY At A Glance

Key Economic Figures



GDP (2020*)
US\$ 506.4 Billion



GDP per Capita (2020*)
US\$ 7,328.2 / Year

GDP Growth



Note: *Estimated value | Source: NESDC
(Data as of March 2021)

Unemployment

Dec 2020*



Headline Inflation

Average 2020*



Source: National Statistical Office,
Ministry of Commerce

Investment Growth



Export Value of Goods Growth



Note: *Estimated value
Source: NESDC

Market Profile (2019)

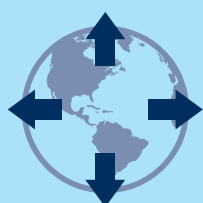
Population
66.56
Million



Minimum Wage
THB 313 - 336

US\$ Approximate
US\$ 9.98-10.71

Source: Ministry of Labour



Export Figures

Export value (USD million)

Jan - Dec 2019 : 246,268.8

Jan - Dec 2020 : 231,468.4

Jan - August 2021 : 176,961.7

Source: Ministry of Commerce

Top 10 Export Markets (January-June 2021)

Rank	Value (US\$ million)	Share
United States	26,883.92	15.19%
China	25,169.40	14.22%
Japan	16,560.27	9.36%
Vietnam	8,504.96	4.81%
Hong Kong	7,621.75	4.31%
Malaysia	7,513.39	4.25%
Australia	7,182.71	4.06%
Singapore	5,806.76	3.28%
Indonesia	5,697.72	3.22%
India	5,168.06	2.92%

International Competitiveness

Global Competitiveness

2018 : 38th 2019 : 40th

Source: World Economic Forum

World Competitiveness Ranking

2020 : 29th 2021 : 28th

Source: IMD

Logistics Performance Index

2016 : 32nd 2018 : 28th

Source: World Bank

Top 10 Exports

Goods / Products	Value (US\$ million)	Share
1. Vehicles and Parts	19,166.80	10.83%
2. Computers and Parts	13,999.86	7.91%
3. Rubber Products	9,961.55	5.63%
4. Plastic Pellets	7,337.20	4.15%
5. Jewelry Products	6,428.47	3.63%
6. Chemical Products	6,218.77	3.51%
7. Integrated Circuits	5,427.70	3.07%
8. Refined Fuel	5,392.99	3.05%
9. Machinery and Parts	5,191.52	2.93%
10. Fresh, frozen, and dried fruit	4,834.14	2.73%

Source: Ministry of Commerce

Exchange Rates (As of 20 October 2021)



THB 33.59



THB 46.61



THB 39.30



THB 29.58
(100 Yen)



THB 5.31

Source: Bank of Thailand

Tax Rate

Corporate Income Tax: 0 - 20%

Personal Income Tax: 5 - 35%

VAT: 7%

Withholding Tax: 1 - 15%

Source: the Revenue Department
(As of May 2021)

ABOUT BOI

The Office of the Board of Investment (BOI) is the principle government agency that operates under the Prime Minister's Office for the purpose of encouraging investment in Thailand. We at the BOI serve as the professional contact points for investors, providing them with useful investment information and services. We offer business support and investment incentive to foreign investors in Thailand, including tax and non-tax incentives. A few non-tax incentives include granting land ownership to foreigners and facilitating visas and work permits. Besides serving the needs of overseas investors, we also offer consultation services to Thai investors who are interested in investment opportunities abroad.

BOI OVERSEAS OFFICES



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

Los Angeles

Thailand Board of Investment,
Los Angeles Office
Royal Thai Consulate-General,
611 North Larchmont Boulevard,
3rd Floor
Los Angeles CA 90004, 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 107-0052 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 Daeyongak 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
Taipei World Trade Center Room:3E40
No.5 Xinyi Rd., Sec.5, Taipei110
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. E3.3 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

BOI Marketing

