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THAILAND INVESTMENT REVIEW

THAILAND'S BIO-CIRCULAR-GREEN ECONOMY

Living up to Global Challenges

Vol. 31 | June 2021

THAILAND BOARD OF INVESTMENT

BOI NET APPLICATION

January – March 2021

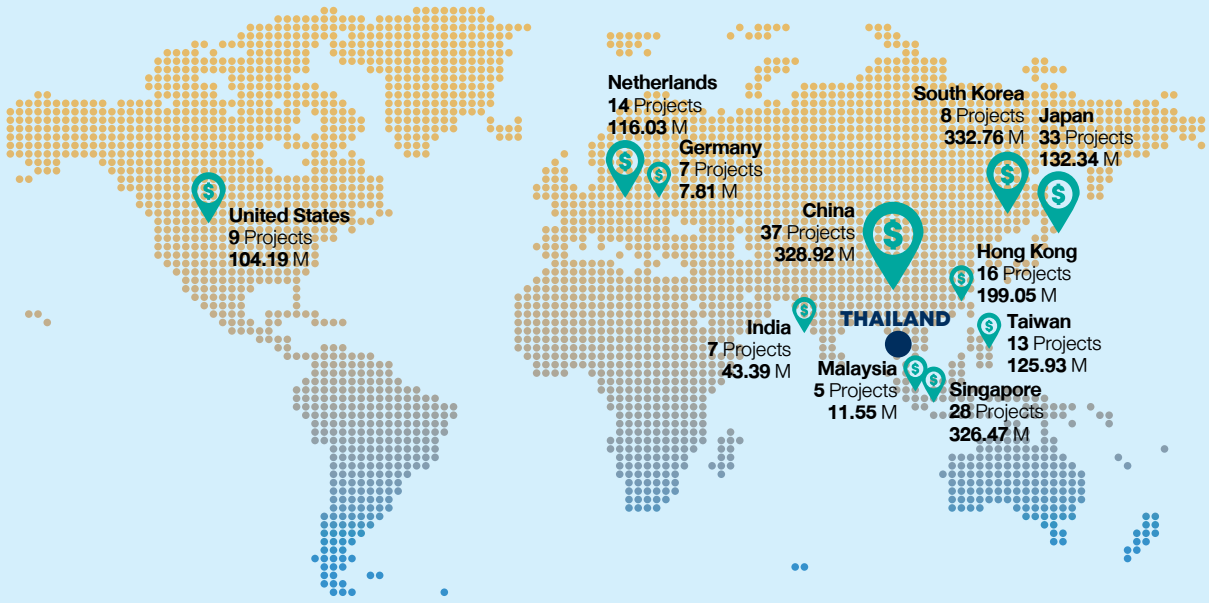
Total Investment
401 Projects
US$ 3,948.03 Million

Total Foreign Investment
191 Projects
US$ 1,967.58 Million

FOREIGN INVESTMENT BY TARGET SECTORS

First S-Curve	New S-Curve
Electronics **27** Projects I **463.36** M	**Biotechnology** **1** Projects I **0.53** M
Agriculture & Food Processing **19** Projects I **134.47** M	**Digital** **25** Projects I **5.08** M
Automotive **23** Projects I **237.93** M	**Aerospace** **1** Projects I **3.08** M
Petrochemicals & Chemicals **13** Projects I **186.28** M	**Medical** **14** Project I **424.54** M
Tourism **2** Projects I **259.39** M	**Automation & Robotics** **1** Projects I **0.09** M

FOREIGN INVESTMENT BY MAJOR ECONOMIES



Unit: US$ (US$ = 31.50 as of 25 May 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**

CONTENT

APPLYING A BIO-CIRCULAR-GREEN ECONOMY IN RESPONSE TO GLOBAL CHALLENGES

With global warming demanding rapid and far-reaching actions to reduce carbon emissions, many economies have galvanized their efforts to change towards clean energy and decarbonized living. In Thailand, action is being taken to fulfill the country's commitment under the Paris Agreement to reduce its greenhouse gas (GHG) emissions by one-fifth from its business-as-usual level, while some major economies around the world have initiated even more drastic efforts to keep the global temperature below 2 or preferably 1.5 degrees Celsius higher than the pre-industrial level by 2030.

In mid-July, the European Union announced that it will be implementing its "Fit for 55" policy with the aim of cutting GHG emissions by 55% by 2030 and achieving carbon neutrality within two decades after that. One of the legislative changes under this policy involves the implementation of a Carbon Border Adjustment Mechanism that could affect trade counterparties. China has accelerated its ecosystem for the green economy with a target of achieving zero emissions by 2060, while Taiwan, South Korea and Japan are all planning to achieve a similar target by 2050. For its part, the United States has announced plans to halve its GHG emissions by 2030 from its 2005 level, in line with the Paris Agreement.

Reinforcing BCG to Accelerate Investment

Against this backdrop, the Thai government has announced the Bio-Circular-Green (BCG) Economy concept as part of the national agenda for the country's development. It is hoped that the BCG model will steer the country's economic recovery through the period of heightened uncertainty in the global economy by increasing investment in science and technology and activities that will create sustainable development and addressing global environmental concerns.

The Thai government's BCG economy model focuses on four-pronged strategies[1] namely 1) enhancing economic value of agricultural and food products by applying biotechnology to create innovations and meet the needs of global consumers; 2) building technology and human capital in R&D of medical and pharmaceutical technology; 3) promoting bioenergy, biomaterials and biochemicals including renewable energy from waste, biomass and biogas as well as community-based power plants which will be connected through blockchain-enabled microgrids; and 4) linking tourism to the country's intellectual capital to develop niches and promote tourism in less-visited cities.

The BCG concept has set out a framework for the government to identify the direction for investment and policy over the next six years.

1 https://www.nxpo.or.th/th/en/bcg-in-action

The Thai government has targeted the total new investment in BCG sectors to be US$ 23 billion, doubling the amount of US$ 12 billion in 2026 from 2021, with investment by the private sector increasing to 30% from 20% during the period.

Through effective implementation of the BCG economy model, the investment by the private sector in the BCG sectors is projected to accelerate to 85% of US$ 30 billion in total new investment by 2030[2].

Under the scenario, the BCG economy is expected to boost the country's gross domestic product by US$30 billion, or 6% per year, driven by investment growth from both the public and the private sector.

Concrete Measures to Drive the BCG Economy

The Thai government's plan to promote investment to ensure the sustainability of natural resources; developing new skill sets for the workforce; applying biotechnology in farm and food products; and developing circular economy could shore up employment and quality of life of the Thai population while offers new business opportunities with inclusiveness in the post-pandemic recovery period.

The investment in BCG economy concepts would help Thailand maintain the competitiveness of local products and services in the world market, which sees consumers and investors increasingly influenced by Environment, Social and Corporate Governance (ESG) aspects, besides propelling the economic growth.

Appointed by the government to oversee the implementation of the BCG framework, the BCG Policy Board has outlined 13 measures which will be the direction for investment and policy over the next six years.

These are comprised of improving data-driven policymaking for the country's resources; creating a more active carbon credit market; developing the economy in rural areas through modern agriculture, food processing, and tourism; increasing the economic value of farm products; enhancing food safety standards; building the capacity of biotechnology innovation in food, pharmaceuticals, biomaterials and biochemicals; boosting the market for local innovations and promoting BCG labels; promoting green and high-value tourism; applying the biotechnology, circular and green technology concept in development plans; promoting BCG-related skills in the workforce; ramping up investment in R&D and translational facilities; supporting local startups; and attracting global talents[3].

BOI Offers Incentives for a Comprehensive BCG Ecosystem

The Thailand Board of Investment has offered a variety of investment incentives to promote the BCG Economy comprehensively based on three core business concepts, namely promoting the cost-effective use of natural resources, recycling materials as much as possible, and addressing environmental problems in line with global actions to tackle climate change[4].

The BOI offers the following exemptions on Corporate Income Tax (CIT):

Agricultural and Food Industries

- 5-year CIT exemption for the manufacture of biofertilizer and the breeding of plants and animals; the manufacture of modified starch, plant and animal oil extracts; the manufacture of food and beverage preservatives and additives; trading centers for agricultural goods; and the manufacture of modern agricultural products and plant factories

2 https://www.bangkokpost.com/business/2071455/government-banking-on-bcg-model-to-propel-recovery
3 https://www.nstda.or.th/en/news-related-to-research/research-news-year-2021/1402-bcg-policy-board-approves-strategic-plan-and-policy-measures-to-drive-bcg-agenda-2.html
4 https://www.boi.go.th/upload/content/BOIBCGEN2021_60827220decab.pdf

- 8-year CIT exemption for the manufacture of natural extracts using advanced technology, the manufacture of active ingredients, the manufacture of natural rubber products, and the manufacture of active and intelligent packaging or packaging made from eco-friendly pulp and paper.

Biobased Industry

- 5-year CIT exemption for the manufacture of biomass briquettes or pallets, the manufacture of eco-friendly polymers, and the manufacture of conventional medicine
- 8-year CIT exemption for R&D or the manufacture of products that adopt advanced biotechnology; the manufacture of fuel from farm products, waste or scraps; and the manufacture of eco-friendly chemicals or polymers

Medical Industry

- 8-year CIT exemption for the manufacture of medical food and food supplements, active pharmaceutical ingredients and targeted medicines

Paper Industry

- 5-year CIT exemption for the manufacture of pulp and paper
- 8-year CIT exemption for the manufacture of hygienic pulp and paper

Energy & Public Utilities

- 5-year CIT exemption for recycling and reuse of unwanted materials
- 8-year CIT exemption for power production from steam from garbage and renewable energy, waste treatment or disposal and energy service companies. ■

REIMAGINING THAILAND WITH A BCG ECONOMY

Faced with the challenges posed by uncertainty in the world economy, technology disruption and impacts from the global pandemic, the Thai government is focusing its efforts on enhancing the country's technology capacity to develop targeted industrial sectors under the Bio-Circular-Green (BCG) Economy model.

Under a framework that will be effective from 2021-2026, the Thai government will sharpen the country's capacity in science, technology and innovations to boost competitiveness of players across farm and food, healthcare and pharmaceuticals, bioenergy and biomaterials and tourism and creative economy.

Essentially, the BCG economic model aims to drive the country's economic growth from within by achieving the United Nation's Sustainable Development Goals[1], while maintain competitiveness in the world economy and catch up with increasing global attention of circular and green economy. Through the process of turning waste to use, regenerating the natural systems and shifting toward more environmental products and investing in energy efficiency and renewable energy, the Thai government expects the circular and green economy to create new investment opportunity among small and medium-sized enterprises and communities.

Healthcare Demand Boost Biobased Economy

With improved human resource capacity and competitive access to raw materials, Thailand has continued to attract solid investment in the biobased businesses, particularly in functional food, medical and healthcare and biochemicals. In the first quarter of 2021, the Board of Investment approved promotional incentives for five new projects in the field of advanced biotechnology with a combined investment value of approximately US$ 78 million in total[2].

Among these projects were the manufacture of amino acids as raw materials to be used in pharmaceuticals and of human milk oligosaccharide (HMO), a prebiotic which is a raw material used in milk powder for infants and adults. In addition, a company founded by local medical doctors developed and produced an innovative treatment for patients with acute lymphoblastic leukemia (ALL) with (CAR) T Cell advanced therapy medicinal products (ATMP).

Another company received BOI incentives for the production of PHA (Polyhydroxyalkanoate) bioplastic and its compound developed from organic waste. The company will use the PHA bioplastic to make a wide range of packaging products for food and medical supplies.

1 https://sdgs.un.org/goals
2 https://www.boi.go.th/index.php?page=press_releases_detail&topic_id=127717

Meanwhile, a Thai startup received approval for a project to develop and produce biopharmaceuticals, including plant-based vaccines and therapeutic proteins, using molecular pharming technology.

Thailand's investment in R&D for biological products has also increased in the wake of the rising threat of pandemics and rare diseases. Also known as biologics, these products are developed from living cells such as bacteria or plant and animal cells as an innovative approach to the treatment of many diseases. Data from the Thai Food and Drug Administration (FDA) has shown that the country's spending on biologics increased substantially from US$ 0.5 billion in 2009 to US$ 1.7 billion in 2018, with most of the extra spending attributed to imports.

The BCG economy aims to reduce the import value of pharmaceuticals and vaccines through intensive capacity building of technology and human capital in R&D as well as clinical research and product registration of pharmaceuticals and medical devices. With an objective to develop preventive and targeted healthcare, Thailand's BCG policy will also include facilitating use of genetic data and clinical research among researchers and industry.

To drive R&D, innovation and commercialization in the medical and healthcare sectors, Thailand Center of Excellence for Life Sciences (TCELS) has recently teamed up with the private sector for the development and manufacture of herbal and conventional medicines derived from cannabis and hemp extracts.

Enhancing Farm Productivity and Food Innovation

A key prong of the strategies to drive the BCG economy is to enhance the productivity of the farm sector and improve the economic value of farm products which will benefit the majority of the Thai population and cater to the global trend of growing health and environmental consciousness.

Under the BCG economy model, the development of local farm sector calls for more intensive use of digital technology such as agritech and upgrade of standard and value of the country's major farm produces such as rice, sugarcane, rubber, tapioca, palm, maize, fruits and vegetables, shrimp and dairy cattle, as well as promoting goods that generate higher value such as herbs, fancy fish and alternative protein.

Thailand is capturing opportunities from the growing demand for plant-based meat and protein from insects especially crickets, as global consumers are becoming more aware of the huge carbon footprints from livestock grown for meat and dairy products.

Although alternative protein is still a fledgling industry in Thailand, growing demand should create a boon for farmers who grow plants that are rich in amino acids, such as soybeans and grains. The National Science and Technology Development Agency is extensively promoting modern insect farming and processed proteins from them.

The Thai government is also increasing its support to innovations of novel food for groups of people such as patients and the elderly, as well as functional food. With these measures, the government targets the food industry contributing 5%, US$ 28 billion, in 2024, up from US$ 20 billion, 4% of GDP, in 2019.

Reducing the Carbon Footprint

To promote Thailand's transition towards a low-carbon economy, the latest national Power Development Plan targets the country's renewable energy at 30% of total energy production, or 17 Gigawatts, by 2037, doubling from 15% at present. The projection reflects the government's policy to facilitate rooftop solar, the private sector's large-scale renewable energy

projects and waste-to-energy and biomass in local communities under the "Energy for All' scheme.

Thailand's energy masterplan also calls for state-owned enterprises to lead investment of approximately US$ 6.35 billion in smart grid, energy storage and blockchain to ensure efficient and resilient energy transmission which links energy production from communities.

As a leading global supplier of sugarcane and cassava, Thailand is also attracting investment for biodiesel and bioethanol as well as biochemicals, especially at the Eastern Economic Corridor[3], the country's pilot high-technology special economic zone which offers cutting-edge R&D complex and facilities. For energy and biochemicals, the BCG model aims to promote ethanol production standards to achieve industrial and pharmaceutical grades, as well as producing ethanol fuel cells for electrical vehicles.

To promote the circular economy, the government will provide support to recycling waste such as sugar cane leaves and rice straw in each region; reduce food loss and food waste; and support more environmentally friendly construction and smart city development.

Linking Tourism to Creative Industry

With tourism has long been the key driver of the Thai economy and employment, the BCG Economy looks to link tourism to targeted markets such as tourism for wellness, food culture, eco-tourism, arts, and sports.

The country also intends to drive the tourism sector towards greater sustainability through efficient tourist management, monitoring the impacts of tourism, preserving natural resources and cultural heritage. As well, aims to promote less-visited cities through improvement of transportation network and the use of digital platforms. ■

3 https://www.eeco.or.th/en/biofuel-and-biochemical

CARBON PRICING: KEY DRIVER OF GREEN ECONOMY

Thai corporations are pushing forward carbon pricing as a cost-effective mechanism to facilitate lower carbon emissions to raise their environment, social and governance (ESG) performance and fulfill the country's commitment under the Paris Agreement[1] of cutting greenhouse gas emissions by one-fifth from the business-as-usual level within a decade.

In this respect, the recently launched "Thailand Carbon Neutral Network" (TCNN) aims to build the capacity of members to participate in the carbon credit market, which incentivize businesses to fight the climate crisis with investment in green technology, such as energy efficiency enhancement and renewable energy, waste management and support tree planting and forest conservation.

One of TCNN's core missions is to accelerate local businesses' engagement in the Thailand Carbon Credit Exchange Platform, co-developed by the Thailand Greenhouse Gas Management Organization (TGO) and the Federation of Thai Industries in 2015. The platform has facilitated Thailand Voluntary Emission Reduction Program (T-VER)[2], which is a mechanism for individuals or organizations to certify and register the amount of greenhouse gas they have reduced as T-Ver credits. These credits will be exchanged in TGO's carbon market which enables those having carbon footprints exceeding their targeted levels to offset their extra emissions by buying carbon credits from companies which perform better. To offset the GFG emissions, they can also adjust their operations through projects such as increasing the usage of renewable energy, lowering carbon emissions through better waste management, improving energy efficiency in transportation and investing in tree planting projects.

By 2020, there were 91 registered projects on the platform committed to reducing emissions by 5.28 metric tons of carbon dioxide equivalents (Mt CO_2eq). With Thailand's business-as-usual level of GHG emissions expected to reach 555 Mt CO_2eq in 2030, the country's aim to cut its emissions by 20.8% equates to 115.6 Mt CO_2eq. of reductions, highlighting the need for further adjustments.

According to TGO, the projects which contributed most to the reduction of carbon emissions in 2020 were renewable energy (39%), followed by energy efficiency enhancement (19%), renewable energy from waste (18%), waste management (17%) and greeneries and forest plantation (6%).

1 Party (unfccc.int)
2 http://carbonmarket.tgo.or.th

The carbon credit scheme is one of the Thai government's key approaches under the National Climate Change Master Plan to strengthen the ecosystem of greenhouse gas reduction and energy efficiency as it offers a flexible mechanism for businesses and instills confidence among investors in the energy security and cost-effectiveness needed for the economy to progress toward a green economy.

In June 2021, the Carbon Markets Club was set up by large companies from the energy, banking and transportation industries to promote carbon trading through T-VER and the Renewable Energy Certificate issued by the Electricity Generating Authority of Thailand (EGAT). The club's action plan includes transitioning from over-the-counter mode to a digital platform for trading, registration and accreditation as well as integrating blockchain trading technology.

Taking into account the shift from fossil fuels toward renewable energy, local businesses, led by the Federation of Thai Industries, have also founded the RE 100 Thailand Club[3] with more than 500 members to promote adjustments across the economy, including in the industrial, transportation, financial and retail sectors. The club aims to promote the use of renewable energy, investment in clean energy, and development of the ecosystem for greenhouse gas reduction.

Meanwhile, findings from the Bank of Thailand's research revealed that green financing by local banking has increased steadily to reach 2.5% of total lending at the end of 2020. The growth has been led by loans taken to finance renewable energy production. There were 844 renewable energy plants in Thailand in 2020, compared with 357 in 2013. Excluding green energy, the banking system's financing grew to approximately US$3 billion in 2020, up from US$ 2 billion in 2013. ■

3 About us - RE100 Thailand Club

13 Measures to Drive Thailand's BCG Economy (2021-2027)

1. Develop big data on the country's biodiversity, cultural capital and local wisdom to inform policy planning on bioresources to support the local economy and tourism.

2. Replenish the country's national resources through the carbon credit market and accelerate R&D in plant and animal breeding and resource management.

3. Match the demand and supply in each of the country's regions and integrate the local economy into the regional economic corridor covering alternative and modern agriculture and processing, tourism, trade and investment.

4. Upgrade the technology needed for the production of premium agricultural products, and maximize economic value from agricultural products such as seeds, fruits, ornamental plants, herbal plants, industrial crops, insects, and livestock.

5. Improve the quality and safety of street food and promote the adoption of automation and advanced food standards to enhance the competitiveness of local food production.

6. Strengthen the country's bio-based economy through innovations in functional food and ingredients, biochemicals such as oleochemicals, carbon-based materials and biopharmaceuticals.

Source: The National Science, Technology and Development Agency

7. Boost the market for local innovations through public procurement of products from the innovation list such as medical devices, facilitate innovations, promote BCG labels such as for carbon footprints and environmental impacts, implement carbon pricing and polluter pays tax principle, and encourage community energy.

8. Promote sustainable, green and high-value tourism with a focus on carbon neutrality; promote tourism in less-visited cities and develop big data on tourism.

9. Promote a sustainable economy by focusing on the adoption of green and circular economy technology.

10. Ramp up investment and facilitate R&D and commercialization facilities including pilot plants, quality standard testing certification and accreditation facilities to raise the standard of goods such as organic produce, biochemical products, biopharmaceuticals medical devices and medical supplies.

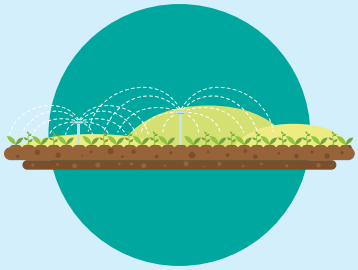
11. Support BCG startups by enhancing the adoption of technology; the development of skilled human resources; and access to public infrastructure, expertise and financial resources.

12. Develop human resources in the BCG Economy at all levels, ranging from the grassroots and community level, to SMEs, technology developers, startups and tech companies.

13. Integrate the local economy into the global market by attracting global talents while also strengthening the R&D network, boosting trade and investment through incentive programs and implementing a smart visa project to promote the ecosystem.

BOI's Tax Incentives for the BCG Economy

Agriculture and Agribusiness

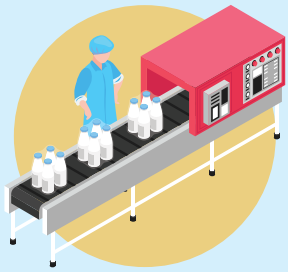


Activities	CIT Exemption (Years)
Manufacture of biofertilizers such as organic fertilizer, nano-coated organo chemical fertilizer, biopesticide	5
Plant and animal breeding (without biotechnology application)	5
Economic crop plantation	8 (No Cap)
Propagation and husbandry for livestock and aquatic animals (except shrimp)	3
Deep sea fishery	5
Grading, packaging and storage of plants, vegetables, fruits and flowers	5–8

Activities	CIT Exemption (Years)
Manufacture of modified starch or starch made of other plants	5
Manufacture of oil or fat from plants or animals	5
Manufacture of natural extracts and products made from natural extracts (except medicines, personal care products and cosmetics) ● Production using advanced technology ● Production using less advanced technology	 8 5
Manufacture of active ingredients made from natural raw materials	8
Tannery or leather finishing	5

Activities	CIT Exemption (Years)
Manufacture of natural rubber products (except rubber bands, balloons and rings) ● Primary processed rubber ● Secondary processed rubber	 3 8

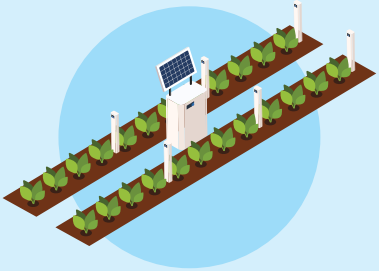
Activities	CIT Exemption (Years)
Manufacture of products made from agricultural by-products or waste (except those without advanced production process)	3



Activities	CIT Exemption (Years)
Manufacture or preservation of food, beverages, food additives or ingredients using high technology (except snacks and beverages)	5

Activities	CIT Exemption (Years)
Manufacture of active packaging (helping maintain product properties) and intelligent packaging (helping indicate changes of products) excluding RFID	8
Manufacture of parts and ingredients with intelligent properties	3
Special grade recycled plastic and related products	8
Special grade compound plastic and related products	5
Manufacture of plastic packages with special properties	5
Manufacture of eco-friendly pulp and products and recycling pulps and paper	3–8
Manufacture of paper or high-performance paper products	5

Activities	CIT Exemption (Years)
Trading centers for agricultural goods	5



Activities	CIT Exemption (Years)
Manufacture of modern agricultural products or services related to modern agriculture such as tracking systems; resource regulation systems such as water, fertilizers, and medicines; and smart greenhouse systems	5 (No Cap)

Activities	CIT Exemption (Years)
Plant factory	5

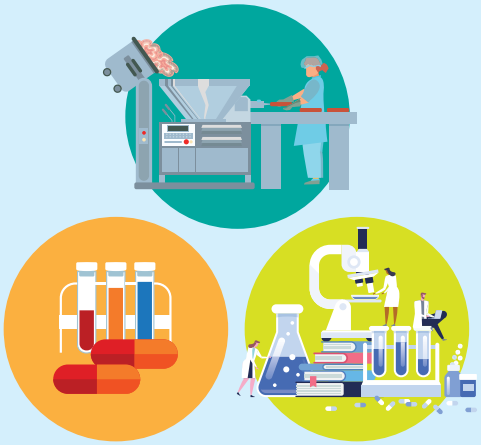
Biobased Industry

Activities	CIT Exemption (Years)
Energy production from agricultural products including scrap, garbage and waste	
• Manufacture of fuel made from agricultural products	8
• Manufacture of fuel made from agricultural scrap, garbage and waste such as biomass to liquid (BTL), biogas from wastewater	8
• Manufacture of biomass briquettes and pallets	5

Activities	CIT Exemption (Years)
Manufacture of eco-friendly chemicals or polymers and products made from eco-friendly polymers	
• Manufacture of eco-friendly chemicals or polymers and products made from them	8
• Manufacture or products from eco-friendly polymers	5

Activities	CIT Exemption (Years)
Biotechnology	
• R&D activities and/or manufacture of seed industry products; improvement of plants, animals or microorganisms using biotechnology	8 (No Cap)
• R&D and/or manufacture of biopharmaceutical agents using biotechnology	8 (No Cap)
• R&D and/or manufacture of diagnostic kits for healthcare, agriculture, food and the environment	8 (No Cap)
• R&D and/or manufacture of biomolecule and bioactive substances using microorganisms, plant cells and animal cells	8 (No Cap)
• Manufacture of raw materials and/or essential materials for molecular biological R&D, experimenting, testing or quality control services and/or production of biological substances	8 (No Cap)

Medical Industry



Activities	CIT Exemption (Years)
Manufacture of medical food or food supplements	8

Activities	CIT Exemption (Years)
Active Pharmaceutical Ingredients	8

Activities	CIT Exemption (Years)
Manufacture of medicines	
• Targeted medicines	8
• Conventional and traditional medicines	5

Paper Industry

Activities	CIT Exemption (Years)
Manufacture of pulp or paper	5–8

Activities	CIT Exemption (Years)
Hygienic pulp or hygienic paper	8

Activities	CIT Exemption (Years)
Specialty pulp or specialty paper	5

Energy and Public Utilities

Activities	CIT Exemption (Years)
Production of electricity or electricity and steam ● From garbage or refuse-derived fuel ● From renewable energy such as solar, wind, biomass and biogas	8 8 (No cap)

Activities	CIT Exemption (Years)
Energy Service Company (ESCO)	8 (No Cap)

Activities	CIT Exemption (Years)
Energy Service Company (ESCO)	8 (No Cap)

Activities	CIT Exemption (Years)
Energy Service Company (ESCO)	8 (No Cap)

Activities	CIT Exemption (Years)
Energy Service Company (ESCO)	8 (No Cap)

MAKING BCG PATHWAYS

> “Thailand has a very large agricultural sector that can serve as a shock absorber, like a reservoir, for crises. There’s a certain charm in the agricultural sector that makes many people seek refuge in it as people always keep going back to the old way of living with its quality of life. As well, natural resources in Thailand have been quickly restored during the COVID-19 pandemic. Tourism resources have recovered very quickly, including the restoration of coral reefs, which benefits local communities.”

Dr Narong Sirilertworakul
President of the National Science and Technology Development Agency (NSTDA)

The Thai government has announced that the Bio-Circular-Green (BCG) Economy will be high on the national agenda to drive the country’s post-pandemic economic recovery and achieve sustainable development in every dimension. The BCG Policy Board, chaired by the Prime Minister, has outlined strategies and action plans to actualize the BCG concept which essentially focuses on enabling the digital platforms to better facilitate development.

The BCG action plans set out to achieve sustainability by 2030 in line with the United Nations’ Sustainable Development Goals (SDGs), encompassing sustainable environment, food and health security, poverty reduction, employment, access to natural resources and equality.

Dr Narong Sirilertworakul, the President of the National Science and Technology Development Agency (NSTDA), which is tasked with carrying out secretarial duties for the BCG Board of Directors, shared with us the current status of the BCG concept in the Thai economy and its future outlook.

Q: What is the role of the BCG Economy in Thailand's economic development?

A: As many countries are discussing the biobased, circular and green economic models, Thailand has conceptualized the BCG Economy by combining these frameworks all together in line with Thailand's effort to achieve the SDGs which align with the sufficiency economy philosophy concept. The key fundamental of Thailand's economic strengths is its diverse biological resources. Additionally, the Thai economy is endowed with cultural diversity and the country plan to maximize its use to create well-being for its citizens under sustainability framework. Thailand will also improve the management of economic activities based on biodiversity and diverse culture to enable us to achieve our potential in industries such as the agro-industry, food industry, tourism industry, clean energy and biochemical industry as well as public healthcare. If Thailand can leverage the scientific knowledge, technology and innovations in our products and services based on our wealthy biodiversity, cultural diversity and creative economy, the country will benefit from enhanced and sustainable economic opportunities.

Despite the persistent COVID-9 pandemic, the world population continues to have demand for safe and high-quality food, even more so, in fact. Therefore, it is a priority for Thailand to upgrade the food supply chain to ensure we produce safe and environment-friendly products with safe agricultural practices and safe food processing standards, as well as employ traceability technology to create added value rather than contending with high exports of farm commodities as we did previously. We will also be able to apply science and technology to our farm product commodities to produce biochemical products, functional foods and ingredients and healthcare products.

Q: What is Thailand's competitive advantages in the BCG Economy model?

A: Thailand has ranked high globally as a key destination for wellness and healthcare tourism, but the country has to import a large number of its pharmaceuticals and medical devices. This trend represents opportunities for local innovations and products as substitutions. Thailand's potential in terms of innovations in the food and medical industries relies on strong agricultural biodiversity. Moreover, the country stands to benefit from good management of natural resources and cultural capital to promote eco-tourism and sustainable tourism, with a focus on the development of tourism in less-visited cities. With strong cultural capital, Thailand is famous for providing attentive care in public health and medical services. Along this line, Thailand's internationally famous street foods should also be upgraded in terms of quality through safe agricultural and food products, food machinery and good hygiene practices (GHP) to be more attractive to tourists.

Thailand's natural endowment of biodiversity will be the cornerstone of the country's economic development in the future, with more efficient and sustainable management. The country's effort to replenish its natural resources will also contribute to the global collective actions in addressing climate change.

Thailand's score on the Sustainable Development Goals Report 2021[1], which benchmarks the country's progress against 17 SDGs, stood at 74.2, ranking it 43rd out of a total of 165 countries under assessment, up from 59th in 2018. Thailand scored highest among the ten-membered Association of Southeast Asian Nations. On the Global Green Economy Index[2], published by the US-based consultancy, Dual Citizen, Thailand stood in 38th place out of 141 countries surveyed in 2018, based on the country's performance in four key areas of leadership & climate change, efficiency sectors, markets & investment, and the environment. Thailand also has the highest number of carbon footprint certified products in Asia for locally-manufactured products, at around 4,600 products receiving a carbon footprint label.

Q: How do you foresee the foreign investment trend under the BCG Economy Model?

A: Thailand has performed well in improving its ease of doing business, ranking 21st out of 190 countries on the World Bank's Global Ease of Doing Business in 2020, with the target of continuing to raise its performance to be among the world's top ten.

As a production base for bioplastic, Thailand is an important investment location for many leading global companies. As a food exporter, Thailand is the eleventh largest in the world. The country was ranked 31st out of 140 countries on the Travel & Tourism Competitiveness

1 https://dashboards.sdgindex.org/profiles/thailand
2 https://dualcitizeninc.com/global-green-economy-index

Index in 2019. Meanwhile, in the 2020-2021 Medical Tourism Index, Thailand was ranked 17th in the world.

These indicators underline Thailand's readiness to drive its BCG Economy in many areas including food, agro-industry, public healthcare, medicine and tourism.

The Thai government has focused on the BCG Economy as the priority for future development, with a committee set up to drive development at the national level. Chaired by the prime minister, the BCG Policy Board has set out four strategies effective from 2021 to 2027: 1) promote the economic sustainability of natural resources and biodiversity, 2) strengthen communities and the grassroots economy, 3) upgrade technology in the industrial sector, and 4) build resiliency to meet global challenges.

Thailand has a very large agricultural sector that can serve as a shock absorber, like a reservoir, for crises. There's a certain charm in the agricultural sector that makes many people seek refuge in it as people always keep going back the old way of living with its quality of life. As well, natural resources in Thailand have been quickly restored during the COVID-19 pandemic. Tourism resources have recovered very quickly, including the restoration of coral reefs, which benefits local communities.

Nevertheless, Thailand needs to improve its traditional agriculture by reducing its dependency on commodity types of produce and make use of the endowed biodiversity. For example, in recent years, Thailand was successful in upgrading the seed industry through the adoption of technology and collaboration among relevant parties.

The country has a very high potential to benefit from raising edible insects to produce alternative protein, as global consumers are shifting away from livestock which releases significant greenhouse gas emissions.

Moreover, there is a pent-up demand for healthcare and wellness services as the global population have more health awareness but are now facing travel constraints.

Overall, Thailand is aiming to improve its readiness by utilizing various raw materials to develop healthy diets, medical foods, medical devices, pharmaceuticals and vaccines.

Q: What specific areas of the BCG ecosystem should the government focus on?

A: Key to the government's action plans to strengthen the ecosystem for the BCG Economy is the development of human resources to be equipped with the knowledge and new skill sets needed. This skill development will occur not only in manufacturing but also in the agricultural and service sectors such as logistics, transportation and management. For example, the logistics of agricultural products and food products is different from the logistics of electronic products and goods that are not perishable. These businesses are different, so the investment promotion is different.

On top of that, with measures such as facilitating long-stay visas, Thailand is focusing on attracting talents who are engineers, academics, and researchers to work in the country. The country is also offering incentives to manufacturers who recycle industrial waste or deploy clean technology.

The Thai government has ramped up its investment in infrastructure to support industries to scale up and to facilitate technology localization which offers solutions that enable us to apply world-class knowhow to make the best use of our raw materials. ■

HUGE OPPORTUNITIES FOR INVESTMENT IN THAILAND'S CIRCULAR ECONOMY

With Thai policymakers having recognized that introducing circular economy principles in production and trade within the waste hierarchy (i.e. reduce, reuse, recycle) can provide solutions to current unsustainable production and consumption patterns, Thailand has introduced its Roadmap on Plastic Waste Management. Effective from 2018 to 2030, the plan is aimed at reducing or banning single-use plastic (SUP) products and replacing them with more environmentally-friendly alternatives.

> "The global returnable packaging market is projected to grow from $37 billion USD in 2018 to $59 billion USD by 2026. This is another huge opportunity for businesses to invest. It also creates more jobs and has many other secondary benefits, such as the tourism industry. Thailand has huge potential for young startups. It is a very highly digitalized country with great opportunities for reverse logistics and value retention processes."
>
> **Mr. Kai Hofmann**
> Project Director at
> Deutsche Gesellschaft für
> Internationale Zusammenarbeit
> (GIZ) GmbH

Taking this commitment even further, the Thai government has partnered with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH[1], a development agency which supports the German government in its mission to promote international cooperation for sustainable development. One area under the sustainable development framework that GIZ Thailand has been implementing is Sustainable Consumption and Production (SCP).

The projects related to SCP aim at reducing waste from single-use plastic products with a focus on upstream strategies of prevention and preparation for re-use. They combine policy advice on the circular economy, capacity development for key stakeholders, local government pilot activities and support for innovative business models tackling SUP prevention.

1 https://www.thai-german-cooperation.info/en_US

Project Director, Mr. Kai Hofmann, talks about the benefits of the project in terms of environmental impacts and investment opportunities.

Could you please explain the SCP project you are working on with the Thai government?

We are working on Sustainable Development Goals (SDGs) 12, ensuring sustainable consumption and production patterns, which covers eco-labeling, green public procurement (GPP), and the circular economy. SDG target 12.7 specifically deals with promoting public procurement practices that are sustainable, in accordance with national policies and priorities.

Thailand has started its BCG (Bio – Circular – Green economy) strategy, and one of our focuses is to support Thailand in the C pillar of the BCG strategy, the circular economy. We can share experiences of how Germany has implemented measures. For example, in the EU, we have developed the Circular Economy Action Plan. Thailand has now done something similar and they are requesting our support specifically on the plastic aspects.

One of the requests from the government is to support the action plan on packaging prevention and to develop a circular packaging legal framework under the act. Also, we are conducting market analysis to assist with the implementation of support measures, in terms of regulatory, fiscal and economic incentives.

We are also supporting the second pillar: standard making. This is called Design for Recycling and includes minimum standards of, for example, beverage containers so that they can be recycled more easily. We are also helping with the development of guidelines for mainstreaming the standards in the FMCG (fast moving consumer goods) industry. We are also supporting the concept of sourcing and labeling bio-based and bio-degradable plastics.

As a specific action, we are supporting a pilot project called Single Use Plastic Prevention in Phuket. On this, we are working together with the municipality and business community, including the Hotel Association of Phuket, two malls and some Thai startups which are producing alternatives to SUP. We're hoping that the TAT (Tourism Authority of Thailand) will take this up to promote Phuket as a green tourism destination.

What strategy should Thailand take to reduce SUP?

It is important to understand that our current economy is linear. It takes virgin plastic, makes SUP products out of it, sells them and then they become waste. This is unsustainable and the costs for this unsustainability are passed on to future generations and the community as the oceans and beaches are damaged which obviously affects tourism.

A circular economy is fundamentally different. In simple terms, in a linear economy, we mine raw materials and process them into products that are thrown away. In a circular economy, we close the cycle of these raw materials. This requires much more than just recycling. It changes the way the value is created and preserved. Production processes are changed from unsustainable to sustainable and new business models are applied.

This can be achieved by using the same goods for more people. You can take the examples of shared cars or multi-use packaging. In the EU, and now similarly in Thailand, we banned the use of SUP drinks containers and replaced them with reusable containers that you either bring yourself or return to the store.

We are introducing this kind of multi-use packaging system in pilot projects in Indonesia and Malaysia, and later in Thailand, for sectors such as food delivery. The COVID-19 pandemic has caused a 15% increase in SUP, mostly because of food deliveries. This can be replaced with multi-use packaging. We have to introduce a reverse logistics system --- to return those containers, clean them, make sure they are hygienic, and then re-use them.

What kind of business activities or investment do you recommend to promote the use of multi-use plastic, reduce SUP or change consumer behaviors?

Figures from the Ellen MacArthur Foundation[2] show that by replacing just 20% of the SUP that is avoidable, we could reduce 6 million tons of plastic so there are huge opportunities for businesses to invest there.

The global returnable packaging market is projected to grow from $37 billion USD in 2018 to $59 billion USD by 2026. This is another huge opportunity for businesses to invest. It also creates more jobs and has many other secondary benefits, such as tourism.

Thailand has huge potential for young startups. It is a very highly digitalized country with great opportunities for reverse logistics and value retention processes.

For instance, one of the opportunities where we can produce economy is in the elimination of packaging from the first part, so new packaging design or other systems of delivery present opportunities, such as in reverse logistics machines and the collection of plastics.

Thailand's Pollution Control Department is currently preparing an extended producer responsibility law, which will transfer the cost responsibility for collecting and sorting plastics from the community, from the public sector, to the private

2 https://www.ellenmacarthurfoundation.org/assets/downloads/Plastic-Packaging.pdf

sector. The polluter who brings the plastic into the system has to pay. For example, in Germany, companies have to prove that they have collected and recycled at least 80% of the plastics they introduced into the market. From this, a collection, sorting and recycling infrastructure has huge investment possibilities. Alternative material is another possibility. Thailand already has great startups turning agricultural waste into compostable containers. Although they are single use, they are definitely helping. It's a double win because the agricultural waste that is normally burned causing pollution is turned into a valuable and compostable product that can replace plastic. This is a great strategy and an excellent investment opportunity.

What does the circular economy offer in terms of job creation or other economic factors?

The circular economy has enormous opportunities, but fundamentally, it is an innovation agenda and innovation triggers investment into new business models and creates economic opportunity. However, it also creates resilience. For example, during the pandemic, some resources have become increasingly less available on the global market. Developing a strong circular economy means we keep the resources in the economic system as long as possible and that makes us more resilient.

The great opportunity for Thailand here is that you have great designers, great innovation potential, and a young digital population that is eager to develop new business models in the circular economy. I see great potential for Thailand to jump ahead of other countries in this regard.

Global powers, such as the EU, US and now even China, are focusing more on climate change, increasing their efforts at reducing greenhouse gas emissions. How can Thailand accelerate its green business model?

We have to understand that we are all in the same boat. We have only one planet and if we don't make a collective effort to reduce greenhouse gas emissions, all of us will suffer.

Thailand is among the frontrunners in Southeast Asia to embrace this agenda. Together with the German government over recent years, Thailand has made drastic strides in getting its nationally determined contributions up to speed. And we hope to see further improvement in the areas of promoting renewable energy and energy efficiency, addressing food loss and industrial-based pollutions such as in construction, manufacturing and mining industries. ■

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

2020 −6.1% | 2021*f 2.5–3.5%

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

Unemployment
Dec 2020*

1.5%

Headline Inflation
Average 2020*

-0.85%

Source: National Statistical Office, Ministry of Commerce

Investment Growth

2020 −4.8% | 2021*f 5.7%

Export Value of Goods Growth

2020 −6.6% | 2021*f 5.8%

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 – April 2021 : 81,413

Source: Ministry of Commerce

Top 10 Export Markets (January - March 2021)

Rank	Value (US$ million)	Share
United States	12,146	15%
China	10,730	13 %
Japan	7,940	10 %
Vietnam	4,104	5 %
Malaysia	3,690	4.5%
Australia	3,503	4.3%
Hong Kong	2,570	3.1%
Indonesia	2,570	3.1%
India	2,530	3.1%
Singapore	2,299	2.8%

International Competitiveness

Global Competitiveness
2018 : 38th **2019** : 40th
Source: World Economic Forum

World Digital Competitiveness
2019 : 40th **2020** : 39th
Source: IMD

Ease of Doing Business
2019 : 27th **2020** : 21st
Source: World Bank

Top 10 Exports

Goods / Products	Value (US$ million)	Share
1. Vehicles and Parts	9,518	11.69%
2. Computers and Parts	6,325	7.77%
3. Rubber Products	4,894	6.01%
4. Plastic Pellets	3,291	4.04%
5. Chemical Products	2,696	3.31%
6. Integrated Circuits	2,468	3.03%
7. Machinery and Parts	2,432	2.99%
8. Air Conditioners and Parts	2,410	2.96%
9. Jewelry Products	2,340	2.87%
10. Refined Fuel	2,231	2.74%

Source: Ministry of Commerce

Exchange Rates
(As of 25 May 2021)

$ THB 31.50 | £ THB 44.85 | € THB 38.68 | ¥ THB 29.20 (100 Yen) | ¥ THB 4.97

Source: Bank of Thailand

Tax Rate

Corporate Income Tax: 0 – 20%
Personal Income Tax: 5 – 35%
VAT: 7%
Witholding Tax: 1 – 15%

Source: the Revenue Department
(As of May 2021)

THAILAND BOARD OF INVESTMENT

ABOUT BOI

The Office of the Board of Investment (BOI) is the principle goverment 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

BOI Marketing

Add Friends

www.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 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
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