

TIR

THAILAND INVESTMENT REVIEW

Vol. 30 | October 2020



**ENABLING
THE NEW NORMAL
WITH AUTOMATION
AND ROBOTICS**

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BOI NET APPLICATION

January - June 2020



Total Investment
754 Projects
US\$ 5,069.83 Million



Total Foreign Investment
459 Projects
US\$ 2,421.89 Million

FOREIGN INVESTMENT BY TARGET SECTORS

First S-Curve		New S-Curve	
	Electronics 63 Projects 727.44 M		Biotechnology 3 Projects 8.58 M
	Agriculture & Food Processing 18 Projects 123.13 M		Digital 51 Projects 11.97 M
	Automotive 40 Projects 406.70 M		Aerospace 2 Projects 7.79 M
	Petrochemicals & Chemicals 26 Projects 110.69 M		Medical 18 Project 46.36 M
	Tourism 4 Projects 59.54 M		Automation & Robotics 2 Projects 3.54 M

FOREIGN INVESTMENT BY MAJOR ECONOMIES



Unit: US\$ (US\$=31.34 as of 15 October 2020)

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



A BUDDING LEADER OF AUTOMATION AND ROBOTICS

Thailand's automation and intelligent robotics industry has gone from strength to strength in recent years, driven by increasing demand from both domestic and overseas industries along with its well-established ecosystem. The country's globally competitive supply chains, most notably in the automotive, food and food processing, and electronics industries, have boosted the demand for industrial automation and robotics as businesses embrace their transformative effects on productivity. Thailand's service robot industry has also grown by leaps and bounds with a proliferation of innovations addressing the more pronounced needs of caring for the elderly and providing healthcare services in the COVID-19 pandemic era.

Having already reached the advanced development stage for the Internet of Things, machinery, information and communication technology, and electronics, Thailand has strong foundations in the automation and robotics supply chain. Thailand also enjoys a large and passionate talent pool in robotics as well as progressive support from the government in the development of its intelligent robotics technology.

At present, Thailand's US\$20-23 billion¹ robotics industry includes homegrown robots that incorporate AI, 5G connectivity, and cloud communications technologies to enable smart manufacturing.

According to the International Federation of Robotics (IFR)², Thailand had the highest number of industrial robots within the ten-membered Association of Southeast Asian Nations (ASEAN) in 2019, with the roughly 3,000 units in operation accounting for almost 1% of the total 373,000 industrial robots installed globally.

With 45 industrial robots for every 10,000 employees in 2019, Thailand was the second largest market for robotics and

automation in ASEAN after Singapore. Across Asia, the average number of industrial robots per 10,000 employees was 63.

The IFR predicts that the use of automated guide vehicles to serve logistical roles across factories, warehouses, and service providers such as hospitals will grow by around 60% annually to well over 700,000 units by 2022. Furthermore, local businesses are increasingly using automation and robotics for a wide range of processes, from welding and assembling, to dispensing and cleaning in industries as diverse as automotive, food and food processing, electronics, and plastics and rubber.

Thailand is home to the world's most significant automotive producer, ranking top in ASEAN for overall vehicle production and 6th globally for commercial vehicle production in particular. The country is also one of the world's most important producers of food and processed food. In electronics, it is the second largest global producer of data storage units including hard disk drives. As businesses across ASEAN look to become more automated and

adapt to the frequent changes taking place in the post-pandemic era, the expansion of automation and robotics will provide substantial opportunities for local businesses and investors.

More importantly, Thailand is situated at the center of one of the world's most vibrant and fast-growing collection of markets: the CLMV countries (Cambodia, Lao PDR, Myanmar, Vietnam and Thailand). As such, the robotics and automation industry in Thailand is poised for future growth as the industrial sectors in these countries also adopt more robots and automated systems in the future.

A Well-Established Robotics and Automation Ecosystem

The multinational companies involved in Thailand's global supply chain of key industries and investors have spearheaded the development of the country's automation and robotics industry. A majority of the firms in the local automation and robotics industry are in the business of system integration and mechanical brain and software development.

¹ Based on the Bank of Thailand's THB/USD exchange rate of 31.20 baht as of 19 October 2020

² <https://ifr.org/ifr-press-releases/news/record-2.7-million-robots-work-in-factories-around-the-globe>

Ever since the early stage of its development more than a decade ago, Thailand's automation and robotics industry has continued to evolve into a comprehensive supply chain with less reliance on imports while also exporting finished robots and parts across Asia.

Over the years, Thailand has developed its capability to produce home-grown robots, giving birth to a vibrant startup scene. This is possible due to the creative ability of local entrepreneurs, as well as government support on both the demand and supply sides of the robotics and automation industry.

Realizing the role of the automation and robotics industry in increasing the value of businesses, strengthening small and medium-sized enterprises, and driving economic growth, the Thai government has highlighted automation and robotics as one of the industries targeted under the "Thailand 4.0" vision. Two key pillars of the government's commitment to fostering the development of the automation and robotics industry's ecosystem are to promote R&D for supplying the industry with new innovations and to enhance the skill training for providing its talented human resources.

In a push to develop the automation and robotics industry, the Ministry of Industry working through Thai-German Institute has collaborated with the country's top science and engineering academies to run the Center of Robotics Excellence (CoRE)³. Among the key missions of the center are encouraging the creation of robotics prototypes, promoting technology transfers from academia to the industrial sector, fostering technological networking internationally and developing the related skills for human resources.

Prior to this, the National Science and Technology Development Agency established the Institute of Field Robotics (FIBO)⁴ which offers undergraduate and graduate programs in automation and robotics engineering and manages a

number of research laboratories including the Bio-Inspired and Educational Robotics Lab, the Micro Robotics Lab, and the Unmanned-Vehicles and Autonomous Robots for EXploration Laboratory (UVAX).

The Thai Automation and Robotics Association (TARA)⁵ is another organization playing a key role in developing Thailand's automation and robotics industry. In addition to working extensively with the Thailand Board of Investment (BOI) and CoRE to foster multi-sector collaboration linkages, TARA has also developed an ecosystem to support local investment in automation and robotics systems by providing a list of registered system integrators (SI), arranging training for local SI, and promoting design and integration for factory automation.

A Leading Innovator of Service and Field Robots

Thailand is not short of achievements in service and field robotics. Equipped with 5G, AI, cloud computing and sensors which enable robots to perceive and respond to the environment, Thai companies and academies have produced many robots to serve various functions in this sector.

Examples include caring robots for the elderly, which can perform the tasks of providing constant monitoring, alerting caregivers and interacting with the elderly. In the agricultural sector, robots are used in smart farming to serve various functions from the monitoring of plantations to irrigation and harvesting. Meanwhile, medical robots have been utilized in many areas from diagnosis and surgery, to rehabilitation and general services.

Back in 2017, Ramathobodi Hospital, a reputable medical school in Thailand, successfully performed Asia's first robot-assisted brain surgery. Robot-assisted surgery has since been widely used for different operations. Robots have also played an important role in assisting patients' rehabilitation and therapy, supporting children with autism



spectrum disorder as well as refilling medical supplies and prescriptions.

The pandemic has also driven the development of Thai medical robots used to assist frontline medical practitioners and reduce the risk of infection. The robots allow doctors to speak with coronavirus patients through video chats and measure patients' temperature without exposing themselves to the risk of infection.

A Large Pool of Passionate Talent

Thailand is currently producing around 80,000 new graduates each year (roughly one-fifth of all graduates) in fields related to automation and robotics industries, as a result of the government's investment in educational resources in the fields of science and engineering.

Many Thai students have triumphed in global robotics contests such as the World RoboCup and the World Robot Olympiad⁶ in recent years. These achievements reflect not only their passion for robotics but also their competency in scientific studies particularly mechanics and both electrical and robotics engineering.

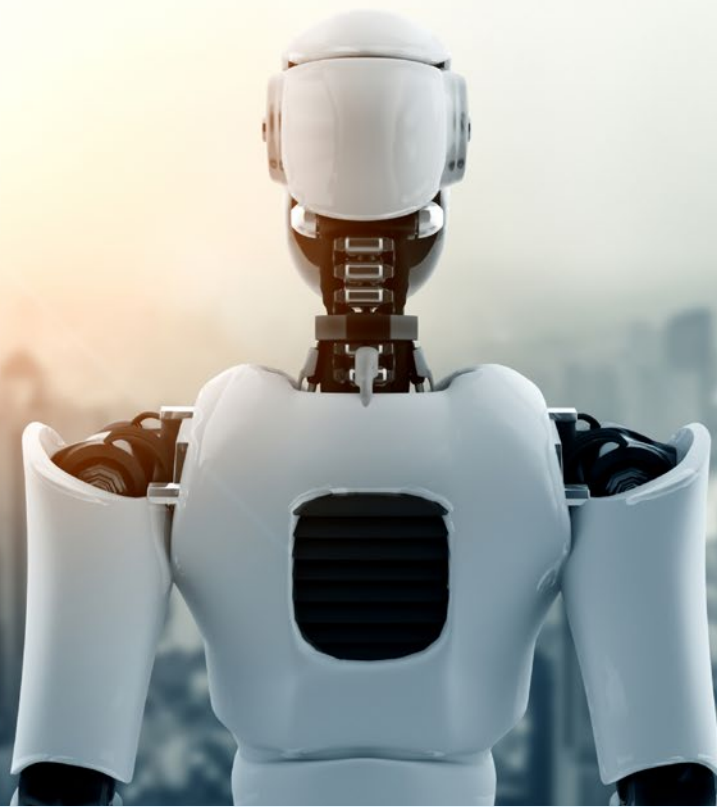
The Thai government continues to strengthen the skills of the country's human resources by facilitating nationwide collaboration among CoRE, universities, research institutions and businesses to offer real-world work experience, skill development and robot prototyping. The collaboration allows those participating to leverage each other's expertise to enhance the capacity of teachers to prepare students with the skills required in this fast-changing environment. ■

³ <http://corethailand.org/>

⁴ <http://fibo.kmutt.ac.th/fibo/en/>

⁵ <http://www.thaitara.org/EN/home.html>

⁶ <https://thailandfoundation.mfa.go.th/en/content/111415-thai-students-won-2019-world-robot-olympiad-champion-in-hungary?cate=5f206dc128600c531517cb77>



AUTOMATION AND ROBOTICS: TRANSITIONING TO THE NEW NORMAL

With physical distancing and lockdown measures in place across most countries around the world, companies are scrambling to find a means of ensuring business continuity while minimizing the amount of contact between their human workers. To achieve this, they are increasingly turning to robots and automation to perform many of the roles that their employees cannot do while working from home.

Global Surge amidst Shifting Trends

In its recently published World Robotics Report 2020, the International Federation of Robotics (IFR) reported a 12% YoY increase in the number of industrial robots operating in factories around the world in 2019. The 2.7 million units in operation worldwide was the highest number ever recorded. Commenting on the findings of the report, Mr. Milton Guerry, the IFR President, stated that:

“The remaining months of 2020 will be shaped by adaption to the ‘new normal’. Robot suppliers will be forced to adjust to the demand for new applications and developing solutions.” Taking a closer look at specific regions, Asia remains the strongest market for industrial robots. In 2019, the annual installations of industrial robots in Asia accounted for about two-thirds of the global supply, with China leading the ranks registering almost 140,500 new robots, followed by Japan and the United States with 49,900 and 33,300 units, respectively. South Korea, Taipei, and India are also major Asian markets for robots. The three economies ranked in the top 10 largest markets globally in 2019 with the number of robots installed standing at 27,900 units, 6,400 units, and 4,300 units, respectively.

With the disrupted global supply chain affecting many sectors, demand for automation and robotic systems is

uniquely robust. The adoption of the so-called “Cobots,” a term used to describe human-robot collaboration, has surged significantly. The IFR reported that 370,000 units of cobots were installed in 2019, representing a continued growth of 11%, while accounting for 4.8% of total market share in global industrial robots.

Recent changes in automation and robotics trends have also shifted the rankings in terms of the industries with the highest concentration of robots. For many years, the automotive and electronics industries were the leading sectors when it came to the sales and adoption of industrial robots. This year, however, and particularly since the arrival of the global pandemic, there has been a sharp increase in demand for new robot functions such as in healthcare, especially for the production of personal protective equipment (PPE).

Thailand's Strong Industry Landscape

Thailand was ranked as the 13th largest market worldwide for industrial robot installations in 2019 with more than 2,900 units. Apart from the country's high demand for industrial robots, Thailand also has the potential to play a significant role in the future of automation and robots as it is the 14th largest exporter of machinery and mechanical appliances, which are critical assembly parts in mechanical arms. Thailand's export value of machinery and mechanical appliances rose to USD 40 billion in 2019, recording a 3% annual growth in value between 2015-2019, and holding a 1.8% share of the global market last year. Furthermore, Thailand's automation and robotics industry attracted more than USD 3.53 million of foreign investment in the first two quarters of 2020, following on from the USD 26.71 million invested in 2019.

In the service robot sector, products made in Thailand have already reached international markets. In 2013, a Thai-made-and-designed elderly care robot called "Dinsow" (meaning pencil) was introduced to the world. It has since become well-known, especially in Japan where the country's aging population is a major issue. Using the robot's built-in sensors, camera, speakers, and touchscreen, the care-giving robot is designed to alert the family of the elderly person under its care in the event of an accident or if it detects a difference in facial expression or unusual movement. Currently, more than 50 private and government hospitals in Japan are using Dinsow robots to assist their elderly patients. Across more than 10 years of development, CT Asia Robotics, Dinsow's developer, has launched four versions of Dinsow, with the latest one being launched in 2019 and aiming to reach 200 units sold by 2020.

Robust Public-Private Partnership

Through the establishment of the Thai Automation and Robotics Association (TARA), local and international players in the country have access to an



extensive network. The association has brought together more than 60 automation and robotics-related companies and academic institutions specializing in automation and robotic systems to help advance Thailand's technology in the field of robotics. The benefits of TARA's highly connected network have been reflected in its latest cooperation on inventing a new service robot for COVID-infected cases. Partnering with the Institute of Field Robotics (FIBO) of King Mongkut's University of Technology Thonburi, the robotic system entitled "FIBO Against COVID-19: FACO" has been launched with technical and financial assistance from various private companies. The highlight of the FACO series is a service robot model called "SOFA" which was developed to provide telemedicine services that enable physicians to command the robot remotely from a centralized control center. SOFA is used to minimize direct contact between healthcare practitioners and suspected cases. Prototypes of FACO were handed over to requested hospitals in April, while engineering drawings and system details have been circulated to more than 20 local robot producers to upscale production for mass markets.

Along with such robust partnerships through private-led cooperation, the Thai government has played an active role in fostering robotics development in the country. Since its establishment in 2017, the Center of Robotics Excellence (CoRE) has been the main driver of Thailand's robotics and automation

industry. The center aims to develop at least 150 robot prototypes, aid more than 200 entrepreneurs, and train more than 25,000 personnel by 2022.

BOI Promotes Demand and Supply

In line with the government's commitment to support the sector, the BOI offers generous investment incentives to foreign and local investors in the automation and robotics industry. An 8-year Corporate Income Tax (CIT) exemption with no designated maximum exemptible amount is granted for business activities in the manufacturing of automation machinery and/or automation equipment with engineering design, including automation system integration (SI) and control system configuration, while an 8-year CIT holiday capped at the value of capital investment is also offered to such activities without SI. For businesses engaged in assembling robots or automation equipment, such activities are eligible for a 5-year CIT exemption.

To promote the usage of automation and robotics systems among local businesses, the BOI grants a three-year corporate income tax exemption with a tax exemption ceiling not exceeding 50% of the total investment capital. The tax exemption will increase to 100% of the total investment capital in automation and robotics if businesses use local systems or services.

From the effective date of January 2018 until June 2020, the BOI had approved incentives to promote automation and robotics in 54 projects with a combined investment value of US\$ 180 million. Of the total investment, 45%, or US\$ 80 million, was in local automation and robotics system.

Apart from the aforementioned potential of Thailand's automation and robotics industry, non-tax incentives are also offered to ensure smooth business operations, including the exemption of import duty on machinery and raw materials, 100% foreign ownership, permission to own land, and permission to bring in skilled workers and experts to work into the Kingdom. ■

STATE-OF-THE-ART INNOVATION INCUBATOR AND LEARNING CENTER IN THE EEC

Embracing the significance of automation and robotics as the key transformative force for global productivity, the Thai government has laid strong groundwork for the growth of the country's automation and robotics industry by introducing incentives, forging collaboration with the private sector, and developing an integrated innovation incubator and learning center in its flagship Eastern Economic Corridor (EEC).

The Automation, Robotics and Intelligent Electronics Center will be built as part of the EECi¹ to be known as ARIPOLIS. Aiming to nurture innovation in robot prototypes and automation systems and translate the technology into actual usage in the business sector, the center will serve as a comprehensive hub of R&D, incubator activities, training and education.

With its advanced ICT infrastructure and multi-mode transportation network conveniently linking its premise at Wangchan District of Rayong Province to the Asia region, EECi ARIPOLIS will provide multinational companies, local companies and startups with access to its top-notch laboratory facilities, incubation activities and learning center and education zone, which features academies and courses focused on developing industry-specific skills.

To leverage its strong ecosystem, the National Science and Technology Development Agency, in collaboration with

the private sector, has also set up a Sustainable Manufacturing Center (SMC) at EECi ARIPOLIS where its Industrial IoT and Data Analytics (IDA) Platform² is being developed to drive productivity enhancement among local factories through the usage of IIOT and data analytics.

The IDA aims to become an important incubator in which system integrators and researchers can learn and test Industry 4.0 tools, while also providing testbed and sandbox facilities for technology R&D. The overall aim is to make manufacturing, logistics and factory maintenance more productive in order to boost development of the automation and robotics industry and enhance the competitiveness of the economy.

Another key initiative in human resource development is a collaboration between the public sector, the private sector and academic institutes to set up Automation Park³ on the site of Burapha University, EEC, as a learning center for Industry 4.0 technology.

Automation Park features a smart-factory model line which integrates automation and IIOT, such as through the usage of self-ordering automated guided vehicle robots, cloud computing and data analytics to create prototypes for factory usage. The park will also offer co-working space and a fabrication laboratory for embedded systems. Automation Park works in collaboration with the Manufacturing Automation and Robotics Academy, the Center of Robotics Excellence, the Institute of Field Robotics and participating academic institutions in improving the academic curricula and training courses in related fields.

The human resource and facility development initiatives align with the government's efforts to drive the country to be a leading developer of automation and robotics technology and establish itself as a prominent powerhouse in Asia. Under the plan, Thailand expects to reduce its reliance on the importation of robotics parts, lower the operating costs of local system integrators and increase the number of system integrators over the next few years. ■



1 <https://www.eeci.or.th/en/focused/automation>

2 <https://www.nectec.or.th/innovation/innovation-service/idaplatform.html>

3 <https://automationpark.or.th/en>



LERTVILAI AND SONS CO., LTD. LEADING THE WAY IN ROBOTICS & AUTOMATION SYSTEM INTEGRATION

A key player in robotics and automation

Lertvilai and Sons Co., Ltd. (Lertvilai) has a long history of providing metal welding consumables, equipment and products in Thailand and abroad. In recent years, Lertvilai has expanded its business model from having a sole focus on metal welding products, to providing robots for spot and arc welding applications, and on to becoming a robotics & automation system integrator. Despite the company having undergone significant changes over the past 68 years, Lertvilai takes immense pride in adhering to its fundamental philosophy of 'putting customers and their needs first'.

In 1996, Lertvilai made its first foray into the robotics sector, by becoming the primary distributor of Nachi robots in Thailand. Since then, it has gone on to becoming one of the key suppliers of robots to Thailand's automobile and other key industries, serving clients in Thailand such as Isuzu, Toyota, Mazda, Sony, Toshiba, Sharp, Colgate, SCG, etc. With Thailand's robotics and automation sector expected to be worth 400-500 billion THB (approx. 12.6-15.7 billion USD) by 2021, Lertvilai is sure to play an important role in the continued growth of this S-Curve industry.

Lertvilai's growth plans in response to COVID-19 pandemic

Since establishing operations in Thailand 89 years ago, Lertvilai has been developing itself as a trusted name in metal welding and robotics and automation system integration. This trust has been built as a result of Lertvilai's consistent adaptation to the ever-changing economic environment

and customer expectations. With the innovation driven economy model of Thailand 4.0 policy, Lertvilai has started an innovation project to develop Autonomous Mobile Robot (AMR) for the manufacturing and logistics industries in the beginning of 2019 with the first prototype came out in December of the same year. In 2020, this flexibility was highlighted once again by the company's agile response to the Covid-19 pandemic. In March— during the early days of the pandemic – Lertvilai

was very busy redesigning its' first AMR prototype in order to develop and manufacture two new Multi-function Mobility AMR within the next three months, a) UVc Disinfection AMR to help disinfect hospital wards and b) Automatic Food/Medicine AMR to automatically dispense food/medicine to patients thereby reducing direct interaction with patients at risk of viral transmission. It is envisaged that this urgent and necessary shift to medical robots, will see Thailand and Lertvilai remain in a leading position within South East Asia's robotics and automation market.

Dr. Prapin Abhinorasaeth, Executive Director of Lertvilai, notes that: "Thailand has been widely recognized as one of the most successful countries when it comes to containing the spread of Covid-19. As such, whilst the world is

“With the global business landscape evolving at such a rapid pace, Lertvilai is committed to providing robotics & automation system integration solutions for the future.

From small business to large conglomerates, Lertvilai is positioned to support companies in various sectors to stay ahead of the competition.”

Dr. Prapin Abhinorasaeth,
Executive Director
Lertvilai and Sons Co., Ltd.





paying attention to Thailand’s success, we must capitalize on this opportunity to showcase our robotics expertise, thus creating additional opportunities within emerging markets such as medical robotics.” Thailand is also expected to maintain strong demand within the automobile, smart electronics, food & agriculture, and medical sectors – a true testament to the political and economic investment made in line with the Thailand 4.0 policy and other initiatives.

What support has Lertvilai and Sons received from BOI and Thai government?

As part of Thai government’s drive towards transforming the economy through Thailand 4.0 policy, Thailand Board of Investment continues to provide a range of incentives to the robotics and automation industry. This support is offered in the form of corporate income tax exemptions, innovation expense offsets, exemption of import duties on machinery, and support for the acquisition of foreign talents.

In recent years, Lertvilai has benefitted directly from a range of tax

and non-tax incentives provided by BOI. Specifically, the company’s status as an automation system integrator has seen the company granted support under BOI’s sub-section 4.5.1.1 ‘Automation machinery and/or automation equipment with engineering design, including automation system integration and control system’ of Section 4: ‘Metal Products, Machinery and Transport Equipment’. Provided with an A1 BOI Incentives, Lertvilai has received corporate income tax exemptions for 8 years. In addition, it is anticipated that the company will also be able to access future benefits related to research and innovation development offered through bodies such as the Ministry of Higher Education, Science, Research and Innovation (MHESRI).

What does the future look like for Thailand’s robotics and automation industry, in particular Lertvilai and Sons?

After decades of steady economic growth, Thailand is on the cusp of becoming an upper-middle income nation. This growth has been buoyed by Thailand 4.0 policy, and the associated

government investment in ‘smart industries’ such as robotics and automation. In 2017, the government doubled down on this commitment, announcing the commitment of a further 200 billion THB to improving industrial productivity as part of its robotics development plan. It is anticipated that this financial support will lead to more than 50% of Thailand’s manufacturing sector utilizing robotics in the coming years.

Like the vast majority of industries globally, Lertvilai and the wider Thai robotics and automation industry have had to adjust their business models rapidly as a result of the COVID-19 pandemic. Following several months of disrupted operations in Q2 of 2020, the industry has managed to bounce back with a renewed vigor. This has been due in part to the rapid appreciation by businesses of the importance of robotics and automation. As an agile, resilient and forward-thinking company that is committed to meeting the present and future market needs, it is anticipated that Lertvilai and Sons will retain a strong position in the robotics and automation market well into the future. ■



1 October 2020:
Prime Minister Chairs Consultative Meeting with Investors in Eastern Economic Corridor

H.E. General Prayut Chan-o-cha, Thailand's Prime Minister, together with Ms. Duangjai Asawachintachit, the BOI's Secretary General, and Mr. Narit Therdsteeerasukdi, the BOI's Deputy Secretary General, hosted a business consultative meeting with 16 top investors at Laem Chabang Port Customs Office, Chonburi Province. The meeting participants discussed Thailand's policy on investment and the country's commitment to facilitating foreign investment, particularly in the Eastern Economic Corridor (EEC) special economic zone covering three eastern provinces.



23 September 2020:
BOI Holds "Subcon Thailand 2020" to Promote Matching Opportunities for Global Industrial Parts Manufacturers and Buyers

Mr. Chanin Khaochan, the BOI's Senior Executive Investment Advisor and Ms. Sonklin Ploymee, the BOI's Senior Executive Investment Advisor, joined the opening ceremony of "INTERMACH & SUBCON Thailand 2020", ASEAN's leading industrial parts and business matching event. The only event held by the BOI's Industrial Linkage Development Division (BUILD), Informa Markets and the Thai Subcontracting Promotion Association, the event presents business opportunities for international manufacturers to negotiate business opportunities with parts buyers across a number of industries including automotive, electrical, electronics, machinery, construction and interior, subcontracting, robotics and automation, digital and aerospace as well as related industrial parts.



29 September 2020:
BOI Discusses post-COVID Cooperation with Japanese Embassy

Mr. Chanin Khaochan, the BOI's Senior Executive Investment Advisor, held a productive meeting with Mr. Shotaro Sano, Commercial Attaché from the Embassy of Japan in Thailand. Both sides discussed opportunities and potential areas of cooperation between Thailand and Japan for inbound and outbound investment to support both economies, especially in the post COVID-19 period.



2 October 2020:
OSOS Wins "Government Easy Contact Center: GECC" Award

Mr. Worakan Kosolpisitkul, the BOI's Director of the Investment Services Center, attended a certificate ceremony organized by the Government Easy Contact Center (GECC) from which it received a standard-level certificate (blue tier). At the presentation ceremony hosted by the Office of the Public Sector Development Commission, the certificate recipients for 2019 included one center for the gold tier, 75 centers for the silver tier, and a total 355 centers for the blue tier.



9 October 2020:
BOI Joins EXIM Mobile Clinic in Surat Thani Province

Mr. Pisut Chotaumpaikom, the BOI's Director of the Regional Investment and Economic Center 6 (Surat Thani), along with the president of Surat Thani Chamber of Commerce, and the president of the Federation of Surat Thani Industries joined the opening ceremony of the Exim Mobile Clinic. The collaboration reflected the BOI's role in supporting local entrepreneurs and investors.

THAI ECONOMY AT-A-GLANCE

Key Economic Figures



GDP Growth



Note: *Estimated value | Source: NESDC
(Data as of May 2020)

Unemployment 2020*



Headline Inflation 2020*



Source: National Statistical Office

Investment Growth



Export Value of Goods Growth



Market Profile (2019)



Minimum Wage
THB 313 - 336

US\$ Approximate
US\$ 9.7 - 10.4

Source: Ministry of Labour, BoT



Export Figures

Export value (USD million)

Jan - Dec 2018 : 252,956.98

Jan - Dec 2019 : 246,244.51

Jan - Aug 2020 : 147,399.00

Top 10 Export Markets (January - August 2020)

Rank	Value (US\$ million)	Share
United States	22,113.37	14.54%
China	19,534.84	12.84%
Japan	14,532.40	9.56%
Hong Kong	7,638.02	5.02%
Singapore	7,092.80	4.66%
Vietnam	6,994.47	4.60%
Switzerland	6,829.88	4.49%
Australia	6,384.72	4.20%
Indonesia	5,577.79	3.67%
Malaysia	5,146.18	3.38%

International Competitiveness

E-Government Development Index

2018 : 73rd | 2020 : 57th

Global Competitiveness Business

2018 : 38th | 2019 : 40th

World Digital Competitiveness Ranking

2018 : 39th | 2019 : 40th

Time to set up business : 4.5 days

Source: World Bank, WEF and IMD

Top 10 Exports

Goods / Products	Value (US\$ million)	Share
1: Precious Stones and Jewelry	15,108.80	9.93%
2: Motor Cars and Parts	12,448.33	8.18%
3: Computers and Parts	11,772.12	7.74%
4: Rubber Products	7,491.34	4.93%
5: Plastic Beads	5,035.11	3.31%
6: Electronic Integrated Circuits	4,530.26	2.98%
7: Chemical Products	4,352.54	2.86%
8: Machinery and parts	4,073.73	2.68%
9: Refined Fuel	3,624.88	2.38%
10: Air Conditioners and parts	3,532.14	2.32%

Source: Ministry of Commerce

Exchange Rates

(Data as of 15 October 2020)



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
(Data as of May 2020)

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

Investment Section,
Royal Thai Consulate-General
Thailand Board of Investment
Liebfrauenberg 26, 60313
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 Daeyoung 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

