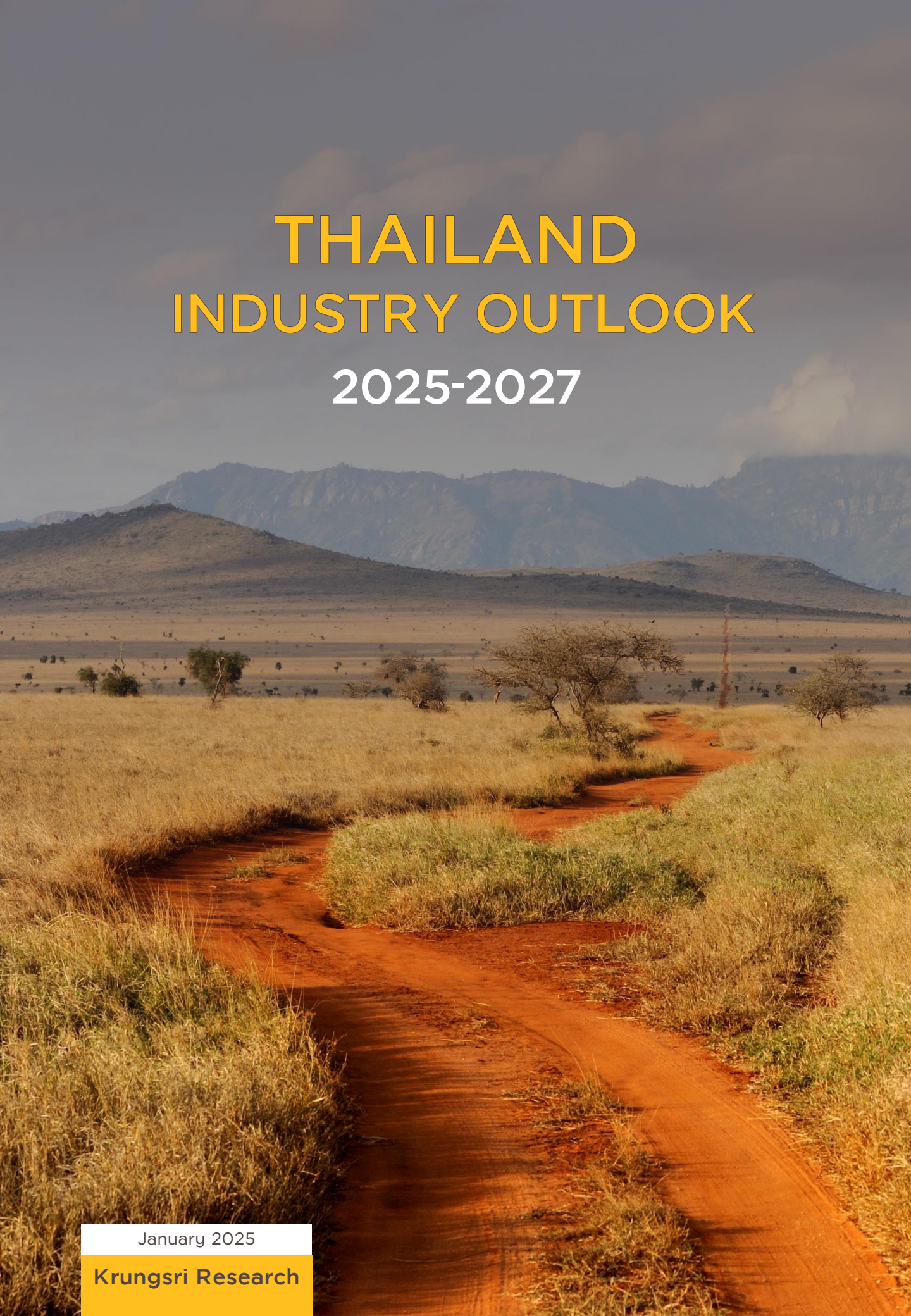


THAILAND
INDUSTRY OUTLOOK
2025-2027

January 2025

Krungsri Research

Author

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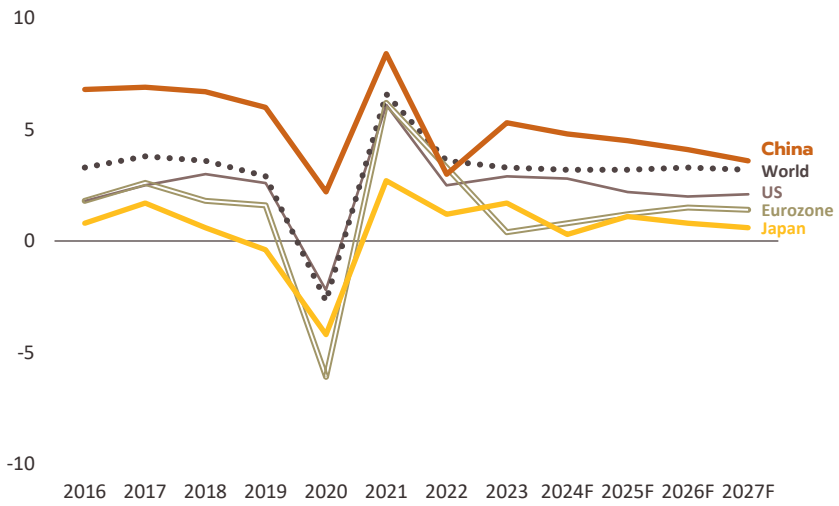
2025-2027 THAILAND INDUSTRY OUTLOOK

The Thailand Industry Outlook for the next three years (2025-2027) examines a range of factors influencing various industries. These factors include both opportunities and challenges, which determine the attractiveness of each sector, depending on the macroeconomic environment and sector-specific factors.

The macroeconomic environment

- **The global economy in 2025-2027 is expected to grow gradually amid a downward trend in interest rates. However, deglobalization trend and geopolitical tensions may put pressure on trade and investment worldwide.**
  - **The global economy in the coming three years is projected to grow at 3.2%,** stable from the 3.2% seen in 2024, yet below the pre-COVID-19 10-year average of approximately 3.7%. This outlook is supported by easing inflation, which is likely to enhance consumer purchasing power. Additionally, major economies may gradually lower interest rates to bolster economic growth and mitigate recession risks. Nevertheless, economic growth will face headwinds from several factors, including (i) the lingering effects of still-high interest rates in the context of significant debt burdens in both public and private sectors, (ii) uncertainties regarding U.S. economic policy after presidential elections, (iii) the slowing Chinese economy, and (iv) geopolitical tensions in the Middle East, alongside the Russia-Ukraine war, which could lead to supply chain disruptions and an energy crisis. Furthermore, the economic bifurcation led by the U.S. and China, through increasing trade and investment barriers, could ignite a new trade war and reinforce the trend of deglobalization, creating ripple effects on global trade, investment, and the overall economy.

Figure 1: GDP Growth (%)

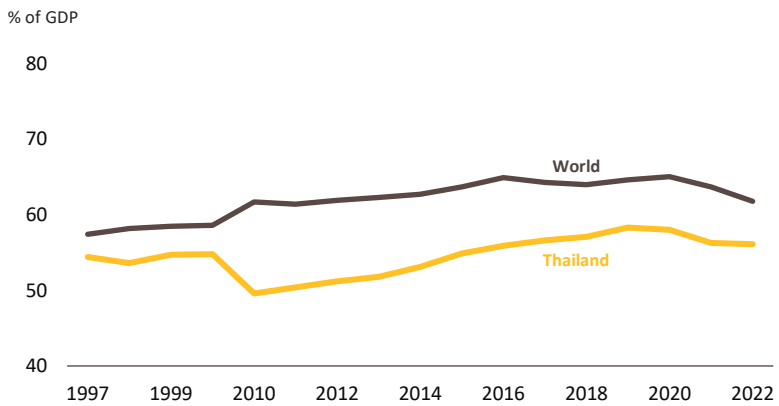


Source: IMF World Economic Outlook (October 2024)

- **The US economy is expected to grow below its potential during 2025-2027,** with an average growth forecast of 2.1% (compared to 2.8% in 2024 and below the long-term potential of 2.3%). Inflation is anticipated to slow down to the 2% target in 2025-2026, allowing the Federal Reserve (Fed) to continue lowering the policy interest rates into 2025 after the first rate cut in September 2024. The Fed Funds rate is projected to drop to 3.50-3.75% by the end of 2025, still higher than the Fed's longer run rate of 3.00%, indicating that monetary policy remains tight and will impact economic growth. Additionally, a significant rise in debt refinancing in 2025-2026 could lead to higher delinquency rates, putting pressure on consumer purchasing power and business incomes over the next two years amid a slowing labor market and a continued contraction in manufacturing. Meanwhile, there are uncertainties over the key polices under Donald Trump's administration such as a sharp reduction in tax rates, harsh tariff hikes and anti-immigration measures. Some polices may improve economic growth in the short term, but most policies could increase risks to the US asset bubbles, inflation, and fiscal position in the periods ahead.
- **The Eurozone economy is projected to experience a slow and fragile recovery,** with an average growth rate of 1.4% per year during 2025-2027, compared to 0.8% in 2024. Inflation is expected to slow to 2.1% in 2025 and drop below 2% in 2026, allowing the European Central Bank (ECB) to continue lowering its policy interest rates. By the end of 2025, the ECB's key policy rate is anticipated to fall to 2.00%. Despite easing inflationary and interest rate pressures, the economic recovery remains weak amid continued contraction in the manufacturing sector, less fiscal stimulus, the fading gains from the 2024 Olympic Games in France, sluggish credit growth, a slowing labor market, and continued weakness in private consumption (reflected by the highest level of household savings rate in three years). Additionally, rising trade tensions with China and uncertainties surrounding global economic and trade policies following the US presidential election in November 2024 will pose challenges to the Eurozone's recovery over the next three years.
- **Japan's economy is expected to recover gradually, with the services sector being the main driver.** The economy is projected to grow at an average rate of 0.9% per year during 2025-2027, compared to the pre-COVID-19 average of 1.2% (2010-2019). Inflation is likely to reach the long-term target of 2%, driven by rising wages and growth in the services sector, along with government measures focused on strengthening income for households and businesses. On November 23, 2024, the Japanese government approved a JPY 39 trillion economic stimulus package aimed at alleviating living costs, supporting low-income households, and promoting investment. However, the manufacturing and export sectors are expected to face pressure from slow global economic growth and intense competition in the automotive industry, which could impact the overall recovery. The gradual recovery of the economy and inflation will be a factor that prevents the Bank of Japan (BOJ) from rushing to adjust its monetary policy. It is expected that the policy interest rate by the end of 2025 will be between 0.75-1.00%.
- **The Chinese economy remains under pressure from structural challenges and external risks.** Economic growth is expected to slow from 4.8% in 2024 to an average of 4.1% per year during 2025-2027 due to several headwinds, including excess capacity in certain industries, the real estate crisis, youth unemployment, local government and private sector debts, an aging society, and slower productivity growth. Meanwhile, external risks — such as intensifying trade and technology wars — may further hinder economic growth, along with geopolitical tensions between China and Taiwan, and between China and the U.S., which could accelerate disruptions and decoupling from the global supply chain. Nevertheless, there are several key factors that could help nurture economic growth — including measures to boost consumption and investment, local government debt relief, prudent monetary easing, property sector rescue measures, infrastructure investment, and support for New Quality Productive Forces (e.g., electric vehicles, hydrogen energy, space travel, and quantum computing).

- **The structural transformation of the global economy will impact Thai businesses**
  - **The service sector is playing an increasingly important role in driving global economic growth.** In the advanced economies, services typically account for some 70-80% of GDP, mainly led by modern services e.g., IT services, intellectual property and finance that leverage the possibilities offered by the combination of technology and a highly skilled workforce. By contrast, although the contribution of services to the Thai economy has risen, this has long remained below 60% of GDP (Figure 2). Moreover, the Thai service sector has strongly been focused on traditional low-skilled industries such as wholesale & retail trade, hotels, and restaurants, while modern services have only recently started to expand and at present, just 14% of GDP is attributable to these (source: BOT).
  - **The modern service sector is crucial in supporting manufacturing within global value chains.** Several services (such as transportation, finance, and telecoms, including a highly skilled workforce with special knowledge) now constitute important intermediate inputs for the manufacturing sector, adding value to outputs and boosting productivity. However, the Thai service sector has only a limited ability to fulfill this role, partly due to its restricted use of technology, and as a result, Thailand was ranked only 41st in the 2024 Global Innovation Index, compared with 4th for Singapore and 33rd for Malaysia. Moreover, Thailand faces both quantitative and qualitative labor shortages and the economy's dependency on the tourism industry, which generates only low levels of added value for the wider economy. Beyond this, Thailand is not creating enough innovative Startups needed to sustain modern service development (source: BOT). **In this context, the transition towards modern service innovation is a critical driver of Thailand's sustainable economic growth and must be accelerated, as it is fundamental to strengthening the country's global competitiveness.**

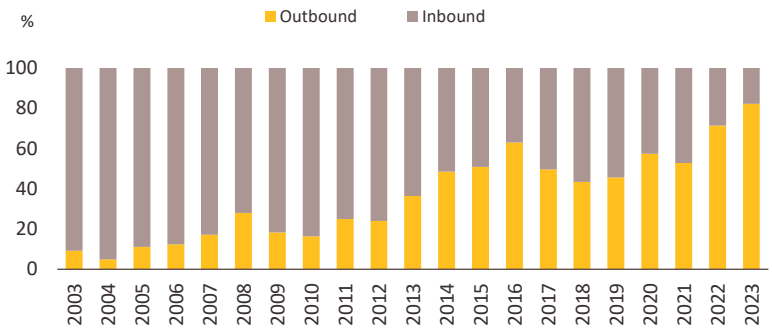
Figure 2: Share of Service Sector in GDP



Source: World Bank, Office of the National Economic and Social Development Council (NESDC)

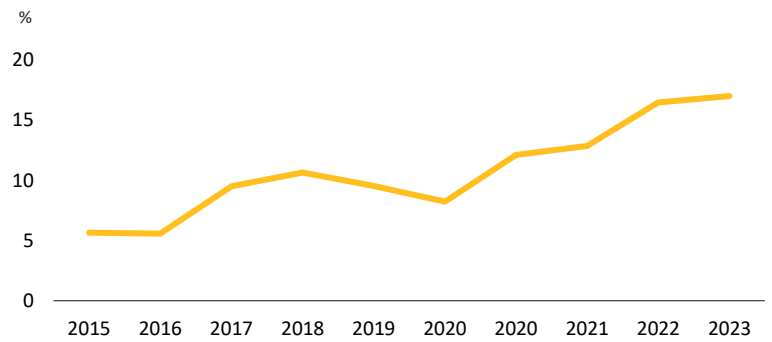
- **New landscape of investment diversion from China towards production base in ASEAN** The prolonged U.S.-China tech war and trade barriers have driven the global supply chain towards intra-regional partnerships, focusing more on near-shoring and friend-shoring strategies. China has shifted from being a former capital importer to becoming a major capital exporter to the ASEAN region (Figure 3), driven by excess production capacity across several industries in China and the attractiveness of using ASEAN as a manufacturing base for exports to the U.S. In 2023, China's outbound direct investment reached a record high of USD 162.7 billion, raising ASEAN's share of global direct investment to 17% (Figure 4). *Most of this investment was concentrated in upstream industries with advanced technologies, including electronics, electrical appliances, automotive parts, and renewable energy* (fDi Markets, 2024). **This investment diversion has facilitated the shift of Asia's production base toward higher value-added upstream industries in the global value chain (Figures 5-6), including in Thailand.** This is evident from the surge in investment promotion applications for the printed circuit board (PCB) industry in Thailand, with a value exceeding THB 140 billion between January 2023 and June 2024, compared to only THB 15 billion per year in 2021-2022, primarily driven by investors from China, Taiwan, Japan, and Hong Kong (BOI, Aug 2024). However, the limited availability of skilled labor and experts in developing countries may not be sufficient to support the influx of new investments in upstream technology industries. This remains a current challenge, as the transforming periods towards aged society in middle-income developing countries is growing at a much faster rate compared to high-income countries in the past (Figure 7).

Figure 3 : China's Outbound to Inbound FDI Ratio
China's FDI trajectory: from capital importer to capital exporter



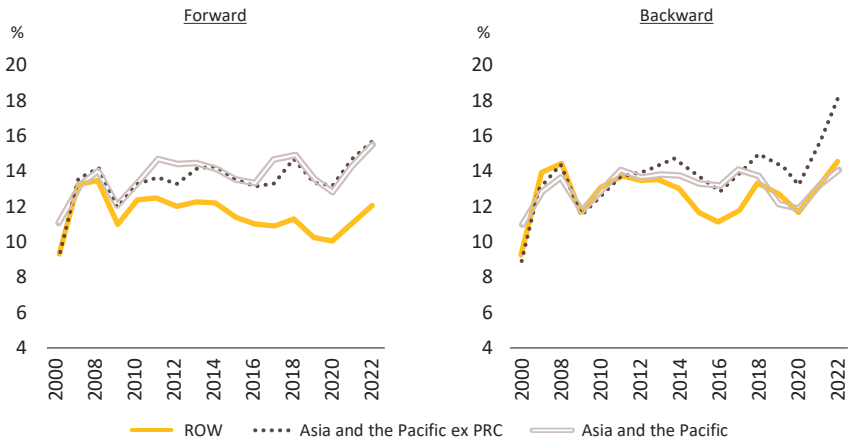
Source: fDi Markets, 2024

Figure 4: Share of Inflow FDI in Southeast Asia
(% of Global Inflow FDI)



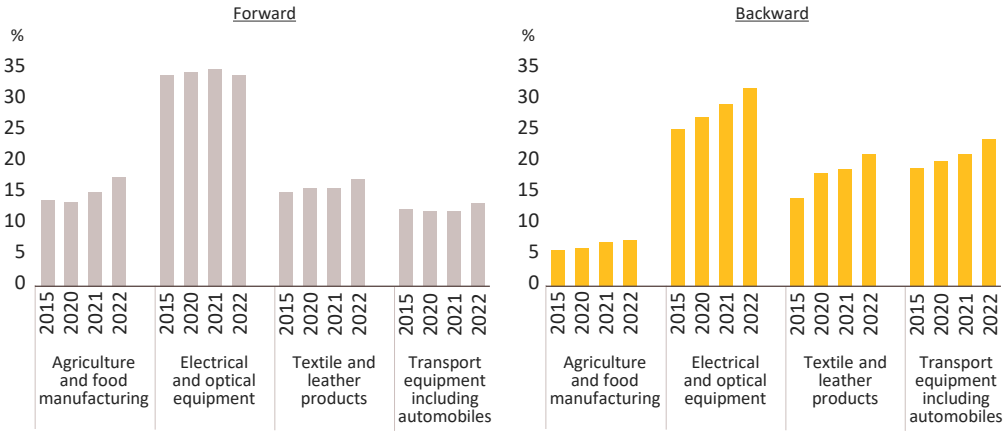
Source: UNCTAD, Calculated by Krungsri Research

Figure 5: Backward, and Forward GVC Participation Rates



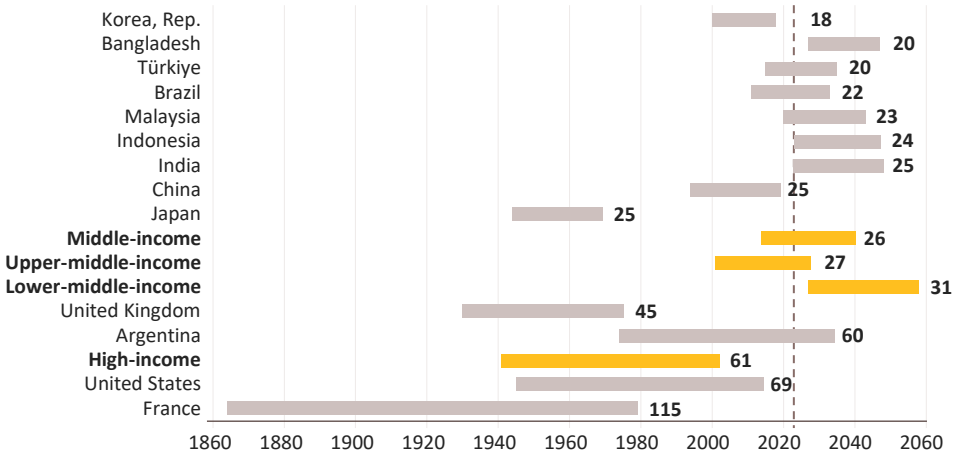
Source: ADB, 2024

Figure 6: Global Value Chain Rate of Asia and the Pacific,
by Selected Sector



Source: ADB, 2024

Figure 7: Transitioning from Aging Society to Aged Society
Middle-income Countries are Aging More Rapidly than High-income Countries Did in the Past.



Source: World Development Report 2024, World Bank Group

- **Addressing new megatrends through technology:** Ongoing technological progress is helping businesses adapt to global megatrends that will impact all industries over 2025-2030, and in this area, the challenges entailed in meeting long-term net zero commitments are particularly salient (Startus-insights, 2024). Technologies that will be especially important over the next 3 years are described below.
  - **Agricultural:** ***Precision agricultural technology and productivity enhancement technology*** will have an important role to play in reducing the impacts of worsening climate variability and strengthening production processes to focus on energy from renewables sourced from within the industry itself, and this will then help to lessen environmental impacts.
  - **Food and beverage industry:** ***Sustainable agri-tech and AI*** will be used to connect changes in consumer behavior and demography with comprehensive management of agricultural production processes and supply chains. Other ***green innovations*** will also help to cut waste across the production and consumption lifecycle.
  - **Manufacture of industrial goods:** ***Robotics, the IoT and AI*** will drive the development of 'Industry 5.0'. This emphasizes the use of smart manufacturing systems that utilize high-speed communication to make production faster and more accurate. Alongside this, the greater use of ***3D printing*** will enable the low-cost customization and personalization of production.
  - **Energy:** ***Carbon capture and storage (CCS) technology and technology connected to the shift away from fossil fuels and towards renewables*** (i.e., the 'energy transition') will help to improve the production and storage of electricity generated from renewables. This together with increasing reuse of energy will also help companies meet their ESG goals.
  - **Construction:** ***Technologies related to the sustainable materials and green buildings*** will help cut carbon emissions from the industry, even as rapid urbanization continues. This will include the development of prefabricated modular structures made from sustainable inputs..
  - **Environmental industries:** ***Remote sensing technology*** will allow for the surveying of forests from space, and coupled with ***AI***, this will make assessments of the actual quantities of carbon drawn-down by carbon credits much more accurate, while also drastically reducing the cost of carrying out on-site surveys.
  - **Service sector industries:**
    - **Transportation and logistics:** ***Blockchain and IoT technology*** will help to create a hyper-connected world and improve the efficiency, transparency and accuracy of complicated logistics processes. ***Smart drones*** will also be used to power unmanned zero-emission transportation systems, thereby further reducing long-term greenhouse gas emissions.
    - **Health and wellness:** ***AI, big data and wearable health technology*** will stimulate the development of personalized innovations that will support growth in preventative healthcare, for example through telemedicine applications. These will improve care especially for the elderly and the treatment of chronic non-communicable diseases. In addition, the use of data in the research and development of drugs and pharmaceuticals tailored to specific diseases will be improved.
    - **Retail:** ***AI*** will increasingly help companies build personalized shopping experiences by adding to the linkages between e-commerce markets and retail supply chains, broadening and accelerating these connections and so making businesses better able to adapt to changing consumer behavior.
    - **Others e.g., convenience services business:** ***AI, the IoT, robotics and edge-cloud computing*** will be used to design customized and personalized platform-based services. This will boost user traffic and help with the delivery of more dangerous services, which are currently affected by labor shortages.

Box A Advanced technologies used in the financial industry

Modern technologies have had a significant impact on the finance industry across a wide range of areas, from strategic business planning through to customer service. Going forward, the following technologies are expected to have a major influence on operations over the next three years.

- **Artificial Intelligence (AI) and in particular Generative AI (GenAI)** has the potential to revolutionize both business operations and consumer demand for goods and services. Within the financial sector, AI and Machine Learning have an important role to play in supporting in-depth data analysis in areas such as evaluating investment opportunities, assessing client debt risk, and improving the efficiency of loan approval processes. In addition, GenAI will be able to add to the customer experience by powering virtual assistants and smart chatbots that are able to respond to queries and give advice in real-time, and companies in a wide range of industries have successfully used AI-driven analysis to help with the design of services and products that are a closer match with consumer demand.
- **Cloud computing** is allowing financial institutions to store, process and analyze data via the internet from anywhere in the world, and this is making management of big data resources much more flexible. Relatedly, cloud computing is powering the digital transformation of the finance industry, and because this technology is making business operations much more agile, this is providing the foundations for 21st century banking. Use of the cloud is also helping financial institutions around the world expand much more rapidly into new markets, fostering financial innovation, and adding to savings in IT costs of up to 15% over 5 years.
- **Intelligent automation** involves integrating AI with automation technology to achieve a level of efficiency that closely resembles human performance. This not only helps reduce errors caused by humans but also enhances the speed of both work processes and customer service, resulting in savings on operating costs. These technologies are already being introduced to the finance industry in areas such as processing the documentation associated with loan approval, know your customer (KYC) and anti-money laundering (AML) processes.
- **Quantum computing** uses applications drawn from quantum mechanics to process vast quantities of data in just fractions of a second, which will then allow players in the finance industry to accelerate operational processes. McKinsey expects that by 2035, quantum-computing use cases in the finance industry could create USD 622 billion (around THB 22 trillion) in value, and combining AI with this will then help to enormously accelerate the speed at which complicated work processes can be carried out in areas such as fraud detection and credit scoring.
- **Advanced cybersecurity based on the zero-trust model** helps enhance the defense against cyberattacks, which are on the rise and can cause significant damage. Zero Trust is an advanced security technology that effectively reduces cyber risks and data breaches. Users can only access networks, systems, or data according to their permissions based on user rights and typically utilize multi-factor authentication. However, implementing Zero Trust requires a substantial budget to upgrade IT infrastructure and involves navigating the trade-off between some loss of operational agility, work process flexibility, and the quality of customer service in exchange for tighter security.

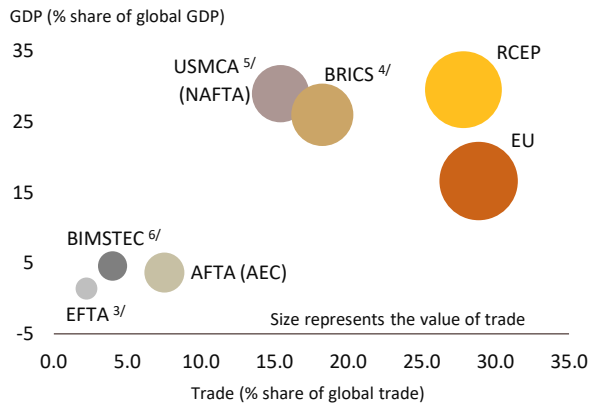
Beyond this, new technologies are increasingly being introduced into the finance industry to help address environmental problems. For example, AI and blockchain technologies are being used to improve the accuracy of data analysis and to monitor environmental impacts across the length of the green financing process. Green technology is also being used to help reduce energy consumption and to cut greenhouse gas emissions, thereby generating additional positive environmental impacts.

- **Trade blocs enhance comparative advantages of Thai products in global market.** Thailand has agreed a number of bilateral and multilateral trade agreements, and the country has now concluded 15 FTAs[1/], including the Regional Comprehensive Economic Partnership (RCEP)[2/](Figure 8). In total, these FTAs govern relations with 19 trade partners, the most recent addition to which was Sri Lanka (Thailand and Sri Lanka agreed an FTA in February, 2024). As of 2023, these agreements covered almost 60% of the value of all Thailand's international trade, and over 9M24, exports covered by FTAs rose another 2.1% YoY, while the value of FTA-covered exports taking advantage of the provisions of these rose to 85.6% of the total. However, only 1.7% of exports that fall within the scope of the RCEP benefit from this (Figure 9), though this is largely explained by the fact that most RCEP signatories have already agreed FTAs with Thailand. Nevertheless, as the provisions of the RCEP are implemented and import duties are reduced, this figure is likely to rise.

  Thailand is in the process of negotiating several further FTAs, and in 2024, the Thailand-UAE and Thailand-European Free Trade Association[3/] agreements should be agreed (as of 2023, these covered total trade worth more than THB 900bn). In 2025, the Thailand-EU and ASEAN-Canada FTAs should be signed, and further out, so should the agreements between Thailand-Pakistan, Thailand-Turkiye, including the BRICS[4/] group (Thailand officially joined as an allied partner on January 1, 2025, but is not yet a member), which accounts for 26% of the global economy and over 40% of the world's population. Thailand further plans to upgrade its existing FTAs and to better align these with changes in the global trading environment.

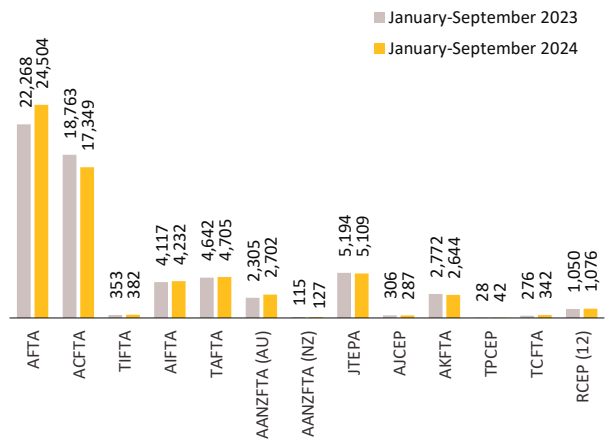
  However, **the rising number of non-tariff barriers (NTBs) to trade means that Thai exporters are facing greater difficulty accessing global markets.** Data from the World Trade Organization shows that over 2009-2023, 62,202 NTBs were in use, of which almost 30% were related to environmental regulations implemented in markets that are major targets for Thai producers, including the EU, the US and Australia. **To ensure that Thai goods remain competitive, the country thus needs to ensure that exporters are maximally benefitting from the provisions of current FTAs.**

Figure 8: The RCEP, the world's largest FTA, covering about 30% of both global GDP and global trade in 2023



Source: UNCTAD Stat, Krungsri Research

Figure 9: Export Value Under FTA of Thailand
(USD, m)



Source: Department of Foreign Trade (DFT)

1/ Currently, Thailand has agreed 15 FTAs with 19 countries: The ASEAN FTA (AFTA), the ASEAN-China (ACFTA), the Thai-India (TIFTA), the ASEAN-India (AIFTA), the Thai-Australia (TAFTA), the ASEAN-Australia-New Zealand (AANZFTA), the Thai-Japan (JTEPA), the ASEAN-Japan (AJCEP), the ASEAN-Korea (AKFTA), the Thai-Peru (TPCEP), the Thai-Chile (TCFTA), the Thai-New Zealand (TNZCEP), the ASEAN-Hong Kong (AHKFTA), the Thai-Sri Lanka (SLTFTA), and the Regional Comprehensive Economic Partnership (RCEP).

2/ The RCEP (Regional Comprehensive Economic Partnership) was agreed between 15 countries: Brunei, Cambodia, Lao PDR, Singapore, Thailand, Vietnam, Australia, China, Japan, New Zealand, South Korea, Malaysia, Myanmar, Indonesia, and the Philippines.

3/ The EFTA (European Free Trade Area) has 4 members: Iceland, Norway, Switzerland, and Lichtenstein.

4/ The BRICS countries are Brazil, Russia, India, China and South Africa.

5/ The USMCA (United States-Mexico-Canada Agreement) replaced NAFTA and was agreed between the US, Mexico, and Canada.

6/ BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) is a framework providing for regional cooperation between South and Southeast Asia. The initiative has 7 members: Thailand, Myanmar, Sri Lanka, Bangladesh, India, Bhutan, and Nepal.

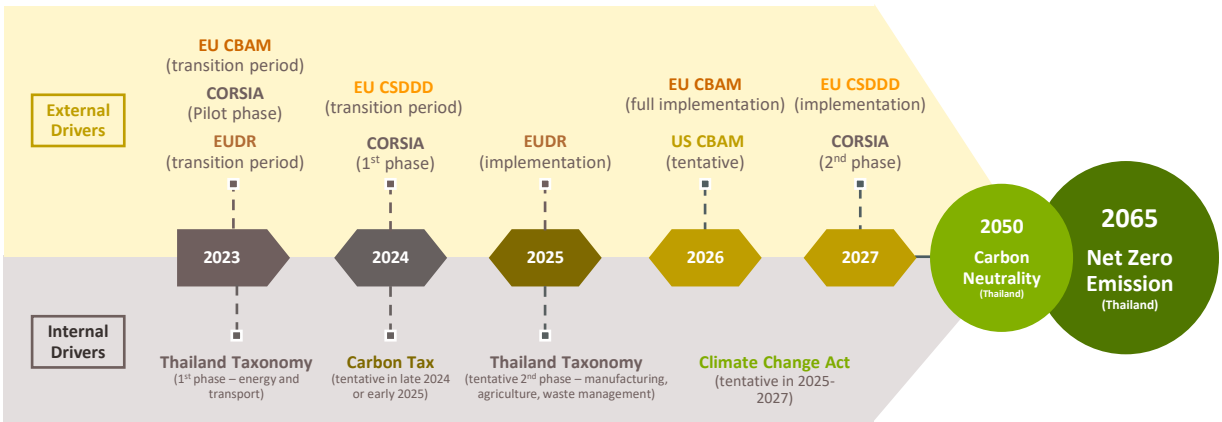
- **The need to meet net zero goals will both necessitate a change in business operations and add to overheads** as environmental regulations tighten and extend to include responsibility for social and environmental issues across supply chains. At present, regulations in this area can be split into the following two groups.
  - **Measures that require companies to report their carbon emissions and then to pay a carbon price**; Examples of these include the following. **(i) The EU's Carbon Border Adjustment Mechanism (CBAM)**, came into force in October 2023 and covers imports to the EU of goods in the six areas of cement, electricity, fertilizer, iron and steel, aluminium, and hydrogen. Exporters of these will therefore need to pay an additional carbon fee from 2026 onwards. Other countries including **the US, the UK, Australia and Canada** are also considering implementing their own CBAMs. **(ii) The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)** will become mandatory from 2027 onwards, adding to the costs borne by the international aviation industry.
  - **Measures that require companies to ensure the sustainability of their operations across supply chains**: Examples of these include the **EU Deforestation Regulation (EUDR)** and the EU's **Corporate Sustainability Due Diligence Directive (CSDDD)**, which will be fully implemented within the next 1-3 years. In particular, the CSDDD is expected to be adopted by countries including Germany and Norway, as well as the state of California, and this will then require that companies selling into these markets are compliant with these new regulatory requirements.

Furthermore, Thai businesses will face stricter domestic regulations in line with global trends. The government is in the process of drafting a Climate Change Act, which will require companies to report their carbon emissions, while also advancing the development of carbon pricing mechanisms. These will include a carbon tax (expected to be imposed on oil products within FY2025), an emissions trading scheme (ETS), and a carbon credit market. Overall, **the intensification of domestic and international regulations that aim to improve the sustainability of economic activity will create both challenges and opportunities for Thai businesses.**

- **Operating expenses will rise** due to the costs connected to: (i) measuring, reporting and verification (MRV) and for conducting due diligence; (ii) paying carbon prices; and (iii) transitioning to more sustainable business processes. This will especially affect the energy sector and heavy industries since these are carbon-intensive parts of the economy and reducing emissions from these activities remains a challenge, but **if businesses are unable to adjust to this newly emerging global business regime, the competitiveness of Thai industry will likely be negatively impacted**.
- **New trade and investment opportunities will open up for businesses** that are more agile and quicker to adapt to this changing business landscape. In addition, new markets will develop for businesses that offer sustainability-related goods and services, such as those connected to MRV, sustainability consulting, transition financing, and climate tech.

Going forward, the global business environment will be driven by the need to green the economy and shift to sustainable business models, prompting Thai companies to accelerate their green transitions to remain competitive.

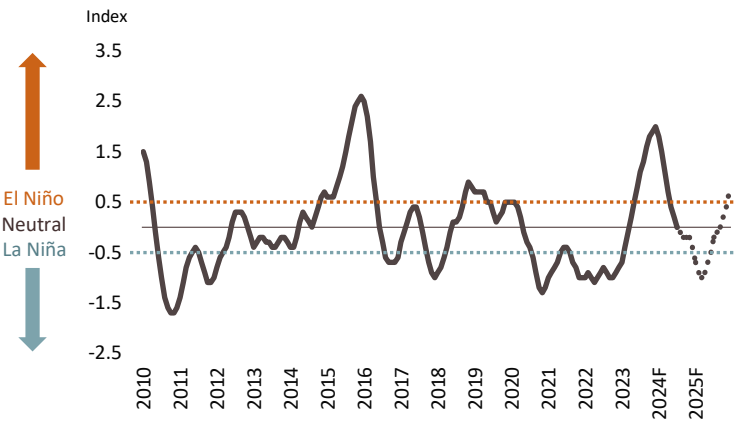
Figure 10: Timeline of sustainability regulations affecting Thailand



Source: European Commission, Department of Trade Negotiations (DTN), The International Civil Aviation Organization (ICAO), Bank of Thailand (BOT), and Krungsri Research

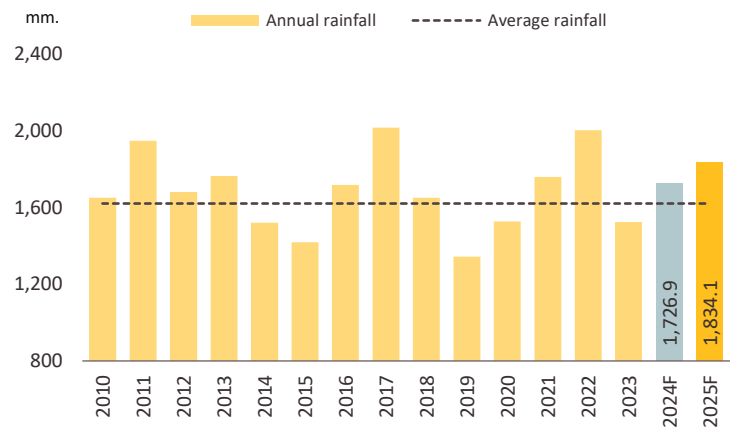
- **Increasing climate variability is impacting agricultural supply chains. Thailand has moved rapidly from El Niño-induced drought in 1H24 to worsening flood conditions in 2H24.** Indicators of these changes can be seen in: (i) the swing in the Oceanic Nino Index (ONI) to neutral and then to La Niña conditions, and with this the onset of greater than average rainfall (Figures 11 and 12); (ii) the influence of annual tropical storms; (iii) the move from positive to negative conditions for the Pacific Decadal Oscillation (PDO) index and the Indian Ocean Diploes (IOD) index, representing the increasing influence of storms; and (iv) the Monsoon Index moving to nearly normal range in short-terms, indicating rainfall in the surrounding areas of Thailand.
- The aforementioned phenomenon impacts residential, agricultural, and industrial areas in the northern, central, northeastern, and parts of the southern regions, particularly the lower north, which serves as a water passage, and the central region, prone to recurring floods. This causes significant damage to economic activities such as households, factories, machinery, agricultural products, infrastructure, and utilities. **The supply chains of key economic crops, including rice, sugarcane, cassava, as well as various horticultural and field crops, are especially affected.** In 2024, the flood-affected area is expected to cover 8.6 million rai, causing property damage of approximately 3.1 billion baht and agricultural losses valued at 43.4 billion baht. The total flood damage is estimated at 46.5 billion baht, or 0.27% of GDP.

Figure 11: Oceanic Indices



Source: NOAA and forecast by Krungsri Research

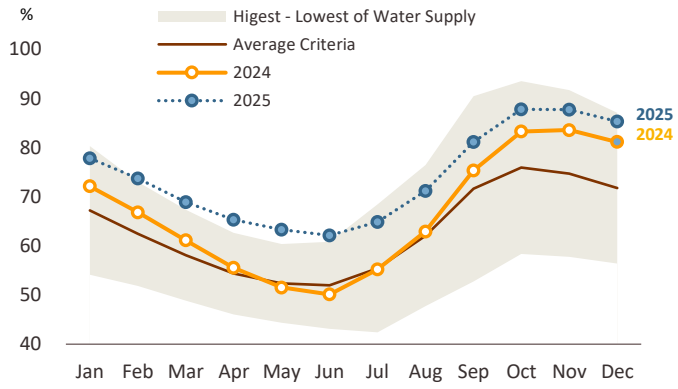
Figure 12: Annual Rainfall in Thailand



Source: Thailand Meteorological Department and forecast by Krungsri Research

Krungsri Research estimates that La Niña conditions will become more pronounced in 2025, with above-average rainfall and reservoir levels reaching record highs in the first half of the year (Figure 13). This aligns with the National Oceanic and Atmospheric Administration (NOAA) report, which projects clear La Niña conditions by Q1 2025 (Figure 14). The increased water availability is expected to boost the production of key economic crops in 2025-2026, compared to the low base from drought impacts in the first half of 2024.

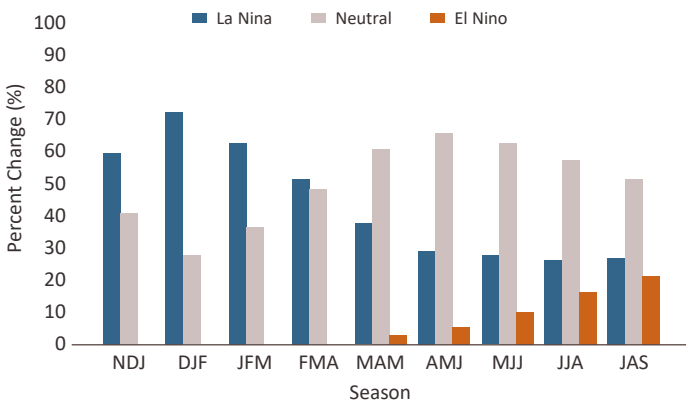
Figure 13: % Water Supply in Thailand



Source: Thaiwater, NOAA, Krungsri Research

Note: The blue dots of 2024-2025 markers line are the forecast values, and the grey shadow area refers to the highest and lowest levels of water supply in Thailand during Y2011 - Y2023.

Figure 14: Climate Current Status and Predictions by Climate Prediction Center, NOAA (December 2024)

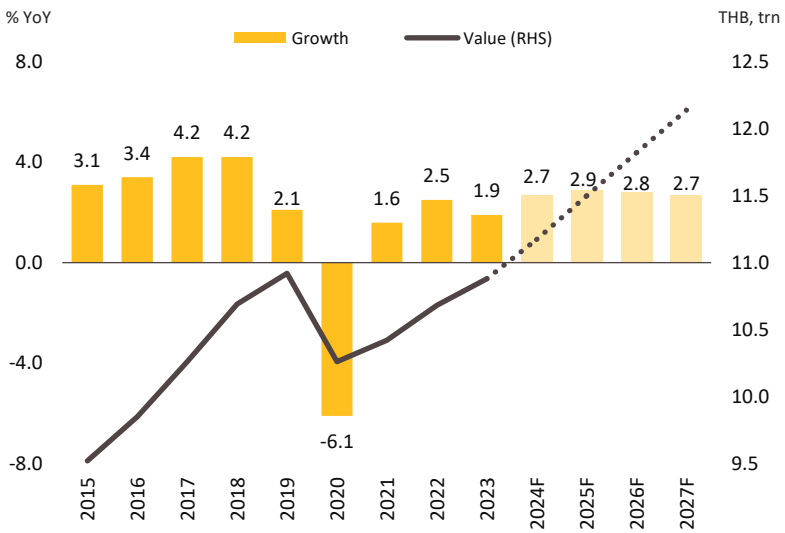


Source: National Oceanic and Atmospheric Administration

- **The Thai economy, 2025-2027: Growth is expected to approach potential levels but remain lower than other ASEAN countries'**

Thailand's economy is expected to grow at an average of 2.8% annually over 2025-2027, with a gradual recovery following the projected 2.7% growth in 2024. This remains below the pre-COVID-19 average of 3.6% (2010-2019). Key growth drivers including: (1) the continued recovery of the tourism sector, which is expected to return to pre-COVID-19 levels of 40 million foreign tourist arrivals in 2025 and increase to 43-45 million in 2026-2027; (ii) Private consumption is expected to grow on the back of the recovery in the tourism sector and government stimulus measures; (iii) public spending will play a key role in driving the economy, as reflected in the annual budget deficits. The deficit is projected to exceed 4.5% of GDP in fiscal year (FY) 2025, before gradually decreasing to 3.4% in FY2026 and 3.2% in FY2027; (iv) Private investment growth is expected to be driven by the expansion of technology infrastructure and the digital economy, along with the avoidance of geopolitical conflicts, which encourages some industries to relocate production to ASEAN, including Thailand. Additionally, investments in key industries such as electric vehicles, future food, renewable energy, and the Health & Wellness sector will further support this growth; and (v) Thailand's exports may experience low growth due to the economic slowdown in trading partner countries. However, there are still opportunities for expansion driven by demand for food and agricultural products. Additionally, if new free trade agreements (FTA) are established, they could provide further long-term growth opportunities. Thailand's policy interest rate is expected to be cut by the Monetary Policy Committee (MPC) by 25bps to 2.00% in the first quarter of 2025, and by another 50bps during 2026 and 2027 to support further economic expansion.

Figure 15: Thailand's Real GDP



Source: NESDC, Forecast by Krungsri Research

Over the next three years, although Thailand's economy is expected to gradually recover, its growth rate is likely to remain relatively low compared to that of ASEAN-5 countries, which are projected at an average of 4.5%. This low growth is due to several structural issues, such as the manufacturing sector's lack of competitiveness, the aging population affecting labor force and productivity, and high household debt constraining private consumption. Additionally, rising public debt may limit the government's ability to use fiscal policy to stimulate the economy in the future. External risk factors include geopolitical conflicts, trade tensions between the U.S. and China, China's economic slowdown, excess supply from China leading to low-cost exports to other countries, including Thailand, and increasingly volatile global climate change. These factors all will impact Thailand's trade, production, investment, and tourism. Therefore, addressing structural issues and adapting to new challenges are crucial for enhancing the country's long-term economic growth potential.

- **A fresh round of government infrastructure spending will boost private sector investment**

Following delays to the 2024 budget and the resulting sharp drop-off in spending on construction, the government will look to push forward with greater investment in infrastructure projects. Thus, over 2025-2027, work on both old and new projects will accelerate as part of the development of multimodal transport networks, while ongoing works will be expanded to enhance their capacity and to accommodate future growth, and this will then help to pull in greater private-sector investment in adjacent parts of the economy including construction, real estate, transport, and logistics. **In particular, the government is hoping that two megaprojects will drive future growth, and so these are likely to be included in 2025** spending plans. These are: (i) entertainment complexes in a number of strategic locations (costing THB 300-500bn), with 10% of total site areas reserved for casinos; and (ii) the Gulf of Thailand Pearl Necklace project, which will help to reduce coastal erosion, alleviate flooding in Bangkok, and establish new investment zones.

Megaprojects that aim to improve the potential of the Eastern Economic Corridor and for which work will be expedited will include: (i) stage 1 of phase 3 of the Map Ta Phut Port development project (construction of a petrochemicals and natural gas port facility), which is now expected to be completed on schedule in 2027; (ii) phase 3 of the Laem Chabang port development, where Wharf F (for the transport of industrial goods) should begin operations in 2027; and (iii) the delayed high-speed three-airport rail-link, for which construction is expected to begin by 2025. The uptick in government infrastructure spending will help to open up new investment opportunities, which will in turn allow **Thai industry to preserve its prominent position in global value chains and improve the potential of Thai players to participate in high-tech supply chains.**

Table 1: Major Infrastructure Project Value, from 2025 onwards (THB, m)

Projects awaiting cabinet approval	Value	Projects still under development	Value
Phase 2 of the high-speed railway (Nakhon Ratchasima-Nong Khai)	341,351	Suvarnabhumi Airport southern passenger terminal	120,000
Phase 2 of the twin-track railway (6 lines)	297,926	Andaman Airport	80,000
Bang Khun Thian-Bang Bua Thong motorway	56,035	Lanna Airport	70,000
Rangsit-Bang Pa In motorway (Don Muang Tollway extension)	31,358	Eastern section of Bangkok's third outer ring road	69,950
Bang Bua Thong-Bang Pa In motorway	16,986	Nakhon Pathom-Pak Tho motorway	43,000
Stage 3 of the Prasert-Manukitch Road -Outer Ring Road expressway	16,960	Muang Mai-Ko Kaew-Kathu motorway	35,800
Kathu-Pa Tong expressway	16,190	Sri Nakarin-Suvarnabhumi Airport expressway	21,892
Light Red SRT line (Sirirat-Taling Chan-Salaya)	15,176	Extensions to Chiang Mai and Phuket airports	21,000
Dark Red SRT line (Rangsit-Thammasat University Rangsit campus)	6,474	Ko Samui cruise ship port	12,172
		Suvarnabhumi Airport eastern passenger terminal	10,000
		High-speed rail bridge across the Mekong River	2,000

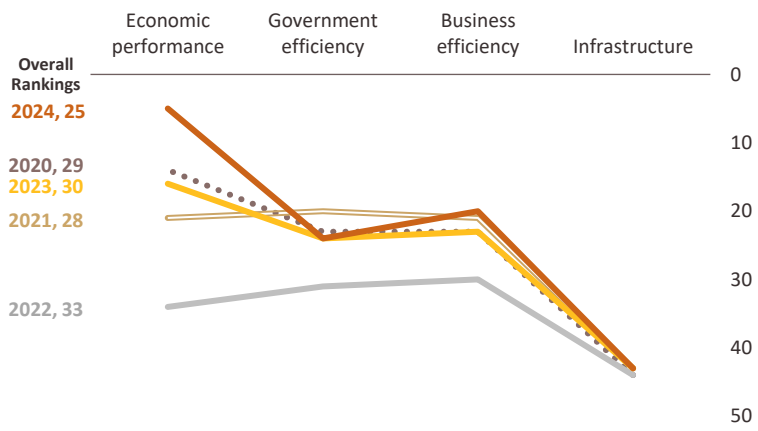
Source: bangkokbiznews, manager online, thansettakij as of September 2024

The business environment

Structural issues are eroding the competitiveness of Thai industry

Thailand climbed 5 places in the 2024 IMD World Competitiveness Ranking, coming in 25th out of the 67 economic regions assessed. This thus matches Thailand's highest placing, which it previously achieved in 2019. The country's position improved in the categories of **economic performance,** where Thailand rose 11 spots to 5th overall thanks to recovery in international trade (Figure 16), and **business efficiency,** where thanks to significant improvements in company management, Thailand ranked 20th, up 3 places from 2023. Unfortunately, the country performed less well on **government efficiency** (24th overall) and **infrastructure** (43rd), and since these are areas that have a direct bearing on competitiveness and ability to attract investment, greater efforts need to be made in these areas. Thailand's position contrasts with that of Singapore, ranked 1st overall thanks to its strengths in infrastructure development and public sector administration, Switzerland (2nd), which benefits from its high-quality education system, skilled workforce and status as a hub of R&D and innovation, and in 3rd place Denmark, which is noted for its environmental management and use of alternative energy.

Figure 16: Ranking of Thailand's Competitiveness



Source: IMD 2024 (World competitiveness ranking 2024), by country
The Office of National Higher Education Science Research and Innovation Policy Council (NXPO)

Thai manufacturing failed to fully recover in the aftermath of the COVID-19 pandemic, and the sector's competitiveness continues to struggle under the weight of structural problems that include: a focus on products that are falling out of favor in world markets (e.g., hard disk drives) that is then forcing the country out of global supply chains; the rapid aging of Thai society, which is worsening labor shortages; and problems recruiting skilled staff. The 2023 Global Talent Competitiveness Index (GTCI) thus placed Thailand 79th overall out of the 134 countries surveyed, while the country managed to reach only 4th spot in the ASEAN region. It is therefore essential that the country's workforce is upskilled so that employers are able to access the highly-skilled individuals that modern business requires. In addition, at 1.16% of GDP (as of 2023), spending on R&D remains far from the government's target of reaching 2% of GDP by 2027. **Therefore, Thailand needs to invest in developing workforce skills, particularly in digital technology, artificial intelligence, and automation, which are crucial for enhancing the country's competitiveness.** This aligns with the World Bank's recommendations for sustainable economic restructuring (Figure 17), which advocates a mix of investment, infusion of appropriate technologies and business models, and innovation of new products and services that leverage each country's unique strengths.

Figure 17: The Mixer of Investment, Infusion and Innovation by Income Classification

Income Classification	Investment	Infusion	Innovation
Low-income	 Higher priority	 Lower priority	 Lower priority
Lower-middle-income	 Higher priority	 Higher priority	 Lower priority
Upper-middle-income	 Higher priority	 Higher priority	 Higher priority

Source: World Development Report 2024

Note: The orange dials indicate a strategy that is a priority for that particular income group. The blue dials indicate a strategy that is less of a priority for that particular income group until the priority strategy is successfully achieved.

- **Changes to policies and regulatory frameworks and their impact on businesses**
  - **Real estate**
    - **The agreement of mutual visa exemption between China and Thailand** (effective March 1, 2024) will make it easier for Chinese buyers to travel to Thailand to purchase property. This will thus **stimulate the market for condominiums, adding to demand from both owner-occupiers and investors.**
    - **Tax breaks for individuals looking to build a home will help to stimulate residential construction.** These measures will run from April 9, 2024, until December 31, 2025, and **will allow individuals to reclaim up to THB 0.1m in taxes when constructing houses costing up to THB 10m.**
    - **Government measures to promote homeownership among low-income earners** (implemented by the Government Housing Bank) include the 'Happy Home' scheme, under which individuals may be eligible for mortgages of up to THB 3m with interest fixed at 3% for the first 5 years, and the 'Happy Life' program, which provides mortgages of up to THB 2.5m with interest fixed at an average rate of 2.98% for the first 3 years. Applications to these schemes will be open until December 30, 2025, or until funding has been exhausted. **These schemes will thus provide easier access for low-income earners to financing for home purchases.**
    - **The BOI is promoting the construction of new homes for low-income earners** through a scheme that offers 3-year tax holidays to property developers if: (i) they construct new condominiums with a size of at least 24 sq.m. per unit, or 70 sq.m. in the case of detached or townhouses; and (ii) these have a maximum price of THB 1.5m each. This project will run from 15 March 2024, to 31 December 2025, to stimulate purchasing power among low-income earners.

- **Regulations and measures currently under consideration or being revised**
  - **The Rights over Leasehold Asset Act** will extend the length of the maximum permissible property lease from 30 to 99 years. (i) The maximum initial lease length will be extended from 30 to 50 years, and (ii) on the expiry of the initial lease, this may be extended once for a maximum of 50 years, though the two leases together must not be longer than 99 years. The second lease must be registered with the Land Office to be considered valid.
  - **The Condominium Act** will be amended to allow a maximum of 75% of the saleable area in a condominium project to be owned by non-Thais (up from 49%). However: (i) this is limited to properties in Bangkok, Phuket and Pattaya; (ii) developments must be on a site no more than 5 rai in size; (iii) no more than 49% of votes may be cast by non-Thais in legal entities governing the management of condominiums; and (iv) local authorities may enforce additional requirements, such as banning the construction of property on agricultural land or in military zones.

- **Manufacturing**
  - **Duties are being waived on imports used to assemble battery-powered autos and boats** (effective March 7, 2023, to December 31, 2025). They will apply to traction motors, EV compressors, battery management systems, drive control units, on-board chargers, DC/DC converters, inverters and PCU inverters, and reduction gears. It is hoped that **this will help to stimulate the domestic production of BEVs and so strengthen Thai BEV manufacturing supply chains.**
  - **The US has imposed punitive tariffs on imports of solar equipment/solar cells from Thailand, Malaysia, Vietnam, and Cambodia** as part of anti-dumping/countervailing duty circumvention measures, that is, to prevent Chinese manufacturers from avoiding duties by exporting to the US via these countries. Initially, the duties placed on exports of solar cells from Thailand to the US (Thailand's most important export market) will be at a rate of 23.06%, compared to 2.85% for Vietnam, 8.25% for Cambodia, and 9.13% for Malaysia (due to be revised in April 2025). This will therefore drag on exports, and **Thai players may lose market share to South Korean exporters,** which are the 4th most important source of imports of solar cells to the US and which are not subject to these duties.
  - **The anti-dumping committee has approved the imposition of anti-dumping measures on imports of hot-rolled and flat-rolled steel products** from Brazil, Iran, and Turkiye of respectively 34.4%, 7.3-38.3% and 6.9-38.2%, which will be levied on CIF (cost, insurance and freight) prices. These measures will be in place for 5 years, running from June 2023 to June 2028, though three categories of imports will be exempt: (i) imports for use or export from free trade zones as established in the law on the Industrial Estate Authority of Thailand; (ii) imports made by companies that have received investment support from the BOI for the purposes of import and export; and (iii) imports for use in exports as per the relevant customs law. **These measures will likely keep prices for imported steel elevated, and these increases may then be passed through into higher production costs, especially for auto manufacturers and manufacturers of electrical appliances.**
  - **Thailand's sugar tax, a tax paid by manufacturers of soft drinks based on their sugar content**, ratchets up regularly. Phase 2 of this was introduced in 2017, with phase 3 running from April 1, 2023, to March 31, 2025. The next and final phase of the tax will start on April 1, 2025. **This will negatively affect the costs of manufacturers that use a significant amount of sugar in their production process, and so players may be tempted to pass these additional costs on to consumers.**

- **Auto industry**
  - **The Thai Industrial Standards Institute (TISI) has adjusted exhaust emission standards for trucks, buses, pickups, and eco cars to align these with the Euro 6 standards,** coming into force on January 1, 2025. It is hoped that this will reduce emissions of dangerous air pollution, including PM 2.5 particulates. **However, the need to develop parts that meet these new requirements will add to players' manufacturing overheads.**
  - **Changes to excise duties on autos will help to reduce the release of greenhouse gases**
    - **The bands assigned to vehicles' according to the quantity of carbon dioxide (CO_2) that they release will be tightened**, with the total number of bands increased from 4 to 5. The new bands are CO_2 released < 100 grams/kilometer, 100-120 grams/kilometer, 121-150 grams/kilometer, 151-200 grams/kilometer, and > 200 grams/kilometer. These changes are part of a package to promote energy saving and a reduction in the release of CO_2
    - **Excise duties for HEVs (hybrid electric vehicles) and PHEVs (plug-in hybrid electric vehicles) will be set according to their CO_2 emissions** as follows.
      - **HEVs with engine capacities up to 3,000 cc** will be taxed as follows: (i) vehicles emitting no more than 100 g/km of CO_2 will be taxed at 6%, (ii) vehicles emitting 101-120 g/km will be taxed at 8%, and (iii) vehicles emitting over 120 g/km will be taxed at 14-24% during 2026-2027, 16-26% during 2028-2029, and 18-28% starting from 2030.
      - **HEVs with engine capacities over 3,000 cc** will be taxed at a rate of 40%, effective January 1, 2026.
      - **PHEVs with engine capacities up to 3,000 cc,** that can travel for at least 80 kilometers on a single charge, and that have a petrol tank that is no bigger than 45 liters, excise will be set at 5%, while for those that travel less than 80 kilometers per charge or that have a petrol tank larger than 45 liters, excise duties are set at 10%. **All PHEVs with an engine bigger than 3,000 cc** will face excise duties of 30%. This will be with effect from January 1, 2026.
    - **Excise duties will be levied on traditional internal combustion engine (ICE) powered vehicles according to their CO2 emissions.** These will rise in stages for every 2 years, beginning in 2026.
      - **For autos with an engine capacity of not more than 3,000 cc,** in phase 1 (January 1, 2026 - December 31, 2027) excise rates will be in the range of 13-34% as per vehicles' CO_2 emissions. Phase 2 will run from January 1, 2028, to December 31, 2029, when the rate will increase to 14-36%, and from January 1, 2030, onwards, excise duty will be set at 15-38%.
      - **For autos with engines larger than 3,000 cc,** excise rates will be fixed at 50% from January 1, 2026, onwards. It is hoped that this will encourage the development of more environmentally friendly technology.
    - **Excise tax on BEVs will be cut from 8% to 2%** to encourage their manufacture and use, as per the resolution of the national committee on EV policy, which has set a target of 30% of cars coming off Thai production lines being zero emission vehicles (ZEVs) by 2030.
    - **To increase the competitiveness of Thai-made pickups and similar vehicles and to help Thailand maintain its position as a regional center of auto production,** the authorities are supporting the use of alternative energy other than biodiesel and promoting the production and use of BEVs and FCEVs (fuel cell electric vehicles). As part of this strategy, excise duties on these will be set at respectively 2% and 0% of the selling price.
    - **As with autos, excise duties for motorcycles, both ICE-powered and HEV and PHEV models, will be set according to their CO_2 emissions.** ***The first stage of the new regime will run from January 1, 2026, to December 31, 2029,*** with excise rates set at: 4% (CO_2 emissions < 50 g/km), 6% (CO_2 emissions 51-90 g/km), 10% (CO_2 emissions 91-130 g/km), and 20% (CO_2 emissions > 130 g/km). ***In phase 2 (from January 1, 2030, onwards),*** rates from 5-25%.

- **To stimulate growth in the BEV segment, over 2024-2027,** the government will give subsidies of THB 50,000-100,000 to individuals buying a BEV costing up to THB 2 million, and of THB 10,000 to those buying a BEV motorcycle that costs no more than THB 150,000.
- **Road tax is being cut for BEVs** registered between October 1, 2022, and September 30, 2025. Thus, to encourage the production and use of environmentally friendly vehicles while cutting emissions of CO_2 and PM2.5 particulates, annual road tax on BEVs will be slashed by 80% for 1 year.
- **The National Electric Vehicle Policy Committee has announced measures to support the use of large commercial electric vehicles, including electric buses (E-buses) and electric trucks (E-trucks).** Companies purchasing these vehicles can claim tax deductions in two ways (effective until the end of 2025): (i) for vehicles manufactured or assembled domestically, they can deduct expenses at a rate of 2 times, and (ii) for imported vehicles, they can deduct at a rate of 1.5 times. These measures are expected to ease the cost burden of upgrading vehicles for businesses and encourage greater adoption of large electric vehicles for transportation.

■ **Petrochemicals & plastics**

- **Phase 4 of the investment support plan for the petrochemical industry (for the period 2022 to 2026) aims to increase the industry's added value, prepare the industry for the transition to the circular economy, and establish a production base that will then supply inputs into the new S-curve industries** (e.g., specialty petrochemicals, chemicals, bioplastics, and recyclable materials) as well as support an extension of research and development and the buildout of associated infrastructure. It is expected that this will encourage an expansion in investment, especially in biodegradable petrochemicals. This will help players better respond to market needs and increase the range of uses for inputs, and over the long term, this should increase operators' competitiveness.
- **Phase 2 of the plastic waste management plan (2023-2027) aims to improve the sustainability of this through a comprehensive life cycle management approach.** This involves: (i) **upstream design and production,** focusing on the manufacture of eco-friendly products; (ii) **management of midstream processes** including encouraging consumers to choose more environmentally friendly products that can be reused and recycled and to cut consumption of plastics by rejecting the use of packaging that has negative environmental impacts; and (iii) **the use of integrated solid waste management in downstream processes,** for example, separating and recycling waste where possible, developing waste-to-energy schemes, and composting organic waste, thus ensuring that only an absolute minimum of waste is sent to landfills. However, **this will add to business overheads and at least initially, this may drag on profit growth.**

■ **Energy**

- **The roadmap for the transition to a carbon-neutral economy should come into effect in 2025.** This is comprised of a variety of strands: (i) the 2024 Power Development Plan, (ii) the Gas Plan, (iii) the Alternative Energy Development Plan, (iv) the Energy Efficiency Plan, and (v) the Oil Plan. Taken together, these aim to help Thailand reach carbon neutrality by 2050 and zero greenhouse gas emissions by 2065. **This should then allow businesses to develop more secure plans for investments in relating sectors such as electricity generation, gas production platforms and importers, and oil refineries.**
- **Amendments to the 2024 Power Development Plan** (expected to be completed and come into effect in 2025) and **the 2024 Alternative Energy Development Plan** will manage the development of renewables through the two phases of (i) 2021-2030 and (ii) 2031-2037, and the current target is that by the end of this period, renewables should comprise at least 50% of installed capacity (source: draft PDP2024, EPPO). **These targets will then support an expansion in new generating capacity by the private sector** from: (i) sources that have no associated cost of inputs/fuel, such as wind, biogas, and solar (including solar farms with and without energy storage facilities, and rooftop solar installations); and (ii) waste-to-energy schemes (from community and industrial sources) and biomass energy.

- **Environments**
  - **The EU's Carbon Border Adjustment Mechanism (CBAM)** entered its transition period on October 1, 2023. From this date, exporters to the EU of goods in six product categories (cement, electricity, fertilizer, iron and steel, aluminum, and hydrogen) will need to report the embedded emissions of these products. **However, full enforcement of the CBAM will begin on January 1, 2026, when exporters will need to begin reporting the carbon footprint of their products as verified by a licensed auditor. Exporters may also have to pay for their products' embedded emissions.** Thai exporters, particularly those in the aluminum and iron and steel industries, which are carbon-intensive, thus face the prospect of higher costs, potentially **impacting the competitiveness of Thai companies.**
  - **The US authorities are in the process of drafting the Clean Competition Act (CCA),** which will establish a carbon pricing mechanism to be applied to US-based production and to determine the operations of the carbon border adjustment mechanism (US CBAM). These measures will apply to energy-intensive products such as fertilizer, hydrogen, cement, iron and steel, fossil fuels, refinery products, petrochemicals, adipic acid, glass, paper and paper pulp, and ethanol. The US CBAM is expected to be implemented in 2027.
  - **The International Civil Aviation Organization (ICAO) is introducing the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)** for all 193 member states, including Thailand. The scheme has two principal components: (i) measuring, reporting, and verifying (MRV) carbon emissions arising from international aviation on an annual basis; and (ii) offsetting emissions that exceed agreed quotas through the purchase of carbon credits. CORSIA will be enforced on a voluntary basis from 2024 to 2026, but from 2027 onwards, compliance will be mandatory, leading to higher costs for airline businesses.
  - **The EU's Deforestation Regulation (EUDR)** has established new laws requiring that importers and exporters of seven products (rubber, oil palm, cattle, wood, coffee, cocoa, and soy, together with their derived products such as gloves and wooden furniture) will need to demonstrate that any products placed on or exported from the EU market are deforestation-free. The EUDR entered its transition phase on June 29, 2023, with full enforcement beginning on December 30, 2025. **Rubber will be the most seriously affected Thai export, followed by wood and palm oil.**
  - **The EU's Corporate Sustainability Due Diligence Directive (CSDDD)** requires large businesses within the EU to assess and report on their environmental and social responsibilities throughout their supply chains. This includes monitoring emissions and protecting labor and human rights. The law came into effect on July 25, 2024 (transition period), before being fully enforced in all EU countries from July 26, 2027, onwards. It is expected to **impact the operating costs of Thai businesses that may be part of the supply chain due to investments or business collaborations with companies in Europe.**
  - **In Thailand, the authorities are drafting the Climate Change Act**, which is currently being prepared for submission to the Cabinet. Its key provisions require that businesses report their carbon emissions and set targets for climate actions. The law will also promote the development of a carbon pricing mechanism including a carbon tax, an emission trading scheme (ETS), and a carbon credit market, thus **encouraging stakeholders at all levels to take concrete action towards the 2065 net-zero target.** The Department of Climate Change and Environment (formerly the Department of Environmental Quality Promotion) will be the regulator for the Act.
  - **Thailand is set to implement a carbon tax**, initially expected to target oil products at a rate of THB 200 per tonne of carbon dioxide equivalent. During the initial phase, the tax will be integrated into a restructuring of the excise tax, thus will not affect the overall tax burden for consumers. For instance, the current excise tax on diesel (THB 6.44 per liter), will be divided to include a carbon tax of THB 0.46 per liter. The proposal is currently being prepared for submission to the Cabinet and is expected to begin tax collection within the fiscal year 2025.
  - **The government is preparing to implement a law banning the import of plastic waste from abroad** in order to reduce impacts on the environment and domestic plastic prices. This law will apply to products classified under the Harmonized Code 39.15 (waste, parings, and scrap, of plastics) and will come into effect on January 1, 2025.

- **The Bank of Thailand is working with public- and private-sector stakeholders to develop 'Thailand Taxonomy'**, a classification of businesses according to their environmental impacts. Phase 1 of Thailand Taxonomy has been completed for the energy and transportation sectors. Moving forward, Phase 2 will be expanded to include other parts of the economy, such as manufacturing, agriculture, waste management, construction, and real estate, with an expected completion in 2025. This will help companies plan and execute business transformations more effectively. Additionally, the financial sector will be able to use the taxonomy to guide the development of sustainable financial products, such as green bonds and green loans.
- **The Securities and Exchange Commission (SEC) has revised the conditions for Thai ESG Fund** for the investment period from January 1, 2024, to December 31, 2026. The changes include: (i) Increasing the maximum investment amount to THB 300,000 (not including other savings funds), allowing tax deductions of up to 30% of assessable income; (ii) Reducing the holding period to five years from the purchase date; and (iii) Requiring Thai ESG funds to invest in securities that demonstrate strong environmental performance, as assessed by credible institutions, and to disclose information on greenhouse gas emissions and governance as specified. These measures aim to encourage sustainable practices among businesses and investors in Thailand, aligning with ESG principles.

Services

Hotels

- **The Ministry of the Interior has suspended the fee for registering hotels for the period from 1 July, 2024, to 30 June, 2026.** This aims to cut expenses for hotels while the industry is still in a period of recovery, and **this should thus act as a stimulus for hotel businesses, especially for smaller operations that are outside the major tourist areas.**

Construction

- **The authorities have issued new quality standards for imports** of 55% aluminum-zinc alloy hot-coated flat steel and zinc-coated cold-rolled steel. These rules are expected to become effective in 2025 and will tend to raise prices for imports of these products.
- **Thai Industrial Standards (TIS) 107-2566 (in effect from November 2, 2024) removes the minimum circumference and thickness sizes for carbon steel pipes used in general construction.** These changes aim to improve the standard of pipes of all sizes by helping to prevent the sale of low-quality goods that lack quality standards marks. This will allow contractors working on public sector projects to use pipes of all sizes since these are now equally subject to the official standards.

Labor

- **The cabinet has approved changes to tax legislation that will encourage skilled Thais working abroad to return to Thailand to work in the government's target industries.** To qualify, individuals will need to return to Thailand in the period between the date of the initial enforcement of the legislation and December 31, 2025. For eligible employees, personal income tax will be capped at 17% of assessable income, while employers will be able to deduct salary expenses for these individuals at 1.5-times their actual amount (with effect from the day of enforcement until December 31, 2025).

- **Finance**
  - **The Bank of Thailand (BOT) will announce the list of authorized Virtual Bank licensees by mid-2025, with the first service provider expected to begin operations by mid-2026.**
    - **The BOT is currently reviewing applications to operate virtual banks.** Between March 20 and September19, 2024, five applications were submitted: (i) Krungthai Bank (KTB), in partnership with Advanced Info Service (ADVANC), PTT Oil and Retail (OR), and GULF; (ii) BTS Group Holdings (BTS), in partnership with Bangkok Bank (BBL), Singapore's Sea Group, Saha Pathanapibul Group, and Thailand Post; (iii) SCBX, in collaboration with South Korea's KakaoBank and China's WeBank; (iv) CP Group, operating through its subsidiary Ascend Money (provider of TrueMoney services), in partnership with Ant Financial Services Group, part of Alibaba Group; and (v) Thai fintech company Lightnet Group, in partnership with Hong Kong's WeLab.
    - **The regulatory framework covers key points as follows:** (i) Other financial institutions, even those within the same financial group, are prohibited from extending credit or engaging in credit-like transactions with virtual banks; (ii) If another financial institution holds shares in a virtual bank and the capital infusion exceeds the actual investment, the Bank of Thailand may require the capital level to be adjusted to align with the risks faced by the bank; (iii) Virtual banks are prohibited from using names, trademarks, or symbols that suggest affiliation with other financial institutions; (iv) At least one director and the chief technology officer of a virtual bank must have at least 3 years of experience in information technology; (v) Transactions with major shareholders that could lead to conflicts of interest must receive unanimous approval from the virtual bank's board of directors and be reported every 6 months; (vi) Virtual banks must offer services exclusively through digital channels, except in necessary cases such as the ATM pool system; and (vii) Virtual banks must ensure continuous service, with disruptions not exceeding 8 hours per year, and service must be restored within 2 hours in the event of an issue.
  - **The BOT strengthened measures to combat financial fraud (mule accounts) on 13 June 2024, as follows:**
    - **Group 1: Enhancing the controls and management of mule accounts** by shifting from account-level actions to individual-level actions, enabling faster handling of suspicious accounts, both existing and newly opened accounts. Banks now use data from three sources to manage mule accounts: (i) The Anti-Money Laundering Office (AMLO), or "Black Mules," which is a list of high-risk individuals identified by AMLO; (ii) The Central Fraud Registry (CFR), or "Grey Mules," which contains the names of individuals who have been reported to the police or are involved in fraudulent money flows across all banks. All banks have access to cross-bank data starting from 1 August 2024; and (iii) Information from individual commercial banks, or "Brown Mules," which consists of accounts flagged for suspicious activity by each bank. All banks apply the same standards for managing mule accounts, such as immediately suspending access to the account via electronic channels and then following up with an investigation.
    - **Group 2: Introducing products or services to enhance user security.** Banks must assist customers in using digital services more securely, including features such as locking transaction limits through online channels, making it more difficult to unlock those limits, and/or reducing the size of transactions made via mobile banking that require a facial scan to below THB 50,000. Additionally, funds transfer may require approval from a third party (double authorization) or only allow transfers to pre-approved recipients. All these measures are expected to be developed by the fourth quarter of 2024**.**

- **The Bank of Thailand, in collaboration with the Ministry of Finance, the Thai Bankers' Association, government agencies, and the National Economic and Social Development Council, has launched a temporary relief program titled "You Fight, We Help" (from December 12, 2024, to February 28, 2025)** to support individual debtors and specific groups of SMEs. The program includes two measures:
  - **"Pay On Time, Preserve Asset":** This measure assists small-scale home, car, and SME loan debtors with limited credit lines who are over 30 but under 365 days past due. It involves restructuring debts by reducing installment payments and deferring interest for three years. All payments during this period will go toward principal reduction, and interest accrued over a 3-year period will be waived if conditions are met.
  - **"Pay, Settle, Finish":** This measure aims to alleviate debt for individual NPL-status debtors with outstanding balances not exceeding 5,000 baht. Debtors must negotiate with creditors to restructure the debt and make partial payments, allowing them to transition from "non-performing debt" to "debt settled," facilitating a fresh start.

- **Multinational Enterprises (MNEs)**
  - **The cabinet approved the Emergency Decree on Top-up Tax, B.E. 2567 (2024), setting a minimum rate of 15%.** It has been officially promulgated in the Royal Gazette and will apply to large MNEs with annual revenues of at least 750 million euros in at least two of the four preceding fiscal periods. This will be effective for fiscal periods starting on or after January 1, 2025. The measure aligns with the global minimum tax framework to prevent tax competition among countries to attract foreign investment.

Krungsri Research sees the macroeconomic and industrial factors described above presenting both opportunities and challenges to businesses and industry. Companies will thus have to adapt rapidly to changing macroeconomic and social conditions. Players will also have to adjust to a regulatory framework that is evolving as the authorities look to build a robust foundation for businesses and create an environment conducive to long-term sustainable growth.

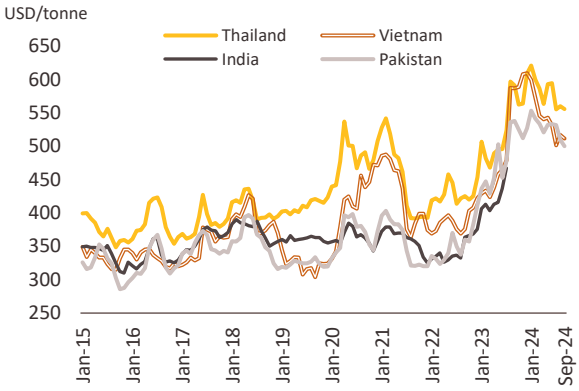
AGRICULTURE

Rice

Situation in 2024

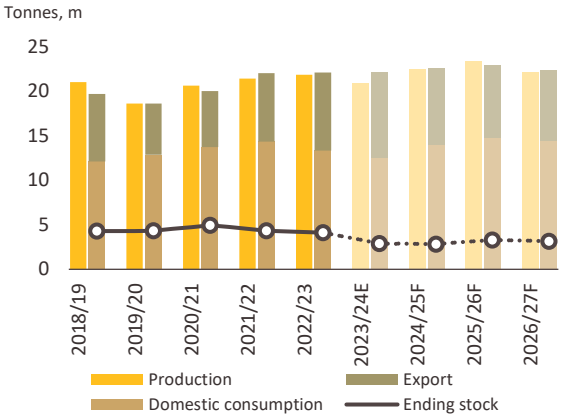
- **Total production index of paddy contracted by -5.2% YoY over 9M24** following the continuation of the El Niño into the start of the year and the resulting delays and reductions in rainfall, which then drove farmers to abandon plantings in some areas. Per unit yields also fell, especially in the areas outside the reach of irrigation systems, with this situation then worsened by flooding in September and October. **2024 outputs will thus fall to 31.9-32.3m tonnes of paddy or 20.8-21.0m tonnes of milled rice (down by between -4.0% and -5.0%).**
- **9M24 exports surged by 22.0% to 7.5m tonnes of milled rice.** These were lifted by: (i) India's decision to suspend exports and to place export tariffs on overseas sales, which diverted demand to Thailand; and (ii) geopolitical uncertainty, worries about the impact of drought over 1H24, and falling global inventories that added to demand for rice to build stocks and to ensure food security. Competition to source supplies to export pushed up average prices by 14.8% YoY. However, India has now lifted export controls and with supply worries easing, export growth will likely reverse. **For 2024 overall, exports are thus forecast to expand by just 8.5-9.5% to 9.5-9.6m tonnes of milled rice.**
- **Domestic sales volume is forecast to slip by -5.0% to -6.0% over 2024, or to 12.5-12.7m tonnes of milled rice** as high prices trigger a -33.5% to -36.5% slump in demand for rice for use in animal feed and in other industries (to 1.5-1.6m tonnes of milled rice). Nevertheless, an uptick in economic activity and the strength of the tourism sector will raise demand from restaurants, hotels and other downstream industries, bringing this to 11.0-11.1m tonnes of milled rice (up 0.5-1.5%).

Figure 1: World White Rice 25% Prices (F.O.B.)



Source: Food and Agriculture Organization of the United Nations (FAO)
Note : Export prices for Indian rice, correct as of July 2023 (the latest data available).

Figure 2: Thailand Rice Production, Consumption and Export (milled rice)

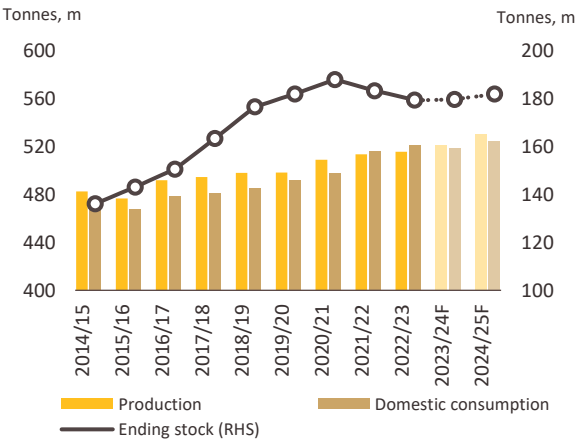


Source: OAE, DOA, MOC, Krungsri Research

2025-2027 Outlook

- **Outputs are forecast to expand by 5.5-6.5% to 35.8-36.5m tonnes of paddy or 23.2-23.7m tonnes of milled rice over 2025-2026.** This will be due to: (i) the continuation of the La Niña into 2025, which will raise rainfall, help to ensure sufficient access to irrigation water, and expand the area under cultivation; (ii) high prices in 2024 that will encourage farmers to plant more rice; and (iii) government interventions to support rice prices. However, **the possible return of an El Niño in 2027 will cut outputs by -5.0% to -6.0%, or to 33.8-34.2m tonnes of paddy or 22.0-22.2m tonnes of milled rice.** In addition, high production costs will force some farmers to cut back on their use of fertilizer, negatively impacting yields.
- **Exports will decline by between -5.5% and -6.5%, falling to 7.8-8.1m tonnes of milled rice** as the onset of La Niña conditions lifts outputs in competitor nations. Vietnamese, Pakistani and especially Indian products will then return to global exchanges, and the price competitiveness of these products will reduce Thailand's presence in world markets.
- **Domestic sales volume will climb to approximately 14.1-14.5m tonnes of milled rice annually (up 4.0-5.0% per year).** Demand will benefit from: (i) an improving outlook for restaurants and hotels as tourist arrivals continue to strengthen; (ii) rising demand from downstream industries, especially food processors; and (iii) an improvement in labor markets, which will increase consumer spending power and boost demand for rice for personal consumption.

Figure 3 : World Rice Balance



Source: USDA

Rubber

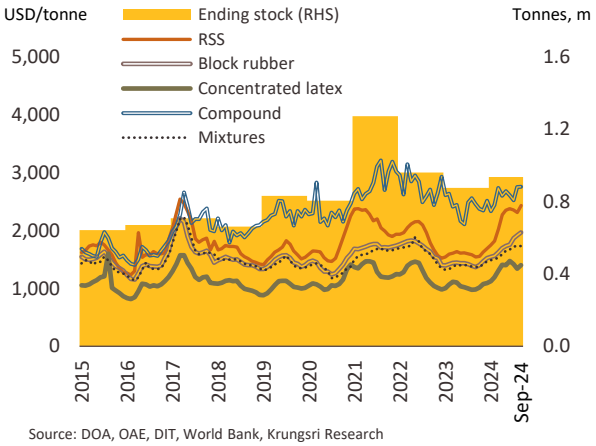
Situation in 2024

- **Rubber outputs index slipped -0.6% YoY over 9M24, moving with falls in the MPIs of RSS, TSR, concentrated latex and mixed rubber of respectively -13.4%, -2.1%, -3.4% and -26.6% YoY.** The industry was hurt by outbreaks of leaf fall disease, as well as the hotter weather and decreasing rainfall by the El Niño. Weaker economic conditions in overseas markets also undercut purchasing power and demand for raw materials, and so by volume, **exports fell -6.6% YoY to 3.2m tonnes.** These declined -7.3% YoY for RSS (down to 0.3m tonnes), -13.8% YoY for concentrated latex (to 0.5m tonnes) and -31.0% for mixed rubber (0.9m tonnes). However, rapidly expanding sales of Chinese EVs fed through into increases of 25.1% YoY in exports of TSR (to 1.4m tonnes) and 2.2% YoY for compound rubber (0.085m tonnes). Nevertheless, with global supply contracting faster than demand, export prices jumped 23.8% YoY, and so export value increased 15.6% YoY to USD 5.4bn.
- For the year overall, **the El Niño and the spread of leaf fall disease will reduce output of intermediate rubber goods by -3.5% to -4.5%, or to 4.9-5.0m tonnes. Domestic demand will also slide by -3.0% to -6.0%** on a drop-off in activity in the auto and in construction industries. Internationally, weakness in the Chinese market is affecting sales of mixed rubber, concentrated latex and RSS and so 2024 **exports are forecast to decline to 4.1-4.2m tonnes, a drop of between -6.0% and -7.0%.** However, export prices will be up by 23.5-24.5% on tighter supply from Thailand and other producing nations and elevated crude prices that have lifted energy costs. As such, export value will rise by 16.0-17.0% to USD 7.1-7.2bn.

2025-2027 Outlook

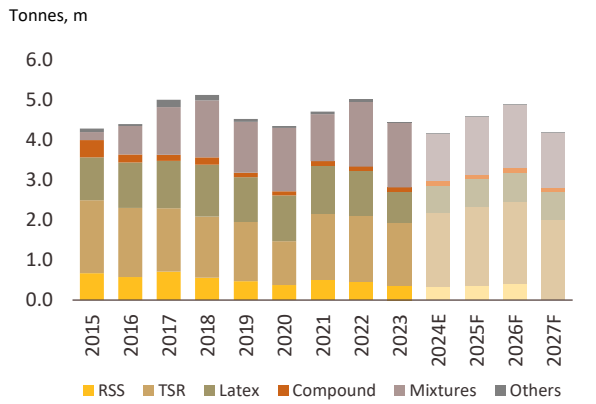
- **Outputs should strengthen by 2.0-3.0% pa** on: (i) rising yields from stands planted some years ago that are now at their most productive; (ii) better weather and access to water; and (iii) high prices that will encourage growers to better care for their trees and to tap these more often.
- **Overall demand will be expected to rise, with domestic consumption tends to increase 2.5-3.5%** on: (i) stronger sales to downstream industrial consumers, especially manufacturers of autos and auto parts; (ii) recovering demand from public- and private-sector construction; and (iii) government measures to absorb excess production. **Exports will expand by 2.5-3.5% per year,** helped by: (i) improving economic conditions in overseas markets that will lift spending power; (ii) strengthening demand from industrial consumers, especially manufacturers of autos, auto parts and tires; and (iii) the need to support increased output by building inventories.
  - **RSS: Annual exports will edge up 2.5-3.5%** since while Thai production is of a high standard, the country is losing market share to producers in the CLMV nations.
  - **TSR: Overseas sales will rise by 2.0-3.0%** annually on growing demand from industries including auto assemblers (especially of EVs) and manufacturers of tires and auto parts.
  - **Concentrated latex: Exports should rise by just 1.0-2.0%.** Demand will be driven by the need for latex to produce surgical gloves and medical devices, although the market is softening with the fading of the pandemic.
  - **Compound rubber: Exports will inch up 0.5-1.5% annually** thanks to increased manufacturing output in major export markets including India, the US, the EU and China.
  - **Mixed rubber: Exports should be up by 3.5-4.5% per year,** thanks to growth in the auto assembly, auto parts and tire industries, although because mixed rubber can be used in a range of industries, sales will also benefit from growth in the Chinese economy (the main export target).

Figure 1: Thailand Ending Stock and Rubber Export Prices



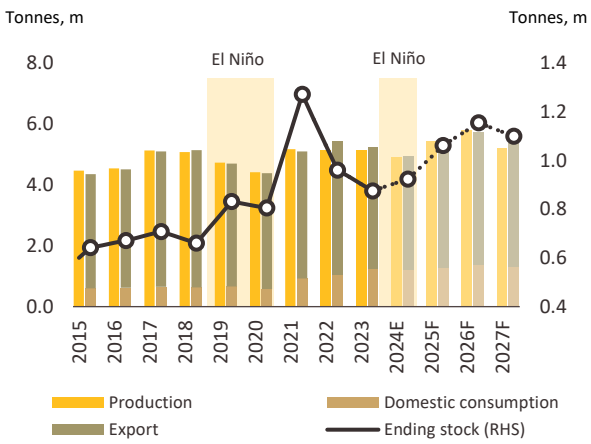
Source: DOA, OAE, DIT, World Bank, Krungsri Research

Figure 2: Thailand Rubber Exports (By Product)



Source: MOC, forecast by Krungsri Research

Figure 3: Thailand Rubber Production, Consumption, Export and Ending Stock



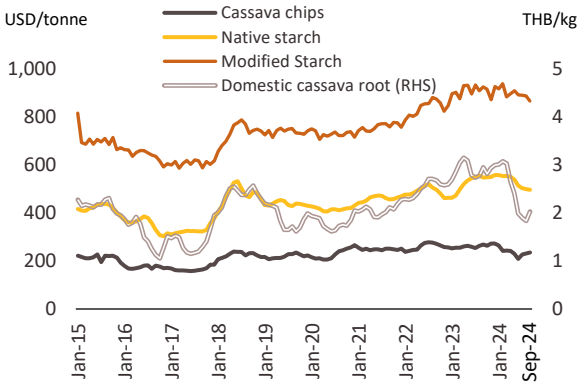
Source: OAE, DOA, MOC, forecast by Krungsri Research

Cassava

Situation in 2024

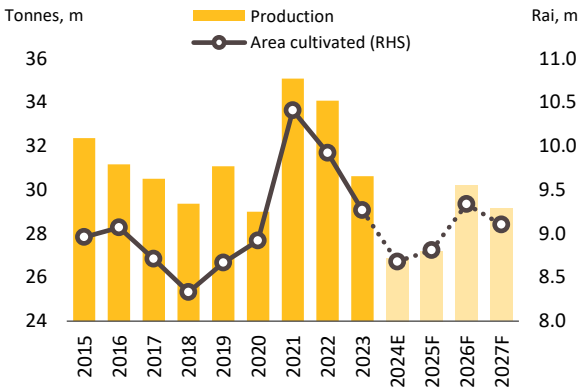
- **Production index of fresh cassava contracted by -11.2% YoY** through 9M24 due to: (i) the impacts of El Niño-induced drought; (ii) the spread of cassava mosaic disease and resulting lower yields; and (iii) outbreaks of disease, pest infestations, and natural disasters that made it difficult to source the cuttings needed for planting. As such, supply shortages emerged and exports fell.
  - **9M24 exports of cassava chips crashed by -58.4% YoY by volume** on: (i) the switch in China to a greater reliance on GMO corn and to the production of ethanol from coal, thereby helping to build food security, ensure energy supplies, and reduce dependency on imports of cassava; (ii) domestic supply shortages that cut exports to China (Thailand's main market); and (iii) the rush to harvest crops during the drought when supply was tight, resulting in cassava with a lower starch content. As such, export prices slipped by -9.0% YoY, and so overall export earnings fell by -62.1% YoY to USD 409.5m.
  - **Cassava starch export volume rose by 14.5% YoY.** Sales into China, Thailand's main export market, climbed 7.7% YoY on greater demand from downstream industries, while in Indonesia, the effects of drought and disease on domestic outputs fed into a 336.5% YoY jump in imports from Thailand. Average export prices thus strengthened by 9.9% YoY.
- **Through the rest of 2024,** although demand from the food and ethanol industries and other parts of the economy will remain solid on both domestic and international markets, the combined effects of the shortage of cuttings, the spread of cassava mosaic disease, and losses due to drought will reduce **2024 fresh cassava outputs by -11.5% to -12.5% (down to 26.8-27.1m tonnes)**, amplifying 2023's -10.1% contraction. The strength of the tourism sector is boosting demand from the food industry, while an increase in domestic travel is lifting consumption of ethanol, and so overall demand should expand by **3.5-4.5% in domestic market**. However, exports of cassava pellets and cassava chips will be down by respectively -66.5% to -68.5% and -48.0% to -50.0%, although overseas sales of native and modified starch should expand by 18.0-20.0% and 2.5-4.5%, respectively.

Figure 1: Cassava Prices



Source: Tapiocathai, Krungsri Research

Figure 2: Thailand Cassava Root Production

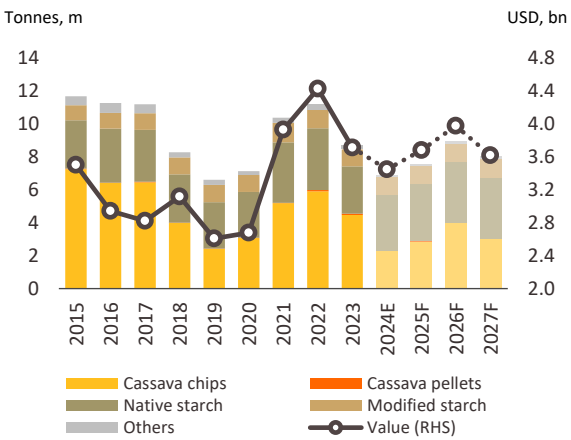


Source: OAE, forecast by Krungsri Research

2025-2027 Outlook

- **Annual cassava outputs should be up by 5.0-7.0% over 2025-2026** thanks to the onset of a La Niña, but the possible return of **drought in 2027 would then cut output by -2.5% to -4.5%.** Continuing problems with disease will also affect yields.
- **Domestic sales will strengthen by 3.0-5.0% p.a,** helped by: (i) the positive effects of economic growth on demand from the food industry; and (ii) government spending on infrastructure and the continuing rebound in the tourism sector, which will add to demand for ethanol. However, with the economy growing, the need to mitigate potential supply shortages has forced a shift from E20 to E10 as the main gasohol mix, and this will put downward pressure on sales.
- **Stronger demand from China will lift exports by some 4.0-6.0% annually,** but the risk of volatility in both prices and outputs may encourage industrial consumers to diversify the inputs that they use. **Annual exports will therefore rise 8.5-10.5% to 2.9-3.1m tonnes for cassava chips, 10.5-12.5% for cassava pellets (to 42,000-44,000 tonnes), 1.5-3.5% for native starch (to 3.6-3.8m tonnes), and 2.0-4.0% for modified starch (to 1.1-1.2m tonnes).**

Figure 3: Thailand Cassava Product Exports



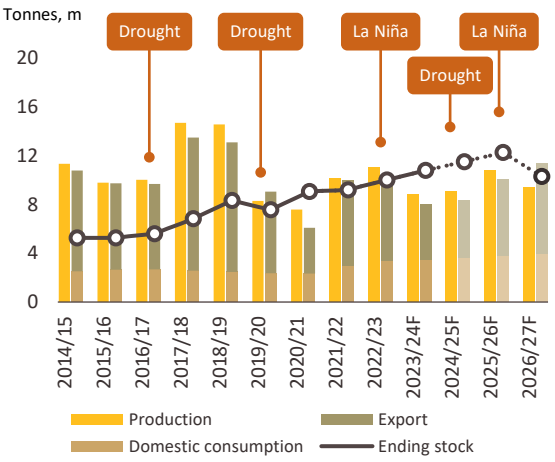
Source: MOC, forecast by Krungsri Research

Sugar and molasses

Situation in 2024

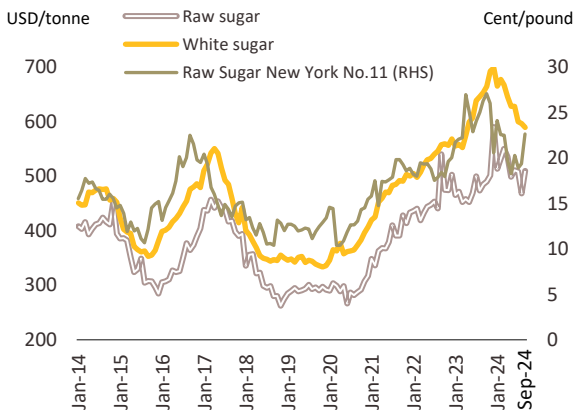
- **The quantity of sugarcane being pressed in the 2023/24 season contracted -12.5% to 82.2m tonnes, with output of sugar then falling -20.4% to 8.8m tonnes.** Declines were driven by: (i) El Niño conditions that cut yields; (ii) a fall in the area under cultivation as farmers switched to cassava, which is more drought resistant, easier to harvest, and more profitable; (iii) a rise in production costs, especially for fertilizer and energy, that encouraged growers to cut back on care and maintenance and undermining yields; and (iv) continuing labor shortages and rising wages that have added further to costs, especially during the harvest of fresh sugarcane.
- **Sugar and molasses exports slumped -40.4% YoY in 9M24, contracting to just 3.6m tonnes,** split between 1.7m tonnes of raw sugar (-53.1% YoY), 1.8m tonnes of white sugar (-22.2% YoY), and 0.12m tonnes of molasses (-10.0% YoY). Declines were caused by: (i) lower crop outputs (result of the El Niño) that led to supply shortages and prevented companies to fulfill export orders; and (ii) stronger supply to world markets, especially from Brazil, which benefited from improved weather.
- **Although the industry is moving into the start of the next pressing season, for all of 2024, exports of sugar and molasses are forecast to fall by -33.5% to -34.5%** on El Niño-induced supply shortages and the need to set aside reserves to meet domestic demand from food and drinks manufacturers, which is being boosted by rising tourist arrivals. **Domestic demand is forecast to expand to 3.49-3.52m tonnes (up 3.5-4.5%)** on recovery in household consumption and stronger sales into the tourism and food and drink industries.

Figure 1: Thailand Sugar Balance



Source: USDA, OAE, MOC, compiled and forecast by Krungsri Research

Figure 2: Thai Sugar Export Prices & Raw Sugar New York No.11 Prices

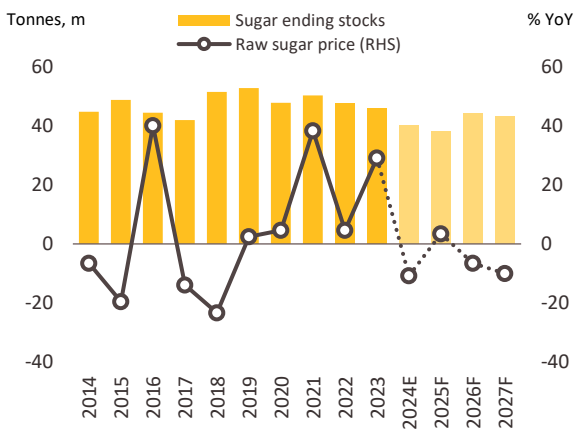


Source: Ministry of Commerce (MOC), compiled by Krungsri Research

2025-2027 Outlook

- **Over the 2025-2026 season, sugarcane outputs should rise** to 111-113m tonnes, which would then produce 10.7-10.9m tonnes of sugar (up 10.0-11.0%). Production will benefit from: (i) the transition to a La Niña and with this, better and wetter weather; and (ii) an earlier rally in prices that has encouraged growers to expand the area under cultivation. However, **the possible onset of an El Niño in 2026-2027 will cut sugarcane outputs** to 97-99m tonnes, and this will bring sugar output down to 9.4-9.5m tonnes, a fall of between -12.5% and -13.5%.
- **Annual exports of sugar and molasses are forecast to rise by 16.0-18.0% to 7.0-7.3m tonnes** thanks to: (i) an easing of supply problems over 2025-2026; (ii) policy in India (a major competitor of Thailand) that is directing sugar away from exports and towards the production of ethanol; (iii) economic growth in export markets that is lifting demand in downstream industries; and (iv) base effects carried over from 2024's crash in exports.
- **Domestic consumption is expected to rise to 3.6-4.0m tonnes, up by 3.5-4.5%** on: (i) a strengthening economy and continuing recovery in tourism; (ii) rising demand from downstream industries, especially producers of food and drink; and (iii) stronger sales of ethanol (made from sugar and molasses) to the transport sector and favorable government policy controlling the mixing of this in gasohol. However, growth in domestic sales may be impacted by the sugar tax.

Figure 3: Global Sugar Flow



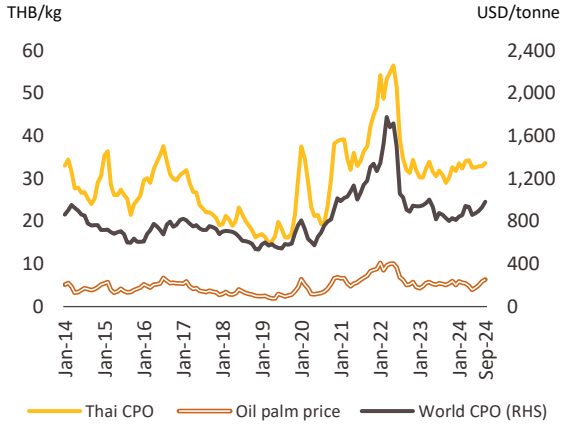
Source: World Bank, USDA, OAE, Krungsri Research

Palm Oil

Situation in 2024

- **Over 9M24, the quantity of palm oil fruits processed into crude palm oil (CPO) climbed 11.7% YoY to 15.8m tonnes** on: (i) worries over the impact of the El Niño; and (ii) government measures to implement a price floor[1/]. However, drought reduced the average oil content of the palm and so **output of CPO totaled just 2.8m tonnes (+7.0% YoY). Domestic demand was up 5.5% YoY to 2.0m tonnes,** split between: (i) 1.1m tonnes (+4.3% YoY) that was used to produce refined palm oil, for which demand was lifted by recovery in the tourism sector, most importantly in restaurants, hotels and nightspots; and (ii) 0.8m tonnes (+7.3% YoY) that was processed into biodiesel, with demand for this boosted by increased activity in the transport sector. **Exports jumped 14.1% YoY to 0.81m tonnes** on strengthening sales into the main markets of India (+16.8% YoY), China (+421.5% YoY) and Malaysia (+32.7% YoY).
- Tailwinds will continue to support the industry through Q4 but worsening outbreaks of stem rot disease will hold rises in **total 2024 palm outputs to 6.0-7.0%, or 19.3-19.5m tonnes, and this will then generate around 3.4-3.5m tonnes of CPO (up 2.0-5.0%).** Strengthening demand for use in the food processing, oleochemicals, and transport industries will raise **domestic consumption of CPO by 4.5-5.5%,** but with supply tightening, **exports will contract by between -0.5% to -1.5%** as a result of government requests to the industry to cease exports over Q4 as officials look to keep prices steady and to maintain supplies to the domestic market. Year-end stocks of CPO will thus fall to 0.20-0.21m tonnes, near the bottom end of the 0.20-0.25m tonne target. This and Indonesia's hike in increases in export duties on overseas sales of CPO are lifting global prices, and with Thai markets following suit, **average domestic prices for CPO and export prices for palm oil products should both be up by 12.0-15.0%.**

Figure 1: Crude Palm Oil (CPO) Prices



Source: DIT, OAE

Table 1: Thai Palm Oil Key Indicators

Tonnes, thousand

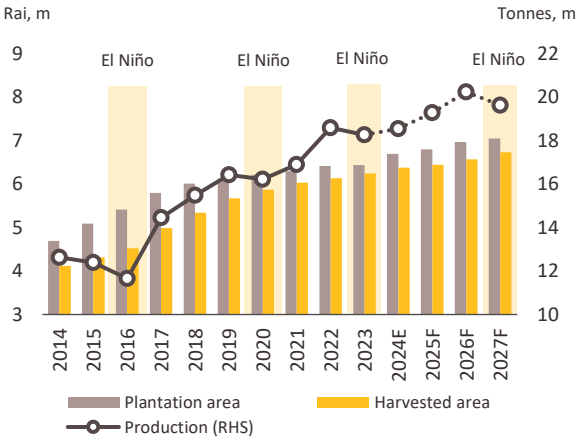
	2020	2021	2022	2023E	2024E
Production	2,652	2,963	3,376	3,328	3,412
Imports	3	1	1	1	2
Domestic con.	2,529	2,382	2,170	2,484	2,600
- Refined oil	1,165	1,235	1,251	1,449	1,511
- Bio diesel	1,364	1,146	919	1,035	1,089
Exports	236	619	1,031	906	896
Ending stock	209	173	348	287	205

Source: DIT, estimated by Krungsri Research
Note: Forecast by Krungsri Research

2025-2027 Outlook

- The transition to La Niña conditions and the incentive effect of high prices will lift **palm yields and output of CPO by 1.5-3.5% annually,** although the possible return of an El Niño in 2027 will again cut per unit palm fruit yields. **Domestic consumption of CPO should increase at an annual average rate of 2.5-4.5%** thanks to continuing economic growth and firmer demand for use in the food processing, oleochemicals and transport industries. **However, the government will try to ensure that domestic demand is met by restricting exports and so these will slip by between -0.5% and -2.5% per year.**
  - **Growers: Incomes will rise** on stronger domestic demand and the effect of government policy on prices, although ongoing outbreaks of disease will cut yields, while the high cost of fertilizer will impact profits.
  - **Crude palm oil mills: Turnover should gradually strengthen** on the back of growth in the domestic market, rising tourist arrivals, growth in commercial transport services, and government promotion of biodiesel. However, over-capacity and competition for inputs may push up CPO production costs.

Figure 2: Thai Oil Palm Plantation and Production



Source: OAE, forecast by Krungsri Research

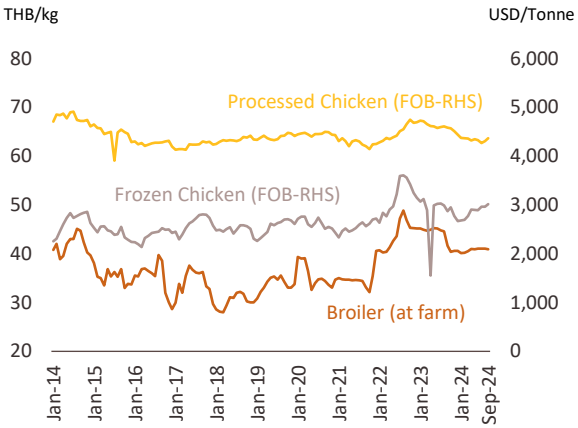
1/ Regulations require that palm oil mills pay at least THB 4.5/kg for palm fruits and that traders purchase palm oil products and derivatives at a price set by the Energy Policy and Planning Office.

Chilled, Frozen and Processed Chicken

Situation in 2024

- **The broiler industry's manufacturing production index edged up 1.1% YoY over 9M24** under the impact of stronger exports. Although farmgate prices dropped -9.1% YoY, these remained high relative to the average maintained over the previous decade and this encouraged farmers to expand their flocks. However, falling domestic prices for pork (down -16.9% YoY on the easing of problems with African swine fever (ASF)) and beef (down -10.0% YoY) reduced demand for chicken, and so **domestic sales contracted -2.4% YoY. Nevertheless, exports jumped 5.4% YoY** on: (i) strengthening demand in Thailand's main export markets; (ii) expansion into new markets in the UAE, South Africa, and the Philippines; (iii) the outbreak of bird flu in Brazil, which then interrupted exports to China, opening the way for Thai exporters to respond to unmet demand; (iv) the rising cost of power and labor in Europe and South Korea that then forced many producers out of the market in these countries, thus diverting demand for raw and processed chicken to Thailand; and (v) Thai producers' improving price competitiveness. Exports of processed chicken (Thailand's major export product) thus surged 13.7% YoY.
- The tailwinds that helped the industry through 9M24 will continue to support growth in the industry across Q4, **and so overall exports are forecast to be up 6.0-7.0%. This will then lift production by 1.0-2.0%, even though domestic consumption is expected to contract by between -1.0% and -2.0%.**

Figure 1: Domestic Broiler Prices and Thai Chicken Export Prices

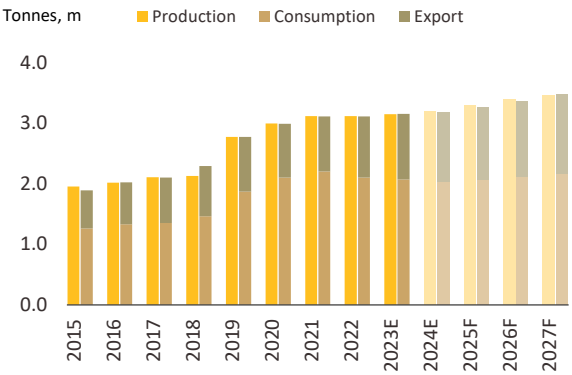


Source: OAE, MOC

2025-2027 Outlook

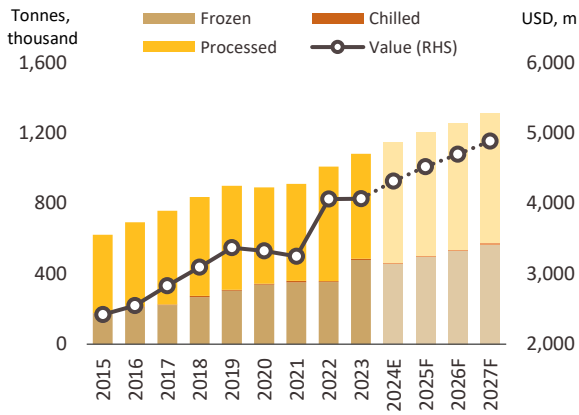
- **Output of chicken products should expand by 2.0-3.0% annually to some 3.3-3.5m tonnes/year** as producers respond to strengthening demand. **Domestic sales will rise at an average annual rate of 1.5-2.5%** thanks to: (i) a better outlook for business and tourism that will then increase turnover for restaurants; (ii) with spending power still soft, the trend among consumers to prefer affordable low-fat, high-protein foods; and (iii) the fall in the cost of animal feed and the rise in output by the chicken industry, which will then tend to lower prices. **Exports are also forecast to rise by 4.0-5.0% annually,** boosted by: (i) the expansion in distribution channels that will result from better trade relations between Thailand and both its neighbors and countries in the Middle East; and (ii) consumers in partner markets continue to choose low-fat proteins to meet health trends, with affordable prices amid gradual economic recovery.
- **Producers will face risks arising from**: (i) the likely easing of problems related to bird flu both in export markets and in competitor nations, where the development of vaccines and the use of evaporative air cooling systems is undercutting the need for imports from Thailand and allowing countries to resume purchases from Thailand's competitors; (ii) the switch in demand to alternative meats following the clearing of problems with ASF and the enforcement of the ASEAN-Australia-New Zealand FTA (AANZFTA) since these are leading to lower prices for respectively pork and beef; and (iii) the increase in non-tariff barriers to trade (NTBs), in particular those concerned with animal welfare, the environment, and governance issues (i.e., the ESG agenda).

Figure 2: Thai Chicken Industry Forecast



Source : OAE, Forecast by Krungsri Research

Figure 3: Thailand's Chicken Product Exports Forecast



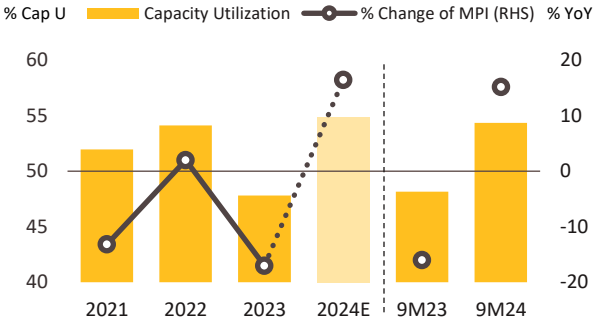
Source: MOC, Forecast by Krungsri Research

Canned Fish

Situation in 2024

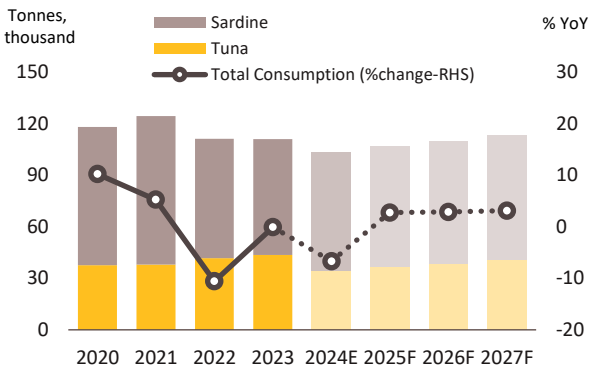
- **Output of canned fished rose 12.9% YoY in 9M24,** split between an increase of 18.2% YoY in production of tinned tuna, which benefited from stronger exports and lower production costs, and a decline in output of tinned sardines of -8.3% YoY, which was likely a result of destocking and limited access to inputs. **Domestic consumption dropped -8.9% YoY,** and in particular, sales of canned tuna crashed -25.0% YoY following the introduction of new ready-to-eat products that are attractive to consumers who are worried about their health (especially middle- to upper-income shoppers who have seen their spending power strengthen rapidly) and the return to dining out and/or eating fresh foods. Nevertheless, tinned sardines remain popular among low- to middle income consumers, and with purchasing power still weak in this segment, consumption inched up 1.6% YoY. **Exports performed well in the period, jumping 29.3% YoY** to 0.44m tonnes, and this generated receipts worth USD 1.8bn (+21.4% YoY). Overseas sales of canned tuna climbed 33.2% YoY on the back of: (i) the -7.6% YoY fall in export prices to USD 4,299/tonne that then made tinned tuna a popular choice for consumers still smarting from the recent run-up in the cost of living in the US (sales was up 23.4% YoY by volume) and Canada (+57.0% YoY); and (ii) expansion into the market for halal foods and worries over fighting in the Middle East that are adding to demand for food to stockpile, which has boosted sales into Saudi Arabia (+10.8% YoY), the UAE (+56.9% YoY) and Israel (+117.4% YoY). Exports of tinned sardines also rose +0.6% YoY, helped by the -2.3% YoY fall in export prices to USD 2,566/tonne. Sardines are thus still a favored food among lower income buyers in South Africa (+4.7% YoY), Australia (+263.9% YoY), Namibia (+45.8% YoY), Panama (+37.6% YoY) and Tanzania (+240.6% YoY).
- Output will continue to climb through Q4 on the strength of exports to the Middle East and the falling cost of inputs, especially for tuna. For all of 2024, **output and exports should therefore be up by respectively 15.0-16.0% and 30.5-31.5%, but the switch in demand to alternative products and the general decline in the stocking of food at home will reduce domestic sales by between -6.0% and -7.0%.**

Figure 1: MPI and Capacity Utilization of Canned Fish Industry



Source: OIE, Forecast by Krungsri Research

Figure 2: Thailand's Canned Fish Domestic Consumption

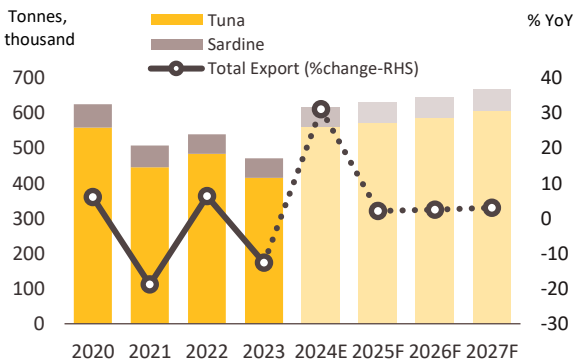


Source: OIE, Forecast by Krungsri Research

2025-2027 Outlook

- **Stronger domestic and international demand will lift annual industry output by 4.0-5.0%. Domestic consumption of canned fish is expected to expand by 2.5-3.5% per year** as the economy grows and spending power rallies, though demand will be especially strong among urban consumers who lead fast-paced lives and where restaurants and other ready-to-eat food services are proliferating. **Exports will also rise by 2.0-3.0% annually** on: (i) an improving economic outlook in export markets; (ii) increasing consumer demand for healthier food, with canned tuna especially popular among health-conscious shoppers in the US and Europe; and (iii) moves by producers to expand their markets following the conclusion of new FTAs and the development of new product lines suitable for these consumers. **Nevertheless, pressure may come to bear on markets as a result of**: (i) stricter rules over when and where fishing can occur and the impact of climate change on catch sizes; (ii) intensifying competition in export markets; and (iii) the possible impact of fighting in the Middle East on the cost of packaging and transport.

Figure 3: Thailand's Canned Fish Exports



Source: MOC, Forecast by Krungsri Research

FOOD & BEVERAGES

Ready-to-eat food

Situation in 2024

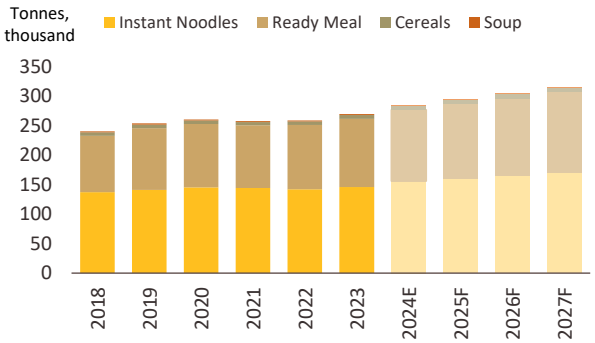
The volume of ready-to-eat products sold domestically is forecast to rise by 5.0-6.0% in 2024, while exports should be up by 11.5-12.5%.

- **Instant noodles: Domestic sales is expected to climb by 6.5-7.5% in 2024** (up from 2.7% in 2023) on the back of: (i) growth in the economy; (ii) the stimulus effects on demand of new flavors; and (iii) the development of new distribution channels. The popularity of **Thai products and their competitive pricing will also lift exports by 6.0-7.0%** (over 9M24 these rose 5.9% YoY).
- **Ready meals: Sales to the domestic market is forecast to rise 3.5-4.5%**, down from growth of 6.1% in 2023. Sales will benefit from: (i) continuing recovery in the tourism sector; (ii) an expansion in the volume of goods distributed through convenience stores; and (iii) the accelerating pace of contemporary life. **Exports will also jump 13.5-14.5%** (up 13.2% YoY in 9M24) on the uptick in economic activity in overseas markets and the effects of this on encouraging consumers to seek out quicker and more convenient dining options.
- **Ready-to-eat cereals:** Having expanded 5.1% in 2023, **the domestic market is predicted to grow by another 2.5-3.5% this year** thanks to deepening consumer interest in personal health and wellness and the effects of urbanization on the adoption of fast-paced consumer lifestyles. **Exports will also surge 19.0-20.0%** (up 18.9% YoY in 9M24), driven principally by growth in the US market, where consumers are increasingly concerned about health issues, and Thai products' competitive pricing
- **Ready-to-eat soup:** Although sales expanded 6.3% in 2023, **2024 domestic sales will remain flat or edge up by at most 1.0%.** Sales are supported by consumers' preference for freshly-made food and the relatively high cost of ready-to-eat soup compared to buying this in a restaurant or making it oneself. Likewise**, exports slumped -31.5% YoY in 9M24 and are expected to contract by between -30.0% and -31.0% across all of 2024** as consumers worldwide shy away from high-sodium foods.

2025-2027 Outlook

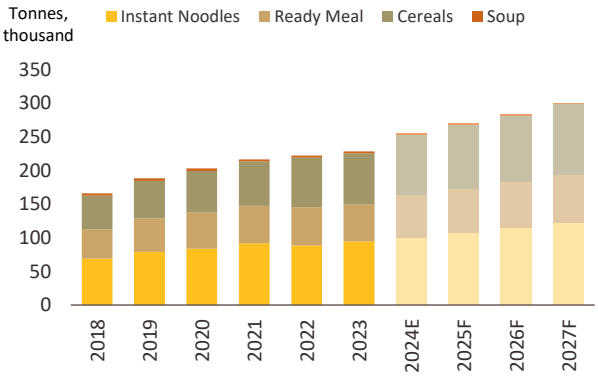
- **Domestic sales should expand by some 3.0-4.0% annually**, helped by: (i) the adoption of urban lifestyles that favor foods that are convenient and quick to prepare and eat; (ii) an increase in distribution through modern trade outlets and online platforms; (iii) expansion in the economy and improving consumer spending power; and (iv) the development of new product lines that are a better fit for customer demand (e.g., more sustainable or health-conscious options). **Exports are expected to grow at 5.0-6.0% per year on**: (i) a better economic outlook and firmer spending power overseas; (ii) stronger sales into new markets; (iii) consumer confidence in Thai products; and (iv) demographic changes in major markets in the US and EU that are seeing average household sizes shrink, and as consumers switch away from cooking from scratch, demand for food in single-serving sizes is increasing.
- **Risk may arise from**: (i) an intensification in climate change, which may disrupt manufacturing supply chains and cause volatility in prices for raw materials; (ii) the move by governments in many countries to control the salt content in food through taxation; (iii) increasing environmental non-tariff barriers to trade that may add to manufacturing and packaging costs; and (iv) geopolitical stresses and protracted wars, which may lift the cost of transport and packaging further.

Figure 1: Ready-to-eat Domestic Consumption Forecast



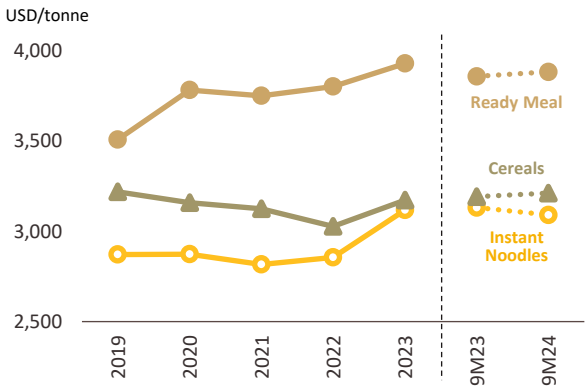
Source: Euromonitor, Forecast by Krungsri Research

Figure 2: Thai Ready-to-eat Exports Forecast



Source: MOC, Forecast by Krungsri Research

Figure 3: Exports price of Ready-to-eat Products



Source: MOC

Beverages

Situation in 2024

- **Over 9M24, output of beverages rose 4.3% YoY**. Rising tourist arrivals and an increase in general economic activity helped to lift production of non-alcoholic drinks, but with brewers and distillers engaged in a process of destocking, output of alcoholic drinks declined. **Total domestic sales climbed 4.1% YoY** on a 3.5% YoY increase in sales of non-alcoholic drinks that was itself driven by: (i) the El Niño and the unusually hot weather; and (ii) growth in the restaurant, hotel and tourism industries. Alongside this, expansion in the markets for domestic and international tourism and the return of full-scale concerts and other social activities helped to boost sales of alcoholic drinks by 6.5% YoY. **Exports also rose 1.6% YoY** by volume as the economic outlook in overseas markets (e.g., Vietnam and Lao PDR) improved, though with production and transport costs pushing up prices, export values increased 8.8% YoY.
- **For 2024 as a whole, production is forecast to be up by 4.0-5.0%** as producers respond to the ongoing rebound in the tourism sector and the increasing return to normal of consumption and entertainment, and so with an uptick in both economic and social activities, **domestic sales will also rise by 4.0-5.0%.** At the same time, **economic recovery in export markets will lift overseas sales volume, though at the slower rate of 1.0-2.0%.**

2025-2027 Outlook

- **Production should expand by some 3.5-4.5% annually** as domestic demand strengthens, producers and distributors build inventories, new healthier product lines are developed, and proactive marketing strategies bear fruit. The quantity of goods sold to **the domestic market is likewise expected to grow by 3.5-4.5% per year** on the back of: (i) steadily rising temperatures that will lift demand for refreshing and thirst-quenching drinks; (ii) growth in the economy generally and in the tourism sector in particular; (iii) ongoing urbanization and the spread of modern trade outlets, which is making it easier for consumers to purchase these products; and (iv) the broadening of distribution channels thanks to the continuing uptake of online ordering and delivery services. **Strengthening cross-border trade will also support 2.0-3.0% annual growth in exports**, although this will be negatively impacted by ongoing investment by both Thai and overseas players in production facilities in the CLMV nations.
- **Risks to growth may originate from**: (i) the impact of climate change on the availability of agricultural inputs; (ii) the effect of the sugar tax on prices; (iii) increasing consumer concerns about health and controls on advertising that will restrict sales of alcoholic drinks; (iv) the entrance of new players to the market for beer, which is then amplifying competitive pressures; and (v) the effects of ongoing wars on the price of both transport and packaging.

Figure 1: Ingredient and Material Costs

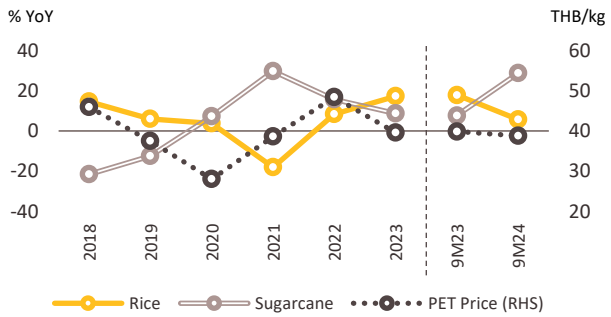


Figure 2: Thai Beverage Production Forecast

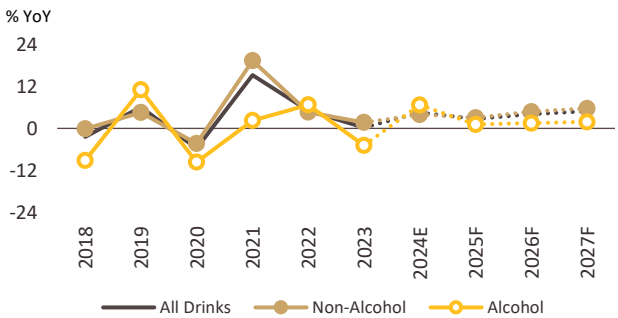


Figure 3: Domestic Beverage Consumption Forecast

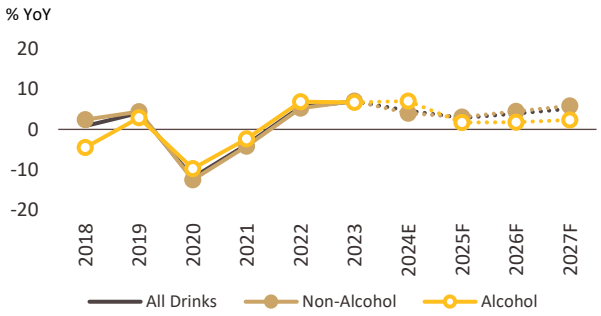
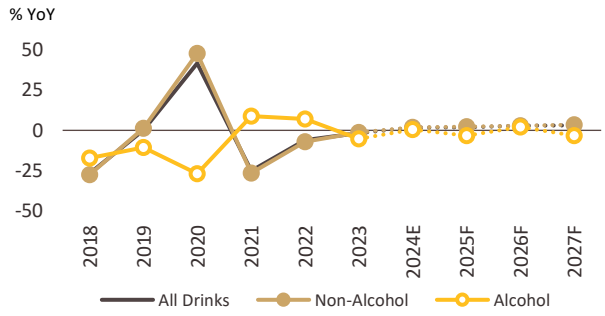


Figure 4: Thai Beverages Exports Forecast



Source: OIE, Euromonitor, MOC, Forecast by Krungsri Research

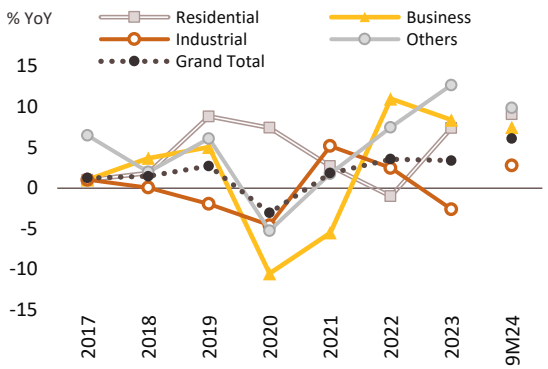
ENERGY & UTILITIES

Power Generation

Situation in 2024

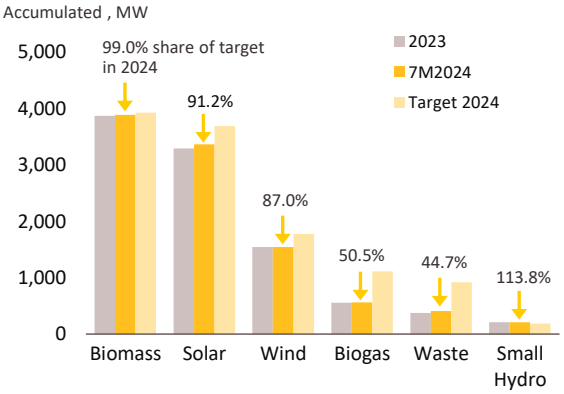
- **Electricity consumption increased 6.1% YoY over 9M24,** with household usage (29.4% of total demand) up 9.1% on the unusually hot weather and government policies that kept energy bills low, while recovery in the tourism and export industries helped to boost demand from business and industry (65.6% of the total), which then grew at the lower rate of 4.5%. Peak demand hit an historic high of 36,477.8 MW in April (+6.9% from the peak in 2023), and **for the rest of the year,** the onset of the tourism high season will lift demand, **implying growth of 5.0-6.0% overall of 2024 (up from 3.4% in 2023).**
- **Electricity generation rose 6.6% YoY**. Growth was driven by IPPs (28.5% of overall electricity production), from which supply rose 21.0%, while generation by SPPs and VSPPs (27.3% of the total) edged up just 0.9%. The quantity of electricity supplied to the grid by EGAT (29.5% of the total) also contracted -1.8%, while imports of electricity (14.7% of the total) jumped 11.7%. In terms of the sources of power, electricity generated from natural gas (59.0% of generation) and coal (13.6%) climbed by respectively 8.4% and 5.7%, but supply from renewables (9.8%) and hydro (2.7%) fell by -0.04% and -9.7%.
- **As of 7M24** (the latest data available), **total installed renewables capacity came to 10,010.5 MW[1/] (+1.2% from the end of 2023).** The most important source of this is from grid-connected solar (+2.2%), followed by biogas (+0.6%) and biomass (+0.5%). For the rest of the year, electricity from solar energy, biogas, and waste is expected to be gradually integrated into the system continuously. **Throughout 2024, renewables capacity should be up 2.5% YoY to 10,150 MW**.

Figure 1: Electricity Consumption Growth by Sector



Source: Energy Policy and Planning office (EPPO)

Figure 2: Installed Capacity of Renewable Power Generation by Fuel

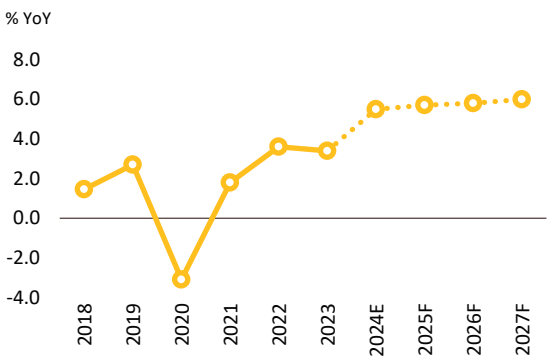


Source: Department of Alternative Energy Development and Efficiency (DEDE)
Note: Data was accumulated, including off grid power generation.

2025-2027 Outlook

- **Power generators will see ongoing growth on the back of a forecast rise in annual demand of 5.0-6.0%.** The latter will be boosted by: (i) growth in tourism and recovery in manufacturing that will support a gradual expansion in the economy; (ii) the impact of climate change on average temperatures (these rose from 27.4 °C in 2022 to 28.1 °C in 2023); and (iii) increase in the number of BEVs and PHEVs. **Government policies targeting ongoing economic growth will continue to support investment in the industry and to shift this to a greater dependency on clean energy**, and this will then increase opportunities for the private sector to expand its involvement in renewables/green power generation. The outlook for different segments is as follows.
  - **IPPs: Revenue will trend upwards on**: (i) an uptick in economic activity; and (ii) plans by players to expand their investments in natural gas generation in the northeast and south of Thailand, renewables/hydrogen-powered generation, energy storage, and renewables facilities overseas.
  - **SPPs: Revenue will grow gradually,** with opportunities to increase investment these are supported by: (i) natural gas cogeneration plants, many of which will come to the end of their operating lives in 2025 (these provide power to industrial estates); (ii) SPP hybrid renewables firms; and (iii) the supply of electricity to the EEC.
  - **VSPPs: Growth in investment and Revenue should accelerate,** lifted by: (i) plans to increase state purchases of renewables (solar, wind, biomass, biogas and waste) to over 10,000 MW by 2027; and (ii) BOI support schemes that exempt investment in renewables generation from corporation tax. However, new biomass and biogas-producing entrants to the market may have difficulties accessing inputs.

Figure 3: Growth of Electricity Demand



Sources: EPPO, Forecast by Krungsri Research

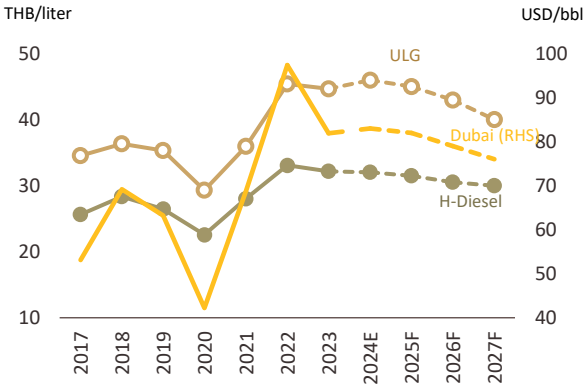
1/ Does not include 2,918 MW of large-scale hydro-power generation.

Oil Refineries

Situation in 2024

- **Domestic consumption of refined products strengthened by 1.4% YoY over 8M24,** buoyed by stronger demand from the tourism sector, especially for air travel. Demand for LPG from the transport sector thus rose 7.6% YoY, while demand for jet fuel was up 17.4% YoY. However, weakness in the manufacturing and export sectors cut demand for refined products for use in industry, leading to falls in demand for diesel and fuel oil of respectively -0.6% YoY and -16.0% YoY. Through the period, although demand rose gradually, **continuing high prices for Dubai Crude (these averaged USD 82.9/bbl) squeezed gross refinery margins.** Likewise, Singapore refinery margins tightened from USD 6.1/bbl over 1H23 to an average of USD 5.4/bbl in 1H24.
- **Stronger year-end demand for refined products and in particular for middle distillate goods should help to widen gross refinery margins slightly, and so across all of 2024, demand is forecast to rise by 1.5-1.7% YoY.** With Dubai Crude expected to average USD 80/bbl across the year, **Thai gross refinery margins should run to USD 5.0-6.0/bbl.**

Figure 1: Oil Prices

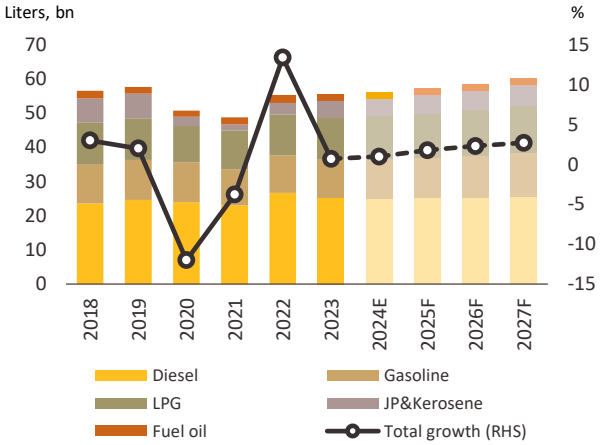


Source: Bloomberg, Energy Policy and Planning Office (EPPO), Forecast by Krungsri Research

2025-2027 Outlook

Krungsri Research sees refineries enjoying a gradually improving business environment over the next 3 years. Prices for Dubai Crude should weaken following the decision by the OPEC+ group to increase production quotas by 0.18m bbl/day in April 2025, while demand will be boosted by expansion in the global economy. However, ongoing geopolitical tensions (e.g., the Russia-Ukraine war and fighting in the Middle East) will lead to periodic price rallies, **and so over 2025-2027, prices for Dubai Crude should average USD 75-80/bbl.** The outlook for the industry is described below.

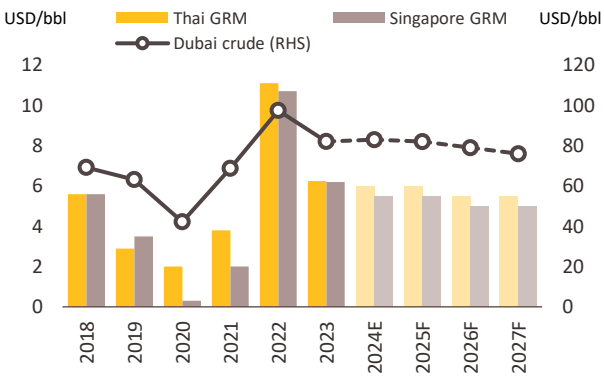
Figure 2: Domestic Petroleum Demand



Source: EPPO, Forecast by Krungsri Research

- **Domestic demand for refined products will strengthen by 2.0-2.5% annually,** moving in line with forecast growth in the economy of 2.5-3.0% per year. Expansion in the economy will be driven in particular by the continuing rebound in the tourism sector, which should return this to its pre-Covid level in 2025, while demand for oil products will also benefit from an anticipated 4.0-5.0% increase in the number of ICE-powered vehicles registered in Thailand. **2025 pump prices will therefore tend to strengthen,** with petrol and diesel prices expected to average respectively THB 39.0-44.0/liter and THB 29.0-30.5/liter.
- **Gross refinery margins should average USD 5.5-6.0/bbl,** above the pre-Covid 2012-2019 average of USD 5.0-5.5/bbl, while the strengthening economy and rising demand for refinery products will help to keep capacity utilization at 85.0-90.0%.
- **Players are likely to scale up their investments in clean energy as a strategy to boost revenue and meet net-zero commitments.** For instance, sustainable aviation fuel (SAF) typically commands a price that is around 2.5 times higher than standard jet fuel, making it an appealing option for enhancing refinery revenue.

Figure 3: Gross Refinery Margins (GRM)



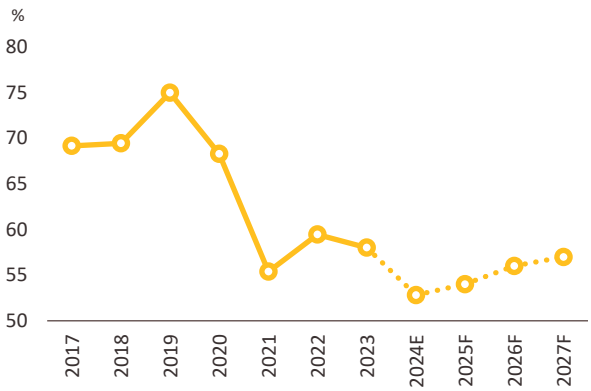
Source: Bloomberg, Forecast by Krungsri Research

Ethanol

Situation in 2024

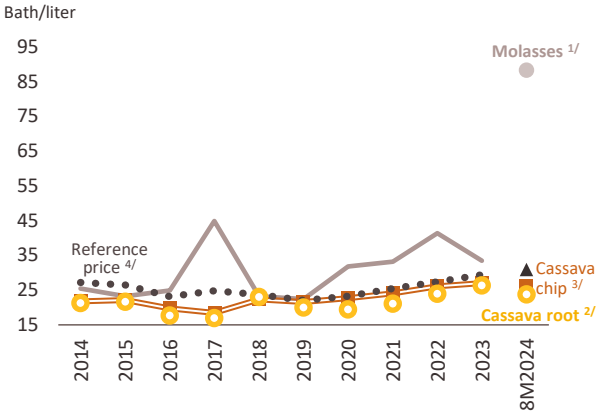
- **Demand for ethanol declined by -4.1% YoY in 8M24, averaging 3.4m liters/day.** The decline was partly driven by the ongoing shift from internal combustion engine (ICE) vehicles to EVs, as well as the opening of the Pink and Yellow BTS lines in Bangkok, which now allow metro passengers to easily connect to other routes. As a result, overall consumption of gasohol edged down by -0.5% YoY. However, following cuts to subsidies from the Oil Fund, which led to higher pump prices, demand for E85 dropped significantly by -62.5% YoY, accounting for just 0.2% of all gasohol sales, down from 0.6% in 8M23. This shift boosted demand for E10, which rose by 1.7% YoY, now representing 82% of all gasohol sales. Meanwhile, sales of E20 (17.7% of the total) fell by -7.8% YoY. With the high tourism season and year-end celebrations on the horizon, demand is expected to pick up. **As a result, ethanol consumption for the full year is projected to average 3.45m liters/day,** reflecting a decline of -2.4% YoY.
- **Daily ethanol production averaged 3.7m liters/day in 8M24, a decrease of -2.6% YoY.** This was comprised of 2.1m liters/day from molasses (down -11.4% YoY), 1.4m liters/day from cassava (up 16.7% YoY), and 0.2m liters/day from sugarcane (down -14.6% YoY). Strengthening demand is expected to drive higher production for the remainder of 2024. However, **for the full year, output is projected to decline by -0.5% YoY,** with capacity utilization remaining close to last year's level at 52.8%, just slightly below 53.0%.
- **Margins for ethanol producers using cassava improved** due to a decline in cassava exports to China, which drove down the cost of fresh cassava by -14% YoY, averaging THB 2.5/kg. As a result, the cost of producing ethanol from fresh cassava fell by -9.7% YoY to THB 23.7/liter. Prices for cassava chips also decreased by -5.8% YoY, to THB 6.8/kg, which further reduced the associated production cost of ethanol to THB 26.0/liter, a -4.1% YoY drop. In contrast, **margins for molasses-based ethanol production tightened** due to the drought, leading to a 246.2% YoY surge in molasses prices, which rose to an average of THB 19.4/kg. This price increase pushed production costs up by 197.2% YoY, reaching THB 88.2/liter.

Figure 1: Ethanol Capacity Utilization



Source: Department of Alternative Energy Development and Efficiency (DEDE), Department of Energy Business (DOEB), Forecasted by Krungsri Research

Figure 2: Cost of Ethanol Production vs Reference Prices

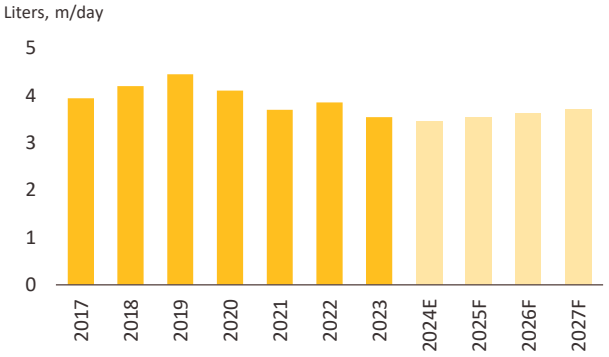


Source: 1-3/ based on the formula of cost structure from Bank of Thailand (BOT), calculated by Krungsri Research
4/ Energy Policy and Planning Office (EPPO)

2025-2027 Outlook

- **Demand is expected to rise by 2.0-2.5% annually to 3.5-3.8m liters/day,** supported by the following:
  - **Economic activity and demand for transport services will strengthen.** In particular, the number of domestic and international tourists should return to its pre-pandemic level in 2025, partly as a result of government stimulus measures.
  - **The 2024 Oil Plan (2024-2037)** will establish E10 (95) or E20 as the basic type of petrol, adding to ethanol demand, but gasohol 91 sales will end in 2025, while prices for E85 and benzene will reflect actual production costs, making these less competitive.
  - **The number of vehicles running on gasohol is forecast to rise by 1.5-2.5% annually,** with all new vehicles able to run on E20.
  - **The government is promoting the use of ethanol in industrial processes (e.g., to produce bioplastics) and the manufacture of sustainable aviation fuels,** thereby adding value to output.

Figure 3: Ethanol Demand



Source: DEDE, DOEB, Forecasted by Krungsri Research

Biodiesel

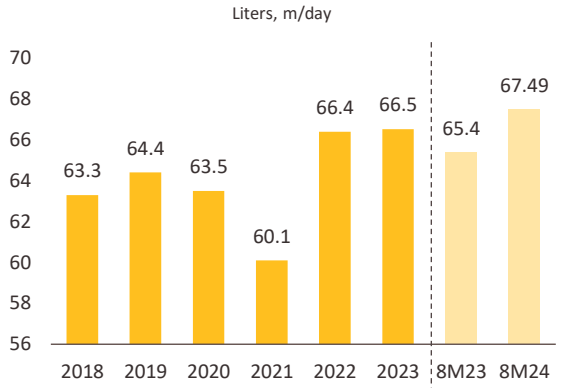
Situation in 2024

- **In 9M24, biodiesel production (B100) increased by 5.2% YoY, averaging 4.7m liters/day. Meanwhile, demand grew at a slower pace of 3.6% YoY, reaching 4.5m liters/day.** This growth is driven by the ongoing economic recovery, particularly the rebound in tourism, fuelling greater demand for travel services from both domestic and international tourists. Additionally, the rise of e-commerce is contributing to higher demand for commercial delivery services. Starting in May 2024, the government implemented restrictions on diesel sales, limiting them to just two types: B7, the primary diesel type, which contains the highest concentration of biodiesel compatible with Euro 5 standards endorsed by manufacturers, and B20, which is available as an alternative.
- **Demand is expected to rise in Q4 due to the onset of the high travel and tourism season,** as well as the implementation of the first phase of the digital wallet policy at the end of September. These factors are likely to stimulate the economy and boost demand for transport services. As a result, for the full year of 2024, **biodiesel output and consumption are forecast to average 4.8m liters/day (+4.9% YoY) and 4.6m liters/day (+3.8% YoY), respectively.** However, **capacity utilization is projected to decline from 44.6% in 2023 to 40.1% in 2024.**
- **The reference price increased by 4.3% YoY in 7M24, averaging THB 35.8/liter or THB 41.4/kg.** A drought in Q1 reduced the production of crude palm oil (CPO), while demand rose, driven by a 16.7% YoY increase in exports through August 2024, with stronger sales to India being a key factor. As a result, the prices of CPO and palm stearin rose by 6.0% and 5.3% YoY, respectively, averaging THB 33.7/kg and THB 33.2/kg. Consequently, the spread between biodiesel and CPO averaged THB 8.15/kg, nearly identical to the THB 8.1/kg seen in the same period of 2023.

2025-2027 Outlook

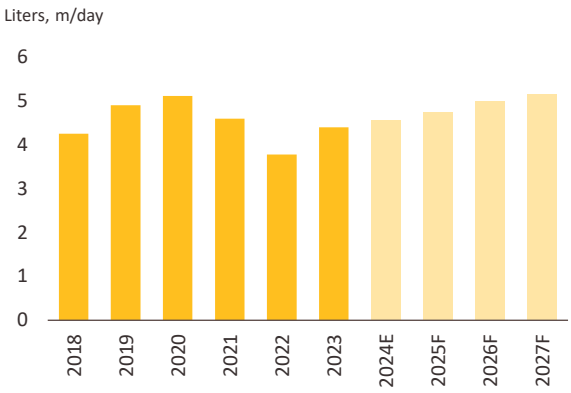
- **Demand is forecast to reach some 4.6-4.8m liters/day (up 4.0-5.0% annually),** boosted by the following tailwinds.
  - **The number of diesel vehicles in the transport sector is expected to increase** due to: (i) a rise in economic activity and the ongoing recovery of the tourism sector, with arrivals projected to reach 43m by 2027; (ii) continued growth in the e-commerce sector, which is forecast to expand to THB 750bn by 2025, up from THB 630bn in 2023 (source: Department of Business Development), driving greater demand for services provided by commercial vehicles, particularly pickups; and (iii) a 3.0-4.0% annual increase in the number of diesel vehicles on Thai roads.
  - **Government efforts to stimulate biodiesel consumption and stabilize the market will include measures to stabilize prices**, such as increasing the proportion of biodiesel blended with diesel when biodiesel prices are low. Additionally, subsidies for biofuel blends will be extended through September 24, 2026, supporting biodiesel price and sustain demand for biodiesel products.
  - **Manufacturers are developing new vehicles** (including trucks, pickups, SUVs, and passenger vehicles) that can run on fuel mixes that **contain a higher proportion of biodiesel.**

Figure 1: Domestic H-Diesel* Usage (average)



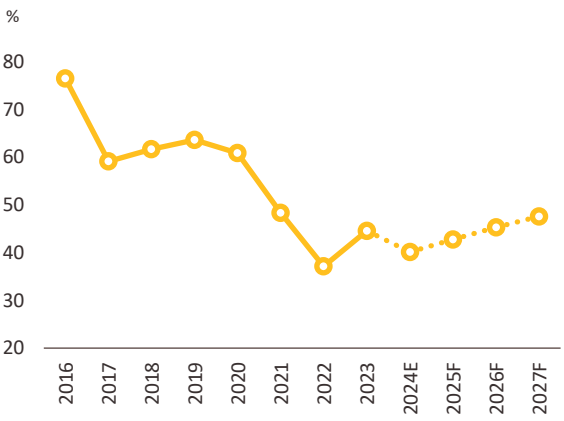
Source: Department of Energy Business (DOEB)
Note: * = B7, B10, B20, Premium Diesel

Figure 2: Biodiesel Consumption



Source: Department of Alternative Energy Development and Efficiency (DEDE) , DOEB, Forecasted by Krungsri Research

Figure 3: Capacity Utilization of Domestic Biodiesel



Source: DEDE, DOEB, Forecasted by Krungsri Research

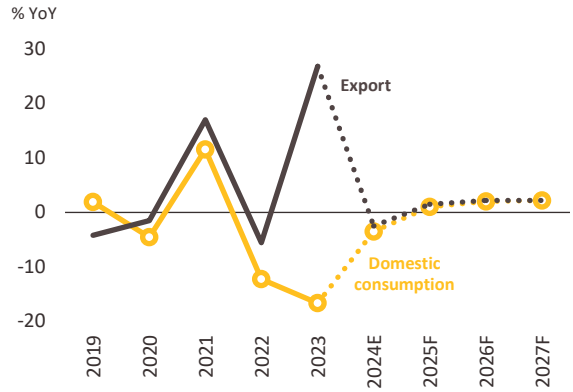
PETROCHEMICALS

Petrochemicals

Situation in 2024

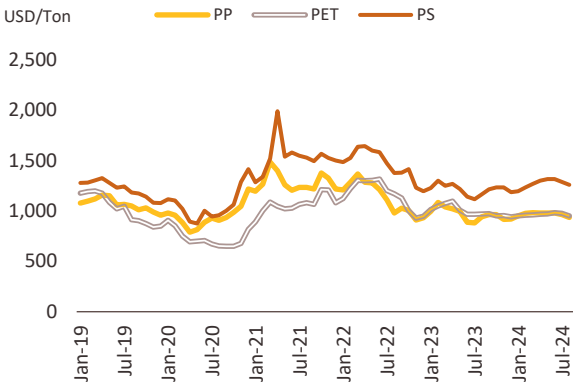
- **Domestic demand for petrochemicals contracted by -5.1% YoY over 8M24,** driven by sluggish performance in the manufacturing and export sectors. This trend was reflected in a -1.7% YoY decline in the industry's Manufacturing Production Index. As a result, demand for petrochemicals used in downstream industries also weakened. At the same time, a weaker economic outlook in key overseas markets contributed to a **-3.2% YoY drop in exports.** Meanwhile, producers in China, the US, and the Middle East benefitted from lower input costs, which helped drive down prices for many petrochemical products. Unfortunately, high oil prices (Dubai crude averaged USD 82.9/bbl over 8M24) put pressure on margins, squeezing spreads for some products.
- **For the remainder of 2024, prices are expected to rise,** driven by growth in the tourism sector and increased demand for consumer products during the year-end holiday season. As a result, **overall demand for the year is projected to decline by -4.0% to -3.0% in the domestic market and by -3.0% to -2.0% in exports.** However, these declines are partly due to high base effects from 2023. For 8M24, the performance of individual product groups was as follows:
  - **Naphtha:** Prices averaged USD 695.0/tonne, lifted 7.4% YoY by the run-up in crude prices. These are expected to average USD 690.0/tonne for the year.
  - **Upstream products:** Ethylene and propylene spreads averaged USD 261.6/tonne (+7.5% YoY) and USD 172.0/tonne (-30.2% YoY). For all of 2024, these should come to respectively USD 260.0/tonne and USD 170.0/tonne.
  - **Downstream products:** Spreads for HDPE and polypropylene came to respectively USD 32.5/tonne (-71.2% YoY) and USD 101.5/tonne (+16.5% YoY) over 8M24, and for the year, these should average USD 27.0/tonne and USD 95.0/tonne.

Figure 1: Domestic Consumption and Export Sales Growth (Volume)



Source: OIE, Forecast by Krungsri Research
Note: Petrochemicals here consist of Ethylene, Propylene, Benzene, Toluene, PE, PP, and PET

Figure 2: Plastic Resin Prices

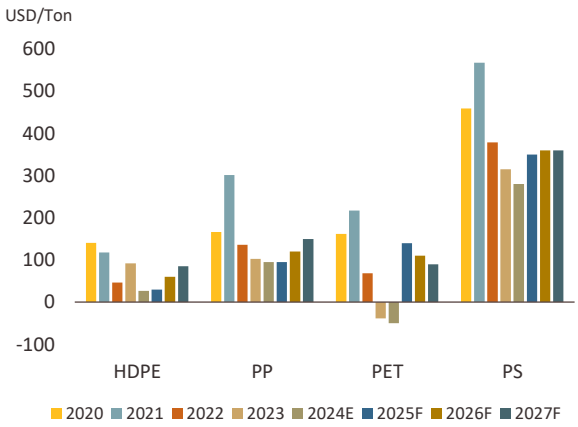


Source: Bloomberg, Krungsri Research

2025-2027 Outlook

- **Consumption of petrochemical products will rise gradually** over the next few years as the global economy expands (the IMF sees global GDP growth averaging 3.0-3.2%), and this will add to demand from downstream industrial consumers. However, demand growth will be limited by factors including bans on single-use plastic and the expansion in new capacity in China and the Middle East, which will then drag on prices for some products. **Overall demand on domestic and export markets is thus forecast to expand by 1.5-2.5% per year.**
- **Manufacturers are likely to shift towards greater production of specialty products,** including high-value inputs for emerging S-curve industries, as well as food-grade biodegradable and recycled plastics. This shift will also enable industries to better address growing environmental concerns.

Figure 3: Global Petrochemical Spreads



Source: Bloomberg, Krungsri Research

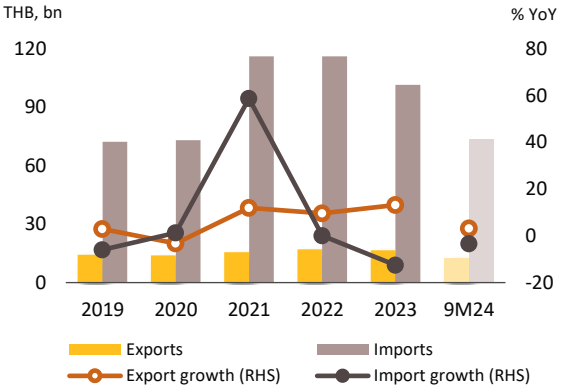
CHEMICAL

Pharmaceuticals

Situation in 2024

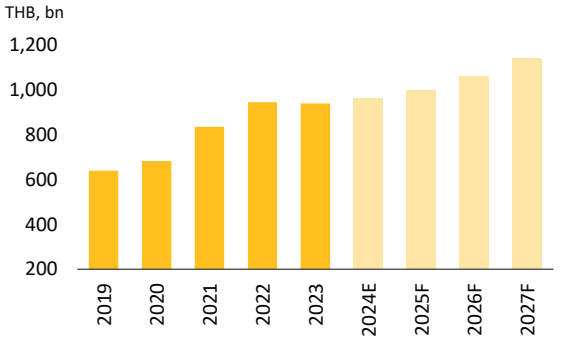
- **The pharmaceuticals industry is in a growing direction** thanks to: (i) uptake of the universal health coverage scheme, which has eased access to medicines, especially through programs allowing individuals to pick up prescriptions from pharmacies or to receive these through the post; (ii) rising levels of illness (in the 2024 financial year, 7.9m individuals accessed national public healthcare services, up from an average of 7.6m in 2022 and 2023); (iii) the return of foreign patients to Thai hospitals, especially individuals arriving for health tourism; and (iv) strengthening demand from the elderly and those affected by non-communicable diseases (most notably hypertension and diabetes). **For 2024 overall, the value of pharmaceuticals distributed to the market should rise by 5.5-6.0%,** compared to 5.7% in 2023. Market conditions over 9M24 are described below.
  - **Domestic consumption of pharmaceuticals[1/] has risen on worsening outbreaks of seasonal illnesses** (influenza cases jumped 59.7% YoY) and conditions caused by air pollution (e.g., cases of conjunctivitis and dermatitis rose 7.8% and 14.6%). Sales were up 11.8% YoY for tablets (50.3% of the total sales in the market), 5.5% YoY for creams (8.7%), 14.9% YoY for powders (7.1%), 4.8% YoY for capsules (7.1%), and 0.8% YoY for injectables (6.9%). However, sales of solutions (19.9% of the market) slipped -4.5% YoY.
  - **Exports of pharmaceuticals and medical supplies rose 3.5% YoY to THB 12.6bn.** Almost 94% of exports were of medical treatments (+4.0% YoY), with 50.5% of sales going to the CLMV nations (+3.1% YoY). By contrast, exports of vaccines (6% of the total) contracted -3.9% YoY on falling demand from Hong Kong and the ASEAN zone (i.e., Myanmar, PDR Lao, and Indonesia), although sales rose strongly to Malaysia (+65.1% YoY) and Saudi Arabia (+21.9% YoY); Statista estimates that for all of 2024, the market for medicines (including vaccines) in these two countries will be up by respectively 5.8% and 6.5%. **Imports of pharmaceuticals have slipped -3.4% YoY to THB 73.8bn** as domestic production displaced some goods previously sourced abroad. By value, imports from the US, Germany and India (a combined 26.0% of imports of pharmaceuticals) have dropped -13.1% YoY, but imports of vaccines from China and India are up by respectively 18.0% YoY and 18.9% YoY.

Figure 1: Thai Pharmaceutical Imports and Exports



Source: Ministry of Commerce (MOC) HS3001, 3002, 3003, 3004

Figure 2: Thailand's Healthcare Expenditure

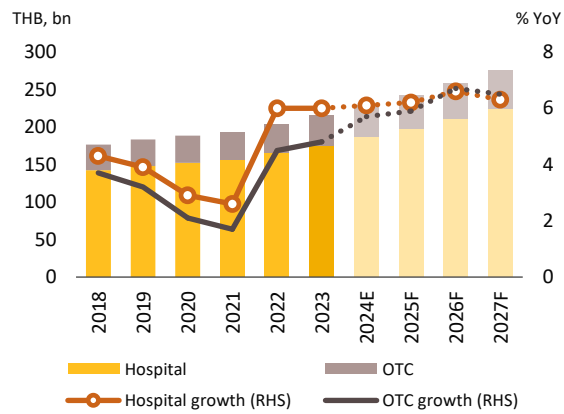


Source: Economist Intelligence (EIU), Krungsri Research

2025-2027 Outlook

- **The value of products distributed to the domestic market is forecast to grow by 6.0-7.0% annually,** helped by: (i) rising levels of urbanization and the aging of Thai society, which is increasing levels of illness from both infectious diseases and chronic non-communicable conditions; (ii) the expansion of universal health coverage, e.g., the One ID Smart Hospital Card (in effect from 7 January, 2024 in the pilot provinces of Roi Et, Phrae, Phetchaburi, and Narathiwat); (iii) rising interest in preventative healthcare, which is adding to demand for products that boost the immune system and reduce the risk of infection; and (iv) technological progress and the development of online platforms, which is improving production processes and expanding the points of contact where producers and consumers can connect.
- **Manufacturers of pharmaceuticals will continue to focus on developing new technologies/innovations (including biologics) as a way of adding value to their products**. This will also help increase access to these among the Thai public.

Figure 3: Pharmaceutical Market Value Outlook



Source: FitchSolutions, Estimated and Forecast by Krungsri Research

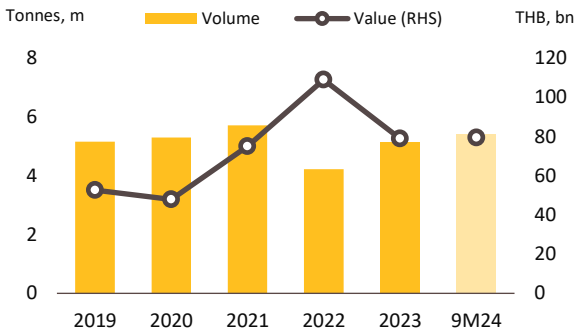
1/ From a survey carried out by the Office of Industrial Economics of domestic manufacturers, most of which produced and distributed generics.

Chemical Fertilizers

Situation in 2024

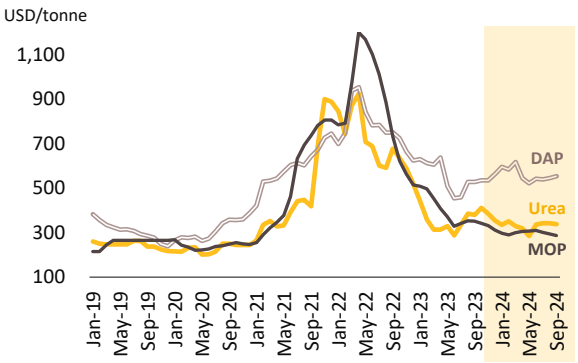
- **Sales of fertilizer rose over 9M24 on the back of:** (i) a 14.0% YoY rise in average prices for arable crops, which came to 4.9% YoY for rice and 28.7% YoY for sugarcane (both fertilizer-hungry crops); (ii) lower domestic fertilizer prices, which moved in line with cheaper urea (-5.2% YoY) and potassium chloride (-25.6% YoY); and (iii) government assistance for the industry that helped to reduce costs for farmers. However, the drought at the start of the year reduced average yields by -4.5% YoY and this then worked against demand, but the cultivation of crops that require applications of fertilizer throughout the year (e.g., oil palm, rubber, and fruit trees) will add to demand through Q4, **and so for 2024, total fertilizer sales are expected to be up 2.4% YoY to 5.65m tonnes**. Details of market for the 9 months are as follow.
  - **Imports of straight fertilizer (66.0% of all fertilizer imports by volume) and mixed fertilizer (34.0% of imports) totaled 5.4m tonnes over 9M24, up 32.2% YoY.** These were bought at a total cost of THB 79bn (+26.1% YoY). Exporters seeing significant gains in the Thai market included Saudi Arabia (20.6% of imports, up +28.8% YoY), China (16.5% of imports, +32.5% YoY) and Russia (12.0% of imports, +76.9% YoY). Following this jump, imports will slow in Q4, but **for all of 2024, these are forecast to be up 16.5% YoY to a historic high of 6.0m tonnes.**
  - **Exports rose 6.5% YoY to 0.41m tonnes (5.0% of total domestic production),** and this generated receipts worth THB 670bn (-0.9% YoY). The strongest gains were recorded in Cambodia (44.6% of exports by volume, +32.3% YoY) and PDR Lao (33.4% of exports, +29.9% YoY). Q4 imports will soften slightly, and **for the year, these should come to 0.52m tonnes, up 6.0% from 2023.**
  - **Import costs slipped -4.6% YoY on a general softening of prices on world markets**. Import prices for straight and mixed fertilizer thus averaged respectively THB 12,495/tonne (-9.6% YoY) and THB 19,023/tonne (-0.7% YoY), and combined with government measures to cut production costs for farmers, wholesale and retail prices dropped faster than production costs. As such, retail prices averaged THB 18,796/tonne for straight fertilizer (-18.1% YoY) and THB 20,036/tonne for mixed fertilizer (-13.0% YoY).

Figure 1: Thailand Chemical Fertilizer Imports



Source: Ministry of Commerce (MOC)

Figure 2: World Fertilizer Material Prices

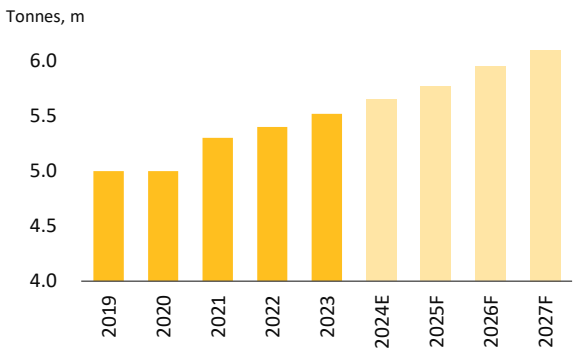


Note: DAP = diammonium phosphate. MOP = muriate of potash (potassium chloride)
Source: World Bank

2025-2027 Outlook

- **Domestic demand is forecast to expand by 2.0-3.0% annually** thanks to: (i) the positive impacts of economic growth on purchasing power; and (ii) prices for agricultural products (especially crops) that will remain high, encouraging farmers to expand the area under cultivation. In addition, the onset of La Niña conditions will expand access to water, helping to lift annual yields of major crops e.g., rice, rubber, and oil palm, which together account for 80% of domestic fertilizer consumption.
- **Players will tend to expand their distribution channels as they look to extend their income base and to make this more resilient.** This will include adding value to their products by offering bespoke fertilizer mixes, leveraging online channels to reach new customers, expanding into markets in the CLMV countries, and making better use of technology, for example by using IoT-enabled sensors to measure soil moisture levels or by automating fertilizer blending.

Figure 3: Thai Chemical Fertilizer Consumption*



Note: * Urea, Phosphatic Fertilizers, Potash Fertilizers and Other Products
Source: Office of Agricultural Economics (OAE), IFA, Mordor Intelligence, Forecast by Krungsri Research

AUTOMOTIVE & PARTS

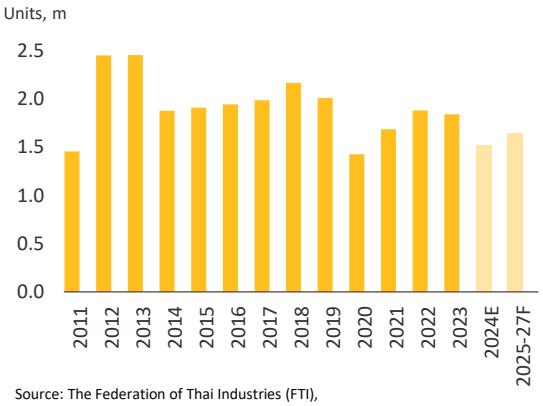
Automobiles

Automakers

Situation in 2024

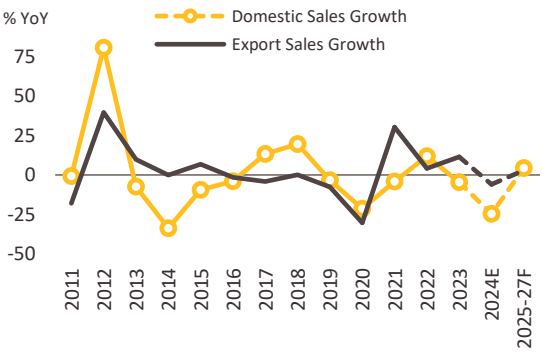
- **1,128,026 vehicles came off Thai production lines over 9M24, down -18.6% YoY** on weakness in both domestic and export markets. Output of pickups and passenger vehicles dropped by respectively -22.8% and -12.5% YoY, although for HEV and BEV autos, production jumped 46.1% YoY (to 145,490 units) and 4,824.8% YoY (to 7,338 units).
- **The domestic market contracted -25.3% YoY to 438,659 vehicles, with sales slipping steadily from June 2023 (a total of 16 months).** The number of pickups and passenger vehicles sold domestically was down by -40.0% and -22.6% YoY, respectively, as a result of: (i) the run-up in the cost of living and the impact of El Niño on agricultural yields, which then eroded consumer spending power; (ii) the increasing number of auto NPLs[1/] and the resulting move by lenders to tighten the release of new credit[2/], and (iii) falling prices for second hand vehicles, which encouraged some buyers to postpone purchases as they had planned to sell their existing autos and then to use this money to pay for new vehicles.
- **Exports also slipped -6.5% YoY to 768,887 vehicles.** Sales were hurt by only weak recovery in purchasing power in overseas markets, though the figures also suffered from comparison with the high baseline set a year earlier as backlogs of orders were cleared. Nevertheless, sales into some markets continued to strengthen, including the US (+24.4% YoY), Saudi Arabia (+6.3% YoY), and Australia (+4.0% YoY). By type, the best performing categories were BEV (+4,985.9% YoY) and HEV and PHEV (+14.9% YoY) autos.
- For the rest of the year, the industry is expected to continue contracting, despite strong growth in HEV and BEV sales in both domestic and export markets. **Throughout 2024 overall, production will contract by -17.0% to -18.0%, domestic sales -24.0% to -25.0%, and exports -5.5% to -6.5%.**

Figure 1: Automobile Production



Source: The Federation of Thai Industries (FTI), Forecast by Krungsri Research

Figure 2: Growth in Automobile Sales



Source: FTI, Forecast by Krungsri Research

2025-2027 Outlook

- **Output will rise** as investment in new semiconductor production facilities pays off and supply chain bottlenecks clear. As per the conditions of the EV 3.0 and EV 3.5 schemes, the output of BEVs will also pick up as manufacturers compensate for earlier imports of these with domestically produced models.
- **Domestic sales will rise** thanks to: (i) recovery in the tourism sector and an uptick in trade and investment; (ii) the transition to La Niña, which will lift agricultural yields and add to demand for pickups in the agricultural sector; (iii) progress on government infrastructure projects; and (iv) competition in developing new models, particularly HEVs and BEVs, from Japanese and Chinese automakers is intensifying, with improved performance and attractive pricing.
- **Exports will bounce back** as economies strengthen and investment accelerates in export targets. This will be particularly noticeable in the ASEAN zone, which will benefit from the relocation of production facilities from China and Japan as manufacturers seek to avoid the impacts of worsening trade and geopolitical tensions.
- **Overall, production will therefore return to growth of 3.5-4.5%, domestic sales 4.0-5.0%, and exports 2.5-3.5% per year.**

Table 1: Automobile Production and Sales Growth

% YoY

	2023	9M2024	2024E	Avg. 2025-2027F
Domestic sales	-8.7	-25.3	-24.0 to -25.0	4.0-5.0
Exports	11.7	-6.5	-5.5 to -6.5	2.5-3.5
Production	-2.2	-18.6	-17.0 to -18.0	3.5-4.5

Source: FTI, Forecast by Krungsri Research

1/ Over 1H24, the value of auto NPLs climbed by 6.3% YoY.
2/ New auto loan approvals fell -34.1% YoY in Q3 relative to Q2 (BOT, 2024)

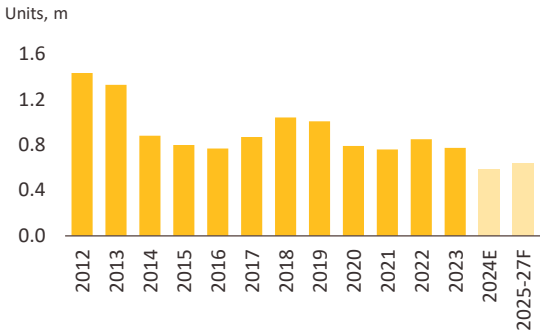
Automobiles (cont.)

Distributors of new vehicles

Situation in 2024

- **Income from auto sales contracted over 9M24, in line with the -25.3% YoY drop in sales to the domestic market (to 0.44m vehicles).** This was a result of softer purchasing power and a tightening of lending conditions, which then encouraged dealers, especially of marques at the low-end to the middle of the market, to overhaul their strategies by downsizing, switching to the distribution of Chinese EVs, or even leaving the market entirely (around 100 dealerships have closed, source: Prachachat, October 9, 2024). Income from servicing and the sale of parts also fell back on the drop in the number of vehicles aged less than 5 years old (down -8.0% YoY to 4.88m vehicles).
- **These trends will continue through Q4, and so for 2024 in total**, the -24.0% to -25.0% decline in auto sales will undercut income, while earnings from services and the sale of parts and spares will also drop in step with the -7.5% to -8.5% fall in the number of vehicles on Thai roads that are less than 5 years old.

Figure 1: Domestic Automobile Sales

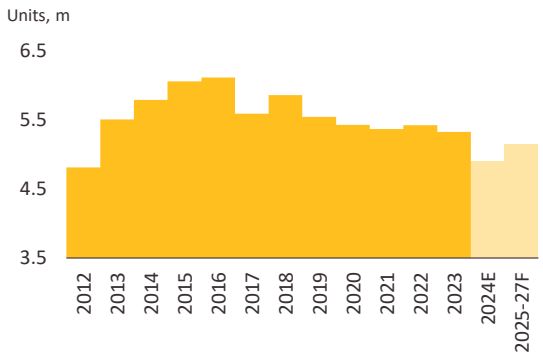


Source: The Federation of Thai Industries (FTI) and Toyota, Forecast by Krungsri Research

Outlook for 2025-2027

- **Income will strengthen over the next 3 years** as the domestic auto market revives and expands by 4.0-5.0% per year. Sales will be lifted by: (i) recovery in the tourism sector and general economic growth; (ii) progress on government spending on infrastructure, which will help to crowd-in private-sector investment; and (iii) better weather which will boost agricultural outputs. However, the entry of new players to the market, most obviously Chinese EV manufacturers, will add to competition and encourage some dealers to move into the distribution of EVs.
- **Income from spares and servicing will drop** due to soft post-pandemic auto sales and the resulting fall in vehicles under 5 years old, which comprise the main market for auto servicing. Nevertheless, recent strong sales of higher-end passenger vehicles and SUVs will mean that receipts from the servicing of vehicles in this segment of the market that are less than 5 years old will continue to rise.

Figure 2: Total Number of Cars Aged ≤ 5Y



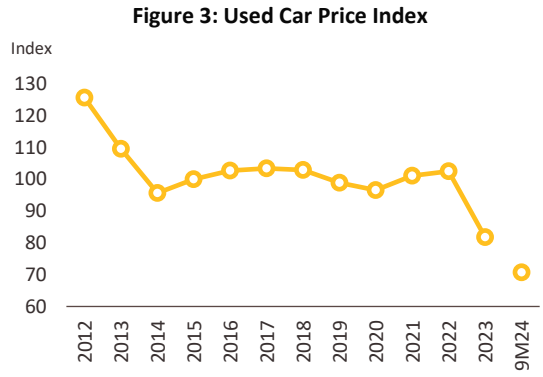
Source: Department of Land Transport (DLT), Forecasted by Krungsri Research; as of Oct 2023

Distributors of second-hand vehicles

Situation in 2024

- **Demand for second-hand vehicles slumped in 9M24** as a result of soft purchasing power among low- to middle-income consumers. Weakness in the economy, the effects of debt restructuring, and tighter lending conditions fed through into an increase in auto repossessions and a -18.9 % YoY crash in average prices. At the same time, customer interest in EVs is rising but almost no second-hand EVs are available (only 40 second-hand BEVs have been registered, source: DLT).
- **Income will continue to slide through Q4** given the large number of vehicles on forecourts and weak purchasing power at the low-end and middle of the market. These factors will then keep prices depressed across the year.

Figure 3: Used Car Price Index



Source: Bank of Thailand

2025-2027 Outlook

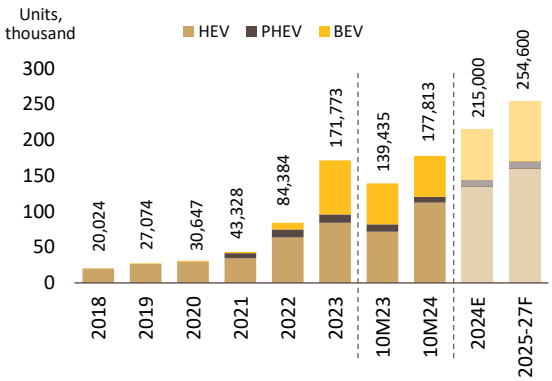
- **Sales will slowly improve**, helped by an uptick in economic activity that will slow auto repossessions, recovery in the tourism sector and stronger demand for travel services. The onset of La Niña and a rise in agricultural incomes, and an increase in government spending on infrastructure will also boost demand for second-hand vehicles from the agricultural and construction sectors. In addition, the supply of second-hand EVs will expand (especially BEVs aged 3-4 years old that were supported through the EV 3.0 scheme and will become increasingly available in 2026 and 2027).

Electric vehicles

Situation in 2024

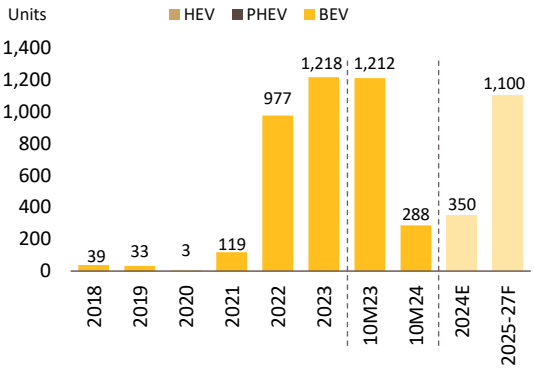
- **New registrations of all types of EVs (xEVs) jumped 27.5% YoY to 177,813 vehicles over 10M24, driven in particular by the 57.2% YoY increase in registrations of HEVs (up to 112,253 vehicles).** These remain popular among mid- to upper-income earners who are not yet ready to buy fully electric vehicles, though demand has also been helped by the wide range of models on offer, especially from Japanese manufacturers. At the same time, registrations of **BEVs slipped -0.3% YoY to 57,484 units** (down -19.3% YoY over February-October, 2024) on the ending of the EV 3.0 support scheme and worries over access to charging stations, in particular upcountry. This was despite the aforementioned subsidies, the large selection of models now on offer, and the increasing range-per-charge of EVs. Some consumers are also holding off on purchases as they wait for new models to be released and/or end-of-year price cuts. Likewise, the inability of PHEVs to compete with HEVs and BEVs, which have benefited from government subsidies, let to a **-22.1% YoY drop in PHEV registrations to 8,076 vehicles**.
- **Registrations of electric buses slumped -76.2% YoY, falling to just 288 vehicles**, though this was a result of the uptick in adoption over the previous 2 years. **By contrast, 918 electric commercial vehicles (pickups and trucks) were registered in the period, a jump of 132.4% YoY.** Sales benefited from improvements in battery technology that have extended their range-per-charge, but although these are now more suitable for commercial use, a shortage of charging stations in rural areas is holding back adoption.
- Although the December Motor Show will likely feature EV promotions that will attract demand from consumers who had postponed purchases in the face of earlier price wars**, for the year as a whole, demand for BEVs and PHEVs will slip to respectively 71,000 and 9,000 units, though more positively, some 135,000 HEVs will be sold in the year. For electric buses and commercial vehicles, sales should reach 350 and 1,100 vehicles, respectively.**

Figure 1: Newly Registered Electric Passenger Cars



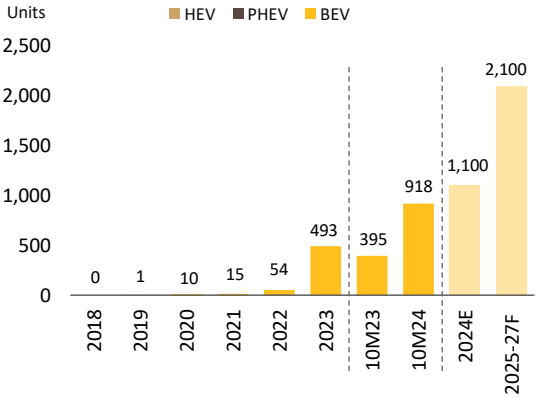
Source: Department of Land Transport (DLT), Forecast by Krungsri Research

Figure 2: Newly Registered Electric Buses



Source: Department of Land Transport (DLT), Forecast by Krungsri Research

Figure 3: Newly Registered E-pickups and E-trucks



Source: Department of Land Transport (DLT), Forecast by Krungsri Research

2025-2027 Outlook

- **By 2027, approximately 500,000 EVs should be coming off Thai production lines each year** given the need to compensate for earlier imports with 1-1.5 and 2-3 domestically produced vehicles, as per the conditions for respectively the EV 3.0 and EV 3.5 promotions. At the same time, **new registrations of BEVs, HEVs, and PHEVs should climb to 85,000, 160,000 and 9,600 annually**, lifted by: (i) the EV 3.5 scheme; (ii) Continuous improvement in developing more efficient HEV and BEV models; (iii) falling price and increasing range-per-charge; and (iv) the enforcement of the Euro 6 standards in 2025, which will make ICE-powered vehicles more expensive. At the same time, **respectively 1,100 and 2,100 new buses and commercial vehicles should be registered each year** over the next three years. Sales will benefit from: (i) government support for the segment, which for EV pickups will come through the EV 3.5 scheme and for buses through measures promoting the use of larger EV commercial use[1/]; (ii) the increasing range of these, which is making them more in the usable in commercial settings; (iii) the increase in the number of charging stations, especially upcountry; and (iv) an extension in EV bus services, both on regular routes and in key areas.

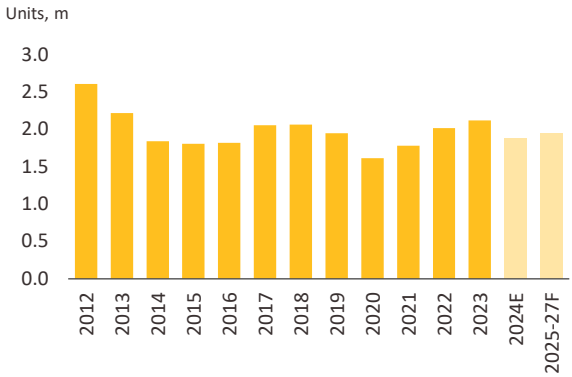
1/ Measures promoting the use of large commercial EVs in organizations will take effect from February 21, 2024, until 2025 (Source: BOI).

Motorcycles

Situation in 2024

- **Over 9M24, motorcycle production slipped -12.3% YoY to 1,436,354 units** as sales worsened on both domestic and international markets. Declines in output were most pronounced for smaller motorcycles, including family models (-28.3% YoY) and sub -400 cc sports bikes (-52.7% YoY).
- **Domestic sales fell back -11.4% to 1,281,711 vehicles.** Demand was undercut by the high burden of household debt, a tightening of lending conditions, and first drought and then floods that forced some low- to middle-income consumers (especially in the provinces) to postpone purchases. As such, sales of sub-250 cc models (over 90% of the market) slipped -11.7%, although growth in e-commerce and food delivery services and the resilience of spending power among mid- to upper-income earners (another important market segment) helped to lift sales of AT/scooters by 12.4% YoY.
- **Exports softened in 9M24, falling -11.4% YoY to 301,832 vehicles** on weak consumer purchasing power in many overseas markets, though declines were also an artefact of the high baseline set last year as exporters cleared their backlog of unfilled orders.
- **For all of 2024, these trends will feed through into falls in production, and in domestic and export sales of respectively -11.0% to -12.0%, -13.5% to -14.5%, and -10.5% to -11.5%.**

Figure 1: Motorcycle Production



Source: The Federation of Thai Industries (FTI), Forecast by Krungsri Research

2025-2027 Outlook

- A better outlook on domestic and international markets will support **annual growth in production of 1.5-2.5% over 2025-2027**. In particular, following earlier investment in production facilities, output of electric motorcycles will rise. (As of November 2024, 15 out of a total of 26 manufacturers had established these, source: Thailand Automotive Institute).
- **Domestic sales will rise by 1.5-2.5% annually**, helped by: (i) growth in the economy and the continuing rebound in the tourism sector; (ii) the transition to La Niña conditions, which will raise agricultural yields and boost demand for smaller models; (iii) the ongoing expansion of food and e-commerce delivery services, which will lift demand for AT and electric motorcycles; and (iv) firmer demand for larger models, thanks to the strength of purchasing power among mid- to upper-income consumers.
- **Exports should expand by 2.0-3.0% per year** as economies strengthen in export markets and this then lifts overseas sales of 'big bikes'. In addition, global demand for electric motorcycles is rising, and since Thailand-based e-motorcycle production capacity has increased following earlier investment, exports of these will climb.

Table 1: Growth in Motorcycle Production and Sales

%YoY

	2023	9M24	2024E	Avg. 2025-2027F
Domestic sales	3.6	-14.1	-13.5 to -14.5	1.5 – 2.5
Exports	10.8	-11.4	-10.5 to -11.5	2.0 – 3.0
Production	5.2	-12.3	-11.0 to -12.0	1.5 – 2.5

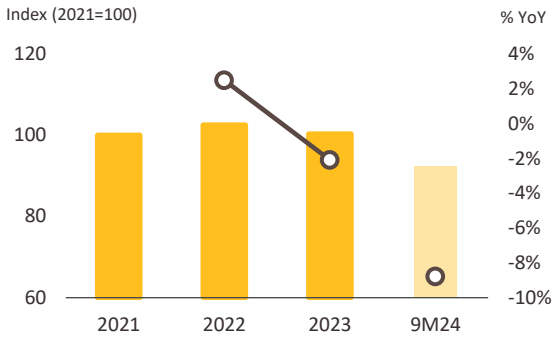
Source: FTI, Forecast by Krungsri Research

Auto parts

Situation in 2024

- **Output of auto parts declined through 9M24**, and with production of autos and motorcycles down by respectively -17.7% and -12.3% YoY, the industry's MPI contracted -8.8% YoY. The market was also impacted by the transition to EVs (both those imported under the EV 3.0 and EV 3.5 programs and those manufactured domestically to compensate for these), which then caused a -17.1% YoY decline in production of internal combustion engines. These declines were somewhat offset by the effects of weak purchasing power and the impetus this gave to consumers to hold on to older vehicles. This has driven 4.3% and 2.3% YoY annual growth in the number of autos and motorcycles more than 5 years old, which in turn has benefited the market for REM parts. **Export values also inched down -0.5% YoY**, though declines were most pronounced in the manufacture of internal combustion engines, where the global transition to EVs caused this to drop -16.0% YoY. However, the ending of anti-dumping measures in the US helped exports of tires to grow 6.3% YoY.
- **For all of 2024, these trends will cut the industry MPI by -7.5% to -8.5%, while the value of exports will remain flat or possibly fall back by up to -1.0%.**

Figure 1: Auto Parts Manufacturing Production Index (MPI)

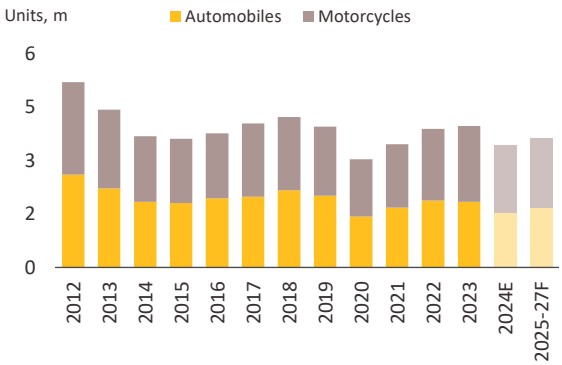


Source: Office of Industrial Economics (OIE)

2025-2027 Outlook

- **Domestic demand will bounce back to growth** thanks to: (i) the 2.0-3.0% annual expansion in the number of autos over 5 years old, which will then lift the REM market; and (ii) increasing output of BEVs an HEVs and the resulting jump in demand for the most important EV components[1/]. **Exports will also rise, though at the slightly slower rate of 1.0-2.0%** as the economic outlook improves in overseas markets. The sharp increase in global EV production will lift output of batteries and battery management systems, traction electric motors, drive control units, cabling and connectors, plastic and rubber parts, and bodywork. However, this will also mean that demand for parts used in ICE-powered vehicles (e.g., engines, powertrains, gears, radiators, exhaust systems, etc.) will significantly decline from 2025 onwards (Deloitte, 2020[2/]). **Output will therefore move in line with rising investment in the industry over the past 2-3 years, and so this is forecast to rise by some 3.0-4.0% per year**[3/].

Figure 2: Vehicle Production (OEM Market)



Source: The Federation of Thai Industries (FTI), Forecast by Krungsri Research

Table 1: Cumulative Registered Vehicles (REM Market)

Units, m

	Automobiles	Motorcycles
2015	15.63	20.50
2016	16.24	20.48
2017	16.97	20.70
2018	17.81	21.08
2019	18.62	21.40
2020	19.20	21.57
2021	19.74	21.84
2022	20.35	22.28
2023	20.88	22.70
10M23	20.81	22.64
10M24	21.14	22.88

Source: Department of Land Transport (DLT)

1/ The BOI has promoted business collaborations between domestic producers of auto parts and EV manufacturers including BYD, NETA, MG, CHANGAN, BMW and GAC AION, and this should help to generate THB 47.25bn in earnings from sales of parts used in EV assembly (Prachachat, 7 November, 2024).

2/ Deloitte (2020) sees global sales of ICE-powered vehicles peaking in 2025 at 81.7m units, at which point sales of EVs will begin to make inroads into the market for ICE vehicles.

3/ In 2023, BOI investment promotion approvals for automotive parts (including EV parts) surged by 218% (Source: BOI).

ELECTRONICS & ELECTRICAL APPLIANCES

Electronics

Hard Disk Drives (HDD)

Situation in 2024

- **The HDD Manufacturing Production Index (MPI) contracted -5.4% YoY over 9M24** as domestic demand shifted to SSDs. However, **export value jumped 17.9% YoY to USD 7.23bn** thanks to: (i) the onset of a new PC replacement cycle that become more prominent in 2024 boosting global PC orders; (ii) the worldwide expansion in data centers, which should run to growth of 34.7% in 2024; and (iii) the production of higher-value HDDs results from advancements in HDD technology that increase storage capacity per unit. (Gartner, 2024).
- Thailand's production is expected to improve for the rest of the year, driven by the ongoing PC replacement cycle. Based on these factors, **the total output of HDDs in 2024 is projected to remain steady between -0.5% to +0.5%, while export earnings will strengthen by 24.0-25.0%.**

Figure 1: HDD Manufacturing Production Index (MPI)

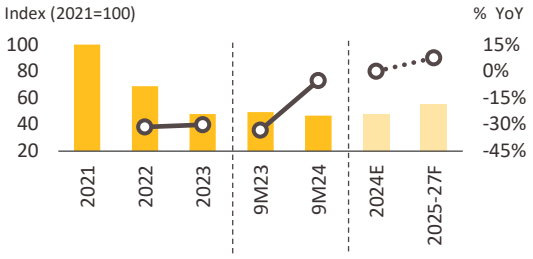
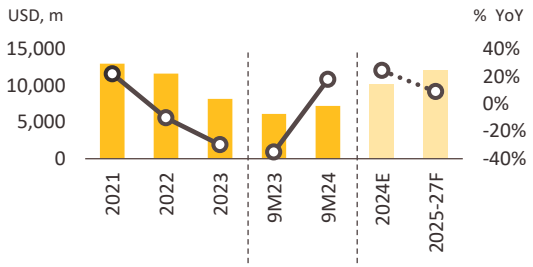


Figure 2: HDD Export Value



2025-2027 Outlook

- Production of HDDs will tend to rise relative to the earlier low baseline. Demand will be boosted by an expansion in investment by major disk manufacturers in Thai production facilities[1/] and ongoing growth in adjacent parts of the economy, such as cloud computing, data centers[2/], and 5G technologies. Nevertheless, growth in overall HDD sales will be limited by the shift to AI-based computers that tend to use SSDs, Gartner projects 43.0% of PC shipments (or 114,225 units) will be AI PCs by 2025. Given this, **HDD output and export earnings are expected to expand by respectively 7.0-8.0% and 8.5-9.5% annually over 2025-2027**.

Integrated Circuits (IC)

Situation in 2024

- **Over 9M24, the IC MPI slumped -22.1% YoY, with export earnings also down -15.9% YoY** as sluggish purchasing power came under further pressure from uncertainty over the global economic outlook, protracted geopolitical stresses, and rising technology-related barriers to trade between the US and China. These factors has impacted demand in downstream industries that use ICs in their production processes. Thai players have also faced stiffening competition from Chinese manufacturers reacting to China's domestic overcapacity, and so although the global IC industry has entered a cyclical upswing, exports of ICs from Thailand to the main markets of the US and China are down by respectively -40.0% YoY and -9.5% YoY.
- **Production and export value will remain on a downward track through Q4, and so for 2024, these will contract by respectively -21.0% to -22.0% and -11.0% to -12.0%.**

Figure 3: IC Manufacturing Production Index (MPI)

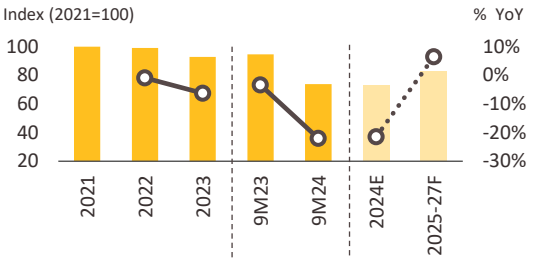
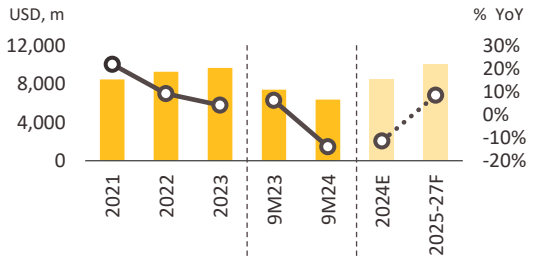


Figure 4: IC Export Value



Source: Ministry of Commerce (MOC), Forecast by Krungsri Research

2025-2027 Outlook

- IC orders will be lifted by: (i) steadily strengthening global demand for ICs, which is expected to average 5.8% CAGR over 2024-2033 (Precedence Research, 2024), especially for high-density interconnect and flexible PCBs; (ii) the onset of a worldwide PC and smartphone replacement cycle (Gartner, 2024); (iii) rising global EV sales, which the IEA expects to increase by 18.2% p.a. over 2024-2030; and (iv) increased domestic investment in related industries (e.g., smart electronics, upstream and midstream electronics parts, EVs, and data centers) that will further lift demand. **Over 2025-2027, annual production and exports of ICs are therefore expected to rise by 6.0-7.0% and 8.0-9.0%, respectively.**

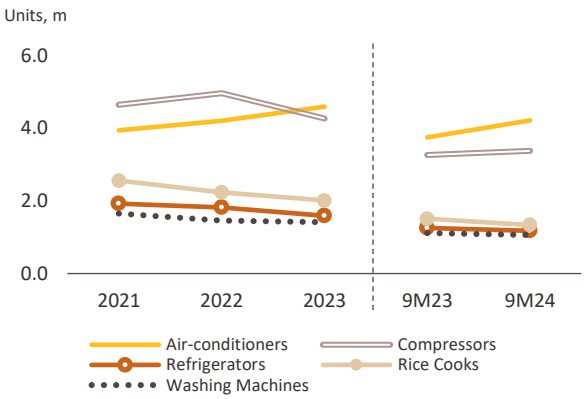
1/ Seagate and Western Digital invested THB 16bn and THB 23bn each in Thailand-based HDD production facilities over 2023-2024.
2/ Global investment in data centers should rise by 15.5% to USD 370bn in 2025 (Gartner, 2024).

Electrical Appliances

Situation in 2024

- **9M24 production of electrical appliances climbed 6.2% YoY to 41.1m units on the back of a 2.4% YoY increase in domestic sales (up to 11.2m items[1/]).** The latter was helped by the government's easy e-receipt scheme, which offered shoppers tax refunds of up to THB 50,000 for purchases made between January 1st to February 15th, 2024, and hotter weather, which increased sales of air conditioners by 12.3% YoY. Nevertheless, continuing problems with high levels of household debt and the run-up in inflation eroded consumer purchasing power, and so sales were down -6.6% YoY for refrigerators, -11.6% YoY for rice cookers, and -4.8% YoY for washing machines. Uncertainty over the global economic outlook and elevated energy costs also impacted **export sales**, and so these **contracted -0.6% YoY** by value.
- These domestic trends will continue through Q4, while in export markets, the start of a new replacement cycle will help to increase export value. **For 2024, production and domestic sales will thus rise by 5.5-6.5% and 2.0-3.0%, while export value will remain flat or possibly soften by up to -1.0 % YoY.**

Figure 1: Domestic Sales for Major Electrical Appliances



% YoY

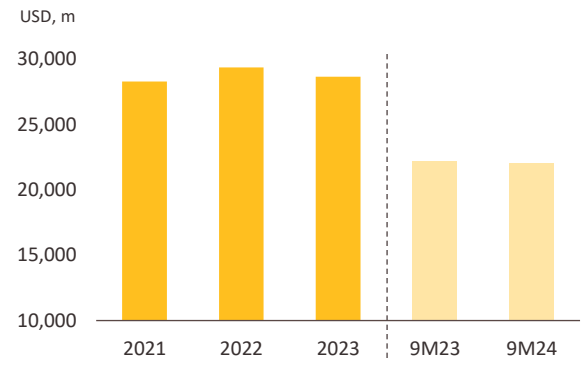
	2022	2023	9M24	2024E	Avg. 2025F-2027F
Domestic Sales	-0.2	-5.6	2.4	2.0-3.0	3.0-4.0

Source: Office of Industrial Economics (OIE), Forecast by Krungsri Research
Note: Survey by OIE: covering only electrical appliances which are produced in Thailand.

2025-2027 Outlook

- An improving outlook for domestic and international markets will **boost output by approximately 2.0-3.0% per year**. Thus, the number of units sold into the **Thai market is forecast to expand at an average rate of 3.0-4.0%** annually thanks to: (i) the recovery in the tourism sector, economic expansion, and better prospects for real estate markets; (ii) the development of new technologies making electrical appliances easier and more convenient to use, with this being seen in both cheaper Chinese goods and premium products from Japan and South Korea (Euromonitor, 2023); (iii) intensified marketing efforts as purchasing power recovers; and (iv) continuing demand for air conditioners. However, given higher electricity costs and the 2024 introduction of the label no. 5 standards requiring clearer labelling of energy use, this will particularly effect units with a capacity greater than 10,000 BTU that make use of energy-saving technologies. However, the expansion of launderettes will erode demand for washing machines, and this may hold back overall growth in the market for electrical appliances. **Exports are also forecast to expand by 2.0-3.0% annually** as economies in overseas markets strengthen, pressure on the cost of living eases, and a new replacement cycle encourages consumers to swap out appliances bought during the pandemic.

Figure 2: Electrical Appliance Exports



% YoY

	2022	2023	9M24	2024E	Avg. 2025F-2027F
Exports	3.9	-2.4	-0.6	0.0 to -1.0	2.0-3.0

Source: Ministry of Commerce (MOC), Forecast by Krungsri Research

1/ Includes the 5 most important product groups of air conditioners, compressors, refrigerators, rice cookers, and washing machines.

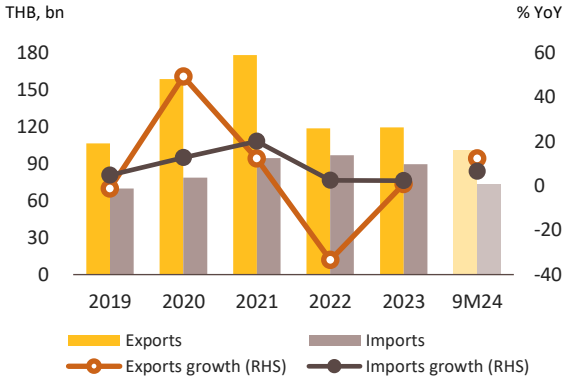
OTHER INDUSTRIES

Medical Devices

Situation in 2024

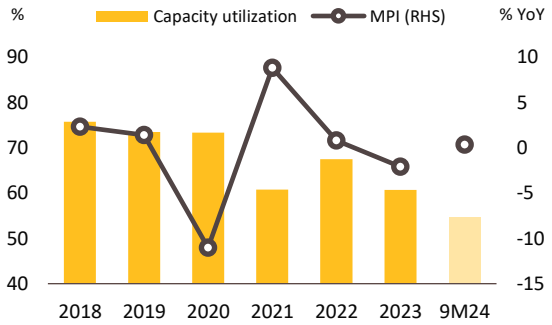
- **Sales of medical devices continue to expand** as a result of rising rates of illness. This is being driven by increases in the spread of infectious diseases (in 9M, the number of patients with influenza and hand, foot and mouth disease rose by respectively 57.9% YoY and 44.6% YoY), the impacts of air pollution, and incidences of non-communicable diseases. In addition, access to basic healthcare services is expanding thanks to the extension in the universal health coverage scheme, namely the 30-baht Gold Card, and improved access to dental services. Worries over public health have also added to sales of protective items and interventions, such as medical masks, surgical gloves, diagnostic kits, and vaccines. **For all of 2024, the value of goods distributed to the domestic market is forecast to expand by 7.0% YoY, while export sales should be up by 6.0-7.0%** on improving demand for surgical gloves and masks in some markets. Market conditions over 9M24 are described below.
  - **Output of medical devices remained largely unchanged from 2023,** with the industry's Manufacturing Production Index inching up from 9M23's 96.7 to an average of 97.0. The strongest gains were seen in the production of surgical gloves (90% of all output), which rose 19.4% YoY, and consumables, such as masks and gowns, for which production jumped 40.4% YoY. However, to meet a sudden jump in demand, production ramped up sharply in 2023 and so in comparison to a year earlier, capacity utilization has worsened, slipping from 60.7% in 2023 to 54.8% over 9M24.
  - **Export value climbed 12.3% YoY to THB 100.6bn**. Stronger demand for surgical gloves in the US and China lifted sales of these by 15.9% YoY, adding 11.7% YoY to overall sales of ***single-use devices*** (86.7% of all exports of medical devices by value). Sales also climbed 17.0% YoY for ***durable*** (11.1% of export value) and 13.7% YoY for ***reagents & test kits*** (2.2% of exports). Overall, the strongest growth was seen in exports to the US (+24.7% YoY), China (+8.9% YoY), and France (+7.4% YoY).
  - **The value of imports rose to THB 73.1bn (up 6.5% YoY).** ***Single-use devices*** comprised the largest share of these (44.9% of all imports of medical devices by value), with these up 7.0% YoY, followed by ***durables*** (36.6% of imports, up 12.4% YoY) and ***reagents & test kits*** (18.5%, down -4.5% YoY). By product group, the largest changes were seen in Electro mechanical medical devices (+18.9% YoY) and ophthalmological equipment (+6.1% YoY), while by originating country, the largest increases came from Germany (+4.2% YoY) and China (+2.7% YoY).

Figure 1: Thailand Medical Device Trade



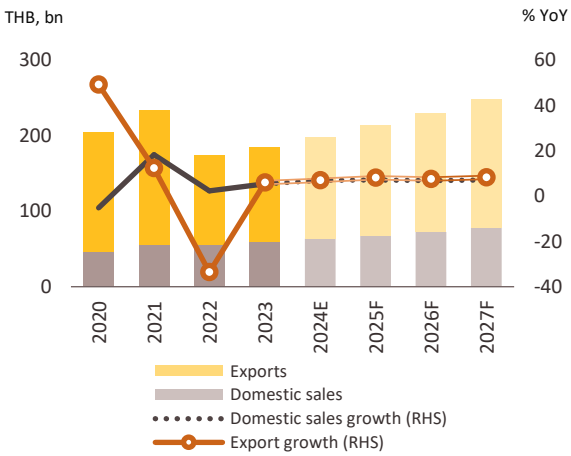
Source: Medical Device Intelligence Unit (MeDIU)

Figure 2: Domestic Medical Device: Capacity Utilization and MPI



Source: Office of Industrial Economics (OIE)

Figure 3: Medical Device Domestic Sales and Exports



Source: FitchSolutions, forecast by Krungsri Research

2025-2027 Outlook

- **Going forward, demand for medical devices will enjoy solid rates of growth, and as such, the value of goods distributed to domestic and export markets is forecast to rise by respectively 6.5-7.0% and 7.5-8.5% per year.** Demand will be lifted by: (i) the aging of society and worsening rates of non-communicable diseases; (ii) strengthening markets for medical tourism, where Thailand enjoys comparative advantages in terms of both quality and cost; (iii) growing interest in preventative healthcare, which will lift sales of items that help prevent or protect against illness; (iv) economic growth in neighboring countries that will then lift demand for imports of medical devices from Thailand; and (v) increased investment by Thai and international companies in the domestic production of medical devices, which will be boosted by government support for the industry and plans to establish the country as both an ASEAN hub for the production of medical devices and an international center for the provision of healthcare.

CONSTRUCTION & CONSTRUCTION MATERIALS

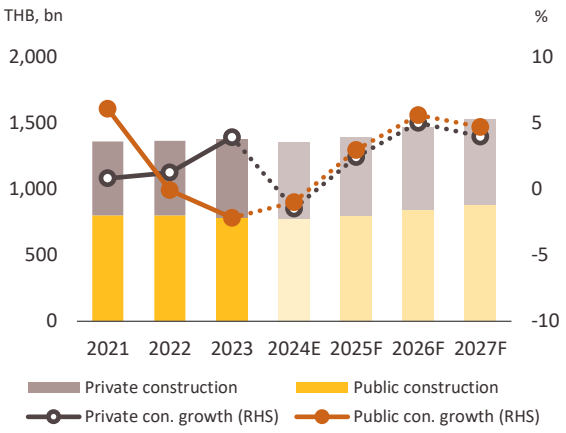
Construction Contractors

Situation in 2024

- **Spending on construction slumped -1.8% YoY over 9M24. The public construction investment slashed -2.2% YoY** due mainly to the delay in implementing the 2024 fiscal budget. This led to a contraction in the value of investments in various projects, particularly government infrastructure construction which slipped -2.6% YoY. At the same time, **private construction investment declined by -1.3% YoY**, with a -5.3% YoY contraction in residential construction.

- **For the rest of 2024, spending on construction has picked up** following the government's accelerated disbursements. However, the industry has still faced headwinds in the form of: (i) the high cost of energy, which will lift prices for some construction materials and transport expenses; (ii) ongoing labor shortages that may force some contractors (especially smaller operations) to delay or even abandon some projects; and (iii) continuing sluggishness in the market for residential accommodation. **For 2024 overall, spending on construction is thus expected to shrink by between -1.0% and -1.5%, with the public sector construction expected to decline by -1.0 to -1.5% and the public sector construction by -1.5% to to -2.0%.**

Figure 1: Spending on Construction



% YoY	2023	2024E	2025F	2026F	2027F	2025F-2027F
Public	-2.2	-1.0 to -1.5	3.0-3.5	5.5-6.0	4.5-5.0	4.5-5.0
Private	3.9	-1.5 to -2.0	2.0-2.5	4.5-5.0	4.0-4.5	3.5-4.0
Total	0.4	-1.0 to -1.5	2.5-3.0	5.0-5.5	4.0-4.5	4.0-4.5

Source: Office of the National Economic and Social Development Council (NESDC), forecast by Krungsri Research

2025-2027 Outlook

- **Overall the investment in construction sector should rise by 4.0-4.5% annually,** driven by higher public sector spending on infrastructure megaprojects, in particular those connected to the Eastern Economic Corridor (EEC), new projects outlined in the 2025 spending plans[1/], and the development of new business zones in strategic areas in the provinces.

  - **Public sector allocations are expected to expand by 4.5-5.0% per year.** Tailwinds will come from the acceleration in work on ongoing megaprojects, as per the 2023-2027 Action Plan, and the pick-up in the pace of work on phases 1 and 2 of the double-track railway and on new lines that will then help to develop transport links connecting industrial estates with border regions. Ongoing projects in the EEC will include: (i) the first stage of phase 3 of the Map Ta Phut Port development (a new natural gas and petrochemicals docking facility) that should be finished on schedule in 2027; (ii) phase 3 of the Laem Chabang Port development, with Pier F (targeting the transport of industrial goods) beginning operations in 2025; and (iii) the delayed three-airport high-speed rail-link, for which ground should be broken in 2025.

  - **Private sector investment spending is forecast to expand by 3.5-4.0% annually**. The industry will benefit from: (i) strengthening investment that will boost work on industrial and office space located on industrial estates in the EEC; (ii) continuing recovery in the tourism sector that will support an uptick in hotel construction; (iii) expansion in retail branch networks that will feed through into an increase in work on new department stores and other retail units; and (iv) recovery in residential housing markets, especially in the EEC and important provincial centers.

  - **Major companies will remain at an advantage relative to SMEs given their better ability to bid for contracts and their stronger negotiating position relative to manufacturers and distributors of construction materials.** By contrast, SMEs will be dependent on revenue from sub-contracting for larger companies, resulting in a high degree of uncertainty over their revenue. Contractors, especially smaller operations, will also be exposed to risk arising from labor shortages and the elevated cost of materials

1/ This includes: (i) THB 300-500bn for the construction of entertainment complexes in a number of locations, with 10% of total site areas reserved for casinos; and (ii) the Gulf of Thailand Pearl Necklace project, which will help to reduce coastal erosion and alleviate flooding in Bangkok.

Construction Materials

Situation in 2024

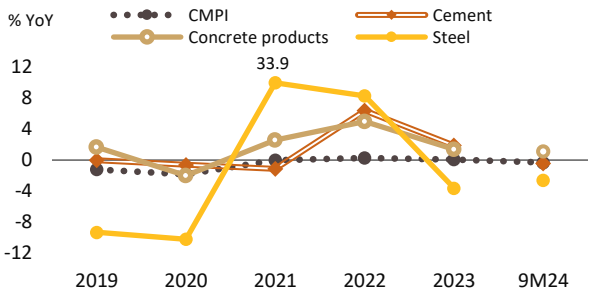
- **Through 9M24, production and domestic sales volumes of construction materials** (cement, construction steel, ceramic floor/wall tile, and sanitary ware) **declined across all products,** in line with the overall contraction in construction investment value, which fell by -1.8% YoY. In Q4, demand for construction materials is expected to contract at a slower pace as public construction projects are likely to accelerate due to faster budget disbursements following significant delays in the first half of the year. Meanwhile, investment in new residential construction projects remains sluggish due to high levels of unsold inventory. **Consequently, domestic production and sales volumes of construction materials for the entire year of 2024 are projected to decline in line with the overall construction sector.**
- **Exports also slipped in 9M24 on softness in the main overseas markets.** Drops in sales to Cambodia and Myanmar of respectively -54.2% and -22.3% YoY led to a -12.9% YoY decline in exports of cement (down to 1.1m tonnes). However, overseas sales of construction steel rose 16.4% YoY, with exports of steel bar up 36.2% YoY to 0.22m tonnes on the back of stronger sales into Canada (+638% YoY) and Lao PDR (+66.0% YoY). **Imports** also weakened, again as a result of delays to work on government projects and the overhang of unsold stock that continues to weigh on residential property markets. Consequently, imports of construction steel and tiles were down by -16.4% and -0.3% YoY, respectively. Nevertheless, demand for use in non-residential projects lifted imports of sanitary ware by 6.5% YoY, **but for all of 2024, both imports and exports are forecast to decline relative to their level in 2023.**
- **The Construction Materials Price Index slipped -0.3% YoY over 9M24** as a result of sluggishness in the Chinese real estate sector, which then weighed on world markets and pulled down domestic prices for construction steel by -2.6% YoY, and the falling cost of coal, which contributed to a -0.4% YoY cut in cement prices. Elevated energy costs from continuing geopolitical stresses, an uptick in disbursements related to public sector construction, especially for ongoing projects, and the need to carry out repairs following this year's flooding will mean that prices will stabilize or possibly edge up slightly in the remainder of the year. In addition, steel prices may be lifted slightly by Chinese stimulus spending in response to the long-running crisis in the real estate sector, although at the same time, domestic demand will continue to be negatively impacted by the high level of household debt and lenders' tightening of the release of new credit. **Prices will therefore remain broadly unchanged from their level a year ago.**

Table 1: 9M24 Growth in the Construction Materials Sector

Product	Unit (mn)	Production	Domestic sales	Exports
Cement	tonnes	24.0	22.1	1.1
% YoY		-8.2	-9.0	-12.9
Construction steel	tonnes	2.7	2.8	0.4
% YoY		-7.3	-9.7	16.4
Ceramic tiles	sq.m.	83.4	103.8	17.2
% YoY		-11.4	-9.9	-13.1
Sanitarywares	pieces	4.0	2.1	51,527 tonnes
% YoY		-5.3	-10.9	-4.6

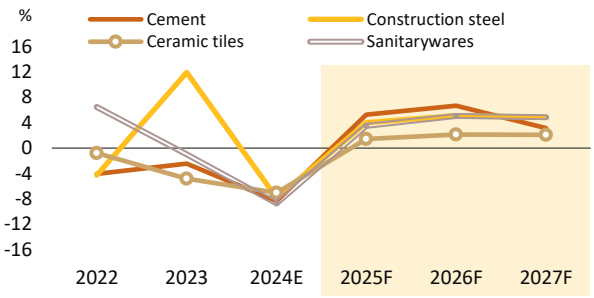
Sources: Office of Industrial Economics (OIE), Iron and Steel Institute of Thailand (ISIT) Ministry of Commerce (MOC)
Note: Cement refers to Portland and mixed cement

Figure 1: Construction Materials Price Index



Source: MOC

Figure 2: Growth in Domestic Sales Volume



Source: OIE, forecast by Krungsri Research

2025-2027 Outlook

- **Domestic sales** will tend to strengthen as a result of the following.
  - **Spending on public sector construction will rise by 4.5-5.0% annually** over the next 3 years, helped by public works that are expected to accelerate. Investments in major public projects (both ongoing and new) connected to the development of multi-modal transportation networks will be on construction process, together with current projects that aim to support the growth potential of a number of various areas, and this will help to attract more private sector investment.

Construction Materials (Cont.)

2025-2027 Outlook (cont.)

- **Private sector spending on construction is forecast to strengthen by 3.5-4.0% annually.** This will be lifted by: (i) the crowding-in effects of public sector spending on construction; (ii) an improving outlook for tourism and investment, which will lift spending on hotels and on industrial units in the EEC; and (iii) recovery in residential housing markets over 2026 and 2027 as the economy improves, purchasing power firms up, and more foreigners move to Thailand, adding to demand in the EEC, tourist areas, and regional centers.

- **Exports will tend to rise** as governments in the border region (Thailand's main market) respond to strengthening investment and growing economies with greater spending on national infrastructure. Real estate markets will also benefit from increased investment inflows from China.

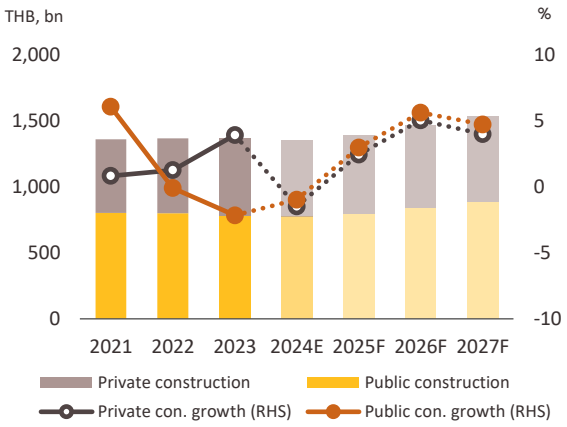
- **Prices will likely track upwards** as a result of: (i) stronger demand, in particular from recovery in work on private sector housing and on new government megaprojects; (ii) an increase in the prices being set on world markets for construction steel as consumption in China revives; and (iii) continuing high energy costs.

- **Traders:**

  - **Modern trade outlets should see gradual growth in revenue,** helped by the consumer preference for retailers that offer a comprehensive range of products. Players will move to secure their market position by adjusting their business strategies, in particular by: (i) opening smaller outlets that will allow retailers to distribute into individual communities more effectively; (ii) partnering with manufacturers to open new branch outlets that target particular consumer groups more tightly; (iii) increasing the share of own-brand product lines; (iv) exploiting new technology more effectively, for example, by selling through online platforms; and (v) investing in new branches in secondary provinces and, to meet anticipated growth in demand, across the ASEAN region.

  - **Traditional outlets will face depressed conditions, and overall growth will be limited. (i) For wholesalers,** the market will remain flat or perhaps expand slightly, though players will have to contend with escalating competition both from modern trade operations that are expanding their branch networks across the country and from manufacturers that are distributing directly to contractors. **(ii) Retailers** are overwhelmingly small operations and face limitations in terms of their access to capital and their stock range, meaning they tend to rely on lower revenue customers.

Figure 3: Spending on Construction



% YoY	2023	2024E	2025F	2026F	2027F	2025F-2027F
Public	-2.2	-1.0 to -1.5	3.0-3.5	5.5-6.0	4.5-5.0	4.5-5.0
Private	3.9	-1.5 to -2.0	2.0-2.5	4.5-5.0	4.0-4.5	3.5-4.0
Total	0.4	-1.0 to -1.5	2.5-3.0	5.0-5.5	4.0-4.5	4.0-4.5

Source: Office of the National Economic and Social Development Council (NESDC), forecast by Krungsri Research

Steel

HRC (Hot-rolled coil)

Situation in 2024

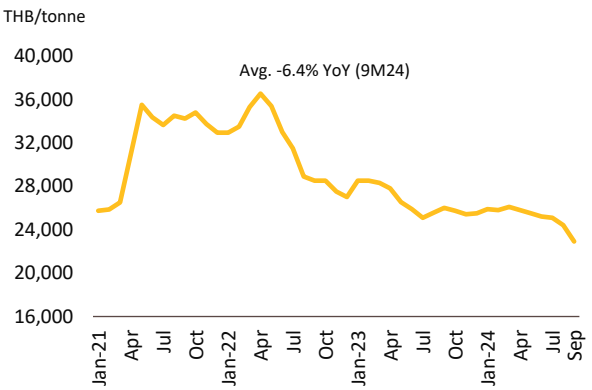
- **Output totaled 1.4m tonnes over 9M24, up just 1.0% YoY** due to depressed downstream demand, particularly from the auto industry. This was in line with the -8.0% YoY drop in imports, with these down by -36.1% and -14.6% YoY from China (hot-rolled coil/sheet) and Japan (hot-rolled P&O), respectively. **For the whole of 2024, output should therefore edge up by just 1.0-1.5%.**
- **Domestic sales fell -4.7% YoY to 4.1m tonnes in 9M24** as demand from downstream industries softened. Thus, weak purchasing power and tighter controls on the release of credit by lenders translated into a -17.7% YoY fall in output of passenger vehicles and pickups over 8M24 (particularly seen in the -22.3% YoY slump in the market for pickups). In addition, high levels of household indebtedness cut sales of some electrical appliances (e.g., refrigerators and washing machines), and with the industry MPI down -2.5% YoY in 9M24, demand for hot-rolled coil followed suit. **For the year, domestic demand is therefore expected to contract by between -3.5% and -4.0%.**
- **9M24 exports crashed -57.4% YoY to just 10,000 tonnes** as the Vietnamese market (55% of exports of HR coil/sheet) was hit by a flood of low-cost Chinese imports; over 4M24, Vietnamese imports of Chinese HRC doubled to 2.9m tonnes (Department of International Trade Promotion, May 2024).
- **Prices** tended to track these market conditions, slipping -6.4% YoY to an average of THB 25,189/tonne over 9M24 as global prices and domestic demand softened. **Average prices for all of 2024 are therefore expected to decline to THB 25,000-25,500/tonne, down by -4.0% to -6.0%** relative to 2023's THB 26,571.

Table 1: Hot-rolled Coil (HRC) Production and Apparent Use

	2021	2022	2023	9M23	9M24
Production (tonnes, m)	2.8	2.3	1.9	1.4	1.4
% YoY	16.9	-18.4	-18.2	-20.2	1.0
Apparent Use (tonnes, m)	6.9	5.7	5.5	4.3	4.1
% YoY	33.8	-18.0	-3.6	-2.0	-4.7

Source: Iron and Steel Institute of Thailand (ISIT)

Figure 1: Domestic HRC Prices

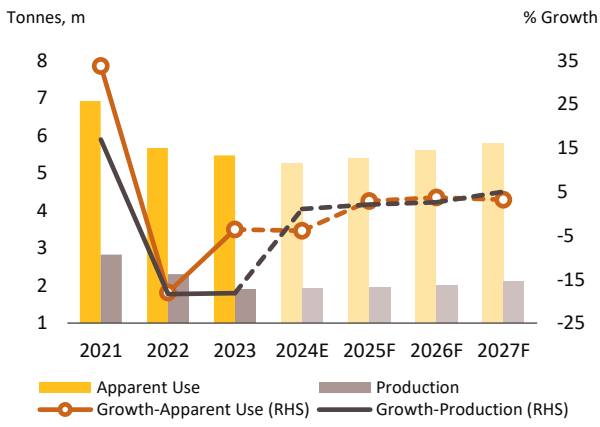


Source: ISIT

2025-2027 Outlook

- **Annual production should strengthen by 3.0-3.5% per year to around 2.0m tonnes per year.** However, although demand will improve, Thailand lacks upstream sources of steel, placing domestic manufacturers at a cost disadvantage relative to imports from producers in India, Japan and especially China, which is now a supplier of cheap but higher quality and less polluting steel.
- **Demand for HRC will also grow by some 3.0-3.5% annually to around 5.6m tonnes.** The main sources of downstream demand remain the auto and electrical appliance industries, and as the economy and spending power strengthen, demand from these will rise. Exports will also rally slowly as demand from downstream industries firms up.
- **Domestic prices will likely continue to soften** under the impact of the rising volume of low cost imports. However, players will need to transition to the production of 'green steel' by reducing their carbon emissions, and with this adding to costs, their ability to generate profits may come under pressure.

Figure 2: HRC Production and Apparent Use Forecast



Source: ISIT
Note: Forecast by Krungsri Research

Steel (Cont.)

Steel Bar and Section

Situation in 2024

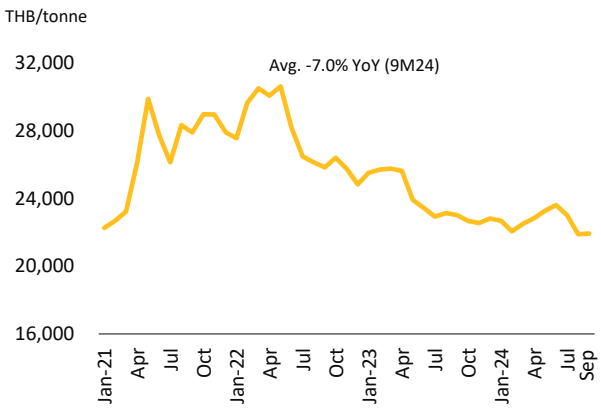
- **Production slipped -7.3% YoY to 2.7m tonnes over 9M24** on the drop off in spending on construction (the principal market for steel bar and section). **For 2024 in total, output is expected to decline by around -6.0% to -6.5%.**
- **Domestic demand dropped to a total of 2.8m tonnes in 9M24, down -9.7% YoY** due to the 9M24 decline in work on government infrastructure projects and private sector housing developments, which knocked off spending by -2.6% and -5.3% YoY respectively, from either side of the market. The situation should improve slightly in the remainder of the year given the acceleration in budget disbursements (this follows major delays in the first half of the year) and the need for repairs to properties damaged in the year's flooding. **This should then limit declines in demand for the year as a whole to somewhere between -7.0% and -8.0% for a total of 3.8m tonnes.**
- **9M24 exports of steel bar jumped 36.2% YoY to 0.22m tonnes** on a surge in exports to the main markets of Canada and Lao PDR of respectively 638.0% and 66.0% YoY. **Exports of steel section were also up, rising 2.1% YoY to some 0.23m tonnes** following a 39.6% YoY increase in sales to Singapore, although this was balanced by the -3.1% YoY fall in sales to Malaysia (the source of 44% of all overseas demand for steel section), where buyers switched to sourcing goods from South Korea instead. Overall weakness in the domestic construction sector undercut **imports of steel bar, which then slumped -26.0% YoY,** although an **uptick in work on factories and warehouses boosted imports of steel section by 102.1% YoY.** Within the latter, imports from China were up by more than 150% YoY.
- **Prices for bar and section averaged THB 22,652/tonne over 9M24, down -7.0% YoY**, in line with declining prices on global markets, which were themselves affected by uncertainty over continuing depressed conditions in the Chinese real estate sector and the effects of this on the outlook for the global economy. These trends will likely continue through Q4 and so for 2024, prices are expected to be down by between -6.0% and -8.0%.

Table 1: Steel Bar/Section Production and Apparent Use

	2021	2022	2023	9M23	9M24
Production (tonnes, m)	3.6	3.6	3.9	2.9	2.7
% YoY	0.6	1.6	6.6	6.9	-7.3
Apparent Use (tonnes, m)	3.8	3.6	4.1	3.1	2.8
% YoY	1.6	-4.3	11.9	14.2	-9.7

Source: Iron and Steel Institute of Thailand (ISIT)

Figure 1: Domestic Steel Bar Prices

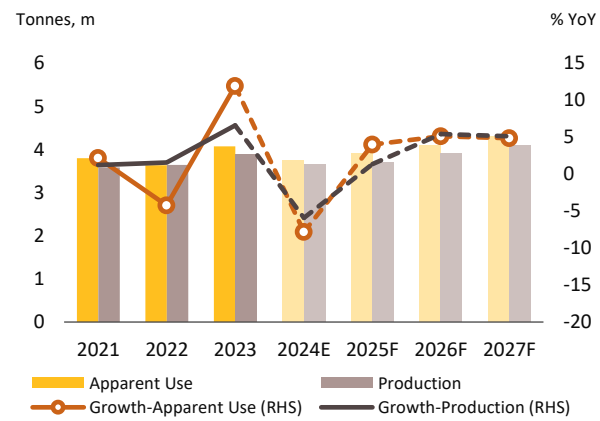


Source: ISIT

2025-2027 Outlook

- **Annual production is forecast to rise 4.0-4.5% per year to 3.8-4.0m tonnes on the back of a 4.5-5.0% annual expansion in domestic demand (up to 3.9-4.0m tonnes).** Output will be boosted by: (i) an acceleration in work on government infrastructure megaprojects, as per the 2023-2027 Action Plan; (ii) an improving outlook for real estate developers; (iii) increasing investment inflows that will lift demand for industrial units in the EEC; and (iv) with the tourism sector continuing to recover, construction and renovation work within the hotel industry will pick up. Nevertheless, competition from cheap Chinese imports will weigh on growth in output and in the quantity of goods sold to the domestic market.
- **Prices for steel bar and section should inch up** on the higher cost of inputs (prices for scrap rose 0.6% YoY in 9M24), together with a range of other factors, including gradually recovery in the Chinese real estate sector, ongoing geopolitical problems in the Middle East, and costs from adapting production processes to reduce carbon emissions in line with eco-friendly trends.

Figure 2: Steel Bar/Section Production and Apparent Use Forecast



Source: ISIT
Note: Forecast by Krungsri Research

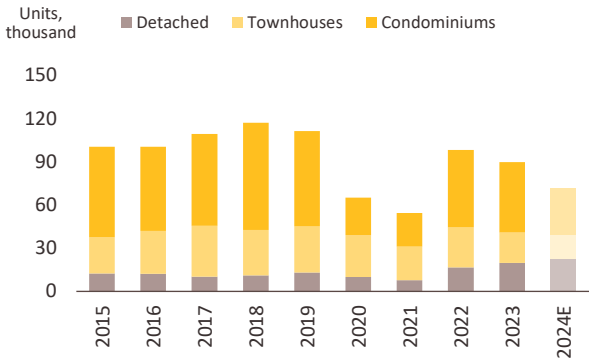
REAL ESTATE

Housing in BMR

Situation in 2024

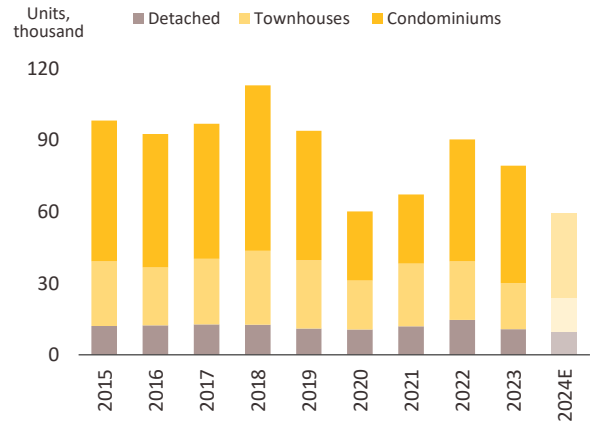
- **Over 8M24,** the residential housing market[1/] was pressured by soft purchasing power, which was further strained by the limited recovery of the Thai economy, high household debt (89.0% of GDP as of September 2024), and the impact of rate hikes that since 2022. These factors have reduced consumers' borrowing capacity and worsened debt burdens, particularly for middle- to low-income earners. **Sales of new units** thus crashed -65.1% YoY to just 7,478 units, with **total sales (new + existing units)** also down -32.0% YoY to 29,377 units over 1H24. Additionally, the number of newly launched units dropped by -37.3% YoY to 35,007 units, as developers held back on work on projects and waited to see how the market evolved. The number of new condominiums and townhouses therefore slumped by -54.5% YoY and -28.3% YoY respectively, though the supply of new detached houses expanded by 8.8% YoY. **In the remainder of the year, ongoing growth in the tourism sector, especially in foreign arrivals, will boost demand,** in particularly for the more sought-after properties priced over THB 5m. This will then help to prevent too sharp a decline in sales of condominiums, Meanwhile, government spending that accelerated from Q2 onwards is expected to support improved purchasing power, As a result, **for the year, the number of new units will contract by -20.0% YoY, while total sales will be down by -25.0% YoY.**
- **Overall property prices[2/]** continued to rise over 8M24, and the price indices for condominiums, townhouses and detached houses rose by respectively 4.2%, 3.6% and 3.4% YoY. **For 2024 in total, prices is expected to increase,** driven by the higher cost of land and of other inputs, including construction materials and labor.

Figure 1: Newly Launched Units



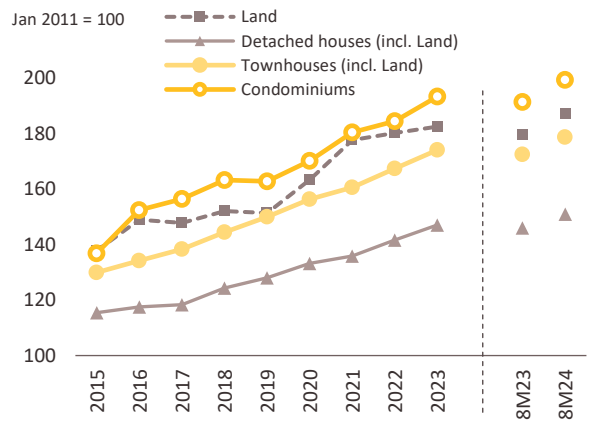
Source: Agency for Real Estate Affairs (AREA), Krungsri Research

Figure 2: Units Sold



Source: AREA, Krungsri Research

Figure 3: Housing Price Index



Source: Bank of Thailand (BOT)
Note: Housing price index is calculated from data from 17 commercial banks which are registered in Thailand and located in the BMR.

1/ Total housing projects include detached houses, townhouse, condominium.

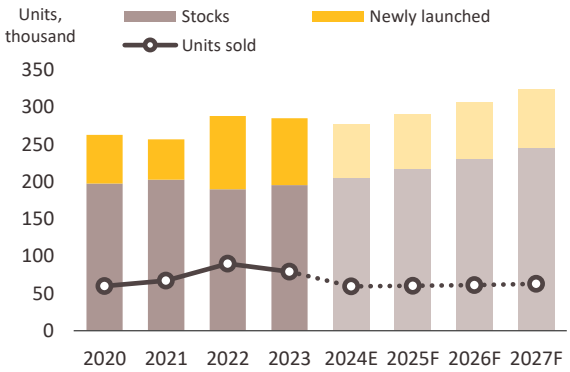
2/ The housing price index is constructed from the prices for detached houses, townhouses and condominiums, for which data are collected from information on housing loans provided by 17 lenders active in the Bangkok Metropolitan Region.

Housing in BMR (Cont.)

2025-2027 Outlook

- **Housing sales are expected to gradually recover by about 2.0-3.0% annually,** helped by: (i) the Thai economy's gradual recovery driven by increased government investment, especially on transportation infrastructure, which will stimulate demand for housing along metro lines and in areas accessible by metro lines, while continuing expansion in the tourism sector will add to demand from overseas buyers looking for investment properties or second homes; and (ii) government measures to promote investment, that will likely increase the number of expatriates working in Thailand, adding further to demand (in Q2, the number of these living and working in the country rose 10.5% YoY to 95,327).
- **The number of new units coming to market is expected to rise by 3.0-4.0% per year,** though new supply will be particularly targeted at upper-middle- to upper-income earners since these have greater purchasing power and remain relatively insulated from economic uncertainty. The outlook for the main market segments is given below
  - **Low-rise housing (detached housing and townhouses): Sales of detached houses will grow slowly,** driven largely by demand from owner-occupiers, with high purchasing power, particularly upper-income buyers looking for properties in areas with full amenities such as shopping centers, international schools, and convenient transportation links. In contrast, **sales of townhouses are likely to remain flat** due to a high level of unsold inventory. These properties are mostly purchased by low- to middle-income buyers, who have been more impacted by rising household debt, thus limiting their purchasing power. **Large developers should continue to see steady growth, while SMEs will face worsening competition due to rising construction and financing costs.**
  - **Condominiums:** Supply will grow in both the CBD and along metro lines, and with the tourism sector continuing to expand and foreign purchasing power returning to the market, sales should also strengthen from non-Thais looking to buy properties as investments and to generate rental income. This will help to boost demand for luxury and super luxury[3/] properties in downtown locations, as well as for the very popular branded residences operated by 5-star hotels and which tend to sellout very rapidly. Condominiums in suburban areas continues to lag behind low-rise developments, and some of these areas still face a high level of unsold inventory, such as Phetkasem, Bang Phlat, Bang Na, and Samut Prakan.
- **The business challenges include:** (i) continuing problems with high levels of household debt, which will undercut purchasing power and limit the ability of financial institutions to expand credit to borrowers with lower credit quality; (ii) rises in property prices that will tend to outpace growth in homebuyers' average income; and (iii) weakening demand as Thailand transitions to an aged society.

Figure 4: Total Supply



Source: AREA, forecast by Krungsri Research

3/ Luxury condominiums are those with a price of THB 250,000-349,999/sq.m., while more expensive units are classified as super luxury.

Housing in Upcountry (6 major provinces[1/])

Situation in 2024

- **The recovery of the tourism sector has bolstered provincial residential markets, with overall sales rising 30.8% YoY over 1H24,** split between a jump of 102.6% YoY in condominium sales, particularly in Phuket, but a fall of -11.0% YoY in sales of low-rise units. The supply of new housing units coming to market also climbed 44.2% YoY, split between a 115.9% YoY increase in the supply of new condominiums (concentrated in Phuket and Chonburi) and a -20.5% YoY contraction in the number of new low-rise properties. Over 8M24, transfers of ownership contracted in all areas except Phuket, where both the number of units and value increased. This was mainly driven by foreign buyers seeking second homes, investment properties, and/or rental income
- **For the second half of the year,** continuing growth in tourism, an improving outlook for manufacturing and exports, as well as the disbursement of the government budget, are expected to stimulate the economy and create more jobs. This will boost demand for residential property, especially in economic zones such as the EEC and in tourist destinations. **For 2024, total sales are forecast to rise by 2.0%, while the supply of new units will increase by 2.5%**

2025-2027 Outlook

- **Sales of residential properties are forecast to grow by 3.0-4.0% annually,** driven by: (i) continued economic recovery, especially in the tourism sector, and government infrastructure investments, (e.g., the high-speed rail-link connecting Bangkok's 3 airports) which will make travel easier; (ii) rising demand for second homes from wealthier domestic buyers, as well as non-Thais living and working in the country; and (iii) less intense competition than in Bangkok and its suburbs, helping to keep price rises limited.
- **Developers will gradually increase the number of new projects that they bring to market.**
  - **Low-rise housing:** The number of new units coming to market is expected to expand by 3.0% per year as developers move to meet demand from owner-occupiers at the mid- to upper-end of the market. However, as large developers from Bangkok and central regions expand their investments into provincial areas, competition will tend to intensify, and this will put pressure on profits for local/SME developers.
  - **Condominiums:** The supply of new condominiums should rise at an average rate of 4.0% annually, primarily in Phuket and Chonburi. These areas are popular destinations for foreign buyers seeking investment properties and second homes. The latter will tend to encourage both local developers and major developers from Bangkok to accelerate new project development to meet demand, particularly from Russian and Chinese buyers.

Figure 1: New Supply

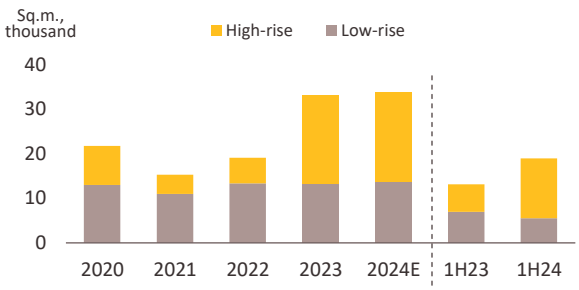


Figure 2: Units Sold

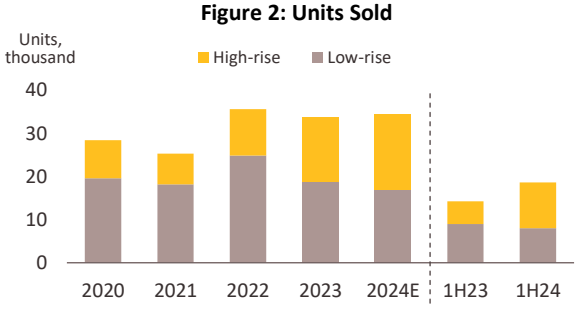


Figure 3: Transfers of Title Deeds

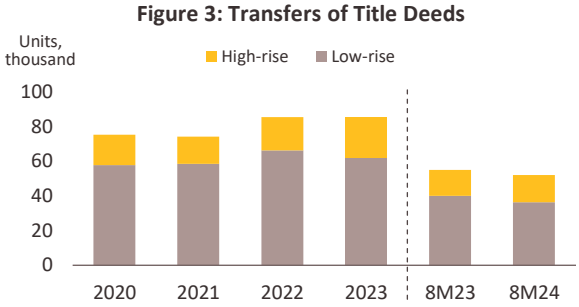
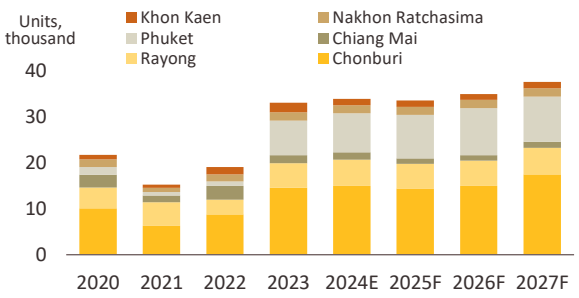


Figure 4: New Supply



Source: Real Estate Information Center (REIC), Krungsri Research
Note: *Low-rise housing includes detached houses, duplexes, townhouses and shophouses. High-rise properties are condominiums.

1/ The 6 provinces are Chiang Mai, Chonburi, Khon Kaen, Nakhon Ratchasima, Phuket, and Rayong.

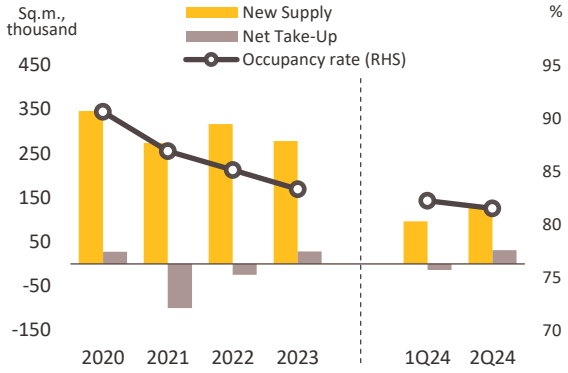
Commercial Buildings in BMR

Office Buildings

Situation in 2024

- **A flood of new units added 224,086 sq.m. to the market over 1H24** (up 66.3% YoY), bringing the total supply to 9.7m sq.m. (+3.7% YoY). At the same time, the net take-up rate[1/] rose by just 17,755 sq.m. (+133.4% YoY), thus lifting total occupied space by 0.2% YoY to 7.9m sq.m. As a result, the occupancy rate slipped to 81.5%, down from 84.3% in 1H23.
- **Over the second half of 2024,** more than 200,000 sq.m. of new supply should come to market, while demand will gradually strengthen as companies look to expand their offices. Grade A and higher-quality offices will be particularly sought after by multinational companies aiming to enhance their public image and recruit the most qualified staff, that are relocating production facilities to Thailand. Rents have also fallen below their pre-COVID levels, further adding to this trend. **For 2024, supply should expand by 480,000 sq.m., with total supply up 5.0% YoY. However, demand will inch up by just 1.0%, or by 70,000 sq.m.** (significantly below the 2017-2019 average of 180,000 sq.m.), and this will bring **the average occupancy rate down to 80.0%.** With the exception of grade A+ offices, rents will also tend to soften.

Figure 1: New Supply Net Take-Up and Occupancy rate

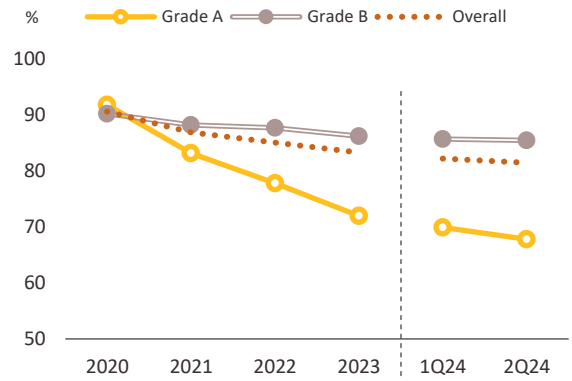


Source: CBRE Research, Krungsri Research

2025-2027 Outlook

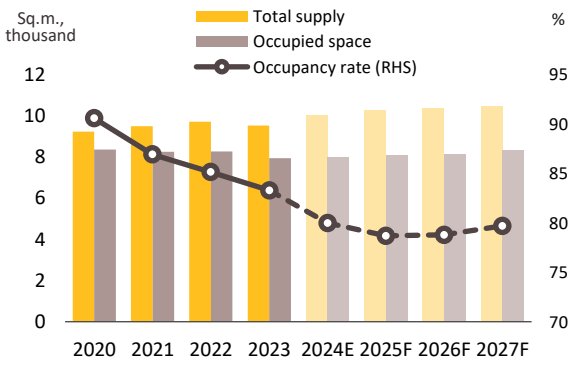
- **Demand for office space will rise by 1.0-2.0% per year** (down from 2.5% over 2015-2019) as gradual economic recovery supports hiring expansion in business sector. Foreign tenants are also likely to seek high-quality, modern Grade A and A+ office spaces in CBD areas, especially new green office buildings constructed to global standards (e.g., LEED) or that are certified for energy conservation, environmental impact, health standards or digital infrastructure. This will help companies achieve their environmental sustainability goals more rapidly. Additionally, property owners can command higher rental rates and potentially achieve faster returns on investment compared to conventional office spaces.
- To meet anticipated growth in demand, **supply will expand at an average annual rate of 1.0-2.5%,** or by around 430,000 sq.m. Meanwhile, the occupancy rate is projected to decline to a historic low of 79.0%, putting downward pressure on rental rates, especially for properties over 20 years old (which account for more than 60% of the total supply, source: JLL), To maintain competitiveness, these properties will need to be modernized. The increasing supply will also shift market power to renters, who may then be able to negotiate more favorable leases.
- **Income is expected to grow in line with the location of office spaces, as follows.**
  - **Office space in the CBD:** Income will continue to rise, especially for new Grade A and A+ buildings that feature modern designs, advanced technology, and effective management systems, making them highly desirable to tenants. However, the slow recovery in demand will limit increases in rents, though rents will remain higher than in other areas.
  - **Office space outside the CBD and in areas around Bangkok:** Income will remain flat or decrease, especially for older and Grade B buildings, since renters are typically SMEs that are more exposed to economic volatility, limiting the potential for rent increases.

Figure 2: Occupancy Rate, by Grade



Source: CBRE Research, Krungsri Research

Figure 3: Office Space in the BMR



Source: CBRE Research, forecast by Krungsri Research

1/ The net take-up represents the difference between new occupied space and rented space that the tenants terminated in that year (square meters).

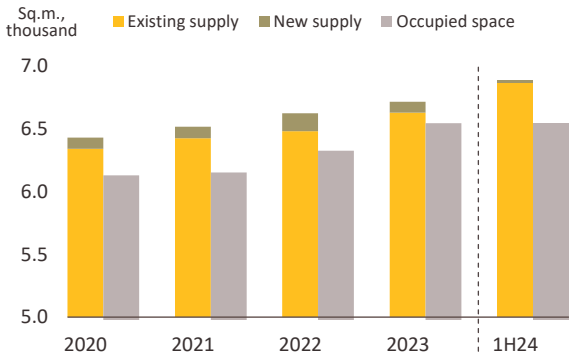
Commercial Buildings in BMR (Cont.)

Retail Space[1/]

Situation in 2024

- **The ongoing rebound in the tourism sector supported growth in the retail business through 1H24,** and as such, uptake of rented retail space increased by 1.8% YoY to 6.5m sq.m., mainly concentrated in new retail developments in the CBD. Additionally, the re-opening of previously renovated spaces further contributed to supply growth, and so total supply grew 1.9% YoY to 6.9m sq.m., while the occupancy rate down to 95.1%.
- **2H24** spending will be lifted by the year-end festivities and the onset of the tourist high season, boosting demand for retail space, especially in the CBD, where retail units are located in large shopping centers. Nevertheless, growth in domestic purchasing power remains limited, while approximately 230,000 sq.m. of new retail space has come to market. **For 2024 overall, although total demand will increase by 2.2% YoY, cumulative supply will expand at the faster rate of 3.4% YoY, thus cutting the occupancy rate to 94.3%.**

Figure 1: Existing & New Supply and Occupied Space

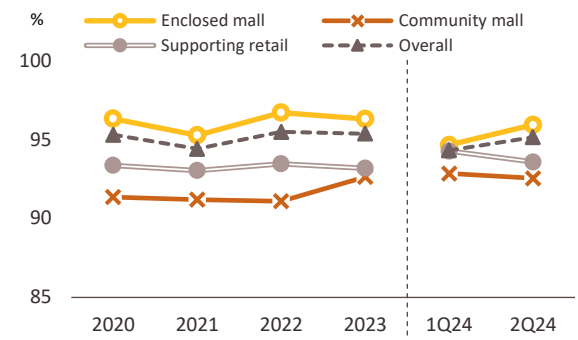


Source: CBRE Research, Krungsri Research

2025-2027 Outlook

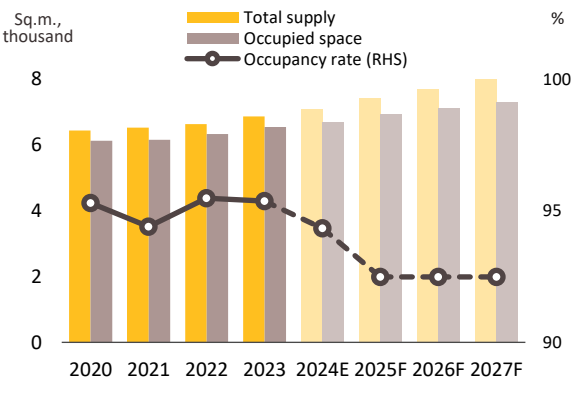
- **The uptake of rented retail space will tend to expand by 3.0% annually** (down from the 3.7% average recorded during 2017-2019). Demand will benefit from: (i) the expected recovery in private consumption, driven by economic and tourism growth, with foreign arrivals particularly boosting demand for retail space in the CBD; (ii) government investment in transport infrastructure which will stimulate urban development and increase demand for retail space in expanding city areas; and (iii) private residential developments in suburban areas of the BMR that will extend demand for goods and services across a wider consumer base.
- **A stream of new developments will mean that supply will expand steadily,** especially from the many large-scale mixed-use projects that are now planned (e.g., One Bangkok and Dusit Central Park, which should be completed in 2025). **Supply will therefore grow by around 4.0% annually, or by 900,000 sq.m., accelerating the downward pressure on the occupancy rate, which will then slip to 92.5%.** Rental rates are likely to remain stable or decrease slightly, except in CBD areas, where they are expected to rise.
  - **Enclosed malls:** Income will continue to rise, especially for units in the CBD since these are sought after by major local and international brands. Meanwhile, supply will also expand in suburban areas where residential developments are expanding (e.g., Rangsit and Bang Na). though investment will mostly be in large shopping centers in downtown locations, and this will lift rental incomes.
  - **Community malls:** Community malls: Income will tend to remain flat, as supply continues to increase due to relatively low investment costs and the availability of development sites, (especially in suburban areas such as Rangsit, Chaeng Wattana, and Lat Krabang) but these developments are typically targeted at low- to middle-income consumers whose purchasing power has been squeezed. As a result, there will be limited potential for rental increases.
  - **Supporting retail:** Incomes will stay broadly unchanged. Supply will tend to expand rapidly, especially in downtown mixed-use developments, but demand growth will be concentrated in locations that emphasize modern designs and ease of access. As a result, rental rates are likely to remain stable or increase slightly.

Figure 2: Occupancy Rate by type



Source: CBRE Research, Krungsri Research

Figure 3: Retail Space in BMR



Source: CBRE Research, forecast by Krungsri Research

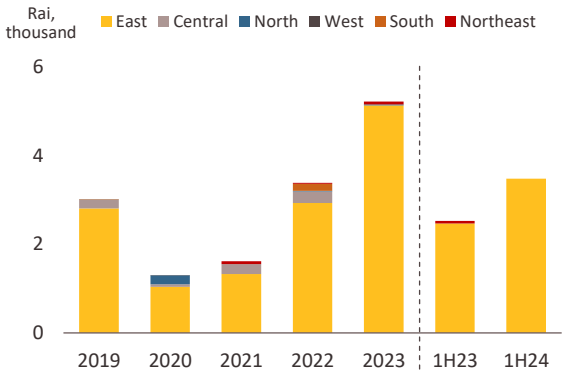
1/ Retail space includes enclosed malls, community malls, and supporting retail.

Industrial Estate

Situation in 2024

- **Total sales and leases of land on industrial estates surged 42.4% YoY to 4,017 rai over 1H24.** 87% of this (3,480 rai) was on industrial estates in the eastern region, a rise of 40.8% YoY, which was followed in importance by the central area (including the Bangkok Metropolitan Area), where 485 rai changed hands (+83.0% YoY). The cumulative total area of land sold or leased on industrial estates thus came to 130,000 rai, mirroring the 34.9% and 26.9% YoY increases in respectively applications and approvals for investment support.
- No new supply came to the market over 1H24, and there are thus still 68 industrial estates nationally. These have a total area of 173,000 rai, of which 78.2% (135,000 rai) is in the eastern region. In the period, the occupancy rate edged up to 79.0%, up from 75.7% at the end of 2023.
- **Through 2H24**, strengthening investment will lift demand, and so across 2024, total sales and leases should be up 6.7% to 6,000 rai.

Figure 1: Area Sold/Lease on Industrial Estates



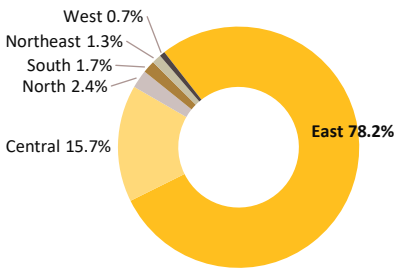
Source : Real Estate Information Center (REIC)

2025-2027 Outlook

Sales and leases will continue to expand by some 7.0-8.0% annually (around 7,000 rai). Demand will be lifted by: (i) growth in the world economy and improving investor sentiment overseas that will boost exports; (ii) the diversion of investment inflows from major economies (especially China) into the ASEAN region as a result of worsening geopolitical stresses; (iii) greater progress on public sector infrastructure projects, in particular in the EEC. Players will tend to switch to work on 'smart parks' that support the provision of a comprehensive range of technological services, and these will also target the environmentally friendly measures needed to attract industries focused on the bio-circular-green (BCG) economy.

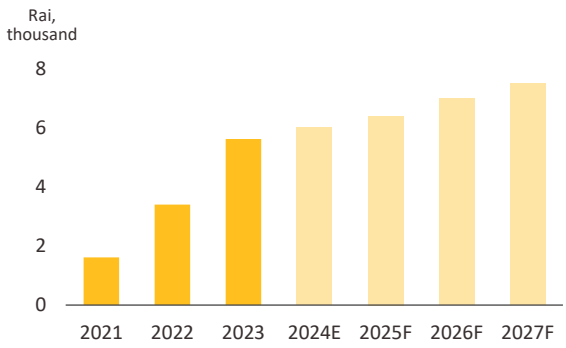
- **Eastern region:** The area's natural advantages and government support for investment in the EEC will underpin strong demand, as seen in Google's recent investment in a data center located on a WHA industrial estate in Chonburi. However, expansion in supply will be limited by: (i) the restricted availability of land and the resulting high prices, especially for sites suitable for the extensive projects favored by major corporations, though these problems are further exacerbated by unfavorable planning regulations; and (ii) delays to the processing of environmental impact assessments.
- **Central region:** Industrial estates in the central region will continue to benefit from their ready access to transportation networks, and so demand will strengthen further. Income will thus rise, especially from leases and the provision of utilities.
- **Other regions:** The lack of progress on developing transportation links that connect these to major industrial/economic areas and on spending on the special economic zones means that demand will remain weak. Income for operators in these areas will therefore grow only slowly.

Figure 2: Industrial Estate Area, by Region (1H24)



Source: REIC

Figure 3: Sold/Rent Industrial Estate Area Forecast



Source: REIC, forecast by Krungsri Research

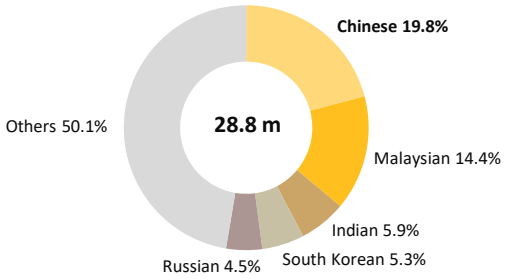
HOSPITALITY

Hotels

Situation in 2024

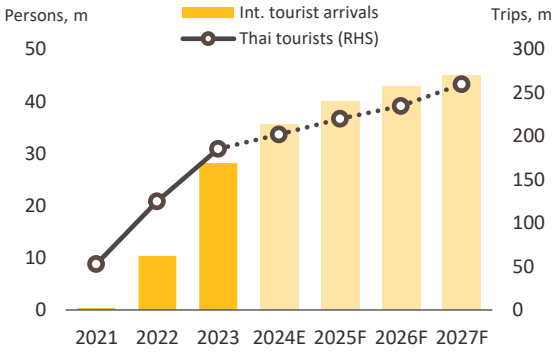
- **Tourist arrivals jumped 29.3% YoY over 10M24 to 28.8m**, helped by: (i) measures to ease travel, including the waiving of visas for arrivals from 93 countries and the need to complete arrival cards at land crossings; and (ii) an increase in the number of flights to Thailand. Arrivals were thus at 88% of their 10M19 level of 32.6m, with the most important markets being China (5.7m arrivals, or 62% of the 10M19 level), Malaysia (4.2m arrivals, or 14% of the total), and India (1.7m, or 6%). Domestic tourists took 148.0m trips in 9M24, up 9.0% YoY thanks to government stimulus measures (e.g., tax refunds on travel-related spending to a maximum of THB 15,000 and tax benefits for those organizing in-country meetings and seminars between May 1st and November 30th, 2024) and the release of pent-up demand, especially over Songkran.
- **Occupancy rates averaged 71.3% over 9M24**, up from 67.8% and 71.1% in each of 9M23 and 9M19, while average room rates rose 32.0% YoY to lift revenue per available room to THB 1,349 (+38.6% YoY), though this is still below 9M19's THB 1,725
- **The total hotel building construction permits dropped -3.1% YoY to 0.58m sq.m. over 7M24.** Following strong growth in applications at the end of 2023, these declined -17.3% in Phuket (29% of the total footprint of these) and -24.2% YoY in Chonburi (10% of the total), although in Bangkok (21%), these jumped 26.5% YoY.
- **Tourist arrivals will continue to rise through the rest of the year.** The industry will benefit from government help, although with the Chinese economy underperforming, the Chinese market remains a long way off full recovery. The domestic segment will also grow, despite struggling against weak purchasing power and the impact of high energy prices on the cost of transport. For all of 2024, arrivals are thus forecast to be up 26.5% to 35.6m, with the number of domestic trips up 8.8% to 202m. The hotel occupancy rate will also climb from 2023's 68.5% to 72.0%.

Figure 1: International Tourist Arrivals (10M24)



Source : Ministry of Tourism and Sports (MOTS)

Figure 2: Tourist Numbers in Thailand



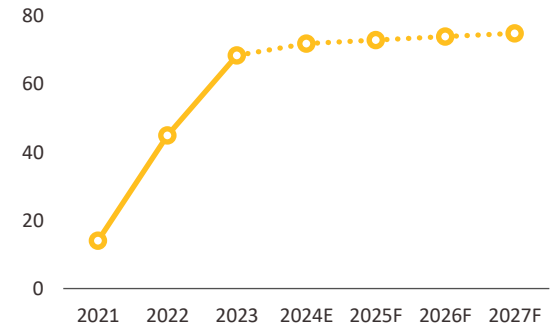
(% Growth)	2022	2023	2024E	2025F	2026F	2027F
No. of international tourists	-2,493.0	152.5	26.5	12.4	7.5	4.7
No. of Thai tourists	184.7	23.0	8.8	8.9	6.8	10.6

Sources : MOTS, BOT
Note: Forecast by Krungsri Research

2025-2027 Outlook

- **Hoteliers will benefit from the anticipated rise in tourist arrivals to 40m in 2025 (equal to the 2019 level) and then to 43m and 45m in 2026 and 2027.** Despite the effects of ongoing geopolitical tensions, arrivals will be boosted by: (i) government measures targeting the industry, in particular the introduction of potentially permanent visa-free travel for Chinese tourists, which should maintain the country's position as Thailand's main market; (ii) the return of flights to their 2019 level; and (iii) the continuing popularity of Thailand as a travel destination. The expected continuation of government stimulus measures targeting the domestic industry will also mean that in each of the next three years, Thais are predicted to take 220m, 235m, and 260m domestic trips, and thus **over 2025-2027, the average occupancy rate should increase to 73-75%.**
  - **Hotels in major tourist destinations (Bangkok, Pattaya, and Phuket):** The increase in arrivals will push the occupancy rate to 80%, thereby underpinning solid growth in revenue.
  - **Hotels in tourist destinations and regional centers:** Recovery in the domestic market, especially the MICE segment, will help revenues to gradually strengthen.
  - **Hotels in other provinces:** Most travelers are en route to other major tourist areas and regional centers and so with lower occupancy rates, revenue growth will remain flat.

Figure 3: Occupancy Rate (%)



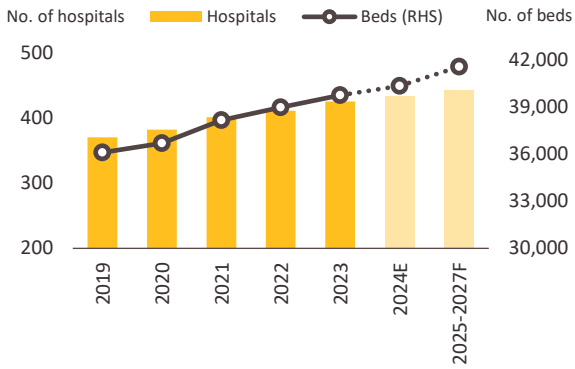
Sources : MOTS, BOT, Forecast by Krungsri Research

Private Hospitals

Situation in 2024

- **Business income strengthened by 8.0-9.0% YoY over 9M24.** The market for medical services benefited from: (i) the return of the economy to normal, which then encouraged patients with a range of conditions to seek treatment, the continuation of Covid-19 infections, and the surge in seasonal illnesses (e.g., influenza and dengue fever); (ii) rising demand from medical tourists (foreign arrivals have reached 26m) and expatriates working and living in Thailand and neighboring countries; and (iii) the extension of Gold Card coverage to more expensive treatments, so for example, rather than face the earlier THB 50,000 cap, those receiving treatment for cancer now have the full cost of their care paid for by the state if this is delivered by approved hospitals. However, changes to the criteria for referrals from some Middle Eastern countries remain unclear, and this may negatively impact growth in income.
- **For the remainder of the year**, growth will be driven by the rebound in the tourism sector and expansion in the market for medical tourism, **and so for 2024 in total, the industry should enjoy growth of 8.0-10.0% relative to a year ago.**

Figure 1: Numbers of Private Hospitals & Beds



Source : NSO, Forecast by Krungsri Research

2025-2027 Outlook

Going forward, private hospitals should see annual growth of 9.0-10.0% thanks to the following.

- **Demand will be boosted by:**
  - The forecast increase in the share of the population aged 60 and over from 20.2% in 2023 to 22.4% in 2026 (source: NESDC), adding to demand for ongoing and more complex treatments.
  - The rise in the incidence of non-communicable diseases and seasonal illnesses, greater clarity over the criteria for referring patients to Thailand from the Middle East, and the continuing rebound in the tourism sector and the resulting rise in the number of medical travelers.
- **Players will grow their income by offering more specialist medical treatments and expanding the range of services on offer (e.g., for more complex conditions, telemedicine services, and health and wellness treatments).** They will also expand existing sites and extend their branch networks as they look to sharpen their competitiveness and connect to a broader consumer base.
  - **Major corporations:** These will benefit from rising rates of illness and their ability to leverage investments in fixed assets (e.g., high-intensity medical equipment), the expansion in the reach of their branch networks, and their ability to offer treatments for more challenging conditions.
  - **SMEs:** Providing services to patients covered by the Universal Coverage Scheme will help to iron out volatility in income, but stiff competition will mean that hospitals not embedded in wider commercial networks will come under intensifying pressure.

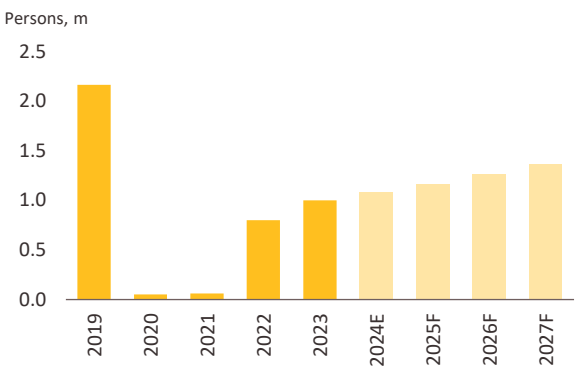
Figure 2: Proportion of Aging Population

% of population 65+ to total population

		2020	2040
Hyper-aged (20%)	Japan	29	34
Aged (14%)	South Korea	16	31
Aging (7%)	Singapore	15	30
	Thailand	13	26
	Vietnam	8	17

Source: United Nations (UN), Krungsri Research

Figure 3: Number of Foreign Patients in Thailand



Source: MoPH, Estimated and forecast by Krungsri Research

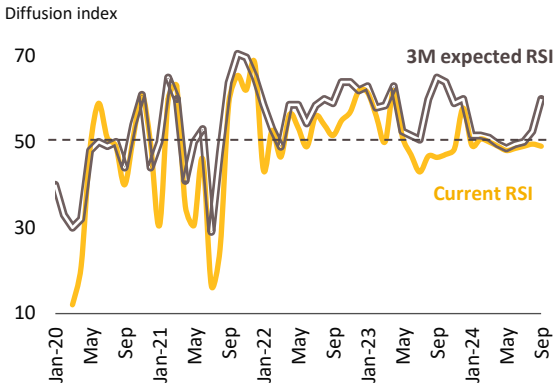
RETAIL TRADE

Modern Trade

Situation in 2024

- **Income strengthened steadily over 9M24 on:** (i) growth in the tourism sector and related industries, which then added to spending on consumer goods, especially on food, drink and other daily necessities; (ii) government stimulus packages (e.g., the Easy-E receipt; and (iii) continuing expansion in modern trade branch networks in Bangkok and upcountry. However, high levels of household debt (89.0% of GDP as of Q3) continue to depress purchasing power among low- to middle-income consumers. Through the remainder of the year, sales will benefit from the start of the tourism high season, the year-end celebrations, and the implementation of the government's THB 10,000 digital wallet programs. **Throughout 2024, income growth of modern trade business is projected to be 4.0-5.0%,** similar to 4.8% in 2023.

Figure 1: Retailer Sentiment Index (RSI)

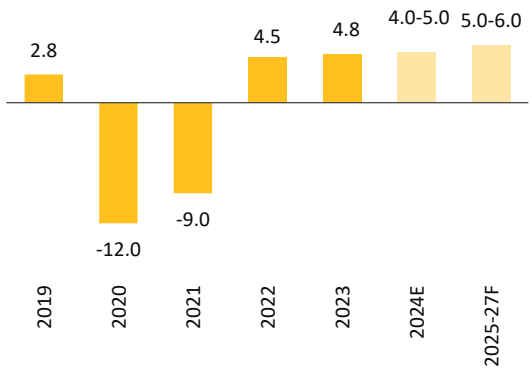


Source: Thai Retailers Association (TRA), Bank of Thailand of Thailand (BOT)

2025-2027 Outlook

- **Income is expected to rise by 5.0-6.0% annually,** helped by: (i) economic growth that will boost consumer spending power; (ii) rising tourist arrivals that are forecast to hit 45m by 2027, thus lifting spending in major tourist areas; (iii) progress on government mega-projects that will both improve employment and income and establish new communities/markets for retail outlets, while new planning laws in Bangkok will help to disperse investment in retail operations to more suburban areas; and (iv) the development of omnichannel platforms that will stimulate sales further. Players will continue to expand their sales networks across Bangkok and upcountry, especially in border regions where they will be able to exploit untapped purchasing power in neighboring countries. To expand their customer base further and to better meet the needs of particular consumer groups, retailers will also work to develop new business models that are a closer match for markets in individual locations.
- **The outlook for individual segments is as follows.**
  - **Department stores:** Income will strengthen by 4.0-5.0% annually thanks to the resilience of spending power among mid- to upper-income earners, the development of new technologies that will improve the shopping experience (e.g., AI and AR), and ongoing expansion into high-potential areas upcountry and overseas.
  - **Discount stores:** Strong competition and weak purchasing power among some target groups will hold growth to an annual average of 2.5-3.5%. However, players will increasingly rollout multi-format stores that will allow retailers to connect with higher income consumers. They will also make use of digital platforms, and will continue to sell goods at lower prices than players in other segments.
  - **Supermarkets:** Annual sales are forecast to jump by 6.5-7.0% thanks to the strong purchasing power of supermarket customers, while as a route to expanding their customer base, players will tend to modernize their outlets and focus more on high-end lines (e.g., high-quality imports, health goods, and organic products).
  - **Convenience stores:** Sales should increase at an average rate of 5.0-5.5% per annum, helped by expansion in store networks that now cover almost the entire country. Convenience stores are also adjusting their strategies by selling online, offering delivery services, and adding to their fresh food and drinks lines.

Figure 2: Modern Trade Retail Business Growth (%)



Source: TRA, Estimate and Forecast by Krungsri Research

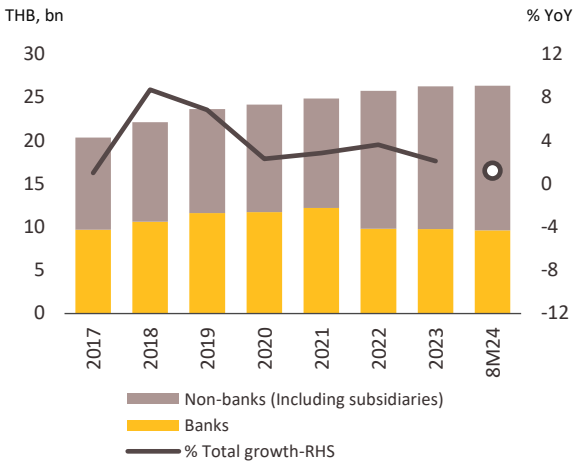
FINANCIAL SERVICES

Credit Card

Situation in 2024

- **Over 8M24, spending on credit cards rose 6.0% YoY.** Credit card usage was boosted by growth in services related to the tourism sector, the government spending stimulus measures such as the Easy E-Receipt scheme (from January 1 to February 15), expansion in e-commerce, and the spending power of mid- to upper-income consumers remained strong. Total spending was split 62% on cards issued by commercial banks and 38% on credit cards from non-bank issuers, the overall growth of 1.2% YoY in the number of credit cards in use was mainly due to a 3.2% YoY increase in issuance by non-banks.
- **The start of the holiday season will boost credit-card spending further through the rest of 2024,** although high levels of household debt will drag on expenditure, especially for lower-income earners. For the year, total expenditure should be up by 7.0-8.0% from its level in 2023. The number of cards issued will also rise by 1.0-2.0%. Credit card issuers are likely to be stricter with new accounts to reduce the risk of rapidly rising NPLs, which as of Q2, accounted for 2.8% of outstanding debt, up from 2.5% at the end of 2023.

Figure 1: Total Number of Credit Cards Account[1/]

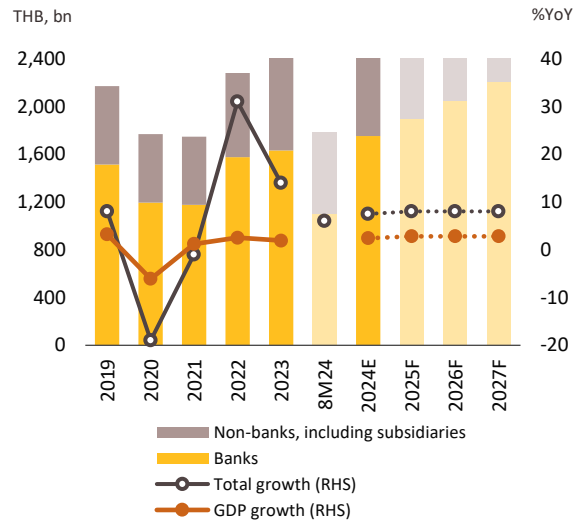


Source: Bank of Thailand (BOT), Krungsri Research

2025-2027 Outlook

- **Going forward, credit card spending is expected to climb by 9.0-10.0% per year.** Uptake of credit card services will be helped by: (i) a steady firming up of consumer spending power as the tourist sector rebounds and the economy grows, and with more Thais traveling abroad especially to countries that have waived visas for Thai arrivals, increasing use of credit card spending; (ii) greater use of e-payment systems, especially mobile banking services; and (iii) continuing expansion of the e-commerce sector, which Priceza expects to reach a value of THB 1trn in 2025 and THB 2trn in 2030, up from THB 0.93trn in 2023. Businesses are also transitioning to fully online distribution channels that are supported by a comprehensive digital payment infrastructure, and so future growth in demand should be secure.
- **Issuers will be careful about extending their customer base and will focus on high-income earners and consumer segments that show high potential for growth.** At the same time, players will try to cut their exposure to NPLs connected to low-income earners and consumers seeing only slow recovery in purchasing power. Issuers will also work on releasing financial products that are a better match for the needs of particular market segments (e.g., that are appealing to those who spend on travel, healthcare or beauty).

Figure 2: Total Spending



Source: BOT, Office of the National Economic and Social Development Council (NESDC), Krungsri Research

OTHER SERVICES

Mobile Communication

Situation in 2024

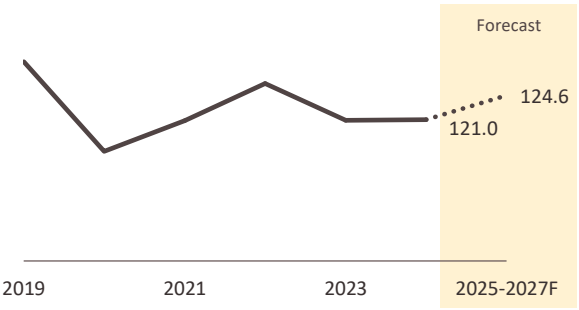
- **Revenue in the telecoms industry continued to strengthen over 9M24,** lifted by the recovery of the Thai economy and the ongoing rebound in the tourism sector, which has then added to demand for mobile, roaming and international services. In addition, consumers increasingly favor the use of mobile phones to access digital services and to carry out online transactions and so demand for data services is rising. Service operators have adjusted their marketing strategies by promoting personalized packages, discounts on handsets, and the bundling of packages with digital content and new products. They have also extended their 5G networks, now covering more than 95% of the population, helping to add 2.0-3.0% to average revenue per user.
- For the rest of 2024, revenue is expected to continue growing due to the end-of-year high season in both general consumption and the tourism sector. **With an anticipated 8-9 million foreign arrivals, the demand for prepaid services will increase, leading to a 4.0-5.0% rise in service revenue for 2024 compared to 2023.**

2025-2027 Outlook

Over the next 3 years, the industry is expected to experience moderate growth, with service revenue increasing by an average of 3.5-4.5% per year.

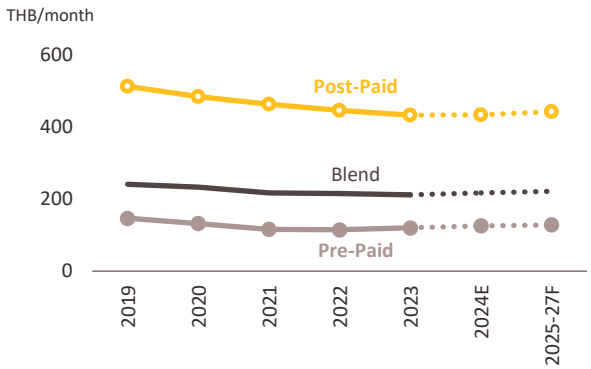
- **Demand will benefit from the following :**
  - The economy will grow, and this will lift consumer spending power, while with tourist arrivals likely to hit 40m in 2025, demand for prepaid services will also rise.
  - Demand for data services will continue to strengthen (e.g., for entertainment services, social media, financial transactions, and the purchase and sale of goods and services), and this will add to opportunities for service providers to expand their customer base and to build new income streams.
  - The digitalization of business and manufacturing will add to demand through**,** for example, the automation of retail services, the spread of digital healthcare, and the increasing use of smart electronics in day-to-day life.
  - Favorable government policy will include the official promotion of the digital economy**,** the smart city program, and the development of the Eastern Economic Corridor. This will support the national rollout and upgrade of telecoms networks and thus stimulate additional uptake of these services by consumers across a wider geographical spread.

Figure 1: Mobile Subscribers
(Million Persons)



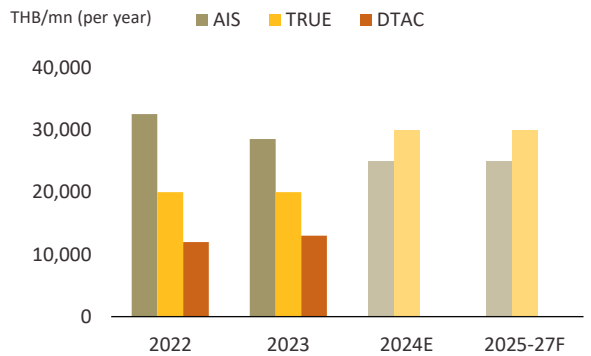
Source: NBTC, Krungsri Research

Figure 2: Average Revenue Per User (ARPU)



Source: NBTC

Figure 3: Investment Budget



Source : Compiled and forecast (average per year) by Krungsri Research
Note: True-DTAC announced the completion of the business merger on March 1, 2023, and now operates under the name "True Corporation Limited (Public)."

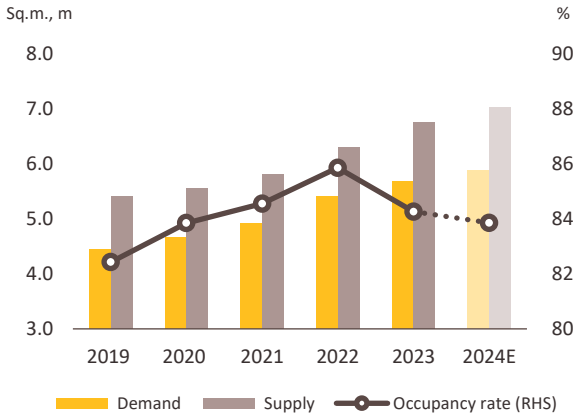
Logistics

Warehouse Space

Situation in 2024

- **Demand for rented warehouse space has continued to rise through 2024** as a result of: (i) strengthening international trade, which has then prompted an uptick in domestic manufacturing and business generally (over 9M24, the value of exports and imports rose by respectively 4.1% YoY and 5.2% YoY); (ii) growth in the tourism industry and the positive effects of this on businesses connected with the production or sale of consumer goods; (iii) ongoing expansion in e-commerce (the Department of Business Development sees this coming to 9.5% YoY in 2024), which is adding to demand for space to store stock; and (iv) the decision by foreign manufacturers, especially of EVs and electronic goods, to relocate production facilities to Thailand, which is also pulling these industry supply chains into the country. Given this, total demand for warehousing space is expected to rise 3.5% YoY to 5.9m sq.m.
- **Operators continue to expand their investments and to increase the supply of rented warehousing,** some of which is being built according to specific customer requirements. **Total supply is thus up 4.0% YoY to 7.0m sq.m.,** but growth in supply has outpaced demand, and so the occupancy rate has slipped to 83.8%, down from 84.3% in 2023.

Figure 1: Supply, Demand, and Occupancy Rate



Source: WHART, 2024E estimated by Krungsri Research

2025-2027 Outlook

- **Demand for rented warehouse space is expected to grow by an average of 4.0% per year.** The market will benefit from: (i) a recovery in international trade and 2.5-3.0% annual growth in the Thai economy; (ii) rising investment, which has shown up in the 100.6% YoY jump in BOI investment promotion certificates issued during 9M24, as well as the establishment of Thailand as a hub for industries such as auto assembly, where it has well-established supply chain, and hard disk manufacturing, which will support data center invesments; and (iii) an expected 15% annual growth in e-commerce (source: e-conomy SEA 2024), adding to demand for storage space for a broad range of inputs, intermediate goods, and finished products.
- **Supply is forecast to grow by 4.5% annually** as operators expand to meet demand across ready-built, built-to-suit, and built-to-function warehousing space. Areas with high- growth potential include the BMR (especially around Km.20 on the Bang Na-Trat highway), regional centers, the EEC, and border provinces that serve as distribution or transshipment centers with strong transportation links to neighboring countries. However, **the occupancy rate is expected to soften to an average of 82.8%.**

Figure 2: Outlook for the Warehouse Market

Supply	
2024	Average 2025-2027
+4.0%	+4.5%

Demand	
2024	Average 2025-2027
+3.5%	+4.0%

Occupancy Rate	
2024	Average 2025-2027
83.8%	82.8%

Source: Krungsri Research

Logistics (Cont.)

Mass Rapid Transit Operators

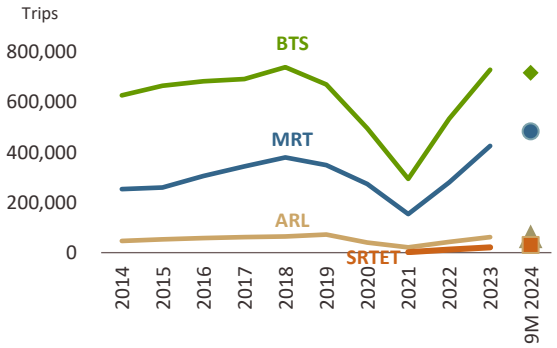
Situation in 2024

- **Mass transit ridership rose steadily through 9M24** thanks to: (i) the integration and extension of rail-based transport networks across the Bangkok Metropolitan Region, coupled with the opening of the Pink Line, which serves as a feeder line bringing passengers into the main metro routes; (ii) a pilot government scheme capping fares on the Red and Purple lines at a maximum of THB 20 (October 16th, 2023 to November 30th, 2024); and (iii) a recovery in tourism, particularly among foreign tourists who prefer major cities, including Bangkok. The overall situation can be summarized as follows:
  - **Ridership averaged 1.3m trips per day (+8.5% YoY), with a total of 380.4m passenger-trips** made during the period. On the BTS (53.9% of ridership), this averaged 720,000 passenger-trips per day (+0.3% YoY), the MRT (36.3%) saw 480,000 daily passenger-trips (+18.5% YoY), and on the ARL (4.9%) had 65,000 passenger-trips daily (+7.9% YoY). The Yellow Line (2.7%) and Pink Line (3.9%) averaged respectively 35,000 (+53.7% YoY) and 52,000 passenger-trips daily.
  - **Average daily income from fares rose 14.9% YoY on the main lines.** These benefited from the opening of supporting lines and increases in fares as per concession agreements. Income on the BTS (Green Line) climbed 10.5% YoY as a result of increased traffic brought in via the Pink and Yellow feeder lines, while on the MRT (Blue Line), the linking to the Yellow and Purple feeder lines boosted revenue by 21.4% YoY.
- **Q4 ridership is expected to increase, driven by the high season for business activities,** including major events and the lengthy year-end holidays, along with the gradual opening of property developments along transit lines (e.g., One Bangkok and Dusit Central Park), which will boost inner-city travel demand. **For 2024, ridership is therefore forecast to increase by 12.8% to 1.4m passenger-trips per day, while overall of daily revenue on the main lines is expected to rise 8.5% YoY, split between increases of 6.7% on the BTS and 11.5% on the MRT.**

2025-2027 Outlook

- **Ridership should increase by an average of 7-9% per year, which will then raise operators' revenue by 8.0-10.0% annually.** Tailwinds supporting the industry will include the following: (i) The number of residential projects in areas served by metro lines will steadily increase (the new launch of residential units in the BMR is forecast to rise by 3.0-4.0% annually). (ii) Tourist demand for metro services, including for travel to and from airports, will increase (especially from overseas tourists since these prefer to use the metro system). (iii) The government plans to hold fares to a maximum of THB 20 on all lines through to September 2025, which will then encourage greater demand. (iv) The Pink Line extension (Chaeng Watthana-Muang Thong Thani) will open in 2025, while the Orange Line (Eastern section) will start in 2027. Both extensions will enhance connectivity between suburban and central areas by integrating new and existing lines. Operators will also be able to generate revenue growth from the rental fees of commercial space in stations.

Figure 1: Mass Transit Passenger Journeys Per Day



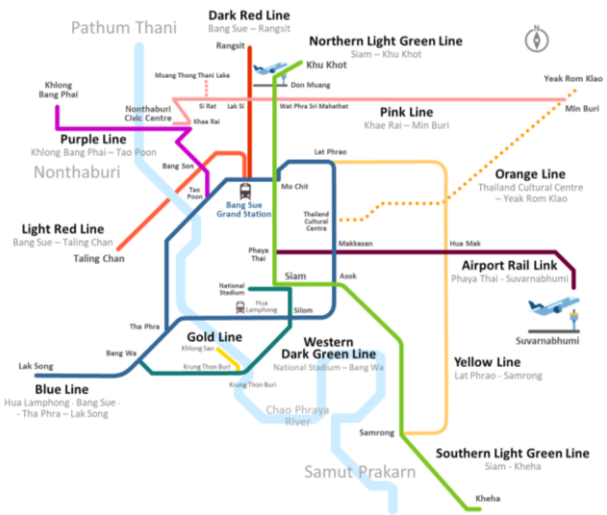
Source: MOT data catalog
Note: SRTET or Red line commercial services started on Nov 28, 2021
Yellow line and Pink line started on Jul 3, 2023 and Jan 7, 2024, respectively

Table 1: Estimated Passenger Journeys in 2024

Daily (Trips, thousand)	2023	9M-24	2024E	
			Trips	(%YoY)
ARL (Airport Rail Link)	62	65	65	5.8
BTS	730	717	738	1.1
MRT	427	483	512	20.0
SRTET (Red Line)	22	30	30	39.9
YL (Yellow Line)	23	35	36	62.0
PL (Pink Line)	9	52	53	474.5
Total	1,273	1,332	1,434	12.8
% Growth (YoY)	46.0	8.5	12.8	

Sources: MOT data catalog, companies released, 2024E by Krungsri Research

Figure 2: Extensions to Mass Transit Lines, 2025-2027



Source: Compiled by Krungsri Research
Note: Solid line signifies existing mass transit lines
Dashed lines signify new routes

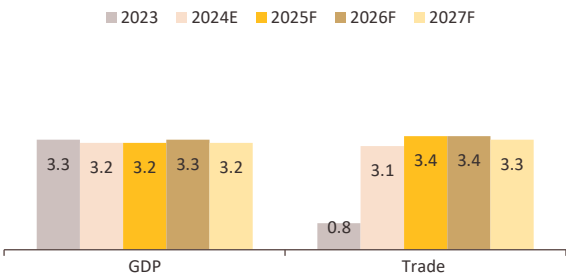
Logistics (Cont.)

Maritime Shipping

Situation in 2024

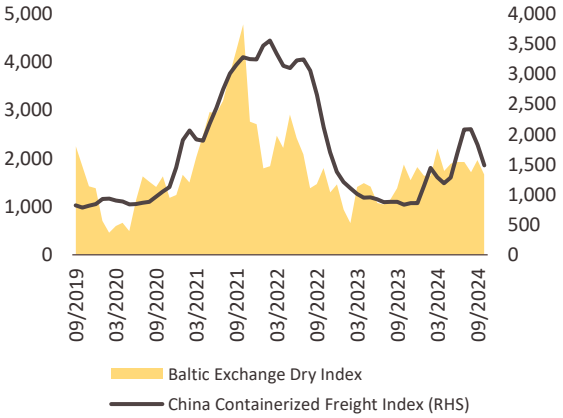
- **Demand for maritime shipping services strengthened over 9M24,** driven by: (i) Thai exports improvement following global trade recovery (the WTO sees expanding 2.7% YoY in 2024), which benefited further from the need to replace Chinese exports in certain sectors (e.g., of electronics and electrical appliances) and the rush to export goods linked to Chinese supply chains ahead of planned hikes in tariffs by the US. (ii) Freight rates have risen on a combination of ongoing geopolitical stresses that have forced players to reroute their ships (especially from the Red Sea) and periodic shortages of vessels and allocation spaces. As a result, the Baltic Exchange Dry Index (BDI) and China Containerized Freight Index (CCFI) have surged by respectively 59.7% YoY and 57.5% YoY.
- **Through Q4,** demand for shipping services for the transport of consumer goods will be sustained by the approach of the end-of-year celebrations, while the onset of winter in the northern hemisphere will add to demand for commodities such as gas and coal. Having contracted by respectively -48.6% and -16.8% in 2023, **revenue for bulk and containerized shippers[1/] in 2024 will thus jump by 7-9% YoY and 25-27% YoY.**

Figure 1: World GDP & World Trade Volume
(% change)



Source: IMF, World Economic Outlook (October 2024)

Figure 2: Sea Freight Index
(Unit: point)



Source: Krungsri Securities

2025-2027 Outlook

- **Business revenues will expand by 3.0-6.0% annually** thanks to: (i) rising demand for shipments to and from Thailand as a result of expected growth of 3.4% in world trade volume and 3.2% in the global economy (source: IMF), together with a rise in global seaborne trade volumes of 2.5% (UNCTAD); (ii) an uncertain outlook with regard to ongoing geopolitical tensions that will tend to keep freight rates above their pre-pandemic level; (iii) the move by many foreign companies to relocate production facilities to the ASEAN, thereby boosting demand on intra-Asia trade lanes; and (iv) improvements to logistics infrastructure in Asia that is now making intermodal transport across road, rail and sea much easier. The business outlook can be summarized as follows:
  - **Bulk shippers will benefit from stronger demand for commodities** such as iron ore, fuel, coal, and rice and other grains. In the latter case, this will be driven by the need to buffer stocks as a hedge against future shortages
  - **containerized shippers will benefit from gradually recovering consumer spending and overseas investment inflows** into Thailand increase, adding to demand for intermediate and final consumer goods.
- **Business costs will tend to rise** as a result of a stricter environmental regulations. Thus, the IMO has set a target that by 2030, at least 5% of shippers' fuels should be zero-emission (ZEFs), while the EU is expanding the reach of its maritime Emissions Trading Scheme (ETS), which will go from covering 40% of emissions in 2024 to 75% in 2025 and then 100% of these in 2026. Geopolitical uncertainty will also drive occasional spikes in both fuel prices and special surcharges.

Table 1: Global Seaborne Trade
(% change)

Year	Total trade	Containerized trade
2025	2.5	2.9
2026	2.5	2.9
2027	2.4	2.6

Source: United Nations Conference on Trade and Development (UNCTAD, October 2024)

1/ Source: Companies listed on the SET and MAI stock exchanges.

Digital Services and Software

Situation in 2024

Overall revenue will increase by 12.0-12.5% through 2024, up from 9.8% in 2023.

- **Digital services:** Revenue is expected to grow by 14.5-15.0% in 2024 (compared to 9.3% in 2023), with 60% coming from last-mile delivery services, passenger transport, and online retail, in which growth is slowing due to increased competition. The high-revenue growth segments come from platform businesses in 1) e-Tourism, driven by the ongoing recovery in the tourism sector, 2) EdTech, fueled by increasing demand for Re-skill and Up-skill training in modern industries, and 3) HealthTech, due to the expansion of wearable medical devices. These sectors are collectively growing by an average of 60-70%, leveraging data-driven platforms to meet niche customer needs and drive revenue growth.
- **Software and software services:** Revenue is forecast to grow by 10.0-10.5% in 2024 (compared to 12.8% in 2023), driven primarily by the increased adoption of AI on cloud-based systems. This has led to the development of new software focused on data security for more complex applications. Additionally, the shift of Thai SMEs toward digital transformation has driven increased investment in software, particularly in developing specialized ready-made web pages tailored to specific business needs. The Asia Pacific SMB Digital Maturity Study estimates that in 2024, software procurement or upgrades will account for 20% of Thai SMEs' total investment, the highest priority, while IT hardware investments will make up only 15%.
- **Digital content:** Revenue is projected to recover by 5.0-5.5% in 2024 (up from a stable 0.01% in 2023), primarily driven by the animation and character sectors, which are benefiting from a trend of increased promotional activities in response to business activity, along with the ongoing growth in tourism and leisure. Meanwhile, revenue from new game downloads is gradually recovering due to increasing capabilities of smart devices and cloud systems.

Figure 1: Revenue by Segment

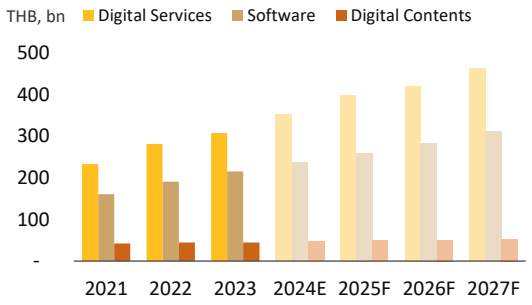
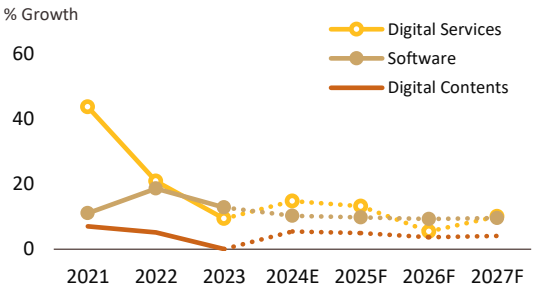


Figure 2: Revenue Growth by Segment



2025-2027 Outlook

Total revenue is expected to grow by 9.0-9.5% annually, driven primarily by digital services and software, while growth in digital content remains modest.

- **Digital services:** Revenue is projected to grow by 9.5-10.0% annually, driven by consumer trends favoring platform transactions for purchasing goods and services, payments, travel, healthcare, and online media, alongside an increase in all-in-one app development. The E-conomy SEA 2023 report forecasts that over 2025- 2030, the market value of digital service platform businesses in retail, transportation, and online media in Thailand will grow at an average rate of 15.3% per year.
- **Software and software services:** Revenue is expected to grow by 9.0-9.5%, driven by increased investment in cloud systems and data center (table 1), which enhance the infrastructure for big data storage and processing in Thailand. This shift facilitates more efficient and cost-effective software services via the internet, supporting a business trend focused on data-driven strategies.
- **Digital content:** Revenue is expected to recover by 4.0-4.5%, with the gaming industry showing improved growth due to the development of new game formats in cloud gaming that are compatible with various devices. Meanwhile, the animation and character sectors will benefit from demand for licensing to produce goods supporting the ongoing recovery of the business and tourism sectors.

Figure 3: Digital Service Revenue and Growth in 2023

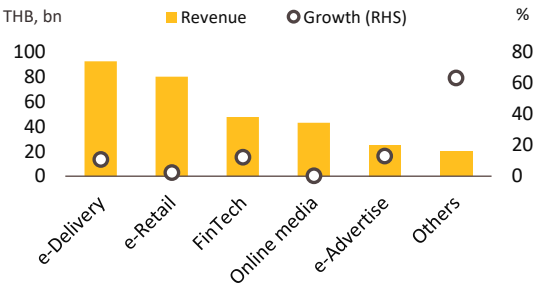


Table 1: Data Center Investment Value in Thailand
(During the next 4-5 Years)

Provider Groups	MW	THB, bn
Global giants e.g., Google and Microsoft.	200	80.0
Business groups investing before 2023	174	69.6
Businesses applying for BOI in 2024[1/]	130	52.0
Domestic businesses e.g., ADVANC, TRUE, and FPT.	40	8.0
Total	**544**	**209.6**

Source: Depa, IAA, SET, Krungsri Securities, Krungsri Research
Note: 1/ including Ctrl's, Next DC, Evolution, Supernap, Telehouse, One Asia

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