



COUNTRY PRIVATE SECTOR DIAGNOSTIC

CREATING MARKETS IN THAILAND

Rebooting Productivity for Resilient Growth

Executive Summary

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EXECUTIVE SUMMARY

Thailand's initial strong economic growth after the 2008 global financial crisis, and its subsequent plateauing as a middle-income tier economy, is well-documented, and a rich body of previous analyses have provided recommendations for how Thailand can jump-start its attempt to become a high-income economy. The World Bank Group's Thailand Country Private Sector Diagnostic (CPSD) endeavors to build on this work by focusing on the private sector's contribution to that vision of high growth, which assumes an even higher priority now, given the impact COVID-19 has had on the economy.

This CPSD argues that addressing existing investment constraints and implementing an innovation- and knowledge-led growth model, are two actionable projects Thailand urgently needs in order to adjust the trajectory of its current path of economic growth toward high-income status. This model also could create a powerful pathway to generating high-quality jobs by moving workers into high-productivity sectors, and to increasing the participation of women in the labor force by adopting new technologies. The CPSD sets out specific private investment opportunities that could create innovative markets and generate sustainable growth, but also identifies the constraints that might impede the realization of those opportunities. In providing recommendations for addressing these constraints, the CPSD underscores the importance of specific interventions that should become prominent in the reform agenda.

The factors that contributed to Thailand's high economic growth in recent decades are unlikely to yield similar dividends in the current period and, unless Thailand urgently shifts gears, its aspiration to become a high-income country by 2037 may be unrealistically ambitious. The growth prospects of the export-led model that not long ago powered so much of Thailand's economic growth have diminished significantly, owing to a contraction in productivity. Average growth in total factor productivity (TFP) stagnated from a high of 3.6 percent per annum during the early 2000s to just 1.3 percent during 2009–2017. Private investment declined from more than 40 percent in 1997 to 16.8 percent of GDP in 2019, while FDI flows and participation in global value chains have also shown signs of stagnation. Structural transformation is unlikely to continue moving resources from agriculture to industry, at the pace it once did. Manufacturing shows modest forward linkages but remains dependent on foreign inputs and faces increasing competition from regional neighbors. Travel and tourism, the country's mainstay in services, present relatively fewer linkages and diversification prospects when compared to other service subsectors. The increasing frequency of natural disasters is also a threat to sustained economic growth. Furthermore, high economic growth has come at the cost of the environment and social inclusion. Greenhouse gas emissions (GHG) have risen markedly during this recent period of rapid growth, as has inequality between the country's regions and firms.

Additionally, the COVID-19 pandemic has dealt a blow to the economy, aggravating the structural challenges. In 2020, the economy is estimated to have contracted by 6.1 percent. This is sharply steeper than the decline that occurred during the 2008 Global Financial Crisis (0.3 percent in 2008) and second only to the 7.2 percent contraction in 1998, the sharpest full-year economic contraction in the past 25 years. The coronavirus outbreak has caused significant loss of economic output and employment across a range of sectors, reversing hard-won gains in poverty reduction. It has negatively impacted firm operations, resulting in corporate debt-service difficulties, with small- and medium-sized enterprises (SMEs) suffering disproportionately. Recent data for the East Asia

and Pacific (EAP) region suggest that even the COVID-19 recovery could be uneven. The devastating effects of the pandemic shutdowns are likely to widen inequality, considering the nature of the present inequalities in access to social support and digital technologies.

To shift gears, the country must use the pandemic as an opportunity to build back better. But even more crucially, Thailand's engine of growth needs to be fueled by innovation and knowledge, and in a way that demonstrates resilience and agility. In pursuing such growth, Thailand can leverage the opportunities that arise from four major trends that are outlined below. However, to achieve its aspirations, the government will need to move swiftly with bold reforms.

To meet these short- and medium-term challenges, Thailand needs to foster a new innovation-led growth model to jumpstart its quest to reach high-income status and create better jobs in the future. Thailand can leverage its manufacturing capabilities to produce complex products, develop linkages, and at the same time upgrade its service model toward global innovator services. To follow this path, Thailand will have to build a system that can enable firms to adopt technology, rely on an expanded skill base and continuous innovation, and create more opportunities for resilient growth and the inclusive participation of all firms. The pandemic recovery agenda should be leveraged to address the long-term structural weaknesses and constraints holding back innovation and productivity and set the country back on track to meet its aspirations of becoming a high-income country by 2037. This innovation-led growth model will also provide the opportunity to shift jobs toward highly productive activities, countering one of the most important structural challenges of the Thai labor market—an ageing population—and balancing the negative effects of recent cuts in work hours, business closures, and the movement toward agricultural activities brought about by the COVID-19 pandemic. An innovation-led economic growth model can help redress the environmental damage that was done during the high-growth years, meet new international climate targets, and achieve the country's decarbonization agenda.

The government's commitment to developing a vision that relies on a knowledge-based economy is commendable, but advancing critical reforms is essential to attaining this vision. To advance an innovation-led growth model, the government has developed a strong vision, formulated strategies, and proposed action plans at all levels of the country and across sectors. These include the Thailand 20-Year National Strategy with its implementation through the 12th National Economic and Social Development Plan (NESDP) and Thailand 4.0, all of which feature opportunities and constraints that are fully aligned with this CPSD report.

Furthermore, the Eastern Economic Corridor (EEC) represents a flagship program expected to demonstrate a set of iconic government initiatives for the knowledge economy and lead implementation in this transformative change by example. However, the perception of a slowdown in reforms that characterized previous wins can hinder the momentum of implementation. The slow pace in the implementation of regulations adds to the perception that vested interests have been allowed to stall the pace of reforms, disproportionately harming the young disruptors. Some of these concerns are also reflected in the implementation of the EEC. The current economic outlook highlights the importance of these challenges because the COVID-19 recovery could be uneven and could exacerbate the sustainability of growth, particularly in the light of the fiscal constraints that the government may face in the immediate term.

Four megatrends—now further accentuated by the COVID-19 pandemic—are likely to influence Thailand’s growth and competitiveness prospects.

- i. *Technology, and the rise of automation and services, are reshaping industries and work, with long-term implications for the labor force and supply-chain operations that will likely be accelerated by the COVID-19 shock.* Evolving customer tastes for goods and services, including their delivery, will also accelerate the speed of innovation for solutions. More recently, technology has helped firms to adjust to the shock, promoting resilience and adaptability in response to the pandemic.
- ii. *Ongoing global trade tensions and new regional agreements are shifting the trade environment and the configuration of global value chains.* This carries implications for intraregional trade and the markets that Thailand could compete in. The pandemic has also shown possible repercussions for GVC configurations as firms seek to diversify risk and establish near-shore operations.
- iii. *Climate change, including the drive toward a low-carbon global economy,* represents another disruptive trend as firms respond not only to changing consumer expectations about sustainable products and services, but also to government policy designed to support environmentally sustainable growth. On the one hand, there are calls for policymakers to use the pandemic as an opportunity to build back greener; on the other, there is a risk that the more urgent priorities of the economic recovery may stall this call.
- iv. *Thailand’s ageing demographic structure carries implications for the country’s economic growth.* Thailand’s share of population aged 65 and older is the third largest in the EAP region, after Korea and Japan, and the largest among the non-high-income economies of the region. First, the ageing demographic is diminishing the relative proportion of the country’s capable workforce, resulting in occupational and skills shortages that will likely reduce productivity. Second, it is changing the nature of the demand for products in the country, which will likely require new delivery models. Third, aging opens new challenges and opportunities brought by a specific segment of the population for which care services can be targeted—for example, a lack of proficiency in the use of digital financial services among the elderly creates an opportunity to improve the user experience and customization.

The CPSD for Thailand looks at two potential levers that can help Thailand harness the trends identified as engines of growth. The adoption of expanded Digital and Disruptive Technologies and the capabilities of the Circular Economy can help unleash innovation and knowledge across sectors, yielding growth dividends and driving resilience.

The CPSD proposes greater private participation in digital and disruptive technology (DDT) and circular economy (CE) approaches as levers to enable resilient and innovation-led growth. These two levers were chosen for several, interrelated reasons. *First*, the adoption of digital and disruptive technologies, together with circular technologies, can leverage “intangible capital” to increase the efficiency of capital and add labor force-reviving momentum to the stalled growth of TFP. For example, the integration of cyber-physical systems—that is, using data analytics, artificial intelligence, and machine learning—enables workers, machines, and resources to work together more efficiently. Circularity also drives improvements in the use of resource and material inputs that enhance efficiency, such as in the acquisition of technology that allows the reuse of waste in production.

Second, these levers can therefore have significant spillover effects across the traditional sectors of the economy. For example, the use of disruptive technology can boost tourism by improving planning, accommodation, and transport services. Circular models in the automotive sector can lead to upgraded processes through recycled plastics, the redesign of electronic content, and shared mobility as an end-service.

Third, both levers can assist in making production processes more sustainable. For example, the use of big data analytics underlies precision farming, which increases the output of sustainable agribusiness. In addition, mobilitytech increases the utilization rate of vehicles, thereby supporting greener transport solutions. Similarly, circularity enables the decoupling of growth from GHG emissions and virgin resource use, promoting decarbonization – for example, the use of alternative materials such as grass in the production of vehicle parts. CE approaches therefore offer solutions to the ominous threat of climate change that Thailand faces.

Finally, these technologies can help Thai firms tap into the opportunities that arise from the megatrends mentioned above. DDTs are at the core of the rise of automation and services in manufacturing, and the fourth industrial revolution. CE can help Thai firms expand their participation in green GVCs and meet the high public and private environmental standards observed in international markets.

If Thailand fails to support the growth of digital and disruptive technologies and the circular economy, it risks widening its income gap with frontier economies (annex D-1). This is especially imperative because, in the wake of COVID-19, firms are seeking to strengthen their resilience in GVCs by leveraging technologies such as Industry 4.0 and 3D printing to respond to shifting consumer behavior and national requirements for sustainable trade. Successful participation in the global economy will therefore increasingly depend on excelling in the scaled adoption of digital and disruptive technologies and circularity.

Lever 1: Digital and Disruptive Technologies encompass innovative technologies that have the potential to radically change the way organizations and people operate, creating new markets and new business models and making affordable goods and services accessible to more people. The use of disruptive technologies for advanced participation in GVCs is a critical strategy if countries are to attract FDI, climb the value chain, diversify their products and services, and support domestic improvements in living standards and wages, leading to better jobs. DDTs also offer opportunities for greater female labor force participation. E-commerce platforms can boost SME trade and GVC participation by reducing export costs, lowering barriers, and accessing operational supporting services. Like circular models, DDTs serve as enablers to sustainable solutions by helping firms improve the energy efficiency of their production processes and asset utilization. These technologies also offer firms solutions to increase their climate resilience (for example, drones and Internet of Things -IoT- sensors).

In terms of investment opportunities: based on an analysis of regional risk capital funding flows to digital startups, there is an opportunity of about USD 1.8 billion, both in currently untapped potential in five B2B digital sectors, and in the expansion of four vital sectors in B2C. It is estimated that if Thailand's digital firms were to attract levels of venture capital (VC) or private equity (PE) investments comparable to Asian frontier markets in five sophisticated, mostly B2B sectors – mobilitytech, big data and analytics, health tech, digital media, and entertainment tech – additional investments of USD 1.2 billion would flow into Thailand annually (table 1). The remaining USD 0.6 billion would result from Thailand strengthening the sectors in which it is already well-positioned. Investments in these underlying sectors and tech-

nologies would help accelerate the digitalization of traditionally analog sectors such as automotive, health and agribusiness. A second step to the current analysis would be to delve deeper into the industries that most use the prioritized digital sectors as drivers of productivity and growth.

TABLE 1: THAILAND'S ANNUAL FUNDING GAP (OR SURPLUS) RELATIVE TO ASIA'S FRONTIER MARKETS (USD MILLION)

Focus of Thailand's strategy	Thailand's annual funding gap (or surplus) relative to Asia's Frontier Focus of Thailand's Markets US\$ million			
Catch-up	-390		Mobility tech	Passenger transportation (air travel, train, automobile) logistics, traffic monitoring and tracking, on demand ride share and haul, passenger transportation repair platforms and online maps.
	-326		Entertainment tech	E sports, e casino, movies, animation studios and gaming, music; video streaming and services, arts, music algorithm software, and entertainment online management and social media.
	-285		Big data and analytics	Firms that use data as a service, data analysis and visualization services and data collection services.
	-208		Digital media	Digital journalism, social media, e media searching and subscription platforms, and publishing logistics management products and services.
	1.8		Health tech	Telehealth, e health platforms, pharma-tech, technical medical device development, medical laboratory management, and diagnostic algorithm development.
Keep growing and scale	-354		e-commerce	Online marketplace, aggregator e commerce, e commerce analytics, e commerce transaction, e-commerce logistics.
	-276		Fin tech	Loans, payments, wealth and investment management as well as software providers automating financial processes or addressing core business needs of financial firms.
Scale and lead	24		Food tech	Restaurant aggregator/ review platform, food e marketplace, food lifestyle media as well as prepackaged food subscription firms.
	167		Travel tech	Travel booking platforms, travel review and discovery platforms, and travel security software.

Lever 2: The Circular Economy – often shortened to just **Circularity** – aims to replace the traditional take-make-waste economy with one based on reusing renewable natural capital and keeping materials and products in use for as long as possible. The business models and approaches that underlie circularity are innovative by nature, one, because they require a fundamental shift in thinking that ranges from the design of goods and services to the disposal of waste, and, two, because they foster parallel innovation in supporting eco-systems such as finance. Circularity models are a solution for green and resilient growth because production systems are a major contributor to GHG emissions and thereby to climate change.

The CPSD for Thailand identified food and agriculture, construction, and electrical and electronic appliances (EEAs) as priority sectors for the introduction of circular business models. Specific value chain activities in these sectors have been quantified for value creation and/or cost savings. The adoption of the six highest-priority circular approaches could yield returns to the private sector through increased revenues and reduced costs amounting to a cumulative total of approximately USD 1.6 billion by 2025. A more detailed study would be needed to assess the GHG emissions reduction that would come from adopting these solutions.

TABLE 2: INVESTMENT OPPORTUNITIES FOR THE CIRCULAR ECONOMY IN SELECTED SECTORS

Sectoral Opportunity	Investments Required	Examples of Application	Potential Sector Benefits
Food & Agriculture: <ul style="list-style-type: none"> • Regenerative Farming • Conversion of organic waste to product 	<ul style="list-style-type: none"> • Logistics services to transport organic waste to product manufacturers • Research and development related to new bio-based products • New product manufacturing facilities 	<ul style="list-style-type: none"> • Conversion of raw agriculture products and animal products in a circular way • Processing of agricultural and food waste into intermediate or end-products such as animal feed, construction materials and bioplastics 	<ul style="list-style-type: none"> • Cumulative THB 12.1 billion (USD 385.8 million) net value creation
Construction: <ul style="list-style-type: none"> • Reuse of construction materials • Flexible and shared spaces 	<ul style="list-style-type: none"> • Technical knowledge and supporting tools for design for deconstruction • Research and development of deconstruction techniques and durable materials • Material passport services • Material exchange platforms • Space sharing platforms • Space utilization monitoring technologies 	<ul style="list-style-type: none"> • Reuse of construction materials in new buildings and infrastructure assets. • Asset redesign to enable deconstruction so that materials can be reused again • Use of underutilized spaces for short-term use by other occupants and users – in most office, retail, and leisure and some residential buildings 	<ul style="list-style-type: none"> • THB 10.3 billion (USD 329.7 million) and THB 2.57 billion (USD 81.9 million) cost savings
Electrical & Electronic Appliances: <ul style="list-style-type: none"> • Device remanufacturing • Device sharing 	<ul style="list-style-type: none"> • Product design • Logistics services related to take-back schemes • Training in remanufacturing skills • Products passports • B2B, B2C and C2C sharing and exchange platforms • Logistics services transporting devices from one user to another 	<ul style="list-style-type: none"> • Investment in the production of important electric vehicle components such as electric motors, inverters, on-board chargers, electric sensors • Multiple user access to products through lease agreements, performance-based contracts, or product-as-a-service contracts 	<ul style="list-style-type: none"> • THB 28.2 billion (USD 0.9 billion) cost savings

It is important to note that achieving success in adopting this innovation-led model through the above two levers comes with both risks and challenges in implementation. Both these approaches run the risk of having an adverse effect on inclusive growth through increasing inequality among firms and negative effects on employment in the short run. Successful implementation will also require a rigorous assessment of international best policy practices to fit-for-purpose in the Thai context. Further, several enabling factors need to be in place for these technologies and approaches to be successful. These are discussed below.

The CPSD analysis emphasizes that unlocking opportunities would require addressing key investment issues and sector-specific challenges. Market distortions, on the one hand, and missing complementarities, on the other, are holding back private participation in markets.

INVESTMENT ISSUES

Limited competition and an uneven playing field are two key constraints to the emergence of an innovative private sector. Thailand ranks sub-optimally on indicators of competition against comparator countries across several global indices. Investor perceptions of business risks related to competition are high. There has been increasing concentration of ownership in a handful of firms, leading to their increasing market power as reflected in high markups, especially in the network sectors. Gaps in the effi-

cient functioning of a competitive regulatory framework create an uneven playing field for private sector participants.

Restrictions to FDI further reduce competition and stall the benefits of knowledge and innovation spillovers that might result from greater participation of foreign firms in the economy. Entry and operational restrictiveness have emerged as key factors driving the shrinking of FDI in Thailand, especially in the service sector. According to the OECD's FDI Regulatory Restrictiveness Index, Thailand's FDI liberalization has stalled over in the last 20 years, while regional competitors have opened their markets. An incomplete regulatory regime, capacity challenges, and the slow pace of reforms compared to regional peers are among the factors that contribute to these restrictions.

Low access to innovation financing further impedes the ability of firms, especially SMEs, to adopt new business models and technology. While the private sector's overall access to credit remains robust, the MSME sector remains underserved by the formal financial sector. Innovation finance remains shallow. Venture capital (VC) funding, a key source of innovation finance that specifically targets risky ventures, is only 0.03 percent of GDP – low compared to regional peers. (Please refer to the constraints in part III on Digital and Disruptive Technologies.)

Firms cite limited access to the workforce skills of the future as another key barrier to greater dynamism in the Thai economy. Thailand lags comparator countries in its share of high-skilled workers in the EAP region: Despite having a GDP per capita just under one-third that of Thailand, and a population only 14 percent larger than Thailand's, Vietnam's share of the region's high-skilled workers is roughly equivalent to Thailand's. Firms in Thailand complain of the unavailability of relevant skills, both technical and non-cognitive, and of the unsatisfactory performance of new hires. FDI restrictions are one of the key factors contributing to this lack of skills, while a weak Technical and Vocational Education and Training (TVET) system aggravates the problem.

SECTOR-SPECIFIC CONSTRAINTS

Digital and disruptive technologies

- **Thailand converged to a low-level equilibrium of highly complex digital regulations with low digital dynamism.** Unlike the leading countries in disruptive technology, Thailand largely has an innovation-hindering environment characterized by (a) high regulatory risk and uncertainty, (b) low de facto enforcement, and (c) a cycle of increasingly tight regulations because of the perception of excessive risks in the digital ecosystem. Government regulators face challenges in adapting and responding quickly to the rapid pace of progress in the digital service sectors. Further, overlapping responsibilities across key agencies engaged in advancing digital policy, such as the Digital Economy Promotion Agency (DEPA) and the National Innovation Agency (NIA), lead to inefficiency and policy inconsistency. The lack of transparency on rules and regulations increases uncertainty and coordination costs for the private sector. Regulatory gaps include:
 - A legal framework for risk capital financing that is less conducive to investment than regional peers: for example, the laws that govern the issuance of preference shares, tiering of classes of shares, creation of Employee Stock Option Plans (ESOPs), and convertible notes.

- High capital gains taxes in venture capital/private equity (VC/PE) that discourage investment.
 - An unfavorable initial public offering (IPO) environment for early-stage firms, along with stringent requirements, which deters risk capital investment. SEC is making efforts to remove some constraints for SMEs and startups to access capital market funds through private placement offerings for SMEs (PP-SMEs), while the regulations for public offerings for SMEs (PO-SMEs) and LiVE Exchange (SME Board) are being discussed by policymakers.
 - Industrial data handling and data security policies that suffer from policy uncertainty and a lack of sharing and safeguard standards.
 - Limited online consumer and supplier protection, especially the limited traceability of imported goods via cross-border e-commerce, which reduces consumer confidence and trust in digital uptake.
- **There are regulatory challenges to a competitive market in the digital economy.** First, various stakeholders have expressed concerns about the role of corporate venture capital (CVC) in supporting competition and the growth of digital technology in Thailand. By some estimates, about 80 percent of risk capital in Thailand comes from CVC, which is extremely high. While important, this funding has often been linked to biases and distortions generated by a misaligned incentive structure between entrepreneurs and financiers. Second, there is significant room for more private operators to participate in providing spectrum and infrastructure for digital services. While the concession regime has evolved, private operators are not able to fully compete with incumbents as they lack financial support available to competitors, including tax exemptions. Finally, the regulatory framework, and the absence of pro-competition regulation, create barriers to participation on a level-playing field for smaller digital and disruptive firms that could otherwise challenge the incumbents. These barriers include vagueness in the definitions of rules, a lack of transparency in implementation, uncertainty in enforcement, and high minimum requirements to become eligible for incentives. Together, they create high costs and formidable nonfinancial barriers for smaller firms. In addition, instruments that encourage adaptation, such as regulatory sandboxes, have opened up experimentation in a few sectors such as finance and tourism. However, these have not been expanded to other domains of the digital economy.
 - **There is limited access to relevant human capital and financial solutions to drive the growth of DDT.** Thailand faces a dearth of IT, engineering, and programming skills and other STEM-related disciplines, which are critically needed in any digital economy. Investors often complain that Thai tech companies and entrepreneurs do not have sufficiently deep, differentiated experience in their sectors and are often mostly recent graduates. Foreign talent is largely absent, including professionals who could bring regional and global perspectives to the work – a situation worsened by restrictions on foreign ownership of firms. Further, access to finance for innovative firms across the funding life cycle is weak. Mid-sized firms are caught in the middle: they are typically beyond seed stage and therefore unable to benefit from government grants set aside for smaller firms yet are also unable to access later-stage VC funding, which is typically reserved for larger companies that have achieved some degree of regional expansion.

Circular economy

- **The regulatory framework governing circularity is neither aligned with international standards nor sufficiently targeted.** First, the current framework relies primarily on voluntary mechanisms and therefore misses the benefits from using additional regulatory and incentive instruments. For example, in the absence of mandatory requirements, sectoral ministries are not proactive in considering circularity in their strategies unless explicitly linked to the current definition of sustainability. Second, although fiscal incentives have been introduced, they are insufficiently targeted to address market failures, particularly for SMEs, which face high costs in adopting CE technology. Current incentives seem mis-targeted, with eligibility criteria that prioritize industry, company maturity and geography. Third, many of the sector-specific regulations have an inhibiting effect because they do not align with emerging international standards. These include laws and policies governing waste collection and its reclassification as secondary raw material, the reuse of material in packaging, and the use of recycling content in construction.
- **The lack of common understanding about the circular economy across the public and private sector and consumers alike, prevents a collective and targeted policy response and inefficient private sector action.** Success depends on the presence of a common definition of the circular economy used across government and industry. This could widen the focus of circular solutions from material/resource strategies to holistic business models. The availability of a monitoring and evaluation framework could enhance firms' ability to assess the financial viability of circular business models. Further, policy engagement with existing conglomerates could be further strengthened and leveraged if these corporate groups coordinate for enhanced standardization and increased economies of scale.
- **Government strategy and institutions governing circularity need tightening and strengthening.** First, the Bio Circular Green policy framework, the main policy instrument for circularity, is skewed toward certain sectors, undermining the original intent of a systematic and cross-industry approach. The strategy has become bio-centric, diminishing its appeal for stakeholders in certain sectors, such as manufacturing and construction, that are potentially substantial contributors to the circular economy. Second, there is institutional fragmentation: mandates overlap, and policy approaches are inconsistent. Many relevant agencies still do not recognize the value of this agenda nor provide supportive policy that could increase impact. This fragmentation translates to regulation which results in being piece-meal creating inefficiencies and transaction costs.
- **Critical supporting physical, financial and human capital infrastructure is inadequate.** First, an efficient reverse logistics system is critical to ensure the continuous and efficient movement of secondary material and waste. Second, finance for non-conventional circular investments remains scarce. The existing financial products are biased toward renewable energy and energy efficiency. In addition, in comparison to traditional investments, the business case for investing in innovative circular approaches is currently more complex than traditional projects, creating uncertainty for financiers. Third, the absence of critical circular skills will prevent a wider adoption of the circular economy. These include designing for flexibility and adaptability, minimizing material use and waste generation in production and construction, adopting product-as-a-service models, and diversifying business to include repair, refurbishment, and replacement services. Finally, while Thailand has introduced several measures to establish a trading infrastructure for carbon credits, remaining gaps need to be bridged to ensure that firms and individuals can in fact offset their carbon footprints.

The strong relationship between addressing investment issues and promoting disruptive and digital technologies and the circular economy, should be highlighted. Thai firms must deploy productive capital investments to develop new business capabilities. It should be noted that the coronavirus pandemic has imposed additional pressure on fiscal spending. The fiscal deficit has expanded because of increased spending on pandemic relief and declining taxes – from 2.3 percent of GDP in FY2019 to 5.9 percent of GDP in FY2020 (Thailand Economic Monitor, 2021). Leveraging private sector development and investment will be critical for advancing the economic recovery.

Roadmap to unleash private-sector growth opportunities

The CPSD presents a package of practical recommendations that could address the key constraints analyzed, considering feasibility, expected timelines and key stakeholders. An agenda of economic reforms that can stimulate private investment and enhance the contribution of private innovation needs to be fast-tracked. It is important to highlight that the key to the successful implementation of reforms will be transparency and coordination across public sector agencies and with the private sector. This will also require having consistently up-to-date knowledge of the issues of all relevant stakeholders and the initiatives they are currently taking. A summary of the key recommendations is offered in the roadmap below. Table 3 presents a roadmap for investment reforms and Table 4 presents a roadmap for sectoral reforms opportunities. Annex I of the main volume highlights references from countries that are implementing similar measures.

Private investments

In the short term

- Bridge gaps in the Competition Act by eliminating exceptions for certain operators and encouraging cartel detection.
- Expand access to innovation finance by strengthening financial infrastructure, including open banking and a single, unified Secured Transaction (ST) Act.
- Ease hiring expatriate staff/foreign experts by making the SMART visa program fully digital.

In the medium term

- Open the FDI regime by reducing the number of service sectors that require a Foreign Business License (FBL) and by adopting a tailored, sector-specific approach to establish minimum capital requirements for FDI.
- Enhance TVET system efficiency by expanding private participation in its delivery and by strengthening oversight of the quality-assurance mechanism

Digital and Disruptive Technology (DDT)

In the short term

- Strengthen digital regulations by conforming financial regulations to international practices and standards and by introducing industrial data strategy and protection policies.

In the medium term

- Enhance contestability in digital markets by expanding early-stage capital market and by promoting more efficient spectrum allocation.

Circular Economy (CE)*In the short term*

- Develop a common understanding of the circular economy across the public and private sectors and consumers alike by introducing a standard national definition.

In the medium term

- Strengthen the regulatory framework governing circularity through amendments in the waste, reuse, and recycling sectors.
- Facilitate investment in enabling physical and digital infrastructure to support the adoption of circular business models by the private sector.

TABLE 3: ROADMAP FOR INVESTMENT REFORMS

Opportunity	Recommendations	Enabling reforms in the immediate term	Enabling reforms in the medium-term	Reforms complementary to each other	Key stakeholders
LACK OF COMPETITION					
Competition law enforcement	Strengthen the enforcement and advocacy roles of Thailand's Office of Trade Competition Commission (OTCC) by building OTCC's capacity and publishing guidelines for competition enforcement.	√		●	OTCC
	Strengthen the governance functions of the OTCC by reducing ministry-related involvement in senior appointments and allowing for independent budget allocations.	√		●	OTCC
	Bridge existing gaps in the Competition Act: that is, eliminate exceptions for certain operators and implement a leniency program to encourage cartel detection.	√		● ●	OTCC, MOC
Competition incentives	Elevate the competition policy agenda as a whole and present it as a national economic policy issue for Thailand, through the representation of higher-level executive offices.	√		● ●	Office of the Prime Minister
	Conduct a review of potential SOEs' competition distortions (including network markets) using the competitive neutrality framework.		√	● ● ●	MOF, OTCC, Sector Regulators

Opportunity	Recommendations	Enabling reforms in the immediate term	Enabling reforms in the medium-term	Reforms complementary to each other	Key stakeholders
RESTRICTIONS ON FDI					
Easing of restrictions on hiring expatriate staff/foreign experts	<ul style="list-style-type: none"> • Make the SMART visa program fully digital, including by (i) not requiring documents to be subject to certification by the issuing organization or notarization or legalization by any government agency, and (ii) accepting all documentation in English (or Thai, if originally issued as such) • Review staff and capital ratios with a view to adopting a sector-specific approach, including for the requirement to employ at least four Thai nationals for every foreigner employed, and the requirement to have a capital increase of at least BHT 2 million for each foreign employee, depending on the form of investment • Continue to gradually allow more foreigners to practice their profession in Thailand. • Further clarify,¹⁶⁷ and reduce the number of professions that are prohibited under the Prescription of the Prohibited Occupations for Foreigners (2020, B.E. 2563); also stipulate a mandatory periodic review of the list. • Amend sector-specific laws to remove nationality requirements, for example, for legal, architecture and engineering services. 	√		● ●	BOI, IB, MOL, MFA, ETDA
	<ul style="list-style-type: none"> • Review staff and capital ratios with a view to adopting a sector-specific approach, including for the requirement to employ at least four Thai nationals for every foreigner employed, and the requirement to have a capital increase of at least BHT 2 million for each foreign employee, depending on the form of investment 		√	●	IB, MOL, MFA
	<ul style="list-style-type: none"> • Further clarify,¹⁶⁷ and reduce the number of professions that are prohibited under the Prescription of the Prohibited Occupations for Foreigners (2020, B.E. 2563); also stipulate a mandatory periodic review of the list. • Amend sector-specific laws to remove nationality requirements, for example, for legal, architecture and engineering services. 		√	●	MOL, Profession-specific bodies, MFA
Open FDI regime, especially in service sectors	<p>Further liberalize services sectors that are key to achieving the goals of Thailand 4.0:</p> <ul style="list-style-type: none"> • Reduce the number of service sectors that require a Foreign Business License (FBL) by removing service sectors from List 3 of the FBA and publish guidelines to enable consistency in the approval process. • Remove the broad "Other service businesses" provision under List 3 of the FBA (item 21 of List 3) and add the clarification that "everything not on the list is permitted without restriction". • Adopt a tailored, sector-specific approach to establishing minimum capital requirements for FDI. • Consider dispensing with the requirement to retain 25 percent of operating expenses for activities under lists 2 and 3 of the FBA.¹⁶⁰ 		√	● ●	MOC, NBTC
	<ul style="list-style-type: none"> • Adopt a tailored, sector-specific approach to establishing minimum capital requirements for FDI. • Consider dispensing with the requirement to retain 25 percent of operating expenses for activities under lists 2 and 3 of the FBA.¹⁶⁰ 		√	●	MOC, BOI
	Consolidate FDI restrictions contained in sectoral legislation under the FBA, systematize the negative list, and issue English translations of subordinate or sectoral legal documents.		√	●	MOC, COM, NA

Opportunity	Recommendations	Enabling reforms in the immediate term	Enabling reforms in the medium-term	Reforms complementary to each other	Key stakeholders
ACCESS TO FINANCE FOR INNOVATION					
Enhanced provider diversity, innovation, and reach	Strengthen the regulations that address risks to investors on crowdfunding platforms by articulating disclosure requirements, and test capital requirements.	√		●	SEC
Strengthened financial infrastructure	Develop an approach to open banking, starting with API standards for data sharing and a cross-industry approach to standards in order to promote competition.	√		●	BOT
	Establish a single, unified Secured Transaction (ST) Act, with a practical, standardized, and simple provision on the "Creation of Security Interest (SI), and "Priority Rules" for all types of movable assets. Establish a single, central, real-time registry that fully interfaces with financial institutions.	√		●	MOF, DBD
	Remove the legal impediments in the Credit Information Bureau Act (CIBA) to allow sharing of data from nonfinancial providers (for example, utility companies, data from retailers, and data from e-commerce operators)	√		●	MOF, NCB
Enhanced access by SMEs to value chains	Support the development and use of online and cloud-based accounting and e-invoicing platforms for SMEs	√		●	Department of Revenue, OSMEP
	Ensure effective implementation of a digital-factoring initiative to promote supply-chain financing and enable SMEs to access key value chains.		√	●	BOT, OSMEP
SKILLS FOR THE FUTURE					
Skills match	Introduce a skills-monitoring system comprising information about vacancies and wages to understand the nature of demand and identify signals of skill shortages.	√		●	MOE, MHESI, NXPO
	Bring the private sector's perspective to bear on curriculum design through a structured engagement that influences decisions of resource allocation for curriculum development, and oversight of results between the Ministry of Labor/ Technical and Vocational Education and Training (MOL/ TVET) agency and industry associations.		√	● ●	MOE, OVEC, MHESI, NXPO, private sector
TVET system efficiency	Reduce the challenges the private sector faces in participating in the TVET system by streamlining the procedures for accessing incentives and reporting.	√		●	BOI, MOL
	Strengthen oversight of the TVET system institutions under a renewed quality-assurance mechanism that follows placement outcomes of graduates and relies on market feedback information including wages, placement, turnover, and tenure.		√	●	MOE, MHESI, OVEC

Opportunity	Recommendations	Enabling reforms in the immediate term	Enabling reforms in the medium-term	Reforms complementary to each other	Key stakeholders
Increased labor force participation	Introduce pilot programs for reskilling of the country's aging labor force, such as the provision of basic and intermediate digital skills training, to test the value proposition and evaluate their potential scalability and relevance in the labor market.		√	●	MOL, private sector
	Introduce and test pilot regulations that increase female labor force participation – for example, increase the number of child development centers, and improve maternity benefits to lessen the current penalties on motherhood and on caring for the elderly, to understand which of these measures present higher additionality. These pilot interventions need to be coupled with rigorous impact evaluations to discern the potential effects of such policies in the labor market.		√	●	MSDHS, MOL, MOE

Note 1: Enabling reforms: Reforms in the immediate term are those that, if introduced at the outset, can be expected to “enable” positive spillovers for subsequent reforms, paving the way for cumulative effects in a particular field and for the medium term. **Complementary reforms** are those that mutually reinforce each other, thereby creating horizontal spillover effects. In the table, upto three sets of complementary reforms have been identified, which are tagged together in the three sub-columns under ‘Complementary Reforms’.

Note 2: BOT – Bank of Thailand; BOI – Thailand’s Board of Investment; COM – Council of Ministers; DBD – Department of Business Development; IB – Immigration Bureau; MHESI - Ministry of Higher Education, Science, Research and Innovation; MOC – Ministry of Commerce; MOE – Ministry of Education; MOF – Ministry of Finance; MOL – Ministry of Labor; MSDHS – Ministry of Social Development and Human Security; NA – National Assembly; NBTC – Office of The National Broadcasting and Telecommunication Commission; NXPO – Office of National Higher Education Science Research and Innovation Policy Council; OSMEP – Office of SME Promotion; OTCC – Office of Trade Competition Commission; OVEC – Office of the Vocational Education Commission; SEC – Securities and Exchange Commission.

In addition, the CPSD offers several reforms and priority action steps in digital and disruptive technology and the circular economy. These are presented in Table 4 below.

TABLE 4: ROADMAP FOR SECTORAL REFORMS OPPORTUNITIES

Opportunity	Recommendations	Enabling reforms in the immediate term	Medium-term reforms	Reforms complementary to each other	Key stakeholders
DIGITAL AND DISRUPTIVE TECHNOLOGIES					
Well-defined institutional responsibilities and sound experimentation in disruptive tech pilots (EEC)	Clarify roles and responsibilities in key digitalization policies and establish a monitoring and evaluation framework to track the progress of key programs and reforms. For example, in industrial data policies, this would mean startup ecosystem building, including early-stage risk capital attraction, and innovative and circular pilots that have been tested in traditional sectors and real-life settings, including those in EEC.	√		● ●	MDES, sectoral ministries
An attractive regulatory environment for digitalization	Conform financial regulations to international practices and standards by amending the Thai Civil and Commercial Code – for example, introducing Employee Stock Option Plans (ESOPs) and issuing convertible notes and preferred shares.	√		●	MOC, SEC
	Introduce industrial data strategy as well as protection policies to enable and safeguard data-intensive solutions because they underpin digital transformation in a variety of traditional sectors such as retail, health, and finance.	√		●	MDES
	Enhance the use of matching equity funds schemes to de-risk investments and catalyze early-stage capital market (co-investment funds, fund-of-funds).		√	●	DEPA, NIA and NSTDA
High contestability in digital markets	Attract more regional financial venture capital to balance the excessively dominant role of CVC in the digital ecosystem; also, expose local large firms to international competition to prepare for a more open and innovation-driven economy.	√		●	DEPA, SEC
	Introduce online supplier protection schemes to prevent online platforms from abusing their market power to squeeze out informal third-party sellers and digital service providers. Create trust and fairness in the digital market to drive broad-based digital uptake.		√	●	ETDA
	Address the lack of competition in how the spectrum is assigned by (i) developing a spectrum roadmap, (ii) designing reserve prices according to market realities, and (iii) designing pro-competition spectrum auctions.		√		NA, OTCC, COM
Enriched pipeline of tech talent to drive digital transformation	Build up deep-tech capabilities and change the popular mindset and culture to make tech a promising career path by promoting successful industry transformation, use cases, and role models. Promote and provide incentives for local-international tech talent exchange by means of incubators, accelerators, diaspora networks, and corporate overseas exchange programs.		√	● ●	DEPA, NSTDA, private sector, academia

Opportunity	Recommendations	Enabling reforms in the immediate term	Medium-term reforms	Reforms complementary to each other	Key stakeholders
CIRCULAR ECONOMY					
Enhanced knowledge and understanding of the circular economy	Introduce a standard national definition of the circular economy in line with international frameworks, in coordination with the private sector, to be adopted in the new Circular Economy Action Plan currently being drafted. An example of this is China's Circular Economy Promotion Law.	√		●	Office of the PM, NXPO
	Implement awareness programs in collaboration with private stakeholders for the correct use of circular economy concepts by embedding CE in core modules of university curricula, business transformation guides, and case studies for the private sector. An example is Netherlands' Holland Circular Hotspot.	√		●	NXPO, academia, businesses, NGOs, MOAC, MOI, Consumers
	Expand the M&E framework to cover broader list of indicators, including sector-specific indicators underlying sector-specific circular economy road maps. For example, the OECD inventory of indicators.		√	● ●	NXPO, sectoral ministries, NCS-DA, MOI, MONRE
Institutional cohesion in the design and implementation of CE policy	Strengthen the public-private collaboration mechanisms under the BCG Committee for coordination to include SME participation, regular reviews of regulations, formulate R&D programs. Example: the City of Brussels' Regional Program for a Circular Economy (BRPCE).	√		●	NXPO, coordinating agency [to be created]
	Create a central circular economy agency or organization – along the lines of Finland's Innovation Fund, Sitra – to develop, implement and advance circular economy policy and to coordinate inter-ministerial action.		√	●	Office of the PM

Opportunity	Recommendations	Enabling reforms in the immediate term	Medium-term reforms	Reforms complementary to each other	Key stakeholders	
Strengthened presence of comprehensive and cohesive policy framework	Remove inhibitory regulations and standards, specifically those identified in the priority sectors above. That is, (a) regulations on the use of recycled plastics for food containers, (b) specifications related to recycled content in aggregate and other building materials, and (c) material intensity conflicts with seismic building requirements.	√		●	sectoral ministries, NXPO, Private sector	
	Introduce enabling regulatory and legal amendments and instruments such as (a) end-of-waste criteria for waste materials to support reuse and recycling, (b) updating the scope of green label products to include circular design, (c) simplifying the waste classification system down to one system in order to facilitate material exchange, and (d) allowing waste materials to move outside regional boundaries to encourage collaboration.		√	●	NXPO, private sector, coordinating agency [to be created]	
	Improve cost-efficiency of incentives for R&D-based CE innovation and increase awareness of the TSCRIF in the private sector.	√		●	●	NXPO, academia private sector
	Introduce and evaluate pilot incentives for non-R&D-based innovation and diffusion of CE technology among businesses: Evaluate potential expansion of fiscal incentives for repair activities and remanufactured goods Consider FTAs on circular economy (for example, the Comprehensive and Progressive Agreement of Trans-Pacific Partnership – CPTPP - in agribusiness)		√	●	●	Coordinating agency [to be created], DOF
Availability of supportive infrastructure to pursue circular-economy opportunities	Facilitate investment in enabling physical and digital infrastructure, such as reverse logistics networks, transport infrastructure, the IoT, and blockchain to support the adoption of circular business models and to make the business case for adopting them.		√	●	MNRE, MOT, MDES, coordinating agency [to be created]	

Note 1: Enabling reforms: Reforms that are to be enabled in the immediate term are those that, if introduced at the outset, can be expected to “enable” positive spillovers for subsequent reforms, paving the way for cumulative effects in a particular field and for the medium term. The distinction highlights reforms that could be sequential in nature and that have the property of creating vertical spillover effects from upstream reforms to downstream ones. Complementary reforms are those that mutually reinforce each other, thereby creating horizontal spillover effects. In the table, upto three sets of complementary reforms have been identified, which are tagged together in the three sub-columns under ‘Complementary Reforms’.

Note 2: BOT – Bank of Thailand; BOI – Thailand’s Board of Investment; COM – Council of Ministers; DBD – Department of Business Development; IB – Immigration Bureau; MHESI – Ministry of Higher Education, Science, Research and Innovation; MOC – Ministry of Commerce; MOE – Ministry of Education; MOF – Ministry of Finance; MOL – Ministry of Labor; MSDHS – Ministry of Social Development and Human Security; NA – National Assembly; NBTC – Office of The National Broadcasting and Telecommunication Commission; NXPO – Office of National Higher Education Science Research and Innovation Policy Council; OSMEP – Office of SME Promotion; OTCC – Office of Trade Competition Commission; OVEC – Office of the Vocational Education Commission; SEC – Securities and Exchange Commission.

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