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THAILAND PUBLIC REVENUE AND SPENDING ASSESSMENT

PROMOTING AN INCLUSIVE AND SUSTAINABLE FUTURE

JUNE 2023

PREFACE

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The Thailand Public Revenue and Spending Assessment: *Promoting an Inclusive and Sustainable Future* is produced by the staff of the World Bank's Bangkok office, consisting of Kim Alan Edwards, Kiatipong Ariyapruchya, Nadia Belhaj Hassine Belghith (Task Team Leaders), Andrew Blackman, Charl Jooste, Dilaka Lathapipat, Francesca Lamanna, Hector Pollitt, Jaffar Al Rikabi, Joseph Massad, Kajetan Trzcinski, Matthew Edward Collin, Matthew Wai-Poi, Muhammad Khudadad Chattha, Muthukumara Mani, Natalia Millan, Phonthanat Uruhamanon, Pongtip Thiengburanathum, Ralph Van Doorn, Rattanyu Dechjejaruwat, Robert J. Palacios, Thanapat Reungsri, Unnada Chewpreecha, Waraporn Hirunwatsiri, Warunthorn Puthong, and Wei Han.

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ACRONYMS AND ABBREVIATIONS

ACSC	Ambulatory Care Sensitive Condition
CGD	Comptroller General's Department
CHE	Current Health Expenditure
CHF	Community Health Fund
CSMBS	Civil Servant Medical Benefit Scheme
DALY	Disability-adjusted Life Year
DHS	District Health System
EHR	Electronic Health Records
GDP	Gross Domestic Product
GGE	General Government Expenditure
GGHE-D	Domestic general government health expenditure
GHSI	Global Health Security Index
HIC	High Income Country
HIS	Health Information System
LAO	Local Administrative Organization
LTC	Long-term Care
MCH	Maternal and Child Health
MOF	Ministry of Finance
MOPH	Ministry of Public Health
NCD	Non-communicable Disease
NHSO	National Health Security Office
OOPS	Out-of-pocket Spending
PFM	Public Financial Management
PHC	Primary Health Care
SCI	Service Coverage Index
SDG	Sustainable Development Goal
SSO	Social Security Office
SSS	Social Security Scheme
Thai Health	Thai Health Promotion Foundation
THE	Total Health Expenditure
UCS	Universal Coverage Scheme
UHC	Universal Health Coverage
UMIC	Upper and Middle-Income Country
VHV	Village Health Volunteer

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EXECUTIVE SUMMARY

Having implemented a substantial fiscal response to COVID-19, Thailand's government now faces the medium-term challenge of reducing elevated deficit and debt levels, and the structural challenge of meeting rising spending needs – including those associated with an aging population – while maintaining fiscal sustainability. In this context, this Public Revenue and Spending Assessment sets out revenue and expenditure choices that will help to ensure a more inclusive and sustainable economy. This will require raising revenue, improving the efficiency of public spending, and ensuring that revenue and spending policy measures support the most vulnerable and are responsive to climate-related challenges. Within this overall framework, the report provides several recommendations to improve the quality of spending in the health, education, and social protection sectors, as well as a detailed assessment of fiscal policies that would contribute to the achievement of climate mitigation and adaptation goals.

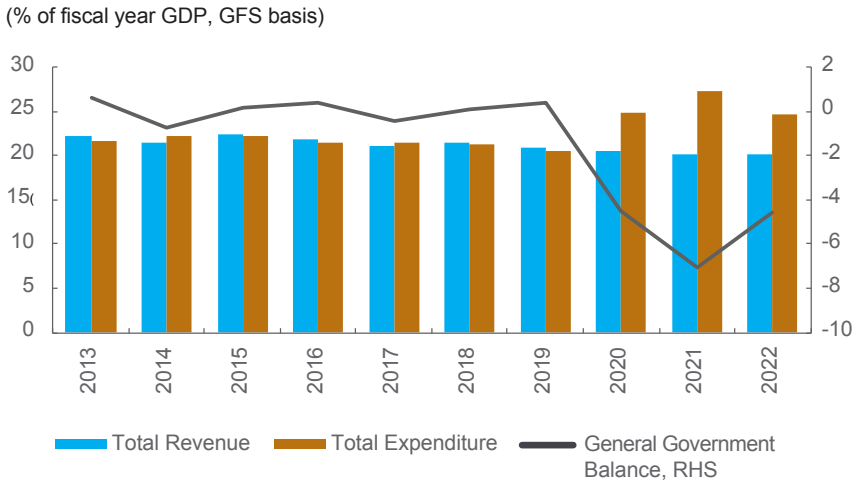
CONTEXT

COVID-19 hit Thailand during a period in which economic growth had slowed. The economy grew at an average annual rate of 7.7 percent in the period from 1980-1996, supported largely by capital accumulation and a manufacturing-focused, export-oriented growth model. Labor shifted from agriculture to manufacturing, and this structural transformation enabled Thailand to rapidly converge with upper middle-income comparator countries while achieving substantial gains in poverty reduction. However, the Asian Financial Crisis of the late 1990s and the Global Financial Crisis of 2008 caused growth to slow. Over the decade to 2019, GDP growth declined to an annual average of just 3.3 percent. Investment in physical capital halved as a share of GDP, and total factor productivity (TFP) growth decelerated. In 2020, the economy contracted by 6.2 percent, due to the cessation of international tourism, the impact of domestic mobility restrictions, and a deterioration in external demand. Thailand returned to pre-pandemic levels of output in the third quarter of 2022, later than most regional peers.

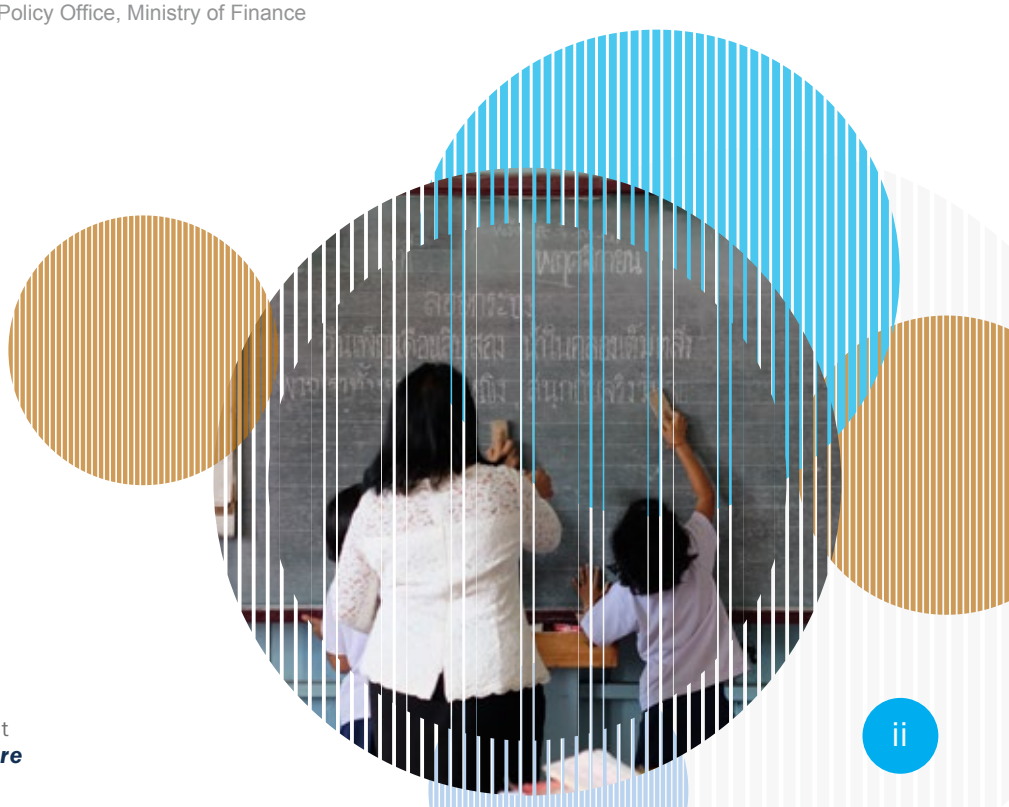
While Thailand has made remarkable progress in poverty reduction in recent decades, this progress is slowing, and inequality remains very high. The national poverty rate fell from 58 percent in 1990 to 7.2 percent in 2015. But the pace of poverty reduction has slowed from 2015 onwards, mirroring a slowing economy and stagnating farm, business, and wage incomes. Due to the large-scale social transfers implemented as a response to COVID-19, poverty only slightly increased by 0.6 percentage points to 6.8 percent in 2020, and estimates indicate that it has subsequently declined. Nevertheless, income inequality in Thailand remains the highest in East Asia and was likely aggravated by the pandemic. Inequality can undermine progress in human capital accumulation and tends to reduce the pace and sustainability of growth and poverty reduction.

Thailand has traditionally had a conservative approach to fiscal policy, with budget deficits and public debt remaining contained prior to the pandemic. Over much of the past two decades, relatively low levels of revenue mobilization have constrained overall spending. Tax revenues (averaging around 16 percent of GDP) and overall revenues have remained relatively low over the past two decades by the standards of upper-middle income countries, as well as regional and OECD comparators. But the budget has been broadly balanced over this period, with the deficit peaking at just 2 percent of GDP in 2009. Between 2011 and 2019, fiscal outcomes have remained within a +1 to -1 percent of GDP range (Figure ES1). Taken together, the combination of low revenues and a balanced overall fiscal position have meant that public spending has been relatively low given Thailand's income level and compared with its peers. Between 2013 and 2019, general government expenditure fluctuated within a tight band of between 21.3 and 22.2 percent of GDP. While health and education spending were prioritized within the overall government budget, they remained relatively low in per capita terms and as a proportion of GDP.

Figure ES1: General government fiscal balance



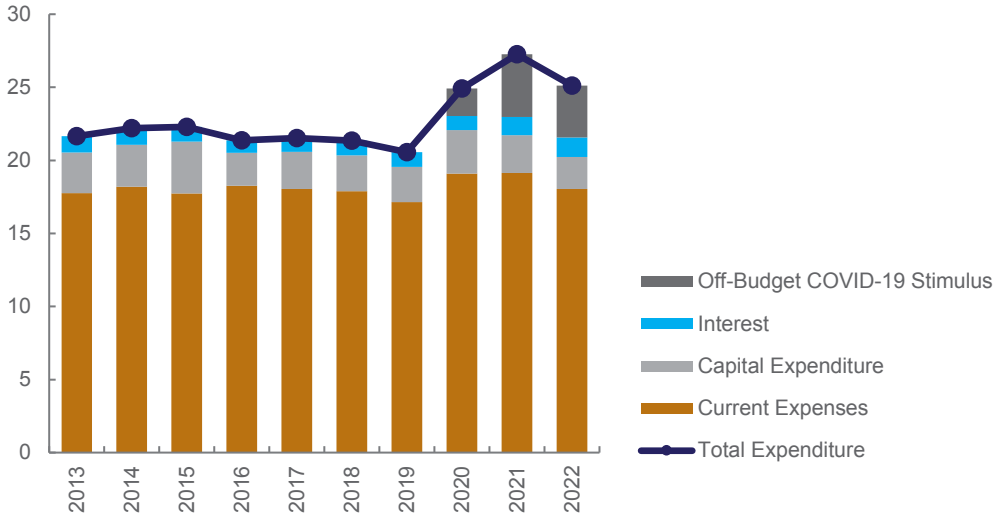
Source: Fiscal Policy Office, Ministry of Finance



This spending discipline allowed the government the fiscal space to respond to the COVID-19 pandemic with one of the largest fiscal packages in the region (Figure ES2). The response was unprecedented for Thailand in terms of the size, coverage and variety of instruments employed. Three phases of fiscal stimulus were announced in March 2020, April 2020, and May 2021 respectively, totaling THB 1.56 trillion. These were organized around three themes: health; relief (financial aid and cash handouts); and economic restoration and recovery. In addition, the Bank of Thailand provided extensive liquidity support to the private sector. Significant resources were allocated to income support measures, including cash transfers and subsidies for vulnerable households, informal workers, and farmers. A relatively large proportion of the total package was allocated to SMEs, to be provided via soft loans from state-owned banks. While Thailand's health-related measures were slightly larger than peers (1.7 percent of GDP), non-health related fiscal measures (7.6 percent of GDP) and below the line measures (5.4 percent of GDP) were much higher than in comparator countries. The package was financed by THB 1.5 trillion (8.9 percent of FY19 GDP) in off-budget loans, combined with reallocations from the budget, and contributions from Bank of Thailand and other financial institutions.

Figure ES2: General government expenditures

(% of fiscal year GDP, GFS basis)

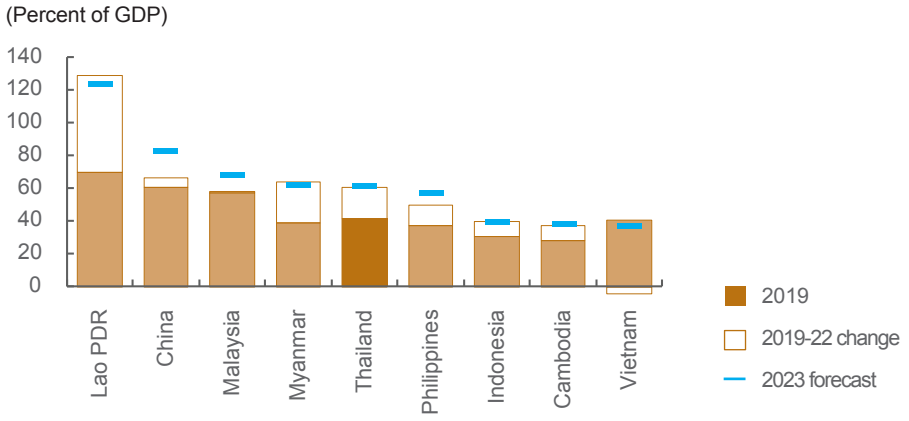


Source: Fiscal Policy Office, Ministry of Finance.

Additional fiscal measures were announced in FY2022 to mitigate the rising cost of living due to the war in Ukraine, slowing the planned consolidation in spending. Between February and July 2022, the authorities announced fiscal measures equivalent to THB 152 billion (almost 1 percent of GDP) to mitigate cost-of-living pressures due to the Ukraine war and rising global commodity prices. Some of the welfare subsidy measures were targeted at lower-income households, which generally results in larger multiplier effects while benefitting the most vulnerable. But subsidies and tax reductions on diesel and cooking gas were costly while being relatively inefficient in terms of their impact on poverty reduction.

These fiscal responses drove an increase in public sector debt of around 20 percent of GDP. Prior to the pandemic, Thailand's conservative fiscal policy had meant that public debt had declined since the early 2000s. As of 2019, the level of public debt – at 41 percent of GDP – was moderate compared to regional and global benchmarks. But the COVID-19 pandemic saw public debt exceeding 60 percent of GDP for the first time in the past 20 years. Accommodating the emergency policy response required temporary changes to the fiscal mandate, including raising the public debt ceiling from 60 to 70 percent of GDP. This allowed the government to fully utilize the THB 1.5 trillion in borrowing authorized for the COVID-19 response effort during FY2020-22. While public debt has risen sharply since 2019, it remains at relatively contained levels compared with other countries in the region (Figure ES3).

Figure ES3: Public debt in emerging EAP economies



Source: IMF Fiscal Monitor April 2023.

ENSURING FISCAL SUSTAINABILITY

i. … over the medium term, while continuing to support economic activity…

Although public debt has risen to historically high levels, several factors mitigate the associated fiscal risks. Almost all of Thailand's public debt is denominated in local currency, and domestic appetite for local-currency government debt appears to have remained resilient. A large majority of public debt is held by Thai residents, limiting exposure to external shocks triggering capital outflows and exchange rate depreciation. Despite the sharp increase since 2019, public debt remains contained relative to peers, and interest rates had not increased substantially as at the end of 2022. The low share of foreign exchange-denominated public debt and long average term to maturity significantly mitigate the impact from exchange rate and interest used by the rate shocks. Debt service as a percent of total revenues, which serves as an additional indicator used by the authorities to guide fiscal policy, remains low.

Nevertheless, some fiscal consolidation will be required over the medium term. In a 'no consolidation' scenario in which primary fiscal deficits remain at the average level observed over the period from FY2020 to FY2022 – 4.4 percent of GDP – public debt would quickly increase to unsustainable levels given current baseline assumptions for economic growth and interest rates. Hence – as recognized by the government's medium-term fiscal framework (FY2023-2027) – over the medium term it will be necessary to reduce the deficit from its recent levels. Moreover, the fiscal costs and risks associated with public debt at 60 percent of GDP are higher than what Thailand was exposed to with public debt at pre-pandemic levels. These include: i) an increase in future interest costs on public debt (with the potential to crowd out other public spending); ii) higher rollover risks associated with a larger stock of maturing debt; iii) elevated risks of an adverse shift in interest rates (due to higher risk premia) and/or growth, which would make it more difficult to maintain debt sustainability; and iv) reduced fiscal space available to respond to future exogenous economic shocks.

But there is scope for the government to moderate the pace of fiscal consolidation over the next few years without jeopardizing debt sustainability. Fiscal consolidation will be more supportive of economic activity if it proceeds at a gradual pace, and to the extent that capital spending is maintained or even increased as current spending declines from its current high levels. A customized macro-structural model is used to assess the impacts of such a fiscal path, compared with a baseline in which larger spending reductions see public debt decline to 55 percent of GDP by 2028. The illustrative scenario is one in which: i) public debt remains at around 60 percent of GDP in 2028; ii) current spending declines by around 3 ppts of GDP from 2022 levels by 2028 (consistent with the baseline); and iii) capital spending increases by a further 0.3 ppts of GDP by 2028 (versus a reduction of 0.4 ppts of GDP in the baseline).

Overall, the analysis indicates that increasing public investment spending from current levels over the medium-term would allow a more growth-friendly fiscal consolidation. Increasing public investment spending from 2.6 percent of GDP (the 2017 to 2022 annual average) to 3.3 percent annually from 2023-28 would support domestic demand in the short-term – in the context of a still-fragile recovery from recent economic shocks – with significant multiplier effects as that spending recirculates in the economy. Additional public investment also has a supply-side effect, raising the public capital stock and 'crowding in' private investment, both of which act to increase potential output over the medium-term. This path would imply a slower fiscal consolidation than would otherwise be the case, but the associated increase in debt-related costs and risks is expected to be manageable. The longer-term fiscal analysis that follows below incorporates the fiscal and growth impacts of this medium-term increase in public investment spending.

ii. … and over the longer-term, while meeting structural spending needs

Alongside an increase in overall public investment spending, the analysis in this report suggests that increasing spending on social assistance, education, and climate adaptation is a near-term priority. Spending in these areas has a significant impact on human capital and economic resilience. Moreover, social spending plays an important role in reducing poverty and inequality in Thailand. But overall levels of social assistance spending (prior to the COVID-19 shock) were relatively low. Currently, the Old Age Allowance (OAA) is among the lowest social pensions in the world, with beneficiaries aged 60 to 69 receiving benefits just over a quarter of the international upper middle income poverty line. Other social assistance payments, including those associated with the State Welfare Card (SWC), are even lower. Microsimulations indicate that increasing the size of these benefits and targeting them more effectively would be a cost-effective means of reducing poverty and vulnerability, even after the impacts of the pandemic recede. In education, spending per student at the pre-primary and secondary level is low relative to international benchmarks, with evidence to suggest that this has adversely affected learning outcomes. Higher spending at these levels has the potential to drive the necessary improvements in education quality and raise the level of human capital over the longer term. And as Thailand is rated as one of the world's most vulnerable countries to climate change, significant climate adaptation investments are required as a matter of priority to mitigate the substantial economic costs associated with an increasing incidence and severity of flooding, storms, and coastal erosion.

Looking forward and beyond the pandemic period, spending needs will also rise relative to pre-COVID levels because of a rapidly aging population. There will be pressure to increase the availability and quality of basic public services and social protection systems given the needs of an aging population, the rising expectations of an increasingly middle-class society, and the objectives of government to support resilient growth and human capital development. The challenge will be to pursue these objectives while ensuring that overall spending remains sustainable, and that the fiscal incidence of taxation and public spending is consistent with an inclusive development path.

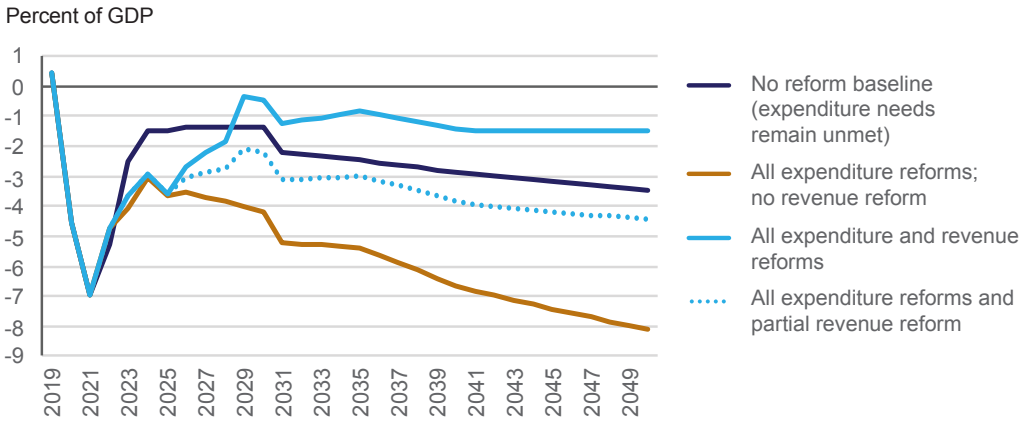
Aging acts to constrain potential growth, which, in the absence of offsetting measures, will make it more difficult to maintain fiscal sustainability. Long-term projections show that growth is expected to decline between 2020 and 2050. The decline in population growth and the working-age to population ratio account for more than one-third of the projected decline in GDP growth over this period. Slowing growth will make it more difficult to raise the revenues required to match spending needs.

Aging will also directly lead to increased spending needs, through rising public pension and healthcare costs. The number of people aged 60 or older has been increasing and this trend will continue until 2050. Under the baseline projection, the combined fiscal cost of the Old Age Allowance and civil service pensions is projected to rise from 1.8 percent of GDP in 2019 to 3.5 percent in 2050, assuming that the per recipient size of these benefits increases with per capita GDP. The total public cost of healthcare is projected to rise from 2.8 percent of GDP to 3.5 percent during the same period as the incidence of non-communicable diseases continues to rise, costs associated with new medical technologies and procedures increase, and the increasing numbers of elderly require additional spending on healthcare.

To limit the extent of spending increases and enhance their impact on equity, there is scope to improve the efficiency of spending on social assistance, education, and health. More stringent targeting of the OAA and SWC benefits could reduce fiscal costs while largely preserving gains in poverty reduction. In education, spending per primary student is high, mainly due to the prevalence of inefficiently small and under-resourced primary schools: efforts to consolidate these schools and redirect resources to pre-primary and secondary schools would lead to a significant gain in allocative efficiency. In health, enhanced NCD screening and preventative measures would reduce the need for more expensive treatments, while there is also scope to harmonize and improve the design of public health insurance purchasing arrangements to reduce costs.

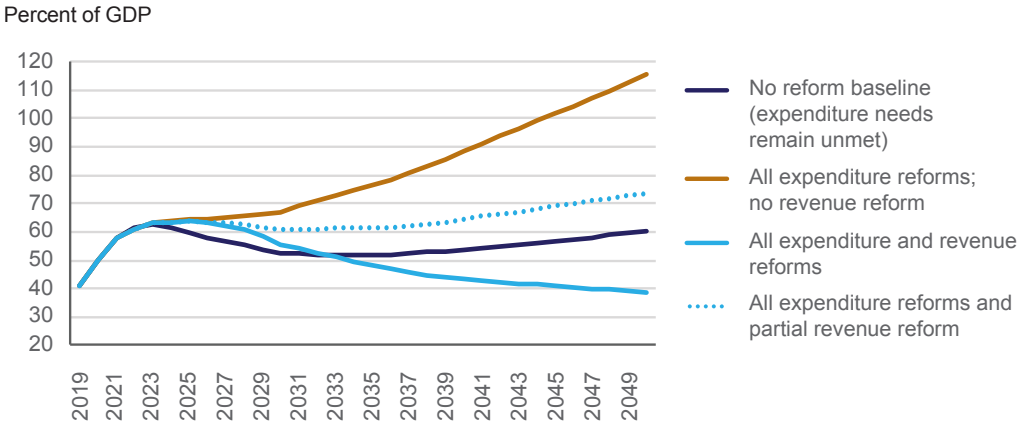
Nevertheless, a key finding of this report is that meeting these identified spending needs while maintaining debt sustainability will require a substantial increase in revenue. In the absence of revenue reforms, the additional expenditures in social assistance, education and climate adaptation outlined above – even after accounting for potential improvements in spending efficiency – would cause the fiscal deficit to exceed 8 percent of GDP and the public debt stock to increase to unsustainable levels in the long term (Figures ES4 and ES5; All expenditure reforms; no revenue reform scenario). On the other hand, with significant efforts on tax reform (see below), revenue collection could rise by 3.5 percentage points of GDP to just under 25 percent of GDP, and public debt could decline to below current levels over the long term. Less effort on revenue mobilization (as per the 'partial revenue reforms' scenario) or spending efficiency would lead to commensurately higher deficit and debt levels. Note that fiscal consolidation in the 'All expenditure and revenue reforms' scenario is slower than in the baseline over the next five years, consistent with the more growth-friendly (and higher capital spending) medium-term trajectory described above.

Figure ES4: Impact of reforms on the fiscal balance



Source: WB analysis

Figure ES5: Impact of reforms on public debt



Source: WB analysis

Note: "No reform baseline" denotes a scenario in which revenues remain stable at 2022 levels and identified spending needs in social assistance, education and climate adaptation remain unmet.

While revenues ultimately need to rise, Thailand has the fiscal space to increase spending in critical areas immediately while pursuing revenue reforms more gradually. In the all-reforms scenario depicted in Figures ES4 and ES5, the recommended increases in spending on public investment and social assistance are assumed to be fully implemented in 2023, while spending on climate adaptation quickly scales up from 2023 onwards. But revenue reforms are assumed to be implemented more gradually, so that revenues rise steadily over the remainder of the decade and reach their peak of 24.3 percent of GDP only by 2030. Such a measured approach to revenue reform may be warranted given that i) the economic recovery remains fragile as at early 2023; ii) there is a need to make a political case for 'stroke of the pen' reforms such as increasing the VAT rate; and iii) other recommended measures (e.g. broadening the personal income tax base) will naturally require a longer implementation period due to the nature of the changes required. The all-reforms scenario shows that committing to such a gradual increase in revenues over the next eight years would create the required fiscal space for additional spending in priority areas now, with debt not rising substantially above current levels in this scenario.

Long - term fiscal outcomes are highly dependent on economic growth. If real GDP growth was to average 2 percent per year rather than the 2.5 percent assumed in the baseline – due to weaker than expected public or private investment, more pronounced aging impacts on the labor force, or more modest growth in total factor productivity – public debt could rise to close to 70 percent of GDP by 2050 after accounting for the impact of all revenue and spending reforms. Conversely, faster average growth of 3 percent per year would make it significantly easier to ensure longer-term fiscal sustainability, though would not eliminate the need for revenue reforms.

This implies that continued progress on the structural reform agenda is critical to the maintenance of fiscal sustainability. To mitigate the impact of aging on long-term growth, polices should aim to increase the size of the labor force and to enhance its productivity, including by increasing the retirement age, increasing female labor force participation rates, and providing training to upskill the existing workforce and resolve mismatches between the skill set of agricultural workers and the skill set demanded by the industrial and services sectors.[1] These are in addition to the reforms considered in Chapter 5 to improve the quality of basic education. Previous World Bank analysis has shown that productivity can also be improved by i) increasing economic openness; (ii) enhancing competition in the domestic economy; and (iii) creating a more conducive environment for firm innovation. Finally, additional public investment (as assumed over the medium-term in the reform scenario) could boost the productive capacity of the economy and crowd in private investment, while at the same time providing demand-side stimulus over the next few years.

Conversely, sustainable fiscal policy can have a significant impact on growth. There are two main channels. The first is that additional public investment in physical and human capital, as captured by the public investment and education reforms in the all reforms scenario, will increase the productive capacity of the economy over the longer term and thereby raise the potential growth rate. The second is that the maintenance of fiscal sustainability is itself growth enhancing. Investment is negatively correlated with macroeconomic uncertainty, while a lower risk of debt distress tends to be associated with lower interest rates.

A sound and transparent fiscal framework can help to provide assurance to investors and the general public that fiscal settings will remain sustainable over time. The public debt rule provides an important anchor for fiscal policy. While the recent increase in the public debt ceiling to 70 percent of GDP was justifiable given the circumstances, to preserve credibility future adjustments to the level of the ceiling should be minimized. And although fiscal policy outcomes to date have been sound and policy decisions have been appropriately constrained in practice, the overall fiscal rules framework is complex and may not be fit for purpose in all respects., For several of the rules – including the capital spending rule – a careful review is warranted as to whether they are necessary and serving intended objectives. In addition, budget fragmentation, including the use of extra-budgetary funds and quasi-fiscal policies, tends to undermine fiscal transparency and the effectiveness of fiscal rules. The Ministry of Finance can improve fiscal transparency by reporting on the extent of off-budget operations, improving the costing of contingent liabilities in the statement of fiscal risks, and moving towards greater compliance with the IMF's general data and dissemination standards.

[1] See Bandaogo, M. and R. Van Doorn (2021), The Macroeconomic and Fiscal Impact of Aging in Thailand, World Bank, on which this longer-term fiscal sustainability analysis is partly based.

RAISING REVENUE

Given Thailand's income level, revenue collection is low. Thailand has an estimated structural 'tax gap' – the difference between tax collection capacity, based on the performance of peers at a similar income level, and actual tax revenue – of around 5.6 percent of GDP. At current levels, revenues will be inadequate to meet future spending needs while maintaining fiscal sustainability. Moreover, the tax system on its own does relatively little to promote equity. More progressive taxes such as personal income tax and wealth taxes provide a relatively small share of the overall tax take, with low levels of compliance and high rates of informality raising the potential for horizontal inequities.

This report proposes progressive tax reforms that taken together could increase revenues by 3.5 percentage points of GDP. These reforms, if implemented gradually over the rest of this decade, would narrow the estimated tax gap, promote equity, and provide the revenue needed to fund elevated spending needs. They include reforms to: (a) adjust the VAT rate and exemptions; (b) broaden the personal income tax base and streamline allowances; and (c) expand property tax collection. By implementing these reforms at a gradual pace over the next eight years, revenue collection could increase to 24.3 percent of GDP by 2030 from 20.9 percent in the baseline scenario (Table ES1). With the incidence of these taxes falling more heavily on higher-income households, these reforms would help to mitigate Thailand's very high rate of inequality. Moreover, the negative impacts on the poor could be offset by social assistance reforms, the cost of which would still allow for substantial net revenue gains (see below). Note that Table ES1 excludes the impact of additional revenues from carbon pricing, which over the longer term would be broadly offset by the cost of other climate mitigation measures proposed in this report.

Table ES1: Key revenue reform areas

Reform options	Detail	Estimated impact (% of GDP)
VAT		
• VAT rate increase	Increase the VAT rate from 7% to 10%	**1.6**
• VAT exemption reform	Remove VAT exemptions	**0.6**
• VAT rate and exemption reform	Increase VAT rate to 10%, while also removing VAT exemptions	**2.5**
Personal Income Tax		
• Expansion of personal income tax base	Expand number of tax filers to the UMIC average of 32.5% of the labor force by incentivizing compliance	**0.3**
• Streamlining personal income tax allowances	Streamline overall allowances, deductions, and special allowances (while maintaining the exemption for incomes below THB 150,000, among others)	**0.5**
Tax on property	Improve collection by ensuring regular updates of the appraisal value (linked to market values), and simplifying valuation approaches	**0.3**
Total revenue impact of proposed reforms		**3.5**

Raising the VAT rate and removing exemptions could substantially increase tax revenue and would also be progressive. Thailand's VAT is a relatively productive tax, with the government collecting around 85 percent of potential collections given the VAT rate and base. But Thailand misses out on higher VAT collections because the rate of 7 percent is among the lowest of upper-middle income countries, and because the tax base is relatively narrow. Raising the VAT rate from 7 percent to 10 percent is estimated to increase revenue by up to 1.6 percent of GDP, with a larger impact on high-income groups. The low VAT base is another driver of low tax potential, largely attributable to the prevalence of exemptions, the relatively low level of consumption, and high rates of informality. Exempted products and services are estimated to account for around 19 percent of GDP; removing these exemptions could result in additional tax revenue of around 0.6 percent of GDP. Taken on their own, these reforms would adversely impact the poor, but providing compensation via the targeted social protection measures proposed in this report would more than offset the impacts on poverty at a cost well below the additional VAT revenue raised. There is also potential for other reforms to broaden the VAT base. Targeted incentives for SMEs could encourage informal firms to register in the VAT system. Extending the VAT to capture e-commerce and digital services more effectively could also raise revenue in a fast-growing sector, while also making local service operators more competitive in the domestic market.

Thailand has the potential to raise personal income tax (PIT) revenue by 0.7 percent of GDP, while also achieving a fairer tax system. At around 1.8 percent of GDP, personal income tax revenues in Thailand are in the bottom 20th percentile of upper-middle income countries. This is because i) the tax base is narrow, with a low share of personal income taxpayers and low rates of filing from non-salary workers; ii) informality rates are relatively high; and iii) despite a high top marginal tax rate of 35 percent, effective tax rates are low due to generous tax incentives and allowances. Only 4 million people (or 10 percent of the labor force) paid tax in 2019, most of whom were salary workers. The introduction of incentives for tax filing and compliance could help to address the low number of self-declarations and/or under-reporting of income among the self-employed, business owners, as well as those workers in the informal sector. The removal of generous deductions and allowances would also improve the efficiency of the personal income tax and make system more equitable. The analysis shows that the benefits of some tax allowances, such as tax incentives for long-term savings, accrue mainly to high-income taxpayers. Measures to expand the PIT base from the current level of 28.5 percent of the labor force to the UMIC average of 32.5 percent are estimated to improve PIT revenue collection by 0.3 percent of GDP. Removing most personal income tax deductions and allowances, while maintaining the standard exemption of THB 150,000 and allowances for personal spending and spending for dependents, could increase revenue by a further 0.5 percent of GDP.

Additional efforts to collect tax on wealth would also help raise revenue and increase tax equity, while minimizing distortionary impacts. Property tax is an equity-enhancing and growth-friendly tax instrument, and Thailand's property tax collections are relatively low at 0.2 percent of GDP, below the UMIC average of 0.5 percent. Closing this gap could provide additional own-source revenues for local governments. Thailand has taken steps to increase property tax with the new Land and Building Tax Act, however, the tax payments due were reduced by 90 percent in 2020 and 2021 due to the COVID-19 pandemic. As these temporary measures are unwound, property tax collection should increase. Collections can be further improved by raising rates, ensuring regular, systematic cadastral updates, and implementing simplified valuation approaches that are based on market values.

ENSURING THE ADEQUACY AND EFFICIENCY OF SPENDING

Prior to the pandemic, overall public spending was relatively low by international standards, reflecting the constraint of low revenue collection. Spending averaged 21 – 22 percent of GDP—far lower than in structural peers (31 percent) and aspirational peers (28 percent), and around half the OECD average (41 percent). The more rigid drivers of current spending—such as the wage bill and interest payments—have been relatively well contained. This reflects the overall conservative fiscal approach, with controls on civil service remuneration and headcount and relatively low levels of public debt.

The low overall budget envelope has constrained investments in human capital, despite efforts to prioritize this spending in the budget. As a proportion of GDP, education and health spending is low compared with peers, and spending on social protection was also low prior to 2020, with the significant COVID-related increase expected to be largely temporary. While there is scope for efficiency gains in each of these sectors, the level of spending will also need to increase to address key challenges arising from the aging population, rising expectations around service delivery, weak learning outcomes, and greater needs for social assistance. This report focuses on the need to invest in human capital to raise productivity and potential growth, with separate chapters devoted to health, education, and social protection spending (see below). In each of these areas there is potential to increase the quantity and quality of spending.

While physical capital is also an important driver of growth, public investment has declined as a share of GDP and of total government spending. Capital spending fell from an average of 14 percent of total spending in FY13 – FY15 to 11 percent in FY16 – FY19. Total public investment spending (including SOEs) as a share of GDP remains higher than in peers, as does the level of the public capital stock. However, the quality of infrastructure appears to have declined, and now underperforms many peers. This has resulted in Thailand giving up a competitive advantage that it previously enjoyed relative to other regional economies. Recent analyses identify gaps in Thailand's infrastructure as a key factor contributing to the slowdown in productivity over the past 20 years, weakening its economic competitiveness and worsening congestion and air pollution. Furthermore, deteriorating infrastructure quality indicates inefficiencies in public investment spending. Cross-country analysis of public marginal capital to output ratios confirms that there is scope for enhancing public investment efficiency in Thailand.

Raising public investment over the medium term and strengthening public investment management (PIM) would unlock a triple benefit of economic stimulus, structural reform, and efficiency gains. Since the late 1990s, Thailand has consistently underspent its capital budget by around 30 percent. This suggests that a constraint to increasing public investment is implementation capacity, and not just available financing.

Several flagship investment projects — initiated many years prior to the pandemic — remain delayed in Thailand's investment pipeline. These projects present an opportunity for economic stimulus in the short to medium term, while boosting the productive capacity of the economy over the longer term. The higher rates of capital spending in the reform scenario considered in this report could be achieved with a relatively small boost to the capital budget execution rate.

Recommendations to alleviate bottlenecks and boost the impact of a public investment-led stimulus include: i) strengthen investment planning and the medium-term expenditure framework (MTEF), including by developing a comprehensive multi-year pipeline of public investment projects—including projects that are identified as potential PPPs—that are costed, appraised, and prioritized at a whole of government level; ii) improve the quality of project appraisals; iii) establish an independent appraisal review body to validate project appraisals and increase transparency; iv) institute mechanisms to effectively follow through on Environmental Impact Assessments (EIAs); v) modernize procurement rules and electronic systems, and increase transparency; and vi) develop real-time monitoring systems that allow agencies to make project modifications during implementation.

i. Health

Despite relatively low levels of spending, the Thai health system has achieved good outcomes, driven by the prioritization of universal health coverage and a focus on primary health care. While health is prioritized in the government budget, because overall spending is comparatively low, public health spending is modest by international standards. Out of pocket spending is also relatively low. Nevertheless, Thailand has achieved a remarkable improvement in population health outcomes in recent decades, with an equitable health system compared to peers. Life expectancy has increased to 77.2 years in 2019, up from 70.6 years in 2000, and over the same period there have been substantial declines in infant, under-five, and maternal mortality rates. In general, Thailand's key population health outcomes are better than the average for East Asia and Pacific countries and Upper and Middle-Income Countries (UMICs). These successes are anchored in (i) long-standing government policy and action towards Universal Health Coverage (UHC), with almost the entire population covered by one of three public health insurance schemes; (ii) sustained focus on primary health care (PHC) with emphasis on maternal and child health (MCH); and infectious diseases; and (iii) a health workforce with a favorable skill mix.

With pressures on the health system expected to rise over the medium to long-term, an ongoing improvement of health outcomes will require a combination of additional resources and efficiency gains (see Chapter 4). Thailand's aging population places increased demands on the health system, in terms of service delivery and escalation of costs. The introduction and expanded use of new drugs, procedures, and other medical technologies – alongside growing pressure to include these in the benefit packages of public health insurance schemes – will put further upward pressures on health spending. Costs associated with NCDs are also expected to rise. While the prevalence of diabetes and hypertension has increased sharply since 2000 and will continue to grow over time, progress in reducing the premature mortality rate from NCDs has stagnated. The system is not well prepared to prevent, detect and manage NCDs. Particularly in urban areas, people often bypass the gatekeeping and referral system, hindering the effectiveness of mechanisms for early diagnosis. This is a source of spending pressure as late diagnosis can result in the need for complex treatments which are much more costly than prevention or routine care. More broadly, health financing and purchasing mechanisms provide limited incentives for care coordination and integration across levels of care, and there is a lack of information sharing among service providers.

A more integrated service delivery system would increase the efficiency of health spending and enhance responsiveness to health-related needs. The establishment of a nationwide interoperable health information system (HIS) with electronic health records (EHR) at its core would provide the foundation of delivering and paying for people-centered integrated care. This would allow care to be better coordinated by different providers and integrated with other services. Innovative payment models should, such as bundled payments, should be explored to achieve better integration and less duplication and waste in health services.

- **A more integrated service delivery system would allow a more effective response to the chronic care needs of an aging population, and result in better management and control of NCDs.** In particular, improving screening of hypertension and diabetes and providing health education during outpatient visits to public health providers would help reduce financing needs associated with providing more expensive treatments.

- **Improvements in the design of public health insurance purchasing arrangements could result in significantly reduced costs.** In particular, three reforms to the Civil Service Medical Benefits Scheme (CSMBS) could make a difference: (i) require beneficiaries to select and register with a contractor provider; (ii) change the payment for outpatient services from a retrospective fee-for-service to a prospective risk-adjusted capitation payment; and (iii) change the budget from open-end to close-end.

Taken together, these reforms would improve spending efficiency and it is estimated that they could reduce total public health spending needs from 3.5 percent of GDP in a 2040 baseline scenario to 3.0 percent, which is only slightly higher than current public health spending of 2.8 percent of GDP.

ii. Education

Student learning outcomes have remained weak despite substantial increases in education spending. Boosting Thailand's growth potential and facilitating its shift into a high-income economy will require a focus on raising productivity by developing human capital and skills. But Thailand's quality of human capital is lagging its regional peers. Despite a large increase in per-student spending over the last two decades, Thai students' performance in the PISA mathematics and science assessments remained stagnant at low levels, and declined significantly in reading.

Poor education outcomes are explained by inefficiencies in the way education spending is allocated across levels, as well as inadequacy of the overall spending envelope. In particular, spending per primary student is high relative to international benchmarks, mainly because there are a large number of inefficiently small and under-resourced primary schools. Even though per-student costs for these small schools are much greater than those for larger schools, they are chronically short of teachers and other key educational inputs. On the other hand, spending per student at the pre-primary and secondary level is comparatively low.

In the education reform scenario, the school network is reorganized to consolidate small schools and ensure that primary students have access to the teachers and resources they need to learn effectively. Savings from this school reorganization – which would largely be reflected in a reduction in per-student primary spending – would then be reallocated to other levels. The analyses in this chapter indicate that the proposed merger of mostly primary schools could be expected to reduce per-student spending at the primary level by around 11 percent. But the reallocation of this spending would only provide a portion of the resources necessary to bring pre-primary and secondary spending to international benchmarks. Additional resources will also need be drawn on to ensure the adequacy of overall education spending at these levels.

- **Children's readiness for school should be improved by increasing the availability of high-quality preschools available.** Only 61 percent of Thai children aged 3-5 were developmentally on track in the literacy-numeracy domain (UNICEF, 2020) and the level of per-student spending in 2019 was as much as 47 percent below comparable international peers. Research has shown that investment in high quality preschool programs generates high economic returns, in the range of 3 to 9 times the amount invested (Cascio and Schanzenbach, 2013).

- **At the secondary level, Thailand should focus on reducing class sizes and providing adequate resources to its schools.** Thailand's average class size of 37.3 was the 9th largest among the 79 education systems which participated in PISA 2018. By contrast, class sizes in OECD countries averaged only 26.2. Moreover, in the PISA 2018 school survey, school principals in 'Average' and 'Disadvantaged' as well as 'Rural' schools reported that their schools' capacity to provide instruction was hindered by 'a lack of/inadequate or poor quality' educational material and physical infrastructure. The same was also true in the area of teaching and supporting staff (World Bank, 2020).

- **There is a need to generate better and more frequent data on the quality of school inputs, establish minimum quality standards, and provide resources to ensure that all basic education schools meet them.** A new instrument developed by the World Bank (2020), called the Fundamental School Quality Level (FSQL) Standards, provides a good starting point. FSQL school input quality indices have been found to correlate significantly with the learning outcomes of students, and therefore can provide guidance to policy makers and school leaders about areas that need to improve to boost student learning.

Though the implementation of these reforms would require additional spending (equivalent to around 0.5 percent of GDP) above the baseline by 2050, the resulting higher rate of human capital accumulation is expected to drive faster potential growth. The net effect of these reforms would see overall education spending increase from 2.8 percent of GDP under the baseline to 3.3 percent of GDP in 2050. However, the reforms would be expected to improve test scores and education quality, which in turn would boost human capital over the longer term as graduating students enter the workforce. Ultimately this could be reflected a boost to GDP growth of between 0.1 and 0.2 ppts per year between 2025 to 2050.

iii. Social Protection

Before the COVID-19 pandemic, social protection spending was low. In 2019, spending on social assistance was less than 1 percent of GDP, compared to 1.6 percent for UMIC countries. Spending on the immature social insurance scheme was also low, though spending on the defined benefit civil service pension scheme had grown to exceed 1 percent of GDP in 2020. While a large share of the population is covered by some form of social assistance, the amounts transferred remain very small, and most poor and vulnerable households do not receive a full package of support due to the fragmented nature of the social protection system. At the same time, large segments of the population lack access to social insurance.

The experience of COVID-19 and the war in Ukraine has highlighted the scope to increase social assistance spending more permanently as a means of reducing poverty and inequality and helping households cope with risk. The government responded swiftly and effectively when the COVID-19 crisis hit, more than tripling spending on social assistance and reaching over 80 percent of households with some form of assistance. However, much of this increase in spending is expected to be only temporary. There is now an opportunity to permanently expand social assistance and reduce fragmentation across programs, improving efficiency and impact (see Chapter 6). Increasing spending to be more in line with international benchmarks would not only lead to a greater impact on poverty, but it would also lead to positive impacts on productive work and long-term growth via human capital formation.

Better targeting of social assistance spending would limit the fiscal impact of increases to benefit amounts, while maintaining most of the poverty reduction gains. This report recommends the following:

- **An increase of the Old Age Allowance (OAA) to THB 2000 per month for the poorest beneficiaries, with the amount of the allowance tapering or being left unchanged for higher income recipients.** Currently the OAA ranges between THB 600 and THB 1000 per month (increasing by beneficiary age), and has not been adjusted for over a decade. A benefit of THB 2000 per month is equivalent to around 86 percent of the THB 2,329 per month poverty line, based on the US$5.5/day (2011 PPP) benchmark.

- **An increase of the State Welfare Card payment to 30 percent of the poverty line (THB 700 per month), and an improvement in the targeting of these payments.** Current SWC payments range from THB 200 to THB 300 per month, depending on the beneficiary's household income. At the moment, the program covers a larger proportion of the poor than the rich, but many poorer households remain excluded while many non-poor households are included. For example, about two thirds of the poorest quintile do not receive SWC benefits, while nearly one in five of the middle quintile are SWC beneficiaries. An improvement in targeting which increases the coverage of the bottom 40 percent (while keeping the overall number of beneficiaries constant) would lead to a significant additional impact on poverty reduction (over 1 ppt), over and above the impact of increasing the benefit amount for existing beneficiaries. Recently, eligibility criteria for the SWC have been revised to consider the assets of the household, not just the individual, which is a step in the right direction. Combining such asset and means tests with a proxy-means test could potentially better capture informal income thereby further reducing inclusion errors.

In the medium term, greater investments in delivery systems and reductions in the fragmentation of the social assistance system would lead to fiscal savings and increase the effectiveness of social protection spending. This includes integrating program databases, consolidating eligibility criteria and delivery of benefits, and introducing case management. The establishment of a social registry would enable the social protection system to become more shock responsive, which is especially important given Thailand's significant exposure to natural disasters that are likely to have a greater impact on the livelihoods of the poor and vulnerable. Thailand could also consider changing the way benefits are delivered under the SWC towards electronic delivery of cash into beneficiaries' bank accounts, as was done with COVID-19 top-up payments in 2020. Such a change would increase efficiency of the program as it would allow beneficiaries to better meet their spending needs.

On social insurance, parametric reforms to public pensions, several of which have already been proposed by the SSO, would significantly improve fairness and financial sustainability, and increase the overall coherence of what is currently a fragmented system. The following parametric reforms are recognized as international good practice and are appropriate for both the SSF and the defined benefit scheme for public sector workers:

- Increase retirement age gradually to reach 65 in the long run, allowing the possibility of early retirement with actuarially fair reductions in pensions;
- Shift to lifetime earnings as the base for calculation of the initial pension value;
- Price indexation of pensions in progress;
- In the case of SSF, indexation of the ceiling for pensionable earnings to wage growth.

These measures would make each of the schemes more equitable and sustainable. The retirement age increase would reduce intergenerational inequities as life expectancy continues to increase and equalize public and private sector retirement ages. Moving from end of career to a lifetime average wage base eliminates the inherent bias toward high-skilled workers who typically have steeper age-earnings profiles. It also reduces average pensions and improves the long-run finances of the scheme. Automatic price indexation is the rule in most OECD countries because it ensures that pensioners do not lose purchasing power but reduces the arbitrary differences between cohorts that result from discretionary adjustments to pension values. The SSF benefits would effectively disappear if the ceiling for pensionable earnings is not indexed and remains constant in nominal terms. But in order to ensure the sustainability of the SSF scheme, parametric reforms including increasing the retirement age and the contribution rate (which is low by international standards) are required, in combination with these indexation reforms which would improve the adequacy and equity of the pensions provided.

RESPONDING TO CLIMATE CHANGE

Thailand is highly vulnerable to climate change. With its long coastlines, fragile agricultural systems and susceptibility to extreme weather events, Thailand is ranked as the third most vulnerable country in Southeast Asia to climate change, and the eighth most vulnerable country in the world. Bangkok remains especially vulnerable to flooding, having suffered six major flooding events since 1980, despite the introduction of flood control measures. Cities and economic activities in coastal areas are also vulnerable to storms and coastal erosion. These climate vulnerabilities have significant implications for the macro-fiscal outlook. Potential costs in the range of 10-20 percent of GDP by mid-century (relative to a no-climate impact scenario) are possible, based on World Bank analysis in other comparable countries and given Thailand's vulnerability to climate shocks. Damage to physical capital and infrastructure will reduce production. Labor productivity may be affected by increased temperatures and/or greater incidence of disease or illness. Some economic activities, including tourism, may lose international competitiveness. GDP impacts would translate to a reduction in tax revenues and public spending needs are likely to increase. For example, resources will be needed to repair or replace damaged public assets and compensate owners of damaged private assets. Healthcare costs may also increase. Additional uncertainty could negatively impact investment and asset prices.

While Thailand is not a large emitter of greenhouse gas emissions, in the absence of further policy action its emissions will increase as its economy grows. Thailand's CO2 emissions accounted for less than 0.9 percent of the global total in 2018. Its per capita emissions are comfortably below the global average but are higher than those in several other ASEAN countries, reflecting higher income levels. Thailand has pledged to reduce greenhouse gas emissions by 20 percent below a business-as-usual baseline level by 2030, which allows only a small increase in emissions between 2020 and 2030.

Fiscal policy can play a critical role in reducing Thailand's contribution to climate change, and in adapting to its impacts. Reductions in carbon emissions can be achieved by combining well-designed tax policies that raise the price of carbon with regulatory and other non-tax instruments. The revenues raised from these instruments could be used to support other climate policies, including climate adaptation investments which would reduce some (but not all) of the economic costs of climate change. Measures to reduce emissions could also bring a range of other benefits, including a reduction in the economy's carbon intensity and dependence on imported fuel, an increase in competitiveness (including due to associated technological advances); improvements in air quality; and increased access to international finance to help fund adaptation measures.

This report recommends:

- **Establishment of an Emissions Trading Scheme for the manufacturing sector.** Model estimates indicate that an ETS with a cap that reduces emissions by 44 mtCO2eq would require a carbon price of THB 908/tCO2 on energy and process emissions from the manufacturing sector. While high compared to carbon prices in some other countries, this would be around one third of the current price applied in Europe. Such an ETS could raise THB 194 billion annually by 2030 (0.8 percent of GDP), if all allowances are auctioned. If a proportion of revenues is recycled, there could also be positive GDP impacts, including because of a reduction in the fossil fuel intensity of output and reduced fuel imports.Negative impacts on international competitiveness are unlikely to be substantial because Thailand is not a major exporter of carbon-intensive products. Moreover, with multinational companies facing pressure to remove high carbon producers from their supply chains, an ETS would reduce the competitiveness risks associated with inadequate action on carbon emissions.

- **Adjusatment of existing excise duties on road transport fuel to reflect the fuel's carbon content.** Currently there are excise duties on petroleum, but other transport fuels are not taxed and the Oil Fund effectively subsidizes fuel when commodity prices are high. Rates of excise duty could be adjusted to better reflect the carbon content of the fuels that are used, which could incentivize more biofuel blending. This would effectively establish a carbon tax for the sector without needing the creation of a new instrument.

- **The promotion of a switch toward electric vehicles** to meet stated government targets, including by using additional revenues from the carbon taxes on fuel to pay for some of the near-term costs, including the provision of charging infrastructure, electrification of the public fleet and/or incentives for early adopters (e.g. taxis).

- **A significant scale up in adaptation spending,** focused on: i) improved water resource management, including additional investments in riverbanks and drainage systems to reduce the impacts of high rainfall, in line with existing plans; ii) protecting against flood damage in Bangkok; iii) increasing the climate resilience of transport and other public infrastructure, including retrofitting existing infrastructure where necessary.

- **Investment in reforestation** which would provide both adaptation benefits (protection against storms, floods, and coastal erosion, regulation of the water cycle, and support for agricultural production) and mitigation benefits (absorption of GHG emissions). This could be funded by a combination of increases in public spending, private sector investment in commercial forests, international support through REDD+, and the use of offset mechanisms in a carbon pricing scheme.

The overall fiscal cost of responding to climate change could be 1 percent of GDP annually by 2030 and 1.5 percent by 2040 (Table ES2). The cost of climate adaptation in Thailand is uncertain and will depend on the policy mix but based on cross-country analysis it could reach around 1.6 percent of GDP in the 2030s. As most adaptation measures are public goods, much of this cost is likely to be borne by the government. The cost of other (largely mitigation) measures is projected to be broadly offset by positive revenue impacts from carbon pricing. A carbon price to reduce emissions in the manufacturing sector could raise up to 1 percent of GDP in additional revenues by 2040. Revenues from fuel excise duties (around 1.2 percent of GDP currently) would also rise in the near term with the introduction of duties that reflect the carbon content of fuel but would subsequently fall as vehicles are electrified in line with government targets. Excise duties from car purchases (0.8 percent of GDP) would also decline given that lower tax rates are applied to low-carbon vehicles. It is assumed that other climate-related costs, including in the transport and forestry sectors, will require comparatively modest net public contributions. Based on these assumptions, the net cost of climate change to Thailand's public sector will be around 1 percent of GDP by 2030, rising to 1.5 percent by 2040.

Table ES2: Indicative impacts of climate-related policies on Thailand's fiscal balance (% of GDP)

	2025	2030	2035	2040
Adaptation costs	-0.6	-1.6	-1.6	-1.6
Manufacturing carbon pricing	0.3	0.8	1.0	1.0
Fuel excise duties	0.3	0.2	-0.1	-0.7
Vehicle excise duties	-0.2	0.0	0.0	0.0
Other transport measures	-0.4	-0.2	-0.2	-0.1
Forestry sector costs	-0.1	-0.1	-0.1	-0.1
Total	**0.0**	**-1.0**	**-1.1**	**-1.5**

MAKING FISCAL POLICY MORE PRO-POOR

Fiscal policy can be a key instrument for achieving distributional objectives. This report uses the Commitment to Equity (CEQ) method to estimate the distributional consequences of Thailand's public revenues and expenditures on household welfare. It quantifies the impact of these fiscal activities on both short-term inequality and poverty and assesses how effectively they redistribute income between the rich and the poor. The analysis aims to inform reforms to improve the poverty and distributional impacts of fiscal policies.

Thailand's fiscal policy currently acts to reduce both poverty and inequality. In total, fiscal policy reduces the Gini Index of inequality in Thailand by 4.5 points when considering only cash benefits of transfers and subsidies, and 9.7 points when also including health and education in-kind benefits. In the international context, the cash impact on inequality is tenth best out of 59 countries with available CEQ data, and fourth best out of 24 UMICs. However, when non-cash benefits are included, the fiscal impact is less progressive compared with other countries. Poverty also falls significantly as a result of fiscal policy, with the low burden of indirect taxation for the poor more than offset by the value of social assistance benefits. Thailand's poverty rate is estimated to be 2.6 percentage points lower as a result of fiscal policy. This is eleventh best out of 56 countries with comparable data and sixth best among UMICs.

The reforms proposed in this report would increase revenue and boost spending in ways that are consistent with further progressive impacts on poverty and inequality. As noted above, spending on health, education and social protection is comparatively low in Thailand, as is collection of tax revenues. But there are strategies to increase both in ways that are consistent with further reductions in both poverty and inequality. These strategies are fully aligned with the specific recommendations in this report. They include:

- Increasing direct taxation, especially from personal income taxes
- Increasing indirect taxation on general consumption via reforms to VAT
- Increasing health taxes on tobacco, alcohol, and sugar-sweetened beverages, as well as introducing digital and carbon taxes
- Increasing spending on health and education
- Avoiding spending on subsidies as a means of mitigating higher fuel and food prices
- Increasing spending on direct transfers and improving their targeting

As a specific example of a set of pro-poor fiscal policy measures, a combination of VAT and social assistance reforms could increase net revenues by around 0.6 percent of GDP, while significantly reducing poverty and inequality. VAT exemptions and preferential rates are an expensive tax expenditure and an inefficient way of providing support to the poor; while they are often on staple goods which represent a larger share of poor consumption, they are also consumed by richer households and usually in larger quantities, meaning that more of the tax expenditures go to richer households. As noted above, increasing the VAT base rate from 7 percent to 10 percent and cutting exemptions, as recommended in this report, could increase VAT revenues substantially. The impact on the poor could be more than offset by additional targeted cash transfers (consistent with the reforms to the Old Age Allowance and State Welfare Card payments outlined above) at a cost well below the additional VAT revenues generated. As another point of comparison, the total cost of these additional cash transfers would be about the same as the cost of the diesel price subsidies and fuel excise tax reductions provided in 2022, but the impact on poverty would be about nine times as large, given that much of the benefit of the fuel price interventions goes to non-poor households.

CHAPTER 1
ENSURING FISCAL SUSTAINABILITY

Chapter 1: Ensuring Fiscal Sustainability

1.1 Introduction

1. Thailand has traditionally maintained a conservative approach to fiscal policy, with budget deficits and public debt remaining contained prior to the pandemic. Nevertheless, the government's fiscal response to COVID-19 was substantial, causing deficits to widen sharply between 2020 and 2022, and debt to rise above 60 percent of GDP. As such, over the next few years fiscal consolidation will be required, and fiscal policy will need to balance ongoing support for a still-fragile economic recovery with the maintenance of longer-term fiscal sustainability. Over the longer term, structural upward pressures on public spending – including those associated with an aging population – will pose further challenges for fiscal management.

2. This chapter looks in detail at the combination of policy measures needed to ensure fiscal sustainability over the medium-term and long-term. It begins by introducing the macro-fiscal context and outlining the evolution and characteristics of Thailand's public debt, and assesses the fiscal risks associated with the COVID-related debt increase. It considers the pros and cons of different pathways for fiscal consolidation over the medium term, and the specific case for a more measured pace of consolidation that prioritizes public investment. It then considers a range of longer-term scenarios for public expenditure – accounting for spending needs associated with aging, social protection, human capital development, and climate adaptation/mitigation – and assesses the additional revenue mobilization effort required to sustainably finance these needs.[2] The scenarios used are based on analysis and recommendations from the subsequent chapters in this PER. Annexes to this chapter assesses the set-up for fiscal policy making in Thailand, reviewing the effectiveness of fiscal rules and institutions in promoting desirable fiscal outcomes, and proposing reform options.

3. The analysis indicates that to meet Thailand's public spending needs while maintaining debt at sustainable levels, substantial revenue reforms will be required. These include raising the value-added tax (VAT) rate and reducing exemptions; expanding the personal income tax (PIT) base and rationalizing PIT deductions and allowances; and expanding property tax collection (see Chapter 2 for a more detailed discussion). These reforms could raise revenues by around 3.5 percentage points of GDP, which would allow identified spending needs to be met while keeping public debt contained over the longer-term.

1.2 Macro-fiscal context

4. COVID-19 hit Thailand during a period in which economic growth had slowed. The economy grew at an average annual rate of 7.7 percent in the period from 1980-1996, supported largely by capital accumulation and a manufacturing-focused, export-oriented growth model. Labor shifted from agriculture to manufacturing, and this structural transformation enabled Thailand to rapidly converge with upper middle-income comparator countries while achieving substantial gains in poverty reduction. However, the Asian Financial Crisis of the late 1990s and the Global Financial Crisis of 2008 caused a decline in growth. Over the decade to 2019, GDP growth slowed to an annual average of just 3.3 percent. Investments in physical capital halved as a share of GDP, and total factor productivity (TFP) growth decelerated. In 2020, the economy contracted by 6.2 percent, due to the cessation of international tourism, the impact of domestic mobility restrictions, and a deterioration in external demand. Thailand returned to pre-pandemic levels of output in the second half of 2022, later than most regional peers.

5. Thailand's conservative approach to fiscal policy since the turn of the 21st century allowed the government to respond to the pandemic without jeopardizing fiscal sustainability. While revenues have historically remained below international benchmarks, overall spending has also been restrained. This meant that fiscal deficits and public debt were contained prior to the pandemic, allowing Thailand the fiscal space to implement a substantial fiscal response to COVID-19. Spending rose, revenues declined, and fiscal deficits widened sharply between 2020 and 2022, with public debt rising above

[2] The longer-term scenarios build on analysis in The Macroeconomic and Fiscal Impact of Aging in Thailand (2021) which assesses the implications of aging and aging-related spending for fiscal sustainability.

60 percent of GDP. Nevertheless, there are several factors that act to mitigate Thailand's exposure to public debt-related risks, including the high share of domestically held and local currency-denominated debt

6. Revenues have remained stable at relatively low levels through much of the last two decades. Averaging around 16 percent of GDP, Thailand's tax revenue is low by the standards of upper-middle income countries, as well as regional and OECD comparators. Thailand has a sizeable structural 'tax gap' – the difference between tax collection capacity, based on the performance of peers at a similar income level, and actual tax revenue – estimated at 5.6 percent of GDP. While the efficiency of VAT collection is high, the current VAT rate at 7 percent is well below the regional average of 11 percent and the world average of nearly 16 percent. Personal income tax (PIT) collection in Thailand is also well below cross-country benchmarks. Despite relatively low tax-free thresholds, only about 30 percent of the labor force pays personal income tax, well below the levels of peer countries, suggesting low compliance rates.

Box 1-1: Who are Thailand's peers?

In each of these chapters, Thailand is benchmarked against structural, aspirational, and regional peers. These comparisons are made to provide a sense of where Thailand already performs well – according to the key criteria of adequacy, sustainability, efficiency, effectiveness, and equity – and in which areas there may be scope for improvement.

A flexible approach to benchmarking has been adopted depending on the topic being addressed and data availability. **Structural peers** have been selected from that subset of countries with similar levels of income per capita and similar challenges with respect to revenue mobilization (limited dependence on natural resources, high levels of informality) and expenditure (aging population, vulnerability to climate change). On this basis, the selected structural peers are China, Belarus, and Vietnam. Cross-country averages for the full set of upper-middle income countries (UMICs) are also referenced in some cases. **Regional peers** include Indonesia, Malaysia, Philippines, and Vietnam (the full set of East Asia Pacific countries is referenced in some cases). Higher income **aspirational peers** include Bulgaria, Chile, Uruguay, and Costa Rica. Korea, Japan, and other OECD countries are also included as aspirational peers in some cases.

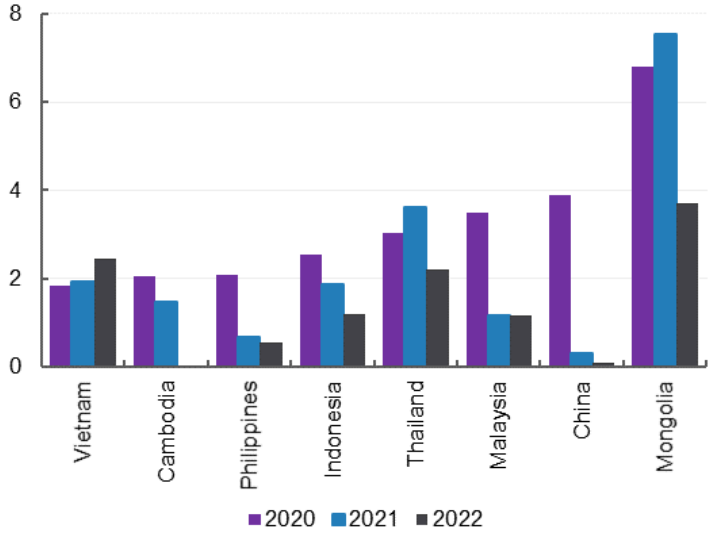
7. General government revenues moved broadly in line with economic activity since the onset of the pandemic, with only a moderate decline in tax buoyancy. Revenue declined by about 1 percentage point of GDP between 2019 and 2022, continuing the downward trend that has been observed since the mid-2010s. Value-added tax (VAT) and corporate income tax revenue—which represent about 60 percent of total revenue—dipped in 2020 before improving modestly in line with the economic recovery. Personal income tax revenue has held steady at 2 percent of GDP since FY19. However, excise tax revenue declined over the same period, as domestic lockdown measures prompted a reduction in fuel imports. Government response measures, including a deferral of tax payment deadlines and an additional personal income tax deduction on the purchase of goods and services, also contributed to the decline in tax revenue. In 2022, excise tax revenue declined by a further quarter percentage point of GDP due to the reduction of the excise tax on diesel, which formed part of the government's response to high fuel and food prices resulting from the Ukraine war.

8. Over the decade prior to the pandemic, public spending was also low given Thailand's income level, and relative to its structural, aspirational, and regional peers. Between 2013 and 2019, general government expenditure fluctuated within a tight band of between 21.3 and 22.2 percent of GDP, closely aligned with the level of government revenue. Spending on more rigid expenditure items (wage bill, interest) remained generally contained, while the level of capital spending was broadly aligned with international benchmarks. Education and health spending have been prioritized in the budget while relatively low as a proportion of GDP, consistent with constraints in the overall spending envelope. While social protection spending had been rising even prior to the pandemic, it remained low compared with regional peers, with spending on social assistance less than 1 percent of GDP in 2019.

9. The government responded to the pandemic with an increase in spending that was relatively large compared with other countries in the region (Figure 1-1 and Figure 1-2). In March and April 2020, the cabinet approved a COVID-19 relief and recovery package amounting to 2.2 trillion baht, or 12.9 percent of GDP. The fiscal response centered on a Parliament-approved emergency decree – in force until the end of FY2021 - to borrow up to 1 trillion baht (about 6 percent of GDP) off-budget to fund cash transfers, the medical response, and economic and social rehabilitation in the aftermath of COVID-19. This was subsequently followed by the approval in May 2021 of an additional 500 billion baht in borrowing to fund further measures under the same three categories. The vast majority was ultimately used for relief

measures (Figure 1-3). A response of this magnitude was deemed necessary given that the pandemic had relatively severe economic effects on Thailand, due largely to its dependence on tourism and merchandise trade, with significant impacts on the poorest and most vulnerable. As of January 2023, 96.4 percent of the THB 1.5 trillion emergency borrowing for COVID-19 responses had already been disbursed, with the remainder available for disbursement in 2023 (Figure 1-4). Much of the remainder of the support consisted of soft loans to SMEs (implemented by the Bank of Thailand and Specialized Financial Institutions) and liquidity support.

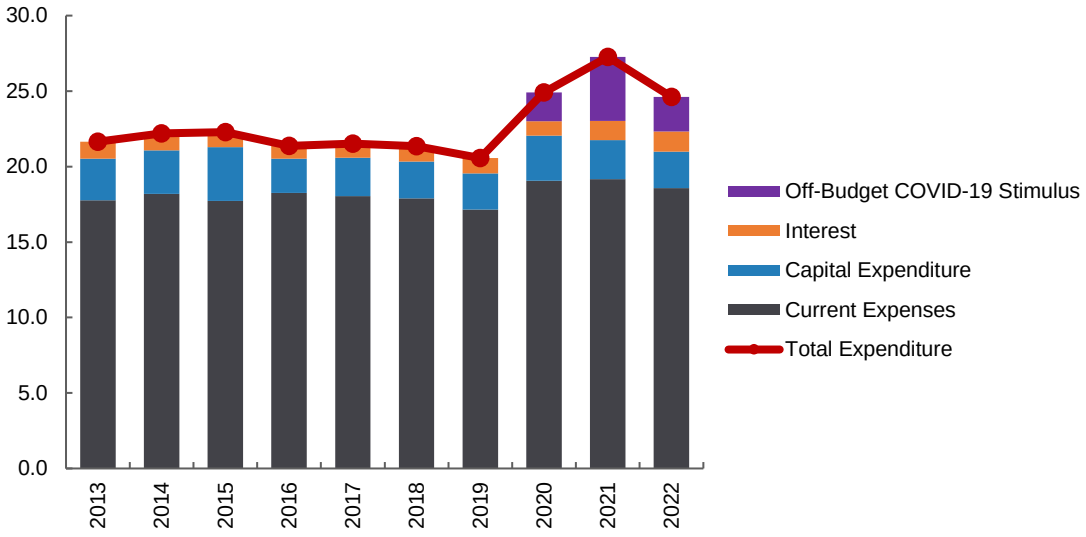
Figure 1-1: COVID-19 related support to households and firms (% of GDP)



Source: World Bank EAP Update, April 2022

Figure 1-2: General Government Expenditures

(% of fiscal year GDP, GFS basis)



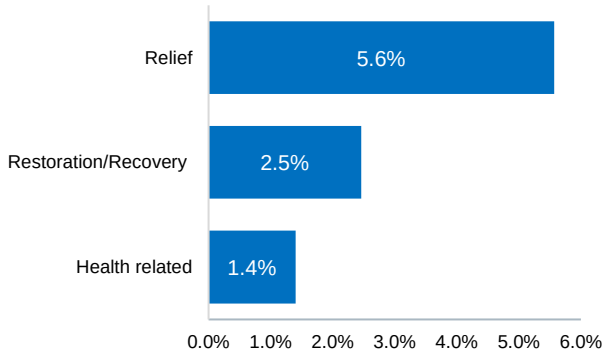
Source: Fiscal Policy Office, Ministry of Finance.

10. Additional fiscal measures were announced in 2022 to mitigate the rising cost of living due to the war in Ukraine, slowing the planned consolidation in spending. To counteract price pressures and support vulnerable households, in March 2022 the government announced new fiscal measures amounting to THB 77 billion (0.5 percent of GDP). The set of measures included energy subsidies, reductions in the fuel excise tax, transfer payments for low-income households and taxi drivers (including through the state welfare card scheme), a cap on electricity prices for lower-income households, and cuts to the employers' and employees' social security contributions (see Chapter 3 for more details). These

were followed by further measures to mitigate the impact of increases in the cost of living, announced in July. Despite these additional measures, overall spending declined slightly in FY22, as the response to COVID-19 tapered. Though some of the subsidy measures were targeted at lower-income households, subsidies on diesel and cooking gas incur a large relatively fiscal cost and tend to be relatively inefficient in terms of their impact on poverty reduction (see also Chapter 8).

Figure 1-3: The 1.5 trillion-baht loan decree was used primarily to fund relief measures.

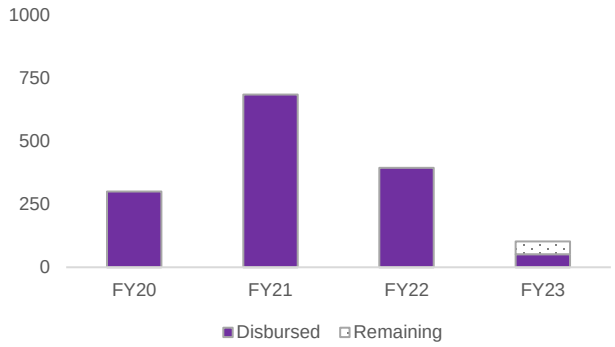
(Allocation of budget, % of fiscal year GDP)



Source: NESDC

Figure 1-4: The government has borrowed to finance off-budget fiscal stimulus in FY 2020 to FY 2003.

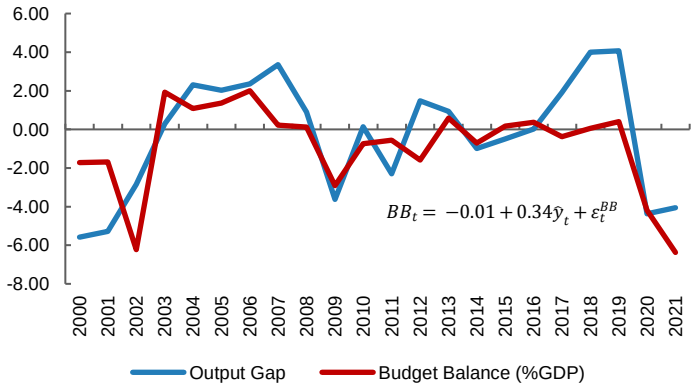
(THB Billion)



Source: NESDC

11. Prior to the pandemic, fiscal deficits had remained contained on average, with evidence of mild countercyclicality. Between 2003 and 2019, the budget was broadly balanced, with an average fiscal surplus of 0.2 percent of GDP, and the deficit peaking at just 2.2 percent of GDP in 2009. Since 2011, fiscal outcomes have remained within an even tighter +1 to -1 percent of GDP range. Nevertheless, a statistical regression analysis of the fiscal balance on the output gap suggests that the budget was mildly countercyclical even prior to the pandemic (Figure 1-5). This means that the net impact of public spending and revenue collection has been to stabilize the economy: supporting economic activity at times of weakness, and moderating growth when it is strong. This stabilizing influence is mainly due to the response of revenue, which tends to decline during downturns and increase during upswings, smoothing overall economic activity through these periods.

Figure 1-5: The fiscal stance was mildly countercyclical prior to the pandemic



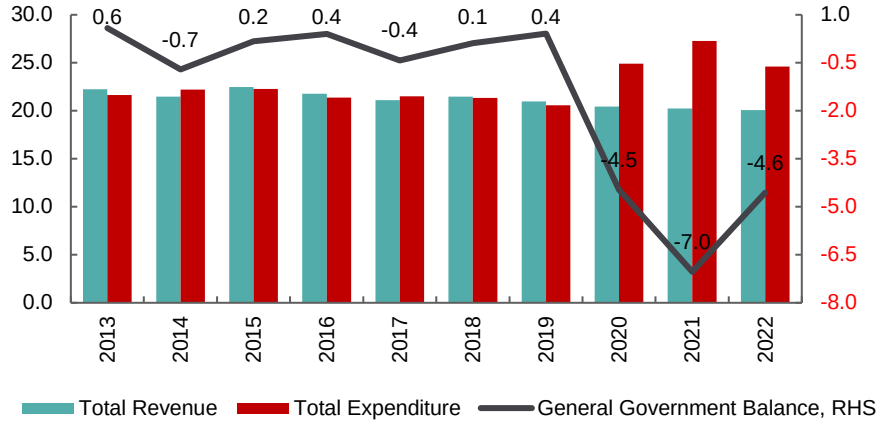
Source: Fiscal Policy Office, Ministry of Finance; World Bank staff calculation

Note: The equation showing the relationship between the budget balance and the output gap is estimated on pre-pandemic data from 2000 to 2019.

12. With revenues declining and spending sharply higher, the fiscal deficit widened substantially during the pandemic (Figure 1-6). The fiscal deficit widened to 7 percent of GDP in FY2021 as the authorities implemented large-scale fiscal support to shore up the economy. This was the largest deficit in Thailand since the late 1990s, when the deficit reached 9 percent of GDP due to the significant impact of the Asian financial crisis.

Figure 1-6: General Government Deficit

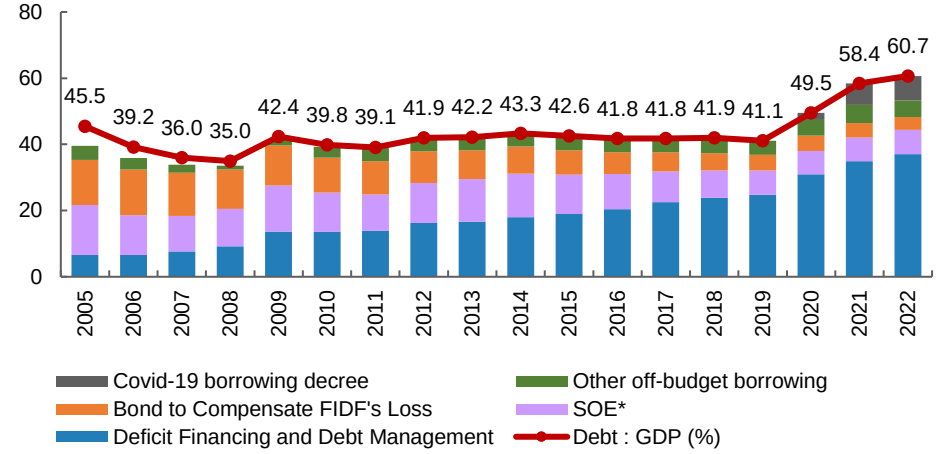
(% of fiscal year GDP, GFS basis)



Source: Fiscal Policy Office, Ministry of Finance; World Bank staff projections

13. The exceptional fiscal response to the pandemic saw total public sector debt rise by around 20 percent of GDP (Figure 1-7). Prior to the pandemic, Thailand's conservative fiscal policy had meant that public debt has declined since the early 2000s. Public debt remained stable at between 40-45 percent of GDP over the decade to 2019, well below statutory thresholds (see section 1.5), and relatively contained compared to regional and global benchmarks. But COVID-19 saw public debt rise to 60.7 percent of GDP at the end of September 2022, exceeding the previous peak of 57.8 percent of GDP in 2000. Around two-thirds of the increase in the debt ratio since 2019 was due to the increase in the primary deficit, with much of the remainder attributable to the sharp contraction in GDP in 2020. Government debt accounted for over 82 percent of total public debt, while SOE debt accounted for about 13 percent, and debts accrued by specialized financial institutions (SFIs) accounted for 5 percent.

Figure 1-7: Public Debt (% of GDP)



Source: PDMO

Note: Gap between 2005-2011 is FIDF Debt.

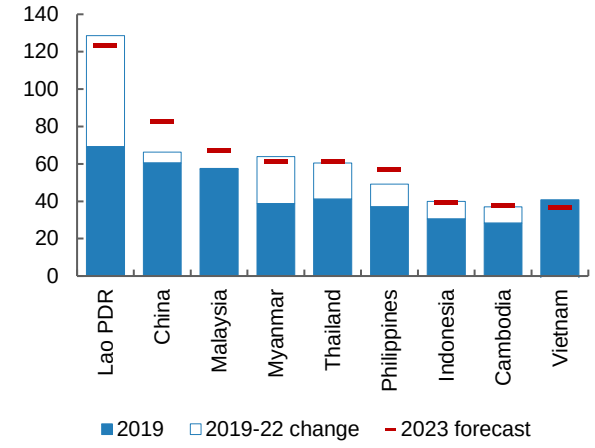
14. Accommodating the emergency policy response required temporary changes to the fiscal mandate, including raising the public debt ceiling from 60 to 70 percent of GDP. This change was consistent with the Fiscal Responsibility Act, under which the government is mandated to review and, if appropriate, revise the public debt ceiling at least once every three years (see section 1.5). Raising the ceiling allowed the government to fully utilize the THB 1.5 trillion in borrowing authorized for the COVID-19 response effort during FY2020-22.

15. Although public debt has risen to historically high levels, several factors mitigate the associated fiscal risks. Despite the sharp increase since 2019, public debt remains below levels in many peers (Figure 1-8), and domestic borrowing costs have not increased substantially, with real yields negative. As a result, debt service remains low as a proportion of

total revenue, at less than 15 percent. Only a small proportion of Thailand's public debt is denominated in foreign currency (Figure 1-9), and appetite for local-currency government debt has remained resilient. Moreover, almost 90 percent of public debt is held by Thai residents (Figure 1-10), and the average term to maturity is in line with emerging market averages (Figure 1-11). Together, these characteristics limit debt-related risks associated with capital outflows and exchange rate depreciation.

Figure 1-8: General Government Debt in Emerging EAP Economies

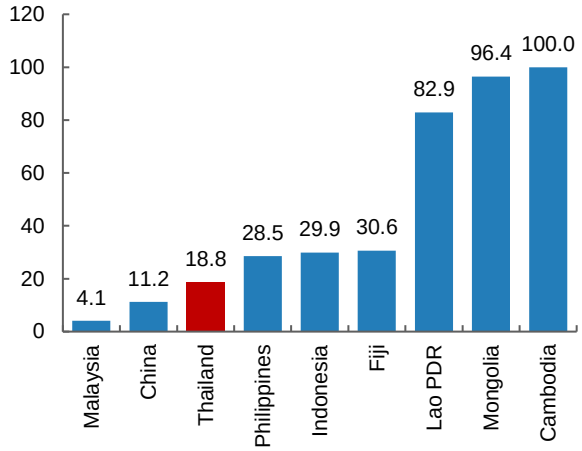
(Percent of GDP)



Source: IMF Fiscal Monitor Database

Figure 1-9: Share of Public Debt Denominated in Foreign Currency

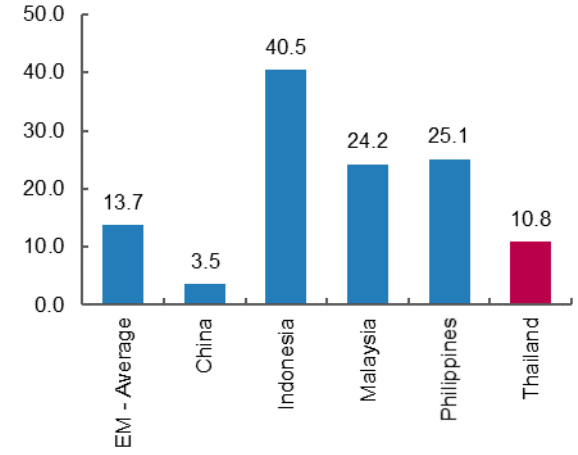
(Proportion of Total)



Source: World Bank East Asia and Pacific Economic Update April 2022

Figure 1-10: Non-Resident Holdings of General Government Debt, 2021

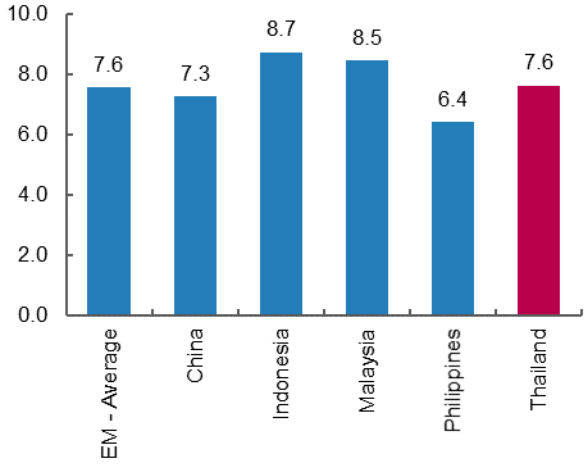
(Percent of Total)



Source: IMF Fiscal Monitor Database

Figure 1-11: Average Term to Maturity, 2022

(Years)



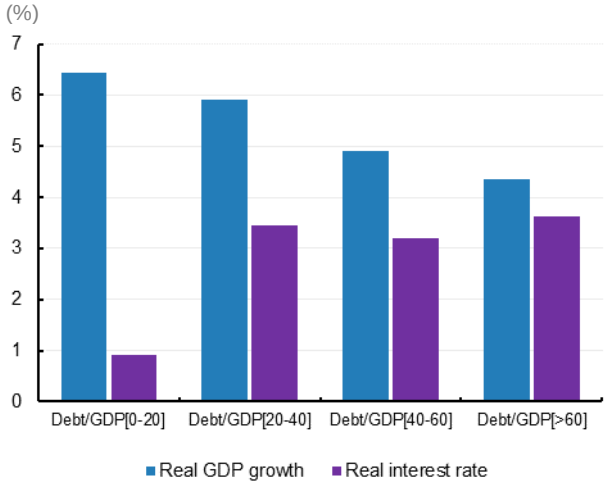
Source: IMF Fiscal Monitor Database

1.3 Options for medium-term fiscal consolidation

16. While risks currently remain manageable, fiscal consolidation will be required over the medium term to ensure public debt sustainability. In a 'no-consolidation' scenario in which primary fiscal deficits continue at the average level observed over the period from FY2020 to FY2022 (4.4 percent of GDP), public debt would increase to 80 percent of GDP by 2030, given current baseline assumptions for economic growth and interest rates. Hence – as recognized by the government's medium-term fiscal framework (FY2023-2027) – over the medium term it will be necessary to reduce the deficit from its recent levels. Even at public debt levels of around 60 percent of GDP, Thailand is subject to higher fiscal costs and risks than was the case prior to the pandemic when public debt stood at around 40 percent of GDP. These include:

- **Higher debt service costs**: even holding interest rates constant, a higher debt stock implies higher interest payments, with the potential to crowd out other public spending. A higher debt stock implies higher future amortization requirements and added pressure to either roll over maturing government debt or pay it down. Alternatively, higher debt implies higher net public financing needs, which again have the potential to crowd out other spending.
- **Higher risks of an adverse shift in interest rates and/or growth**: In EMDEs, interest rates are sensitive to fiscal deficits and risk premia on interest rates can increase suddenly (Subramanian and Felman 2021). Domestic market participants may demand higher yields to the extent that there are concerns about debt sustainability. Cross-country evidence indicates that higher debt stocks correspond to lower economic growth and higher interest rates. These in turn lower the maximum primary deficit a government can run while maintaining a stable debt level. In particular, higher debt stocks result in a commensurately higher risk that the interest rate (r) rises above the GDP growth rate (g) (Figure 1-12 and Figure 1-13). This worsens debt dynamics, as it implies that the growth in the overall debt burden due to cumulating interest charges exceeds the growth in the capacity of the economy to pay down this debt.

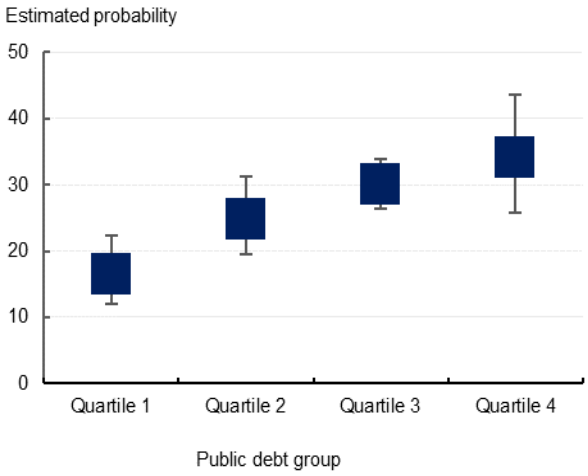
Figure 1-12: Higher government debt has corresponded to lower economic growth and higher interest rates



Source: World Bank EAP Update, April 2021

Note: The sample includes 50 developing (of which 10 EAP) countries with at least 10 observations on r–g and public debt over GDP over the period 2000–2019.

Figure 1-13: The probability that the interest rate rises above the economic growth rate increases with the level of debt



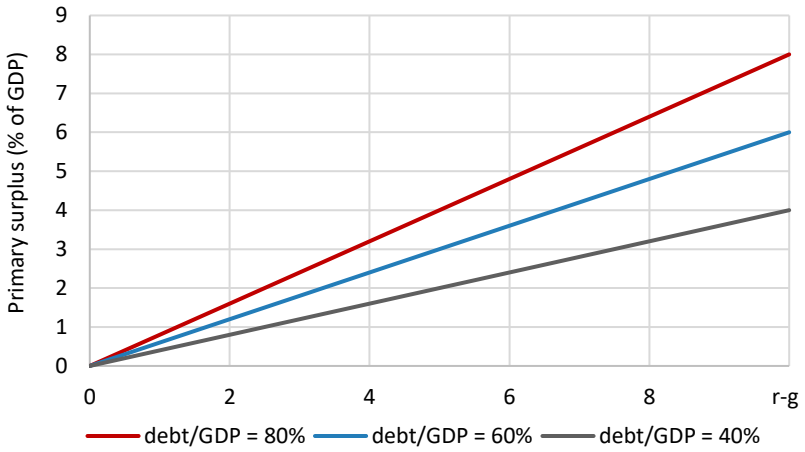
Source: World Bank EAP Update, April 2021

Note: Quartiles 1 – 4 refer to the quartiles of the public debt to GDP distribution, based on the same sample as the previous chart. For each quartile, the chart plots the estimated probabilities (and the associated 90 percent confidence intervals) that the average r-g over five years is positive, following at least two consecutive years of negative r-g.

- **Reduced fiscal space available to respond to a future economic shock**: In the case of an exogenous sharp rise in interest rates or reduction in growth (e.g., due to US monetary policy tightening) the minimum primary surplus that the government needs to run to keep debt stable at any given level rises at higher debt levels

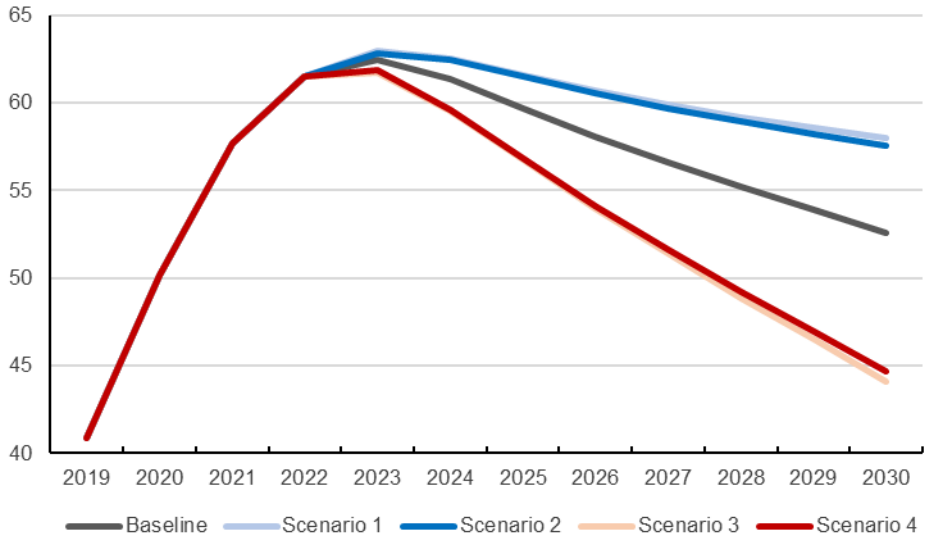
(Figure 1-14).[3] Being forced to run large primary surpluses to maintain debt sustainability is suboptimal during economic shocks, when fiscal stimulus is needed to stabilize the economy.

Figure 1-14: Minimum Primary Surplus Needed to Stabilize Public Debt to GDP



17. Nevertheless, to the extent that the economy can benefit from additional support, there is scope for the government to moderate the pace of its fiscal consolidation without jeopardizing debt sustainability. Here we use a customized macro-structural model to estimate the impacts of different fiscal consolidation paths, compared with the baseline in which public debt declines to 55 percent of GDP in 2028 (Figure 1-15). Four illustrative scenarios are run around this baseline (Table 1-1). Scenarios 1 and 2 model a fiscal consolidation that is *slower* than in the baseline, so that public debt declines to 60 percent of GDP by 2028 rather than 55 percent. In scenario 1, the consolidation is slower because *current* spending from 2023 onwards is higher than in the baseline projection (0.8 percentage points of GDP higher in 2028). In scenario 2, the consolidation is slower because *capital* spending is higher than in the baseline projection.[4] Scenarios 3 and 4 model a fiscal consolidation that is *faster* than the baseline, so that public debt declines to 50 percent of GDP by 2028.

Figure 1-15: Public Debt to GDP, Baseline and Medium-Term Fiscal Consolidation Scenarios



[3] Specifically, the required primary surplus to stabilize debt to GDP at any given level increases with the difference between the interest rate (r) and the growth rate (g) when r – g > 0.

[4] The quantitative adjustments to current and capital spending in these scenarios are calculated as those adjustments necessary to yield the corresponding debt paths in Table 1-1 and Figure 1-15.

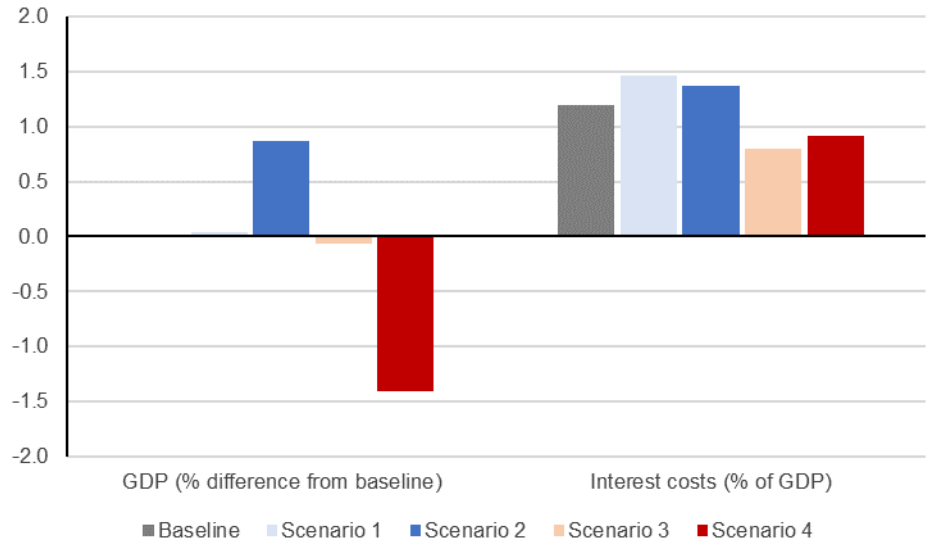
Table 1-1: Medium-Term Fiscal Consolidation Scenarios

% of GDP	**Current**	**Baseline** projection	**Sc. 1**: *Slower* consolidation, preserve current spending	**Sc. 2**: *Slower* consolidation, increase capital spending	**Sc. 3**: *Faster* consolidation, cut current spending	**Sc. 4**: *Faster* consolidation, cut capital spending
	2022	*----------2028----------*				
Debt	61.5	55	60	60	50	50
Revenues	20.4	20.8	**Increase current** spending by 0.8 ppts of GDP (relative to baseline projection)	**Increase capital** spending by 0.8 ppts of GDP (relative to baseline projection)	**Reduce current** spending by 1.2 ppts of GDP (relative to baseline projection)	**Reduce capital** spending by 1.2 ppts of GDP (relative to baseline projection)
Current primary spending	21.4	18.4				
Capital spending	3	2.6				

* Descriptions of Scenarios 1 through 4 are relative to the baseline projection.

18. A slower consolidation would result in higher GDP over this period, but also higher debt service costs.[5] The relatively higher rates of public spending associated with scenarios 1 and 2 add to overall demand, with multiplier effects as that spending recirculates in the economy. Additional public investment (scenario 2) also has a supply-side impact, increasing potential output over the medium-term. At the same time, the risks to fiscal sustainability associated with debt at 60 percent of GDP are expected to remain manageable, particularly if domestic appetite for baht-denominated debt remains robust. The main costs of a slower consolidation are larger debt service requirements and less fiscal space to respond to future shocks. Interest costs rise when the pace of consolidation is slower, both because the stock of debt remains higher for longer and because there is an endogenous increase in interest rates (Figure 1-16).

Figure 1-16: Impacts on GDP and Interest Costs in 2030 under Various Fiscal Consolidation Scenarios



19. The most 'growth-friendly' approach to fiscal consolidation would combine an increase in capital spending with a reduction in current spending (Scenario 2). Under this scenario, current spending would stabilize over the medium term at about 1 percentage point of GDP higher than pre-pandemic averages. This implies a decline of 3 percentage points from 2022 levels, consistent with an unwinding of pandemic-related spending measures. Capital spending, on the other hand, would increase slightly from 2022 levels (rather than declining as it does in the baseline). In this scenario, average annual GDP growth would be around 0.1 ppt faster over the period 2023-30, and the level of GDP would be almost

[5] MFMod (the World Bank macro model) is a macrostructural model, which has been customized for Thailand. It builds out various interactions between fiscal and monetary policy, economic aggregates such as labor, GDP, the current account balance and prices and the supply of the economy in terms of potential GDP via capital stocks and structural employment.

1 ppt higher in 2030. Conversely, a faster fiscal consolidation driven by additional constraint in capital spending (Scenario 4) would significantly reduce GDP. On the other hand, Scenarios 1 and 3 show that the GDP impacts of adjustments to current spending are estimated to be only marginal.

20. There are several reasons why the economic returns to public investment are larger than the returns to current spending. First, while both public investment and public consumption directly impact domestic demand, some current spending takes the form of cash transfers rather than consumption. Cash transfers – a particularly important part of the response to COVID-19 – raise household incomes but have less of a direct impact on GDP to the extent that a portion of the transfer is saved rather than spent. Compared with public investment, public consumption is also more likely to leak to imports, limiting its impact on GDP. Second, public investment is more likely to boost the productive capacity of the economy over the medium term, including by 'crowding in' private investment. On the other hand, public consumption is more likely to be inflationary, prompting a monetary policy response. The model estimates indicate that the short and medium-term multipliers associated with a marginal increase in public investment spending are indeed larger than those associated with an equivalent increase in current spending.

21. Overall, the analysis indicates that increasing public investment spending from current levels over the medium-term would allow a more growth-friendly fiscal consolidation. Increasing public investment spending from 2.6 percent of GDP (2017 to 2022 annual average) to 3.3 percent annually from 2023-28 would support domestic demand in the short-term – in the context of a still-fragile recovery from recent economic shocks – while raising potential output over the medium term. Doing so would imply a slower fiscal consolidation than would otherwise be the case, but the debt-related costs and risks associated with this path are expected to be manageable.

22. The longer-term fiscal analysis that follows in the next section incorporates the fiscal and growth impacts of this medium-term increase in public investment spending. The longer-term "reform" scenarios presented in Section 1.5 are fully consistent with a slower consolidation in the medium-term, with public debt still at around 60 percent of GDP in 2028 (i.e. in line with Scenario 2), and public investment increasing over the same period as described above. Chapter 3 provides a more detailed rationale for increased public investment spending, given declines in infrastructure quality over the past decade. It also provides an overview of the public investment pipeline and the opportunities that exist to overcome bottlenecks currently delaying public investment projects.

1.4 Meeting structural spending needs

23. There are several policy areas – including education, social protection, and climate adaptation – where increased spending is a near-term priority. Increased spending in these areas is needed as soon as possible to promote better outcomes now and to establish the conditions for stronger, more resilient, and more inclusive economic growth over the longer term. Education spending at the pre-primary and secondary level is comparatively low and learning outcomes are weak relative to peers: higher spending at these levels has the potential to drive the necessary improvements in education quality and raise the level of human capital over the longer term. With respect to social assistance, Thailand's response to COVID-19 was impressive but temporary. A permanent, targeted increase in the Old Age Allowance and other social welfare benefits has the potential to significantly improve the lives of Thailand's most vulnerable after the worst impacts of the pandemic recede, at a manageable fiscal cost. Finally, increased investment in climate adaptation is required as a matter of priority to mitigate the inevitable social and economic costs of climate change, to which Thailand is particularly vulnerable given its long coastlines, fragile agricultural systems and susceptibility to extreme weather events.

24. Looking forward and beyond the pandemic period, spending needs will also rise relative to pre-COVID levels because of a rapidly aging population. There will be pressure to increase the availability and quality of public health services and social protection mechanisms (including pensions) in line with changing demographics, and to support inclusive growth. The challenge will be to pursue these various objectives while ensuring that overall spending remains sustainable, and that the fiscal incidence of taxation and public spending is consistent with an inclusive development path.

25. This section analyzes the long-term fiscal paths implied by revenue and expenditure policy measures that attempt to address this challenge. The rationale for these particular policy measures and the quantification of their longer-term fiscal impacts is outlined in more detail in the chapters that follow. They include: i) tax reforms (Chapter 2); ii) increasing the efficiency of health spending (Chapter 4); iii) increasing the efficiency and adequacy of education spending

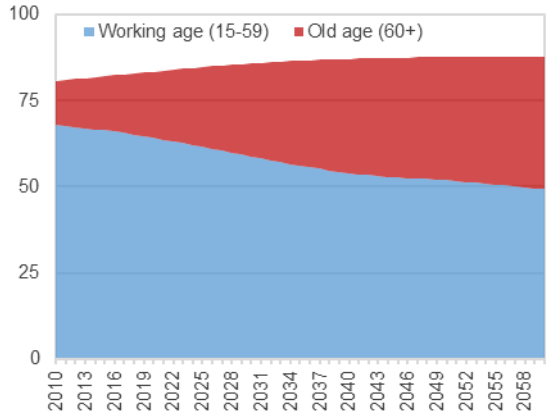
(Chapter 5); iv) increasing the Old Age Allowance (Chapter 6); v) raising other social assistance spending (Chapter 6); and vi) adopting spending and revenue policy measures that respond to a changing climate (Chapter 7). This section begins by assessing key aging-related challenges to the fiscal accounts and long-term growth, which are captured by the baseline projection. The marginal impacts of each of these revenue and expenditure reforms on this baseline projection are then analyzed in turn. Finally, we assess the cumulative impact of these reforms (taken together) on longer-term fiscal sustainability, and the sensitivity of these fiscal projections to different assumptions for longer-term economic growth.

The Fiscal Impacts of Aging and Implications for the Baseline Projection

26. A rapidly aging population will directly lead to increased spending needs, through rising public pension and healthcare costs. The number of people aged 60 or older has been increasing and this trend will continue until 2050 (Figure 1-17). Under the baseline projection, the combined fiscal cost of the Old Age Allowance (OAA) and civil service pensions are projected to rise from 1.8 percent of GDP in 2019 to 3.6 percent in 2050, assuming that the per recipient size of these benefits increases with GDP per capita. This is without allowing for any discrete increase in the OAA, which is currently among the lowest social pension benefits in the world (World Bank, 2021).[6] The total fiscal cost of healthcare is projected to rise from 2.9 percent of GDP to 3.5 percent over the same period as the incidence of non-communicable diseases continues to rise, costs associated with new medical technologies and procedures increase, and the increasing numbers of elderly require additional spending on healthcare (Figure 1-18 and see Chapter 4 for more details).

Figure 1-17: Share of working age and aging population

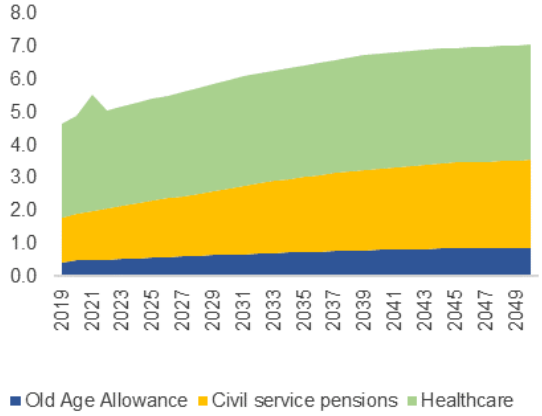
Percent share of total population



Source: WB analysis, data from UN

Figure 1-18: Aging-related spending and healthcare costs versus rising share of elderly

Left: Percent of GDP, Right: Percent of total population



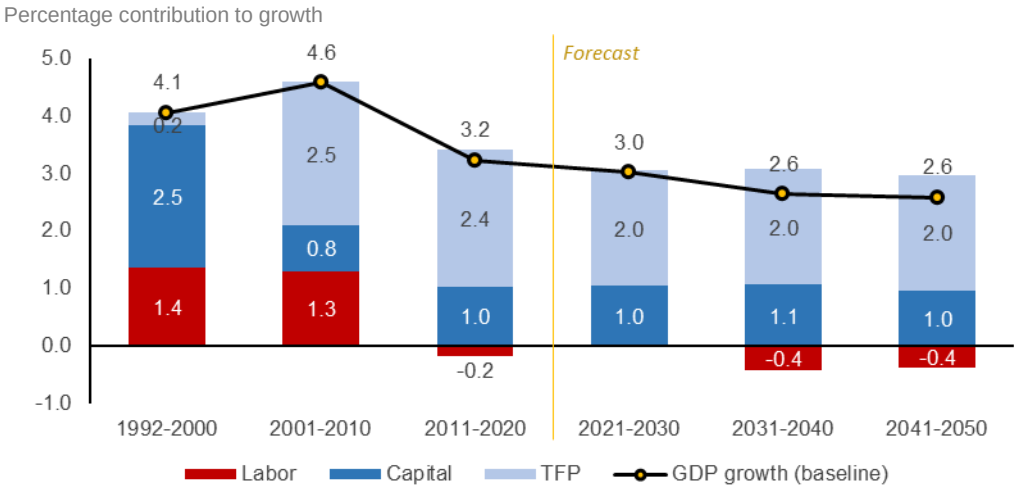
Source: WB analysis, data from UN, IMF, WHO, DOP

27. Aging also acts to constrain potential growth, which, in the absence of offsetting measures, will make it more difficult to maintain fiscal sustainability. Since 2003, Thailand's growth rate has been below the average growth rate of upper-middle-income countries (World Bank, 2021).[7] This is partly due to sluggish investment in physical capital and slower human capital growth. Looking ahead, long-term projections based on the Long-Term Growth Model (LTGM) show that growth is expected to decline over the coming decades, from 3.2 percent on average in 2011-2020 to 2.6 percent in 2041-2050 (Figure 1-19). The decline in population growth and the working-age to population ratio account for more than one-third of the projected decline in GDP growth over this period. Slowing growth has fiscal implications to the extent that it makes it more difficult to raise the revenues required to match spending needs.

[6] Lamanna, F. and J. Sharpe. 2021. Towards Social Protection 4.0: An Assessment of Thailand's Social Protection and Labor Market Systems. Washington, D.C.: World Bank.

[7] Bandaogo, M. and R. Van Doorn. The Macroeconomic and Fiscal Impact of Aging in Thailand. Washington, D.C.: World Bank.

Figure 1-19: Contribution to long-term growth – baseline

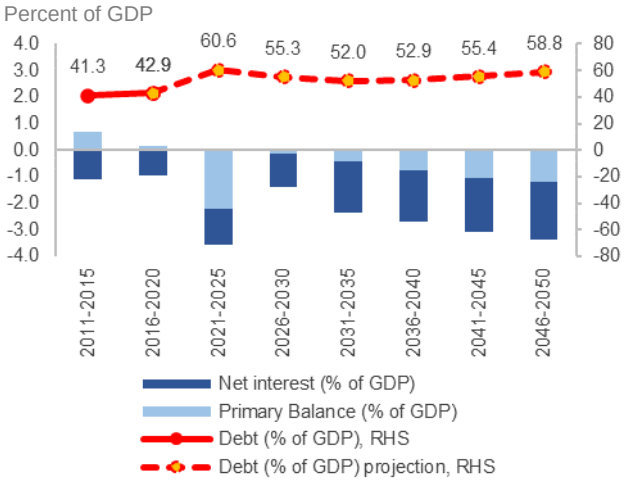


Source: WB analysis

28. Under the baseline projection, which accounts for these impacts of aging, public debt does not return to pre-pandemic levels over the forecast horizon. Public debt is projected to remain between 50 to 60 percent of GDP, with the impact of rising spending pressures offset by the projection of ongoing (albeit slower) economic growth (Figure 1-20 and Figure 1-21). In the absence of reforms, revenue collection is assumed to continue to remain stable over the forecast horizon at just under 21 percent of GDP. In contrast, primary expenditures are expected to increase over the forecast horizon from 19.5 percent of GDP in 2019 to 22.1 percent in 2050, mainly due to the impacts of aging noted above.

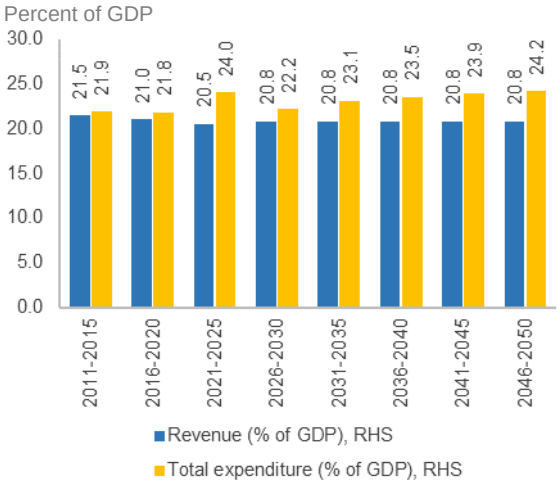
29. This baseline projection does not incorporate additional longer-term expenditure needs in the areas of social assistance, education, or climate adaptation. Nor does it account for potential reforms to increase revenue mobilization. The fiscal impacts of each of these policy measures are estimated below.

Figure 1-20: Public debt stock and general government balance under the baseline projection



Source: WB analysis, data from FPO, PDMO

Figure 1-21: In the baseline, fiscal revenues remain stable while expenditures rise



Source: WB analysis, data from FPO, PDMO

Revenue Reforms (see Chapter 2)

30. Revenue collection in Thailand lags its regional, income level, and aspirational peers. As previously noted, tax revenues and overall revenues have been stable at around 16 percent and 21 percent of GDP respectively over 2016-2020, lower than in structural peers and upper-middle income countries. The tax gap is estimated to be around 5.6 percent of GDP. This gap can be narrowed by pursuing reforms to: (a) adjust the VAT rate and exemptions; (b) broaden the personal

income tax base and streamline allowances, (c) improve tax compliance on e-commerce; and (d) expand property tax collection.

31. By implementing these measures at a gradual pace over the remainder of the decade, revenue could increase to 24.3 percent of GDP by 2030 from 20.9 percent in the baseline scenario (Figure 1-22).[8] Among the reforms proposed, several could be implemented relatively quickly from a technical perspective, including increasing the VAT rate, streamlining VAT exemptions, and rationalizing personal income tax allowances. Others – such as broadening the personal income tax base, and increasing property tax collections – are likely to take longer, to the extent that they require changes to slower-moving variables such as compliance and informality rates, or improvements in administrative capacity. In this report, we allow for a relatively gradual implementation of revenue reforms, given that Thailand's economic recovery from recent shocks is still somewhat fragile (as at the end of 2022), and acknowledging that some of the measures proposed will require more time than others that are more 'stroke of the pen' in nature. Nevertheless, as Thailand has a comparatively sound fiscal position currently, even such a gradual increase in revenues over the next eight years would create the required fiscal space for additional spending now (see section 1.5).

32. Raising the VAT rate and removing exemptions could substantially increase tax revenue and would also be progressive. Thailand collects significantly less VAT than expected given its income. This is largely because the rate of 7 percent is among the lowest of upper-middle income countries. Raising the VAT rate from 7 percent to 10 percent is estimated to raise revenue by up to 1.6 percent of GDP. The low VAT base is another driver of low tax potential, largely attributable to the prevalence of exemptions, relatively low level of consumption, and high rates of informality. Exempted products and services are estimated to account for around 19 percent of GDP; removing these exemptions could result in additional tax revenue of around 0.6 percent of GDP. The combination of an increase in the VAT rate to 10 percent and removal of exemptions is estimated to raise revenue to GDP by 2.4 percent.

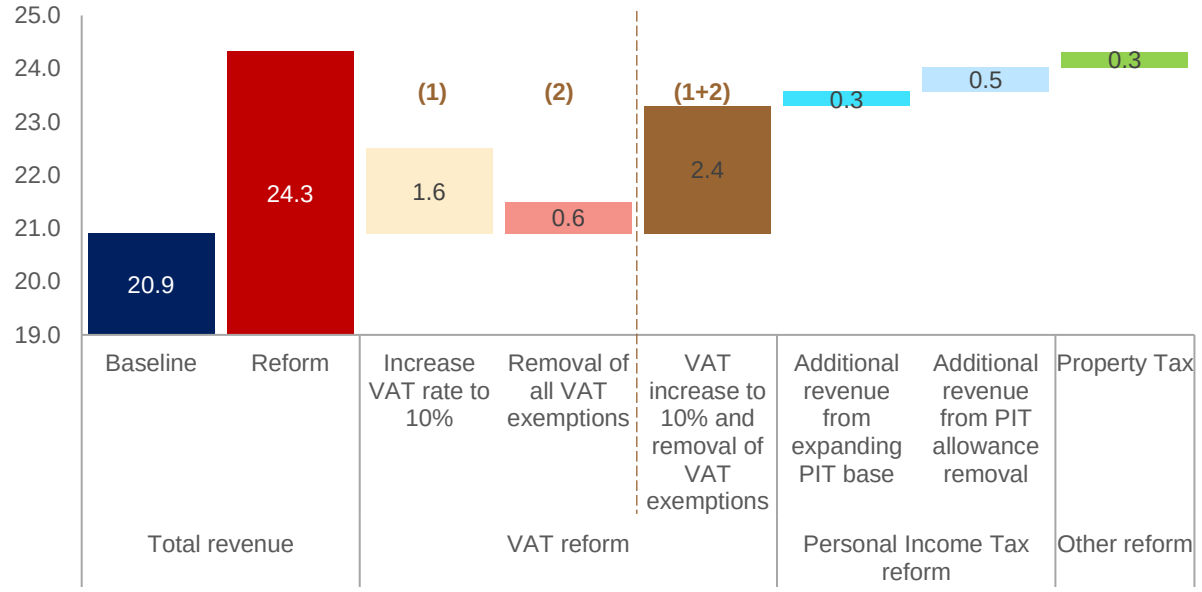
33. Personal income tax (PIT) revenue can be raised by addressing compliance issues and streamlining allowances and deductions. At around 1.8 percent of GDP, personal income tax revenues in Thailand are in the bottom 20th percentile of upper-middle income countries. This is because i) the tax base is narrow, with a low share of personal income taxpayers and low rates of filing from non-salary workers; ii) informality rates are relatively high; and iii) despite a high-top marginal tax rate of 35 percent, effective tax rates are low due to generous tax incentives and allowances. The analysis in Chapter 2 indicates that Thailand has the potential to raise personal income tax (PIT) revenue by 0.7 percent of GDP by incentivizing tax filing and compliance, and by removing most income tax deductions and allowances, many of which are regressive to the extent that they tend to benefit high-income earners only.

34. Property tax is a low-distortion, growth-friendly tax instrument, but Thailand's property tax collections prior to the pandemic were relatively low at 0.2 percent of GDP, below the UMIC average of 0.5 percent. This gap could be closed by ensuring regular updates of the appraisal value and adopting simplified valuation approaches based on market values.

[8] The impact of additional revenues from carbon pricing in the manufacturing sector are excluded from this projection, as over the longer term they would be broadly offset by the cost of other climate mitigation measures proposed in this report.

Figure 1-22: Additional revenue from each reform effort versus baseline

2030, percent of GDP



Source: WB analysis

Health Reforms (see Chapter 4)

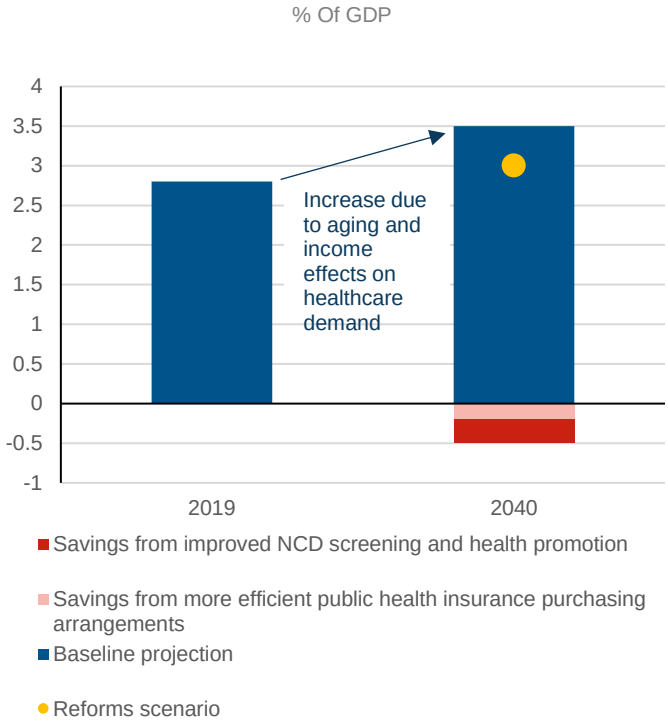
35. With pressures on the health system expected to rise, the continued achievement of good health outcomes will require a combination of additional resources and efficiency gains. Thailand's aging population and rising incidence of NCDs is likely to see public health costs escalate over time. The introduction and expanded use of new drugs, procedures, and other medical technologies – alongside growing pressure to cover these in public health insurance schemes – will put further upward pressures on health spending.

36. A more integrated service delivery system would allow a more effective response to the chronic care needs of an aging population, and result in better management and control of non-communicable diseases (NCDs). In particular, better integration would facilitate improved screening of hypertension and diabetes and the provision of follow-up care to outpatients. This in turn could help reduce financing needs, by reducing the need for complex later-stage NCD treatments that are more costly than prevention or routine care.

37. The design of public health insurance purchasing arrangements and mechanisms could also be improved. Steps should be taken to ensure that the management of the Civil Service Medical Benefits Scheme (CSMBS) and other schemes has the expertise required to implement strategic purchasing. Three reforms to the CSMBS have the potential to increase efficiency: (i) require that beneficiaries select and register with a contractor provider; subsequently, (ii) change the provider payment for outpatient services from retrospective fee-for-service to prospective risk-adjusted capitation payment; and (iii) change the budget from open-end to close-end.

38. These reforms would improve spending efficiency and reduce costs. It is estimated that these specific reforms, taken together, could reduce total public health spending needs from 3.5 percent of GDP in a 2040 baseline scenario to 3.0 percent, which is only slightly higher than current public health spending of 2.8 percent of GDP (Figure 1-23).

Figure 1-23: Public health spending in baseline and reform scenarios



Education Reforms (see Chapter 5)

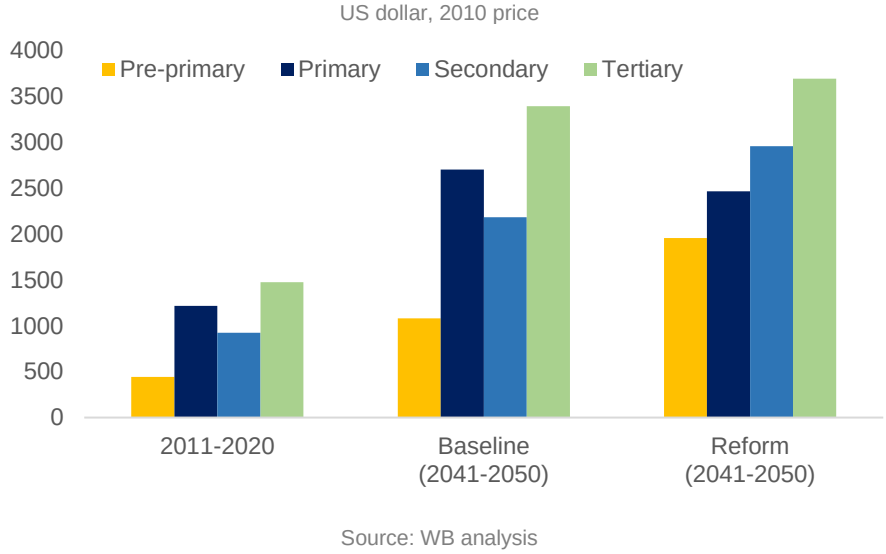
39. Boosting Thailand's growth potential and facilitating its shift into a high-income economy will require a focus on raising productivity by developing human capital and skills. Thailand's quality of human capital is lagging its regional peers, in part because of poor education outcomes. Despite a large increase in per-student spending, Thai students' performance in the PISA mathematics and science assessments remained stagnant at low levels between 2000 and 2018, and declined significantly in reading.

40. Poor education outcomes are explained by inefficiencies in the way education spending is allocated across levels, as well as inadequacy of the overall spending envelope. In particular, spending per primary student is high relative to international benchmarks, mainly because there are a large number of inefficiently small and under-resourced primary schools. On the other hand, spending at the pre-primary and secondary level is comparatively low.

41. In the education reform scenario, the school network is reorganized to consolidate small schools and ensure that primary students have access to the teachers and resources they need to learn effectively. Savings from this school reorganization – which would largely be reflected in a reduction in per-student primary spending – would then be reallocated to other levels. But this reallocation would only provide a portion of the resources necessary to bring pre-primary and secondary spending to international benchmarks, as envisaged in the reform scenario. Additional resources would be drawn on to ensure the adequacy of overall education spending (Figure 1-24).

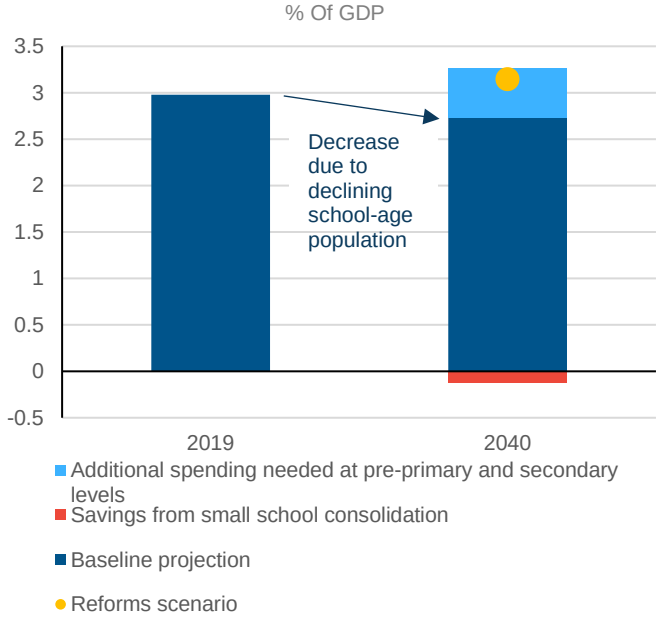
42. Though the implementation of these reforms requires additional spending on education, the positive impacts on human capital are expected to ultimately drive faster potential growth. These reforms would require additional annual education spending of around 0.5 percent of GDP. At the same time, the reforms would be expected to improve test scores and education quality, which in turn would boost human capital over the longer term as graduating students enter the workforce. Ultimately this increase in human capital would help to drive faster GDP growth: 2.9 percent on average from 2025 to 2050, as compared with the baseline projection of 2.7 percent.

Figure 1-24: Public spending per student in the baseline versus education reforms



Source: WB analysis

Figure 1-25: Public education spending in baseline and reform scenarios



Increasing the Old Age Allowance (see Chapter 6)

43. In 2019, the OAA covered 9.1 million elderly, or around 71 percent of the over-60 population, but the amount of the benefit is very low. In 2018, the OAA represented just 8.9 percent of average household consumption and the benefit level of THB 600-1,000 per month is far below the national poverty line. If the OAA was to increase with GDP per capita, OAA spending would increase from 0.4 percent of GDP in 2019 to 0.9 percent by 2050 as the population ages and the number of recipients increases, but the benefit provided would remain very low by international standards, and fail to compensate for the inadequate coverage provided by Thailand's social insurance schemes.

44. Increasing the OAA to the poverty line for all recipients would be an expensive reform: similar impacts on poverty and inequality can be achieved with a more targeted and less expensive approach. Increasing the OAA benefit – so that the benefit amount is equivalent to the national poverty line of 2,329 baht per month – would increase the cost of the scheme to 2.9 percent of GDP by 2040. Poverty and inequality (as measured by the Gini Index) would be lower by 2.7 points and 1.5 points, respectively. Increasing the OAA benefit to poorer beneficiaries to 2,000 baht per month, while

tapering or leaving the current allowance unchanged for higher income recipients, would be a much more cost-effective reform option. OAA spending would rise to 1.5 percent of GDP by 2040, while the impact on poverty and inequality would only be marginally lower.

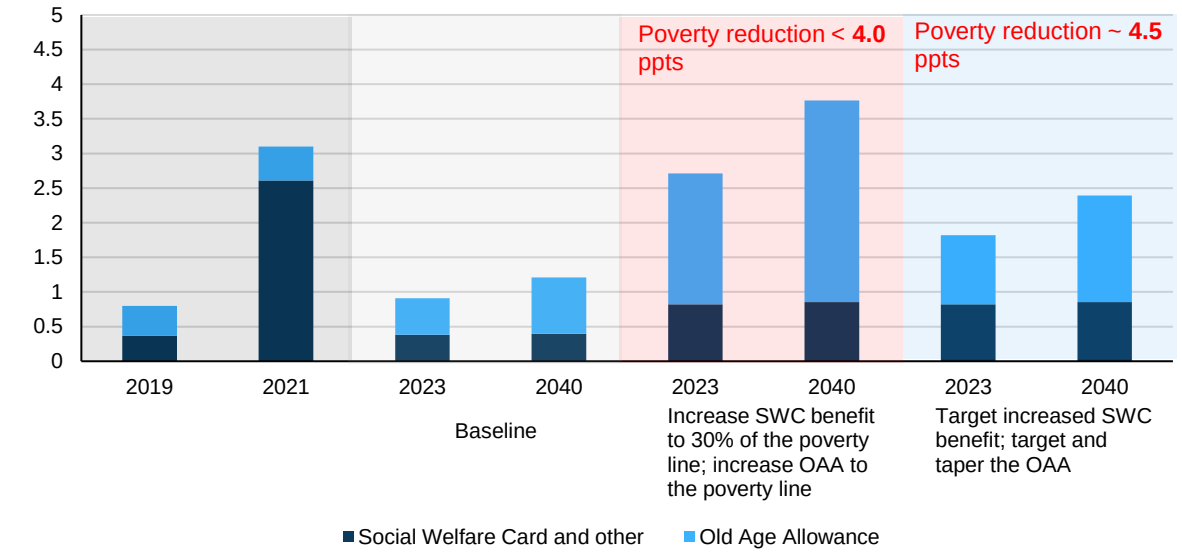
Increasing other Social Assistance (see Chapter 6)

45. In 2020, spending on social assistance was more than tripled to mitigate the impact of COVID-19 but this remarkable response is only intended to be temporary. Spending on social assistance excluding the OAA is projected to return to the level prior to the pandemic under the baseline projection, well below the EAP average, and significantly below the average for countries with similar GDP per capita. Given such low benefit levels in absolute terms and relative to household consumption, it is important to consider reform options that provide sufficient benefits to the lower income households, in a more targeted manner. There is now an opportunity to permanently expand social assistance and reduce fragmentation across programs, improving efficiency and impact. Increasing benefit amounts to be more in line with international benchmarks would not only lead to a greater impact on poverty, but it would also lead to positive impacts on productive work and long-term growth via human capital formation.

46. Increasing the benefit to the State Welfare Card holders would require an increase in social assistance spending: this increase would be much more cost-effective if targeting was improved. Benefit payments to State Welfare Card holders are one of the main government tools to protect the most vulnerable. Current SWC payments range from THB 200 to THB 300 per month, depending on the beneficiary's household income, which is only a fraction of the poverty line. Raising the benefit levels to 30 percent of poverty line (i.e. THB 700 per month) while keeping the current beneficiaries unchanged would lead to an increase in social assistance spending (excluding OAA) from 0.4 percent of GDP in 2019 to 0.8 percent of GDP. As a result, it will reduce poverty by 1.9 points and inequality by 0.9 points. But an improvement in targeting which increases the coverage of the bottom 40 percent (while keeping the overall number of beneficiaries constant) would lead to a significant additional impact on poverty reduction (over 1 ppt) at the same cost.

47. The recommended targeted OAA and State Welfare Card reforms would require higher spending, but could have substantial impacts on poverty reduction (Figure 1-26). The targeted OAA and SWC reforms outlined above are projected to cost 2.4 percent of GDP in 2040, significantly above the 1.2 percent of GDP projected in the no-reform baseline. However, this cost would be significantly lower than the cost of implementing untargeted alternatives (3.8 percent of GDP in 2040). At the same time, the targeted approach is likely to have a larger overall impact on poverty reduction (4.5 ppts versus less than 4.0 ppts with untargeted payments), reflecting the distributional benefits of capturing a larger proportion of poorer recipients and excluding those beneficiaries who are less in need of the assistance.

Figure 1-26: Social Assistance scenarios



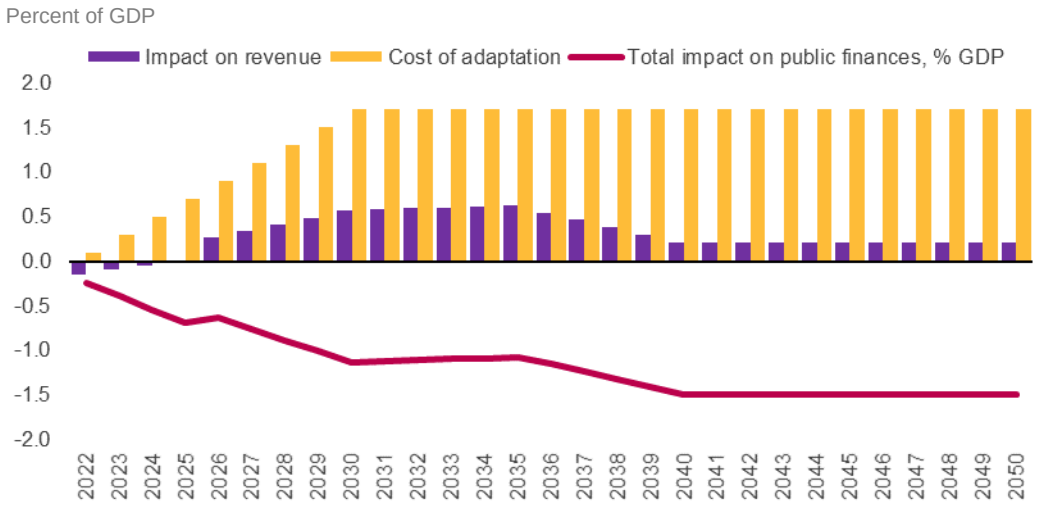
Source: WB analysis,

Responding to a changing climate (see Chapter 7)

48. Thailand is highly vulnerable to climate change: fiscal policy can play a critical role in adapting to its impacts, and in reducing Thailand's carbon emissions. With its long coastlines, fragile agricultural systems and susceptibility to extreme weather events, Thailand is ranked as the third most vulnerable country in Southeast Asia to climate change, and the eighth most vulnerable country in the world. While Thailand is not a large emitter of greenhouse gas emissions, in the absence of further policy action its emissions will increase as its economy grows. Reductions in carbon emissions can be achieved by combining well-designed tax policies that raise the price of carbon with regulatory and other non-tax instruments. The revenues raised from these instruments could be used to support other climate policies, including climate adaptation investments which would reduce the considerable economic costs of climate change and bring a range of other benefits.

49. The overall fiscal cost of responding to climate change could be 1 percent of GDP annually by 2030 and 1.5 percent by 2040. The cost of climate adaptation in Thailand will depend on the policy mix, but based on cross-country analysis it could increase from near zero today to 1.6 percent of GDP in the 2030s. As most adaptation measures are public goods, much of this cost is likely to be borne by the government. The cost of other (largely mitigation) measures is projected to be broadly offset by positive revenue impacts from carbon pricing. A carbon price to reduce emissions in the manufacturing sector could raise up to 1 percent of GDP in additional revenues by 2040. Revenues from fuel excises would also rise in the near term with the introduction of duties that reflect the carbon content of fuel, but would subsequently fall as vehicles are electrified in line with government targets. Excise duties from car purchases would also decline given that lower tax rates are applied to low-carbon vehicles. It is assumed that other climate-related costs, including in the transport and forestry sectors, will require comparatively modest net public contributions over the longer term (there would be some medium-term costs involved in incentivizing the switch to electric vehicles). Based on these assumptions, the net cost of climate change to Thailand's public sector will be around 1 percent of GDP by 2030, rising to 1.5 percent by 2040 (Figure 1-27).

Figure 1-27: Climate adaptation revenue and fiscal cost



Source: WB analysis

1.5 Implications for longer-term fiscal sustainability

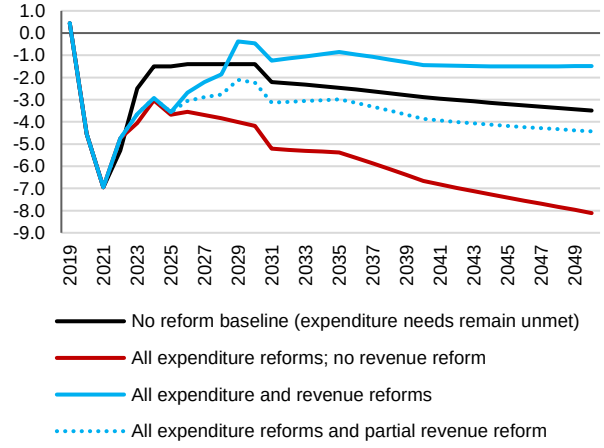
50. The key message of this report is that meeting Thailand's longer-term public spending needs while maintaining debt sustainability will require an increase in revenue. In the absence of revenue reforms, the additional expenditures required to implement all of the reform options in the areas of social assistance, education and climate adaptation outlined above could cause the fiscal deficit to exceed 8 percent of GDP and the public debt stock to increase to 115 percent of GDP in 2050 (Figure 1-28 and Figure 1-29). On the other hand, with efforts on tax reform, revenue collection could rise by around 3.5 percentage points of GDP (to 24.3 percent), and these expenditures could be covered even as public debt declines to below 2023 levels over the long term. Less effort on the revenue mobilization or spending efficiency

front would lead to commensurately higher deficit and debt levels: in a scenario in which the revenue effort was only half of what is assumed in the 'all reforms' scenario, debt would rise above 70 percent of GDP by the end of the projection period. Note that fiscal consolidation in the 'all reforms' scenario is slower than in the baseline over the next five years, consistent with the more growth-friendly (and higher capital spending) medium-term trajectory described above.

51. While revenues ultimately need to rise, Thailand has the fiscal space to increase spending in critical areas immediately while pursuing revenue reforms more gradually. In the all reforms scenario depicted in Figures 1-28 and 1-29, the recommended increases in spending on public investment and social assistance are assumed to be fully implemented in 2023, while spending on climate adaptation quickly scales up from 2023 onwards. But revenue reforms are assumed to be implemented more gradually, so that revenues rise steadily over the remainder of the decade and reach their peak of 24.3 percent of GDP only by 2030. Theall reforms scenario shows that committing to such a gradual increase in revenues over the next eight years would create the required fiscal space for additional spending in priority areas now, with debt not rising substantially above current levels in this scenario.

Figure 1-28: Impact of reforms on the fiscal balance

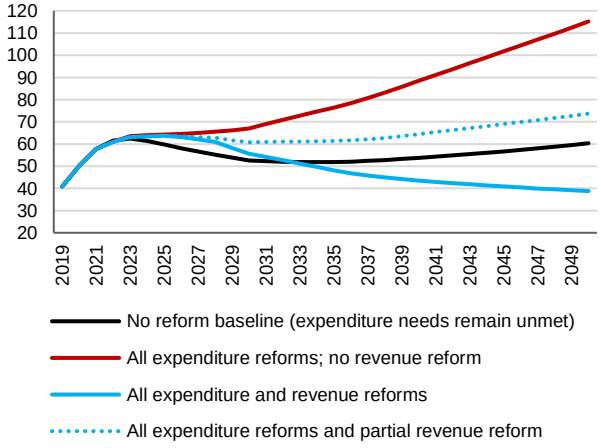
Percent of GDP



Source: WB analysis

Figure 1-29: Impact of reforms on public debt

Percent of GDP



Source: WB analysis

Note: "No reform baseline" denotes a scenario in which revenues remain stable at 2022 levels and identified spending needs in social assistance, education and climate adaptation remain unmet.

Table 1-2: Impact of revenue and expenditure reforms on fiscal outcomes (percent of GDP, and ppt deviation from baseline)

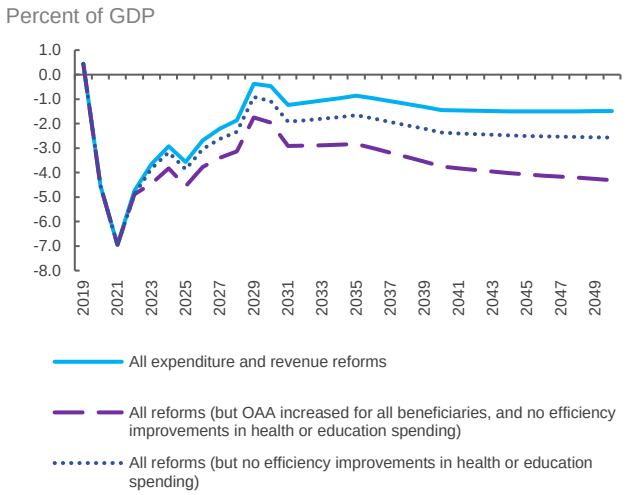
		All spending reforms*, no revenue reform		All reforms, including revenue reform	
	2019	2030	2050	2030	2050
Revenue	20.9	**21.3**	**20.6**	**24.3**	**24.5**
		+0.5	-0.2	+3.5	+3.7
Primary Expenditure	19.5	**24.1**	**24.5**	**24.1**	**24.5**
		+3.1	+2.5	+3.1	+2.5
Primary surplus/deficit	1.5	**-2.8**	**-3.9**	**0.2**	**0.0**
		-2.6	-2.7	+0.4	+1.2
Public debt	40.9	**67.0**	**115.2**	**55.6**	**38.8**
		+14.5	+54.9	+3.1	-21.6

*All spending reforms include an increase in public investment through to 2030, consistent with the slower medium-term fiscal consolidation path described above.

52. Of the potential spending reforms assessed in this report, the level and targeting of the Old Age Allowance is the most important determinant of the public debt trajectory. Lifting the OAA close to the poverty line for all beneficiaries (to THB 2000 per month) would put significant additional pressure on the fiscal position and debt trajectory, compared with the 'all reform' scenario which assumes that the increased OAA is only provided to poorer recipients (Figure 1-30 and Figure 1-33). It is therefore important to explore more targeted approaches to the OAA which would have similarly large impacts on poverty and inequality, but at a much more manageable fiscal cost.

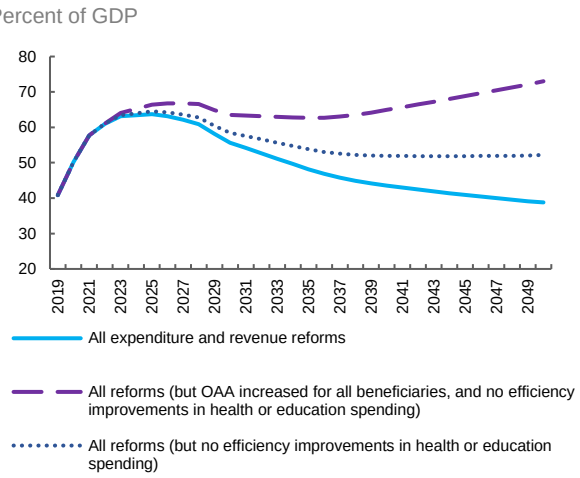
53. Improving the efficiency of spending on health and education is also important to keep the public debt trajectory contained. The health and education reforms included in the 'all reforms' scenario include measures to improve the efficiency of spending, including by improving the healthcare service delivery system and public insurance purchasing arrangements, and by consolidating small schools and providing primary students with better access to teachers and educational resources. Failing to achieve these efficiency gains would also result in increased fiscal pressures over time (Figure 1-30 and Figure 1-33).

Figure 1-30: Impact of spending efficiency on the fiscal balance



Source: WB analysis

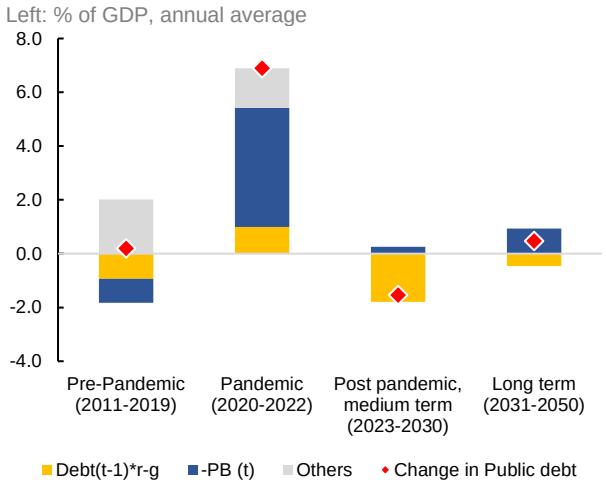
Figure 1-31: Impact of spending efficiency on public debt



Source: WB analysis

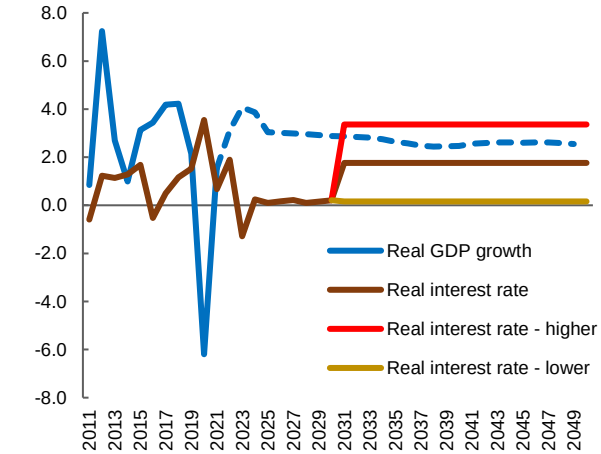
54. Beyond revenues and spending, another important determinant of fiscal sustainability is how deficits are financed. In addition to the primary balance, changes in the public debt to GDP ratio are also dependent on the difference between the interest rate (i.e. the average rate paid on the overall public debt stock) and the rate of economic growth. If the cost of financing were to rise, debt dynamics will worsen for any given primary deficit and GDP growth rate (see Figures 1-32 and 1-33). Nevertheless, to the extent that Thailand's public debt remains predominantly baht-denominated and held by Thai residents, with a long term to maturity, exposure to exchange rate and interest rate shocks should remain manageable. Innovative green financing options such as sustainability bonds and REDD+ financing may also help to reduce the overall cost of public financing.

Figure 1-32: Drivers of debt to GDP path



Source: WB analysis

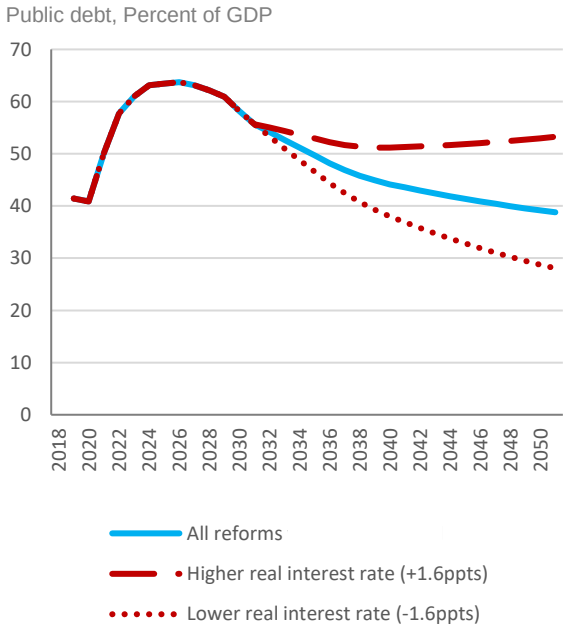
Figure 1-33: Real GDP projections and alternative interest rate scenarios



Source: WB analysis

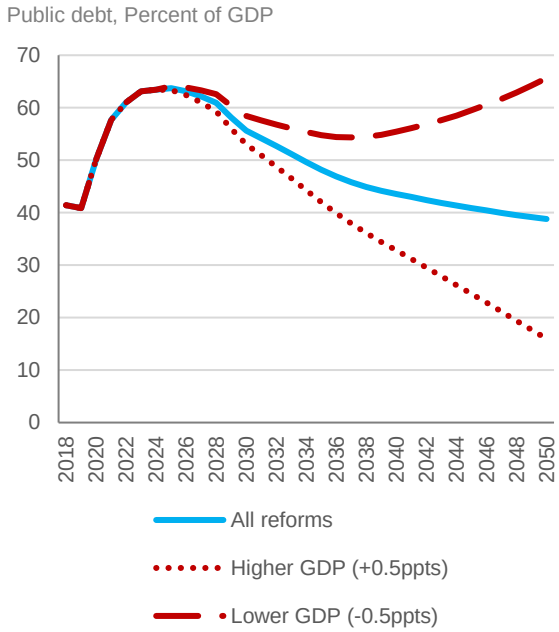
55. Long-term fiscal outcomes are highly dependent on economic growth. If real GDP growth was to average 2.4 percent per year between 2025 and 2050 rather than the 2.9 percent projected when all reform options are implemented – due to weaker than expected public or private investment, more pronounced aging impacts on the labor force, or more modest growth in total factor productivity – public debt would rise to around 66 percent of GDP by 2050 after accounting for the impact of all revenue and spending reforms (Figure 1-35). Conversely, faster average growth of 3.4 percent per year would make it significantly easier to ensure longer-term fiscal sustainability, though would not remove the need for revenue reforms.

Figure 1-34: Sensitivity of public debt path in response to higher/lower real interest rate



Source: WB analysis

Figure 1-35: Sensitivity of public debt path in response to higher/lower GDP



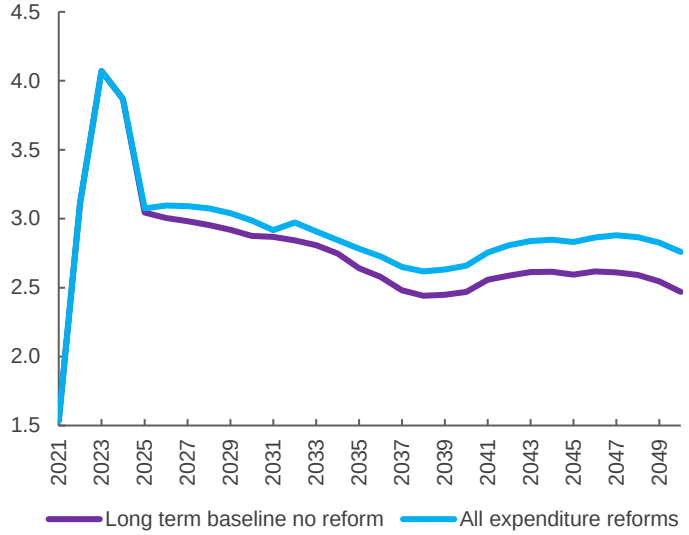
Source: WB analysis

56. This implies that the structural reform agenda is critical to the maintenance of fiscal sustainability. To mitigate the impact of aging on long-term growth, polices should aim to increase the size of the labor force and to enhance its productivity, including by increasing the retirement age, increasing female labor force participation rates, and providing training to upskill the existing workforce and resolve mismatches between the skill set of agricultural workers and the skill

set demanded by the industrial and services sectors.[9] These are in addition to the reforms considered in Chapter 5 to improve the quality of basic education. Manufacturing sector productivity can be improved by i) increasing economic openness; (ii) enhancing competition in the domestic economy; and (iii) creating a more conducive environment for firm innovation. Finally, as per section 1.3, an increase in the level and/or efficiency of public investment could boost the productive capacity of the economy and crowd in private investment, while at the same time providing critical demand-side stimulus in the near term to help promote the recovery from COVID-19.

57. Conversely, sustainable fiscal policy can have a significant impact on growth. There are two main channels. The first is that additional public investment in physical and human capital, as captured by the public investment and education reforms in the "All reform" scenario, will increase the productive capacity of the economy over the longer term and thereby raise the potential growth rate (Figure 1-36). The second is that the maintenance of fiscal sustainability is itself growth enhancing. Investment is negatively correlated with macroeconomic uncertainty, while a lower risk of debt distress tends to be associated with lower interest rates.

Figure 1-36: Impact of public investment in physical and human capital on GDP growth in the "All reforms" scenario



58. A sound and transparent fiscal framework can help to provide assurance to investors and the general public that fiscal settings will remain sustainable over time. The public debt rule provides an important anchor for fiscal policy. While the recent increase in the public debt ceiling to 70 percent of GDP was justifiable given the circumstances, to preserve credibility future adjustments to the level of the ceiling should be minimized. And although fiscal policy outcomes to date have been sound and policy decisions have been appropriately constrained in practice, the overall fiscal rules framework is complex and may not be fit for purpose in all respects (see Annex 1-1: Reforming Fiscal Rules). For several of the rules – including the capital spending rule – a careful review is warranted as to whether they are necessary and serving intended objectives. In addition, budget fragmentation, including the use of extra-budgetary funds and quasi-fiscal policies, tends to undermine fiscal transparency and the effectiveness of fiscal rules (see Annex 1-2: Reforming Fiscal Institutions). The Ministry of Finance can improve fiscal transparency by reporting on the extent of off-budget operations, improving the costing of contingent liabilities in the statement of fiscal risks, and moving towards greater compliance with the IMF's general data and dissemination standards.

[9] Bandaogo, M. and R. Van Doorn. The Macroeconomic and Fiscal Impact of Aging in Thailand. Washington, D.C.: World Bank.

CHAPTER 2
REVENUE MOBILIZATION

Chapter 2: Revenue Mobilization

2.1 Introduction

60. Over the last three decades, Thailand has made little progress on revenue mobilization. In 2019, the revenue to GDP ratio was 21 percent, which was low relative to peers. Revenues declined further due to the pandemic, and absent a significant increase they will be inadequate to meet future spending needs. Tax collection of 15.7 percent of GDP remains considerably below the efficiency frontier given Thailand's income level and the structure of its economy, with an estimated tax gap of 5.6 percent of GDP. Moreover, the tax system on its own does relatively little to promote equity (see Chapter 8). More progressive taxes such as personal income tax and wealth taxes provide a relatively small share of the overall tax take, while low levels of compliance and high rates of informality raise the potential for horizontal inequities.[10]

61. There is scope to increase revenue collection, while also increasing fairness. The tax gap can be narrowed by pursuing reforms to: (a) adjust the VAT rate and exemptions; (b) broaden the personal income tax base and streamline allowances, (c) expand property tax collection; and (d) improve tax compliance to increase efficiency and avoid base erosion. These reforms can raise additional revenue and enhance the equity of the tax system. There is also potential for improvements in tax administration. Expanding e-filing and e-payment while introducing behavioral initiatives and utilizing third-party data through firm networks could lower the burden of tax filing and help improve voluntary compliance.

62. This chapter analyzes Thailand's tax performance and potential, compared with international benchmarks, and identifies the scope for tax policy and administration reform. It assesses available options to increase tax collection, which as shown in Chapter 1 will be necessary to maintain long-term fiscal sustainability if Thailand is to meet elevated spending needs over time. This chapter begins with an overview and benchmarking of Thailand's tax performance, and a 'top down' estimation of Thailand's tax potential and the corresponding tax gap, based on cross-country analysis. It then provides a detailed 'bottom up' analysis of each major tax component – including VAT, excise tax, income taxes, and wealth taxes – identifying reform priorities and estimating the potential revenue gains associated with each.

2.2 Overview of tax revenues

63. Through much of the 1990s, Thailand outperformed EAP and UMIC peers in terms of revenue collection, but since the Asian Financial Crisis and Global Financial Crisis, its performance has lagged. In the early 1990s revenue collection averaged 17 percent of GDP (from 1990-1997), which was above UMIC and EAP peers. But since 1998, the average revenue to GDP ratio has fallen to 16.2 percent of GDP (average of 1998-2020). This was in large part because of a decline in taxes on international trade (due to WTO commitments) and a reduction in corporate income tax rates aimed at raising competitiveness. On the other hand, average revenue collections in UMIC and EAP countries rose by 2.5 and 0.9 ppts respectively over the same period, leading to the emergence of a substantial gap between Thailand and its peers. Thailand remains a long way below higher-income OECD countries (Figure 2-1).

64. Tax composition has been relatively stable over time, with a relatively large reliance on indirect taxes. VAT and excise taxes have accounted for just under half of total tax revenues in recent years. Corporate and personal income taxes have declined over the past decade, from 7.5 percent of GDP in 2011 to 5.7 percent of GDP in 2021 (Figure 2-2). Trade taxes have also trended downwards. Property taxes were very low during 2005-2019, amounting to just 0.2 percent of GDP in 2019 before dropping to 0 percent in the pandemic period due to the temporary property tax discount measures. Overall, the share of indirect tax revenues (62 percent of total) is large relative to regional and aspirational peers (Figure 2-4). While the proportion of direct tax revenues generally increases with income, Thailand is lagging behind other UMICs on personal income tax collection, while outperforming peers on corporate income tax revenue.

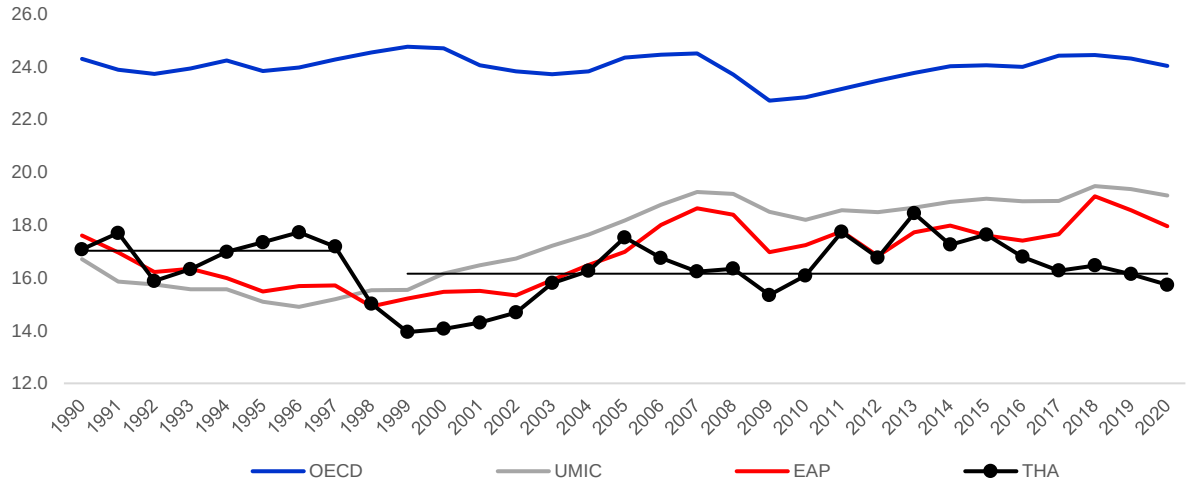
65. The COVID-19 pandemic saw tax revenue to GDP falling by 0.4 ppts in 2020 and a further 0.2 ppts in 2021. In nominal terms, revenues fell due to a decline in the tax base, with tax on goods and services falling by 6.3 percent, income tax falling by 11.6 percent, and trade tax falling by 14.1 percent in 2020 from the previous year, in line with the deep

[10] Equity of the tax system comprises two elements: horizontal equity and vertical equity. Horizontal equity implies that people whose circumstances are the same pay equal taxes. Vertical equity implies that those with greater capacity to pay more taxes.

economic contraction. The government also implemented tax relief measures including additional income tax deductions, a 90 percent property tax discount, and excise tax reductions for jet fuel. The impact of COVID-19 on Thailand's tax revenues was similar to that in the UMICs and EAP countries, where average tax revenue declined by 0.2ppts and 0.6ppts respectively in 2020.

Figure 2-1: Tax Revenue (% of GDP)

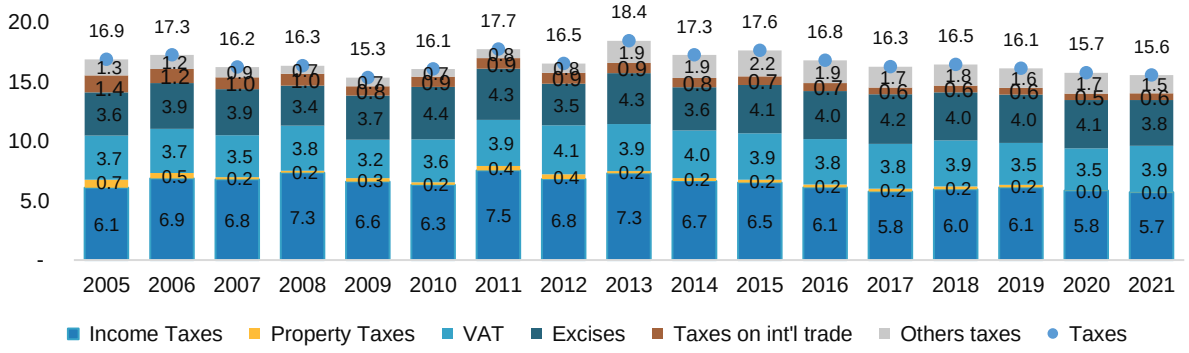
Tax Revenue in % of GDP



Source: WB analysis, data from ICTD 2021.

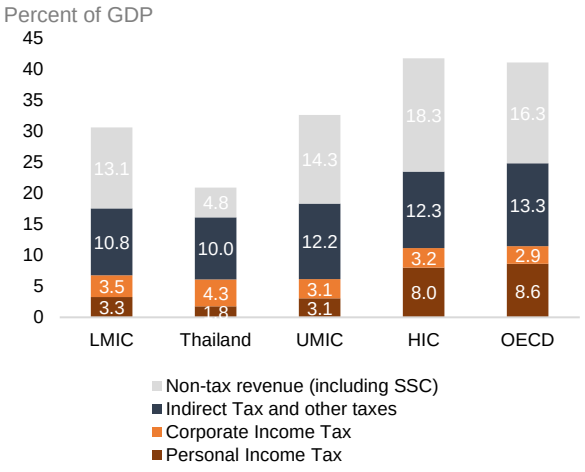
Figure 2-2: Tax collection structure

2005-2021, percent of GDP



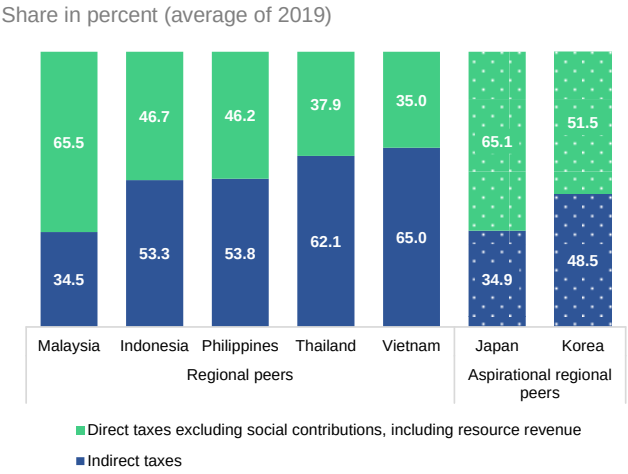
Source: WB analysis, data from Fiscal Policy Office.

Figure 2-3: Countries rely more on income tax as they become richer



Source: WB analysis.

Figure 2-4: Tax revenue collected from the consumption base (indirect tax) is high compared to regional peers

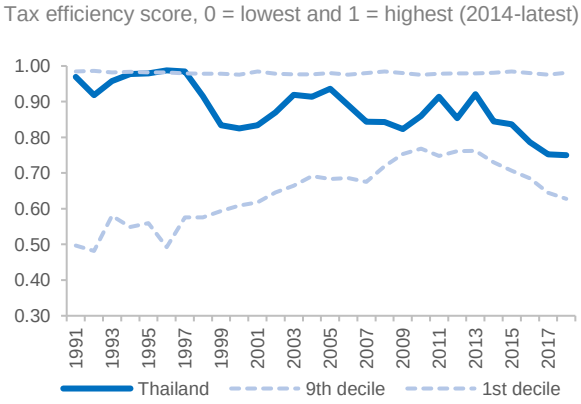


Source: WB analysis, data from ICTD and WDI.

2.3 Tax potential and the tax gap

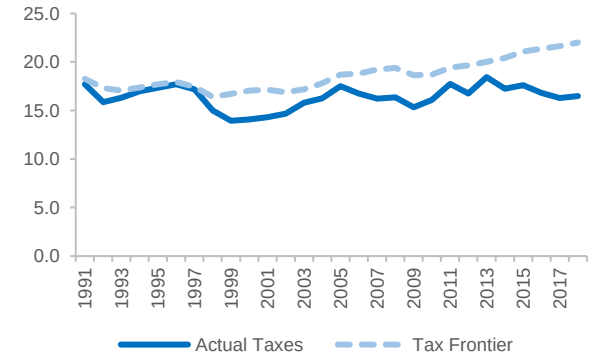
66. Cross-country estimates indicate that Thailand's actual tax collections are 5.6 percentage points of GDP below potential. This tax gap – the difference between actual and potential tax collection – has widened over time as actual collections have declined while estimated tax potential has increased (see Annex 2-1). To derive the size of the tax gap, Thailand's tax potential[11] is estimated as a function of a range of macro-structural factors – including level of economic development, openness, the size of the working age population, and the size of the informal sector – based on the cross-country relationship of these factors with tax collection. Since 2014, the tax efficiency score[12] (directly related to the tax gap) has declined (Figure 2-5). The size of the tax gap reached 5.6 percent of GDP on average between 2016-2019 (Figure 2-6).

Figure 2-5: Tax Efficiency has been declining since 2014



Source: WB analysis, data from ICTD and WDI.

Figure 2-6: Stable tax revenues failed to catch up with rising tax frontier



Source: WB analysis, data from ICTD 2020 and WDI 2020.

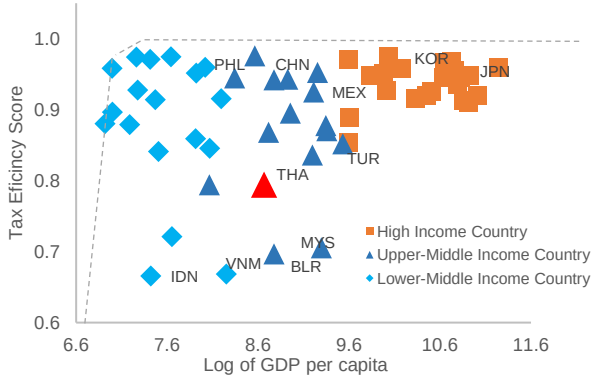
67. Thailand's tax efficiency is below that of countries with a similar level of income and informality. High-income countries, in general, tend to be clustered closer to the efficiency frontier (Figure 2-7). Middle-income countries are more dispersed. Thailand's efficiency score (averaged since 2014) is considerably below the efficiency frontier for its level

[11] The tax potential of 64 countries is determined using a stochastic frontier analysis (SFA).
[12] An efficiency score of between 0 and 1 is assigned to each country based on the distance between actual tax collections and estimated tax potential. A higher number indicates higher efficiency/tax effort

of income and below most of the upper-middle income peers. Many countries with a lower level of per capita income also have higher efficiency scores than Thailand. Countries with low informality tend to have high tax efficiency scores and are situated closer to the frontier, while countries with a large share of the informal sector are more dispersed (Figure 2-8). Thailand also has a low tax efficiency score, compared to other countries with a similar degree of informality.

Figure 2-7: Thailand has low Tax Efficiency score compared to middle-income countries

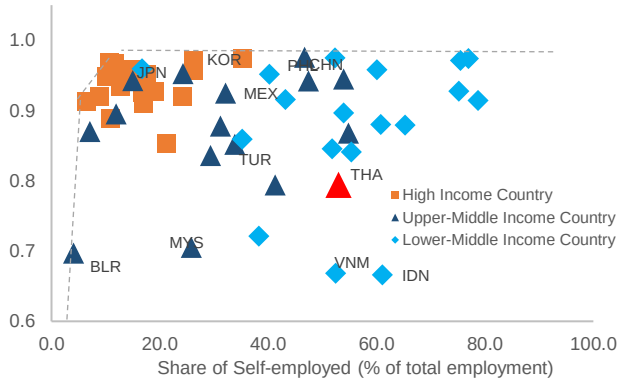
Log of GDP per capita vs. Tax efficiency score (2014-latest)



Source: WB analysis, data from ICTD and WDI.

Figure 2-8: High share of informal sector also affects low Tax Efficiency score in Thailand

Self-employed share vs. Tax efficiency score (2014-latest)



Source: WB analysis, data from ICTD 2020 and WDI 2020.

68. Taking an international perspective on individual tax lines, Thailand stands out on corporate tax and excise tax collection, while personal income tax, wealth tax, and VAT were lower than in peers.[13] This 'bottom-up' perspective complements the top-down analysis provided by the tax gap estimates above. Table 2-1 indicates that improvements in the collection of VAT, personal income tax, and property tax should be targeted as a means of reducing the size of the estimated tax gap and boosting overall revenue collection. Specific reforms that would facilitate higher revenues from these sources are discussed in the following sections.

Table 2-1: Tax revenue to GDP, by type

Average 2017-2019, % of GDP	**Taxes***	**Direct taxes***	Individuals	Corporations	Taxes on property	**Indirect**	VAT	Excises	Taxes on international trade
Regional peers	15.1%	6.0%	1.6%	3.9%	0.6%	9.1%	4.2%	2.1%	1.1%
Thailand	**16.3%**	**6.2%**	**1.8%**	**4.2%**	**0.2%**	**10.1%**	**3.7%**	**4.1%**	**0.6%**
Structural peers	19.2%	6.8%	2.4%	3.5%	1.4%	12.4%	6.8%	2.0%	1.8%
UMIC	18.9%	7.6%	3.4%	3.2%	0.7%	11.3%	6.1%	2.2%	0.9%

Note: *Taxes exclude social contributions; Direct Taxes excludes social contributions, includes resource revenue; Structural peers, including Belarus, China, Vietnam

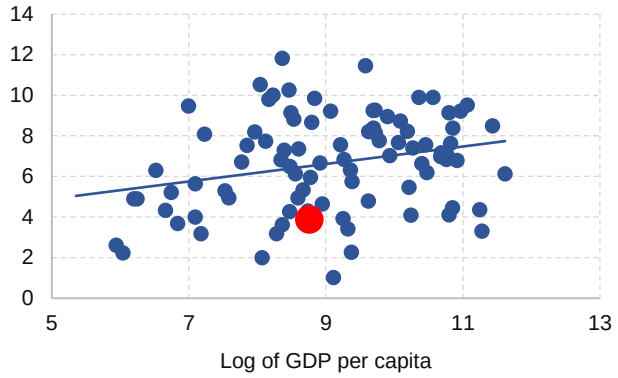
Source: ICTD 2021

2.4 Value-added tax

69. Thailand collects significantly less VAT than is expected given its income. Over the past 10 years, VAT revenue has averaged just below 4 percent of GDP, well below levels in upper- and lower- middle income countries and in EAP countries (Figure 2-9 and Figure 2-10). VAT revenue can be decomposed into three parts: (1) VAT collection efficiency, (2) VAT rate, and (3) the VAT base. The comparatively low collection of VAT revenue is due to the low VAT rate and the relatively small tax base.

[13] Structural peers, including Belarus, China, Vietnam, are selected based on degree of dependence on natural resources, GDP per capita, aging population, and informality.

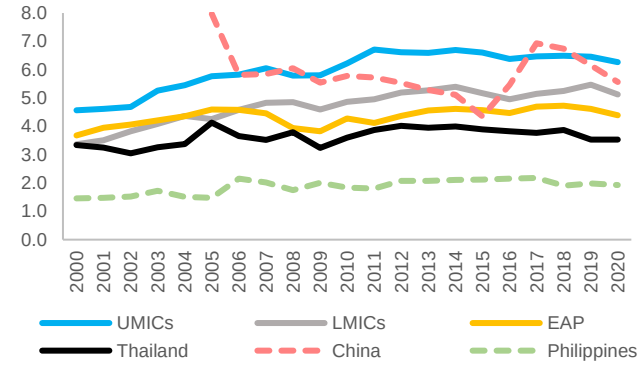
Figure 2-9: VAT revenues and level of income (log of GDP per capita), 2018



Source: WB analysis, data from ICTD 2020 and WDI 2020.

Figure 2-10: VAT revenue to GDP remained stable and well below peers over the past 10 years

VAT revenues, Percent of GDP

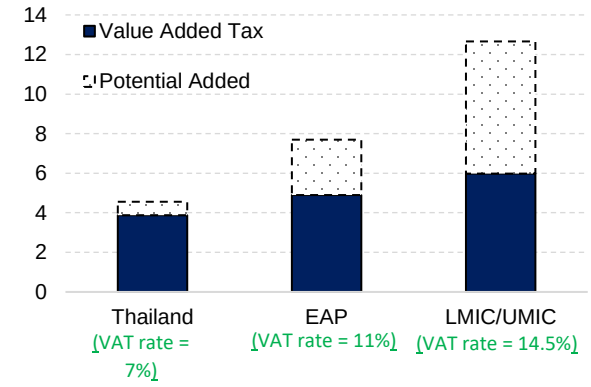


Source: WB analysis, data from ICTD and WDI.

70. VAT efficiency in Thailand is high but VAT potential is low. Thailand collects 85 percent of potential VAT revenue, much higher than in EAP or in middle income countries (Figure 2-11). However, the high efficiency rate in Thailand in part reflects the relatively low estimated tax potential, which is calculated by applying the standard VAT rate to total consumption expenditures in its GDP. The estimated VAT potential in Thailand of 4.6 percent of GDP was well below the EAP average of 7.7 percent and the middle-income average of 12.7 percent.

Figure 2-11: VAT and potential VAT

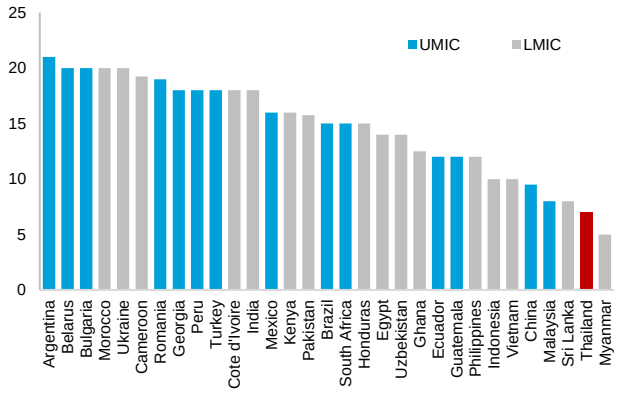
in % of GDP, 2018



Source: WB analysis, data from ICTD 2020, WDI 2020, and Doing Business 2020.

Figure 2-12: Thailand's VAT rate is low compared with Middle-Income Countries

VAT rate, Percent



Source: PWC

71. Thailand's VAT rate is the lowest among upper-middle income countries and is at the bottom end of the range for lower-middle income countries, falling between that of Myanmar and Sri Lanka (Figure 2-12). Thailand's VAT was implemented in 1992 and the statutory tax rate was set at 10 percent, but the rate was cut to 7 percent in 1999 after the economy was badly hit by the Asian Financial Crisis in 1997 and has subsequently been maintained at this level. The rate is significantly below the UMICs average of 15 percent and the EAP average of 11 percent. In 2021, the Thai Official Gazette published Royal Decree No. 724 providing that the 7 percent reduced VAT rate be extended by another 2 years until 2023. The cabinet has the authority to extend the reduced VAT rate every year.

72. The low VAT base is another key driver of low tax potential, driven by the prevalence of exemptions, the low level of consumption, and high rates of informality. Retailers are liable to file for the VAT if their annual turnover exceeds THB 1.8 million (USD 56,280) (Figure 2-13), however many products are exempted from the VAT. These include unprocessed agricultural and related products, including fertilizers, animal feeds, pesticides, and basic services, including certain educational expenses, healthcare, interest, leasing of immovable property, and the sale of real estate. Many of these

exemptions apply to staple goods which represent a larger share of poor consumption. Nevertheless, the exemptions are generally an inefficient way of supporting poorer households as the products to which they apply are also consumed by richer households and in larger quantities, meaning that a larger share of the overall tax expenditures go to richer households. Another reason for the comparatively low VAT potential is the country's lower level of aggregate consumption in 2018, at 65 percent of GDP compared to the UMIC average of 80 percent. In term of growth, private consumption expanded at only 4.2 percent on an annual average over the past decade, down from an average of 10.4 percent over 2001-2010. Slow growth in consumption has been driven by a shift in consumption patterns due to the aging population and high level of household debt.

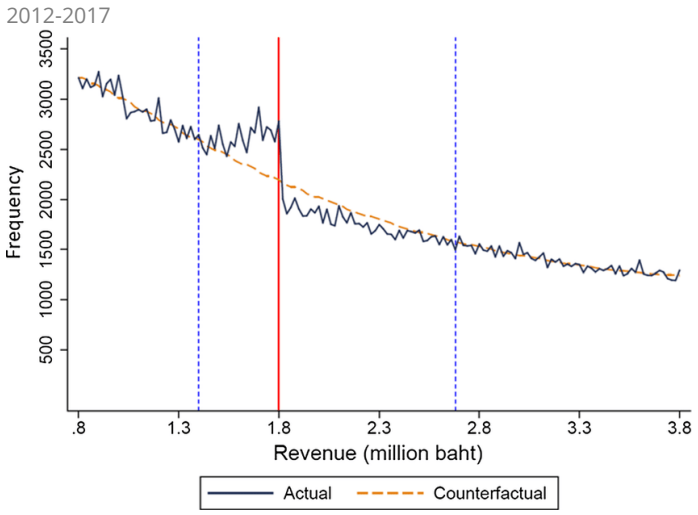
Figure 2-13: Structure of VAT and VAT registration Threshold, 2018

	Standard rate	Reduced rate	Others	VAT registration Threshold (USD)	VAT to GDP
Bulgaria	20	9	Zero-rated (0%) and exempt	42,171	9.1
Belarus	20	10	25%, zero-rated (0%) and exempt	NONE	8.6
Chile	19		Exempt and additional taxes	NONE	8.5
China	13	3,5,6,9	Zero-rated (0%) and exempt	9,302	6.7
Philippines	12		Zero-rated (0%) and exempt	60,908	2.0
Indonesia	10		Zero-rated (0%) and exempt	335,431	3.6
Japan	10	8	Exempt-with-credit and exempt	91,097	4.0
Vietnam	10	5	Zero-rated (0%) and exempt	NONE	5.0
South Korea	10		Zero-rated (0%) and exempt	NONE	4.1
Malaysia	8		exempt and several specific rates	120,713	1.4
Singapore	7		Zero-rated (0%) and exempt	744,320	13.0
Thailand	**7**		**Zero-rated (0%) and exempt**	**56,280**	**3.9**

Source: WB analysis, data from EY Worldwide VAT, GST and Sales Tax Guide 2022, and ICTD 2020.

73. The large size of the informal sector also contributes to low VAT potential as informal firms generally do not pay tax and can underreport their true income. Muthitacharoen et al. (2021) studied the bunching response of firms at the VAT registration threshold to explain the effect of informality on firms' decision to register with the VAT system. The study shows a sharp bunching of revenue just below the VAT threshold of THB 1.8 million (Figure 2-14). SMEs tend to stay in the informal sector due to the risk of losing competitiveness and limited benefits from trading with VAT-registered firms. In an environment of high informality, small VAT-registered firms might find it difficult to compete with non-VAT businesses which are similar in nature but can avoid charging VAT on their consumers. In addition, as the presence of non-VAT businesses grows larger, there is also less pressure to register for VAT in order to enjoy the tax benefits from trading with VAT-registered firms.

Figure 2-14: Distribution of revenue around the VAT registration threshold



Source: Muthitacharoen (2021)[14]

Note: The analysis focuses on firms around the registration threshold during 2012–2017. Included are all firms with revenue in the range between THB 1 million below and THB 2 million above the threshold (THb 0.8–3.8 million). The dataset for this analysis contains 615,474 observations. The blue vertical dashed line denotes lower bound and upper bound of the excluded region. The orange dashed line is counterfactual density fitted by excluding bins around the tax notch

74. Nevertheless, experience from other countries suggests it is possible to address these issues of informality and compliance. Given the analysis above, it can be concluded that the informal economy discourages firms from growing large and the decision to register in the VAT system depends on their supply chain linkages. Firms that are highly reliant on intermediate inputs for production tend to comply with the VAT system due to the benefit from VAT credits, while other firms are less compliant. Addressing such inequities is important because perceptions of inequitable competition can negatively affect tax morale and compliance. This not only risks resulting in a revenue loss, but it may also discourage firms from growing to their most efficient size (Box 2-1).

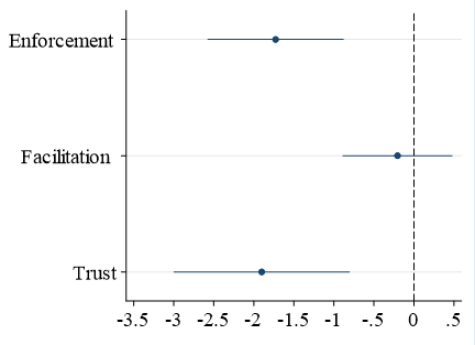
Box 2-1: Trust and VAT Compliance in Georgia

The Georgia Revenue Service (GRS) asked the World Bank to conduct an assessment of compliance with value-added taxation (VAT) among medium-sized businesses in Georgia. VAT is Georgia's single largest source of tax revenue, making up 45 percent of total tax revenue. There remains scope to improve compliance, in particular among medium-sized businesses.

The methodology used for the assessment was the Innovations in Tax Compliance Conceptual Framework[15], which approaches compliance from three interrelated angles – enforcement, facilitation and trust. The assessment shows that the biggest opportunities for the GRS to improve VAT compliance among medium-sized businesses are located on the enforcement and trust sides, less so on the facilitation side.

A statistical analysis of tax compliance, exploiting a list experiment[16] built into a taxpayer survey, revealed that in Georgia improvements in enforcement and trust significantly reduce non-compliance. Investments in facilitation have a statistically negligible impact on tax compliance (Figure Box 2-1). The overall level of taxpayer facilitation is already very high in Georgia and therefore the marginal returns may be low. The results underline that enforcement and trust building should be prioritized in order to impact VAT compliance by medium-sized business.

Figure Box 2-1: Estimated effect of E-F-T on non-compliance



Source: World Bank survey 2020

[14] Athiphat Muthitacharoen & Wonma Wanichthaworn & Trongwut Burong, 2021. "VAT threshold and small business behavior: evidence from Thai tax returns," International Tax and Public Finance, Springer;International Institute of Public Finance, vol. 28(5), pages 1242-1275, October.

[15] "Dom, Roel; Custers, Anna; Davenport, Stephen R.; Prichard, Wilson. 2022. Innovations in Tax Compliance : Building Trust, Navigating Politics, and Tailoring Reform. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/36946 License: CC BY 3.0 IGO."

[16] A list experiment is a questionnaire design technique used to mitigate respondent's social desirability bias (i.e. lying about socially undesirably behaviors) when eliciting information about sensitive topics, such as tax non-compliance. With a large enough sample size, list experiments can be used to estimate the proportion of people for whom the sensitive statement is true.

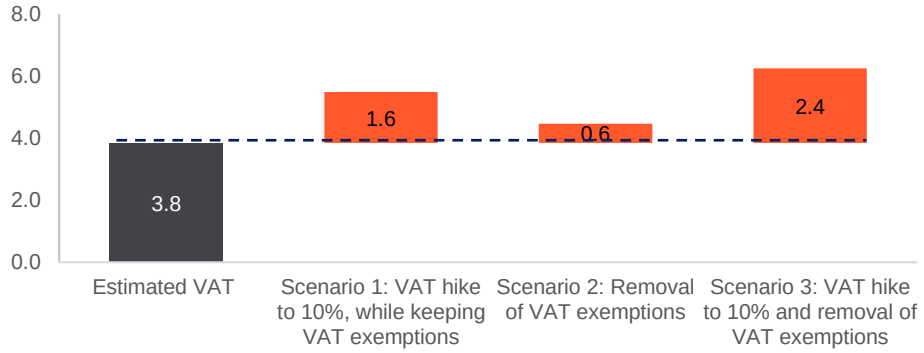
Box 2-1: Trust and VAT Compliance in Georgia

Based on these findings, the assessment identifies a number of binding constraints and reform recommendations to further improve VAT compliance. With regards to enforcement three reform priorities were identified: i) access to third party information, notably banking information; ii) improved cross-departmental cooperation between risk-management and operations, and; iii) investments in the quality of VAT analytical capacity. Concerning trust, four reform priorities were identified: i) targeted taxpayer education focused on recent VAT reforms, ii) committing to a swift and transparent audit process, iii) improving the fairness and impartiality of tax administration for example through a social recognition program, and; iv) improve overall quality of government services by other agencies because this directly influences willingness to pay tax and thus capacity to raise revenues.

75. In terms of VAT reform options, raising the statutory VAT rate to 10 percent would lead to a projected increase in VAT revenue of about 1.6 percent of GDP. Assuming that demand is perfectly inelastic to price changes, the VAT rate hike from 7 percent to 10 percent is estimated to raise the VAT revenue by 1.6 ppts to 5.5 percent of GDP (Figure 2-15: scenario 1). There is little evidence that VAT efficiency would necessarily be eroded with the higher rate. International experience among middle-income countries demonstrates that increases in rate and efficiency can be simultaneously achieved. Serbia and Kosovo both increased their VAT rate by 10 percent or more between 2013 and 2018 and experienced increases in efficiency over the same period.

Figure 2-15: VAT hike and removal of exemptions could raise revenue to GDP by 2ppts at maximum

% of GDP, average of 2016-2018



Source: WB analysis, data from NESDC, FPO, OECD IO table

76. Removal of VAT exemptions is estimated to raise tax revenue by 0.6 ppts. According to the top-down analysis of the VAT base, the estimated size of exempted products and services is equal to 19 percent of GDP on average in 2016-2018 (Table 2-2). Removing exemptions on these products could translate to additional tax revenue to GDP of 0.6 ppts. The removal of these exemptions would bring the VAT revenue to 4.5 percent of GDP (Figure 2-15: scenario 2), assuming no behavioral response to the higher prices. The combination of a VAT hike to 10 percent and the removal of exemptions is estimated to raise VAT revenue by 2.4 ppts to 6.4 percent of GDP (Figure 2-15: scenario 3).

Table 2-2: Decomposition of VAT base and VAT liability

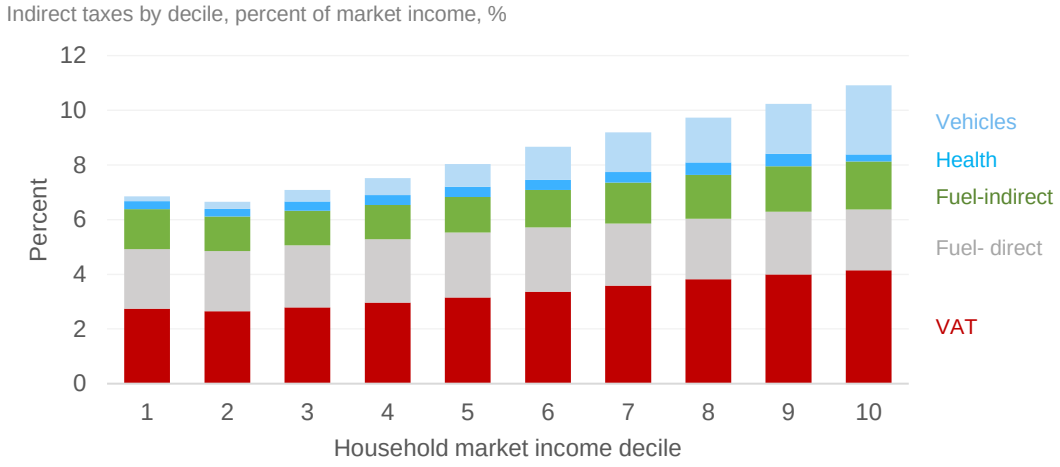
THB million, average of 2016-2018

	VAT base	Share of GDP	VAT liability	Share of GDP
Consumption: Households	7,305,145	47.2	511,360	3.3
Consumption: non-resident	1,630,974	10.5	114,168	0.7
Government purchase of goods and services	940,771	6.1	65,854	0.4
Intermediate Consumptions (with limited right to deduct VAT)	1,557,006	10.1	108,990	0.7
VAT Exemptions	(2,930,091)	-18.9	(205,106)	-1.3
Estimated VAT	*8,503,805*	*54.9*	*595,266*	*3.8*
Estimated VAT - no VAT exemption	***9,876,890***	***63.8***	***691,382***	***4.5***

Source: WB analysis, data from NESDC, FPO, OECD IO table

77. While Thailand's VAT structure is progressive, reforms to compensate lower-income households for the impact of VAT reforms will nevertheless be important. Based on the incidence analysis, the VAT system is slightly progressive because the poor purchase goods that are generally tax-exempt and lower-income households tend to shop in informal markets[17], which often do not charge VAT. Nevertheless, a VAT increase and/or removal of exemptions would impact the poor, given the poorest decile pays 2.7 percent of their market income in VAT (Figure 2-16). As shown in Chapter 8, it is possible to more than compensate lower-income households through targeted cash transfers, at an overall fiscal cost well below the additional revenue raised from these VAT reforms.

Figure 2-16: VAT structure is progressive, but it still represents a significant share of income for poorer households



Source: CEQ (chapter 7)

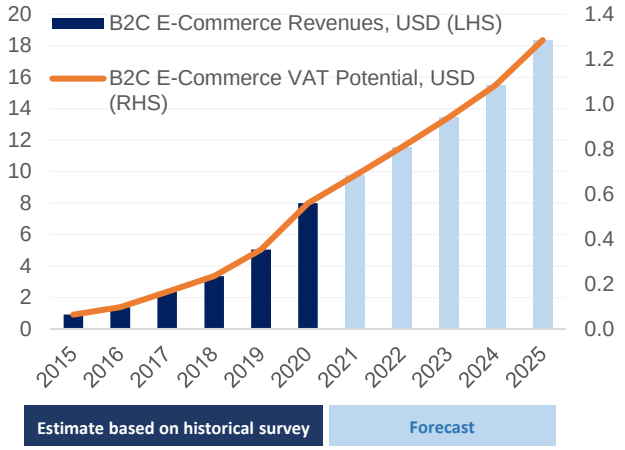
78. Reform efforts are also needed to reduce informality and raise the tax base. Targeted incentives for SMEs to register in the VAT system would be a useful tool to bring firms from the informal sector into the system. The government has taken steps to register more firms, such as the co-payment program under which the government subsidizes half the cost of food and general goods and services purchased from registered shops. However, additional incentives could be provided to sustain the expansion of the tax base in the long term.

79. Extending the VAT to capture e-commerce and digital services more effectively is also an important tool for achieving stronger VAT efficiency. Due to rapid growth in the digital sector, it is projected to generate 1.3 billion USD of additional VAT revenue by 2025 or 0.2 percent of GDP (Figure 2-17). Given the importance of digital services highlighted by the COVID-19 pandemic, the conversion to e-commerce has accelerated. Similar to regional peers, online sales in Thailand are becoming more common. For instance, in 2020 alone, e-commerce sales grew more than 50 percent in Thailand (Figure 2-18), a strong growth rate even in comparison to other advanced economies (IMF, 2021)[18]. However, since firms are not obligated to report their e-commerce sales revenue separately from that generated by physical retail stores, it can be challenging for authorities to estimate the value-added tax (VAT) revenue losses that may result from unreported online transactions. To address this issue, an amendment to the tax code was enacted in 2019, which enables authorities to utilize financial transaction data from financial institutions for tax auditing purposes and improve the efficiency of VAT collection (see section 2.8 Revenue administration).

[17] These Informal purchases made up a larger share of poor consumption with nearly 20 percent of VAT on consumption of the poorest half of households going unpaid compared to less than 10 percent for richer households.
[18] Digitalization and Taxation In Asia, IMF 2021

Figure 2-17: Potential VAT revenue from the digital sector

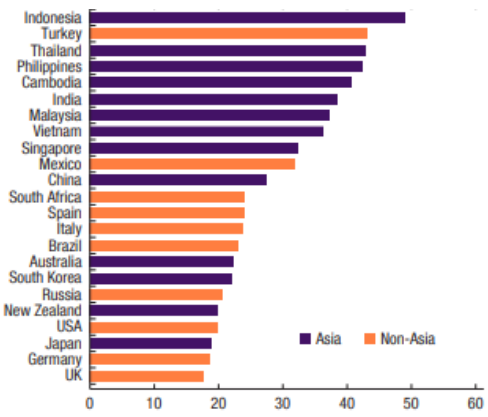
In USD billion, 2015 – 2025



Source: WB analysis, WB Taxation of E-Commerce Reform Model (TERM).

Figure 2-18: E-Commerce Sales

Annual percentage change, 2020



Source: IMF 2021.

80. Implementation of VAT on digital services represents one important step in upgrading tax policy and administration to tax the digital economy more effectively. Starting from September 2021, the Government has required the registration of overseas e-service providers and companies whose revenues originate in Thailand and exceed more than THB 1.8 million per year with the Revenue Department. From October 2021 to July 2022, the government collected THB 5.9 billion (0.04 percent of GDP) of e-service tax from foreign online platform operators based on a total service value of THB 85 billion from 138 registered platform operators.

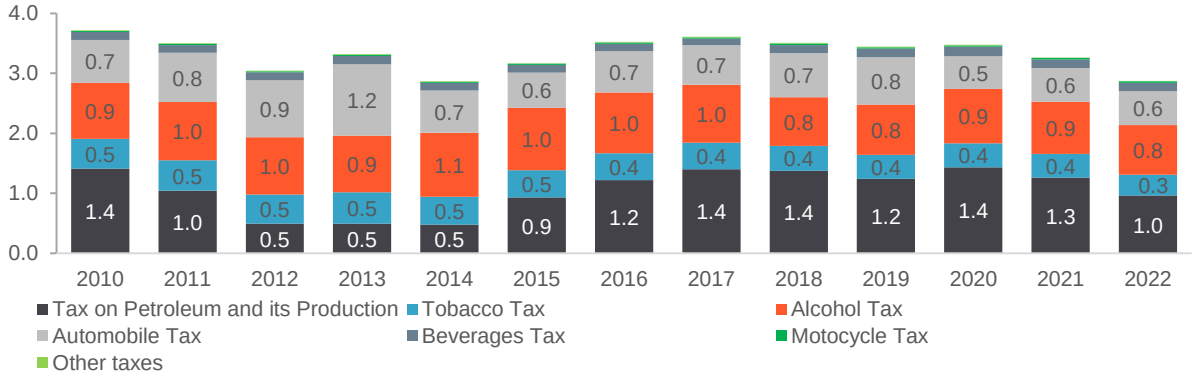
81. VAT on e-services will also make local service operators more competitive in the local market. With foreign online operators playing an important role in online businesses and e-commerce in Thailand, applying VAT consistently on all digital imports would level the playing field between domestic and foreign businesses, and between goods and services.

2.5 Excise tax

82. Thailand collects more excise revenue than other EAP and UMIC countries both as a share of GDP and as a share of tax revenue. Thailand's excise collection amounts to about 4 percent of GDP and 20-25 percent of total taxes (Figure 2-2), well above other EAP and UMIC countries. Excise tax on petroleum made up the largest share of total excise revenue at 1.3 percent of GDP in 2021 and 1.0 percent of GDP in 2022 (Figure 2-19), with collections fluctuating with the movement of the global oil price and measures to support households' cost of living. Alcohol and tobacco tax have remained relatively stable over the past 10 years.

Figure 2-19: Composition of excise tax

Percent of GDP, Cash based account



Source: World Bank Analysis; Data from Fiscal Policy Office

83. Temporary fuel tax and subsidy measures implemented in response to the Ukraine war have been costly. In late 2021, a ceiling of THB 30 baht per liter was set on the diesel oil price, which was later revised to THB 32 in May 2022 and THB 35 in June 2022 as global oil prices rose and the subsidy burden increased. The cost of the subsidy was funded by two instruments: (1) a temporary cut to excise tax from THB 5.99 per liter to THB 1.34 and (2) a subsidy from the State Oil Fund (Figure 2-20). The excise tax reduction is estimated to have incurred a fiscal cost of 0.4 percent to GDP from February to December 2022. The fiscal cost was significantly larger when the cost of energy subsidy from the Oil Fund is also accounted for (Figure 2-21). However, this subsidy turned negative after December 2022 as the global oil price fell below the domestic regulated price, allowing the government to collect the difference and replenish the State Oil Fund. On the other hand, the excise tax cut on diesel, if not reversed, will continue to result in forgone revenue. In 2011, as the global oil price surged, a cut in the diesel excise tax from THB 5.31 per liter to THB 0.005 was estimated to have incurred a fiscal cost of 1 percent of GDP per year over 3 years. As shown in Chapter 8, with targeted cash transfers it is possible to compensate lower-income households for the impact of fuel price rises at a much lower fiscal cost than subsidies/excise tax reductions, for which a greater proportion of the benefit accrues to higher-income households.

Figure 2-20: Structure of retail price of Diesel

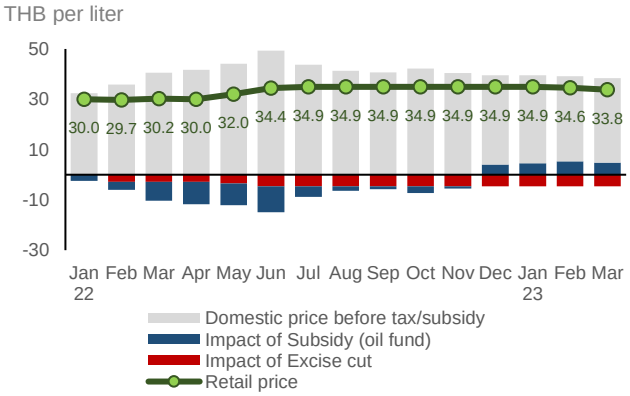
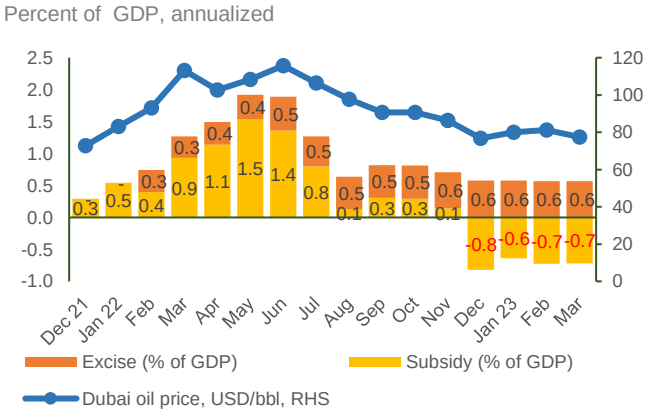


Figure 2-21: Size of oil subsidy and global oil price



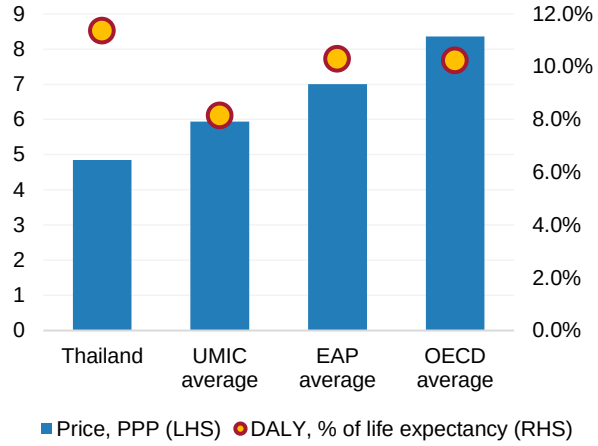
Note: **data in August are based on the retail price and subsidy cost at the beginning of each week, consumption in July and August is assumed to remain stable at the past 6 months average

Source: WB analysis, data from EPPO, OFFO, Haver Analytics

84. Beyond their revenue objective, excises are useful tax instruments for correcting negative externalities from the consumption of certain goods and services. For example, health excises on tobacco encourage reduced consumption and raise revenue that can be partly used to tackle tobacco-related non-communicable diseases and fund health campaigns to raise awareness of the personal and social costs of smoking. In Thailand, the internationally comparable price of a 20-pack of cigarettes is lower than the UMIC, EAP, and OECD averages (Figure 2-22). Simultaneously, Thais lose an estimated 11.4 percent of their healthy lives due to tobacco use. This loss is greater than in the comparator groups where it ranges from 8.1 to 10.3 percent. Although the Thai government increased excise tax rates on tobacco in October 2021 (from 20 to 25 percent for cheaper packs, and from 40 to 42 percent for more expensive packs), there is still potential to raise tobacco taxes further to discourage smoking.

Figure 2-22: Price and health cost of tobacco

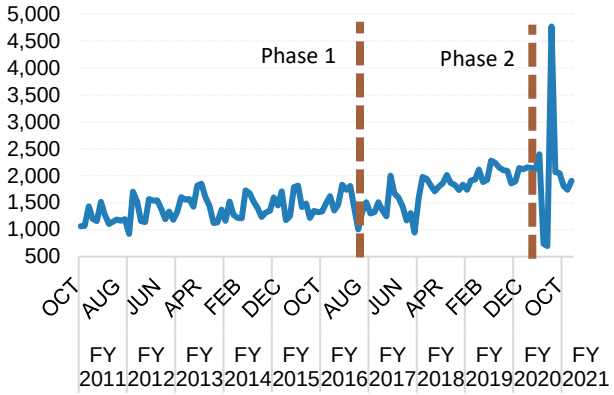
Price of a 20-pack of cigarettes in international dollars (PPP, LHS) and Disability-Adjusted Life Years Lost (DALY, % of life expectancy, RHS), 2018



Source: WB analysis, data from Tobacco Atlas (2019).

Figure 2-23: Revenue generation from the SSB taxes

Million Baht, from FY11 to FY21



Source: WB analysis, data from Bangkok Post, WDI 2020, and Thailand's FPO tax data 2021.

85. Continued implementation of the sugar sweetened beverage (SSB) tax could shift consumers' preferences toward healthier drink options. First introduced in 2017, the SSB tax was designed to grow over three phases, each stretching over two years. Since its introduction, it has raised an average of over 20 million Baht per year (Figure 2-23). This rollout was scheduled to begin the third phase in October 2021 but has been suspended in light of the COVID-19 pandemic and to provide the private sector additional time for the research and development of healthier products.[19] Looking to the future, this tax remains a valuable option to promote a shift toward healthier drink alternatives, in addition to raising additional revenue.

2.6 Income tax

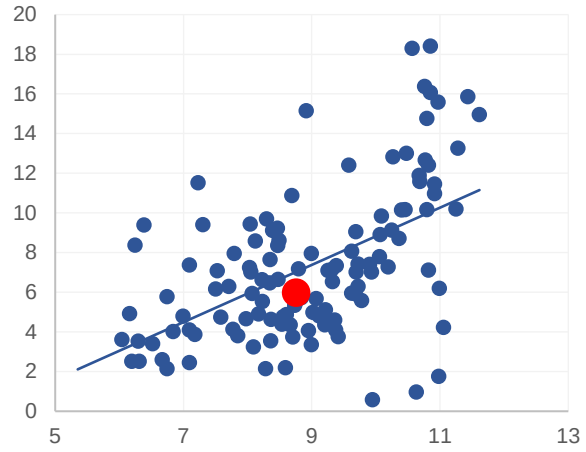
86. Thailand's income taxes fall short of international benchmarks because taxes on personal income are highly inefficient. An estimated additional 1 percent of GDP could be collected if Thailand were able to move to international benchmarks for income tax collection, controlling for GDP per capita (Figure 2-24). Low-income tax collection is attributable to the low productivity of personal income tax, contrasted against the very productive tax on corporate income (Figure 2-25). Tax productivity[20] is calculated as the ratio of actual tax collections (as a % of GDP) to the standard statutory rate. Improving income tax collection will be a crucial part of Thailand's overall revenue mobilization efforts and would also improve progressivity of the system.

[19] See Kasikorn Research Center (2021).

[20] To calculate productivity, the highest marginal rate is applied to the entire base as if it were a uniform rate.

Figure 2-24: Income Tax versus Level of Income (log of GDP per capita), Thailand

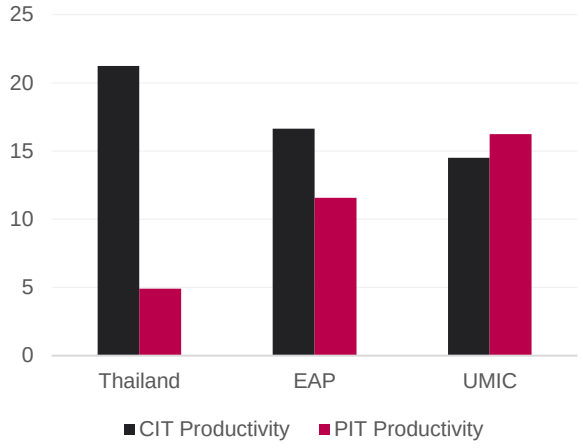
in % of GDP, 2018



Source: WB analysis, data from ICTD 2020 and WDI 2020.

Figure 2-25: CIT and PIT Productivity, Thailand

Productivity, 2018 (percent)



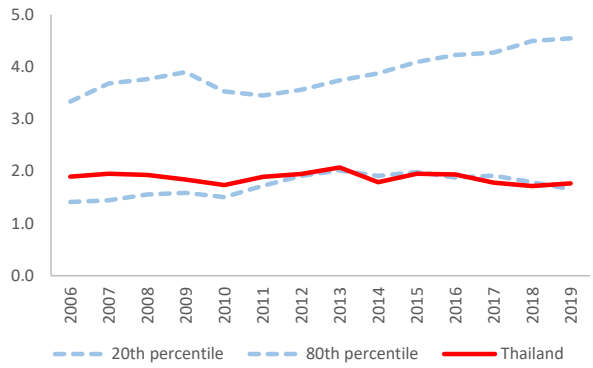
Source: WB analysis, data from ICTD 2020, WB Doing Business 2020, and KPMG 2020.

Personal Income Tax

87. Low levels of income tax collection are explained by weak compliance and the presence of significant incentives and exemptions. As a share of GDP, personal income tax revenue has been stable at a very low level of 1.8 percent of GDP over the past 10 years. The level is situated at the bottom 20th percentile of the upper-middle income countries (Figure 2-36: CIT Collection, Rate, Productivity in EAP). Major factors driving the large personal income tax productivity gap include (1) a narrow tax base due to a low share of active personal income taxpayers; (2) low PIT collection from workers in the informal sector, and (3) low effective tax rates due to generous tax incentives, exemptions, and a complicated system of deductions. This is despite a relatively high-top marginal tax rate of 35 percent (Figure 2-27).

Figure 2-26: Personal income tax revenue is at the bottom 20th percentile in the past 8 years

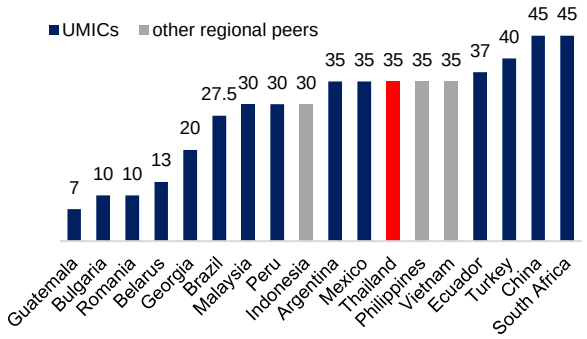
Personal income tax to GDP in UMICs, %



Source: WB analysis, data from ICTD and WDI.

Figure 2-27: Top marginal personal income tax rates for UMICs and regional peers, 2022

%



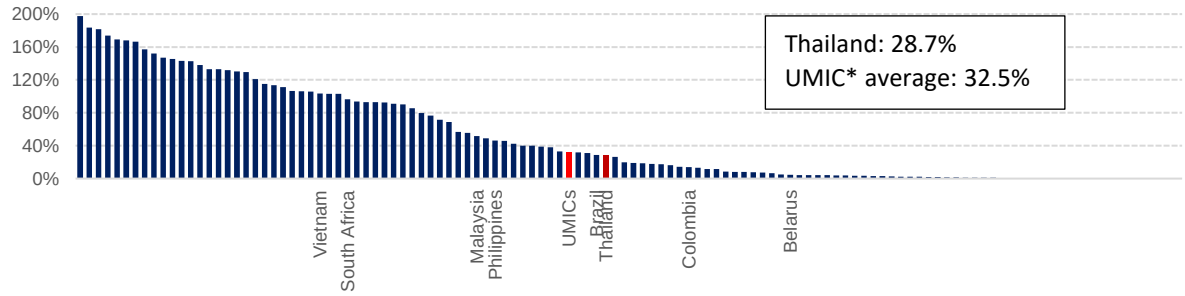
Source: WB analysis, data from PWC.

88. Taxpayers represent only 10 percent of Thailand's labor force, which is low compared with peers. Compliance is weak, especially among self-employed professionals and business owners. The share of people filing for tax accounted for 28.7 percent of Thailand's labor force in 2019, well below the sample UMIC average of 32.5 percent (Figure 2-28). In contrast, other UMICs, such as Brazil, Colombia, Malaysia, and South Africa have increased their shares. The low number of taxpayers in Thailand in large part reflects the low number of filings among self-employed workers (which depend on self-declarations of income); withholding taxes are assigned only to the salary workers and capital income earners. Moreover, only a low proportion of those filing for PIT pay tax. In 2019, out of 11 million people filing for the PIT, only 4 million people actually paid tax (10 percent of the labor force), most of whom were salary workers; the other 7 million

filings belonged to those who reported income below the tax threshold of THB 150,000 per year. Salary workers accounted for 83 percent of the total tax filers and 24 percent of the total labor force (Figure 2-29). A much lower proportion of self-employed workers, business owners, and capital income earners filed or paid income tax.

Figure 2-28: Personal income tax filers, Thailand and UMICs

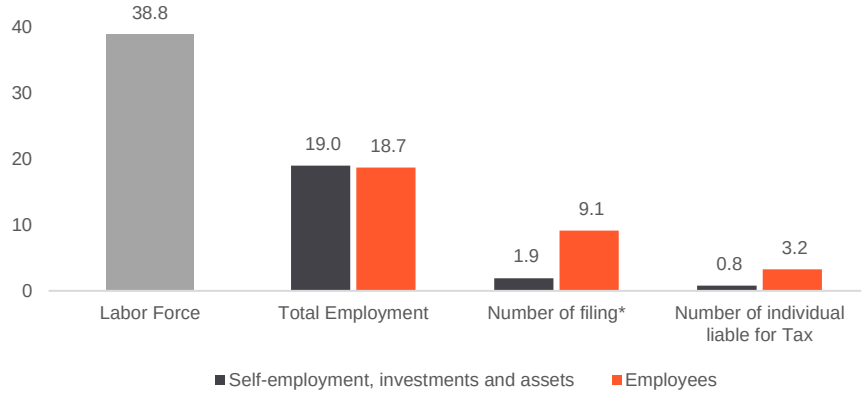
In % of Labor Force, 2019



Source: WB analysis, ISORA 2021. WDI (2022). Note: data only available for UMICs in sample (n = 37).

Figure 2-29: The size of self-employed workers is large, but the number of tax filings remain low.

Million, 2019

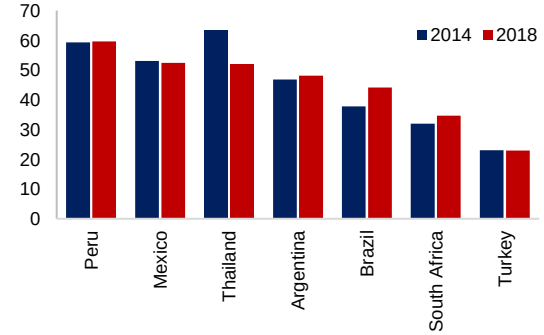


Source: WB analysis. Data from ILO and Revenue department, Note: *self-employed refer to PND90 and Employees refer to PND91 and those salary income workers who also earn income from other sources

89. Informality has also constrained the personal income tax base. According to the data from ILO, Thailand's share of the informal sector in non-agricultural activity has declined from 63.4 percent in 2014 to 51.9 percent in 2018. However, the degree of informality remains high compared to those upper-middle income countries (Figure 2-30). As a result, the ratio of PIT tax filings to total labor force has remained low over the past years at 28.5 percent in 2019 and declined to 27.3 percent in 2020 (Figure 2-31).

Figure 2-30: Informality remains high, despite a substantial reduction

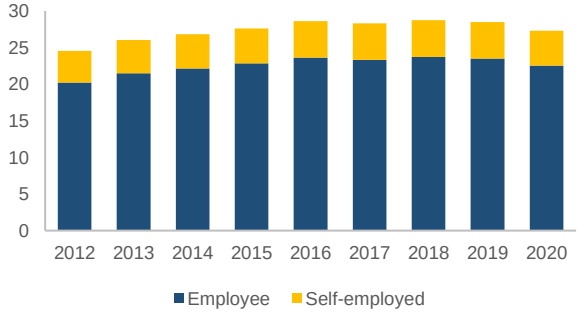
informal employment of total employment, percent



Source: WB analysis, data from ILO.

Figure 2-31: Number of PIT tax filings to total labor force increased 5ppts between 2012 and 2020

Percentage share of labor force

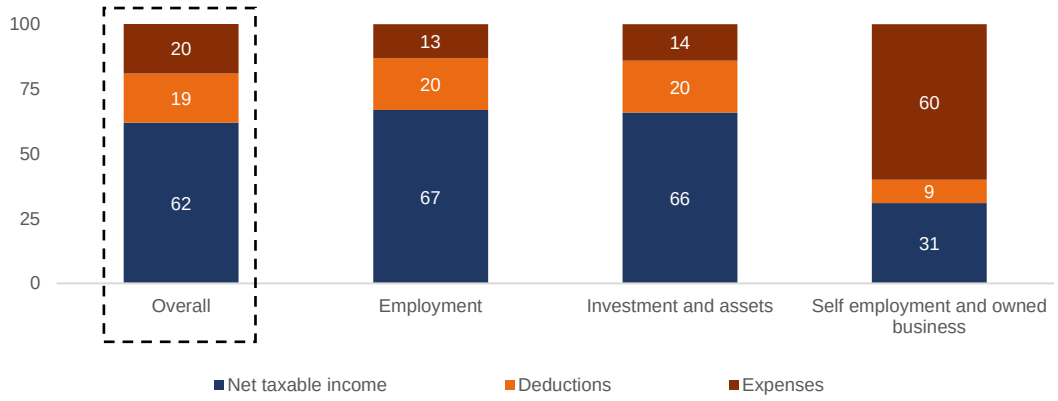


Source: WB analysis, data from Revenue Department.

90. The rules on deductions are likely contributing to revenue loss and horizontal inequities. The deductible rates of expenses are different across different types of income earner. Self-employed workers and business owners can deduct business expenses of up to 60 percent out of their assessable incomes (Annex 2-2). These expense deductions for self-employed workers and business owners have been simplified to encourage more filings. However, these allowed deductions are significantly higher than what is available to salary workers, for whom expenses are deductible at up to 50 percent of income and the amount is capped at THB 100,000. This can mean that self-employed workers and business owners end up paying less tax than salary workers. Based on 2012 data, deductible expenses accounted for 20 percent of total reported income for those who earned income from employment, while it increased to 60 percent for the self-employed workers and business owners (Figure 2-32). Most major countries with the similar proportion of self-employed workers do not offer standard deductible rates to self-employed professionals, instead allowing business deductions only for incurred expenses[21] (e.g. Indonesia, Georgia, Colombia, Ecuador, and Mongolia). Countries that do provide a standard deductible rate have a lower maximum deductible rate than Thailand, such as the Philippines (40 percent), Uruguay (30 percent), and Costa Rica (25 percent).

Figure 2-32: Share of expenses and deductions in assessable income in 2012, by type of income

Percent of total reported income



Source: Muthitacharoen (2017)

91. Allowances are estimated to have incurred a revenue loss of 0.5 percent of GDP in 2019. Apart from the deductible expenses and standard allowances[22], many tax expenditures for specific economic purposes have also been introduced in the form of special allowances. These special allowances include tax subsidies for long-term savings, insurance premiums, and interest payments, as well as tax subsidies for purchasing products and services. In 2020, the list of tax allowances comprised as many as 20 items, higher than 10 items in 2005. Some of these allowances provide benefits specifically to high-income earners. These allowances, except for the deductions for personal and dependents spending, are estimated to have reduced government revenue by 0.5 percent of GDP. Streamlining some of the generous allowances will make PIT more productive by bringing the effective tax rate[23] (ETR) closer to the marginal tax rates, in a more equitable manner (Table 2-3).

[21] Data from PWC

[22] Standard personal allowances including those allowances for personal spending, spending on dependents, and social security contribution

[23] Effective Tax rate is derived from dividing average tax payment in each income bracket by their average income before deducting expenses, deductions, and allowances.

Table 2-3: Effective tax rate, taxpayers, and revenue collection by bracket

average of 2019

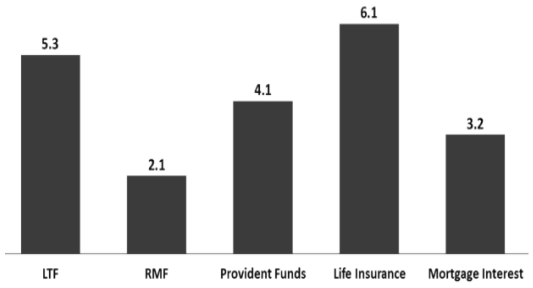
Income Bracket	Tax rate	Income	Number of individual filings for tax		Number of taxpayers		PIT receipt		Effective Tax Rate
		Baht per taxpayer	Persons	Share (%)	Persons	Share (%)	Million baht	Share (%)	
Total		467,113	11,034,583	100	4,016,760	100	222,061	100	6.0%
0-150,000	Exempt	210,346	7,048,378	63.9	30,720	0.8	210	0.1	0.0%
150,001-300,0000	5%	508,898	1,919,010	17.4	1,918,927	47.8	6,021	2.7	0.6%
300,001-500,000	10%	755,910	1,012,231	9.2	1,012,182	25.2	16,350	7.4	2.1%
500,001-750,000	15%	1,071,333	519,297	4.7	519,272	12.9	22,351	10.1	4.0%
750,000-1,000,000	20%	1,481,042	203,467	1.8	203,463	5.1	17,747	8.0	5.9%
1,000,001-2,000,000	25%	2,160,882	230,683	2.1	230,679	5.7	46,342	20.9	9.3%
2,000,001-5,000,000	30%	4,229,111	79,042	0.7	79,042	2.0	52,002	23.4	15.6%
> 5,000,000	35%	10,661,830	22,475	0.2	22,475	0.6	61,037	27.5	25.5%

Source: WB analysis, data from Revenue Department

92. Tax incentives for investments in long-term financial assets are one instance of a highly regressive tax policy; reforms have already been implemented but further efforts would yield additional revenue gains and improvements in equity. These types of tax allowances were found to be heavily concentrated among high-income taxpayers. A study from Muthitacharoen and Phongpaichit (2020) found that the tax expenditures for these five tax deductions, including long-term equity fund contributions (LTF), retirement mutual fund contributions (RMF), provident fund contributions, life insurance premiums, and mortgage interest account for roughly 20 percent of total personal income tax revenue in 2012—more than half of which is associated with the deductions for life insurance and LTF (Figure 2-33). Some reform efforts had been made to reduce these tax incentives for investments in long-term financial assets in 2020. The government ended the tax-deductible long-term equity fund (LTF) and replaced it with the Super Savings Funds (SSF). Under the SSF, the maximum amount that can be deducted from annual personal income for tax filing was reduced from THB 500,000 to THB 200,000. The reform helped improve the tax progressivity, but further efforts to rationalize tax incentives would help to raise additional income tax revenue while enhancing equity.

Figure 2-33: Tax expenditures associated with tax incentives for households' saving and investment

% of total personal income tax revenue

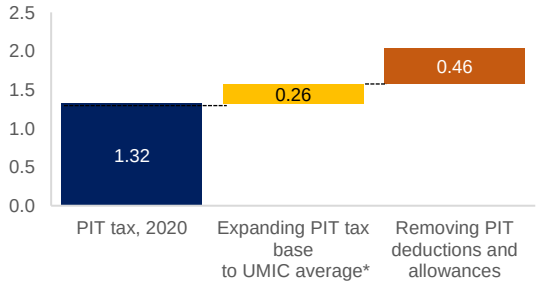


Source: Muthitacharoen and Phongpaichit (2020)

Note: The tax expenditure is defined as the difference between the tax liability without benefit of the tax deduction and the tax liability under the 2012 law.

Figure 2-34: Estimated impact of the personal income tax reforms

Percent of GDP



Source: WB analysis, Revenue Department

Note: *average of personal income taxpayer in UMICs at 32.5 percent of labor force

93. Estimation of revenue gains from personal income tax reform shows that a combination of tax base expansion and removal of deductions and allowances would raise PIT revenue by 0.7 percent of GDP (Figure 2-34). 0.5 percent of GDP in additional revenue could be collected from the removal of some PIT deductions and allowances outlined above, while an expansion of the personal income tax base from 28.5 percent of the labor force to the UMIC

average of 32.5 percent of the labor force would also increase revenue collection by about 0.3 percent of GDP, based on the existing effective tax rate after deducting all expenses, deductions, and allowances.

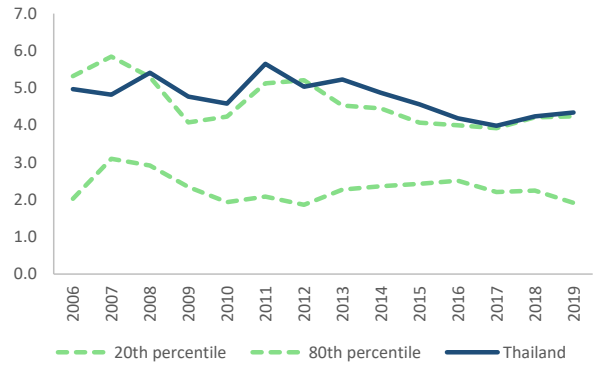
94. Providing targeted incentives, filing alert systems, and a nudging system can help build inclusion of self-employed workers and business owners and close the personal income tax compliance gap. Part of the low personal income tax productivity results from non-compliance and incentives to minimize the reported income among the self-employed and business owners. Verifying their incomes and enforcing compliance is more difficult as self-employed professionals can easily switch to cash and can take advantage of the various loopholes in the tax system to reduce their taxable income, such as retaining earnings in the firm, transfers to assisting spouses, and classification of personal income as capital income (World Bank, 2022[24]). Providing positive inducements to compliance through facilitation, trust building, rewarding, or adopting "nudging" techniques[25] may help to improve compliance among the self-employed workers.

Corporate Income Tax

95. CIT is efficient and the tax rate is competitive, but collections have declined in recent years. CIT revenue reached 4.2 percent of GDP in 2018, at the top 20th percentile among the upper-middle income peers (Figure 2-35), despite a relatively competitive tax rate of 20 percent. This combination caused Thailand's CIT productivity to be higher than EAP and UMIC comparator countries. The Thai government lowered the corporate income tax rate from 30 percent to 23 percent in 2012 and to 20 percent in 2013. Though the rate remains above the internationally agreed minimum corporate tax rate of 15 percent, it is competitive compared with regional peers. It is likely that the high level of CIT productivity is due to good compliance as its corporate tax base does not significantly differ from other EAP countries. However, CIT to GDP declined from 5.1 percent on average in 2008-2013 to only 4.4 percent on average from 2014 to 2019.

Figure 2-35: CIT has been constantly high in Thailand

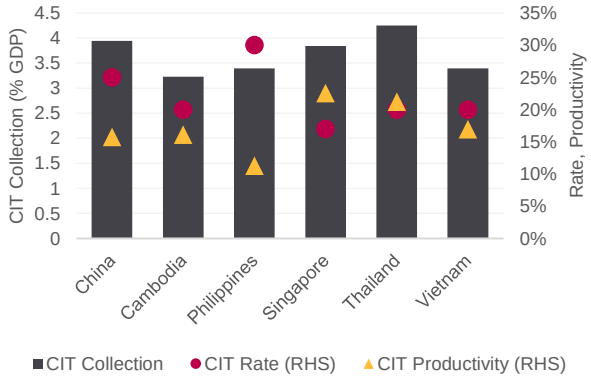
CIT to GDP in UMICs, %



Source: WB analysis, data from ICTD and WDI.

Figure 2-36: CIT Collection, Rate, Productivity in EAP

Collection in % of GDP (LHS); Rate and Productivity in % (RHS); 2018 or latest available



Source: WB analysis, ICTD 2020, and KPMG 2020.

96. Thailand maintains high CIT collections due to its high CIT productivity. Thailand lowered its CIT rate from 30 percent to 20 percent between 2006 and 2013, but CIT revenues have remained high. In 2018 CIT collections reach 4.2 percent of GDP, yielding a CIT productivity of 21 percent which was much higher than the other countries' average of 17 percent.

[24] https://openknowledge.worldbank.org/bitstream/handle/10986/36946/9781464817557.pdf

[25] Government can deploy information interventions, such as sending a message, to push or nudge an individual toward the desired outcome. In one of the best-known examples, the United Kingdom's tax administration mailed letters to over 200,000 taxpayers to influence the occurrence and timing of their income tax payments by reminding them of penalties for late payments (World Bank, 2022)

Table 2-4: Development of standard CIT rates and reduced rates in Thailand

Taxpayer	Tax Base	2011	2012[26]	2013	2015	2017	2019
General		**30%**	**23%**	**20%**	**20%**	**20%**	**20%**
Listed Company on The Stock Exchange of Thailand (SET)	Net Profit 0-THB 300 million	25%	23%	20%	20%	20%	20%
	over THB 300 million	30%					
Listed Company on Market for Alternative Investment (MAI)	0-THB 20 million	20%	20%	20%	20%	20%	20%
	over THB 20 million	30%					
SMEs	Net Profit 150,000 - 300,000	15%	15%	0%	0%	0%	0%
	300,000 - THB 1 million			15%	10%	15%	15%
	THB 1 million - THB 3 million	20%	23%	20%	10%	20%	20%
	over THB 3 million	30%					
CIT revenue, % of GDP		**5.6%**	**5.6%**	**5.2%**	**4.6%**	**4.1%**	**4.4%**

Note: Since 2011, SMEs must have registered capital not over 5 million baht and have revenue not over 30 million baht.
Source: Sudsawasd and Siriprapanukul (2017), Fiscal Policy Office

97. Despite relatively high CIT productivity, cross-country analysis suggests scope for further improvement. Thailand's tax rules allow for a wide array of incentives. Thailand, Malaysia, and Singapore were the only EAP countries to offer tax incentives across each of the commonly identified types (Figure 2-37). Furthermore, the 13-year tax holiday period for special strategic areas was the longest identified in the sample. Further analytics would be required to quantify the net impact of these incentives. Overly generous and poorly designed tax incentives can potentially result in lost revenue, distort competition, and reduce equity.

Figure 2-37: Tax Incentives in EAP

Grouped by tax incentive type

	Tax holiday/ Tax exemption	Reduced Tax rate	Investment allowance/ Tax credit	R&D incentives	Super-deduction	SEZ/Free Zones/EPZ/Free port	Discretion	Incentives in Investment Code	Maximum Tax Holiday period
Cambodia	x	x	x			x	x	x	9 years
China	x	x	x	x	x	x	x		2 years
Hong Kong			x	x		x			
Indonesia	x		x			x	x	x	10 years
Japan			x	x		x		x	5 years
Laos	x	x		x		x	x	x	10 years
Malaysia	x	x	x	x	x	x	x	x	10 years
Myanmar	x	x	x	x		x	x	x	5 years
Philippines	x	x		x		x		x	6 years
Singapore	x	x	x	x	x	x	x	x	<Offered but negotiated>
Thailand	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**11-15 years**
Vietnam	x	x		x		x	x	x	4 years

Source: WB analysis, KPMG 2020 and PwC 2020.

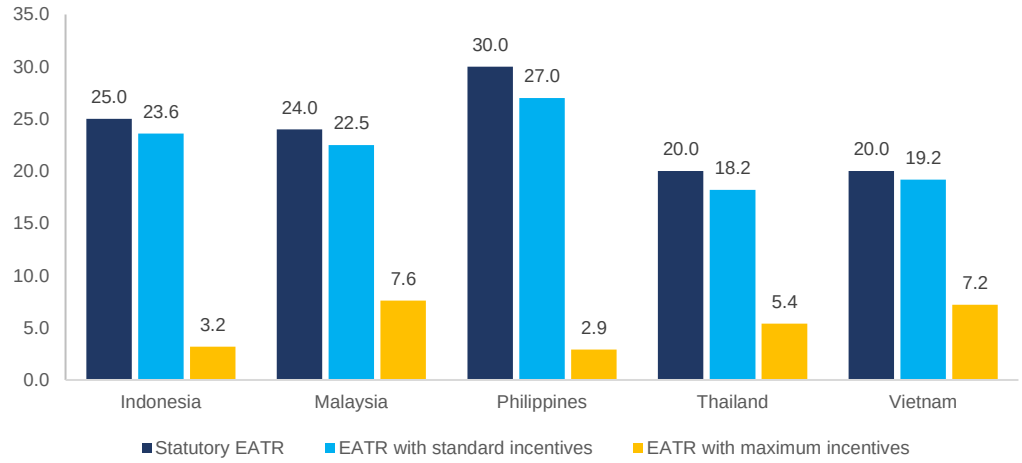
98. Thailand's effective average tax rate (EATR[27]) was close to the average rate of the ASEAN-5. In 2021, Thailand's EATR was estimated to reach 5.4 percent, significantly lower than the statutory CIT rate of 20 percent. The estimation of EATR takes into consideration the standard incentives, such as depreciation and the maximum tax incentives provided to firms. The EATR in Thailand was lower than those of Malaysia and Vietnam due to the long tax holiday period.

[26] The government lowered corporate tax rate from 30 percent to 23 percent in 2012, then to 20 percent in 2013 in an effort to help private companies deal with higher labor costs from increases in minimum wages of about 40 percent implemented on April 2, 2012. The rate has been kept at 20 percent since.

[27] EATR calculation is based on the theoretical model developed by Devereux and Griffith (1999, 2003) and reflects the average tax contribution a firm makes on an investment project earning above-zero economic profits, which also taken into consideration the effect of maximum tax incentives, such as depreciation deductions and maximum tax holiday. It is defined as the difference in the NPV of pre-tax and post-tax economic profits relative to the NPV of pre-tax income net of real economic depreciation, maximum deductions and tax holiday period.

Figure 2-38: Effective average tax rate (EATR) across ASEAN 5

in %, 2021



Source: Muthitacharoen (2021)

99. Thailand has made progress on international tax reforms, but tax evasion and avoidance remain substantial, lowering income tax revenue. Tax evasion and avoidance from multinational corporations and high-net-worth individuals result in revenue losses for the government and undermine fairness and equity in the tax system. In recent years, Thailand signed "The Convention" on Tax Matters in 2020 thereby removing itself from the "grey-list" of the EU tax avoidance and harmful tax practices. Further needed reforms include expanding access to beneficial ownership information for the competent authority; strengthening tax avoidance rules; renegotiating tax treaties based on a new tax treaty model to better balance trade-offs between attracting investment and protecting against base erosion and profit shifting risks; and increasing the tax administration's capacity on international tax issues. Moreover, as the Global Minimum Tax[28] (GMT) may affect investment competitiveness, improvements to the broader business environment will be important for Thailand in continuing to attract foreign direct investment.

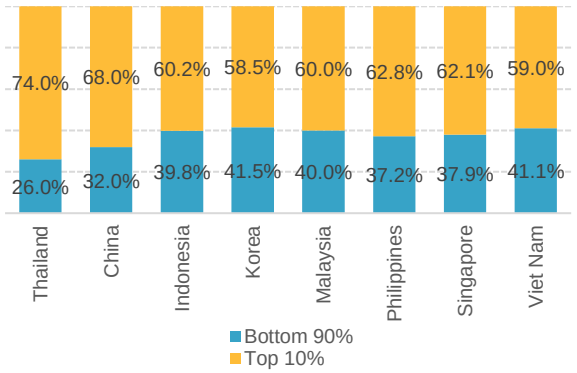
2.7 Taxes on wealth

100. Thailand's wealth is very concentrated, with the top 10 percent owning about three times as much as the bottom 90 percent (Figure 2-39). For comparison, the country's wealth is more concentrated than the average of the regional peers, where the top 10 percent own 61.5 percent. In addition, the highest income group held about half of the total asset holdings, including both fixed and financial assets (Figure 2-40). Slowing consumption growth also exacerbates inequality. Consumption growth of the bottom 40 percent was higher than the national average between 2006 and 2015 (Figure 2-41). However, this trend reversed between 2015 and 2018.

[28] Framework on BEPS reached an agreement in October 2021 to address the tax challenges of digitalization (Pillar One) and aggressive tax competition (Pillar Two). The Pillar Two - Global Minimum Tax- is designed to ensure that large MNEs with annual revenues greater than EUR 750 million pay a minimum tax of 15%. The purpose is to address the ongoing concerns about tax avoidance by MNEs and the so-called "race to the bottom" on corporate tax rates. The primary rule to achieve implementation is the Income Inclusion Rule (IIR). Under this rule the country in which the parent company of a MNE is taxable will impose a Top-up Tax on the profits of any foreign subsidiaries that have an effective tax rate of less than 15%.
https://openknowledge.worldbank.org/bitstream/handle/10986/38099/P169976034c92506a0a1190bc5e3a05e3ed.pdf?sequence=1&isAllowed=y

Figure 2-39: Wealth concentration in the bottom 90 percent vs. top 10 percent

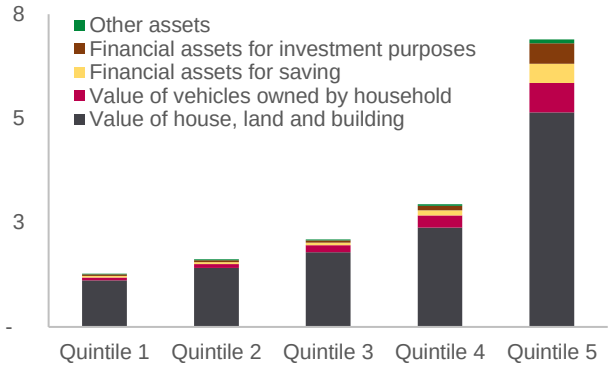
in % of total wealth, 2021



Source: WB analysis, data from World Inequality Database 2021.

Figure 2-40: Assets holding by households

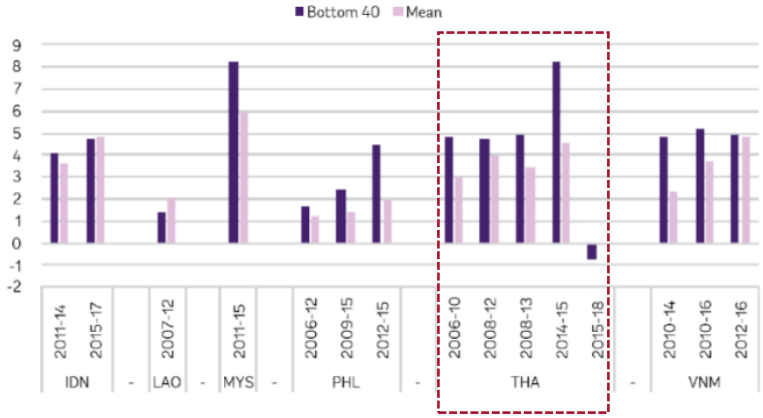
Income Quintile 1-5 in million, average of 2015-2019



Source: WB analysis, data from SES.

Figure 2-41: Consumption growth of the bottom 40 percent vs. country mean

Annualized growth (%), 2006 - 2018

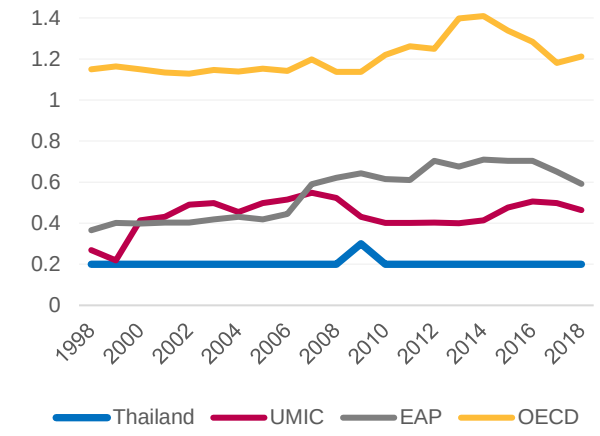


Source: WB analysis, data from Global Database of Shared Prosperity 2021.

101. Property tax is a progressive, low distortion and growth-friendly tax tool, but the gap between Thailand's collection of property tax and the UMIC average remains large at 0.3 percent of GDP. Property taxes are a highly efficient, progressive, and under-utilized instrument in Thailand that is well-suited for subnational revenue generation. The property tax (recurrent taxes on immovable property) is less distortive than other tax types, such as income tax, and can provide a stable source of revenue (Johansson, Å., et al., 2008). However, Thailand falls below the region's benchmark with collections amounting to 0.2 percent of GDP (Figure 2-42), while it was 0.5 percent on average for UMICs. In terms of subnational taxation, Thailand raises about 2 percent of GDP compared to EAP's average of 2.8 percent and UMIC average of 2.3 percent (Figure 2-43). Increasing property taxation could boost the own-source revenues of local governments and strengthen the "fiscal social contract" at the subnational level. This can be partly achieved by strengthening property taxation, including through raising rates and ensuring regular, systematic cadastral updates and simplified valuation approaches.

Figure 2-42: Property Taxes, Thailand

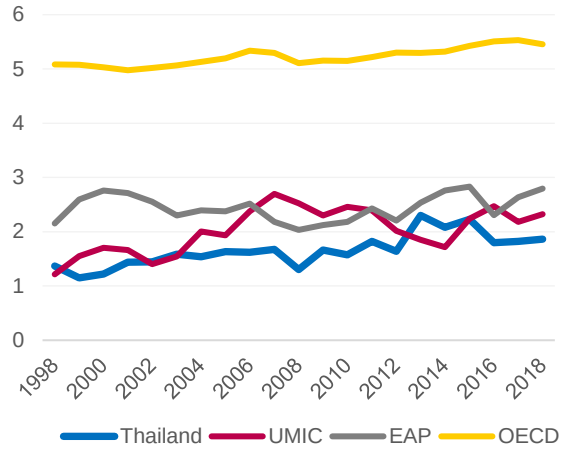
in % of GDP, 1998 – 2018



Source: WB analysis, data from ICTD 2020.

Figure 2-43: Subnational Taxes, Thailand

in % of GDP, 1998 – 2018

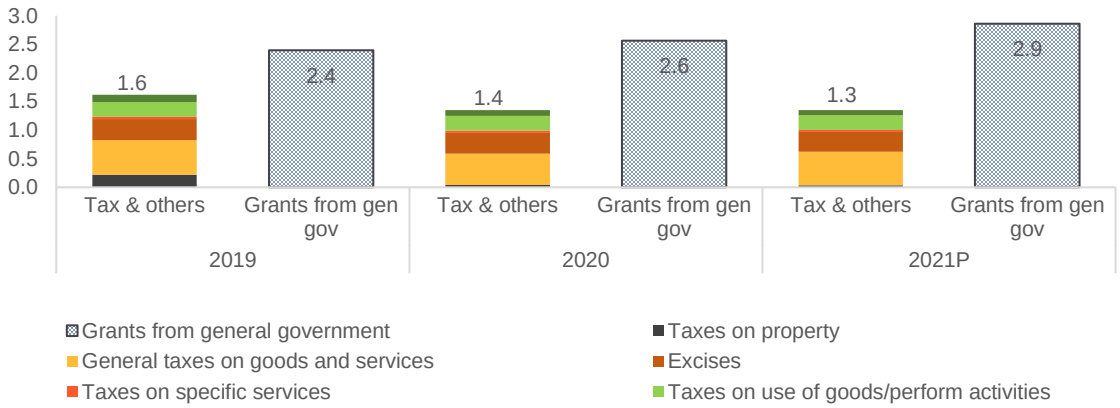


Source: WB analysis, data from ICTD 2020.

102. Thailand has taken steps to increase property tax with the new Land and Building Tax Act,[29] however, the amount due was reduced by 90 percent for 2020 and 2021 due to the COVID-19 pandemic.[30] The discount on property tax resulted in a loss to local government tax collections of around 0.2-0.3 ppts of GDP in 2020-21 (Figure 2-44). However, the loss to the local government revenue was compensated by an increased allocation from the general government. The local government tax collection should return to the pre-pandemic level on the resumption of full property assessment in 2022. The Land and Building Tax came into effect on 1 January 2020 with an assessment based on the property's appraised value. The value is calculated based on the sum of standard land and building prices set by the Treasury Department. The recurrent local property tax is levied with a progressive tax rate, depending on the usage and type of property, with some degree of local autonomy in the rate-setting (Figure 2-45). This new tax law replaced the former property taxes (Buildings and Land Tax (1932) and the Land Development Tax (1965)) which assessed properties based on an income-based method. The tax is administered and collected by local authorities, and the collected tax goes directly to the local budget.

Figure 2-44: Local government revenue

Percent of GDP



Source: Fiscal policy office; WB analysis

[29] The new Land and Building Tax Act B.E. 2562, which was introduced March 2019 and entered into effect January 1, 2020 ("Thailand's New Land and Building Tax Act." ASEAN Briefing, 2020).

[30] Via The Royal Decree to reduce taxes for certain types of land and buildings, BE 2563.

Figure 2-45: Property tax rate and exemptions

2022

Purpose of use of land and buildings	Maximum tax rate	2022-2023	Tax exemptions
Commercial	1.20%	0.3-0.7%	None
Vacant or unused*	1.20%	0.3-0.7%	None
Residential use	0.30%	0.02-0.1%	1) Land and buildings owned by individuals for residential use, whose names are on the household registration documents and are worth up to 50 million baht; 2) Buildings owned by individuals for residential use, whose names are on household registration documents and are worth up to 10 million baht
Agricultural use	0.15%	0.01-0.1%	Agricultural land worth up to 50 million baht

Note: *If a property remains vacant for more than three consecutive years, the rate will be increased by 0.3 percent every three years until it reaches a cap of 3 percent.

Source: WB analysis

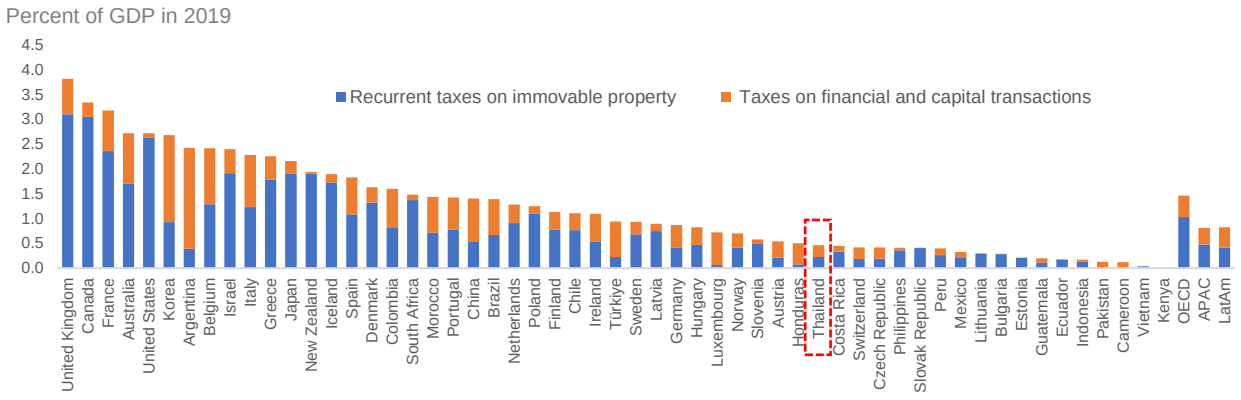
103. There is also scope to improve the administration of the property taxation process, including discovery and valuation. Identification and registration of land and buildings in a jurisdiction are the critical first steps to effective property taxation. Yet Thailand's local government still faces challenges in completing the cadastral survey, as surveys rely mainly on a manual approach, and there is a lack of capacity to identify all properties for their tax purpose (such as commercial, residential, agricultural use, or vacant). Thailand can expand the potential property tax base by adopting technology to improve the land mapping survey, drawing from geographic information systems (GIS), satellite, or drone imagery. In addition, levying taxes should be based on property values that reflect the market value and its use. The new Land and Building Tax offers a more efficient approach to tax, given its higher rates and more up-to-date appraised land values (Jangratsameekan and Phijaisanit, 2018). But given that the land values used for tax calculations are still based on values appraised by the government, which do not reflect current market values, further reforms have the potential to improve the tax base, collections, and progressivity. Many countries in the region rely on market-based values of the property to define the property assessment level, for example, China, Hong Kong, Indonesia, the Philippines, and Singapore. However, adopting market-base values for property taxation may encounter revaluation challenges as the values will be updated periodically – e.g. on an annual basis (Hong Kong, China; and Singapore) or every 3 years (Indonesia, the Philippines) – which could cause significant value shifts at the individual property level, and significant tax increases (ADB[31], 2022).

104. Apart from recurrent taxes on immovable property, Thailand also imposes tax on property transactions which can create large distortions. According to the data from OECD, Thailand collects tax from financial and capital transactions, at 0.24 percent of GDP, which largely consists of the property transaction tax. For each property transaction, the transaction tax is charged through three channels: (1) a fixed transfer fee of 2 percent of the appraised value, (2) a business tax of 3.3 percent, classifies as "Taxes on goods and services, for the transaction of property sold within 5 years of ownership, or a stamp duty of 0.5 percent of the appraisal value for properties sold beyond 5 years of ownership, and (3) a progressive income tax or a maximum withholding tax of 20 percent, based on appraisal value after deducting its ownership period and depreciation. Though taxes on property transactions have the benefit of shifting investment out of housing into higher-return activities and preventing excessive speculative activities in the housing market, they have the disadvantage of discouraging housing transactions and thus the reallocation of housing to its most productive use, thus reducing growth, for example, by discouraging individuals from moving to areas where labor is in greater demand (OECD, 2010[32]).

[31] https://www.adb.org/sites/default/files/institutional-document/782851/ado2022bn-property-taxation-developing-asia.pdf

[32] OECD (2010), *Tax Policy Reform and Economic Growth*, OECD Tax Policy Studies, No. 20, OECD Publishing, Paris, https://doi.org/10.1787/9789264091085-en.

Figure 2-46: Taxes on immovable property and financial and capital transactions



Source: WB analysis, data from OECD

105. Thailand could potentially expand its taxes on wealth by raising the inheritance tax rate and imposing capital gains taxes on individual investors. Thailand's Inheritance Tax Act has been effective since 1 February 2016, and levies a 5 percent tax rate on Lineal descendants and ascendants, while other heirs face a 10 percent tax rate. The tax is applicable to inheritance received with a value exceeding 100 million baht, and only the portion exceeding this value is liable for tax. However, the tax rate remains low compared to international benchmarks, such as South Korea's 50 percent, Taiwan and Vietnam's 10 percent, and the Philippines'[33] 6 percent. This suggests that there is scope for increasing tax revenue while reducing inequality by raising the tax rate or tax threshold. Thailand also imposes a capital gains tax on corporate investors and withholding tax on dividend incomes of 10 percent. However, individual investors are currently exempt from the capital gains tax.

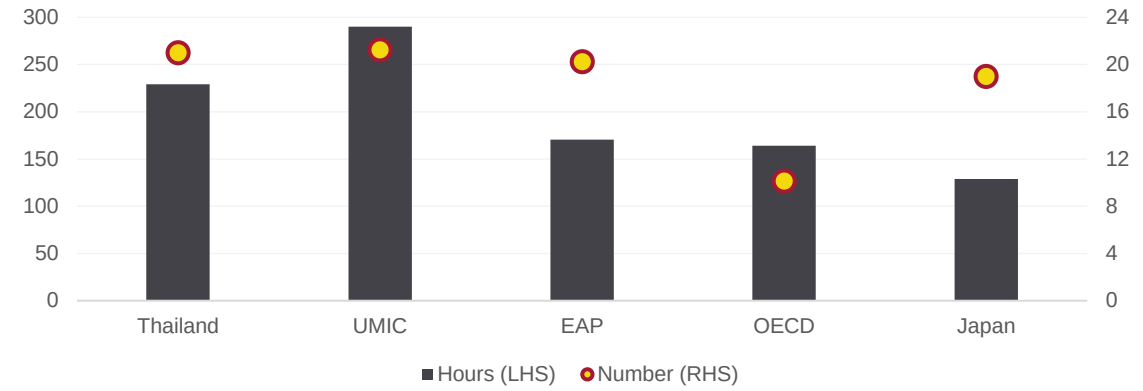
2.8 Revenue administration

106. Thailand's revenue administration falls short of regional and aspirational peers in terms of time and number of payments required to comply with tax laws. Thailand requires 21 payments per year (Figure 2-47), much higher than the OECD average of just over 10 payments. While Thai companies spend less time filing their taxes than companies in the average UMIC, they spend much more time per year than the EAP and OECD averages.

[33] In 2017, estate tax in the Philippines is lowered from 20 percent to a single rate of six percent for net estate with standard deduction of PHP 5 million as well as exemption for the first PHP 10 million for the family home.

Figure 2-47: Time and payments to comply with tax laws

Time (hours per year, LHS) and payments (number per year, RHS), 2020

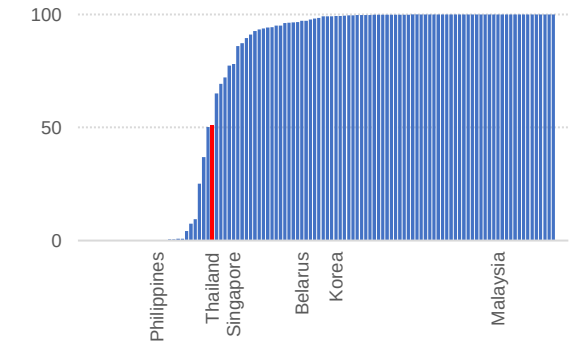


Source: WB analysis, data from WB Doing Business 2021.

107. Thailand has much ground to gain in the digitalization of its revenue administration. While the e-filing for personal income tax returns improved to as high as 82.1 percent in 2019, just over half of Thailand's CIT and VAT returns were e-filed in 2019, with 51 percent and 58 percent respectively. Most UMIC countries had much larger e-filing shares than Thailand for both types. It was in the bottom third of countries for 2019 CIT returns that were e-filed (Figure 2-48), and in the bottom quartile of countries for 2019 VAT returns e-filed (Figure 2-49). While e-filing services require upfront ICT investment, the long-term benefits outweigh the costs. The body of available literature highlights that e-filing eases the burden of paying taxes, reduces taxpayer errors, improves voluntary compliance, and limits the risk of fraud and corruption.[34] Beyond e-filing, the combination of technology and good data can help facilitate automated compliance risk management and enable strengthened auditing. Other benefits include improving taxpayer services when taxpayers engage in the manner that is easiest for them and enhanced effectiveness of tax compliance activities such as through the automated exchange of information.[35]

Figure 2-48: CIT returns e-filed

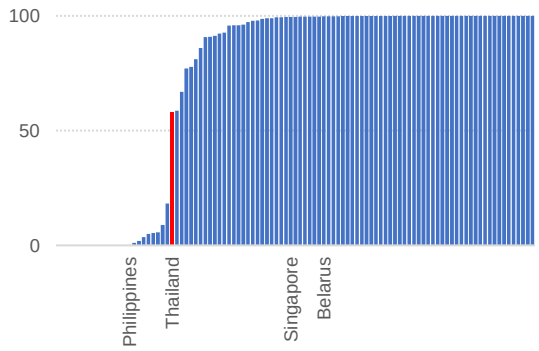
in % of total returns filed, 2019, UMIC/LMIC



Source: WB analysis, data from ISORA 2022.

Figure 2-49: VAT returns e-filed

in % of total returns filed, 2019, UMIC/LMIC



Source: WB analysis, data from ISORA 2022.

108. The government has taken steps to improve compliance by announcing the e-payment law to improve the tracking of financial transactions of businesses, especially among the e-commerce players. Starting from March 2020, financial institutions, state financial institutions, and electronic money service providers are required to report to the Revenue Department by the end of March every year details of all accounts. These include specific transactions of persons who make, in the aggregate, (i) at least 3,000 annual electronic deposits/transfers, or (ii) at least 400 annual deposits/transfers where the total value of all transactions is at least THB 2 million.

[34] See, for instance, "Why tax administrations are embracing digital transformation," WBG (2021) and "Digitalization of Tax Administrations and the necessary simplification of tax systems," CIAT (2020).
[35] See, for instance, OECD, "Tax and digitalisation" (2018).

109. Thailand has not yet taken advantage of behavioral insights that may offer a cheap way to boost compliance. Other EAP countries such as Australia, China, Indonesia, Japan, Malaysia, and Singapore have used behavioral insights to increase taxpayer compliance.[36] In Singapore, a behavioral nudge included in tax arrears letters increased payments by between 1.7 and 6.4 percentage points within 44 days of the redesigned letters. In Indonesia, incorporating nudges in SMEs' calendars saw more SMEs pay taxes, and witnessed SMEs paying more in taxes compared to the control group.

2.9 Conclusion and recommendations

110. Thailand remains considerably below the tax efficiency frontier for its level of income. Though Thailand has undergone several reforms in the past, by making income tax rates more competitive and by introducing new forms of taxation, such as a tax on sugar, digital service tax, and property tax, the impact on tax collection has been marginal. Thailand has a sizeable structural 'tax gap' – the difference between tax collection capacity, based on the performance of peers at a similar income level, and actual tax revenue – estimated at around 5.6 percent of GDP. At current levels, revenues will be inadequate to meet future spending needs while maintaining fiscal sustainability. Moreover, the tax system on its own does relatively little to promote equity. More progressive taxes such as personal income tax and wealth taxes provide a relatively small share of the overall tax take, with low levels of compliance and high rates of informality raising the potential for horizontal inequities.

111. This report proposes progressive tax reforms that taken together could increase revenues by 3.5 percentage points of GDP. These reforms would narrow the estimated tax gap and provide the revenue needed to fund elevated spending needs. They include reforms to: (a) adjust the VAT rate and exemptions; (b) broaden the personal income tax base and streamline allowances; and (c) expand property tax collection. On the administration side, expanding e-filing and e-payment and introducing behavioral initiatives can lower the burden of tax filing and help improve voluntary compliance. This estimate excludes the impact of additional revenues from carbon pricing in the manufacturing sector, which over the longer term would be broadly offset by the cost of other climate mitigation measures proposed in this report (see Chapter 7).

112. By implementing these reforms at a gradual pace over the next eight years, revenue collection could increase to 24.3 percent of GDP by 2030, compared with 20.9 percent in the baseline scenario (Table 2-5). Among the reforms proposed, several could be implemented relatively quickly from a technical perspective, including increasing the VAT rate, streamlining VAT exemptions, and rationalizing personal income tax allowances. Others – such as broadening the personal income tax base, and increasing property tax collections – are likely to take longer, to the extent that they require changes to slower-moving variables such as compliance and informality rates, or improvements in administrative capacity. In this report, we allow for a gradual implementation of revenue reforms, given the economic benefits of a relatively gradual medium term consolidation (see Chapter 1), and acknowledging that some of the revenue measures proposed will require more time than others that are more 'stroke of the pen' in nature. Nevertheless, as Thailand has a comparatively sound fiscal position currently, even such a gradual increase in revenues over the next eight years would create the required fiscal space for additional spending now.

Table 2-5: Recommended revenue reforms*

Reform options	Detail	Estimated impact (% of GDP)
Total revenue increase	**Achievable by 2030 with staggered implementation of reforms**	**3.5**
VAT:		
• VAT rate increase	VAT hike from 7% to 10%	1.6
• VAT exemption reform	Removal of all VAT exemptions	0.6
• VAT rate increase with no exemptions	Increase VAT rate to 10%, while also remove all VAT exemptions	2.4
Personal Income Tax:		

[36] See Behavioral Insights Team (2019) and WBG Indonesia Behavioral Insights Report (2020).

Reform options	Detail	Estimated impact (% of GDP)
• Expansion of personal income tax base	Expanding tax base to UMIC average of 32.5% of labor force by addressing the low compliance issue among the self-employed and business owners, as well as those workers in the informal sector	0.26
• Streamlining personal income tax allowances	Removal of the overall allowances, deductions, and special allowances (keeping the exemption for incomes of less than or equal to THB 150,000 and personal/dependents allowances)	0.46
Tax on property	Improve collection by ensuring regular, systematic updates of the appraisal value. Property valuation approaches should also be simplified and indexed to the market value	0.3

Note: *Excludes revenues from carbon pricing which are analyzed in Chapter 7.

113. VAT reforms, including raising the VAT rate and removing exemptions, will substantially increase tax revenue. Thailand misses out on higher VAT collection due to a comparatively low rate and small tax base. Raising VAT rate from 7 percent to 10 percent is estimated to raise revenue at a maximum by about 1.6 percent of GDP. The low VAT base is another driver of low tax potential, largely attributable to the prevalence of exemptions, relatively low level of consumption, and high rates of informality. Exempted products and services are estimated to account for around 19 percent of GDP; removing these exemptions could result in additional tax revenue of around 0.6 percent of GDP. Taken on their own, these reforms would adversely impact the poor, but providing compensation via the targeted social protection measures proposed in this report (see Chapters 6 and 8) would more than offset the impacts on poverty at a cost well below the additional VAT revenue raised. There is also potential for other reforms to broaden the VAT base. Targeted incentives for SMEs could encourage informal firms to register in the VAT system. Extending the VAT to capture e-commerce and digital services more effectively could also raise revenue in a fast-growing sector, while also making local service operators more competitive in the domestic market.

114. Thailand has potential to raise personal income tax revenue by 0.7 percent of GDP, while also achieving a fairer tax system. The personal income tax base is narrow due to the large number of exemptions and deductions, the prevalence of informality, as well as a large compliance gap. Only 4 million people (10 percent of the labor force) paid tax in 2019, most of whom were salary workers. Expanding the tax base could be achieved by addressing the low number of self-declarations or under-reporting of income among the self-employed and business owners, as well as those workers in the informal sector. The expansion of the PIT base (i.e. number of tax filings) from 28.5 percent of the labor force to the UMICs average of 32.5 percent would increase revenue by an estimated 0.3 percent of GDP. The removal of some generous deductions and allowances could also improve the efficiency of the personal income tax and make the system more equitable. Our analysis shows that some tax allowances, such as tax incentives for long-term savings, are heavily concentrated among high-income taxpayers. Streamlining these personal income tax deductions and allowances, while maintaining the standard exemption of THB 150,000 and allowances for personal spending and spending for dependents, could increase revenues by 0.46 percent of GDP.

115. Additional efforts to collect tax on wealth could help achieve a more equitable tax system, and raise revenue while minimizing distortionary impacts. The expansion of property taxation, if appropriately implemented, could provide additional funds for local governments. Closing the property tax gap between Thailand and the UMIC average could see an increase in government revenue by 0.3 percent of GDP, which would accrue to local governments. Collections can be improved by ensuring regular and systematic updates of the appraisal value. Property valuation approaches should also be simplified and indexed to the market value.

116. Other tax policies, such as expansion of excise tax, inheritance tax, and capital gains tax, also warrant further analysis. There is room for some excises to be increased further, which would reduce harmful behaviors and could raise additional revenue. The cost of a package of cigarettes remains cheaper than international comparisons and costlier in terms of health effects. The third phase of the SSB tax has been delayed due to COVID-19, though its rapid implementation would yield health benefits sooner. Implementing reforms to inheritance tax and capital gains tax could also raise additional revenue and enhance the equity of the tax system.

CHAPTER 3
SPENDING TRENDS AND PRIORITIES

Chapter 3: Spending Trends and Priorities

3.1 Introduction

117. Public spending has a critical role to play in supporting Thailand's long-term development goals and securing fiscal sustainability. Chapter 1 highlighted that Thailand's long-term fiscal sustainability is dependent on economic growth, which in turn hinges on structural reforms to enhance productivity. Human and physical capital accumulation are key pillars of the structural reform agenda, as they can drive higher productivity and economic growth, poverty reduction, and improved wellbeing. The composition and quality of public spending is key in building human and physical capital, and thus has a critical role to play in supporting this agenda.

118. However, overall public spending has traditionally been low, and its composition only moderately growth enhancing. Prior to the pandemic, Thailand's level of public spending averaged 21 – 22 percent of GDP—far lower than in structural peers (31 percent) and aspirational peers (28 percent), and close to half the OECD average (41 percent). Further, growth-enhancing spending—defined as spending on: (i) health and education (investment in human capital); (ii) transport and communication (investment in infrastructure); and (ii) R&D (associated with innovation and technological development)—accounted for only 26 percent of total expenditure in Thailand.[37] This is lower than the share of growth-enhancing expenditures in aspirational peers and OECD countries (Figure 3-1). Furthermore, the share of growth-enhancing spending in Thailand has declined over the past decade. This is due to a decline in the share of spending on education (see paragraph 125) and temporarily higher spending on social protection in FY20 as part of the COVID-19 response package, which saw the shares of other allocations decline. Even accounting for the FY20 increase in social protection spending, the share of the budget directed to this function remains much lower than in structural and aspirational peers, and in OECD countries (Figure 3-2). A key driver of this gap is old-age pension spending, which accounts for 7.8 percent of GDP in OECD countries (18 percent of total spending), compared to 1.3 percent of GDP in Thailand (6 percent of total spending).

Figure 3-1: The share of growth-friendly spending is lower than in comparator countries and has declined over the past decade.

(Percent of general government total spending, GFS figures)

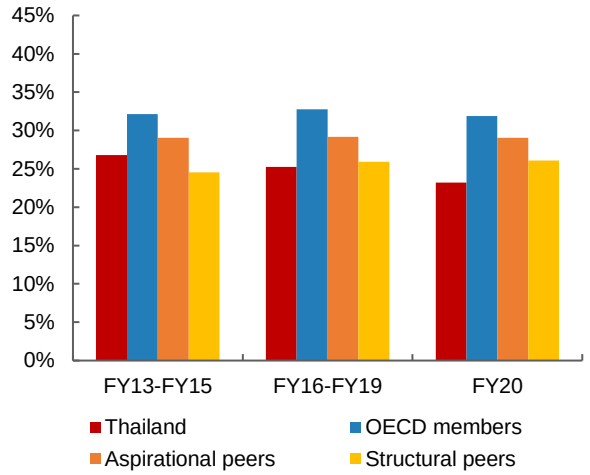
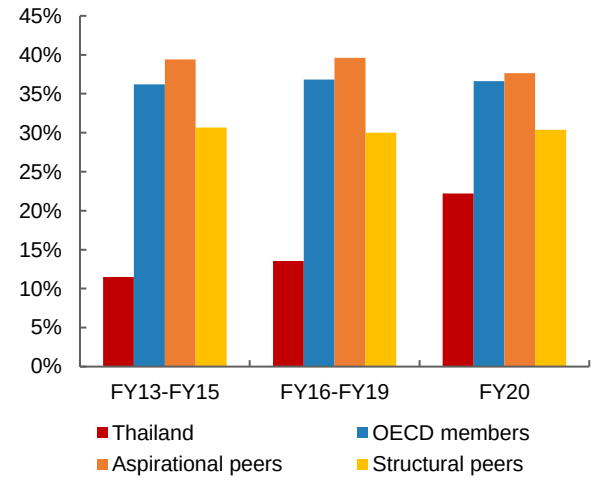


Figure 3-2: The share of total spending directed to social protection is also low relative to comparator countries.

(Percent of general government total spending, GFS figures)



Source: Fiscal Policy Office, Ministry of Finance, MTI benchmarking, WB staff calculations.

119. This chapter and subsequent chapters focus on the key components of growth- and welfare-enhancing spending. The following chapters analyze the adequacy, efficiency, and equity of public spending related to the accumulation of human capital—education, health, and social protection. This chapter has two objectives: (i) to put spending in these social sectors in the context of overall public spending; and (ii) to undertake a deeper analysis of public investment

[37] Following the methodology outlined in Cepparulo, A. & Mourre, G. 2020. "How & How Much? The Growth- Friendliness of Public Spending Through the Lens" *European Commission Discussion Paper 132*.

spending. It does this by first assessing the overall level of spending in relation to peers and outlining the broad structure of spending by levels of government. Overall spending is then disaggregated by function (health, education, etc.) and by economic classification (wages, goods and services, capital spending, etc.), using Thailand's performance on the Human Capital Index (HCI) relative to its peers to provide context and broad framing for the subsequent discussion of the adequacy, efficiency, and effectiveness of social sector spending. Historical trends are analyzed, and the composition of spending is compared with international benchmarks to identify potential allocative inefficiencies and whether rigidities in spending are likely to constrain the ability of the government to respond to emerging pressures. Particular attention is paid to the response to COVID-19 and the war in Ukraine and its impact on spending in these social sectors. The chapter then turns to public investment and the public capital stock: assessing its adequacy, efficiency, and quality, and outlining recommendations to boost the capacity of the government to implement these investments and raise their quality. The chapter concludes with a summary of key findings.

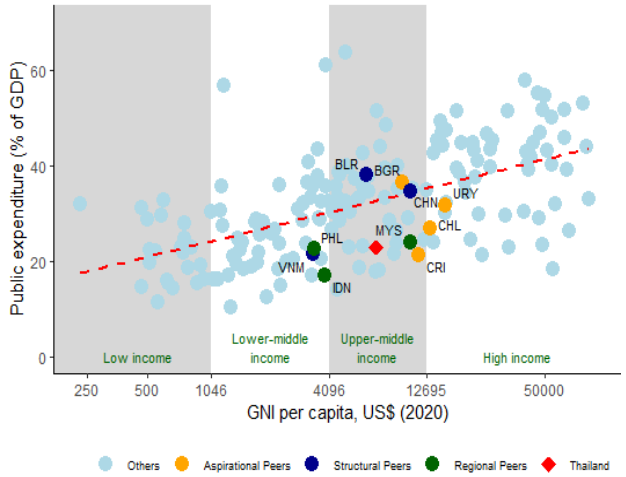
3.2 Public expenditure trends

120. Prior to the pandemic, Thailand's level of public spending was low given its income level and compared with peer countries (Figure 3-3). This reflects relatively low levels of revenue collection (as outlined in Chapter 2), and the government's efforts to prioritize fiscal sustainability. Public spending remained low and stable between FY13 – FY19, at 21 – 22 percent of GDP (Figure 3-4). This placed Thailand below most of its aspirational and structural peer countries, and well below the OECD average.

121. Spending increased substantially in response to COVID-19. Thailand responded to the pandemic with one of the largest counter-cyclical fiscal packages in the region (equivalent to 14.6 percent of GDP). In doing so, it reaped the benefits of previous fiscal discipline. Total spending averaged 26.1 percent of GDP in FY20 and FY21—4.5 percentage points above the average of FY13 – FY19. While the recent surge in spending due to COVID-19 relief measures has brought Thailand closer to its peers, much of this spending is expected to be unwound over the coming years. Section 3.2.3 summarizes the fiscal measures adopted by the Thai authorities in response to COVID-19 and the Ukraine war.

Figure 3-3: Government spending is low compared to Thailand's level of income and peer countries…

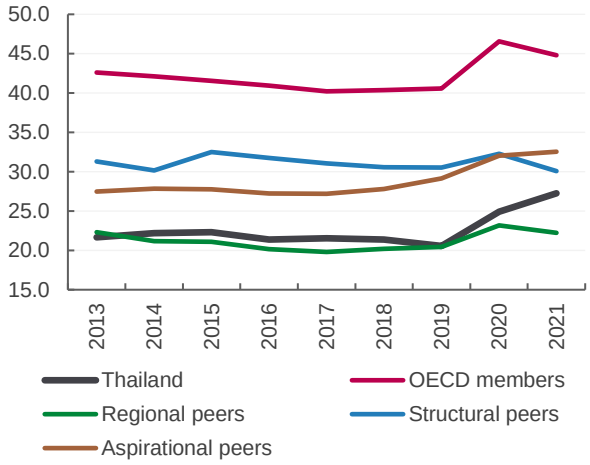
(Public Expenditure, % of GDP, average FY18 – FY20)



Source: World Bank WDI.

Figure 3-4: …And was not rising prior to the pandemic.

(Total General Government Expenditure, % of GDP)



Source: MTI benchmarking

122. The central government continues to dominate spending, despite long-standing efforts to decentralize service delivery (Figure 3-5). The 1997 Constitution introduced reforms aimed at decentralizing service delivery responsibility and finances to local authorities—particularly for health, education, and local infrastructure. This was expected to make public services more efficient, increase public participation in decision making at the local level, and enhance local economic development. Despite several rounds of legislative and administrative reform, there remains limited decentralization of health and education services (see Annex 3-1 for a detailed discussion). Consequently, the central government continues to dominate spending and service delivery, with local governments (referred to as Local

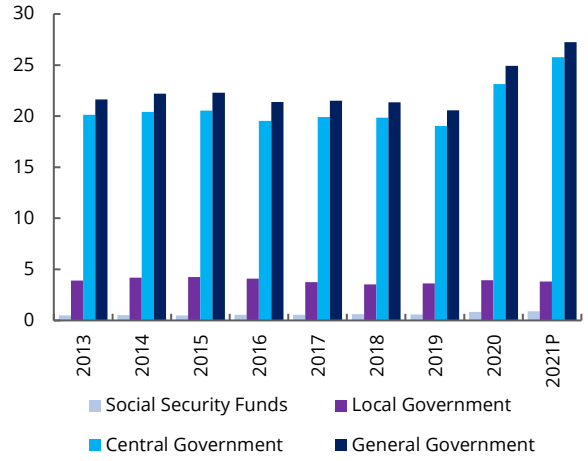
Administrative Organizations, or LAOs) averaging 17 percent of general government spending in recent years (3.9 percent of GDP). This proportion falls to 13 percent when considering current spending—reflecting the limited decentralization of service delivery. However, LAOs play a more prominent role in infrastructure spending, accounting for around a quarter of public capital spending (see Section 3.2.2). In addition, SOEs also represent an important component of total public spending, particularly public investment (see Box 3-1).

Composition of Government Spending by Function

123. In recent years, social sector expenditures have become the largest share of general government spending (Figure 3-6). Over the period FY16-FY19, health, education, and social protection overtook general public service expenditure as the largest share of total expenditure, at over 35 percent. This was driven by an expansion in health and social protection spending, offsetting a decline in the share of total spending directed to education. The share of social sector spending increased further to over 39 percent in FY20-FY21 as the authorities implemented extensive income support as part of the COVID-19 response.

Figure 3-5: The central government dominates general government spending.

(Spending by institutional level, % of fiscal year GDP, GFS basis)

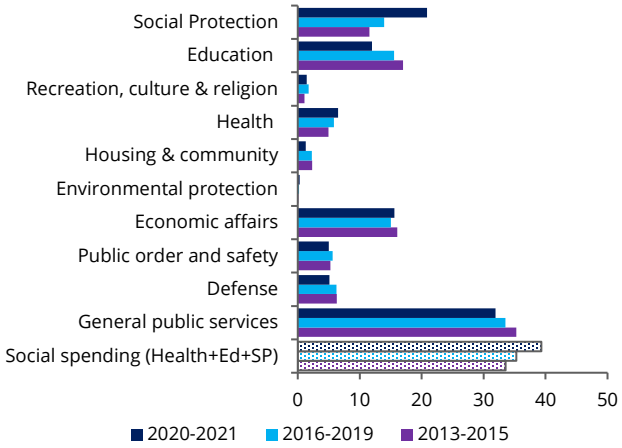


Source: Fiscal Policy Office, Ministry of Finance.

Note: p = preliminary data. General Government spending is less than the sum of the components due to the netting out of central-local government transfers.

Figure 3-6: Prior to the pandemic, social expenditure became the largest share of general government spending by function.

(% of total expenditures, expenditures-functional classification, GFS basis)

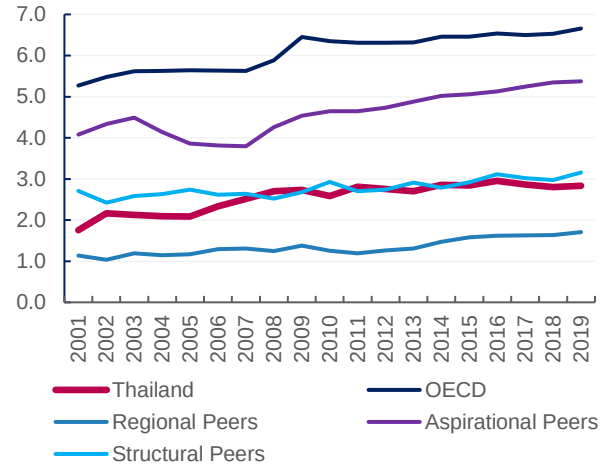


Source: Fiscal Policy Office, Ministry of Finance.

124. Public spending on health has increased steadily over time but remains below aspirational peers and the OECD average. Although public health spending has steadily increased over the past 20 years, it remains slightly below what would be expected for a country at Thailand's level of income (Figure 3-7 and Figure 3-8). Government spending on health increased substantially from 10.3 percent in 2002 to average 14.5 percent of total government spending since 2006, reflecting efforts to increase coverage under the Universal Coverage Scheme. This is high compared to Thailand's structural and regional peers (Figure 3-9). Yet, since 2015, Thailand's public spending on health as a share of GDP (2.9 percent) has been lower than the average for structural peers (3.0 percent), aspirational peers (5.2 percent) and the OECD (6.5 percent). This suggests that health spending has been constrained by the overall spending envelope, despite prioritization in the government budget (see Chapter 4).

Figure 3-7: Health spending has increased gradually over the past 20 years but remains below the OECD average and aspirational peers…

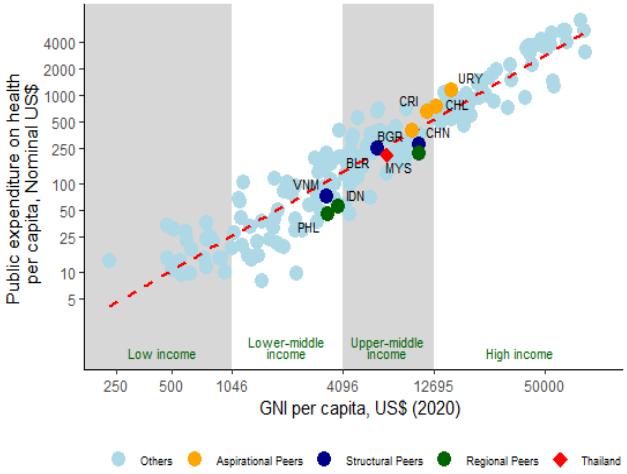
(Public expenditure on health as a share of GDP)



Source: WHO Global Health Expenditure Database

Figure 3-8: …and is slightly lower than would be expected for Thailand's income level…

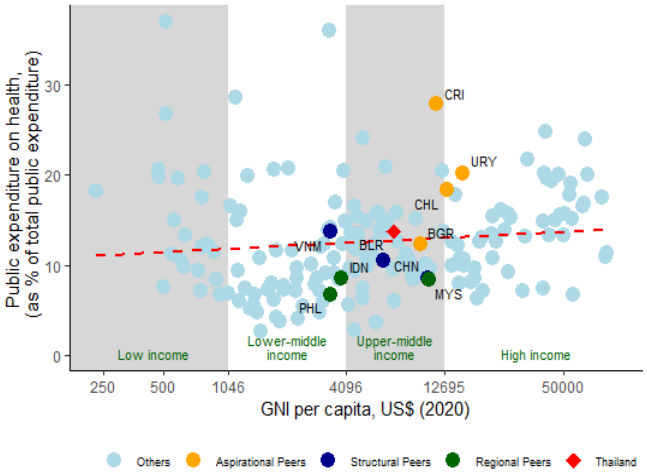
(Public expenditure on health per capita, average FY18 – FY20)



Source: WDI

Figure 3-9: …but its share of the budget is slightly higher than in most peer countries.

(Public expenditure on health as a percent of total spending, average FY18 – FY20)



Source: WDI.

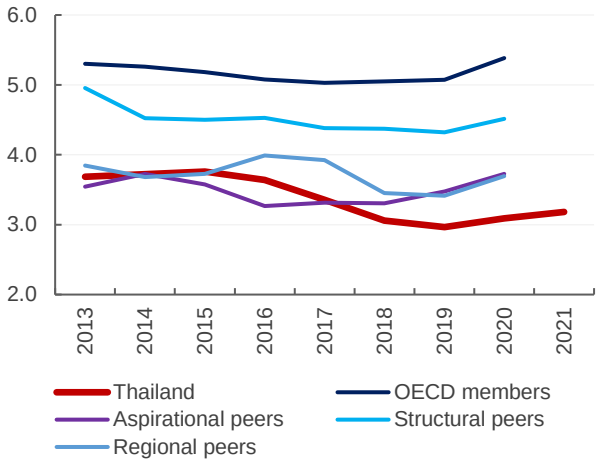
125. Public spending on education is low relative to peer countries and Thailand's income level; and has fallen further in recent years. Over the past decade, Thailand has fallen behind its peers in terms of education spending as a share of GDP, with spending falling from almost 4 percent to barely 3 percent (Figure 3-10 and Figure 3-11). Furthermore, education spending has been deprioritized in the budget, with education accounting for a lower share of total spending compared to the nation's peers and relative to its income level (Figure 3-12). Indeed, education spending as a share of total expenditure fell from 17.3 percent in FY16 to 14.5 percent pre-pandemic (FY19); and was only 11.7 percent in FY21 (although the recent decline is partially explained by the temporary increase in overall spending due to the COVID-19 fiscal response).

126. While social protection spending increased prior to the pandemic, it was low compared with regional peers (Figure 3-13). Prior to the COVID-19 stimulus package, annual spending on social assistance was less than 1 percent of GDP. Spending on the immature social insurance scheme is also low but spending on civil service pensions has been growing and exceeded 1 percent of GDP in 2020. Yet, overall social protection expenditure remained well below aspirational peers and the OECD average. Recent work has found that prior to the pandemic, Thailand's total social assistance spending was

lower than other countries at similar income levels (Sharpe and Lamanna et al, 2021). While a large share of the population was covered by some form of social assistance, the amounts transferred were very small, and most poor and vulnerable households did not receive a full package of support due to the fragmented nature of the social protection system. The spending on social assistance almost doubled (as a share of GDP) to mitigate the impact of COVID-19 but much of this increase in spending is currently only expected to be temporary.

Figure 3-10: Education expenditure is below peers and has fallen as a share of GDP over the past decade.

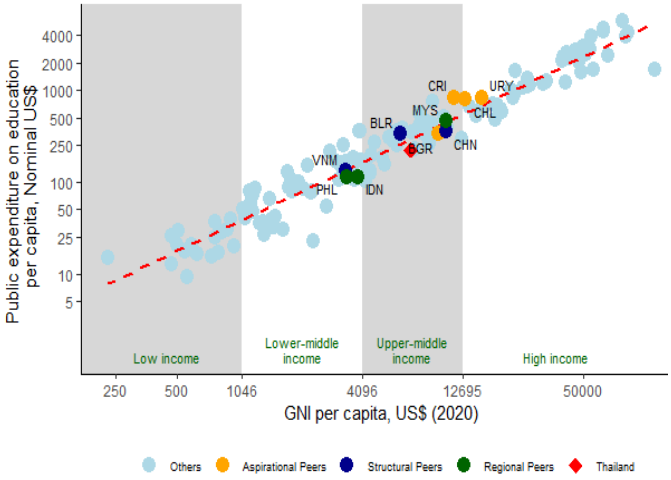
(Public expenditure on education as a percent of GDP)



Source: MTI benchmarking and WDI

Figure 3-11: In recent years, education spending has been slightly lower than would be expected, given Thailand's level of development…

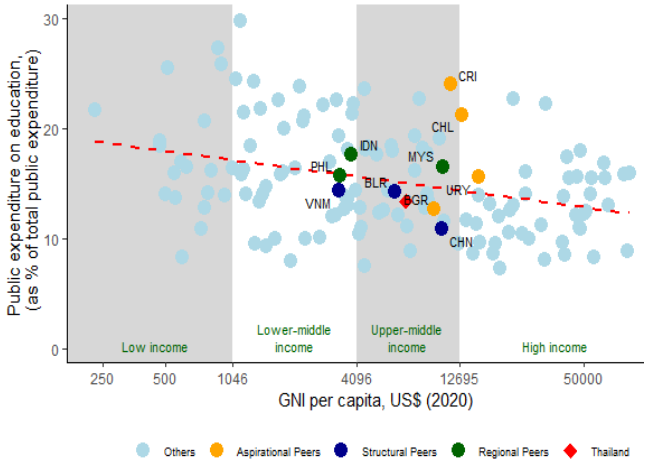
(Public expenditure on education per capita, average FY18 – FY20)



Source: WDI

Figure 3-12: …and has accounted for a low share of the budget compared to peers and its level of income.

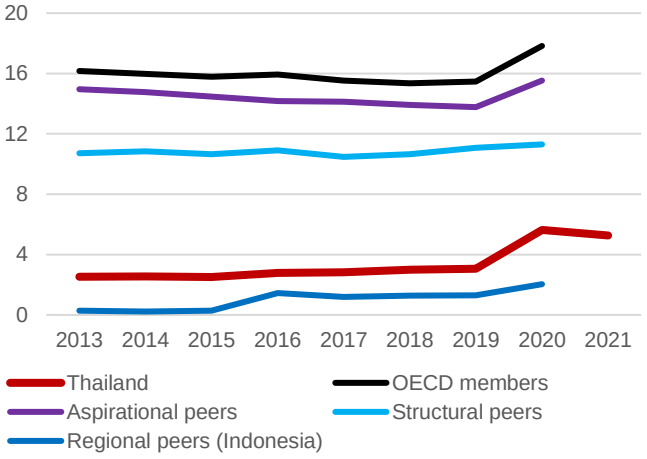
(Public expenditure on education as a share of total expenditure, average FY10 – FY20)



Source: WDI

Figure 3-13: Social protection expenditure was rising gradually prior to the pandemic, but remained well below peers

(Percent of GDP, GFS figures GFS functional classification of expenditure)



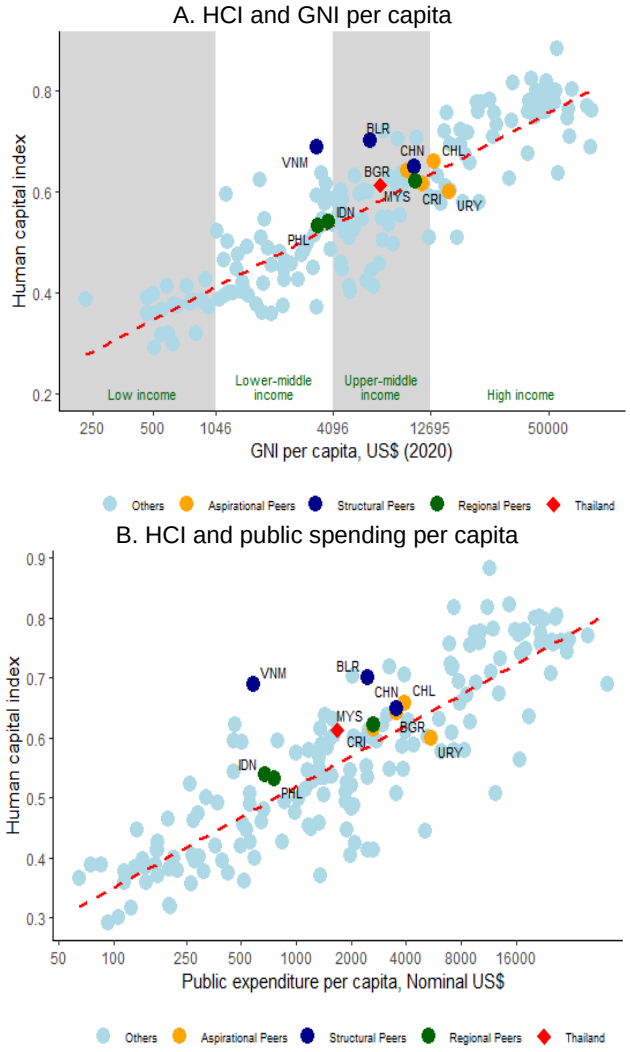
Source: MTI benchmarking. Note: Data for other Regional Peer countries not available.

127. Despite low social sector spending, the quality of Thailand's human capital is relatively high—though poor education outcomes indicate that public spending efficiency and effectiveness could be improved. Thailand's HCI score is above what would be expected for its level of income and public spending (Figure 3-14). Thailand also outperforms some of its peer countries, such as Uruguay, Indonesia, and the Philippines. However, its HCI score lags its three structural peers (Belarus, China, and Vietnam). Steadily improving health outcomes over the last 20 years push up Thailand's HCI score—indicating that public spending in the sector has been relatively efficient. However, poor education outcomes

(highlighted by falling harmonized test scores and learning-adjusted school years) drag down Thailand's overall score—and indicate potentially poor spending efficiency and effectiveness, particularly in recent years (Figure 3-15). Chapters 4 to 6 and Chapter 8 explore the adequacy, efficiency, and effectiveness of social spending in detail.

Figure 3-14: Thailand's HCI is high given its income level and public spending…

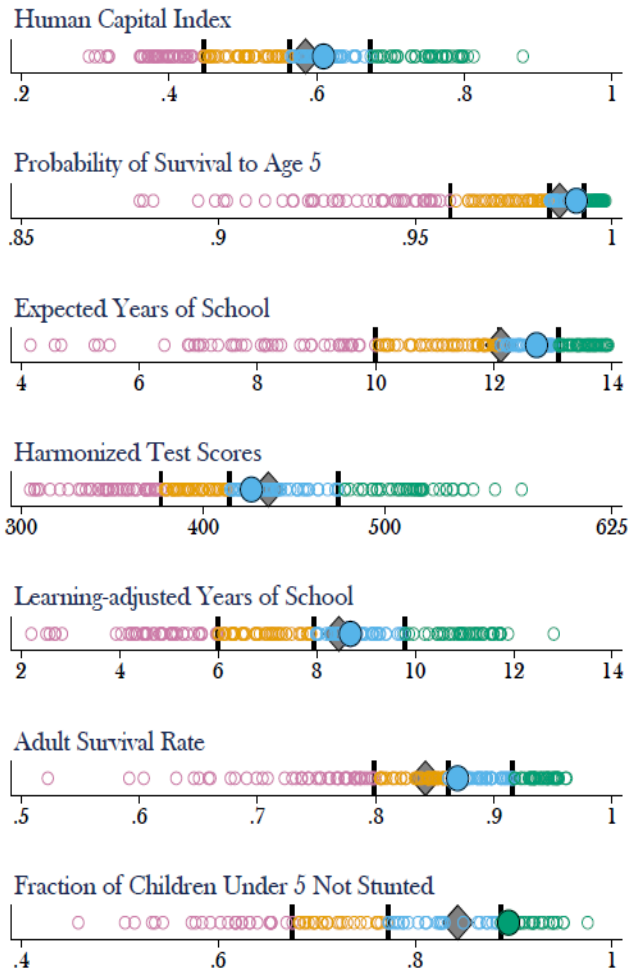
(HCI average, FY18 – FY20)



Source: World Bank WDI.

Figure 3-15: …though poor education outcomes drag down the nation's overall score.

(HCI and components, 2020)



Note: Large circle represents Thailand in 2020. Diamond represents Thailand in 2010. Small circles represent other countries. Lines and color of circles represent quartiles of the distribution

Source: World Bank. 2020. Human Capital Index Country Brief: Thailand. Washington, D.C.: World Bank.

Box 3-1: Interpreting public spending data sources in Thailand

Thailand uses two systems of fiscal accounting, the cash-based system and the Government Financial Statistics (GFS) system. The cash-based system is widely used by the authorities, including in the preparation of the budget. However, the budget estimates for revenues and spending can differ significantly from the GFS estimates reported elsewhere, including in this PER, which can complicate the interpretation of budget outcomes and projections. One major difference is that the GFS estimates include a range of revenues and expenditures that are excluded from the cash-based budget, including those treated as off-budget.

The most important spending item excluded from the cash-based budget estimates in FY20, FY21, and FY22 has been the COVID-19 response package financed by the two borrowing decrees. By authorizing this spending through an emergency off-budget instrument, the government was able to quickly implement a range of relief and recovery measures, the details of which did not need to be reviewed by the legislature when the spending was

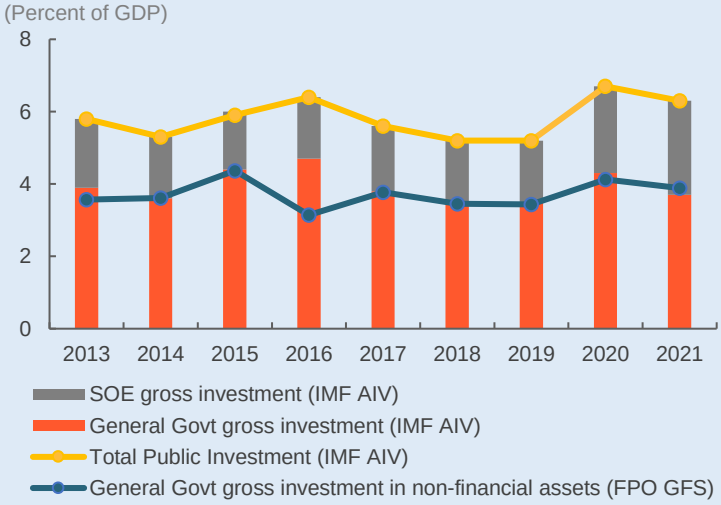
Box 3-1: Interpreting public spending data sources in Thailand

approved. Moreover, classifying this spending as off-budget ensured that the government would not violate its deficit rule, which states that the annual budget deficit cannot exceed 20 percent of the annual budget plus 80 percent of expenditures allocated for principal repayment (see Chapter 1). However, approving spending through emergency borrowing decrees means that there is less Parliamentary scrutiny over the specific measures deployed. It also implies that – unlike the GFS estimates – the actual and projected budget deficits do not give an accurate indication of changes in the government debt stock, due to the exclusion of substantial debt-financed expenditure. Finally, the practice calls into question the relevance and enforceability of the government's deficit rule, which is established by law.

Thailand's Fiscal Policy Office (FPO) within the Ministry of Finance (MoF) produce the nation's GFS statistics. Comprising data from FY13 to FY21, these include a breakdown of spending by economic and functional (Classification of the Functions of Government, COFOG) classifications. Spending by economic classifications is provided for the Central Government, an aggregation for all LAOs, and an aggregation of the Social Security Funds. These are combined to produce economic classifications spending data for the General Government (after applying some adjustments to correct for aggregation errors). COFOG data are provided for the General Government level only (i.e., disaggregated breakdowns for central government, LAOs, and the Social Security Funds are not available). Neither data set includes SOE spending.

This PER uses IMF estimates of total public investment spending to analyze the adequacy and efficiency of Thailand's public investment. Investments by SOEs account for approximately 30-40 percent of total public investments (IMF 2022).[38] Thus, it is important to account for this spending when considering the adequacy and efficiency of Thailand's public investment and comparing Thailand's performance to its peers. Further, SOE debt is part of total public debt, meaning that SOE borrowing and investment decisions have direct implications on government finances. The IMF produces estimates of SOE gross public investment as part of its macroeconomic monitoring. In addition, the IMF estimates gross general government investment. These are broadly similar to the FPO's GFS net investment figures, adjusted for depreciation (Figure Box 3-1). Finally, the IMF also produces a cross-country dataset for investment and capital stock, covering the public, private and PPP sectors.

Figure Box 3-1: Comparison of data sources and measurements of public investment spending



Source: FPO, MoF, IMF Article IV documents (several years).

To facilitate international comparison, the PER uses World Health Organization (WHO) data on aggregate public health spending. Public financing for the health system is administered by several government agencies.[39] It appears that not all the activities of these spending units are captured in the GFS statistics. For example, spending under the public health insurance schemes appears to be included as "sickness and disability spending" under Social

[38] IMF. 2012. Thailand: 2022 Article IV Consultation—Staff Report.

[39] These include the Ministry of Public Health, National Health Security Office, Social Security Office, Comptroller General's Department of MOF, local governments, SOEs, public independent agencies, and other ministries.

Box 3-1: Interpreting public spending data sources in Thailand

Protection rather than under Health. The WHO Global Health Expenditure Database provides comparable data on health expenditure for 192 countries over the past 20 years, based on health accounts data, government expenditure records and official statistics. WHO estimates for total public health spending in Thailand are generally 2 – 3 times higher than the FPO GFS data.

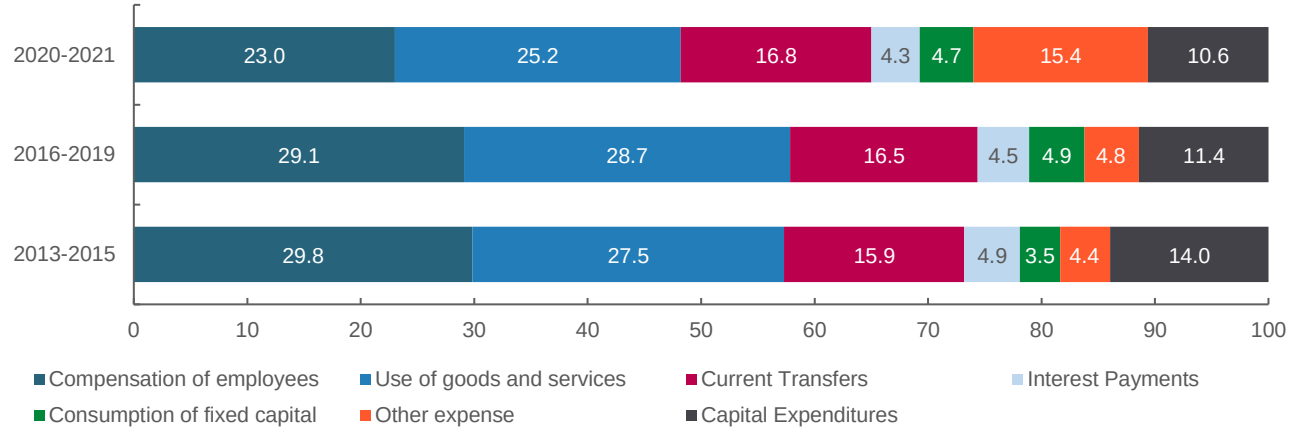
Given the short timeseries of the FPO's COFOG data, the PER also utilizes sectoral spending from the cash-based budget system to analyze longer-term sectoral spending trends. Achieving improvements in health and education outcomes take time. Indeed, the literature recognizes that outcomes today generally reflect investments stretching back over many years. It is thus important to put current spending and outcomes in the context of historical spending. Consequently, this PER utilizes both the GFS and the cash-based spending data. As explained above, differences in sectoral spending statistics between the GFS and cash-based systems is due to the wider coverage of revenue and expenditure categories (including off-budget spending) included in the GFS figures.

Composition of Government Spending by Economic Classification

128. By economic classification, the composition of the budget had remained relatively stable pre-pandemic (Figure 3-16). The FPO's GFS figures show that most of the key economic classifications—such as the public sector wage bill, goods & services, interest payments, and transfers—remained relatively stable over the period FY13 – FY19. However, lower capital spending (both in nominal terms and as a share of GDP) resulted in a decline in the share of general government capital spending in FY16 – FY19, which naturally led to a rise in the share of current spending. The decline in the share of capital spending reportedly continued during the pandemic as 'Other expenses' expanded, reflecting the COVID-19 stimulus spending. However, as noted in Box 3-1, the GFS figures for general government investment spending are only about 70 percent the value of the figures estimated by the IMF, as the GFS figures do not include SOE investment. The IMF figures indicate that total public sector investment spending picked up during the pandemic, particularly due to higher SOE investment spending (see Box 3-1).

Figure 3-16: Expenditures-Economic Classification

(% of total expenditures, GFS basis)



Source: Fiscal Policy Office, Ministry of Finance

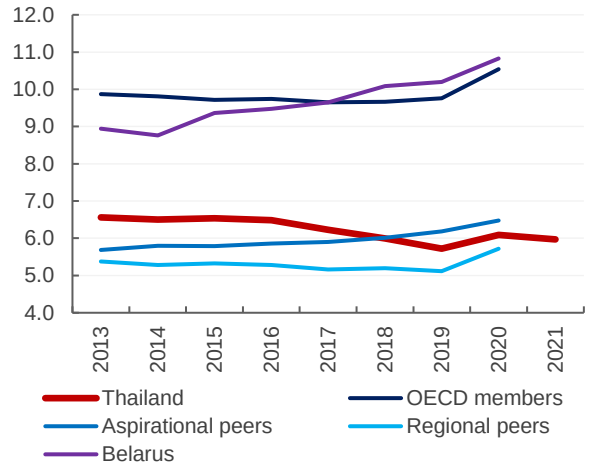
129. Key drivers of current spending—such as the public sector wage bill, interest payments, and use of goods and services—have been relatively well contained (Figure 3-17 and Figure 3-18). Compensation of employees has been gradually declining over the past decade (both as a share of GDP and a share of total spending) and is low as a share of GDP compared to peers.[40] This reflects the overall conservative fiscal approach, combined with relatively strong controls on civil service remuneration and headcount. General use of goods and services was stable as a share of GDP prior to the pandemic and was comparable to OECD benchmarks. Finally, debt servicing has also remained well contained and stable,

[40] As a share of total spending, Thailand's public wage bill in 2020-21 (23 percent) was comparable to the OECD and aspirational peers (23 and 25 percent in 2020) and was lower than regional peers (27 percent).

at around 1 percent of GDP over the past decade before increasing to 1.3 percent in FY21—reflecting both lower GDP and the higher debt burden.

Figure 3-17: Thailand's public sector wage bill has declined in recent years, and is now lower than most peers

(General government Compensation of Employees expenditure, % of GDP)

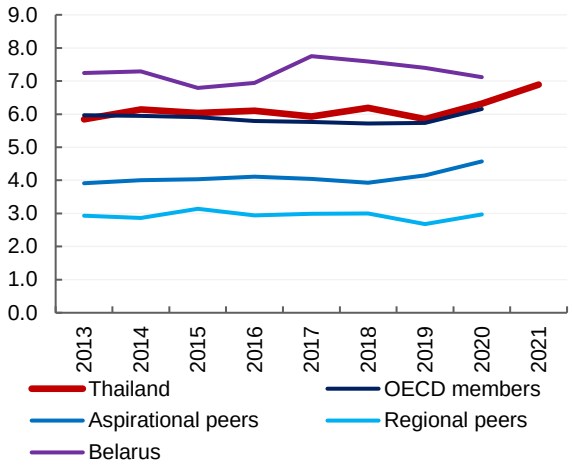


Source: MTI benchmarking, WDI

Note: Data for other Structural Peer countries not available.

Figure 3-18: Spending on goods and services was stable pre-pandemic and comparable to the OECD average, but is higher than other peers

(*General government Use of Goods and Services expenditure, % of GDP)*



Source: MTI benchmarking, WDI

Note: Data for other Structural Peer countries not available.

130. The composition of spending is relatively less rigid than in peer countries. Herrera and Olaberria (2020)[41] define non-discretionary (rigid) budget components as the sum of public wages, pensions, and debt service. They decompose these items into structural and non-structural components for a large set of countries over time (Box 3-2). In their data, Thailand's rigid spending as a share of total expenditures stood at 37.4 percent in 2017 (Figure 3-19), well below the levels of peer countries included in the dataset. With the wage bill and interest expenses relatively well contained, this indicates that the Thai authorities have somewhat greater capacity to adjust spending in line with emerging priorities. Greater flexibility can also facilitate improved quality of spending. Nevertheless, there are risks that spending rigidities could increase over the medium to long term. This is associated with an aging population (higher pensions/social security costs) and with higher debt (higher interest costs), both of which have the potential to crowd out other forms of spending and reduce budget flexibility.

Box 3-2: Measuring Government expenditure rigidity

Herrera and Olaberria (2020) propose a new measure of rigidity based on analyzing structural and non-structural components of government expenditure over time. It focuses on wages, pensions, and interest payments as the key non-discretionary areas of public spending. The approach defines the structural component of these spending areas as being determined by long-run economic fundamentals such as level of development, demographic and geographic characteristics, and long-term institutional arrangements. The non-structural component is determined by policy decisions or short-run effects associated with the business cycle. Interest payments are taken as a rigid expenditure due to their contractual nature and the negative consequences of default.

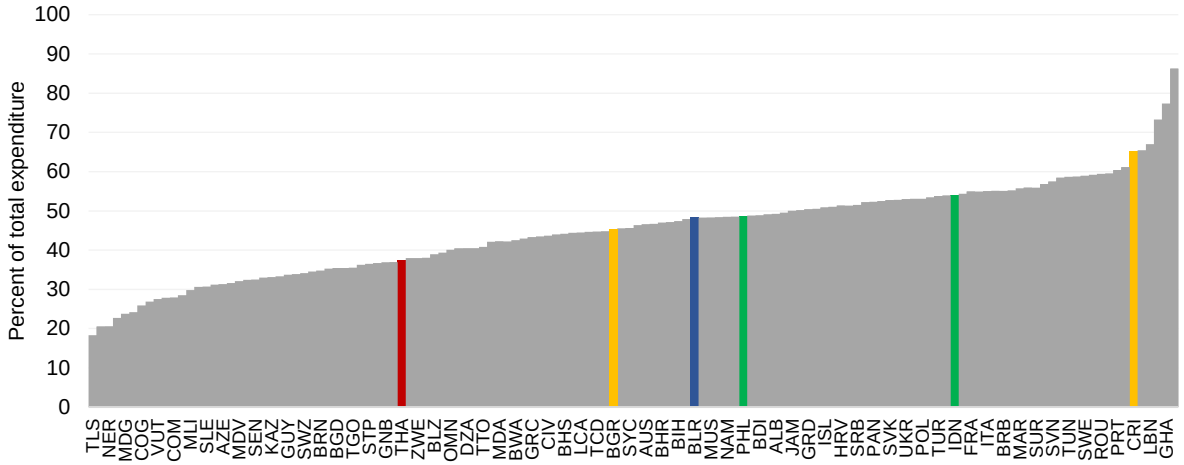
The authors define rigidity as the sum of interest payments, structural public wages, and structural other current expenditure (including pension payments, transfers to the private sector, and other current spending), as a proportion of total general government spending. Structurally rigid expenditure is estimated using a fixed-effect model in which the log of the expenditure per capita in constant international dollars depends on a set of

[41] Herrera, S. and Olaberria, E. 2020. Budget Rigidity in Latin America and the Caribbean: Causes, Consequences, and Policy Implications. International Development in Focus; World Bank, Washington, DC.

structurally independent variables including GDP per capita, population, and the dependency ratio. The structural components of wages and other current spending are estimated separately.

Figure 3-19: Spending is relatively less rigid than in peer countries.

(Rigid expenditure = structural wages + interest + structural other current expenditures; percent of total expenditures, 2017)



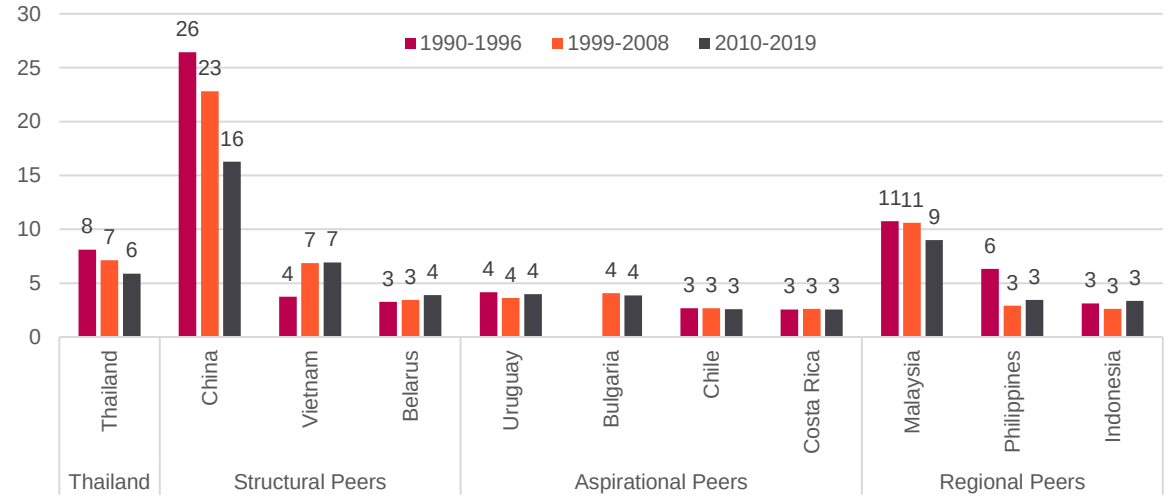
Source: Herrera and Olaberria (2020).

Note: Rigid expenditure is measured by calculating the structural component of wages, social security benefits, other current expenditures, and interest payments as a percentage of total expenditure. Thailand in red, Aspirational Peers in yellow, Structural Peers in blue, Regional Peers in green.

131. Public investment has declined as a share of GDP over the past 30 years and has been deprioritized in the budget. Capital spending fell from 14 percent of total spending in FY13 – FY15 to 11 percent in FY16 – FY19 (Figure 3-16). Nevertheless, capital spending as a share of GDP remains higher than most peer countries—only China, Malaysia and Vietnam are higher (Figure 3-20). The central government accounts for less than half of total public investment spending (44 percent, on average, over the period FY13 – FY21) (Figure 3-21). SOEs account for around a third of investment spending, on average. Local governments accounted for over 30 percent of spending during FY13 – FY16; but dropped to 18 percent from FY17 – FY21. Despite the recent decline, LAOs still comprise a significant proportion of total public capital spending. This is consistent with the government's decentralization agenda, which is designed to bring spending decisions closer to citizens and enhance local economic development (see Annex 3-1 for a detailed discussion).

Figure 3-20: Public investment has been declining over the past 30 years.

(General government gross fixed capital formation, percent of GDP, IMF data)

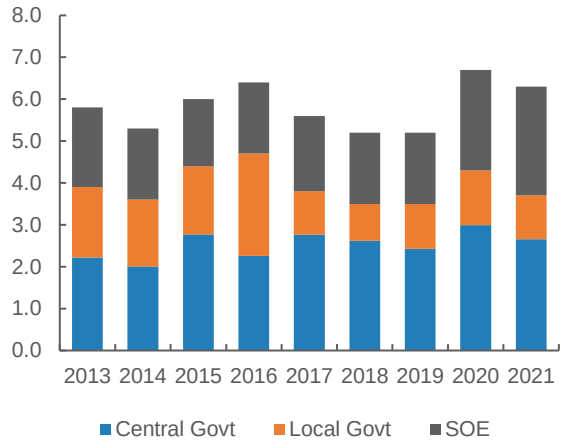


Source: IMF Investment and Capital Stock Dataset, 2021, WB staff calculations.

132. Most of the on-budget COVID-19 response spending was recorded under 'Other Expenses' to facilitate spending tracking and reporting. The COVID-19 response measures consisted of various types of economic classifications of current spending, including public servant wages, goods and services, and transfers (as well as capital spending). Facing challenges in accurately tracking and reporting on these current expenses, the authorities decided to record most of the spending under 'Other Expenses' in the government's GFS accounts (Figure 3-22).[42] Of the 6.3 percentage point of GDP increase in total spending from FY19 to FY21, over 60 percent was recorded in 'Other Expenses'. As the stimulus package is unwound, this category of expenditure is expected to return to its previously low level.

Figure 3-21: The central government accounts for less than half of public investment spending

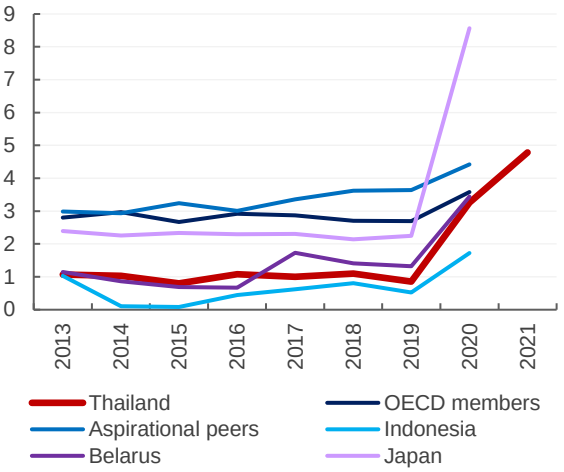
(General government gross fixed capital formation, percent of GDP, IMF data)[43]



Source: IMF Investment and Capital Stock Dataset, 2021, FPO, WB staff calculations.

Figure 3-22: Other expenses spiked in FY20-FY21, reflecting the COVID-19 stimulus package

(General government Other Expenses expenditure, % of GDP)



Source: MTI benchmarking. Note: Data for other Structural and Regional Peer countries not available.

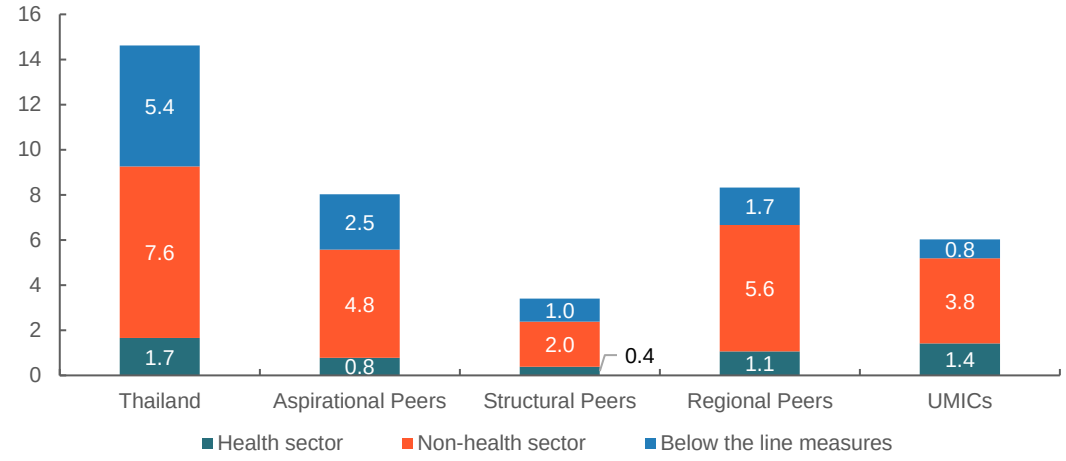
Fiscal Measures in Response to COVID-19 and the Ukraine war

133. During FY20 – FY22, the government of Thailand implemented a COVID-19 response package worth 14.6 percent of GDP to mitigate the health and economic impact of the pandemic. The package was very large compared to its peers and income level (Figure 3-23). Across Thailand's aspirational and regional peers, as well as the UMIC grouping, pandemic fiscal response packages averaged 6 – 8 percent of GDP, with considerable variation in size and breadth across countries. While Thailand's health-related measures were slightly larger than peers (1.7 percent of GDP), non-health related fiscal measures (7.6 percent of GDP) and below the line measures (5.4 percent of GDP) were much higher than in comparator countries.

[42] Thailand was not unique in recording a large proportion of COVID-19-related fiscal stimulus as 'other expenditure'—with Japan and Belarus (and to a lesser extent, other peers) showing a similar spike in FY20.

[43] Central and local government figures are calculated by applying the ratio of gross investment spending in non-financial assets from the FPO GFS from the two levels of government to the aggregate IMF data.

Figure 3-23: Thailand's COVID-19 relief package relative to peers *(percent of GDP)*



Source: Office of the National Economic and Social Development Council, IMF Fiscal Monitor.

Note: Includes measures announced up to March 2022 for Thailand, and September 2021 for other countries. Disbursement figures for Thailand below are to July 2022.

134. The response was unprecedented for Thailand in terms of size, coverage and the variety of instruments employed (Table 3-1). The package included three phases of fiscal stimulus, announced in March 2020, April 2020, and May 2021, totalling THB 1.56 trillion. These were organized around three themes: (i) Health; (ii) Relief (financial aid and cash handouts); and (iii) Economic Restoration/Recovery. In addition, the BoT provided extensive liquidity support to the private sector. Significant resources were allocated to income support measures, including cash transfers and subsidies for vulnerable households, informal workers, and farmers. A relatively large proportion of the total package was allocated to SMEs, to be provided via soft loans from state-owned banks. This reflects the importance of SMEs as a driver of incomes and employment in the Thai economy, and their need to maintain access to credit to deal with the cash flow impacts of COVID-19. The three themes of the fiscal response were:

(i) **Health**: THB 280 billion for health-related measures such as medical personnel and equipment, vaccine procurement, laboratory operations, and medical emergency responses.

(ii) **Relief**: THB 886 billion for measures such as: cash transfers and subsidies to affected groups; lower water and electricity bills, and social security contributions; tax relief; infrastructure projects; and debt restructuring for firms and households. While vertical transfers or top ups were paid to almost eight million beneficiaries of pre-COVID programs, the bulk of the economic relief spending was through the scaling up of social assistance to citizens that would not have been considered vulnerable prior to the pandemic.

(i) **Economic Restoration/Recovery**: THB 391 billion for measures such as co-payment programs for general consumption and to encourage domestic tourism, and local employment programs.

135. In addition, the BoT provided financial relief to SMEs and large firms to minimize cash flow constraints and ensure job preservation. This included: (i) soft loans to businesses from the BoT via commercial banks and Specialized Financial Institutions[44] (SFIs); (ii) establishment of the Corporate Bond Liquidity Stabilization Fund to help firms roll over maturing bonds and support financial market stability; and (iii) regulatory forbearance, while balancing risk disclosure and supervisory expectations.

[44] Thailand has 8 specialized financial institutions which are state-owned, often deposit-taking, banks mandated with implementing the government's social and economic agenda. The three largest SFIs are Government Savings Bank (GSB), Bank for Agriculture and Agricultural Cooperatives (BAAC) and Government Savings Bank (GSB).

Table 3-1: Summary of key measures of the COVID-19 relief and recovery package, and additional measures in response to high global commodity prices

	Baht (bn)	% of FY19 GDP
Total Fiscal Measures: COVID-19	**2,457**	**14.6**
Fiscal Stimulus	***1,557***	***9.3***
Health spending	280	1.7
Relief (Cash handouts)	886	5.3
Economic Restoration/Recovery	391	2.3
Below the line measures (contingent liabilities)	***900***	***5.4***
Guarantees on BoT soft loans to SMEs	500	3.0
BoT Stabilization Fund	400	2.4
Additional Fiscal Measures: Ukraine War	**152.5**	**0.9**
Cost of living support	74.7	0.4
Subsidy of diesel oil and gas	39.5	0.2
Temporary cut to Social Security contributions	33.9	0.2
Tourism recovery	4.5	0.0

Source: Office of the National Economic and Social Development Council, Budget Bureau, Fiscal Policy Office, Bank of Thailand, WB staff calculations.

136. The package was financed by THB 1.5 trillion (8.9 percent of FY19 GDP) in off-budget loans, combined with reallocations from the budget, and BoT and SFI balance sheets. The first phase of measures (March 2020) was financed by reallocations from the FY20 budget and allocations from the BoT and SFIs to fund soft loans. The second phase (April 2020) was financed by a THB 1 trillion (5.9 percent of GDP) emergency loan decree—an off-budget loan that enabled authorities to quickly implement the response package in the early stages of the pandemic (see Box 3-1). In May 2021, the government approved an additional THB 500 billion (3.0 percent of GDP) in off-budget borrowing to support the third phase of fiscal measures. Finally, the government has access to a "contingency fund for emergencies or immediate needs" at part of the Central Fund in the annual budget. This is set aside to respond to unexpected events such as a natural disaster or global crisis. In FY21 and FY22, THB 57 million was allocated from the contingency fund to cover spending on vaccine procurement and rollout, active COVID-19 testing, and treatment.

137. From February to July 2022, the authorities announced a further 0.9 percent of GDP of fiscal measures to mitigate cost-of-living pressures due to the Ukraine war and rising global commodity prices. To counteract price pressures and support vulnerable households, in the months following Russia's invasion of Ukraine the government announced new fiscal measures amounting to THB 152 billion (0.9 percent of GDP). The set of measures included energy subsidies, transfer payments for low-income households and taxi drivers (including through the expanding state welfare card scheme), a cap on electricity prices for lower-income households, and cuts to the employers' and employees' social security contributions. Though some of the welfare subsidy measures were targeted at lower-income households, which generally results in larger multiplier effects, subsidies on diesel and cooking gas prices continue to incur a large fiscal cost and lead to an inefficient allocation of resources (see Chapter 8).

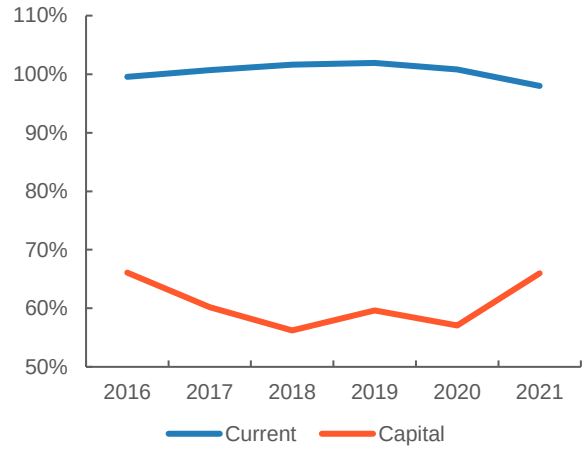
3.3 Public investment for stronger growth

138. Thailand has a history of low execution of planned capital spending, despite legislation designed to increase public investment spending. All data sources on public investment spending—the cash-based budget system, the FPO GFS, and the IMF estimates—point to a decline over the past 30 years. As outlined in Box 3-1, the cash-based system is widely used by the authorities, including in the preparation of the budget. Based on the cash budget figures, capital spending accounted for around 38 percent of total budgeted spending prior to the Asian Financial Crisis. This fell to around 21 percent of the total cash-basis budget in FY16 – FY19, and below 20 percent in FY20-FY21. Thailand's Fiscal Responsibility Act B.E.2561 (2018) Section 20 states that "Capital expenditures must account for no less than 20 percent of the annual

budget and must not be less than the budget deficit of the fiscal year." However, the law only mentions the annual budget, not actual execution. While execution of the current budget has consistently been around 100 percent, the execution rate on planned capital spending has remained around 60-70 percent (Figure 3-24). This largely reflects low execution at the central government level, particularly in the ministries of transport and communication, interior, agriculture, and defense. Raising the capital budget execution rate equivalent to the rate for current spending could deliver an additional 1 – 2 percentage points of GDP in public investment spending, returning it to levels of the 1990s and early 2000s (Figure 3-20).

Figure 3-24: The execution rate of planned investment spending by the central government is low.

(*Central government execution rate, FPO cash-based budget figures*)



Source: FPO.

139. Higher public investment could support the economic recovery, boost potential growth, and catalyze Thailand's green transition—and ultimately support fiscal sustainability. Prior to the pandemic, Thailand had been growing slower than peers, largely due to low productivity growth and lackluster physical and human capital accumulation, high household debt, and weak social safety nets for a rapidly ageing population. The pandemic has increased the urgency of structural reforms needed to mitigate economic scarring and spur new drivers of growth. Public infrastructure investments to connect lagging regions and crowd in private investment can help support the recovery and raise the medium-term growth path, which is critical for fiscal sustainability (Chapter 1). Such investments are also essential to achieve Thailand's ambitious goal of reaching high-income status by 2037. This section assesses the adequacy, efficiency, and quality of public investment and the public capital stock, and outlines recommendations to enhance the government's capacity to implement these investments and raise their quality.

140. While capital spending has slowed in recent years, Thailand's stock of public physical capital (i.e., infrastructure and other fixed assets) still compares favorably to its income level and peers. The public capital stock (as a share of GDP) has also fallen over the past 20 years—suggesting that new public investment is not keeping up with depreciation and output growth (Figure 3-25). Nevertheless, Thailand's level of public capital stock is higher than would be expected for its level of income and compares favorably to its peers (Figure 3-26).

Figure 3-25: Declining capital spending has led to a fall in the public capital stock…

(Public capital stock, percent of GDP)

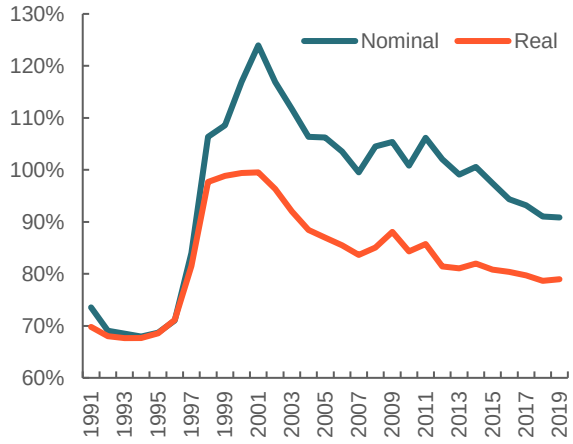
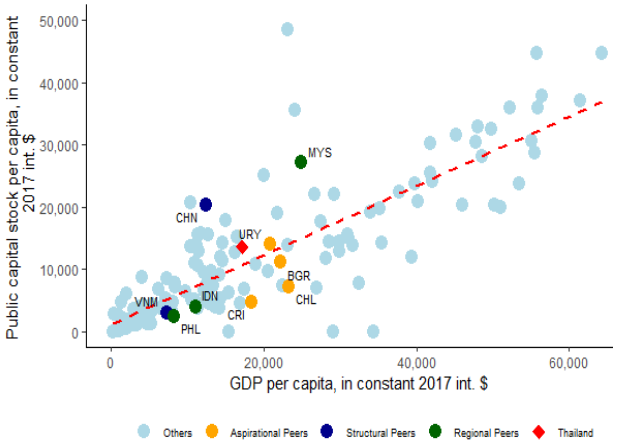


Figure 3-26: …Yet, Thailand's level of public capital stock still compares favorably to its income level and peers.

(Public capital stock and GDP per capita, 2017-19 averages)



Source: IMF Investment and Capital Stock Dataset, 2021, WB staff calculations.
Note: Capital stock is estimated using the perpetual inventory method.

141. Nevertheless, the quality of infrastructure underperforms peers (Figure 3-27 and Figure 3-28). Previous studies found that Thailand's Infrastructure Development Programs of the 1970s to early 1990s placed the nation in an outstanding position among emerging economies in terms of infrastructure—an advantage that Thailand retained into the 2000s.[45] However, this advantage appears to have diminished. Over the past decade, the quality of Thailand's infrastructure is perceived to have deteriorated, while the quality of infrastructure in peer counties has improved. Major deficits in infrastructure were identified as far back as 2004, with identified priorities focused on reducing transport congestion within greater Bangkok, improving connectivity with other parts of Thailand, and expanding power supply.[46] Recent analyses identify gaps in Thailand's infrastructure as a key factor contributing to the slowdown in productivity over the past 20 years, weakening its economic competitiveness and worsening congestion and air pollution.[47] Deteriorating infrastructure quality despite higher spending relative to peers is also an indicator of potentially inefficient spending.

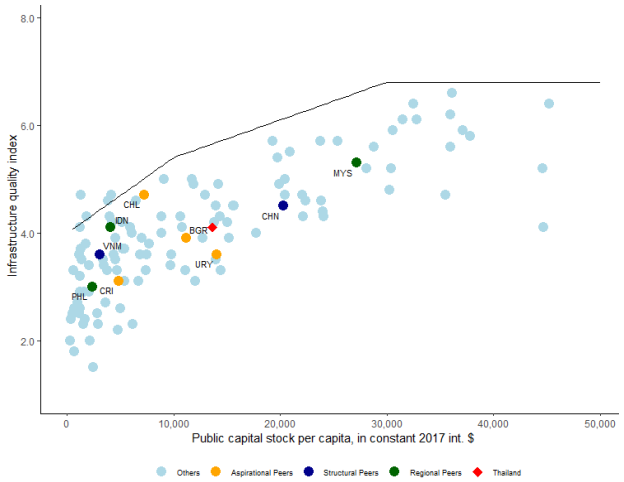
[45] World Bank Group. 2016. *Thailand - Systematic Country Diagnostic: Getting Back on Track – Reviving Growth and Securing Prosperity for All*. Washington, D.C.: World Bank Group.

[46] Ibid.

[47] The World Bank (2022), "Creating Markets in Thailand," Country Private Sector Diagnostic, Washington, D.C.; IMF (2022), AIV Report; ADB (2015) Thailand: Industrialization and economic catch-up. Mandaluyong City, Philippines: ADB; World Bank TEM Jan 2020.

Figure 3-27: Despite the relatively high public capital stock, quality of infrastructure underperforms peers.

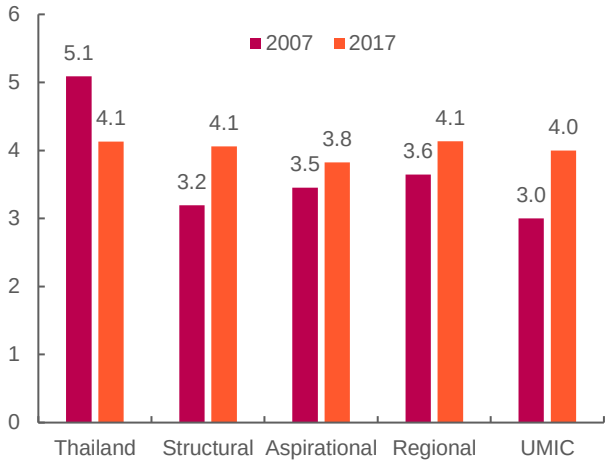
(Public capital stock and infrastructure quality index)



Source: IMF Investment and Capital Stock Dataset, 2021, World Economic Forum, WB staff calculations.

Figure 3-28: The quality of Thailand's infrastructure is perceived to have declined vis-à-vis its peers

(Average score, scale of 1 – 7 where 7 equals extensive and efficient—among the best in the world)



Source: World Economic Forum, WB staff calculations.

142. Cross-country analysis indicates that there is scope for enhancing public investment efficiency in Thailand. Thailand's marginal capital to output ratio improved remarkably during the 2000s compared to the years prior to the Asian Financial Crisis, indicating a more efficient allocation of capital to higher quality projects. This improvement was driven by a sharp improvement in the marginal productivity of private investment spending. However, this trend has reversed over the past decade (Figure 3-29). In comparison, the marginal capital to output ratio for public investment has gradually deteriorated over the past 30 years. Further, the public marginal capital to output ratio is now higher than most of Thailand's peer countries (Figure 3-30). This can be partially explained by Thailand's relatively high public capital stock, as additional projects would be expected to have lower marginal returns. Nevertheless, Thailand's ratio is higher than China and Uruguay—countries that also have a high level of public capital stock relative to their level of development in Figure 3-26 — suggesting that there is space to improve the efficiency of public capital allocation. Improvements in public investment management could significantly enhance the efficiency and productivity of public investment.

Figure 3-29: Thailand's marginal capital to output ratios have deteriorated (i.e., increased) in the past decade…

(Marginal capital to output ratios, IMF figures)

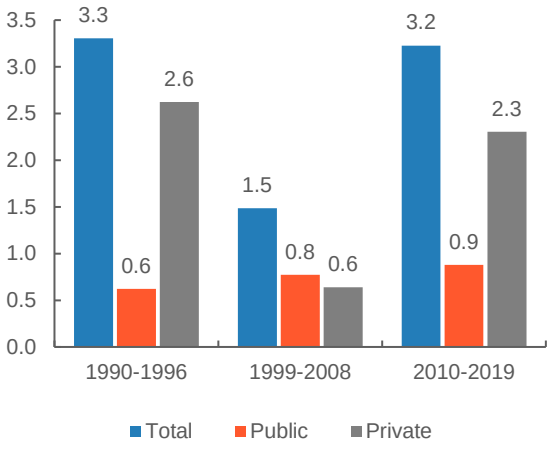
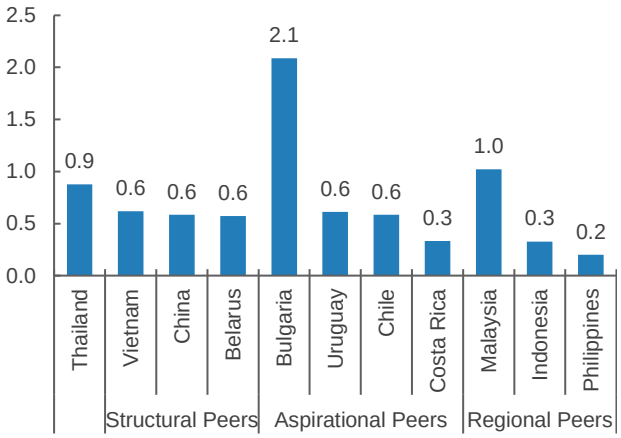


Figure 3-30: …and the public marginal capital to output ratio is higher than most of its peers, indicating that public investment spending efficiency could be improved.

(Public marginal capital to output ratios, avg. FY10 – FY19, IMF figures)



Source: IMF Investment and Capital Stock Dataset, 2021, WB staff calculations.

Note: Marginal capital-output ratio is ratio of increment in the stock of capital to the increment in output (ΔK/ΔY).

143. Strengthening public investment management (PIM) could unlock a triple benefit of economic stimulus, structural reform, and fiscal savings through efficiency gains. As outlined in paragraph 138, since the Asian Financial Crisis, Thailand has consistently underspent its capital budget by around 30 percent. This suggests that a constraint to increasing public investment is implementation capacity, and not just available financing. Some flagship investment projects worth billions of THB—initiated many years prior to the pandemic—remain delayed in Thailand's investment pipeline (see Box 3-3). These projects present an opportunity for economic stimulus in the short to medium term, with evidence that the public investment multiplier is relatively high in Thailand, while boosting the productive capacity of the economy over the longer term.[48] Chapters 1 and 7 also show that increasing public investment in human capital and green resilient infrastructure will be essential to improve productivity and address Thailand's climate mitigation and adaptation needs. Finally, strengthened PIM can help improve project design to minimize expensive cost overruns, enhance value for money through the procurement process, align operational and maintenance costs with capital spending to minimize costly repairs, and curtail the opportunity for graft. Combined, these effects can support Thailand's long-term fiscal sustainability.

Box 3-3: The Eastern Economic Corridor (EEC) and Thailand's public investment pipeline

The EEC is a key pillar of the Thailand 4.0 strategy to promote economic integration across the Eastern seaboard and foster manufacturing and innovation. Established in 2017, the EEC is a special economic zone of three provinces in eastern Thailand—Chachoengsao, Chonburi, and Rayong.[49] The EEC builds on the 1980 Eastern Seaboard project which managed to attract significant investments from Japanese manufacturers of automobiles and electronics. The EEC aims at transforming the eastern provinces into a hub for technology, high-tech industries, and services, and a regional gateway for trade and investment.[50]

The pandemic has delayed the implementation of EEC investment projects. On 28 June 2022, the cabinet approved the Action Plan on EEC Infrastructure and Public Utilities (2023-27) to enhance the linkages between the key EEC infrastructure investment projects. Key infrastructure projects in the EEC aimed at enhancing connectivity, transportation, and logistics in the region include:

- **High-Speed Rail Link.** This will connect three major airports in the EEC - Don Mueang, Suvarnabhumi, and U-Tapao and reduce travel time between Bangkok and Rayong to less than an hour. The project is estimated to cost around THB 258 billion (USD 8.3 billion or 1.5 percent of GDP).
- **The extension of U-Tapao International Airport and Airport City.** The project is expected to significantly increase the airport's capacity from an estimated 5 million to 12 million passengers per year in the initial stage. The estimated cost of the project is around THB 204 billion (USD 6.6 billion or 1.2 percent of GDP).
- **Laem Chabang Port Phase 3.** The project will expand the capacity of Thailand's largest deep-sea port, located in Chonburi province. The project will increase the port's capacity to handle up to 18.1 million TEUs (twenty-foot equivalent units) of cargo by 2025, up from its current capacity of 8 million TEUs. The project is estimated to cost around THB 110 billion (USD 3.5 billion or 0.6 percent of GDP). The project is under construction and expected to be completed in 2027.
- **Map Ta Phut Port Expansion.** The Map Ta Phut Port Expansion project will increase the capacity for handling LNG in the industrial deep-sea port, located in Rayong province. The project is estimated to cost around THB 65 billion (USD 2.1 billion or 0.4 percent of GDP). The project is under construction and expected to be completed in 2026.

The combined cost of these investments is around THB 637 billion (3.7 percent of GDP). Several of these investments – including the High-Speed Rail Link and the extension of U-Tapao International Airport – were originally scheduled to be completed by 2023 but have experienced significant delays. Accelerating the implementation of these and other

[48] The Bank of Thailand estimated fiscal multipliers from public investment spending of 1.36 after 1 year and 1.02 after 2 years (Bank of Thailand. 2008. Fiscal Impulse and Fiscal Multiplier of Thailand. Bank of Thailand: Bangkok).

[49] The zone was established on 17 January 2017, at the direction of the National Council for Peace and Order (NCPO), with the mission of promoting economic integration across the (Eastern seaboard**).** The first law of the EEC is the Eastern Special Development Zone Act, proclaimed on 15 May 2018.

[50] See "Thailand's Eastern Economic Corridor: A Bold Strategic Move", ISEAS Yusok Ishak Institute, Issue 2020 No. 12)

projects would provide demand-side support to the economic recovery of Thailand in the short term while also boosting the productive capacity of the economy over the longer term.

144. Six key bottlenecks that delay large public investment projects have been identified in previous work.[51] Resolving the following six challenges could help increase the speed, efficiency, and quality of public investment spending and boost economic growth.

145. First, strengthen investment planning and the medium-term expenditure framework (MTEF).

- Challenge: The public sector has multiple, overlapping multi-year plans, but lacks a detailed national investment plan and a true multi-year budget. Thailand has a five-year National Development Plan, four-year Government Administrative Plan, 32 annual Ministerial Operating Plans, 76 Provincial Development Plans, 18 Regional/Cluster Development Plans, and more than 5,000 local authority development plans. These plans are not effectively linked or informed by the medium-term resource envelope, and proposed investments are not costed, appraised, and prioritized. This makes it extremely difficult for the single-year budget system to allocate resources consistent with these plans. Further, under single-year budgeting, every year agencies are required to submit budget requests – even for multi-year projects that have received funding in the past. Budget requests are then debated and sometimes not approved or delayed. This disincentives agencies from undertaking multi-year projects.

- Potential Solution: First, develop a comprehensive multi-year pipeline of public investment projects—particularly projects that are identified as potential PPPs—that are costed, appraised, and prioritized at a whole of government level. This can help streamline decision making and make choices between sectors and different investment channels more transparent and efficient. Second, implementation of the four-year MTEF has improved the strategic focus of the annual budget and helped maintain fiscal discipline within Thailand's existing fiscal space. However, continued progress towards a truly multi-year budget system—i.e., one that allows for the appropriations (indicative or otherwise) of capital spending for future years—would help to strengthen the linkages between the MTEF and the annual spending prioritization process. It would also encourage agencies to reflect the capital and operational costs from detailed and costed project appraisals in the MTEF, improving its realism and consistency with prospectively available resources.

146. Second, improve the quality of project appraisals.

- Challenge: First, the current appraisal guidelines issued by the Bureau of the Budget and the National Economic and Social Development Board provide a good general guidepost for implementing agencies to prepare project appraisal cases. However, for complex multi-dimensional projects like high-speed rail and integrated water management systems, the appraisal guidelines do not provide detailed guidance. Second, during budget requests, all agencies are required to submit a detailed project design to the BOB as a criterion for investment budget review. However, some project designs were drafted years prior and have not been updated with geographical changes of the construction site. Once the projects are allocated, a detailed project design is prepared for implementation at the construction site, which can lead to design changes. Those changes may require approval from the Minister, BOB, and the Cabinet depending on the scale of the project and size of the adjustment. Such changes and approval processes cause delays in construction.

- Potential Solution: First, more detailed appraisal guidelines should be provided for more complex projects. Second, the project appraisal review process should require detailed project designs, cost/benefit analysis, and an implementation timeline to minimize post-selection design modifications.

[51] This analysis is based on previous work in World Bank. 2022. *Thailand Economic Monitor - Building Back Greener: The Circular Economy.* Washington, D.C.: World Bank; and World Bank. 2016. *Thailand Economic Monitor: Aging Society and Economy*. Washington, D.C.: World Bank.

147. Third, establish an independent appraisal review body to validate project appraisals and increase transparency.

- Challenge: Thailand does not have an independent appraisal review body with appropriate capacity and institutional arrangements to check soundness of the appraisal case submitted by line agencies. This encourages information asymmetries—where line agencies rely on external consultants to prepare project appraisals, with central agencies lacking the capacity to ascertain the quality of the underlying analysis. Countries without an effective independent appraisal review function have been affected by project delays and economically unsound projects being implemented.

- Potential Solution: Korea experienced a similar issue in the early 2000's and established an independent Public Investment Management Appraisal Centre (PIMAC) at the Korean Development Institute (KDI) to advise the Ministry of Strategy and Finance on the technical aspects of project appraisals. Between 2004 and 2013, 38 percent of projects that were proposed by line ministries were returned at the appraisal review stage (before going to project selection and budgeting), due to technical deficiencies in the project appraisal. A similar independent project appraisal review body in Thailand could help improve the quality of project appraisals, leading to more efficient project implementation.

148. Fourth, institute mechanisms to effectively follow through on Environmental Impact Assessments (EIAs).

- Challenge: Thailand has instituted robust environmental and social safeguard policies that ensure projects are implemented in a socially and environmentally sustainable manner. Each project that adversely impacts environmental or social conditions is required to develop an EIA. However, agencies are not mandated or monitored to effectively implement the EIA, and a lot of EIAs languish. This causes two issues: (i) a dead weight loss due to the time taken to conduct the EIA (average of 18 months for large projects) that is not implemented; and (ii) gives rise to a lack of trust in government by affected stakeholders—which means that in the next round, stakeholders do not agree to EIAs for new projects because they believe authorities will not follow through on implementation. Furthermore, agencies often do not get enough budget allocation for mitigation measures. As a result, affected communities do not trust mitigation measures and may be unwilling to move.

- Potential Solution: Consider instituting mandatory follow through of EIAs and reporting to Cabinet on progress for large projects. Another option could be to outsource EIA implementation to civil society organizations with the appropriate capacity. Ensuring that mitigation measures are accurately costed and sufficiently financed is also essential for smooth project implementation.

149. Fifth, modernize procurement rules and electronic systems, and increase transparency.

- Challenge: First, agencies are not allowed to start procurement until the budget has been secured, and by the time procurement is concluded, the fiscal year is closing. Second, despite the Comptroller General's Department (CGD) having introduced e-GP a decade ago (FY13), there is still a lot of misunderstanding among line agencies due to the unfriendly user interface and limited technical support. The e-GP system is also prone to instability and disconnects. Third, government-to-government procurement lacks transparency, which can result in inefficiencies and undermine confidence in the procurement system.

- Potential Solution: First, pre-procurement should be allowed so implementation can start right after the budget approval. Second, upgrading the stability of the e-GP system would help to reduce time-consuming disconnections, which can also lead to errors as staff in line agencies are required to re-submit documents and restart processes. Regular, structured training for line-agency procurement officers and a centralized technical support team would also help to minimize errors, thereby reducing processing times. Third, the cost of borrowing and terms of repayment between government agencies should be published, to improve oversight and accountability.

150. Sixth, develop real-time monitoring systems that allow agencies to make project modifications during implementation.

- Challenge: It is natural that project implementation does not go exactly as planned. However, it is important to have in place a monitoring system that provides early warning of implementation bottlenecks and to have

mechanisms to resolve identified issues. Currently, monitoring systems are fragmented and focus mostly on tracking disbursements and compliance with regulations. There is lack of systematic tracking of outputs, outcomes, and impact from projects during implementation. This means that during project implementation there is no feedback on intermediate outputs/impact that would be used to make appropriate modifications to the project.

- Potential Solution: The government could integrate the physical, technical, and beneficiary details contained in project appraisal cases into the existing financial reporting systems, along with intermediate output/impact objectives. This would facilitate regular monitoring and evaluation of progress against pre-determined goals and timelines, as well as early course-correction.

3.4 Conclusions

151. The chapter highlights two key structural changes in the composition of spending in recent years: (i) the increasing importance of social sector spending; and (ii) the long-term decline in investment spending. First, the analysis highlights that overall public spending in Thailand is low compared to the nation's income level and peer countries, reflecting the constraint of low revenue collection and the government's conservative approach to fiscal policy. Within this constrained fiscal envelope, there has been a gradual shift towards prioritizing social sector spending in the budget, reflecting increased spending on health and social protection, offset by a decline in education spending. Nevertheless, spending on all three sectors remains low relative to Thailand's level of development and peers. This underscores the need to increase spending from its current level as the nation seeks to address key challenges arising from the aging population and the need to invest in human capital to raise productivity and potential growth.

152. Second, public investment spending has been declining as a share of GDP for 30 years and has been deprioritized in the budget. Yet, the level of public investment spending (including SOE spending) as a share of GDP remains high relative to peers. While the stock of Thailand's public physical capital also compares favorably with peers, the quality of infrastructure appears to have has declined, and now underperforms peers. This has resulted in Thailand giving up a competitive advantage that it previously enjoyed relative to other regional economies; and has likely contributed to low productivity growth over the past 20 years. Furthermore, deteriorating infrastructure quality despite higher expenditure relative to peers suggests potential inefficiencies in public investment spending. Cross-country analysis of public marginal capital to output ratios confirm that there is scope for enhancing public investment efficiency in Thailand.

153. Encouragingly, the analysis finds that the composition of spending is relatively less rigid than in peer countries. This provides authorities with greater flexibility to respond to emerging priorities and to improve spending quality. However, spending associated with the aging population and higher debt servicing has the potential to crowd out other forms of spending and reduce budget flexibility. These risks call for careful monitoring.

154. In addition, the chapter highlights the role of sub-national governments in capital spending. Despite long-standing efforts to decentralize spending and service delivery, the central government continues to dominate both. LAOs account for around 17 percent of general government spending—a ratio that has not changed over the past decade. The ratio is even lower for current spending (13 percent), reflecting the limited decentralization of service delivery. LAOs have a more prominent role in capital spending, accounting for 26 percent of total public investment spending prior to the pandemic (FY13 – FY19). However, the central government retains influence over LAO spending priorities, as LAO budgets must be approved by the provincial governor—who is appointed by the central government and reports to the Ministry of Interior. Annex 3-1 provides additional analysis on Thailand's progress in implementing the decentralization agenda.

155. Finally, the chapter highlights six key bottlenecks that undermine the quality and efficiency of public investment spending; and outlines potential solutions to resolve these challenges and boost economic growth. Declining public infrastructure spending reflects long-standing challenges due to implementation capacity. Resolving the six identified constraints and raising the capital budget execution rate can unlock a triple benefit of economic stimulus in the short term, higher productivity and potential growth in the longer term, and fiscal savings through efficiency gains. Combined, these measures can thus boost Thailand's economic prospects and while helping to secure long-term fiscal sustainability.

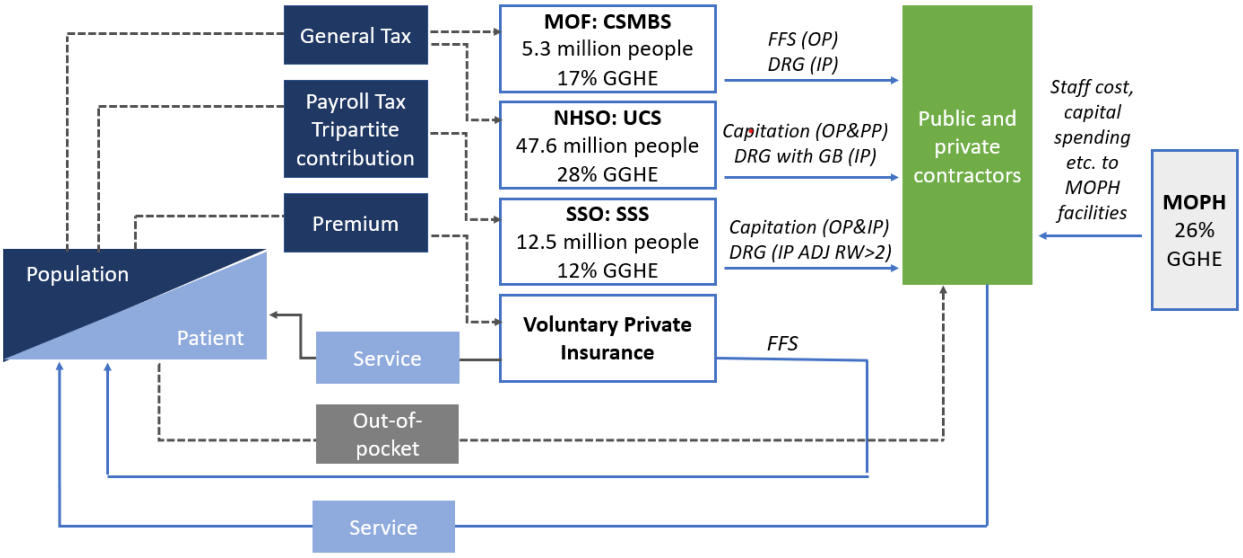
CHAPTER 4
REIMAGINING HEALTH CARE

Chapter 4: Reimagining Health Care

4.1 Introduction

156. Thailand has become internationally known for its success with universal health coverage (UHC) policy and health development. Among a total of 67 million people in 2021, 98 percent were covered by one of three public health insurance schemes (see Figure 4-1). Approximately three-quarters of the population are covered by the Universal Coverage Scheme (UCS) administered by the National Health Security Office (NHSO), and the rest by the Civil Servant Medical Benefit Scheme (CSMBS) administered by the Ministry of Finance's (MOF) Comptroller General's Department (CGD) for civil servants and their dependents, and the Social Security Scheme (SSS) administered by the Social Security Office (SSO) for private sector employees. UHC means that all people have access to the health services they need, when and where they need them, without incurring financial hardship. Two indicators have been used globally to measure progress toward UHC: (i) an indicator measuring coverage of essential health services; and (ii) an indicator measuring financial protection. In Thailand, without accounting for the impact of COVID-19, the latest UHC Service Coverage Index (SCI) of essential health services[52] was 82 percent, 5 percentage points higher than the average of Upper Middle-Income Countries (UMICs); further, only about 2 percent of people spent more than 10 percent of their household total expenditure on health care. The achievement of both UHC indicators ranked top among countries in the Southeast Asia region.[53] Overall, Thailand's health system showed strong resilience in responding to COVID-19, providing timely responses to COVID-19 and other related essential health services to all.[54] However, addressing regional disparities in access to and quality of health services remains a development challenge. *See Box 4-1 for Thailand's Health System at a Glance.*

Figure 4-1: Health Insurance Schemes in Thailand (2021)



Source: The figure is adapted from Thailand UHC & Overview of the Universal Coverage Scheme of the National Health Security Office (NHSO). The number of people enrolled in each insurance scheme is extracted from NHSO Annual Report 2021. The share of government spending on CSMBS, UCS, and SSS is extracted from Thailand National Health Account (2019).

Note: MOF = Ministry of Finance; MOPH = Ministry of Public Health; CSMBS = Civil Servant Medical Benefit Scheme; NHSO = National Health Security Office; UCS = Universal Coverage Scheme; SSO = Social Security Office; SSS = Social Security Scheme; GGHE = General Government Health Expenditure; FFS = fee-for-service; DRG = diagnosis-related group; GB = global budget; OP = outpatient; IP = inpatient; PP = prevention and promotion; ADJ RW = adjusted relative weight.

[52] UHC Service Coverage Index of essential health services is defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases, and service capacity and access among the general and the most disadvantaged population. The indicator is an index reported on a unitless scale of 0 to 100, which is computed as the geometric mean of 14 tracer indicators of health service coverage.

[53] WHO. 2021. Monitoring Progress on Universal Health Coverage and the Health-Related Sustainable Development Goals in the South-East Asia Region: 2021 Update.

[54] "UHC Increases Thailand's Health Resilience." https://eng.nhso.go.th/view/1/DescriptionNews/UHC-increases-Thailand-health-resilience/221/EN-US.

Box 4-1: Thailand's health system at a glance

Health service delivery in Thailand is highly centralized with a dominant role for the public sector. The Ministry of Public Health (MOPH) is the main provider of health services at all levels, especially in rural areas; other ministries also play some roles in health-related activities in various dimensions. Despite the Decentralization Act 1999 mandating all public health services to be gradually devolved to Local Administrative Organizations (LAOs), the progress has been slow in the past 20 years and local governments still play a very limited role in health service delivery. The public health infrastructure comprises community health centers in all subdistricts, secondary care hospitals in all districts, tertiary care facilities in all provinces, and more advanced referral hospitals in all regions. This hierarchical public service delivery system serves as the platform for successful universal health coverage (UHC) implementation.

There is a disparity between health service delivery in urban and rural areas. In rural areas, health service delivery including gatekeeping and referral[a] are enabled by the District Health Systems (DHSs) supported by one million Village Healthcare Volunteers (VHVs). A DHS consists of community health centers and a district hospital. Community health centers are the first point of contact for the population and provide primary health care and prevention and health promotion through nurses and public health workers. District hospitals provide secondary-level outpatient and inpatient care, as well as some prevention and health promotion. And provincial hospitals receive referral cases from district hospitals and offer tertiary care in all clinical specialties. However, the DHS does not exist in major cities; the majority of primary health care providers are private clinics. In Bangkok, there are only 69 public health centers, in contrast to over 6,000 private clinics. People can bypass the gatekeeping and referral system by making out-of-pocket (OOP) payments.

Financing arrangements in the health sector are complex and fragmented. At the central level, the budget is allocated across several agencies and schemes, including the Ministry of Public Health (MOPH) to finance the salaries of central civil servants and capital investment, three agencies to finance the three public health insurance schemes, as well as other ministries with health responsibilities (e.g., Ministry of Education). These agencies, in turn, use a wide range of mechanisms to channel funds to health care providers and Local Administrative Organizations (LAOs) to finance health services and other functions. In addition, at the central level, health taxes, that is, 2 percent additional surcharges from excise tax levied on tobacco and alcohol, are earmarked as the Health Promotion Fund to support all relevant sectors to carry out health promoting activities. The fund is managed by the Thai Health Foundation (ThaiHealth). At the local level, the LAOs play a limited role in financing health services.

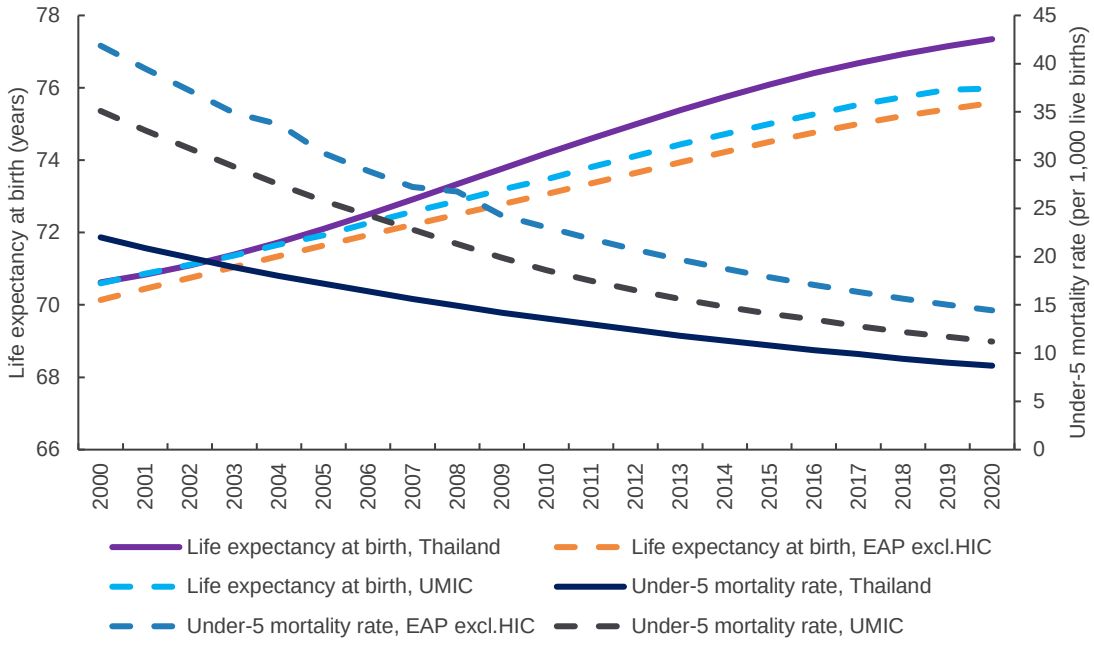
Source: World Health Organization (WHO). 2015. The Kingdom of Thailand Health System Review.

Note: a. Gatekeeping is the term used to describe the role of primary care providers in authorizing access to specialty care, hospital care, and diagnostic tests. Ideally, gatekeeping ensures that patients see specialists only for conditions that could not be managed by primary care providers and are referred to an appropriate specialist, hence saving specialists' time for more complex cases.

157. Thailand has achieved remarkable improvement in population health outcomes in recent decades, with a health system that is relatively equitable compared to other income and regional peers. Life expectancy increased to 77.2 years in 2019, up from 70.6 years in 2000. From 2000 to 2020, the infant mortality rate declined from 19 per 1,000 live births to only 7; the under-five mortality rate declined from 22 deaths per 1,000 live births to 9; the maternal mortality rate decreased from 43 per 100,000 live births to 37. In general, Thailand's key population health outcomes are higher than the average for East Asia and Pacific (EAP) countries excluding High-Income Countries (HICs) as well as UMICs (Figure 4-2).[55] These successes are anchored in (i) long-standing government policy and action toward UHC; (ii) sustained focus on primary health care (PHC) with emphasis on maternal and child health (MCH) and infectious diseases; and (iii) a health workforce with a favorable skill mix, notwithstanding persisting gaps in overall human resources for health.

[55] World Development Indicators.

Figure 4-2: Key Health Outcomes: Thailand vs East Asia and Pacific vs Upper Middle-Income Countries

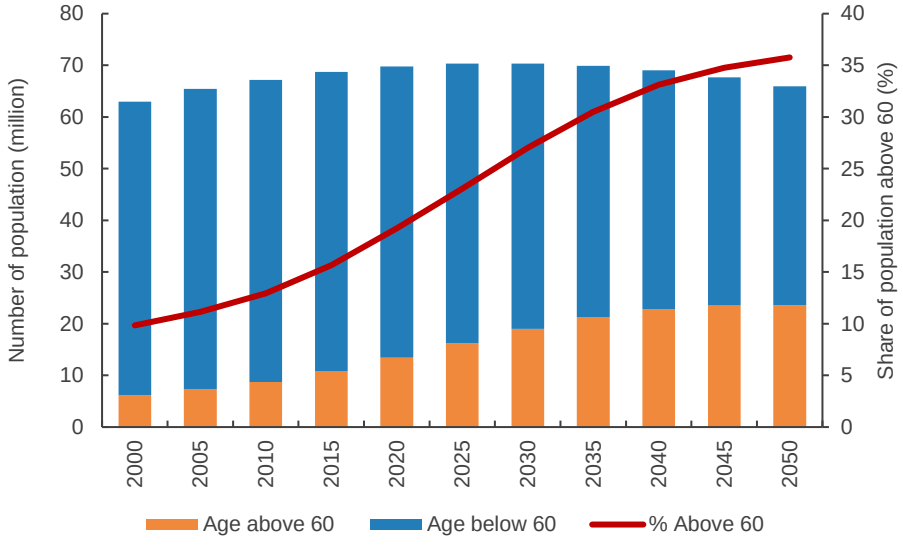


Source: World Development Indicators.

Note: UMIC = Upper Middle-Income Country; EAP = East Asia and Pacific; HIC = High-Income Country.

158. Thailand is rapidly undergoing a demographic transition, which will exert service delivery and expenditure pressures on the health system. Reductions in mortality and fertility trends have led to a rapidly aging society. The total population is expected to peak close to 2030, reaching 70 million, then turn into an accelerated downward trend, dropping to 66 million in 2050. However, the number of people aged 60 or older has been increasing monotonically and will continue on an increasing trend until 2050. As a result, the share of people aged 60 or older was about 10 percent in 2000, then doubled to 20 percent in 2020, and is projected to reach 36 percent by 2050 (Figure 4-3).[56]

Figure 4-3: Population Aging in Thailand

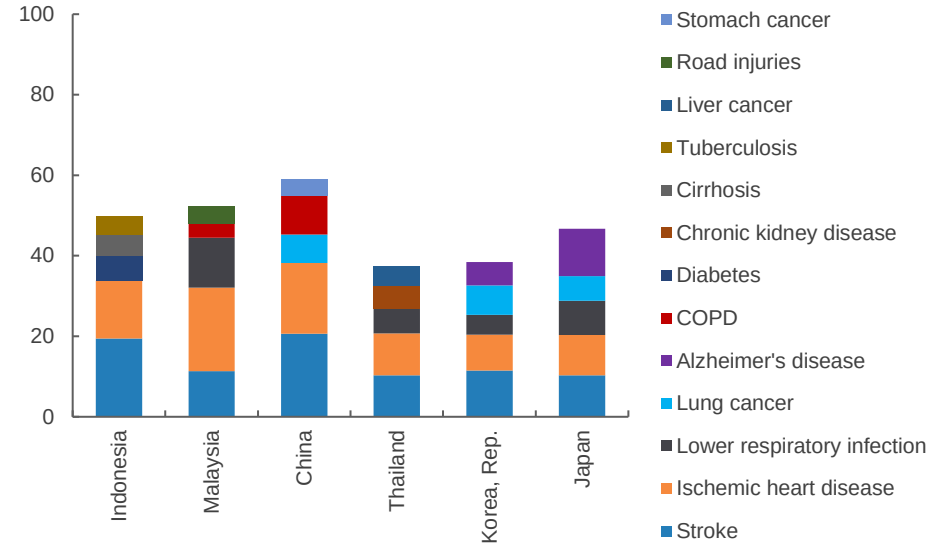


Source: World Population Prospects 2019.

[56] World Population Prospects 2019.

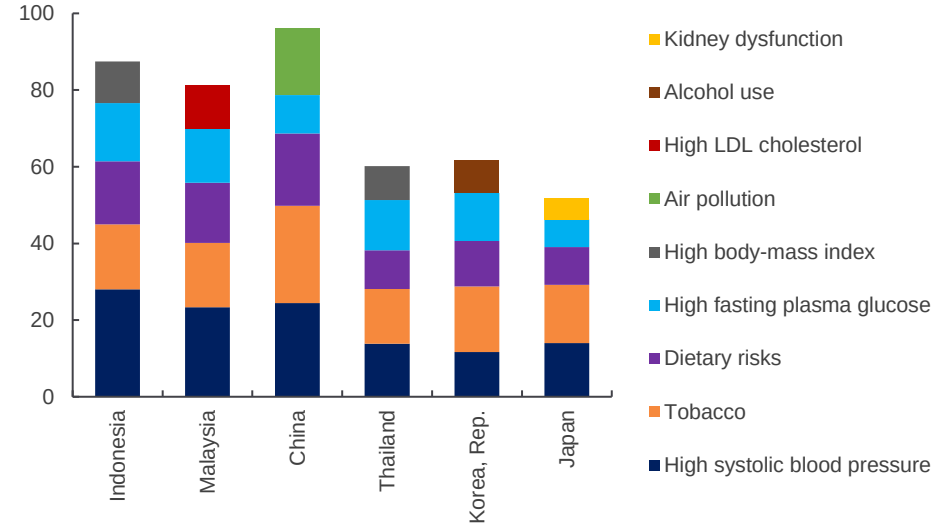
159. An evolving disease burden poses new challenges. Lifestyle, environmental, and demographic changes have resulted in a growing burden of noncommunicable diseases (NCDs), which require long-term as opposed to episodic care. In 2019, 76.3 percent of deaths were caused by NCDs, a 12.6 percentage-point increase compared to 2000. The top five causes of death were ischemic heart disease, stroke, lower respiratory infection, chronic kidney disease, and liver cancer, accounting for 37.3 percent of total deaths. Tobacco, high systolic blood pressure, high fasting plasma glucose, dietary risks, and high body mass index are prominent risk factors. See Figure 4-4 and Figure 4-5 for a comparison of the top five causes and risks of deaths among selected countries.[57] Meanwhile, Thailand is exposed to an increased risk of emerging infectious diseases and natural disasters. Some emerging infectious and reemerging diseases have already been found in Thailand, including Avian Influenza, Influenza A/H1N1 2009, Middle East Respiratory Syndrome (MERS), and Zika virus infection.[58]

Figure 4-4: Top Five Causes of Deaths, 2019



Source: IHME. Global Burden of Disease.
Note: COPD = Chronic obstructive pulmonary disease.

Figure 4-5: Top Five Risks of Deaths, 2019



Source: IHME. Global Burden of Disease.
Note: LDL = Low density lipoprotein.

[57] IHME. Global Burden of Disease.
[58] Thailand National Strategic Plan for Emerging Infectious Diseases (2017–2021). http://e-lib.ddc.moph.go.th/pdf/material_370/material_370.pdf.

160. Thailand has been making substantial efforts to address health risk factors. For instance, according to the Health Promotion Foundation Act in 2001, the Thai Health Promotion Foundation (ThaiHealth), an autonomous government agency, has been dedicated for the past 20 years to the promotion of healthy lifestyles in communities, workplaces, schools, and families with high importance placed on contributing to better health among vulnerable populations. In terms of policies and regulation, Thailand became a party to the World Health Organization (WHO) Framework Convention on Tobacco Control in 2005; and in 2017, the Tobacco Products Control Act became effective as the primary piece of legislation governing tobacco control in Thailand. Furthermore, Thailand introduced fiscal policies to promote healthy diets, such as Sugar-Sweetened Beverage Tax in 2017, as well as the tobacco tax and alcohol tax. Nevertheless, evidence showed that there still needs to be better implementation of policies. Tobacco use was persistently the number one risk factor in past decades. In 2019, 9.3 percent of total disability-adjusted life years (DALYs)[59] and 14.2 percent of total deaths could be attributed to tobacco use.[60] Smoking among Thais aged 15 years or above is on a downward trend. Yet regional differences remain, and the south of Thailand has the highest prevalence of smokers.[61]

161. As in many countries, the COVID-19 pandemic hit Thailand with a double shock—health and economic.[62] As of June 28, 2022, COVID-19 had directly caused almost 4 million deaths with estimated excess deaths of over 10 million worldwide,[63] and triggered an economic recession. Thailand is currently moving through the transition from pandemic to endemic and recovering from the economic impact of COVID-19.

162. Given constrained fiscal space and growing health spending needs, improving efficiency in health spending is key. In the short term, Thailand needs to reorient the health system towards integrated care delivery, which improves value-for-money and creates better health outcomes; in the medium term, a multisectoral approach should be further promoted to prevent NCDs by reducing major risk factors. Financing and purchasing arrangement and eHealth solutions, among many others, need to be strengthened to enable health system reorientation.

163. The overall objective of this chapter is to review the efficiency, adequacy, and outcomes of government spending on health. The chapter is organized as follows. Section 2 undertakes a rapid assessment of spending adequacy before the pandemic. Section 3 focuses on spending efficiency with a focused discussion on: (i) delivery and purchasing of NCD care, and (ii) improving efficiency and sustainability of public health insurance schemes. Section 4 provides a brief assessment of spending efficiency during the pandemic. Section 5 presents projections of health spending needs up to 2050. Section 6 summarizes recommendations.

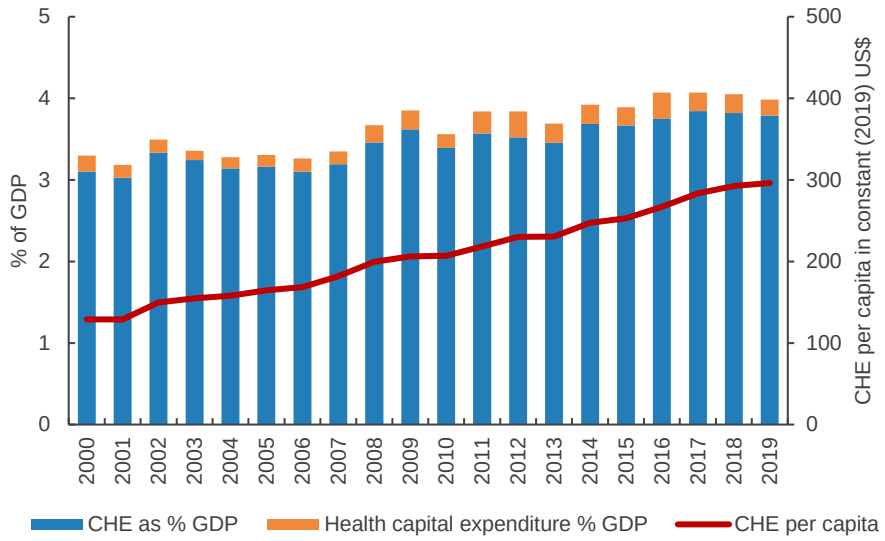
4.2 Spending adequacy before the pandemic

164. Thailand's total health expenditure (THE)[64] has been rising but is lower than that of other countries in the same income category or that of neighboring countries. Albeit with some fluctuations, there had been a slight upward trend in THE as a proportion of GDP between 2000 and 2019, ranging from 3.2 to 4.1 percent. On average, the current health expenditure (CHE) accounted for 94.1 percent of THE from 2000 to 2019; the rest was spent on capital formation. The CHE per capita in constant (2019) US$ increased from $129 in 2000 to $296 in 2019 (Figure 4-6).[65] The average annual growth rate of CHE was 4.5 percent, which was slightly higher than that of GDP (3.4 percent). Despite doubling from 2000 to 2019 in Thailand, CHE remains low relative to comparator countries. In 2019, while Thailand's CHE per capita was $296

[59] One DALY represents the loss of the equivalent of one year of full health. DALYs for a disease or health condition are the sum of the years of life lost due to premature mortality and the years lived with a disability due to prevalent cases of the disease or health condition in a population.
[60] IHME. https://www.healthdata.org/Thailand.
[61] Thai Health Project. 2021. "Health Behaviors Thai Health 2021," p. 10. Nakhon Pathom: Institute for Population and Social Research, Mahidol University.
[62] C. Kurowski. D. B. Evans, A. Tandon, P. H.-V. Eozenou, M. Schmidt, A. Irwin, J. Salcedo Cain, E. S. Pambudi, et al. 2021. "From Double Shock to Double Recovery: Implications and Options for Health Financing in the Time of COVID-19." Health, Nutrition and Population Discussion Paper. World Bank, Washington, DC.
[63] *The Economist.* https://www.economist.com/graphic-detail/coronavirus-excess-deaths-estimates.
[64] Total health expenditure consists of current health expenditure (CHE) and capital health expenditure (i.e., expenditure on capital formation). The latter accounted for approximately 0.2–0.3 percent of GDP in recent decades.
[65] WHO Global Health Expenditure Database.

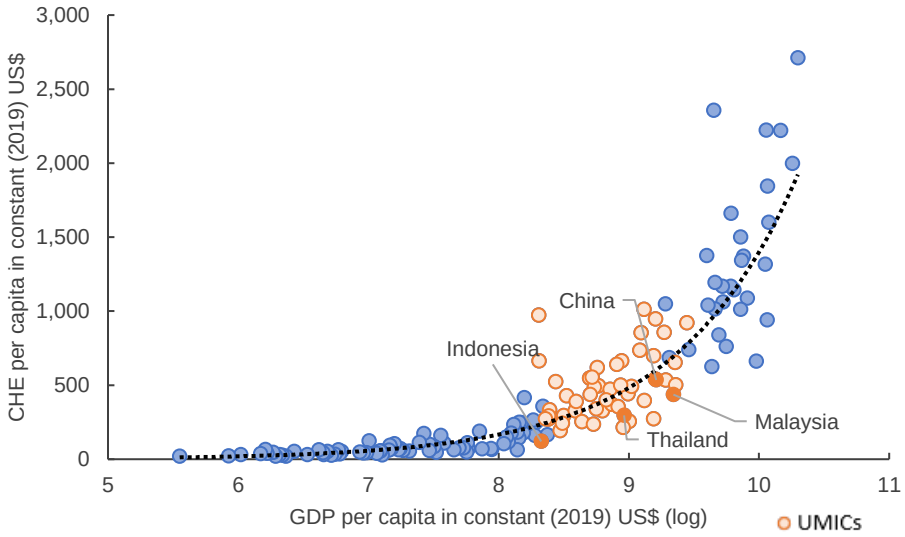
(3.8 percent of GDP), it was $414 (5.1 percent of GDP) and $555 (5.9 percent of GDP), respectively, for EAP countries excluding HICs and UMICs (Figure 4-7).

Figure 4-6: Total Health Expenditure in Thailand



Source: WHO Global Health Expenditure Database.
Note: CHE = Current health expenditure.

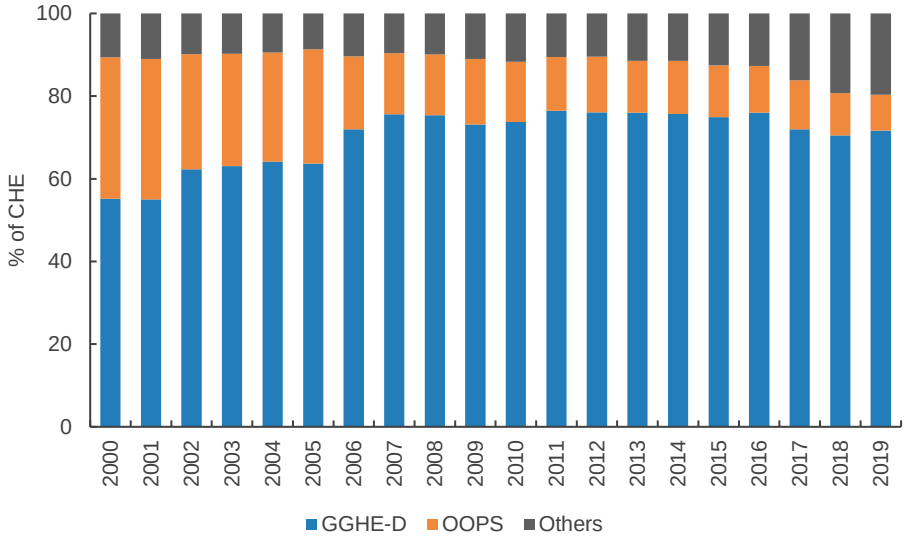
Figure 4-7: Current Health Expenditure in Upper Middle-Income Countries in 2019



Source: WHO Global Health Expenditure Database.
Note: CHE = Current health expenditure; UMICs = Upper Middle-Income Countries.

165. In Thailand, the government plays a significant role in health financing. Domestic general government health expenditure (GGHE-D) as a proportion of CHE increased from 50 percent in 2000 to 70 percent in 2006 and was maintained approximately 70–75 percent thereafter (Figure 4-8). The share of direct out-of-pocket (OOP) payments has decreased sharply, from 34 percent in 2000 to only 9 percent in 2019, which was significantly lower than for comparator countries (Figure 4-9). This is in part due to the government's high commitment to UHC.

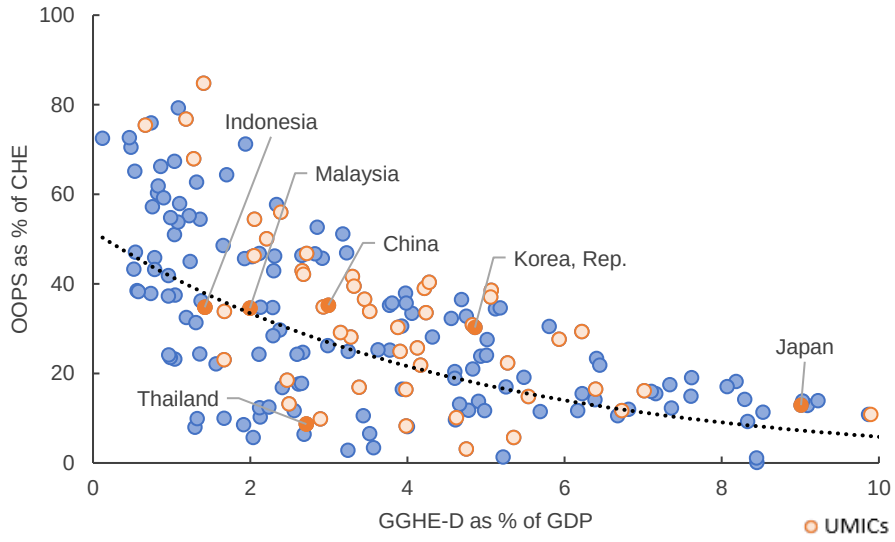
Figure 4-8: Composition of Current Health Expenditure in Thailand



Source: WHO Global Health Expenditure Database.

Note: CHE = Current health expenditure; GGHE-D = Domestic general government health expenditure; OOPS = Out-of-pocket spending.

Figure 4-9: Share of Out-of-Pocket Spending versus Government Health Expenditures



Source: WHO Global Health Expenditure Database.

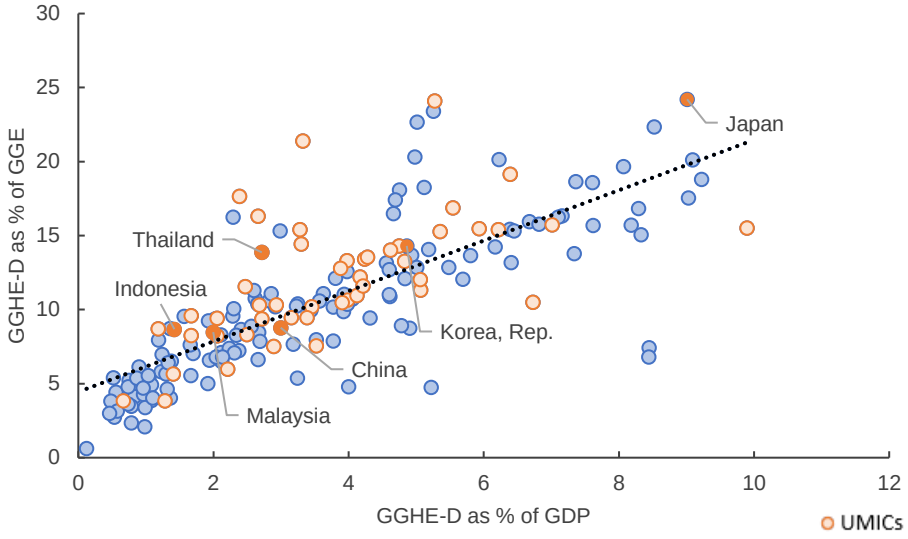
Note: OOPS = Out-of-pocket spending; CHE = Current health expenditure; GGHE-D = Domestic general government health expenditure; UMICs = Upper Middle-Income Countries.

166. The health sector has been consistently prioritized in government spending in Thailand. The GGHE-D as a share of general government expenditure (GGE) remained largely stable between 2000 to 2019, at approximately 15 percent. Nevertheless, GGHE-D as a share of GDP was relatively low compared to many other UMICs due to relatively low GGE (Figure 4-10). The GGHE-D per capita in constant (2019) US$ was tripled between 2000 and 2019, from $71 to $212. This increase in public financing for health can be broken down into contributions from overall economic growth; from changes in overall government spending as a proportion of GDP; and from changes in the prioritization of health spending in government budgets.[66] In Thailand, the real increase in public financing with an annual growth rate of 5.8 percentage points appeared to be driven mostly by economic growth (3.3 percentage points), followed by changes in overall

[66] A. Tandon, J. Cain, C. Kurowski, A. Dozol, and I. Postolovska, 2020. "From Slippery Slopes to Steep Hills: Contrasting Landscapes of Economic Growth and Public Spending for Health." *Social Science & Medicine* 259: 113171.

government spending (2.0 percentage points). The priority for health in government budgets only accounted for 0.5 percentage points (Figure 4-11). This is not surprising as the health sector already had a relatively high prioritization in the government budget in 2000.

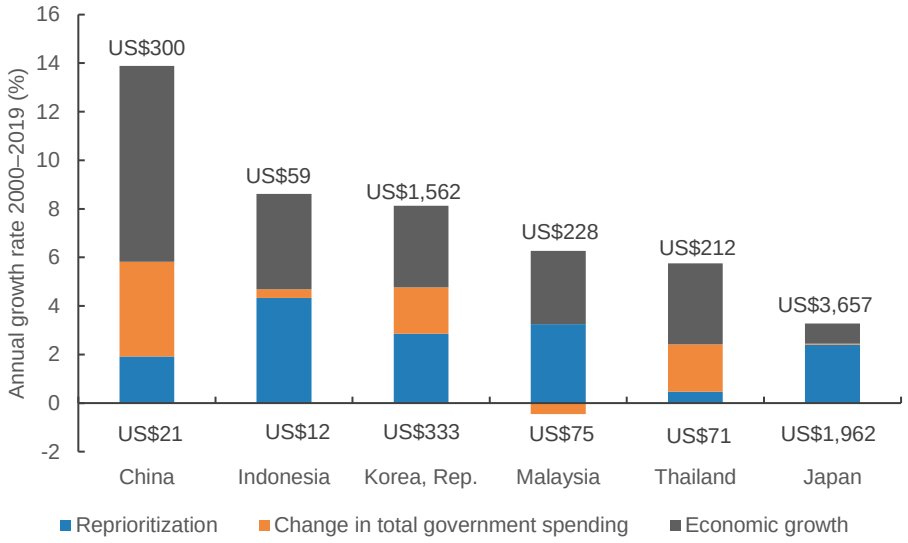
Figure 4-10: General Government Health Expenditure, 2019



Source: WHO Global Health Expenditure Database.

Note: GGHE-D = Domestic general government health expenditure; GGE = General government spending; UMICs = Upper Middle-Income Countries.

Figure 4-11: Decomposition of Growth in Domestic General Government Health Expenditure

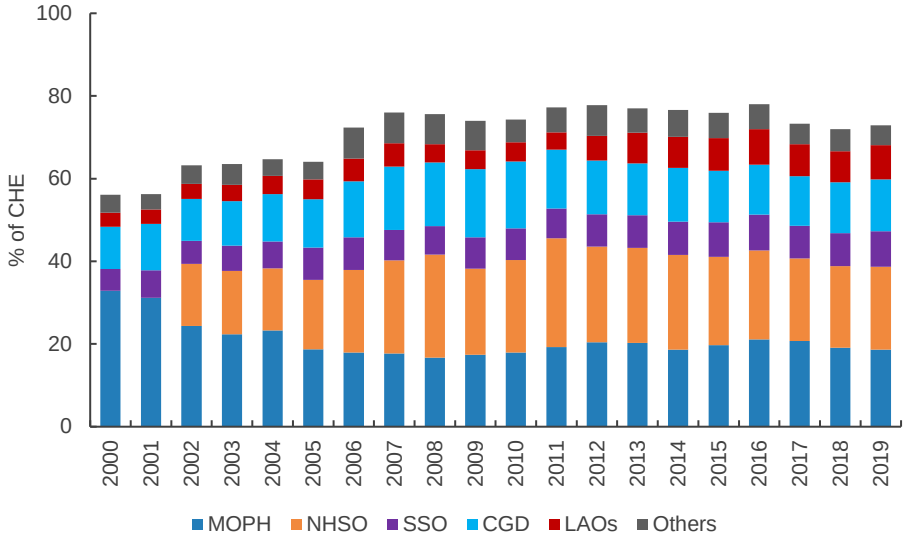


Source: Estimated by the author using WHO Global Health Expenditure Database.

167. Local Administrative Organizations (LAOs) still play a limited role in financing health services. Several government financing agents administer public health spending, including the Ministry of Public Health (MOPH), the National Health Security Office (NHSO) for UCS, the Social Security Office (SSO) for Social Security Scheme (SSS) as well as the Workmen's Compensation Fund (WCF), Comptroller General's Department (CGD) of the Ministry of Finance (MOF) for CSMBS, LAOs, state enterprises, the Public Independent Agency, and other ministries. The MOPH, together with three public health insurance schemes (UCS, SSS, and CSMBS), financed about 60 percent of CHE. Although decentralization of the health

system had been on the government agenda since 1999, the LAOs' role had not been strengthened much; the share of LAO spending as a share of CHE never went beyond 10 percent (Figure 4-12).[67]

Figure 4-12: Government Health Expenditure by Financing Agents in Thailand



Source: Thailand National Health Accounts.

Note: CHE = Current health expenditure; MOPH = Ministry of Public Health; NHSO = National Health Security Office; SSO = Social Security Office; CGD = Comptroller General's Department; LAOs = Local Administrative Organizations.

168. Overall, before the COVID-19 pandemic, government spending on health was sufficient to make good progress on UHC goals.

- The benefit packages of the three public health insurance schemes are comprehensive with zero copayment at the point of service. All three schemes cover both ambulatory and inpatient care, including accident and emergency and rehabilitation services. The prevention and health promotion for beneficiaries in all three schemes are covered by UCS. The initial benefit packages were comprehensive with an explicit negative list such as cosmetic surgeries, and services of unproven effectiveness such as stem cell treatment. The packages have been gradually expanded to cover more interventions that are subjected to rigorous Health Technology Assessment.[68]
- The prevalence of unmet health care needs was low and not due to the cost of treatment. A recent study assesses the trend, between 2011 and 2019, of prevalence and reasons for unmet health care needs and identifies population groups who had unmet needs, using the nationally representative Health and Welfare Survey. The prevalence of unmet needs remained lower than 3 percent between 2011 and 2019. The poor, the elderly, and people living in urban areas had higher unmet needs than their counterparts. Long waiting times was the main reason for unmet need, while the cost of treatment was not an issue.[69]
- Thailand achieved a high level of financial risk protection. According to the latest estimates, only 2.2 percent of people spent more than 10 percent of their household's total expenditure on health care; and approximately zero people were pushed into poverty (at $1.90 level) because of OOP health spending.[70]

[67] Thai National Health Accounts.
[68] World Health Organization (WHO). 2015. The Kingdom of Thailand Health System Review.
[69] V. Vongmongkol, S. Viriyathorn, Y. Wanwong, W. Wangbanjongkun, and V. Tangcharoensathien. 2021. "Annual Prevalence of Unmet Healthcare Need in Thailand: Evidence from National Household Surveys between 2011 and 2019." *International Journal for Equity in Health* 20 (1): 1–10.
[70] WHO. 2021. Monitoring Progress on Universal Health Coverage and the Health-Related Sustainable Development Goals in the WHO South-East Asia Region: 2021 Update.

169. Nevertheless, rising health costs for the government will continue.

- First, Thailand's aging population places new demands on the health system, not only in terms of service delivery but also with respect to cost escalation. It is well-established empirically that aging itself does not drive up health care costs.[71] Nevertheless, the combination of poor health outcomes and health systems' inability to address NCDs and control costs drives up health spending. From 2000 to 2019, Thais' life expectation at age 60 increased from 20.8 years to 23.6 years, whereas healthy life expectation at age 60 increased from 15.6 years to 18.0 years.[72] In other words, on average, people at age 60 would have 5.6 years of life in poor health in 2019 compared to that of 5.2 years in 2000, which results in increased demand for health care and associated costs.
- Second, the growing prevalence of NCDs will further burden health service delivery and result in further cost escalation. The NCD epidemic is projected to continue to grow. According to the International Diabetes Federation's latest estimate,[73] the number of diabetes patients in Thailand increased fourfold in the past 20 years, from 1.5 million in 2000 to 6.1 million in 2021, and will reach 6.7 million in 2030; among the existing 6.1 million diabetes patients, 39.7 percent were not diagnosed. This low rate of diagnosis is a major vulnerability for the Thai health system, as late diagnosis might result in patients requiring complex procedures and management, often at a much higher cost than for prevention or routine care. The cost pressure could originate from (i) screening, detection, and management; and (ii) substantial treatment and rehabilitation costs for end-stage complications such as cardiovascular disease and renal failure. Medical costs associated with treatment can be very large. Total diabetes-related health expenditure in Thailand was estimated to reach $4 billion in 2021,[74] accounting for about 0.8 percent of GDP in that year.[75]
- Finally, the introduction and expanded use of new drugs, procedures, and other medical technology also push up health spending. The benefit packages of public health insurance schemes have been gradually expanded since 2002, and there is expectation and pressure for further expansion to include some new drugs and more procedures. Technological advances in the health sector over the last several decades have been substantial but also costly; technological advance is likely to continue to drive an increase in health care costs.

4.3 Spending efficiency before the pandemic

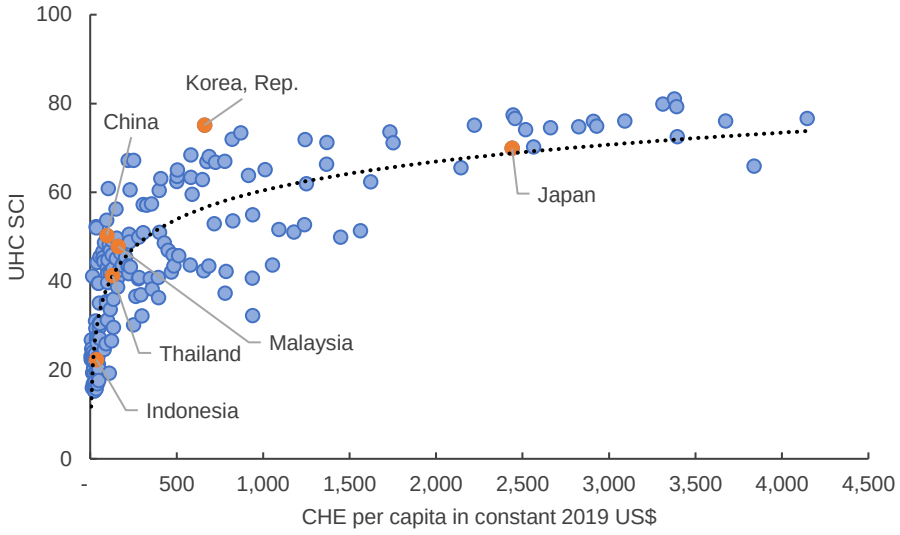
170. Overall, the Thai health system provides relatively good value-for-money. It achieved good health outcomes despite relatively low levels of THE per capita and the proportion of GDP devoted to health (about $311 per capita and 4.0 percent of GDP, respectively, in 2019). In addition to the life expectancy and maternal and child health indicators presented in the Introduction section, Thailand performed well on the UHC Service Coverage Index (SCI).[76]

171. Thailand's UHC SCI doubled between 2000 and 2009 with a relatively low increase in health spending. The UHC SCI measures coverage of essential services among the general and the most disadvantaged population using 14 tracer indicators on (i) reproductive, maternal, newborn, and child health; (ii) infectious diseases; (iii) NCDs; and (iv) service capacity and access. It increased from 41 in 2000, which was lower than that of Malaysia and China, to 83 in 2019, which surpassed these two countries and is approaching the level of Japan. While the CHE per capita of Thailand was $296 in 2019, it reached $437, $535, and $4,360, respectively, for Malaysia, China, and Japan (Figure 4-13).

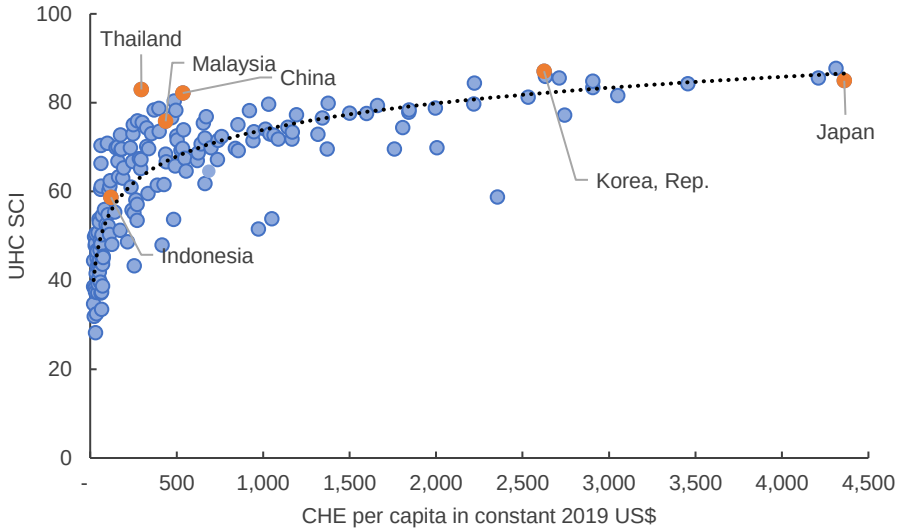
[71] Scott L. Greer, Julia Lynch, Aaron Reeves, Michelle Falkenbach, Jane Gingrich, Jonathan Cylus and Clare Bambra, eds. *Ageing and Health: The Politics of Better Policies.* Brussels: European Observatory on Health Systems and Policies. https://eurohealthobservatory.who.int/publications/m/ageing-and-health-the-politics-of-better-policies
[72] WHO Global Health Observatory.
[73] International Diabetes Federation. 2021. *Diabetes Report 2000–2045* (10th ed.). Thailand. https://diabetesatlas.org/data/en/country/196/th.html.
[74] Ibid.
[75] World Bank. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=TH.
[76] WHO Global Health Observatory.

Figure 4-13: Universal Health Coverage Service Coverage Index, 2000 vs 2019

2000



2019



Source: WHO Global Health Observatory.

Note: UHC = Universal health coverage; CHE = Current health expenditure.

172. Nevertheless, there is potential for efficiency gains. To this end, the discussion will be focused on (i) delivery and purchasing of NCD care, and (ii) improving efficiency and sustainability of public health insurance schemes.

Delivery and purchasing of NCD care

173. NCDs not only result in health costs but also economic costs. A recent study[77] estimated that the annual cost of four main NCDs (cardiovascular disease, diabetes, cancer, and chronic obstructive pulmonary disease [COPD]) to the Thai economy was approximately 1.6 trillion baht (B), equivalent to 9.7 percent of its 2019 GDP. Within this, 9 percent (about THB 139 billion and over 20 percent of the CHE in 2019) was attributed to public spending on treatment; and the majority of the remaining 91 percent was attributed to the loss of productivity due to premature death or disability. It is evident that NCDs negatively affect socioeconomic development and long-term fiscal sustainability of the government.

[77] United Nations. 2021. "Prevention and Control of Noncommunicable Diseases in Thailand—The Case for Investment." https://thailand.un.org/en/159788-prevention-and-control-noncommunicable-diseases-thailand-case-investment

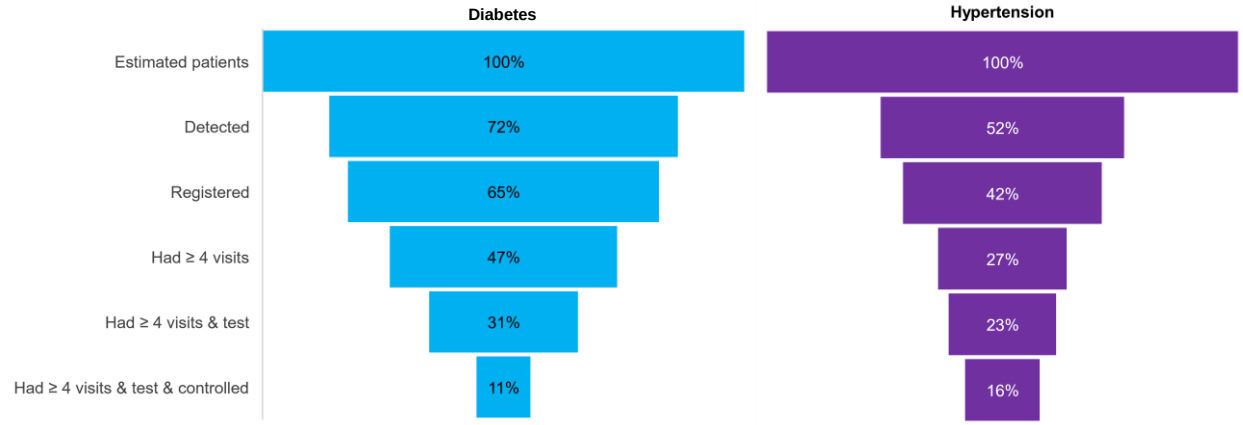
174. However, the system is not well-prepared to prevent, detect, and manage the existing burden of NCDs per the evidence below.

175. Treatment and control rates for hypertension and diabetes are relatively low. A recent cascade analysis among UCS members above 15 years indicated that gaps existed at all stages of the NCD patient journey—detection, registration in the NCD management system, regular follow-ups, and laboratory testing. The cumulative shortfall resulted in a rather low control rate, 11.3 percent and 15.9 percent, respectively, for diabetes and hypertensive patients (Figure 4-14).[78] Uncontrolled hypertension and/or diabetes increases the risk of a range of severe complications such as heart attack, heart failure, kidney disease, stroke, and cognitive decline, which impose significant health and economic costs. Some countries, such as Canada, Costa Rica, Germany, the Republic of Korea, and the United States, have implemented a set of policies and programs related to hypertension detection, treatment, and control and achieved high hypertension treatment rates (Figure 4-15).[79]

176. Improvement in the admission rate of Ambulatory Care Sensitive Conditions (ACSCs)[80] has been limited. Data from the UCS showed that from 2006 to 2021, the admission rate of ACSCs showed little reduction, and for certain conditions, it even increased (Figure 4-16). The poor performance on this indicator, the admission rate of ACSCs, indicates a need for improving service performance, quality of care, and effectiveness of NCD treatment and control in outpatient settings.

177. Progress in reducing the premature mortality rate from NCDs has been stagnating. While the premature mortality rate[81] in Thailand had been consistently lower than that of Indonesia, Malaysia, and China, it has been higher than that of Japan and Korea. Since 2013, limited progress had been made in reducing the premature mortality rate in Thailand, stagnating at about 14 percent (Figure 4-17). If this stagnating trend continues, Thailand would be at risk of not achieving Sustainable Development Goal (SDG) Target 3.4.1, which is to reduce premature mortality from NCDs by a third by 2030 relative to 2015 levels. It is worth noting that the premature mortality rate steadily dropped by over 50 percent (from 15.5 to 7.3 percentage points) in Korea between 2002 to 2019, indicating there is considerable scope to improve NCD-related health policies and service delivery in Thailand.

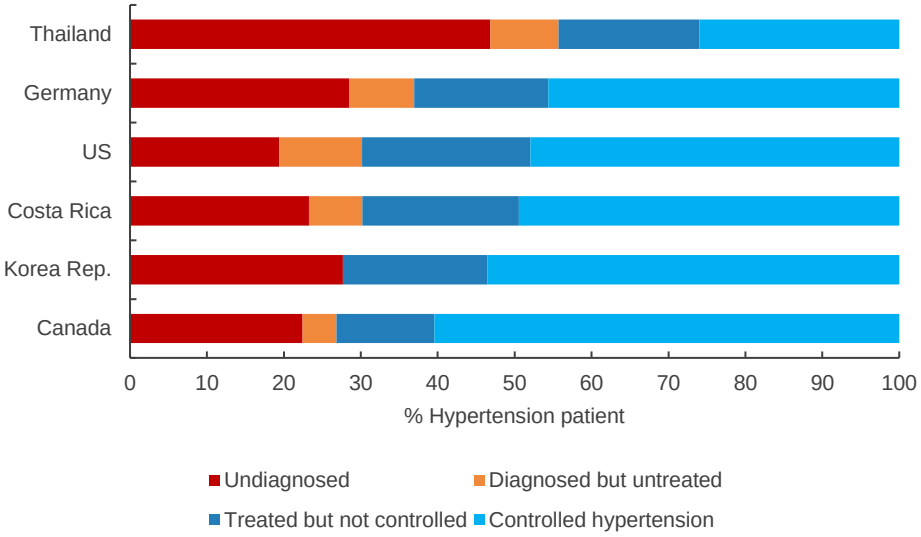
Figure 4-14: Diabetes and Hypertension Cascade Analysis among Universal Coverage Scheme Members above 15 years



Source: International Health Policy Program. 2020. "Report on the Effective Coverage Programs: Diabetes and Hypertension Services." https://ihppthaigov.net/publication/comprehensive-report-on-effective-coverage-assessment-projects-2020.

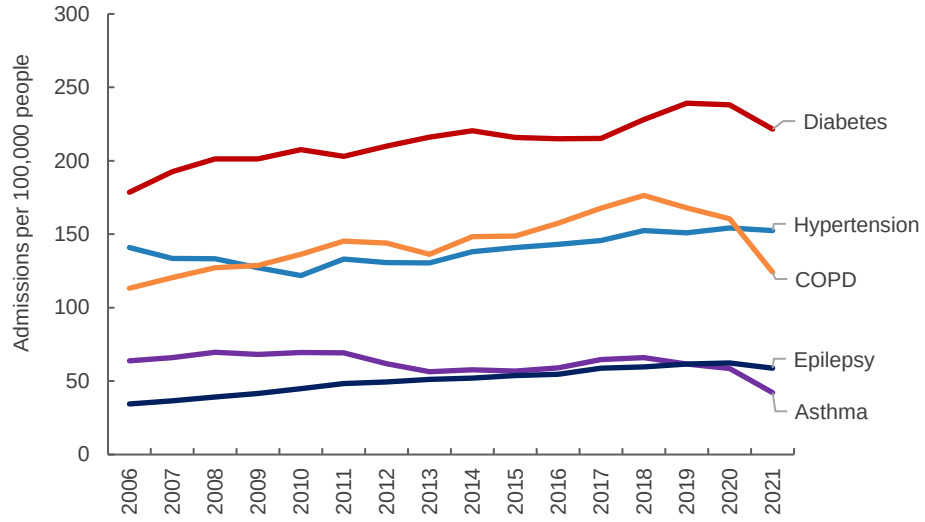
[78] International Health Policy Program. 2020. "Report on the Effective Coverage Programs: Diabetes and Hypertension Services." https://ihppthaigov.net/publication/comprehensive-report-on-effective-coverage-assessment-projects-2020.
[79] NCD Risk Factor Collaboration (NCD-RisC). 2021. "Worldwide Trends in Hypertension Prevalence and Progress in Treatment and Control from 1990 to 2019: A Pooled Analysis of 1201 Population-Representative Studies with 104 Million Participants." *The Lancet*.
[80] Ambulatory care sensitive conditions (ACSCs) are conditions where effective community care and case management can help prevent the need for hospital admission. Admissions for ACSCs are not only a sign of the poor overall quality of primary and community care but also burden the public health budget and use resources that could be better used for other health actions.
[81] Premature mortality rate is defined as probability (percent) of dying between the exact ages between 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases. Data were extracted from WHO Global Health Observatory. This is the indicator measuring achievement of SDG 3.4.1.

Figure 4-15: Hypertension Cascade Analysis among People Aged 30–79 Years Old



Source: Calculated by author using (i) data from NCD Risk Factor Collaboration (NCD-RisC). 2021 "Worldwide Trends in Hypertension Prevalence and Progress in Treatment and Control from 1990 to 2019: A Pooled Analysis of 1201 Population-Representative Studies with 104 Million Participants." The Lancet 398 (10304); and (ii) gender ratio from World Development Indicators.

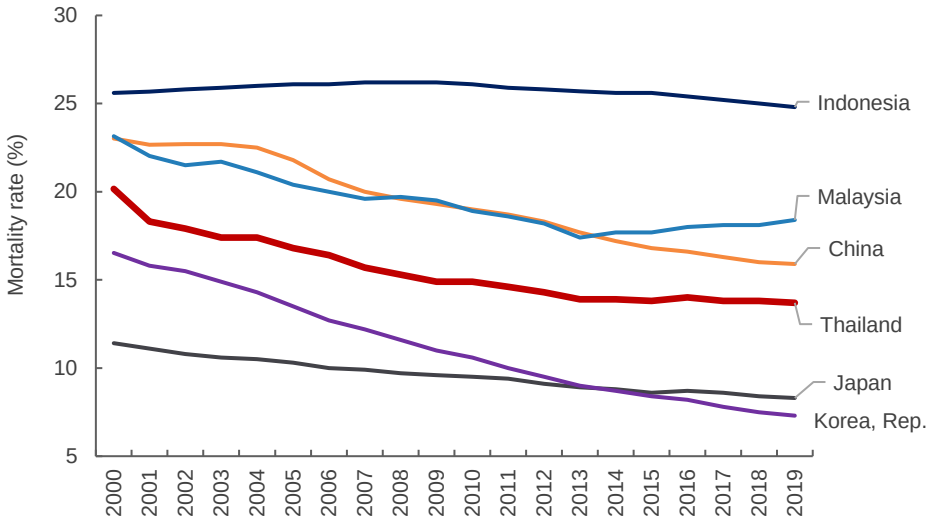
Figure 4-16: Admission Rate of Ambulatory Care Sensitive Conditions among Universal Coverage Scheme Members



Source: Thailand National Health Security Office Annual Report 2017–2021.

Note: COPD = Chronic obstructive pulmonary disease.

Figure 4-17: Premature Mortality Rate



Source: WHO Global Health Observatory.

178. The suboptimal outcomes indicate the challenges in service delivery for NCD patients. An accessible and equitable health system that integrates population-based prevention with the entire continuum of care is one of the key considerations for reducing the NCD disease burden.[82] Thailand achieved UHC more than a decade ago and is top-ranked in the UHC Service Coverage Index. Therefore, accessibility in and of itself is not an issue. The issue lies in how to translate those high levels of access to more integrated, better quality of care. Several issues are hindering the effectiveness and efficiency of service delivery.

179. First, the primary health care system in Thailand has not yet reached its full potential. Primary health care has been a cornerstone of the Thai health system for several decades, and importantly, the Primary Health System Act became effective in April 2019. Nevertheless, there is room to improve the effectiveness of primary health care in line with the evolving challenges facing the health care system. On the one hand, the bypassing of primary health care is evident, especially in urban areas. In contrast to the limitations in access to health care in rural areas, urban areas, such as Bangkok, have a rich choice of health care providers and higher demand for health care as a result of improved socioeconomic status. People can bypass primary health care through out-of-pocket payments. Besides, the high mobility of residents and lower interconnectedness of communities in urban areas has restricted the roles that the 15,000 Village Healthcare Volunteers (VHVs) in Bangkok could play in providing outreach services and follow-up. Consequently, the mechanisms for early diagnosis, appropriate and efficient referral, and long-term care (LTC) for NCDs were generally not functioning, which not only caused the inefficient use of hospital services, and a rise in health spending but also compromised health outcomes. On the other hand, primary health care reforms are still works-in-progress with various ongoing initiatives. Thailand has been exploring new models of primary health care based on multidisciplinary teams or networks of providers in recent years, such as the establishment of primary care clusters with family care teams in the community[83] and the introduction of the three-doctor policy.[84] But these new models are still to prove their worth.

180. Second, financing and purchasing mechanisms provide limited incentives for care coordination and integration across levels of care. The MOPH, NHSO, CGD of MOF, SSO, ThaiHealth, and LAOs share major financing roles for NCD prevention and treatment services in Thailand. In general, prevention services are financed by ThaiHealth, NHSO, and LAOs; treatment services are financed by three public health insurance schemes; and community-based long-term care (LTC) is financed by NHSO in some rural areas. Payments are made to service providers according to the types of care, such

[82] J. E. Bennett, V. Kontis, C. D. Mathers, M. Guillot, J. Rehm, K. Chalkidou, A. P. Kengne, et al. 2020. "NCD Countdown 2030: Pathways to Achieving Sustainable Development Goal Target 3.4." *The Lancet* 396 (10255): 918–34.
[83] World Health Organization. 2017. "Primary Health Care Systems (PRIMASYS): Case Study from Thailand." Geneva.
[84] Human Resources for Health Research and Development Office (HRDO). 2020. "The Conversation with Dr. Samrerng Yangkratoke's Push for Three-Doctor Policy." https://hrdo.org/en/the-conversation-with-dr-samrerng-yangkratokes-push-for-three-doctor-policy/.

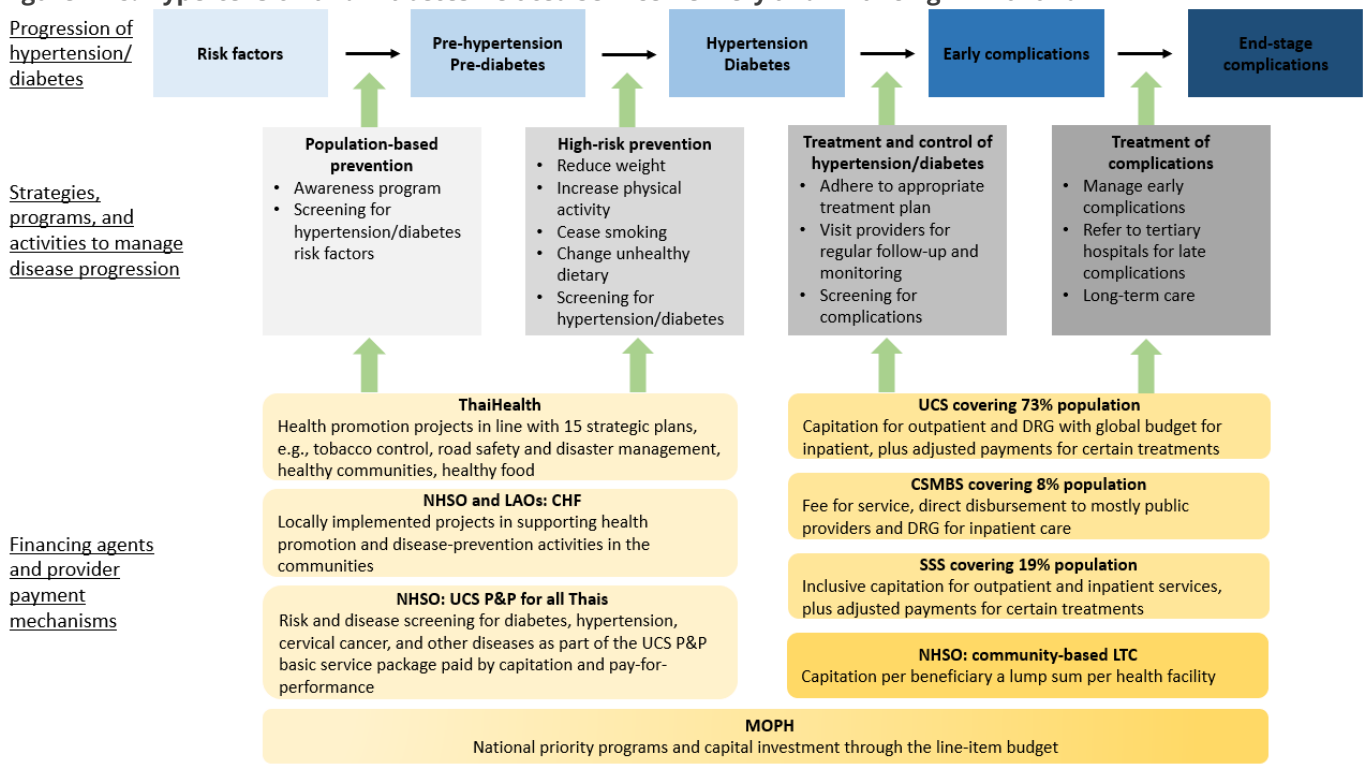
as preventive care, outpatient care, inpatient care, and LTC. The provider payment methods vary. In addition, MOPH provides line-item budgets to some national priority programs and capital investment (Figure 4-18). In general, with appropriate performance monitoring and evaluation systems in place, the existing provider payment systems encourage high-quality service provision for each type of care. However, they do little to support new care models that improve care coordination or develop services for patients with multiple morbidities who need to seek coordinated care across levels of care. Frequently, the fragmented health financing results in fragmented care, with suboptimal health outcomes.

181. Third, there is a lack of information-sharing among service providers. In general, health information systems (HISs) are in place but only function within a facility. In other words, the HISs are not interoperable across health care providers. If a patient is referred from a rural district hospital to a provincial hospital, he/she needs to carry paper-based medical records. Although many providers are equipped with advanced technology in urban areas, challenges persist in information-sharing among service providers. Several initiatives have been launched in recent years such as the "BMA Doctor" application that allows users to access their medical records at all 11 hospitals under the Medical Service Department of BMA.[85] Information challenges are even more pronounced between health care and social care services.[86] This is particularly so for patients with multiple morbidities who need to seek coordinated care across levels of health care as well as social care. It is worth noting that the MOPH has a well-articulated eHealth Strategy (2017–2026) in place. It aims to improve the safety, quality, and efficiency of patient care by enabling access to electronic health records and by supporting clinical practice, service management, research, and policy through the availability of appropriate evidence and data.[87] In addition, the Digital Health Strategy (2021-2025) was developed to provide a framework and guidelines for digital health implementation through the concept of good governance and the participation of different sectors towards empowering patients and achieving the vision of health for all.[88] Currently, Thailand is at the beginning of this complex journey to encourage the development and safe use of health data.

182. In the context of rapid urbanization and aging, innovations should be encouraged, and much more attention should be paid to improving the integration of service delivery across levels of health and social care, especially in urban areas. The bypassing of primary health care through out-of-pocket payments is one of the major barriers to care coordination and integration. Moreover, it increases the financial burden on public health insurance schemes as well as the households. Currently, roughly 50 percent of the country's 70 million population live in urban areas, which increased from 30 percent in 2000 and is projected to rise to 70 percent by 2050.[89] Meanwhile, people aged 60 or older are projected to reach 36 percent of the population by 2050, up from 20 percent in 2020. If no action is taken, urban aging would further affect the sustainability of UHC and, most importantly, hinder economic and social development in Thailand.

[85] "BMA and KBank Team Up to Launch the 'BMA Doctor,'" March 4, 2022. https://www.kasikornbank.com/en/news/pages/bma-doctor-app.aspx.
[86] Asian Development Bank (ADB). 2020. "Lessons from Thailand's National Community-Based Long-Term Care Program for Older Persons." Manila.
[87] eHealth Strategy, Ministry of Public Health (2017–2026). http://team.sko.moph.go.th/content/view/?id=307.
[88] Digital Health Strategy, Ministry of Public Health (2021-2025).
https://ict.moph.go.th/upload_file/files/263bec94c161efb9d61d3b1116dee9a4.pdf
[89] World Urbanization Prospects: The 2018 Revision.

Figure 4-18: Hypertension and Diabetes-Related Service Delivery and Financing in Thailand



Source: Author.

Note: NHSO = National Health Security Office; LAO = Local Administrative Organization; CHF = Current health financing; UCS = Universal Coverage Scheme; P&P = Prevention and promotion; DRG = Diagnosis-related group; CSMBS = Civil Servant Medical Benefit Scheme; SSS = Social Security Scheme; LTC = Long-term care; MOPH = Ministry of Public Health.

Improving efficiency and financial sustainability of public health insurance schemes

183. The achievement of UHC in Thailand through three public health insurance schemes has been remarkable and well-recognized globally. All three public health insurance schemes provide comprehensive benefit packages for different population subgroups and adequate financial risk protection. Two of the schemes (i.e., UCS and CSMBS) are financed by general taxation and one (i.e., SSS) by social health insurance with tripartite contribution from the government, the employer, and the employee (see Figure 4-1). For a country like Thailand with a large informal sector, a contributory insurance scheme for the entire population would be challenging to implement. Nevertheless, there are several opportunities to improve the efficiency of public health insurance schemes to enhance the overall financial sustainability of UHC, particularly in the context of fiscal constraints and rising health care needs in the post-COVID era.

184. First, strengthening strategic purchasing[90]arrangements, including the provider payment mechanism, can contribute to improvements in the efficiency of health spending. There were few differences in the benefit packages between UCS and CSMBS, yet health expenditure per member of UCS was only about 25 percent of CSMBS during the past decade.[91] In 2020, CSMBS spent approximately THB 14,630 per member while UCS spent THB 4,000 per member, of which, outpatient services accounted for about 70 percent.[92] One of the reasons behind this is that the beneficiaries of CSMBS are on average older than those of UCS, resulting in a higher risk profile. It was estimated that the average age of CSMBS and

[90] Purchasing is considered strategic when these allocations are linked, at least in part, to information on provider performance and the health needs of the population they serve, with the aim of realizing efficiency gains, increasing equitable distribution of resources and managing expenditure growth. Strategic purchasing is about defining: (i) What to buy: Which services will respond to the needs of the target population? How will they be defined? (ii) From whom to buy: Which providers, public and/or private, will be able to deliver effectively those services? And (iii) How to buy: How will providers be paid? At what rates? What are contracting terms, and how will compliance be monitored? For more information, see: https://www.who.int/activities/making-purchasing-more-strategic.

[91] W. Patcharanarumol, W. Panichkriangkrai, A. Sommanuttaweechai, K. Hanson, Y. Wanwong, and V. Tangcharoensathien. 2018. "Strategic Purchasing and Health System Efficiency: A Comparison of Two Financing Schemes in Thailand." *PLoS ONE* 13 (4): e0195179.

[92] CSMBS expenditure data were provided by CGD of MOF. UCS data were extracted from the *NHSO Annual Report (2021).*

UCS beneficiaries was 49 and 37 years old, respectively, in 2020.[93] Nevertheless, at least part of this difference can also be attributed to how the health providers are paid.

- The UCS relied more on strategic purchasing for health services whereas CSMBS passively reimbursed the cost of health services. Specifically, for outpatient services, UCS paid an age-adjusted capitation[94] to the district health systems that carry out gatekeeping functions; in contrast, CSMBS paid fee-for-service to health providers in a service delivery system where patients have direct access to public hospitals and specialists (see Figure 4-1). It is well documented that fee-for-service provides incentives for providers to increase the volume and intensity of service provision but no incentives to control cost. Furthermore, although both UCS and CSMBS were financed by general taxation through an annual budget allocation, UCS applied a close-end budget for cost containment whereas CSMBS had an open-end budget. While harmonizing purchasing arrangements across the three schemes is progressing, this process could be further accelerated.
- For CSMBS, a change in billing process moderately but persistently increased outpatient utilization through both visiting rates and treatment intensity. The beneficiaries previously had to pay out-of-pocket payment first and then receive their reimbursement. The current billing system allows hospitals to charge and get paid by the government directly. Although the new billing process improved operational efficiency, a study indicates that patients with lower utilization rates (conditional on illnesses) prior to this change increased their health care utilization more than those with higher utilization rates.[95]

185. Second, the multipayer and multischeme system has a significant impact on administrative costs. In Thailand, the governance, and health system and financing administration cost accounted for about 16 percent of CHE in 2019, which was much higher than for all of its peers (all of its peers' share of administrative costs were below 10 percent).[96] The multipayer and multischeme system duplicates the investment (e.g., IT system, capacity building) as well as the activities (e.g., claims processing, benefits management, purchasing and contracting), which results in an additional burden at the provider level.

186. In addition to improving the efficiency of health spending as a means of enhancing financial sustainability, more effort could be made to monitor the size and risk pooling of three schemes. Currently, about 20 percent of the population is covered by SSS, and the majority of them are the working-age population. For SSS, two-thirds of revenue were generated in the form of contributions from mandatory earmarked payroll taxes (i.e., the employee's contribution and the employer's contribution), and the rest were raised from general taxation (i.e., the government contribution). This means SSS is much less of a burden on the government's general taxation than UCS and CSMBS. Two main factors would affect the size of SSS. On the one hand, aging will raise the old-age dependency ratio, that is, increase ratios of those aged 65+ relative to those in the working-age population group of 15–64 years, which potentially puts downward pressure on the size of SSS as some people opt for UCS upon retirement. On the other hand, the growing informal sector would shift more working-age population from the formal sector to the informal sector, which also potentially puts downward pressure on the size of SSS. It is worth exploring the potential of SSS expansion, which could be viewed as an option for enhancing the financial sustainability of UHC. Nevertheless, the change in risk pooling of three schemes should be closely monitored during this process.

[93] It was estimated using data from the NHSO Annual Report Fiscal Year 2020 (Figure 17). For all the age groups except the age group 80+, the median age of each age group is used for that group (e.g., for the age group 0-4, 2 years old is used). For the age group 80+, 80 years old is used.

[94] Capitation payment is a prospective lump sum payment per enrolled patient covering a range of services.

[95] Wasi, N., Panpiemras, J., & Manachotphong, W. (2021). The Impact of a Billing System on Healthcare Utilization: Evidence from the Thai Civil Servant Medical Benefit Scheme. Oxford Bulletin of Economics and Statistics, 83(1), 228-251

[96] WHO Global Health Expenditure Database. https://apps.who.int/nha/database/Select/Indicators/en/.

4.4 Spending efficiency during the pandemic

Overall budget and spending on COVID-19 emergency response in the health sector[97]

187. As in other countries, COVID-19 has been driving a sharp increase in Thailand's health spending. Before the onset of the COVID-19 pandemic, 2.3 percent of Thailand's government annual budget, totalling THB 138,000 million, had been allocated to the health sector for fiscal year 2020.[98] An additional THB 208,000 million was allocated for the COVID-19 emergency response in the health sector from March 2020 to January 2022,[99] of which 33 percent (THB 69,000 million) was sourced from the THB 1 trillion 2020 Borrowing Act, 51 percent (THB 106,000 million) from the THB 500 billion 2021 Borrowing Act, and the rest from the government's own reserves and the transfer of nonessential budget allocations.[100]

188. The additional injection of funds was critical for the COVID-19 emergency response in the health sector. The budget for 2020 was mostly authorized to finance VHVs' outreach and surveillance in their local communities (THB 11,969 million, 6 percent).[101] Later on, vaccine procurements dominated the early 2021 budget approval (THB 77,744 million, 37 percent). The largest and final significant budget approval was recorded in late 2021 to provide COVID-19-related prevention, treatment, and vaccination services operated by NHSO (THB 82,800 million, 40 percent). The rest of the budget (THB 35,446 million, 17 percent) was approved for laboratory capacity enhancement, medical equipment and supplies, and surveillance (Table 4-1). Overall, budget execution was efficient. By October 2021, more than 95 percent of the approved budget was utilized and rapidly distributed to the relevant bureaus and departments.[102]

Table 4-1: Main Programs and Approved Budget for COVID-19 Emergency Response in the Health Sector

Year	Program	Approved budget (Unit: million baht)	Department
2020	VHV supporting funds	10,394	Health Support Services
	Medical equipment and supplies	4,504	Disease Control and Office of the Permanent Secretary
	UHC supplementary financing	3,000	NHSO
	Others	3,710	Various departments
	Subtotal	*21,608*	
2021	Vaccine procurement	77,744	Disease Control and National Vaccine Institute
	UHC supplementary financing	79,800	NHSO
	Others	28,807	Various departments
	Subtotal	*186,351*	
	Total (2020 and 2021)	**207,959**	

Source: See footnote of the paragraph above.

Note: VHV = Village Healthcare Volunteer; UHC = Universal health coverage; NHSO = National Health Security Office.

Factors affecting the efficiency of health spending for the COVID-19 emergency response

189. Various public financial management (PFM) measures facilitated an effective and accountable health sector response.[103] PFM is especially critical during public health emergencies like COVID-19, as prompt execution is paramount in financing crisis mitigation and resolution. To facilitate prompt budget execution and payment to frontline health care facilities during COVID-19, the budget execution authority was fully decentralized to budget-holder departments, as authorized by the cabinet, within their approved operation plans and legislative mandates. In terms of expenditure reporting and auditing, NHSO, as the main purchaser, utilized post payment auditing as a major mechanism to not slow down payments. Moreover, accountability was safeguarded through the enforcement of respective rules and regulations. On the provider side, the internal audit and reporting of all hospitals were mandated by the MOPH hospital

[97] The analysis covers the period from March 2020 to January 2022, and it is based on publicly available information. Thus, it might not provide a comprehensive picture of health financing for the COVID-19 response in Thailand.
[98] Parliamentary Budget Office analysis 2018–2020, published in October 2019.
[99] Parliamentary Budget Office analysis for Monitoring of Borrowing Acts, published January 2022.
[100] https://www.bbc.com/thai/52917890.
[101] https://www.hfocus.org/content/2021/12/23912.
[102] The Third/2021 Committee of the rapid utilization of government expenditure meeting, dated November 29, 2021.
[103] S. Sachdev, S. Viriyathorn, S. Chotchoungchatchai, W. Patcharanarumol, and V. Tangcharoensathien, 2022. "Thailand's COVID-19: How Public Financial Management Facilitated Effective and Accountable Health Sector Responses." *The International Journal of Health Planning and Management.*

revenue regulation; the Office of the Auditor General conducted on-site external audits of health care facilities. On the purchaser side, the NHSO was subject to internal accounting and procurement audit and external financial and operations audit by the Audit Subcommittee, appointed by the Governing Board.

190. The NHSO acted as the single budget holder and payer for most COVID-19-related prevention and vaccination services. These services include laboratory screening and testing for high-risk exposure, quarantine, vaccine deployment, treatment costs for adverse events following immunization (AEFI) as an outpatient, and AEFI compensation. The treatment cost for positive cases and AEFI are paid by individuals' public health insurance schemes. Using a single budget holder and payer ensured consistency in the benefit package design, resource allocation criteria, provider payment methods, and selection of providers. As a result, this ensured efficiency and accountability in budget execution. An important lesson from the role played by NHSO in the COVID-19 response is the importance of governments having robust institutional structures to purchase and finance health care. Thailand effectively leveraged the NHSO, which has a long-standing mandate for strategic purchasing of routine services, to deliver during an unprecedented health shock.

191. Nevertheless, regulatory hurdles potentially resulted in some delays and inefficiencies in the COVID-19 response, particularly in the procurement of medical equipment and supplies and vaccines. In 2017, a Government Procurement and Inventory Management Act was promulgated and enforced. Additional protocols, such as electronic government procurement, were established to improve transparency in the procurement process. The rigid procurement process was a way of establishing strong controls and robust spending management, which was seen as a strength before COVID-19. Nevertheless, this process caused delays in the context of a fast-evolving pandemic. Furthermore, vaccine procurement did not start until 2021, as the government procurement protocols were not in favor of Advanced Purchase Agreements, which were widely used globally as part of a strategy to provide up-front financing for COVID-19 vaccines and to accelerate their development and availability. To sum up, COVID-19 underscored the need for more agile and adaptive procurement processes to meet the unexpected surge in demand.

Innovations facilitated COVID-19 prevention and control and essential service delivery

192. Thailand effectively leveraged the Community Health Fund (CHF) to mount an effective response to the pandemic at the community level. To tackle community health problems and community health services to reach underprivileged groups, the CHF was set up with matching funding from the NHSO and local governments. It primarily aims to support health-related activities that are carried out by communities and organizations based on community needs and readiness.[104] Nevertheless, the utilization of CHF did not reach its full potential before COVID-19. By the end of fiscal year 2019, the balance brought forward reached about THB 4 billion.[105] One of the main barriers that caused the inefficient use of CHF before COVID-19 was CHF budget rules. The rules set by the NHSO are broad and open for interpretation to afford LAOs greater flexibility and encourage the efficient use of the fund. Nevertheless, fund utilization is subjected to random audits conducted by the State Audit Office, which does impose a set of strict rules. To effectively leverage the CHF for the COVID-19 response, guidelines and notifications were issued to encourage the use of CHF and streamline the rules. For instance, the National Health Security Board issued a notification[106] to enable LAOs to use the CHF to support epidemic prevention and control; and to accelerate the project approval process during the pandemic. It allows the CHF committee chairman of each LAO to directly approve health-related projects with less than THB 100,000 per project during the pandemic. Thanks to various adaption measures, the CHF was well-utilized by LAOs to support COVID-19 prevention and control. By February 2022, CHF had supported 57,108 projects with a budget of THB 2.6 billion to tackle COVID-19 and run

[104] CHF supports projects under five schemes, including Scheme 1 to support health facilities and public health agencies, Scheme 2 to support health promotion and disease prevention activities among organizations and groups of people, Scheme 3 to support centers for children or elderly or disabled, Scheme 4 to support administration and development of CHF, and Scheme 5 to support in case of epidemic or disasters.

[105] NHSO Community Health Fund Balance Report. https://obt.nhso.go.th/obt/balance_report.

[106] Announcement of the National Health Security Board on criteria to support Local Administrative Organizations' operation and management, https://dhes.moph.go.th/wp-content/uploads/2020/05/1-3_%E0%B8%9B%E0%B8%A3%E0%B8%B0%E0%B8%81%E0%B8%B2%E0%B8%A8%E0%B8%97%E0%B9%89%E0%B8%AD%E0%B8%87%E0%B8%96%E0%B8%B4%E0%B9%88%E0%B8%99-%E0%B8%893.pdf.

health promotion and disease prevention projects at the community level.[107] *See Box 4-2 for a case study on how Phuket Municipality Used the Community Health Fund to Support COVID-19 Prevention and Control in the Community.*

Box 4-2: Phuket Municipality used the Community Health Fund to support COVID-19 prevention and control in the community

There are 533 registered Village Healthcare Volunteers (VHVs) and 20 public health workers in Phuket Municipality to provide community health services to approximately 80,000 residents. In 2019, 240 projects were financed by the Community Health Fund (CHF) with a budget of THB 22.4 million.

During COVID-19, following notification from the National Health Security Board on the use of CHF to support COVID-19 prevention and control, the Medical Department of Phuket Municipality, which is responsible for public health and CHF management, made substantial efforts in improving CHF utilization to support COVID-19 prevention and control in the community. From the onset of the COVID-19 pandemic to May 31, 2022, 945 projects were financed by CHF with a budget of THB 124.1 million. In line with one of the CHF adaptation measures, the CHF committee chairman of Phuket Municipality could directly approve health-related projects with less than THB 100,000 per project during the pandemic. Five projects were approved between 2020 to 2021 with the CHF budget of THB 246,550.

One exemplar project was to engage VHVs in preventing the spread of COVID-19 and provide a COVID-19 vaccination campaign for community residents. This project had a budget of THB 86,000 and was carried out successfully from May to September 2021. The beneficiaries were 50 VHVs and 500 residents including those from vulnerable groups. The project consisted of a range of activities such as (i) a seminar attended by VHVs to equip them with essential knowledge of COVID-19 prevention and vaccination; (ii) community engagement carried out by VHVs including COVID-19 public health campaign, registering and following up with residents for vaccination; and (iii) procuring equipment for COVID-19 prevention and control in the community. The evidence showed that 80 percent of VHVs who attended the seminar had adequate knowledge of COVID-19 prevention and the benefit of vaccination, and 80 percent of target residents registered and were vaccinated. Importantly, the project demonstrated a successful collaboration among community leaders, VHVs, and the Phuket Municipal authority.

This case study indicated the importance of introducing flexibility in the use of CHF to enable timely and context-specific responses to health emergencies without compromising on accountability. Moreover, the close collaboration among community leaders, VHVs, and Local Administrative Organizations (LAOs) provided timely and tailored public health services to the community.

Source: Case study conducted by the National Health Foundation and commissioned by the World Bank.

193. Digital transformation in health service delivery was accelerated during COVID-19, which largely facilitated the COVID-19 response and essential service delivery. In fact, MOPH had been promoting digital transformation in health service delivery a couple of years before the pandemic; nevertheless, progress was limited as neither patients nor doctors saw the necessity of digital transformation.[108] To respond to evolving health care needs, both in terms of the surge of COVID-19 cases and in maintaining essential health services, many digital health platforms were launched during COVID-19, both by government agencies as well as by private entities. For instance, MOPH launched Mor Prom mobile application for COVID-19 infection tracker, vaccine appointments, digital vaccination records, and risk communication; the NHSO in collaboration with other government departments introduced a telemedicine BKK HI/CI Care platform to monitor COVID-19 patients with mild symptoms at home and at community isolation centers; a telemedicine startup company created the mobile application Doctor Raksa, which allows patients to have online consultations and get prescription filled via an online pharmacy and delivered.[109] Importantly, the Department of Medical Services, MOPH, piloted a "New Normal of Medical Services" model that was enabled and facilitated by digital health solutions. This model not only provided people with access

[107] NHSO COVID-19 Epidemic Prevention Project Supported by Community Health Fund (excluding Bangkok Metropolitan Administration). https://datastudio.google.com/reporting/1d164c84-4e67-48bd-ab2c-44026b25e626/page/QRXYC.
[108] Thailand Today 2021, EP62: "New Normal of Medical Services Campaign: Director-General of the Department of Medical Services Dr. Somsak Akksilp." https://www.youtube.com/watch?v=lnvlSL8eVV8.
[109] "Telemedicine for Thailand—Doctor Raksa." https://www.boi.go.th/upload/content/DR.raksa.pdf.

to appropriate, quality, and timely medical services during COVID-19 but also has had profound implications for service delivery in the post-COVID era. *See Box 4-3 for A New Normal of Medical Services Model for Noncommunicable Disease Management during COVID-19.*

Box 4-3: A new normal of medical services model for non-communicable disease management during COVID-19

The New Normal of Medical Services Model. The Department of Medical Services, MOPH, introduced a "New Normal of Medical Services" model to provide people with access to appropriate, quality, and timely medical services during COVID-19. The new service delivery model includes new service delivery arrangements related to the dental room, the emergency room, the operating room, and noncommunicable disease (NCD) care. The model was first piloted in Pattani Province, and, thus, is referred to as the Pattani Model. Under this model, patients with different diseases are classified into three "traffic light" groups—green, red, and yellow—based on the need for direct medical care and risk of COVID-19 infection. Patients who do not need to visit the health care facility are supported by online consultation and drugs are delivered to them, often by Village Healthcare Volunteers (VHVs). Arrangements for patients who need to visit health care facilities are modified, taking into account the patient pathway and the need to maintain physical distancing.

The "Shared Care Plan" for NCD care. Under the Pattani Model, a series of guidelines and innovative practices were developed including a "Shared Care Plan" for hypertension and diabetes care. "Shared Care Plan" links patient care responsibilities across levels of health facilities, VHVs, and patients. With assistance from VHVs, patients are enabled to define goals and treatment plans, and to self-monitor conditions like measuring blood pressure or blood sugar levels using portable devices. Self-monitoring data are then sent to telecommunication platforms. The medical staff analyzes the data and triages patients into different groups—green, yellow, and red—according to their conditions. However, in all cases, a doctor can be consulted through various channels such as online consultation or a hotline in case of urgent problems. To promote the "shared care plan," the National Health Security Office (NHSO) introduced additional top-up payments to incentivize providers to use telemedicine and medicine delivery. The reimbursement of NCD telemedicine by the NHSO increased rapidly from 3,767 to 73,338 visits from April to September 2021.

Group	Seeing doctors face-to-face	Seeing doctors via telemedicine	VHV home visit	Drug refill without seeing doctor
Green Well-controlled	Once every other time	Y	N	Y
Yellow Moderately controlled	Once every other time	Y	Y	Y
Red Not well-controlled with serious problems	Every time	N	Y	N

Policy implications. The "New Normal of Medical Services" model is a win-win solution for patients and providers. For patients, this new service delivery model shifted away from hospital-based medical care, so they could receive care at home through telemedicine. For providers, it reduced hospital congestion and unnecessary hospital visits. As a result, not only would doctors have more time for each necessary consultation but there would also be a reduced risk of infection. From a health system perspective, the successful scale-up and implementation of the "Shared Care Plan" would improve care coordination and, consequently, health outcomes and spending efficiency.

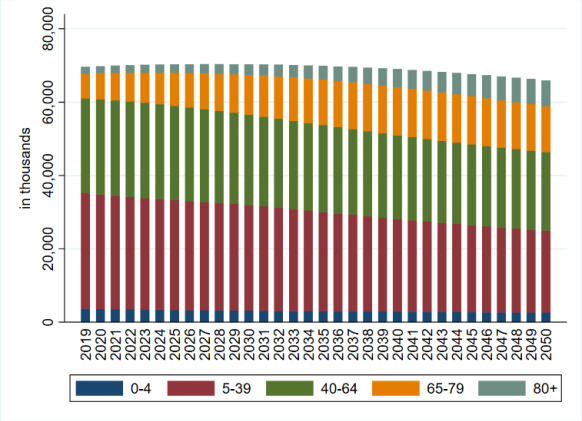
Source: Case study conducted by the National Health Foundation and commissioned by the World Bank.

4.5 Health system in the post-COVID era: Spending projections

194. To understand the likely trajectory of future health spending needs, a standard growth accounting model was applied to project health financing needs in Thailand up to 2050 using the Thailand Health and Welfare Survey (2019 and 2021) datasets. The projection was based on a series of fiscal scenarios that rely upon the decomposition of spending growth into three factors: income, demographic, and residual factors.[110,111] The income factor that resembles the variation in health spending caused by the variation in income is calculated from projections of GDP growth and income elasticity of health care demand assumptions. The demographic factor is estimated based on demographic characteristics of the population, which vary over time, and a medical cost curve by capita, age, sex, and mortality status. Lastly, the residual accounts for factors that are not explained by demographics and income, such as medical technology and innovations.[112]

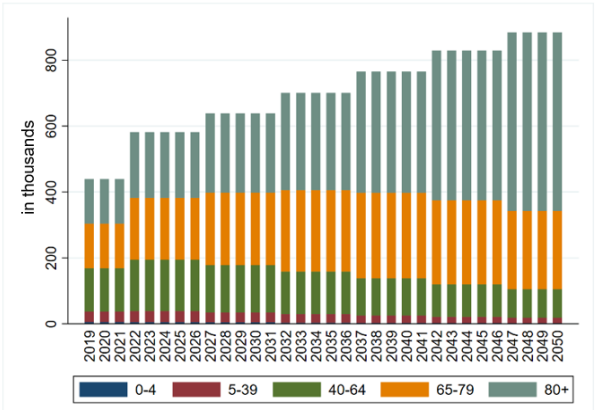
195. The population of Thailand is aging over time, with medical cost curves increasing for older populations. Figure 4-20 shows the share of the population aged 5–39 is expected to decline, while the share of the population aged 65 and above is expected to increase.[113] Figure 4-20 shows projected deaths in Thailand until 2050. The number of deaths is expected to double by 2050. Figure 4-21 and Figure 4-22 show the medical cost curve by (i) public and private financing, and (ii) survivorship and nonsurvivorship (which refers to the status of the patient after the medical care) for different age and gender groups. [114]

Figure 4-19: Population Projection, by Age Group



Source: World Population Prospects.

Figure 4-20: Mortality Projection, by Age Group



Source: World Population Prospects.

[110] C. De la Maisonneuve, and J. O. Martins. 2015. "The Future of Health and Long-Term Care Spending." *OECD Journal: Economic Studies* 2014 (1): 61–96.

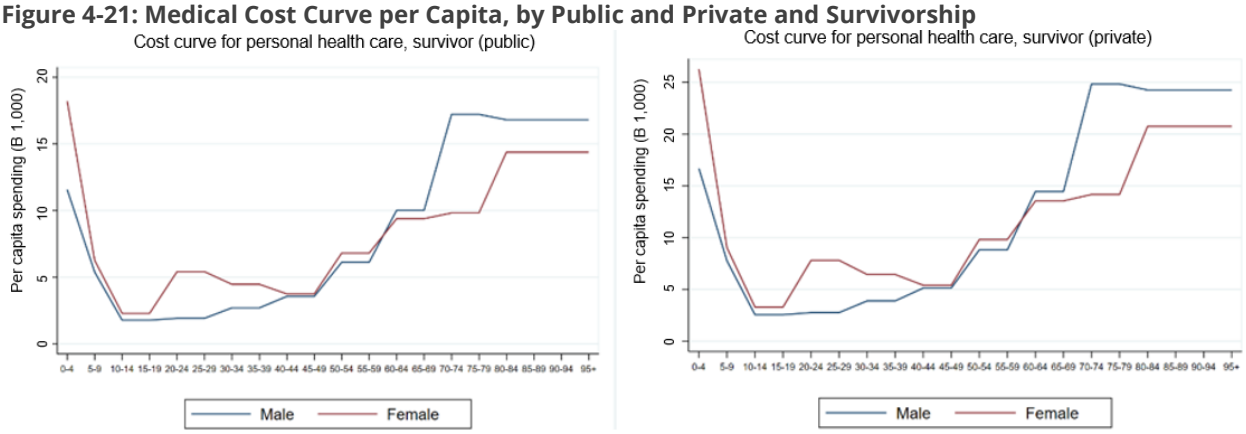
[111] R. Rocha, I. Furtado, and P. Spinola. 2021. "Financing Needs, Spending Projection, and the Future of Health in Brazil." *Health Economics* 30 (5): 1082–94.

[112] It is important to highlight that, strictly speaking, the projections should not be interpreted as projections of spending, but rather as financing needs. What will happen with spending, however, will depend on the ability of the government and society to actually respond to these needs with more resources.

[113] Population and mortality projections until 2050 disaggregated by age and sex are extracted from the United Nations World Population Prospects 2022. https://population.un.org/wpp/Download/Standard/Population/.

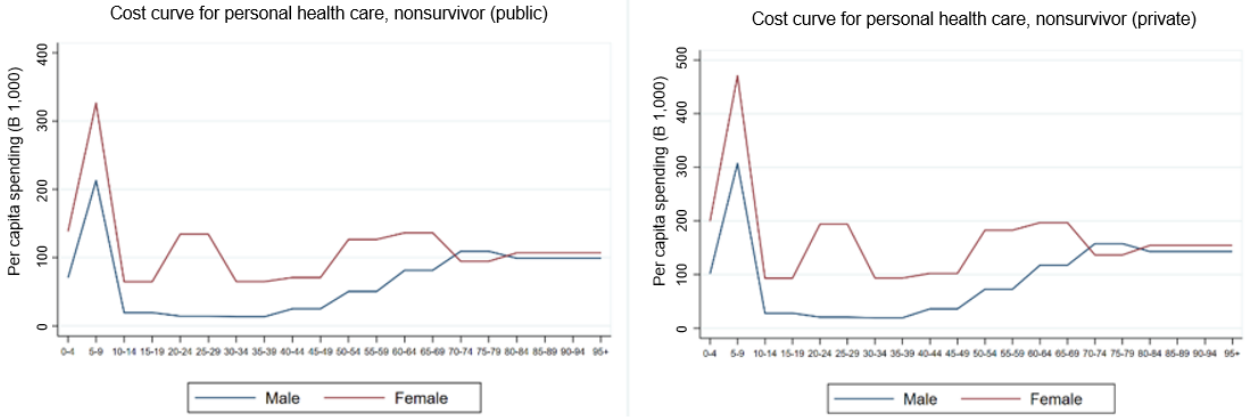
[114] The medical cost curves were calculated using the 2019 National Health Account data by applying weights from pooled Thailand National Health and Welfare Survey data (2019 and 2021). The weights were obtained by calculating the health care cost during inpatient admission, annualized outpatient visits, and use of health promotion services. The weight is the share of health care cost of a specific age-sex group to the total health care cost.

Figure 4-21: Medical Cost Curve per Capita, by Public and Private and Survivorship



Source: Estimated by the author using Thailand Health and Welfare Survey 2019 and 2021.

Figure 4-22: Medical Cost Curve per Capital, by Public and Private and Nonsurvivorship



Source: Estimated by the authors using Thailand Health and Welfare Survey 2019 and 2021.

196. Our analysis suggests that Thailand will face increased spending pressures in the health sector. Table 4-2 presents projected financing needs in Thailand until 2050. Health spending as a share of GDP increased from 3.5 percent in 2010 to 3.8 percent in 2019. Using our baseline scenario in which (i) income elasticity equals 1, (ii) GDP projections are as per the baseline scenario in Chapter 1, and (iii) the residual is set equal to zero, health financing needs as a share of GDP would grow to 4.5 percent in 2030 and 4.8 percent in 2050. This would represent an increase from the observed spending of THB 652 billion in 2019 to THB 1,741 billion by 2050 (2019 prices). In 2050, public financing would account for about 3.5 percent of GDP whereas private financing would be 1.3 percent. Demographic factors would account for about a quarter of the overall growth of total projected health financing needs. An aging population combined with relatively ineffective control of NCDs as well as certain weak cost control mechanisms in the health system is expected to exert significant pressure on health financing needs.

197. These projections must be interpreted with caution. It is important to note that these estimates do not account for possible changes in cost structure, improvement in quality, or technological changes. The literature suggests that technology has been the main driver of long-term health spending, more than income or demographics.[115] However, in the standard growth accounting model, technology is included in the residual and assumed to be zero in our projections. This implies that the actual growth in Thai health spending could be greater than that indicated by the baseline scenario. Following the literature, sensitivity analysis was carried out using ±0.75 deviation of the residual. In some cases, the

[115] A. Marino, and L. Lorenzoni. 2019. "The Impact of Technological Advancements on Health Spending: A Literature Review," Organisation for Economic Co-operation and Development (OECD) Health Working Papers, no. 113, OECD Publishing, Paris, https://doi.org/10.1787/fa3bab05-en.

projected total health financing needs as a share of GDP would exceed 5 percent.[116,117] This is not necessarily of concern from an efficiency perspective, given that investments in health systems generally provide good value for money, with their contribution to longer lives and productivity far outweighing their costs. On average, Organisation for Economic Co-operation and Development (OECD) countries spent more than 8 percent of GDP on health in the past decade; most of this spending comes from public financing.[118] Nevertheless, a larger rise in health spending would create additional pressures on overall long-term fiscal sustainability, as discussed in Chapter 1.

Table 4-2: Health Financing Needs Projection

	Income elasticity	GDP growth rate	Residual	Observed health spending as a share of GDP (in billion baht, 2019 prices)		Projected health financing needs as a share of GDP (in billion baht, 2019 prices)		
				2010	2019	2030	2040	2050
Base scenario:								
Total	1	World Bank estimates	0	3.5%	3.8% (651.9)	4.5% (958.9)	4.7% (1320.3)	4.8% (1741.0)
Public				2.5%	2.8% (475.9)	3.3% (700.0)	3.5% (963.8)	3.5% (1271.0)
Private				1.0%	1.0% (176.0)	1.2% (258.9)	1.3% (356.5)	1.3% (470.1)
Sensitivity analysis								
Residual:								
Total	1	World Bank estimates	***+0.75***	—	—	4.8% (1038.2)	5.5% (1536.7)	6.1% (2179.2)
Public						3.5% (757.9)	4.0% (1121.8)	4.4% (1590.8)
Private						1.3% (280.3)	1.5% (414.9)	1.7% (588.4)
Total			***-0.75***	—	—	4.1% (885.2)	4.1% (1133.1)	3.9% (1388.7)
Public						3.0% (646.2)	3.0% (827.1)	2.8% (1013.0)
Private						1.1% (239.0)	1.1% (305.9)	1.0% (374.9)

Source: Estimated by the author using Thailand Health and Welfare Survey 2019 and 2021.

4.6 Conclusion and recommendations

198. The Thai health system has provided relatively good value-for-money to date; nevertheless, given rising health care needs and potential public health threats, efforts must be made to reimagine health care for the future. Despite a relatively low level of spending devoted to health, Thailand achieved remarkable improvements in population health outcomes in recent decades, with a relatively equitable health system compared to its peers. This well-performing health system provided a solid foundation for an effective response to COVID-19. However, with demographic and epidemiological transitions well underway, and a growing risk of emerging infectious diseases and natural disasters, it is important to reimagine health care for the future. This is to meet society's continued expectations for better services but also to improve human capital and productivity to match the country's economic and social development status.

[116] The government uses total health spending as a share of GDP less than 5 percent as a means of measuring health financing sustainability.
[117] Using "excess cost growth" methodology, a recent World Bank report projected that public expenditure on health care would increase from 2.9 percent of GDP in 2018 to 5.5 percent of GDP in 2060. M. Bandaogo, and R. Van Doorn. 2021. "The Macroeconomic and Fiscal Impact of Aging in Thailand." Washington, DC: World Bank.
[118] OECD Health Statistics 2022.

199. The opportunity for transforming the health system has never been greater. The COVID-19 pandemic catalyzed positive change and innovations in health financing and service delivery, which should be sustained in the post-COVID era. Furthermore, it is time for the government to build on this opportunity and take strategic action with a long-term vision—to advance a highly effective, efficient, and people-centered health system that stays ahead of the curve during the demographic and epidemiological transition as well as urbanization. A few key recommendations are summarized below.

Recommendation 1: Harness digital technology to advance health system transformation to the next level

200. Sizable investment is required for a successful digital transformation in the health sector, but the returns are even greater. The COVID-19 pandemic catalyzed digital transformation in the health sector and highlighted the potential benefits of using data and digital technologies. Building capacity for such a digital transformation, that is, providing the right information to the right people at the right time, in the post-COVID era requires sizeable investment. Nevertheless, the returns could be even greater in the long term, such as reducing health system waste and improving health outcomes. It has been estimated that the direct health and economic benefits of a digital transformation across OECD health systems would approach $600 billion annually—roughly about 8 percent of OECD health expenditure. Delaying this transformation has negative impacts on both health outcomes and health budgets.[119]

201. A nationwide interoperable health information system (HIS) with electronic health records (EHR) at its core is the foundation for effectively delivering and paying for people-centered integrated care. It would enable health care providers to access comprehensive health and medical history about their patients regardless of where and when they sought care. As a result, care could be better coordinated by different providers and integrated with other services, achieving better health outcomes and less duplication and waste in health services. This is of significance for the growing number of people who have multiple comorbidities and require care across levels. Moreover, it could be a game changer for the challenges facing cities where the health care–seeking behavior is more diverse and the traditional gatekeeping and referral system is hardly functioning. Furthermore, an interoperable HIS could enable better payment models. Payment systems that encourage integration and that cover entire care pathways, better outcomes, and efficiency have been discussed for some time, such as additional payments, bundled payments, and population-based payments.[120] The success and sustainability of these non-traditional payment models heavily relies on an information system with the capacity to integrate data on inputs, outputs, processes, and outcomes.

202. Such a digital transformation requires strong political commitment and leadership. Institutional and organizational bottlenecks are the main barriers to a successful digital transformation in the health sector. To this end, the most crucial role of the government is to build an enabling policy environment and ecosystem where both public and private sectors could be engaged collaboratively and seamlessly in line with their comparative advantages and toward the same objective. It is worth noting that some progress has been made to this end recently. The Office of the Prime Minister issued the appointment of the National Digital Health Commission in 2022, which is chaired by the designated Deputy Prime Minister, and co-deputy chaired by the Minister of Public Health and the Minister of Digital Economy and Society. The Commission consists of members from key stakeholders including relevant government agencies, professional organizations, academic institutes, and experts. Current government priorities include building institutional and operational capacity; formulating or modernizing relevant governance frameworks, especially in terms of the governance of health data; and reshaping fundamental policy settings, processes, and workflows such as reorienting service delivery and health financing models.

203. Investing and empowering people is indispensable for advancing health system transformation. The government should take the lead in investing and empowering people. On the one hand, this includes not only investing in the digital capacity of the health workforce but also shifting their mindset from traditional health service delivery to digitally enabled, people-centered integrated care. On the other hand, it also includes investing in the digital health literacy of the

[119] OECD. 2019. "Health in the 21st Century: Putting Data to Work for Stronger Health Systems." *OECD Health Policy Studies.* Paris: OECD Publishing. https://www.oecd-ilibrary.org/social-issues-migration-health/health-in-the-21st-century_e3b23f8e-en.
[120] OECD. 2016."Better Ways to Pay for Health Care." *OECD Health Policy Studies.* Paris: OECD Publishing, Paris. https://www.oecd.org/publications/better-ways-to-pay-for-health-care-978926425 8211-en.htm.

public, especially those living in less developed areas, and empowering them to use their own medical information, take greater control of their health, and proactively communicating with their health care team.

Recommendation 2: Reduce fragmentation to better meet health system objectives

204. Thailand needs a stronger and more coherent policy response to deliver and pay for people-centered integrated care for the entire population. To respond to both the chronic care needs of an aging population and support any future health emergency or health security threats such as COVID-19, Thailand should aim to build an integrated service delivery system, including LTC. Such an integrated service delivery system should be accessible to and the first choice for everyone regardless of the insurance status or place of residence. The diverse health care–seeking behavior in urban areas should be considered and addressed in the design. In addition, innovative payment models should be explored to ensure the functioning of an integrated service delivery system and meet health system objectives, such as bundled payments. Bundling payments for several activities into one single payment for chronic conditions is increasingly seen as optimal. The payment rate is calculated based on information from clinical guidelines to reflect activities covered in the care pathway. There is strong empirical evidence that this type of provider payment method controls the cost and improves quality of care, irrespective of country, medical procedure, condition, or applied research methodology. It is worth noting that payment and delivery of people-centered integrated care for the entire population requires a nationwide interoperable HIS with EHR at its core. In other words, it is to be enabled by a successful digital transformation in the health sector.

205. Purchasing arrangements and mechanisms for health services across three public health insurance schemes could be harmonized. Given the substantial expertise required to implement the strategic purchasing of health services, the management of CSMBS could be entrusted to an agency that has demonstrated expertise in this area. Taking a step further, the management of all three public health insurance schemes could be entrusted to one agency, which will not only ensure progress in harmonizing the purchasing mechanisms of health services but also improve operational efficiency. In terms of purchasing mechanisms, given that fee-for-service with open-end budget results in inefficiency in service delivery and cost escalation, reforms should be explored to address these issues. To this end, three reforms in CSMBS may make a difference: (i) require beneficiaries to select and register with a contractor provider; subsequently, (ii) change the payment for outpatient services from retrospective fee-for-service to prospective risk-adjusted capitation payment; and (iii) change the budget from open-end to close-end.

Recommendation 3: Realign the roles and responsibilities of various stakeholders toward promoting population health

206. The COVID-19 pandemic gave new impetus to the overdue decentralization of the health system in Thailand. However, the risks and unintended consequences should be mitigated to the best possible extent. Thailand has a highly centralized and dominant public health system, and its efforts at decentralization has been limited during the past two decades. It was announced in October 2021 that over 3,300 subdistrict health promotion hospitals with about 22,000 personnel would be transferred to Provincial Administrative Organizations (PAOs) in October 2022.[121] This would be the first time that the facilities were transferred to PAOs; in the past, decentralized facilities were transferred to Subdistrict Administrative Organizations (SAOs). Decentralization in the health sector presents both opportunities and risks. Therefore, there is an urgent need to establish more clearly the roles and responsibilities of different stakeholders and to establish mechanisms of central oversight and accountability to mitigate the risks associated with further decentralization.

207. A multisectoral approach should be further promoted to prevent NCDs by reducing major risk factors, promoting healthy lifestyles and supporting evidence-based policy making. Many of the social, environmental, and economic determinants of health have origins that extend beyond the health sector and health policies. Therefore, it is important that the impact on health be considered across sectors and at all levels of governance. The successful implementation of NCD prevention, addressing major risk factors and promoting healthy lifestyles requires effective intersectoral action for health across the sectors, and across ministries, academia, nonprofit organizations, business owners and the public. The underlying determinants of NCDs are complex, addressing them not only requires government leadership and implementation capacities but must also be guided by evidence, especially health behavior science and rigorous impact evaluation. Special emphasis needs to be placed on exploring innovations for behavioral change towards

[121] "Transferring Tambon Health Promotion Hospital to LAOs for Connecting Public Health System, Referral, and Treatment (in Thai)," February 11, 2022. https://www.hfocus.org/content/2022/02/24444.

healthy lifestyles, building a functioning monitoring and evaluation and impact evaluation system, building ownership and capacity among various stakeholders to improve their policy performance and policy outcomes, and building effective communication and dissemination mechanisms to share information with stakeholders and the public.[122]

Recommendation 4: Monitor and address inequities to ensure no one is left behind

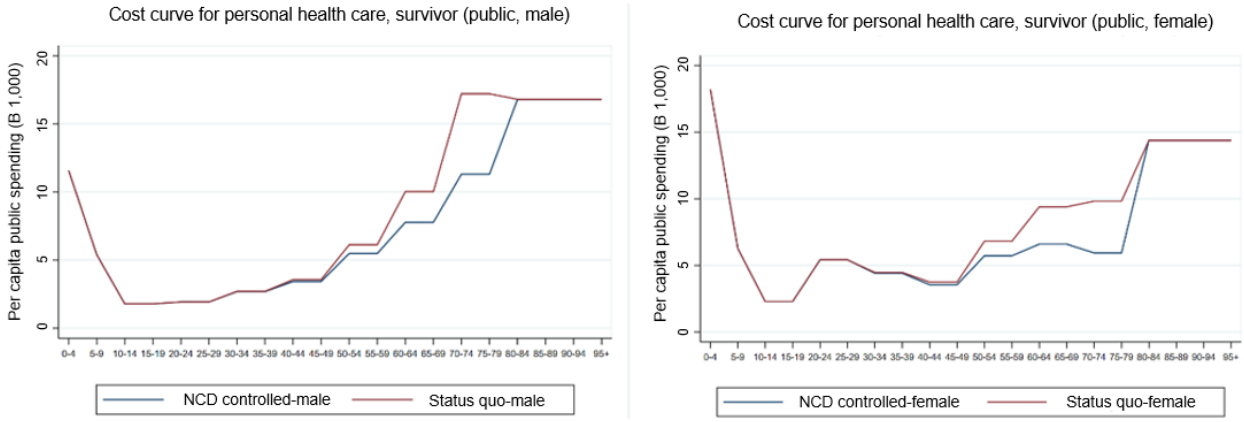
208. Some reforms and innovations may improve overall health system efficiency but have unintended consequences on equity, which should be monitored and course-corrected along the way. As one of the key health system objectives, equity should be actively managed in policy making and implementation. For instance, investing in digital technology could potentially improve health system performance; nevertheless, it may also reinforce and exacerbate existing health inequities since digital transformation may favor the already more well off while others are left behind. Decentralization of the health system may also result in equity concerns given the disparities in the technical and financial capacity of LAOs, which in turn, may cause inequities in health outcomes. Digital transformation in the health sector will bring in more reliable data in a systematic way, which should be utilized for evidence-based policy making toward a stronger and more equitable health system.

Potential fiscal impacts of implementing these recommendations

209. One of the expected outcomes of building an integrated service delivery system is to effectively respond to chronic care needs of an aging population, resulting in better management and control of NCDs. Figure 4-23 shows the cost curve for patients with diabetes, hypertension, and/or hypercholesterolemia who had received (i) hypertension and/or diabetes screening, and (ii) health education and promotion during outpatient visits to public health providers, versus those who had not. It was estimated that the health financing needs in the public sector as a share of GDP could decrease by about 0.3 percentage points by 2030 (from 3.3 percent to 3.0 percent) if better screening and health promotion mechanisms were put in place.[123]

210. Improvements in the purchasing mechanisms of public health insurances could result in significantly reduced costs. As noted above, there is potential to reform the CSMBS so that (i) the provider payment for outpatient services changes from retrospective fee-for-service to a prospective capitation payment; and (ii) the budget changes from open-end to close-end. In 2020, CSMBS spent approximately THB 14,630 per member while the more efficient UCS spent THB 4,000 per member, even though the benefit packages are largely similar. Taking the higher risk profile of CSMBS into account, if CSMBS reforms cut this difference by even half, it could result in a reduction of health sector costs of about 0.2 percentage points of GDP.

Figure 4-23: Medical Cost Curve per Capita (Public Only), Disaggregated by Noncommunicable Disease Care



Source: Estimated by the authors using Thailand Health and Welfare Survey 2019 and 2021.

[122] Sutayut Osornprasop, SirinyaPhulkerd, and Sueppong Gowachirapant. 2018. "Lessons Learned from Thailand's Obesity Prevention and Control Policies (English)." Washington, DC: World Bank Group. http://documents.worldbank.org/curated/en/397481548340562764/Lessons-Learned-from-Thailands-Obesity-Prevention-and-Control-Policies.

[123] The estimation follows the same methodology as the projection of health financing needs.

Table 4-3: Public Financing Needs under Different reform scenarios

	Observed health spending as a share of GDP (in billion baht, 2019 prices)	Projected financing needs as a share of GDP (in billion baht, 2019 prices)		
	2019	2030	2040	2050
Base scenario only				
Public spending (status quo)	2.8% (475.9)	3.3% (700.0)	3.5% (963.8)	3.5% (1271.0)
Public spending with better NCD care		3.0% (635.6)	3.1% (876.5)	3.2% (1156.0)
Public spending with better NCD care and CSMBS reforms		2.8% (593.2)	2.9% (820.0)	3.0% (1083.8)

Source: Estimated by the author using Thailand Health and Welfare Survey 2019 and 2021.

Note: NCD = Noncommunicable disease; CSMBS = Civil Servant Medical Benefit Scheme.

CHAPTER 5
SPENDING FOR IMPROVED STUDENT LEARNING

Chapter 5: Spending for Improved Student Learning

5.1 Introduction

211. This chapter identifies spending inefficiencies that explain why higher levels of education spending in Thailand have not translated into improved learning outcomes. It begins by providing an overview of education spending trends. Section 5.2 then assesses the country's performance in terms of education access and per-pupil spending by benchmarking Thailand against international peers at similar stage of development. The relationships between public expenditure and human capital accumulation, as measured by PISA 2018 test scores, are analyzed in Section 5.3. The results indicate that Thailand's spending efficiency has deteriorated as the increase in spending over the last fifteen years has not translated into any improvement in student learning. The worsening spending inefficiency was further compounded by widening inequalities in student achievement. Section 5.4 then goes on to identify the root causes of the high and rising spending inefficiency, as well as investigate how equitably educational resources have been allocated among the schools. It finds that the bulk of the inefficiency was concentrated in the primary level, resulting mainly from the existence of a vast network of small schools with tiny classes. Even though per-student costs for these small schools were much greater than those for larger schools, they were chronically short of teachers and other key educational inputs. A recommendation to consolidate the school network is proposed in order to create larger, better resourced schools which do not face such shortages.[124]

212. The chapter ends with an analysis of various education financing scenarios that would be consistent with improved learning outcomes. Three different scenarios are analyzed in the section. First is the 'Baseline' scenario, which reflects business-as-usual management of the education sector and in which the economy's long-run growth path is assumed to follow the low-growth potential level. The second scenario, called 'School network reorganization,' is the same as the baseline scenario, except that the Government will begin to implement a 15-year program to downsize Thailand's vast network of mainly small primary schools in 2023. Finally, the 'High-growth' scenario assumes that the Government will initiate wide-ranging reforms to improve student learning. These reforms would encompass reorganizing the school network (as in the second scenario), as well as substantially raising public per-student spending at the pre-primary, secondary, and tertiary levels to be in-line with international peers. In this scenario, learning outcomes improve significantly, shifting Thailand's potential growth rate upwards.[125]

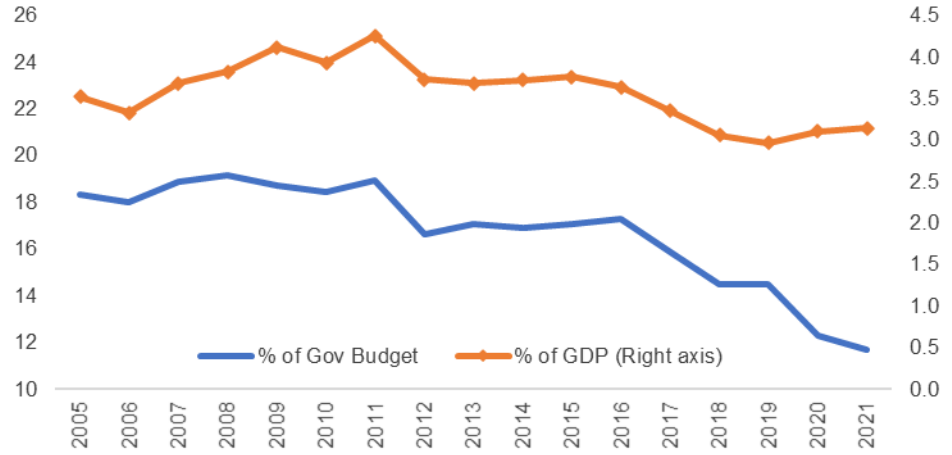
5.2 Education spending trends in Thailand

213. Public spending on education in 2019 amounted to 3 percent of Thailand's gross domestic product (GDP). This has declined substantially from the 3.7 percent registered half a decade earlier (Figure 5-1). Compared to international peers, Thailand's education spending in 2019 was well below the expected level (4.4 percent) given the country's stage of economic development. (Figure 5-2). Nevertheless, there is very weak correlation between a country's GDP per capita and this indicator of public education expenditure. More advanced economies such as Singapore and Macao SAR, China spent less than 3 percent, while Japan and Hong Kong SAR, China spent around 3.2 and 3.3 percent of their GDP on education.

[124] The analytical framework used in this section follows those employed in World Bank (2018) and World Bank (2020). However, while the two previous reports used school level data from 2016 and 2019, this study updates the analysis by using the latest available 2020 school level data. Nevertheless, the key conclusions reached are similar in all studies.

[125] A central assumption underlying the High-growth scenario is that additional public educational resources are used effectively to improve student learning. Some recent empirical evidence on ways in which Thailand could reform its education system in order to raise student learning to the level consistent with the high-growth scenario are provided in Annex 5-3.

Figure 5-1: Government expenditure on education as percentage of GDP and total government budget (2005 – 2021)



Source: Bureau of the Budget, Ministry of Finance, Thailand.

214. As of 2019, Thailand has allocated around 14.5 percent of total public spending to the sector. This has again fallen sharply from the 16.9 percent level seen in 2014. Thailand's 14.5 percent allocation in 2019 was slightly below its peers at a similar stage of economic development (Figure 5-3). Given the country's GDP per capita of US$ 6,503 (in constant US$2010), it was expected that Thailand would allocate around 14.7 percent of its total public spending to the education sector. But once again, the level of a country's GDP per capita is a poor predictor of education spending as a percentage of total government expenditure.

215. Education expenditure fell further in 2020 and 2021 due to the COVID-19 pandemic. Government expenditure on education declined further to 12.3 percent of total public spending in 2020 and then to just 11.7 percent in 2021 as a result of the COVID-19 pandemic.

Figure 5-2: Government expenditure on education as percentage of GDP

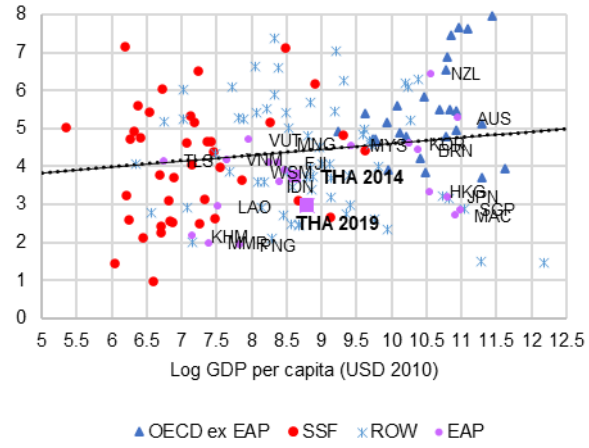
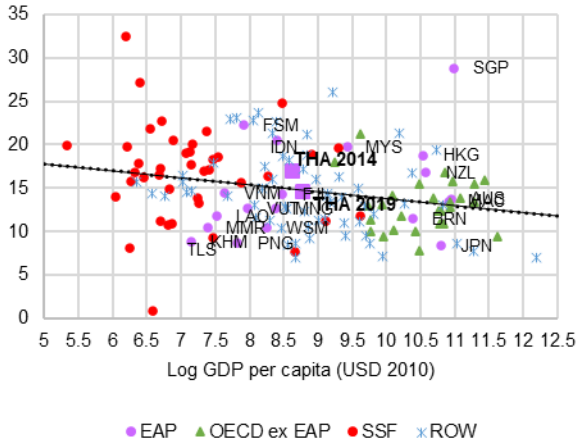


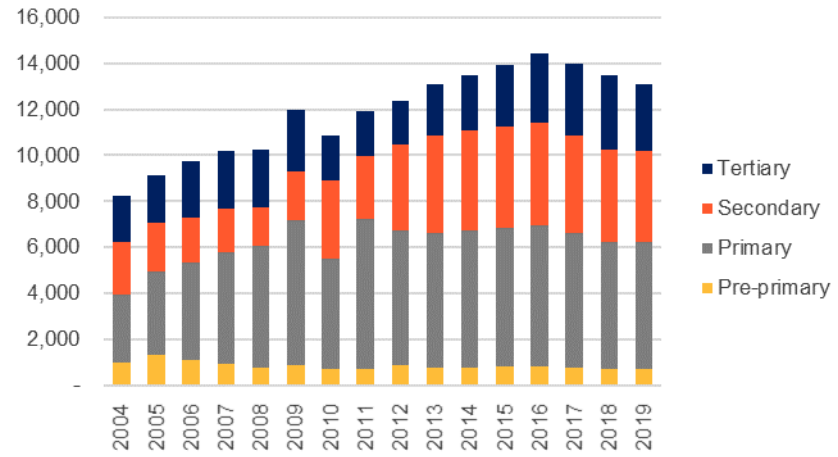
Figure 5-3: Expenditure on education as percentage of total government expenditure



Source: World Development Indicators and World Bank EdStats

216. In real US$ terms, Thailand's total public spending on education increased significantly up until 2016, after which it declined. Real public expenditure on education increased by 75 percent between 2004 and 2016. However, spending has gradually decreased since then. Primary education was the biggest cost driver during the 2004-2011 period, while secondary education took over thereafter (Figure 5-4).

Figure 5-4: Total expenditure by level of education (constant US$2010, million)



Source: World Bank Staff estimates based on Education Statistics from the Office of the Permanent Secretary, Ministry of Education, Thailand.

217. This increase in public education expenditure occurred despite a continuous decline in student numbers. Due to Thailand's rapidly ageing demographics, the number of primary students fell by almost 1.2 million, or as much as 20 percent, from 2004 to 2019. Over the same period, the number of secondary students declined by14 percent (734,800 students). On the other hand, the number of pre-primary and tertiary students have remained relatively stable over the observed period (see Figure 5-5 and Figure 5-6).

Figure 5-5: Number of primary and secondary students (2008 – 2019)

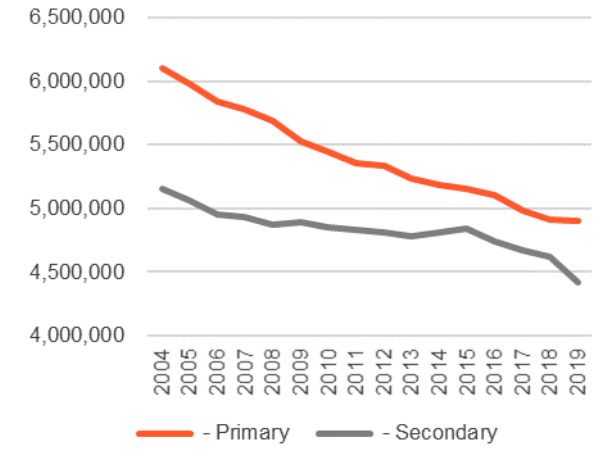
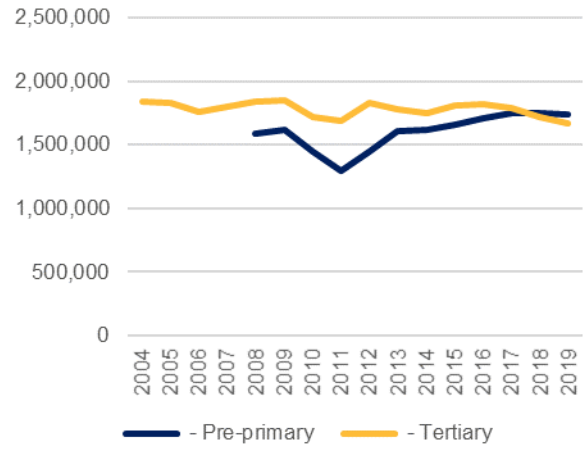


Figure 5-6: Number of pre-primary and tertiary students (2008 – 2019)



Source: World Bank Staff estimates based on data from the Office of the Permanent Secretary, MOE, Thailand.

218. Focusing on basic education schools under the Office of the Basic Education Commission's (OBEC),[126] we observe that the inflation-adjusted total budget increased by nearly 30 percent from 2010 to 2016 even though the total number of students declined from 7.71 to 6.86 million (or around 11 percent). Despite the fall in the number of students, the total number of teachers (including principals and administrators) increased from 404,816 to 451,038 (11.4 percent increase).[127] Personnel salary was the most important driver of the rise in the budget, accounting for as much as

[126] The majority of general basic education students (from pre-primary to secondary) are enrolled in schools under OBEC. As of 2019, around 85 percent of students enrolled in the public school system were in OBEC schools. Private schools, on the other hand, accounted for around 29 percent of total basic education student enrolment.

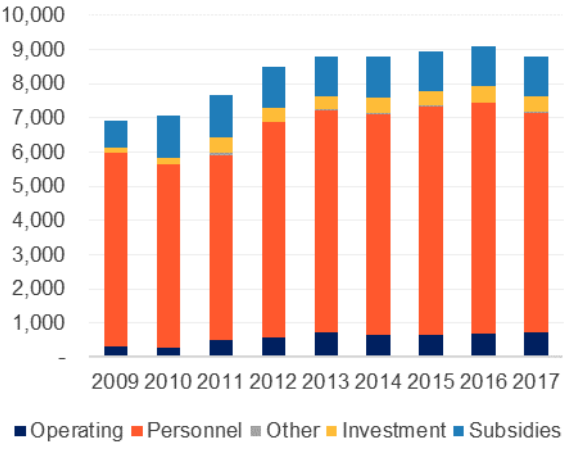
[127] The latest 2020 school-level data indicate that the number of students in OBEC schools has fallen further to 6.58 million, while the total number of teachers has risen to 475,024. We will show in later sections that even though the pupil teacher ratio has fallen to as low as 13.85:1, many classrooms in OBEC schools are still chronically short of teachers.

69 percent of the total increase over 2010 to 2016. Personnel salary made up around 74 percent of basic education budget (see Figure 5-7).

219. As a result, annual per-student public spending has risen substantially. Figure 5-8 shows that real annual per-student public spending at the primary level increased by as much as 133 percent from 2004 to 2019. Secondary and tertiary per-student spending also rose substantially by 83 and 78 percent respectively. However, at the pre-primary level, spending per student has remained relatively unchanged throughout the entire observed period.

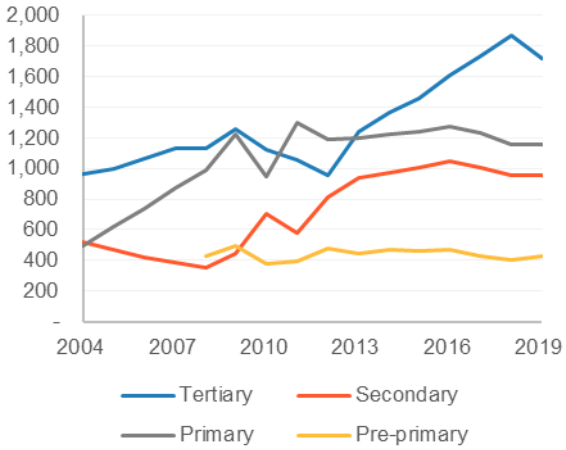
220. Unusually, spending per primary student is higher than spending per secondary student. Considering the fact that secondary schools require more specialist subject teachers compared to primary schools, we would expect that per-student spending at the secondary level would be higher. Instead, however, the observed annual expenditure of US$ 1,157 per primary student was around 21 percent higher than annual spending per seconary student in 2019. This issue is explored in more detail later in this chapter.

Figure 5-7: Basic Education Budget by Category (in constant US$ 2010 THB) – OBEC



Source: Ministry of Education, Thailand

Figure 5-8: Expenditure per student by level of education (constant US$2010)



Source: World Bank Staff estimates based on data from the Office of the Permanent Secretary, MOE, Thailand.

5.3 Benchmarking Thailand's education spending performance

221. Thailand has made substantial progress in improving access to pre-primary education. The pre-primary net enrolment rate (for 3–5-year-olds) stood at almost 80 percent in 2019, up considerably from around 60 percent a decade earlier, as a result of government policy to expand free access. The observed net enrolment rate was about 20 percent higher than expected given Thailand's level of GDP per capita (see Figure 5-9).

Figure 5-9: Pre-primary net enrolment rate

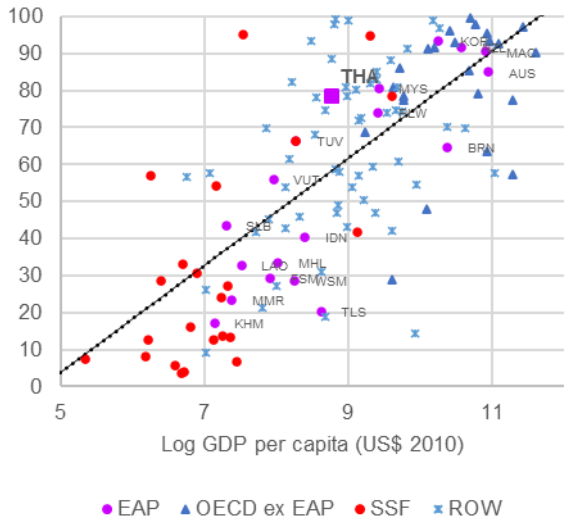
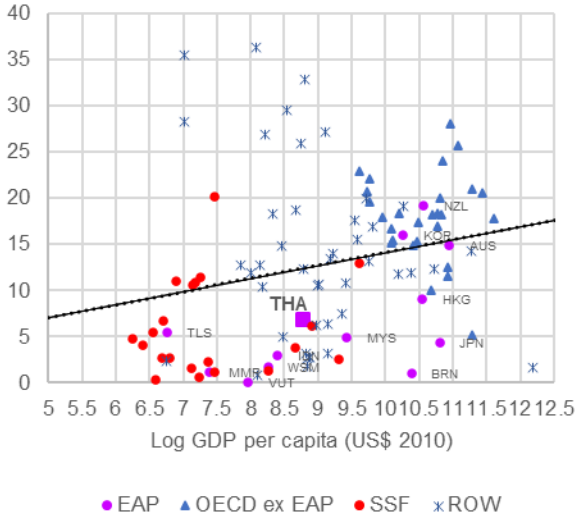


Figure 5-10: Government expenditure per pre-primary student as percentage of GDP per capita



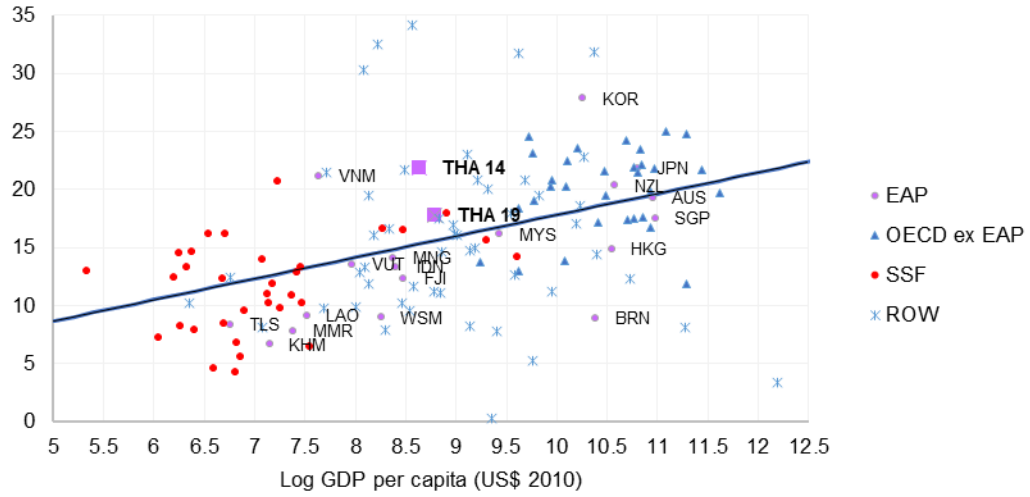
Source: World Development Indicators and World Bank EdStats

222. But Thailand's per-student public spending at the pre-primary level continues to be much lower than its peers and the quality of pre-primary education remains a concern. The country's level of per-student public expenditure in 2019 was as much as 47 percent below its international peers at a similar developmental stage (Figure 5-10). As we have seen in Figure 5-8, real per-student spending at the pre-primary level has remained roughly unchanged over the last decade. The latest Multiple Indicator Cluster Survey 2019 data (MICS6)[128] also revealed that only 61 percent of Thai children aged 3-5 were developmentally on track in the literacy-numeracy domain (UNICEF, 2020). In order to boost the quality of pre-primary education, the government is currently seeking to raise teacher qualifications, improve the curriculum, and create a standardized evaluation system for all early childhood development centers (OECD, 2018). These reforms are likely to result in material increases in spending in the sector.

223. In primary education, Thailand was spending significantly more per student than expected given its GDP per capita. Thailand has achieved universal primary education with primary gross and net enrolment rates hovering around 103 and 98 percent respectively since early 2000s. In regard to public expenditure, at Thailand's level of economic development, it is expected that the country would spend around 15.6 percent of GDP per capita per primary student. However, the country was spending almost 18 percent of GDP per capita per student in 2019. In 2014 this proportion was even greater, at 21.9 percent, and it put Thailand among the highest spenders in the world in that year (Figure 5-11). As will be shown in upcoming sections, most inefficiencies in Thailand's education spending can be traced to the primary sector.

[128] MICS6 is the largest national survey on children and women. Launched in October 2019, the survey was the first to include a questionnaire directed at children to assess foundational learning skills and will form key evidence for policy planning, advocacy, and monitoring on child related issues (MICS6 Report).

Figure 5-11: Government expenditure per primary student as percentage of GDP per capita



Source: World Development Indicators and World Bank EdStats

224. Both secondary and tertiary gross enrolment ratios were slightly below expected levels. As shown in Figure 5-12, compared to international peers at similar stage of development, Thailand's secondary gross enrolment rate of 85.6 percent in 2019 was slightly below the expected rate of 90 percent. Similarly, the country's tertiary gross enrolment ratio of 44.8 percent was slightly below the 46.8 percent expected rate given Thailand's GDP per capita (Figure 5-13).

Figure 5-12: Secondary gross enrolment rate

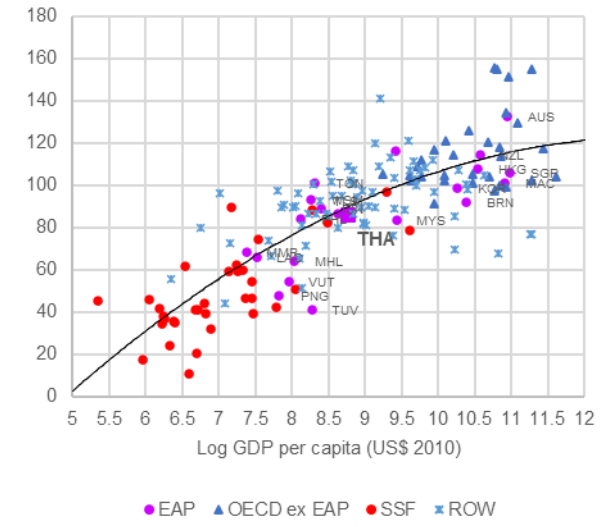
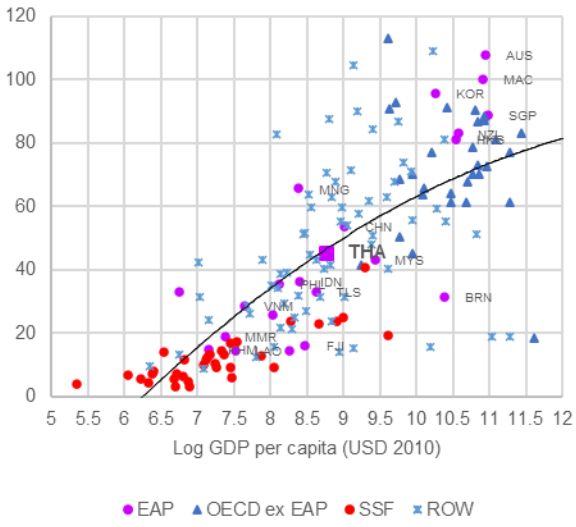


Figure 5-13: Tertiary gross enrolment rate



Source: World Development Indicators and World Bank EdStats

225. Thailand's per-student public spending at the secondary level in 2019 was substantially lower than the international benchmark. Given Thailand's GDP per capita, the country's per-student spending at the secondary level was around 25 percent below the world regression line shown in Figure 5-14. As already mentioned, expenditure per secondary student in 2019, at 14.6 percent of GDP per capita, was even lower than the 17.8 percent recorded by the primary education sector. Considering the fact that secondary schools generally require more specialist subject teachers than primary schools, it is reasonable to expect that per-student spending at the secondary level would be higher. However, the exact opposite is true for Thailand. As can be seen from Figure 5-8, per-student public spending at the primary level has been consistently higher than the secondary level throughout the last 15 years.

226. At the tertiary level, Thailand's per-student public expenditure was slightly below the level expected given the country's stage of economic development. Government expenditure per tertiary student in 2019 amounted to 26.4 percent of GDP per capita, which was slightly lower than the estimated 27.8 percent international benchmark given the country's income per capita (see Figure 5-15).

Figure 5-14: Government expenditure per secondary student as % of GDP per capita

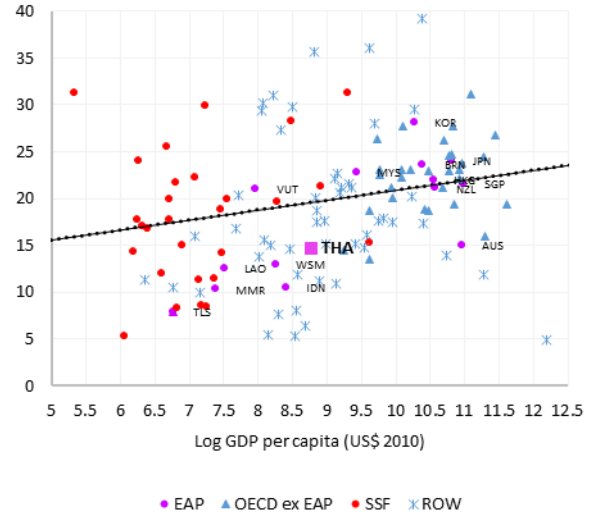
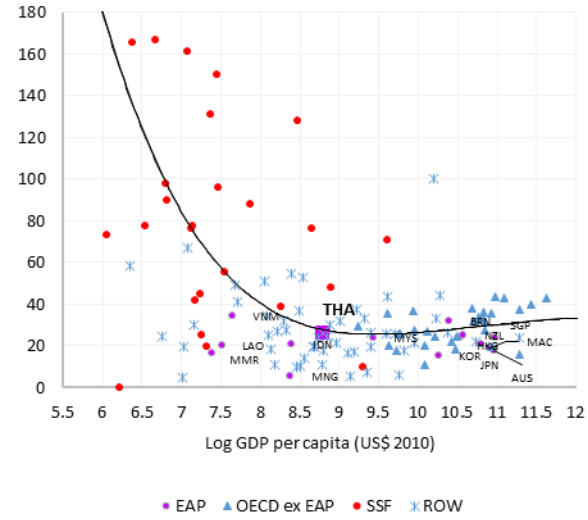
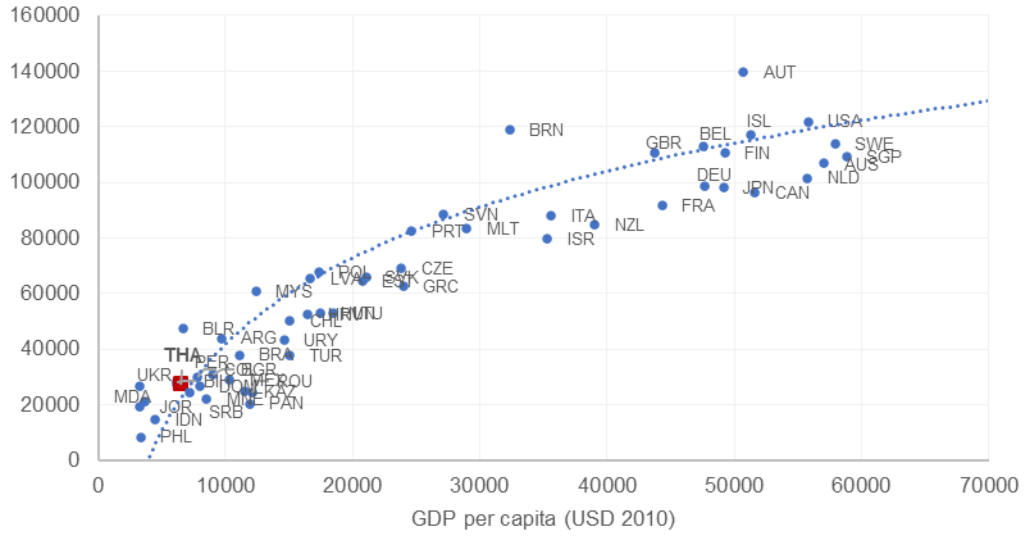


Figure 5-15: Government expenditure per tertiary student as % of GDP per capita



Source: World Development Indicators and World Bank EdStats

Figure 5-16: Cumulative expenditure per student from Grade 1 to Grade 9 (PPP US$)



Source: OECD PISA 2018 database and World Development Indicators

227. In terms of cumulative government expenditure per student from Grade 1 to Grade 9, Thailand's spending level of US$ 27,271 (after accounting for purchasing power parities) is one of the lowest observed among the PISA 2018-participating countries (Figure 5-16). Nevertheless, Thailand spent nearly 22 percent more than the level expected given its per capita income. Clearly, the higher than expected cumulative per-student spending was driven by the six years of primary education, where Thailand was spending significantly more per student than expected.

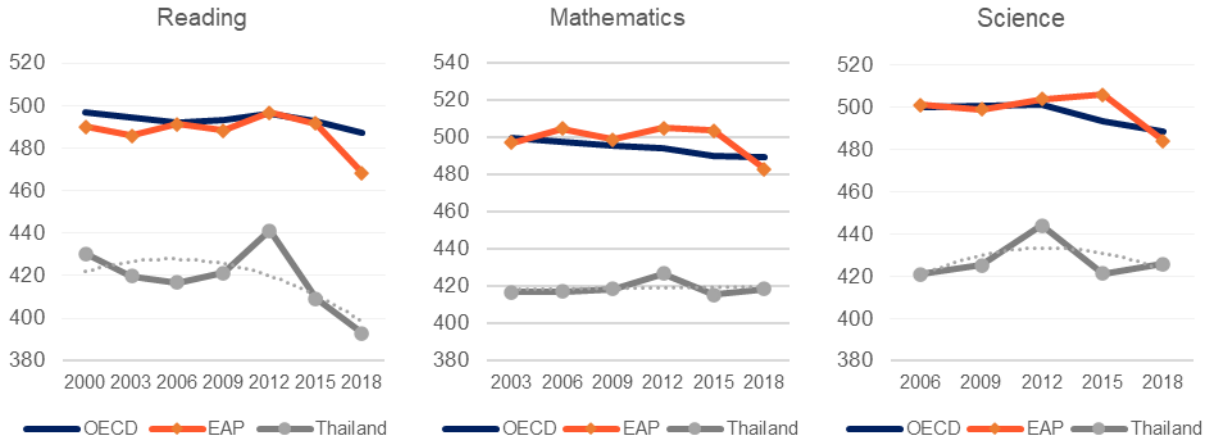
228. The benchmarking analysis in this section revealed that, except for primary education, per-student public expenditure in Thailand has generally been lower than its international peers across all levels of education. Per-

student public spending at the pre-primary and secondary levels in particular, were as much as 47 and 25 percent below international peers at similar stage of development respectively. Per-student public expenditure at the tertiary level, on the other hand, was only slightly below the international benchmark.

5.4 Public educational inputs and human capital development

229. Despite the massive increase in spending discussed in the previous section, Thai students' performance in the PISA assessments remained stagnant from PISA 2000 to PISA 2018. In PISA 2018, Thailand ranked 68th in reading out of the 79 PISA-participating countries and economies (59th in mathematics, and 55th in science), ahead of only Indonesia and the Philippines in EAP. Furthermore, all the trends have moved in the wrong direction. Thailand's reading performance shows an increasingly negative trajectory, while scores in math and science have stagnated (see Figure 5-17).

Figure 5-17: Trends in Student Learning Outcomes in the Three PISA Domains



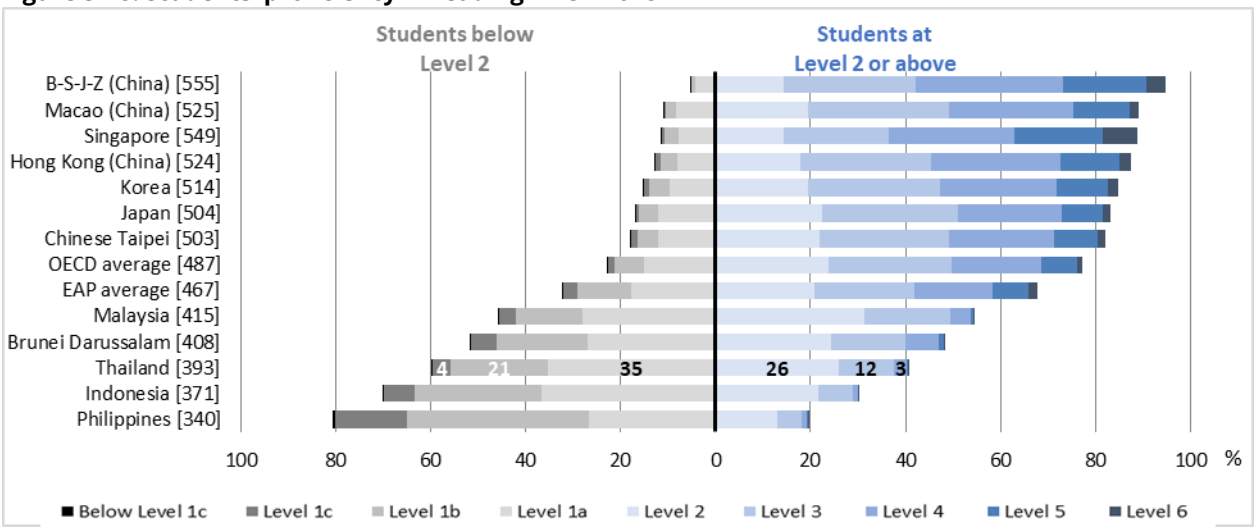
Source: OECD PISA 2000-2018 database.

230. In 2018, around 60 percent of students scored below the minimum proficiency level (Level 2) in reading.[129] In other words, they were functionally illiterate in spite of their having attended school for nearly nine years. At the other end of the spectrum, while over a quarter of students in Singapore, 12.2 percent in Macao SAR China, 13.5 percent in Hong Kong SAR China, 3.5 percent in Vietnam, and 12 percent in Korea attained level 5 or higher (high proficiency) in reading, only 0.07 percent of Thai students managed to do so (Figure 5-18). The gaps to these better-performing countries were even greater in the mathematics domain.

231. Substantial increases in spending over the last fifteen years did not yield any improvement in results. Figure 5-19 examines the relationship between countries' cumulative spending per student from Grade 1 – 9 and mean student performance in reading. Average reading scores and per student spending are strongly and positively associated (with a coefficient of determination or R-squared of 0.49). It is important to note from Figure 5-19 that Thailand's current per student public expenditure is around the stage where increases in spending should lead to relatively large gains in student learning outcomes. However, as also discussed in the previous section (see Figure 5-8), substantial increases in spending over the last one and a half decades did not yield any improvement in results. In fact, Thai students' performance across the three domains have either stagnated or deteriorated over the period (compare 'Thailand 2003' and 'Thailand 2018' in Figure 5-19).

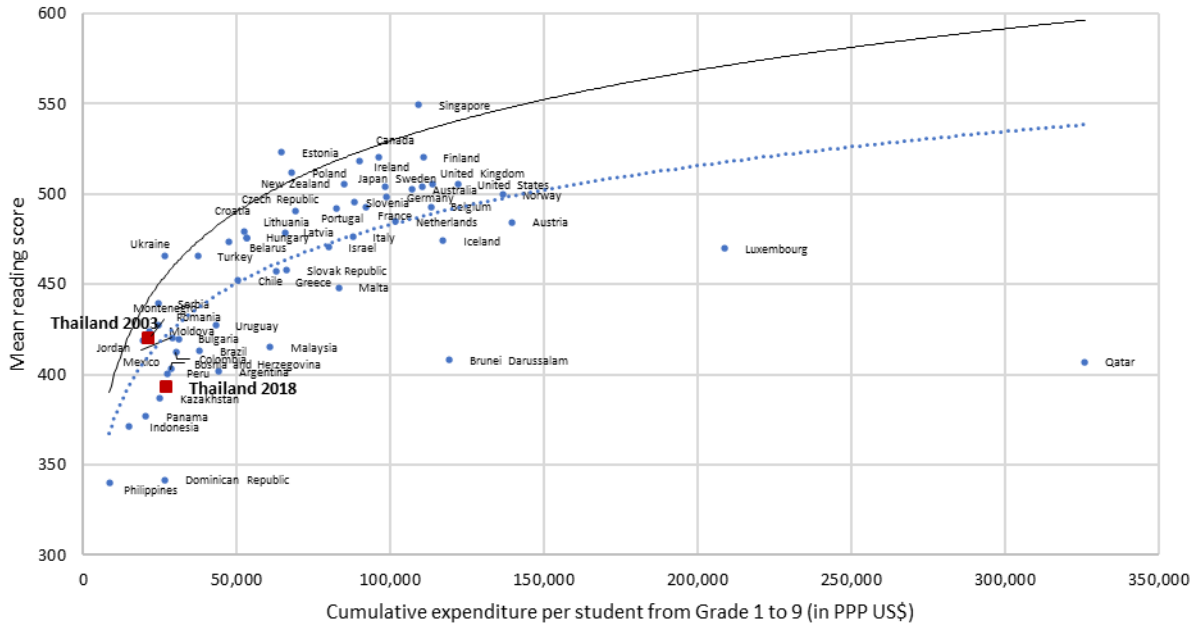
[129] More than half (53 percent) were unable to attain the minimum proficiency level in math, while 44 percent failed to reach basic proficiency in science.

Figure 5-18: Students' proficiency in reading - PISA 2018



Notes: Mean reading scores for each country are indicated within brackets [ ]. Source: OECD PISA 2018 database.

Figure 5-19: Mean reading performance and cumulative spending per student in US$ PPP



Source: OECD PISA 2018 database.

Note: Dark solid line is the frontier; Blue dotted line is the regression trend line.

232. Given Thailand's level of per student spending, the country could achieve much better learning outcomes in reading. Regression analysis of the relationship between PISA 2018 reading score and cumulative spending per student (dotted line in Figure 5-19) suggests that Thai students' average reading score of 393 was 29 points below the expected level of 422.[130] This means that Thai students were almost a full year[131] behind their counterparts in the 'average' country which spent similar amount per student as Thailand. Applying Stochastic Frontier Analysis (SFA) on the same variables, we

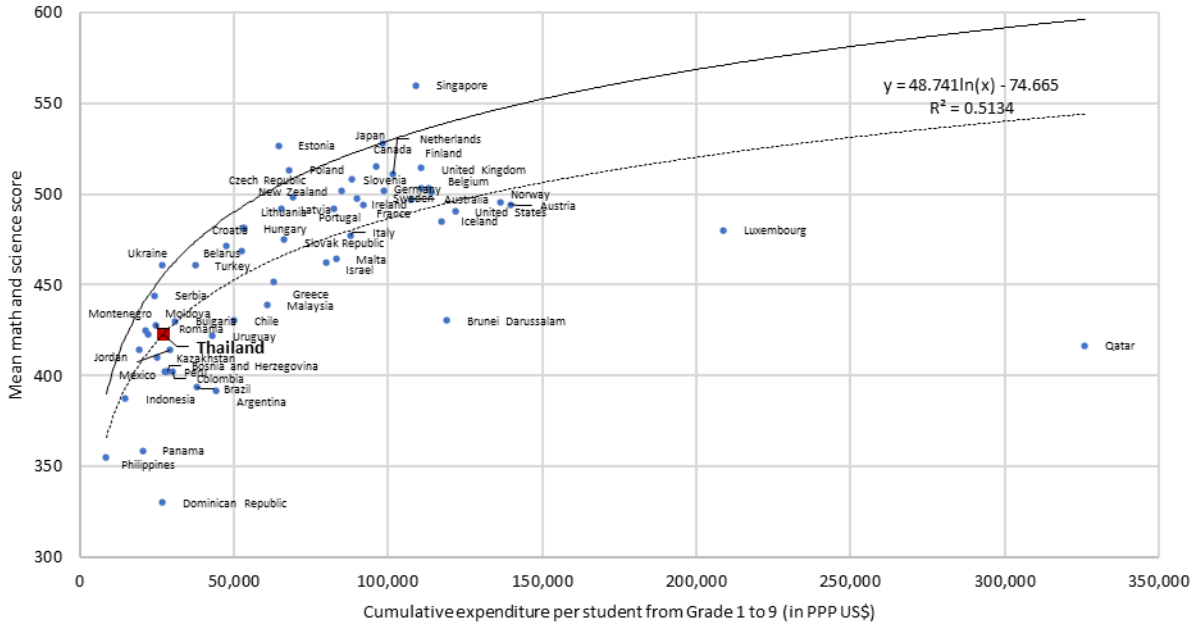
[130] A similar analysis conducted using countries' GDP per capita yielded comparable results. Specifically, it estimated that Thailand's performance was 22.5 points below expected level.

[131] PISA scores are scaled so that the OECD average in each domain (mathematics, reading, and science) is 500 and the standard deviation is 100. This is true only for the initial PISA cycle when the scale was first introduced, though, subsequent cycles are linked to the previous cycles through item response theory (IRT) linking methods. A score of 30 points is equivalent to one year's worth of learning (OECD PISA).

estimated that at Thailand's level of cumulative spending per student (US$ 27,271), the country's theoretical maximum student achievement in reading was 456, which is 63 points higher than the 393 the country managed (the frontier is given by the solid line in Figure 5-19). Other countries which spent less, such as Jordan (US$ 19,363), Romania (US$ 24,608), and Ukraine (US$ 26,647) did much better and achieved scores of 419, 428, and 466 respectively.

233. Regarding math and science, however, Thai students' average performance across the two subjects was at the expected level given the country's per student spending. In 2018, the country's average score in the two subjects was 422, which is approximately on the world regression line (dotted line graph in Figure 5-20). But SFA suggests that at Thailand's level of spending, student math and science scores could potentially be as high as 456 (the frontier is given by the solid line in Figure 5-20).

Figure 5-20: Mean math and science performance and cumulative spending per student in US$ PPP



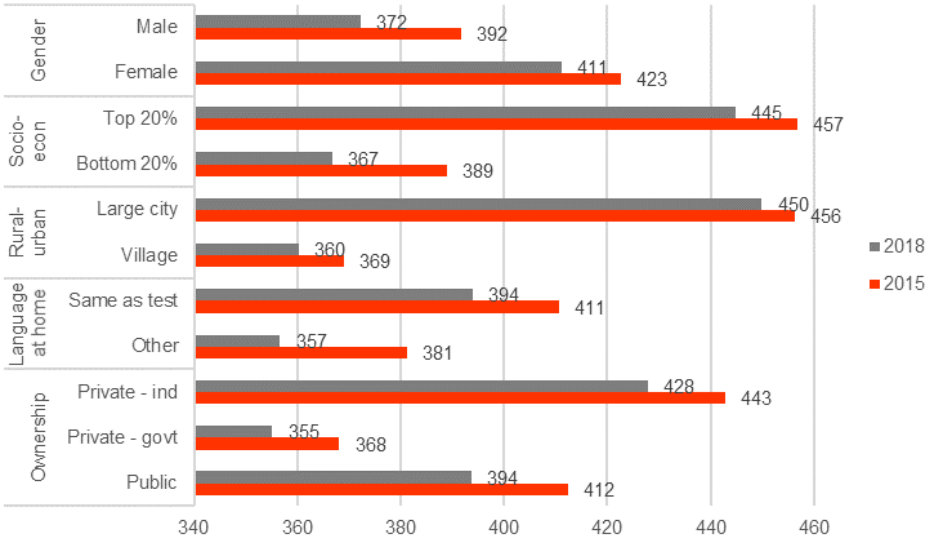
Source: OECD PISA 2018 database.

234. The COVID-19 pandemic could result in a further loss of 1.22 learning adjusted years of schooling for Thailand. Learning time has been lost due to lengthy nationwide school closures. A recent World Bank (2021) report estimated that COVID-19 could result in a loss of 1.22 years of schooling (adjusted for quality), in addition to the learning crisis underway before the pandemic. Moreover, the loss of learning was unlikely to be uniformly distributed across socioeconomic groups, as students with lower access to remote learning resources were more adversely affected (World Bank, 2020).

235. Inequality in student learning outcomes has also widened across almost all dimensions over the 2015-2018 period. Figure 5-21 shows that the gap in reading performance between female and male students has widened from 31 points in 2015 to 39 points in 2018 (gap widened from 1 to 1.3 years). Similarly, the performance gap between students from the top 20 percent in the socioeconomic status index and the bottom 20 percent has widened from 68 to 78 points (from 2.3 to 2.6 years), while the gap between those students who spoke the language of the test at home and those who spoke a different language has widened from 29 to 37 points (from 1 to 1.2 years) over the same period. The already very wide urban-rural performance gap has expanded further from 87 to 90 points (from 2.9 to 3 years). Lastly, the gap from Public to Private independent schools has widened from 30 to 34 points (from 1 to 1.1 years) over the same period, while the gap from Private government-dependent to Private independent schools has narrowed slightly from 75 to 73 points

(from 2.5 to 2.4 years).[132] Similarly, almost all measures of inequality have also widened in mathematics and science over the period from 2015 to 2018 (see World Bank (2020) for more detailed analysis of PISA results).

Figure 5-21: Learning outcome inequality for Reading



Source: OECD PISA 2018 database.

5.5 Equity in educational resource allocation

236. This chapter has shown that despite increases in real per-student spending, learning outcomes (as reflected in test results) have worsened. The objective of this section is to identify the root causes of the spending inefficiency in the basic education sector, investigate how equitably educational resources are allocated among Thai schools, and propose recommendations on reforms to improve spending efficiency and equity. The analytical framework used in this section follows those employed in World Bank (2018) and World Bank (2020). However, while the two previous reports used school level data from 2016 and 2019, this study updates the analysis by using the latest available 2020 school level data. Nevertheless, the conclusions reached are similar across all studies.

Resources invested in education

Human resources

237. Of the 29,313 schools nationwide under OBEC's supervision[133] in 2020, as many as 16,596 (57 percent) are considered small. In this report, a school is defined as "Small" if the enrolment size is less than 120 for "Primary" schools, less than 120 for "Secondary" schools, less than 180 for "Opportunity expansion" schools, and less than 240 for "Complete" schools.[134] From Table 5-1 we can see that 1.25 million students (or 19 percent of students) were enrolled in these small

[132] Among the different school ownership types, public schools and private government-dependent schools tended to have higher concentrations of socioeconomically disadvantaged students than private independent schools. The socioeconomic composition of the student body in public schools was nearly equal in proportions across all socioeconomic quartiles (measured using PISA Economic, Social, and Cultural Status (ESCS) index). By contrast, private independent schools tended to have a much higher proportion of students from the top ESCS quartile. In private independent schools, more than half (57 percent) belonged to the top quartile, while only 6 percent belonged to the bottom quartile. Among the three school ownership types, students in private government-dependent schools tended to be more socioeconomically disadvantaged than those in private independent schools and, to a lesser extent, those in public schools (World Bank, 2020).

[133] Around 71 percent of Thai students from pre-primary to grade 12 attend these schools (Office of the Education Council, 2018).

[134] A "Primary" school is defined as a school which has grade levels up to G6; An "Opportunity expansion" school is a school which has primary and lower secondary grades (up to G9); A "Secondary" school is a school which has only secondary grades (G7-G12); and A "Complete" school is a school which has all primary and secondary grades (G1-G12).

schools. The average enrolment size for these 16,596 schools was just 75 and the bulk of the small schools were "Primary" and "Opportunity expansion" schools.

Table 5-1: School Characteristics by Enrolment Size Category - 2020

	All schools		Small schools		Non-small schools	
	Number of schools	Share	Number of schools	Share	Number of schools	Share
Kindergarten	15	0.05%	0	0.00%	15	0.12%
Primary	19,979	68.16%	13,660	82.31%	6,319	49.69%
Opportunity	6,855	23.39%	2,753	16.59%	4,102	32.26%
Secondary	2,353	8.03%	174	1.05%	2,179	17.13%
Complete	111	0.38%	9	0.05%	102	0.80%
Total schools	**29,313**	**100.00%**	**16,596**	**100.00%**	**12,717**	**100.00%**
	Average class size	Average # of classes per school	Average class size	Average # of classes per school	Average class size	Average # of classes per school
Preschool	14.05	2.439	8.00	2.176	21.02	2.832
Pri 1	16.95	1.172	9.16	1.000	25.23	1.433
Pri 2	16.78	1.160	9.07	1.000	25.18	1.404
Pri 3	16.14	1.146	8.62	1.000	24.53	1.369
Pri 4	16.52	1.145	8.78	1.000	25.19	1.368
Pri 5	16.67	1.144	8.87	1.000	25.42	1.363
Pri 6	16.89	1.145	9.19	1.000	25.51	1.367
Sec 1	29.59	2.104	12.94	1.002	32.50	2.605
Sec 2	28.86	2.089	12.62	1.005	31.75	2.584
Sec 3	28.68	2.059	12.34	1.005	31.63	2.539
Sec 4	32.11	4.195	11.40	1.162	32.53	4.433
Sec 5	30.40	4.121	9.70	1.158	30.82	4.351
Sec 6	29.40	4.090	8.69	1.180	29.85	4.317
Total classes	335,965		139,941		196,024	
Total teachers	475,024		132,078		342,946	
Teachers req	540,388		199,724		340,664	
Total students	6,579,306		1,252,819		5,326,487	
Avg enrolment	224		75		419	
Actual						
Teacher-to-class	1.414		0.944		1.750	
Pupil-to-teacher	13.850		9.485		15.532	
Required						
Teacher-to-class	1.608		1.427		1.738	
Pupil-to-teacher	12.175		6.273		15.636	

238. Even though the small schools had very low pupil-teacher ratios, they had a very large number of tiny classes and there were not enough teachers to teach in them. Classes in these schools were half empty, especially in the primary grades, where the average class had less than 9 students. Closer investigation reveals that even though the pupil-teacher ratio for these schools was as low as 9.5:1, the schools were chronically understaffed, with anaverage teacher-to-class ratio of less than one. It is therefore impossible for these schools to conduct all classes across different grades at the same time unless multi-grade teaching is employed. The practice could undermine the quality of teaching and learning for these 1.25 million students if teachers were not properly trained and equipped to teach in this manner.

239. The non-small group of 12,717 schools, on the other hand, had much larger classes and higher pupil-teacher ratios. Nevertheless, their teacher-to-class ratio of 1.75 was almost twice as high as that for the small schools. Around 5.33 million students were enrolled in the non-small group of schools, whose enrolment size averaged 419 students. From Table 3.4.1, we can see that these schools were nearly 6 times larger than the small schools in terms of student enrolment, while their classes were nearly 3 times larger. Even with their much higher pupil-teacher ratio of nearly 16:1, their classes were much better-staffed as reflected by their superior teacher-to-class ratio.

240. The observed spending inefficiency and ineffectiveness of teacher (and other educational resource) allocation appears to result from the existence of too many small schools with tiny classes. World Bank (2020) found that the per-student costs for the small schools are several times greater than those for the larger schools. At the same time, teachers and other educational resources are being spread thinly across too many small classes. This means that too many Thai classrooms were faced with chronic teacher shortages, and that their students were disadvantaged as a result. Therefore, the small average class size and low pupil-teacher ratio in many Thai schools do not provide a high quality learning environment, but rather reflect a substantial misallocation of educational resources.

241. If the current distribution and size of schools remain unchanged, there would be a need to recruit, train, and deploy around 65,400 additional teachers to adequately staff all classes in Thai schools. The World Bank teacher demand model[135] (see Annex 2.1 in World Bank (2020) for technical details and underlying assumptions) was employed to quantify the extent of teacher shortage across the entire system. Table 5-1 shows that the total number of teachers in OBEC schools in 2020 was 475,024 but the number of teachers required to staff all existing classes adequately was 540,388. Therefore, if no action is taken to reorganize the vast school network, then it would be necessary to recruit, train, and deploy around 65,400 additional teachers to eliminate the teacher shortage across all 335,965 existing classrooms. The shortage is much more acute among the small schools, where it is estimated that 67,646 additional teachers are needed – a massive increase of 51 percent in their teaching force. Adequately staffing all classes in these small schools under the current situation would require lowering their already very low pupil-teacher ratio of 9.5:1 further to 6.3:1 (see bottom panel of Table 3.4.1), which would in turn lead to a further increase in their already high per-student cost. As shown below, a much more cost-efficient approach would be to reorganize the oversized school network by merging small schools into designated hub schools.

Learning materials, school infrastructure, and other inputs

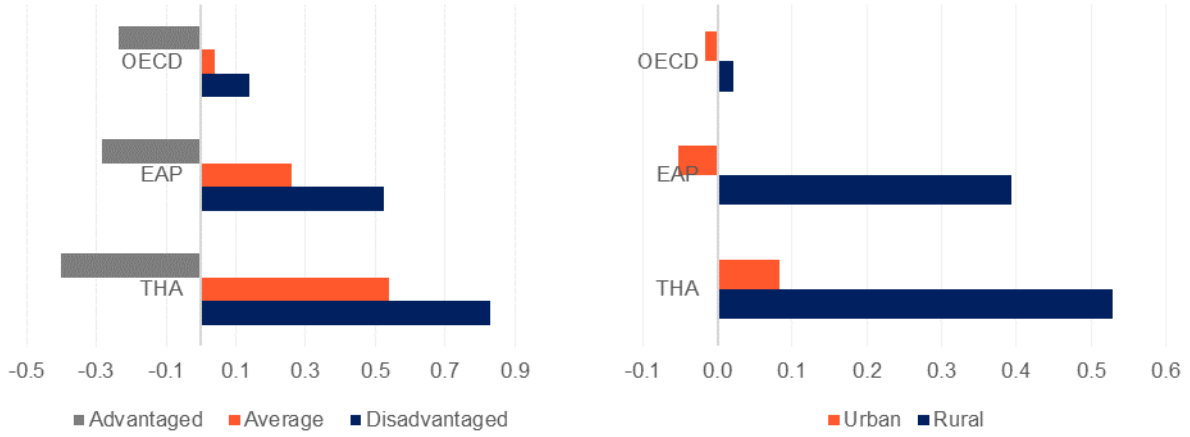
242. School survey results have been used to construct a measure of the availability of educational materials. In the PISA 2018 school survey, school principals were asked whether their schools' capacity to provide instruction was hindered by: "A lack of educational material"[136], "Inadequate or poor-quality educational material", "A lack of physical infrastructure",[137] and "Inadequate or poor-quality physical infrastructure." For each question, the principals had to select one response from "Not at all", "Very little", "To some extent", and "A lot." The answers to these four questions were then given scores and combined to construct a "Shortage of educational material index", which we normalized so that the OECD schools have a mean of zero and a unit variance.

243. The constructed "Shortage of educational material index" shows clearly that Thai schools were more severely hindered in this dimension compared to international peers. The "Shortage of educational material index" was computed for: Advantaged, Average, and Disadvantaged schools;[138] as well as urban and rural schools in the OECD, EAP, and Thailand and the results are presented in Figure 5-22. We observe that Thai schools were more severely hindered in this dimension compared to international peers. Furthermore, schools primarily serving disadvantaged children and schools in the rural areas were generally much more lacking in material resources and physical infrastructure than

[135] The model is our attempt to quantify how many teachers a school should have, taking into account Thailand's curriculum, rules regarding teacher training and teaching loads, and appropriate class sizes.
[136] Including textbooks, IT equipment, library or laboratory material.
[137] Including building, grounds, heating/cooling, lighting and acoustic systems.
[138] Advantaged (Disadvantaged) schools are those schools which were ranked in the top (bottom) 25 percent in terms of average student body Economic, Social, and Cultural Status (ESCS) index. The PISA ESCS index was derived from the following three indices: highest occupational status of parents, highest education level of parents, and home possessions. The index of home possessions comprises all items on the indices of family wealth, cultural possessions, home educational resources, as well as books in the home.

Advantaged schools and schools in the urban areas. The resource allocation inequality can also be seen to be much worse than that observed in the OECD and other EAP countries.

Figure 5-22: Shortage of Educational Material Index – PISA 2018



Source: World Bank staff calculations based on OECD PISA 2018 database.

244. Results from a recent pilot of the World Bank's new Fundamental School Quality Level (FSQL) Standards tool provides further empirical evidence that Disadvantaged schools with weaker school input quality indices were much more likely to be the smaller schools. A new instrument called the Fundamental School Quality Level (FSQL) Standards,[139] conceived by World Bank (2020), was recently tested on 275 schools enrolled in The Kru Rak Thin (KRT) Project[140] during February and March 2022. The results from the survey questionnaire were used to construct 10 FSQL school input quality indices (School leadership and management quality; Student-centric teaching; Classroom management; Teacher development; and six Infrastructure, utility, and service facility indices), which have been normalized to have zero means and unit variances. A K-means clustering algorithm was then used to assign the schools into 3 distinct groups based only on their values on the 10 FSQL school input quality indices. The groups were assigned the labels 'Advantaged', 'Average', and 'Disadvantaged' depending on their input quality index scores. The results from the cluster analysis exercise summarized in Figure 5-23 (and presented in more detail in Annex 5-1) show clearly that the 'Student learning outcome index'[141] for the Disadvantaged group was 0.834 SD below the sample mean, while those of the Average and the Advantaged groups were 0.035 SD below and 0.634 SD above the sample mean respectively.

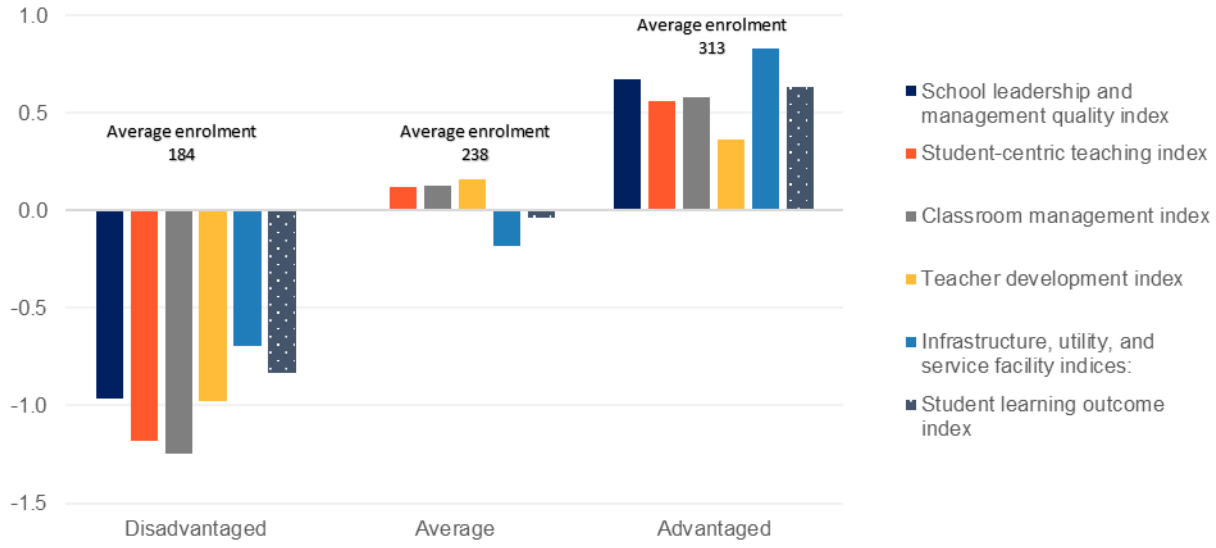
245. Since the Student learning outcome index was not used in classifying the schools, the results of the exercise suggested that the 10 indices of school input quality were good predictors of school performance. The results from the analysis also provide strong empirical evidence that the Disadvantaged schools with lower values of school input quality indices were much more likely to be the smaller schools. Average student enrolments in Disadvantaged, Average, and Advantaged schools were 184, 238, and 313 respectively (see also Table Annex 5-1)

[139] FSQL is a self-scoring tool which schools will fill out. It consists of 63 questions covering 4 domains: i) School Leadership (18 items); ii) Learning Outcomes (5 items); iii) Teacher Quality (11 items); and iv) School Infrastructure and Utility and School Accessibility (29 items). For each question, schools evaluate themselves (based on objective criteria specified by the tool) from a score of 1 ("very poor") to 5 ("very good"). Importantly, the 63 questions are designed to be answered by schools based mainly on information that should be readily available.

[140] The Kru Rak Thin (KRT) Project, initiated by the Equitable Education Fund, is intended to provide an opportunity for poor students in remote areas, who aspire to become teachers, to study at designated public teacher training universities. The project aims to produce quality young teachers, who are recruited locally, in response to the need of schools in remote areas with a focus on reducing inequality and increasing educational opportunities for the poor and underprivileged, and reducing teacher turnover in remote schools.

[141] The Learning Outcome domain of the FSQL instrument consists of 5 variables measuring multiple aspects of learning outcomes, which include 'Lagging students' performance has shown significant learning growth', 'Students have desirable characteristics according to the school curriculum in the school development plan', 'Students meet the curricular competencies requirements', 'Students participated regularly in school or classes until they completed their schooling or received certificate or degree within the normal time frame', and 'Students' Ordinary National Educational Test (O-net) Score or National Test Score (NT) has improved.'

Figure 5-23: FSQL School Input Quality and Learning Outcome Indices



Source: World Bank (2022): "Thailand: Fundamental School Quality Level (FSQL) Instrument Validation."

246. The level of under-resourcing for Thailand's small schools, therefore, goes beyond human resources, learning materials, and physical infrastructure. The results from the FSQL pilot presented in Figure 5-23 and Table Annex 5-1 provide strong evidence that small schools lacking educational staff (both in terms of quantity and quality) were also more likely to be lacking in educational materials, physical infrastructure, school leadership and management quality, as well as classroom practices conducive to learning.

247. The analysis suggests that there is considerable scope for improving Thai students' learning outcomes and reducing achievement disparities. However, achieving these goals requires addressing the misallocations of teachers and other educational resources. Tackling this problem in a cost-efficient manner should be prioritized if Thailand is to successfully raise the standard of education provision and reduce student outcome inequality.

Optimizing educational resource allocation through school network re-organization

248. What is the best way of addressing the teacher shortages identified above? Broadly speaking, there are two ways: 1) allocate staff in accordance with what the curriculum requires (and teacher working hours). Doing so would involve hiring at least an additional 65,400 teachers, a 13.8 percent increase. Or, alternatively, 2) consolidate the school network to create larger, better resourced schools in which no school faces such shortages. The latter option has benefits from both an educational perspective and from a cost-efficiency perspective.

249. This section discusses how such a re-organization could be done, using the results of a school network reorganization (SNR) model developed in World Bank (2020,2022). The model is a tool for policymakers to systematically classify schools into five mutually exclusive school-type categories. These are: i) Hub schools; ii) Affiliated schools; iii) Protected schools; iv) Isolated schools; and v) Large schools. Options for the criteria to be used to determine the five school

types are provided in the package.[142] These options serve as the policy variables for policymakers.[143] The SNR model indicates which of the Affiliated schools could be merged with which of the identified Hub schools so that the aggregate travel distance for students is minimized.

250. The SNR model suggests that as many as 16,889 Affiliated schools could be merged with 6,888 Hub schools, using the SNR model default parameters. Table 5-2 shows that around 3.03 million students were enrolled in the 23,777 Hub and Affiliated schools in 2020. Class sizes in these schools can be seen to be very small, especially for the Affiliated schools where primary level classes average less than 13 students. These schools were also understaffed (teacher-to-class ratios of 1.29 and 1.09 for Hub and Affiliated schools respectively) and the teacher demand model suggests that a total of 328,438 teachers were required to adequately staff all classes in these schools, a 32 percent increase from the teaching force in 2020. At the aggregate level, as many as 540,388 teachers were needed to adequately staff all classes in Thai schools, a 13.8 percent increase over the total teaching force of 475,024.

Table 5-2: Characteristics of Schools by School Type Category – Status Quo[144]

	Hub schools		Affiliated schools		Protected schools		Isolated and large schools	
	Number of schools	Share	Number of schools	Share	Number of schools	Share	Number of schools	Share
Kindergarten	0	0.00%	0	0.00%	0	0.00%	15	0.35%
Primary	4,496	65.27%	13,512	80.00%	940	77.69%	1,031	23.83%
Opportunity	2,373	34.45%	3,363	19.91%	268	22.15%	851	19.67%
Secondary	0	0.00%	0	0.00%	0	0.00%	2,353	54.39%
Complete	19	0.28%	14	0.08%	2	0.17%	76	1.76%
Total schools	6,888	100.00%	16,889	100.00%	1,210	100.00%	4,326	100.00%

	Average class size	Number of classes	Average class size	Number of classes	Average class size	Number of classes	Average class size	Number of classes
Preschool	15.03	15,869	11.08	36,138	8.49	2,471	25.63	9,096
Pri 1	17.53	7,574	12.86	17,075	9.68	1,193	30.96	5,275
Pri 2	17.34	7,524	12.68	17,049	9.22	1,193	31.49	5,091
Pri 3	16.65	7,383	12.08	17,003	8.76	1,182	31.18	4,918
Pri 4	17.17	7,402	12.37	17,016	8.66	1,193	31.78	4,917
Pri 5	17.30	7,371	12.46	16,997	8.85	1,188	32.25	4,885
Pri 6	17.61	7,396	12.71	17,026	9.04	1,190	32.28	4,887
Sec 1	21.10	2,590	17.96	3,485	12.04	266	34.70	13,160
Sec 2	20.26	2,596	17.40	3,494	11.52	269	34.00	13,036
Sec 3	19.41	2,570	16.55	3,469	11.10	269	34.21	12,788
Sec 4	20.13	24	14.50	14	4.50	2	32.16	10,275

[142] The school network reorganization methodology discussed above provides a tool for policymakers to systematically classify schools into 5 *mutually exclusive* school-type categories. Under the default setting, these 5 school types are defined as follows:

Hub schools: Enrolment size of less than 500 (prior to consolidation), located within a cluster, has a football pitch or a children playground, and selected as "Hub" by the School Network Reorganization Algorithm (see Box 3.1 in World Bank (2020))

Affiliated schools: Enrolment size of less than 500, located within a cluster, and NOT selected as "Hub" by the algorithm

Protected schools: Small and Isolated (located more than 6 km from any other school and are not assigned by the algorithm to any cluster)

Isolated schools: Non-small and isolated

Large schools: Enrolment size of more than or equal to 500 student

[143] This report presents one reorganization option at the national level, with an assessment of the number of schools in each category, and the resulting distribution of size of the remaining Hubs and other schools after the proposed school consolidation simulation. Notice that if a different set of policy variables are chosen, then the resulting number of schools in each school type category, the school size distribution after the proposed school consolidation, the number of teachers required, and the travel distance for the students will also be different.

[144] Table 5-2 represents a different grouping of schools (into Hub, Affiliated, Protected, and Isolated and Large groups) than that presented in Table 5-1 (Small and Non-small groups). The "All schools" column is omitted from Table 5-2 in order to save space. This would have been identical to the one shown in Table 5-1.

Sec 5	16.38	24	13.71	14	7.50	2	30.46	10,080
Sec 6	15.56	25	11.33	15	9.50	2	29.47	9,994
Total classes	68,348		148,795		10,420		108,402	
Total teachers	88,102		161,450		9,958		215,514	
Teachers req	107,611		220,827		15,004		196,946	
Total students	1,167,942		1,861,751		94,810		3,454,803	
Avg enrolment	170		110		78		799	

251. With careful planning and support, the SNR model indicates that the 23,777 Hub and Affiliated schools could be merged into 6,888 larger and better resourced-schools, without impairing student access. [145] A total of 12,424 schools would thus remain after the reorganization and their enrolment size distribution would improve significantly. The economies of scale resulting from the merger and the redistribution of existing teachers could reduce or even eliminate the aggregate teacher shortage. The upgrading of school infrastructure and the physical environment could also be carried out much more cost effectively with the smaller number of schools. School network reorganization reform therefore has the potential to enhance Thailand's education spending efficiency and the quality of education provided.

252. The reorganization would reduce the total number of classes in the Merged schools from 217,143 to 142,850 and increase the average primary level class size to more than 23 students.[146] The existing teaching force of 249,552 would therefore be more than adequate as the teacher demand model indicates that 205,226 teachers would be needed to staff the 142,850 classes consisting of 3.03 million students. Even with this reduced number of teachers, the average teacher-to-class ratio for the merged schools would increase to 1.44. Some of the 44,326 surplus teachers could then be reassigned to the Protected schools, which are chronically understaffed (short of 5,046 teachers).

253. It is important to notice that almost all of the Hub and Affiliated (as well as Protected) schools identified by the SNR model are Primary and Opportunity Expansion schools and that the merged classes are almost all in the primary level. Consider Primary 6 classes in Table 5-2 for example. We can see that the original number of classes totalled 24,422 (7,396 in Hub and 17,026 in Affiliated schools). After the simulated school consolidation, the total number of classes at this level would decline to just 14,853.

254. A quick back-of-the-envelope calculation suggests that the proposed school merger would result in more than 15 percent surplus teachers in the Merged and the Protected schools, and could be expected to reduce per-student spending at the primary level by as much as 11.2 percent. Given the estimated surplus teachers of 15 percent ((44,326-5,046)/(249,552+9,958)) and the fact that personnel (mainly teachers) salary made up around 74 percent of OBEC's education budget (see discussion surrounding Figure 5-7), we can see that the proposed school consolidation would be expected to reduce per-student spending at the primary level by as much as 11.2 percent (0.15×0.74) due to the decline in the number of teachers required to adequately staff the primary classes.

255. As discussed in World Bank (2020), due to the natural retirement rates of teachers and school managers, Thailand can gradually consolidate its school network without having to lay off a single personnel in the process. Any necessary reductions amongst existing staff could very likely be handled through natural attrition since about 14,000 teachers, on average, will be retiring or otherwise leaving the profession each year over the next five years.

256. Nevertheless, the reorganization of schools implies that many teachers would have to change their place of work and this might have legal, practical and financial implications. World Bank (2020) proposes an introduction of

[145] World Bank (2020) suggests that even with the much smaller number of schools emerging from the SNR model, the average travel distance is estimated to decline. Specifically, students' average travel distance to school would decline by about 150 meters - from 5.50 km to 5.36 km (a 2.6 percent reduction) after the reorganization. The decline in the average travel distance may seem counterintuitive at first glance. This is due to the SNR algorithm which selects which of the Affiliated schools should be merged with which of the identified Hub schools so that the aggregate travel distance for all affected students is minimized. In other words, the implicit assumption behind the model is that after the reorganization, every student would "choose" to attend the school located closest to home. This assumption would be realistic only if all remaining schools are of high enough quality and that there would be no reason for parents to send their children to larger/better equipped urban schools further from home.

[146] In the School Network Reorganization model, the 'default' maximum allowable class sizes for pre-primary, primary, and secondary levels were set at 20, 30, and 35 respectively.

a "Special Hardship Allowance" (SHA) for educational personnel assigned to a hardship post. A School Hardship Index would be used to measure the hardship faced by personnel in schools located in difficult environments. This index would be used to determine the level of SHA associated with a posting location, with an objective to incentivize more highly qualified and experienced educational personnel to work in hardship areas, which would also promote equity.

257. It would also be necessary to garner students and parents' support for the reorganization. World Bank (2020) also explores the option of introducing transportation grants (for those living between 5 and 50 km from their designated schools and would be eligible to receive the transportation subsidy), boarding subsidy for students with schooling access difficulty (those who would live more than 50 km from their nearest schools after the reorganization), and additional underprivileged allocation for all poor students to incentivize students and their parents to support the proposed school network reorganization plan. The analysis shows that the efficiency gains resulting from the school network reorganization would be sufficient to fully fund these programs.

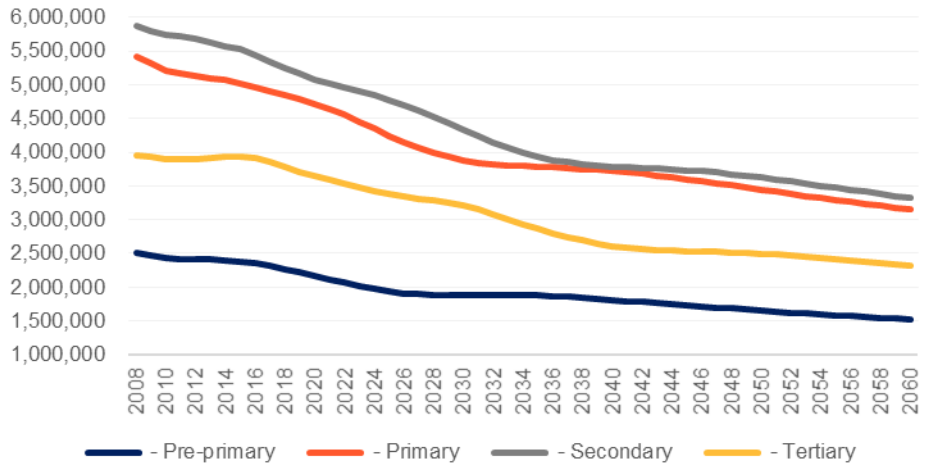
5.6 Projecting Thailand's education financing needs

258. The forecasting model for public education expenditure discussed in this section is premised on four core components: i) student-age population projections by education group; ii) projection of GDP per capita; iii) income elasticity of enrolment demand by education level; and iv) income elasticity of per-student public expenditure by education level. The elasticity parameters were obtained from the international benchmarking exercise of enrolment and spending discussed at the beginning of this chapter, while the student-age population projections were estimated from the UN population projections (2017 revision).

Student-age population

259. Given Thailand's demographic trends, the number of school- and college-age population (3–21-year-olds) is projected to decline considerably in the near future. Specifically, the projected student-age population in the four education groups are presented in Figure 5-24. In the decade to 2032, the number of 3-21 year-olds in Thailand will likely decline by as much as 2.17 million (or 14.3 percent). The primary (6-11 year-olds) and secondary (12-17 year-olds) age groups are expected to register the largest fall of around 16 percent each, while the tertiary (18-21 year-olds) and the pre-primary (3-5 year-olds) population groups are expected to shrink by 12.6 and 8.9 percent respectively.

Figure 5-24: Student-Age Population (3-21 Years Old), Thailand



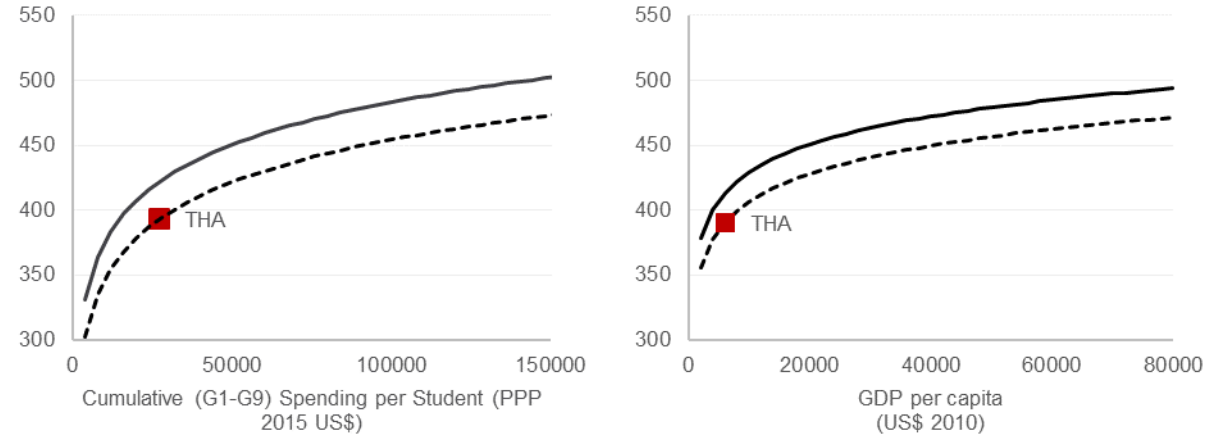
Source: Analysis of the UN projection data

Thai students' performance and economic growth

260. We have seen earlier that the performance of Thailand's 15-year-old students in the PISA 2018 reading assessment was weak, with almost 60 percent of students functionally illiterate. Thai 15-year-old students obtained an average score of 393 on the PISA 2018 reading assessment. This was significantly below the expected score of 422 (415) given the country's level of per student spending (GDP per capita). In other words, Thailand's performance gap to the

'average country' at a similar stage of economic development (as measured using per capita GDP) or level of per-student spending was estimated to be in the range of 22.5-29 points on the PISA scale. This means that Thai students were around 0.75-0.96 year of formal schooling[147] behind their peer group in terms of expected level of learning.

Figure 5-25: PISA 2018 Reading Score vs. Cumulative Spending per Student (Left) and GDP per Capita (Right)



Note: Solid line is cross-country benchmark; dashed line is Thailand's path under low-growth scenario.

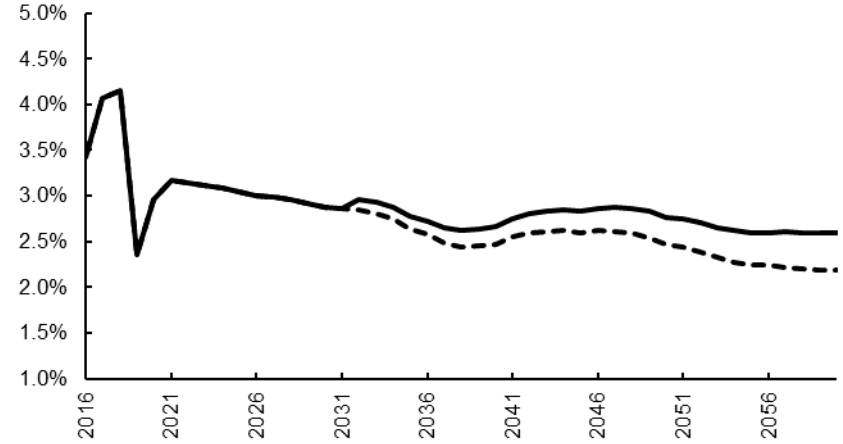
261. It is assumed under the baseline or 'low growth' scenario that Thai students' performance will remain at 29 points or 0.96 year below the expected level. As shown graphically in Figure 5-25, Thailand's PISA score growth path (dotted line) is assumed to remain permanently at 29 points, or 0.96 year of formal schooling, below the world regression line (solid line) under the baseline.

262. The second key component of the forecasting model is the economic growth projection, which is represented by Thailand's GDP per capita (in constant US$2010) growth path. Under the baseline scenario, it is assumed that Thailand's economic growth will proceed at the 'low growth' potential level throughout the forecast horizon. Thailand's long-run growth path, as depicted by its GDP per capita growth, is assumed to proceed as shown by the dotted line projection in Figure 5-26. Implicit in this scenario is that the country's PISA score path (dotted line in Figure 5-25) would remain at 29 points below the world regression line (solid line) throughout the forecast horizon.

263. Under the 'high-growth' scenario, it is assumed that the country's PISA score path would 'gradually' shift up by 29 points to the solid world regression line in Figure 5-25. Our forecasting model employed the approach of Hanushek and Woessmann (2012) in estimating the effect of human capital on economic growth, where countries' initial PISA test scores (in the year 2000) were used as measure of human capital. Specifically, growth models were estimated using available data on 57 PISA sample countries, where the dependent variable was the average annual growth rate in GDP per capita over the 2000–2019 period. The results indicated that a 1 SD increase in cognitive skills (100 points increase in PISA 2000) was associated with between 1.11 to 1.52 percentage points higher average annual growth rate in GDP per capita over the study period. These estimates were all statistically significant at conventional levels. The higher estimate of 1.52 was employed in our forecasting model. The methodology for estimating the effect of human capital on long-run GDP per capita growth is described in Annex 5-2.

[147] PISA scores are scaled so that the OECD average in each domain (mathematics, reading, and science) is 500 and the standard deviation is 100. This is true only for the initial PISA cycle when the scale was first introduced, though, subsequent cycles are linked to the previous cycles through item response theory (IRT) linking methods. A score of 30 points is equivalent to one year's worth of learning (OECD PISA).

Figure 5-26: Thailand's GDP per Capita Growth Paths – Low-growth (dotted) and High-growth (solid) Scenarios



Source: World Bank staff projection (actual data up until 2019)

264. Notice that the projected learning improvement and the resulting economic gains are assumed to undergo gradual processes. Under the 'high-growth' scenario, our forecasting model assumed that an effective education reform will commence in 2023 and that grade 1-entering students (6 year-olds) from 2023 onwards would benefit from the improvement in the quality of education throughout their entire schooling careers. It is also assumed that the first cohort of beneficiaries will enter the labor market in 2032; the second cohort in 2033; and so on, and that all workers would retire at the age of 65. The resulting GDP per capita growth path under the 'high-growth' scenario is depicted as the solid line graph in Figure 5-26, where it can be seen that the effect of education quality improvement that has started in 2023 will only begin to affect the economy in 2032 when the first cohort of student beneficiaries begins to enter the labor market.

265. As described below, the improved learning outcome / high-growth scenario is achieved by a combination of i) boosting per-student spending at the pre-primary, secondary and tertiary levels to cross-country benchmarks; and ii) boosting secondary and tertiary enrolment rates. As discussed in Annex 5-3, there are several ways in which additional spending at these levels could be used to improve student learning to the level consistent with cross-country benchmarks (as per the solid line in Figure 5-25) and consistent with the high-growth scenario.

Enrolment rates and public expenditure per student

266. The income elasticity of enrolment demand parameters was estimated from fitting regression lines through cross-country scatter plots of enrolment rates versus the logarithm of GDP per capita. Specifically, the elasticity parameters are indicators to the sensitivity of enrolment that are affected by variations in countries' level of development (as measured by GDP per capita). Consider pre-primary net enrolment rate for example. The 'fitted world regression line' is shown as a solid line graph in the left-hand chart of Figure 5-27. As economies progress and GDP per capita rises, we can see that pre-primary enrolment demand also increases along the world regression line. Pre-primary enrolment rate for Thailand can be seen to be around 18 percentage points above its peers at similar stage of development. Under all simulation scenarios, it is assumed that Thailand's pre-primary enrolment rate will remain at 18 percentage points above its peers throughout all stages of economic development until net enrolment reaches 100 percent.

Figure 5-27: Pre-primary Net Enrolment Rate vs. Logarithm of GDP per Capita

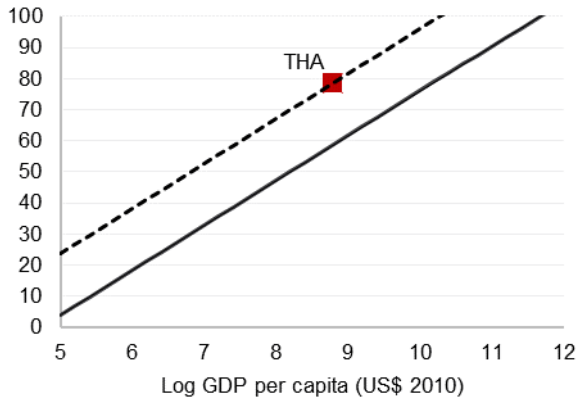
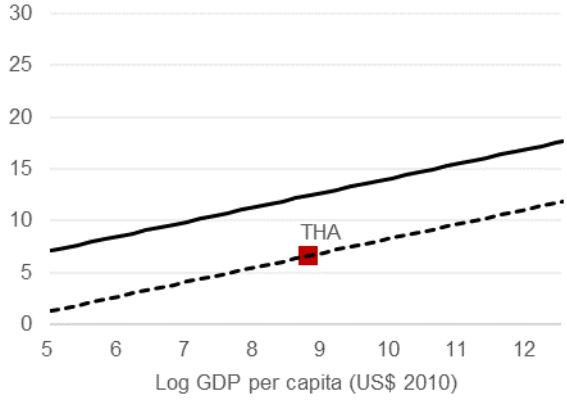


Figure 5-28: Public Expenditure per Pre-primary Student as Percentage of GDP per Capita vs. Logarithm of GDP per Capita



267. Under the improved learning outcome / high-growth scenario, secondary and tertiary enrolment rates increase to cross-country benchmarks. Universal primary enrolment is assumed to be maintained throughout the forecast horizon in all scenarios, while secondary and tertiary gross enrolment rates are assumed to remain below the world regression lines in the 'low-growth' scenario. Thailand's primary gross and net enrolment rates have been around 103 and 98 percent respectively since early 2000's. Universal primary enrolment is therefore assumed throughout the forecast horizon in all scenarios. Secondary and tertiary gross enrolment rates, however, were slightly below the expected levels given the country's GDP per capita. Under the low-growth scenario, it is assumed that secondary and tertiary enrolment rates would proceed along the dotted line graphs below the world regression lines (see corresponding graphs in Figure Annex 5-4-1 in Annex 5-4) throughout all stages of economic development. Under the 'high-growth' scenario, it is assumed that secondary and tertiary gross enrolment vs. log GDP per capita paths will 'gradually' shift up to the world regression lines (see Figure Annex 5-4-1 in Annex 5-4). Our forecasting model assumes that the transformation process would be gradual and would take 15 years from 2023 for the enrolment paths for these two education groups to reach their respective world regression lines.

268. The income elasticity of per-student public expenditure parameters was similarly estimated from fitting regression lines through cross-country scatter plots of public expenditure per student (as a percentage of GDP per capita) vs. the logarithm of GDP per capita. Similar to the approach of projecting enrolment rates, the 'fitted world regression lines' were estimated and are presented as solid line graphs in Figure 5-28 and Figure Annex 5-4-2 in Annex 5-4 for the four levels of education. Once again, we observe that public expenditure per student as percentage of GDP per capita for each education level increases with economic progress (as measured by GDP per capita).

269. To reach the improved learning outcome / high-growth scenario, it is assumed that Thailand gradually shifts its public per-student spending as a percentage of GDP per capita at the pre-primary, secondary, and tertiary levels upwards to be in line with cross country averages (i.e. until per-student spending at each level reaches the solid world regression lines). Again, our forecasting model assumes that the transformation would be gradual and would take 15 years, starting from 2023, for the public per-student spending paths for these three education levels to reach their respective world regression lines. On the other hand, under the 'low-growth' or business-as-usual scenario, it is assumed that Thailand will proceed along the dotted line graphs in all education levels shown in Figure 5-28 and Figure Annex 5-4-2. Specifically, it is assumed that the country will maintain its public under-spending in the pre-primary, secondary, and tertiary levels and its over-spending in the primary level throughout the forecast horizon.

270. Recall from our earlier analysis that the bulk of the basic education spending inefficiency could be traced overwhelmingly to the primary level. Most of the cost-inefficiency was found to arise from the existence of too many small schools and classrooms, resulting in poor teacher allocation and unnecessarily high per-student spending. Therefore, under the 'high-growth' scenario, our forecasting model assumes that an effective education reform will commence in 2023 and one component of the reform would seek to eliminate this inefficiency (perhaps through school network

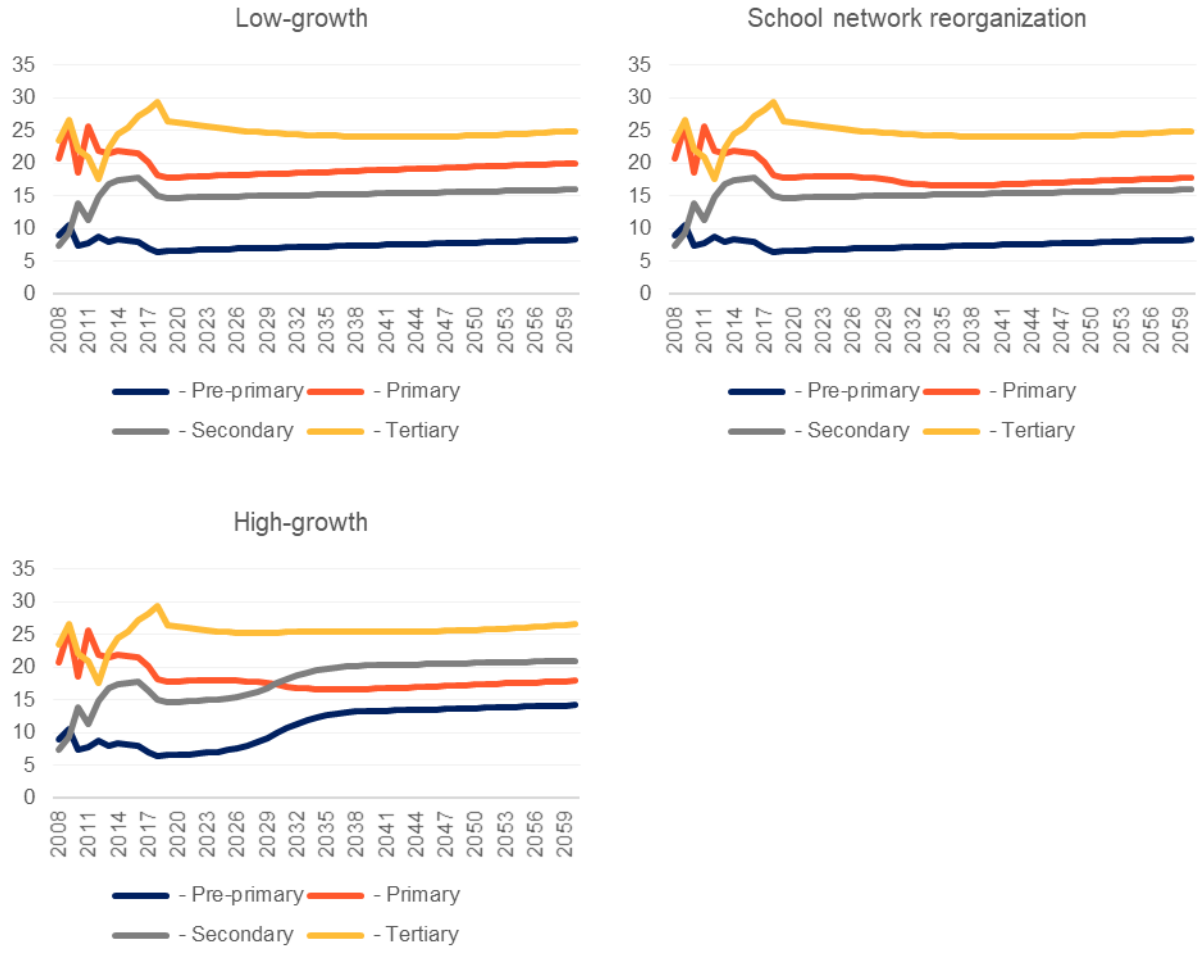
reorganization). Once again, it is assumed that the transformation process would be gradual and would take 15 years for the per-student spending path to shift downward to the world regression line. Under this assumption, the per-student spending path for primary level would shift downwards by around 11.5 percent. This is consistent with the 11.2 percent reduction estimated in Section 5.4 (see discussion surrounding Table 5-2).

Simulation results

271. Three different scenarios are analyzed in this section to shed light on the likely education financing needs for Thailand. First is our baseline or 'Low-growth' scenario, where the Government of Thailand is projected to carry on business-as-usual management of the country's education sector and the economy's long-run growth path is assumed to follow the low-growth potential level (dotted line in Figure 5-26). The second scenario is called 'School network reorganization.' This scenario is the same as the baseline scenario in every way, except that the Government will begin to implement a 15-year program to downsize Thailand's vast network of mainly primary schools in 2023. By changing only one factor in the model, we will be able to clearly assess the impact of the spending efficiency improvement on Thailand's future education financing needs. The last 'High-growth' scenario assumes that the Government is ambitious and will initiate wide-ranging reforms to improve student learning. These reforms would encompass school network reorganization to improve teacher allocation and spending efficiency, substantially raising public per-student spending at the pre-primary, secondary, and tertiary levels to be in-line with international peers, and boosting secondary and tertiary enrolment rates. It is assumed that these reforms will significantly improve student learning and shift Thailand's PISA score path up by 29 points to the solid world regression line in Figure 5-25. Thailand's GDP per capita growth will also be shifted to the 'High-growth' scenario as given by the solid line graph in Figure 5-26.

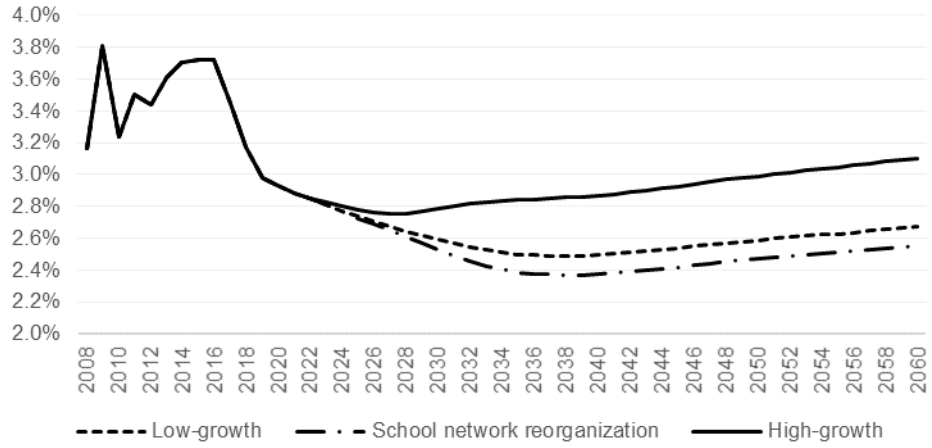
272. The projections of public expenditure per student as percentage of GDP per capita under the three scenarios are presented in Figure 5-29. The high spending inefficiency at the primary level can be seen from Thailand's unusual spending pattern. Consider the 'Low-growth' chart in Figure 5-29. Here, we can see that public spending per student at the primary level has been consistently much higher than at the secondary level, although the gap has come down over the last decade. Under the school network reorganization scenario, per-student spending at the primary level declines (compared with the low-growth status quo scenario) due to the consolidation of small schools and the associated decline in staffing costs. As discussed in the preceding paragraph, the reforms considered under the 'High-growth' scenario are projected to gradually shift Thailand's spending pattern to be more in line with international peers with per-student spending at the pre-primary, secondary and tertiary levels shifting upwards to be aligned with international benchmarks.

Figure 5-29: Projected Public Expenditure per student as Percentage of GDP per capita



273. The projections of Government total expenditure on education as percentage of GDP under the three scenarios are presented in Figure 5-30. Under the baseline or 'Low-growth' scenario, it is projected that total education spending as percentage of GDP will continue to decline until 2038, before rising slowly thereafter. The decline will primarily be driven by the rapidly shrinking student population. As expected, 'School network reorganization' will likely improve education spending efficiency and the model predicts that spending will fall by 0.115 percentage points after the reform is fully implemented, due to reductions in per-student spending at the primary level. In the 'High-growth' scenario, total public spending can be seen to be much higher than in the baseline scenario as a result of the envisioned increases to per-student spending at all levels other than primary.

Figure 5-30: Government expenditure on education as percentage of GDP



274. Would the present value of the expected future benefits (in terms of higher economic growth) be higher than the present value of the cost of reform? This question is addressed by calculating the difference between the projected GDP paths in the 'High-growth' and 'Low-growth' scenarios from 2022 to 2100 and comparing the result with the present value of the difference between the projected total public education expenditures from the two scenarios. Employing a discount rate of 3 percent, the present value of the benefit is US$ 3.303 trillion, while the present value of the cost is US$ 252.3 billion (in constant US$ 2010). Therefore, the net present value of the reform is estimated to amount to US$ 3.051 trillion, which is equivalent to as much as 615 percent of Thailand's projected GDP in 2022.

5.7 Conclusion and recommendations

275. Thailand's oversized school network should be reorganized to ensure that limited educational resources are adequately and equitably redistributed. The World Bank's teacher demand model suggests that if the current distribution and size of schools remain unchanged, Thailand would need to recruit, train, and deploy around 65,400 additional teachers (a 13.8 percent increase in the teaching force) in order to adequately staff all classes in the schools. A better and more cost-efficient approach is to drastically downsize the vast network of schools and to ensure that teachers (and other educational resources) are equitably redistributed to improve both the quality and equity of the system. The analyses in this chapter indicate that the proposed merger of mostly primary schools would result in more than 15 percent surplus teachers, and could be expected to reduce per-student spending at the primary level by as much as 11.2 percent. The reorganization could be done gradually over time without the need for any teachers to be laid off.

276. The overall education spending envelope should be increased with the savings from the school merger utilized to increase per-student spending, especially at the pre-primary and secondary levels. Overall public expenditure on education in Thailand has declined significantly in recent years, partly as a result of the COVID-19 pandemic. Government spending on education of just 11.7 percent of total public expenditure in 2021 was well below the 18.9 percent observed in 2011 and the 14.7 percent expected rate given the country's stage of economic development. As the economic impact of the pandemic eases, Thailand should aim to raise spending per pre-primary and secondary student to be in line with international benchmarks.

277. It is important that the country urgently addresses children's school readiness by making high-quality preschool available to every child. The recommendation is given in light of the fact that only 61 percent of Thai children aged 3-5 were developmentally on track in the literacy-numeracy domain (UNICEF, 2020) and that the level of per-student spending in 2019 was as much as 47 percent below its comparable international peers. Research has shown that investment in high quality preschool programs generates high economic returns, which could be expected to be in the US$3.4-8.5 range for every dollar invested (Cascio and Schanzenbach, 2013).

278. At the secondary level, Thailand could first embark on reducing class sizes and providing adequate resources to its schools. Thailand's average class size of 37.3 was the 9th largest among the 79 education systems which participated in PISA 2018. By contrast, class sizes in OECD countries averaged at only 26.2. Moreover, in the PISA 2018 school

survey, school principals in 'Average' and 'Disadvantaged' as well as 'Rural' schools reported that their schools' capacity to provide instruction was hindered by 'A lack of/inadequate or poor quality' educational material and physical infrastructure. The same was also true in the area of teaching and supporting staff (World Bank, 2020).

279. Thailand needs to generate better and more frequent data on the quality of school inputs, establish minimum quality standards, and provide resources to ensure that all basic education schools meet them. A new instrument conceived by World Bank (2020), called the Fundamental School Quality Level (FSQL) Standards, provides a good starting point. As mentioned earlier, the instrument was recently tested on 275 remote schools. The results from the survey questionnaire were used to construct 10 FSQL school input quality indices (School leadership and management quality; Student-centric teaching; Classroom management; Teacher development; and 6 Infrastructure, utility, and service facility indices), which were found to correlate significantly with the learning outcomes of students. This is important because the FSQL standards are intended to provide guidance to policy makers and school leaders about areas for improvement which would result in improved student learning. A second and final pilot of an improved version of FSQL is currently being planned. After the second pilot, the instrument should be ready for nationwide implementation.

280. A recent World Bank (2020) report on Thai basic education concludes that educational outcomes are driven by five key factors or foundations for success: educational resources, quality instruction, learning time, inclusive learning environment, and family support. The report recommends that policymakers and educators pay attention to: i) Making schools inclusive, safe, and welcoming; ii) Strengthening teaching quality and addressing the poor allocation of educational resources; and iii) Making effective use of learning time. Furthermore, World Bank (2018) provides econometric evidence from Thailand for the presence of institutional features that are complementary to local autonomy in schools. Specifically, the study sheds light on the set of accountability-enhancing activities or policies, or their combination with local autonomy which could lead to improvement in student performance. The findings of these reports are discussed in Annex 5-1 of this Chapter.

CHAPTER 6
STRENGTHENING SOCIAL PROTECTION

Chapter 6: Strengthening Social Protection

6.1 Introduction

281. Thailand's social protection system faces significant challenges stemming from a slowing economy, inequality, rapid aging, the changing nature of work, and a highly informal workforce. At the same time, the social assistance system is highly fragmented and though a large majority of Thais were receiving at least some form of social assistance before the pandemic, this reflected a lack of efficient targeting across various programs, reducing the impact on poverty and income distribution. Moreover, while overall spending has risen in recent years, and more than doubled as a share of GDP due to the cash transfer response to COVID-19, it is returning to relatively low levels as compared with other countries at its income level. Again, this is due primarily to low benefit levels rather than low coverage.

282. Meanwhile, the social insurance system is marked by inequities, fragmentation, and concerns about fiscal sustainability. Social insurance schemes cover most people working in the civil service and formal private sector but with much more generous terms for the former. Some private sector workers are also covered by voluntary, occupational provident funds while others rely solely on mandatory schemes. Most importantly, given high informality, over half of the employed population lacks any coverage, despite multiple voluntary schemes that allow informal workers to save for retirement. The Social Security Organization (SSO) pension scheme will mature in the coming years leading to an increase in the share of the elderly receiving pensions. Nevertheless, the only income that will be available to a large and growing share of Thai elderly is the Old Age Allowance (OAA). OAA benefit amounts remained stagnant for a decade and have therefore been falling relative to incomes and are significantly below the poverty line. The continued reliance on support from children will become more challenging as the ratio of elderly to working age people increases.

283. Thailand also faces increasingly significant exposure to natural disasters, floods, landslides, storms, and droughts (see Chapter 7), and their impact on livelihoods is more likely to be larger on the poor and those living in rural areas. This makes social assistance all the more important and highlights the need for the social protection system to become adaptive, resilient, and able to respond to the needs of broad segments of the population who may be at risk.

284. The COVID-19 crisis shed light upon the strengths and weaknesses of Thailand's social protection system. In particular, it revealed the vulnerability faced by the vast informal population not covered by social insurance. The government responded with a significant social assistance package to mitigate the impact of the crisis, including top up transfers for existing beneficiaries and the introduction of new programs to cover informal workers and farmers who were previously not receiving any social assistance. Over 80 percent of households received some form of assistance helping to significantly offset the impact of the recession on poverty rates. The rapid rollout of these relief programs demonstrated that the infrastructure needed to administer an advanced delivery system for social assistance – a universal, unique identifier that allowed for online registration, a robust digital payments platform with high coverage, and the ability to link various administrative datasets for targeting – is available in Thailand. It also became clear that it is being harnessed effectively in normal times. Recent initiatives toward developing the 'e-welfare platform' and improving targeting are promising. Yet, the major social assistance programs continue to spread limited spending over a large population thus diluting the potential impact.

285. This chapter analyzes the adequacy and efficiency of social protection spending in Thailand, including with reference to international comparators. It examines lessons from the significant scale-up in transfers in response to COVID-19 and proposes longer-term policy reforms to social assistance programs that would be cost-effective in terms of their impact on poverty and inequality, without unduly straining the overall government budget. Chapter 8 then delves further into the distributional impacts of current social protection spending programs and these proposed reforms.

6.2 Spending adequacy

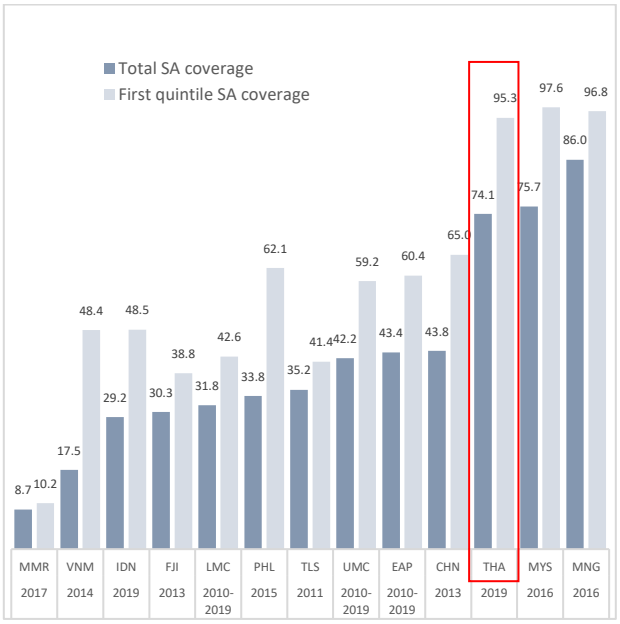
286. Overall coverage of social protection in Thailand is relatively high and comparable to other countries with the same level of income per capita; however, though most people receive some form of social assistance, only a minority are covered by social insurance. In Thailand almost three quarters of the population received some form of social assistance in 2019 (either directly or indirectly); in the poorest quintile 95 percent receive at least one social assistance

benefit (Figure 6-1, panel a). This is significantly higher than the average for Upper Middle-Income Countries (UMC); in the EAP region, only two other countries for which ASPIRE data are available (Malaysia and Mongolia) exhibit higher coverage. In general, given that the main objective of social assistance spending is to mitigate poverty and help vulnerable households cope with shocks, such high coverage of social assistance is indicative of inefficient spending.

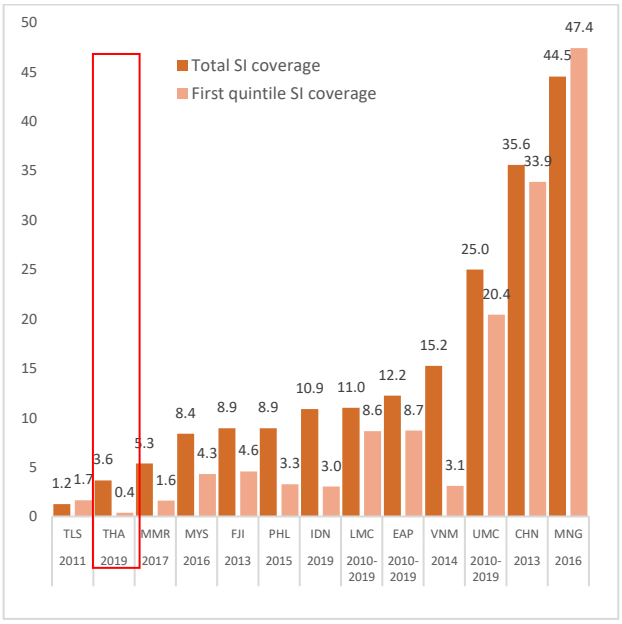
287. In contrast, Thailand stands out in the region, and among countries with similar income per capita, for its low share of the population receiving social insurance benefits. Most of these beneficiaries are public sector pensioners. This is largely due to the fact that the Social Security Fund (SSF) pension scheme has only been operating for about two decades. In this sense, it is 'immature' in that most SSF members are yet to qualify for a pension because they have not contributed for the requisite 20 years before they reach retirement age. Only 3.6 percent of the population received social insurance benefits in 2019. Even for the top quintile, less than 10 percent were receiving benefits and a significant share of these were civil service pensioners (covered under a separate pension scheme). According to the latest available data in ASPIRE, this figure is more than three times higher for the region and 8 times higher in UMIC countries.

Figure 6-1: Social assistance and social insurance coverage, regional comparison

a. Social assistance coverage, percent



b. Social insurance coverage, percent



Source: ASPIRE database.

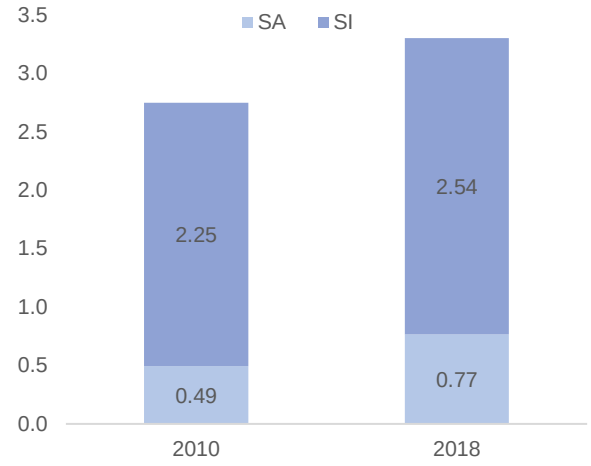
Note: Coverage refers to the share of the population receiving benefits. Regional averages refer to simple averages for using the latest data available for each country between 2010 and 2019.

288. Spending on social protection totalled 3.3 percent of GDP[148] in 2018; most of this spending was on social insurance (2.54 percent of GDP, or 77 percent of social protection spending) (World Bank, 2021b). Spending on social assistance, on the other hand, remained less than 1 percent of GDP despite increasing significantly between 2010 and 2018 (Figure 6-2, panel a).[149] This placed Thailand below the EAP average for spending on social assistance (1.1 percent of GDP), and significantly below the simple average for upper middle income (1.6 percent) or even lower middle income (1.4 percent) countries (Figure 6-2, panel b).[150]

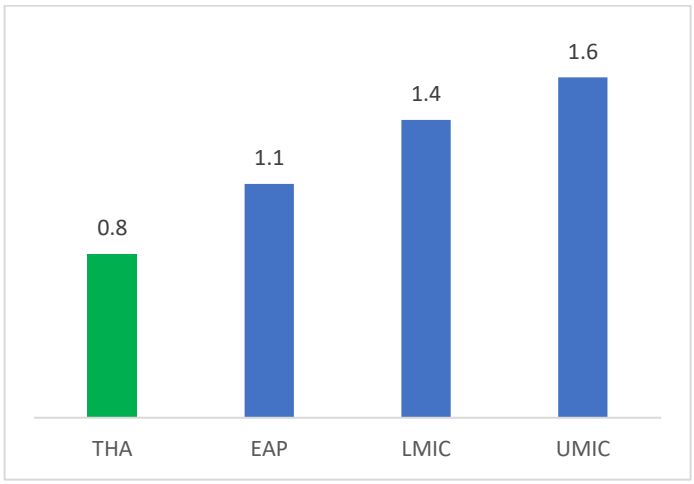
[148] Government data show that, in 2019, total social protection spending fell to 3.1 percent of GDP.
[149] The figures refer to prior to the COVID-19 pandemic. As will be seen later, the response to the pandemic brought spending levels well above 1 percent of GDP.
[150] Thailand is classified as an upper middle income country (UMIC).

Figure 6-2: Spending on social assistance and social insurance as percent of GDP

a. SP spending as percent of GDP, 2010 and 2018



b. SA spending as percent of GDP, international comparison

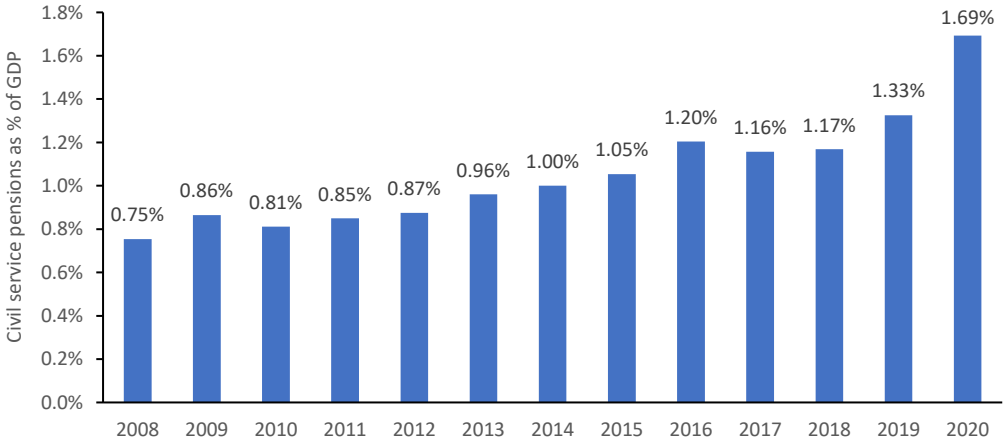


Source: World Bank, 2021b.

Note: 2018 is the most recent year for which disaggregated social protection spending data for Thailand are available. Government data for 2019 show that total spending on social protection was 3.1 percent of GDP, representing a decline with respect to 2018. Regional averages are simple averages. Data for EAP, LMIC and UMIC represent averages for the latest years available.

289. More than half of social insurance spending is on civil service pensions. Public sector pensions are mostly financed on a pay-as-you-go basis and have been rising for the last decade. As the median age of civil servants increases, spending as a percentage of GDP has more than doubled between 2008 and 2020 (Figure 6-3). At 1.7 percent of GDP, public sector pensions represented the single largest social protection program in 2020.

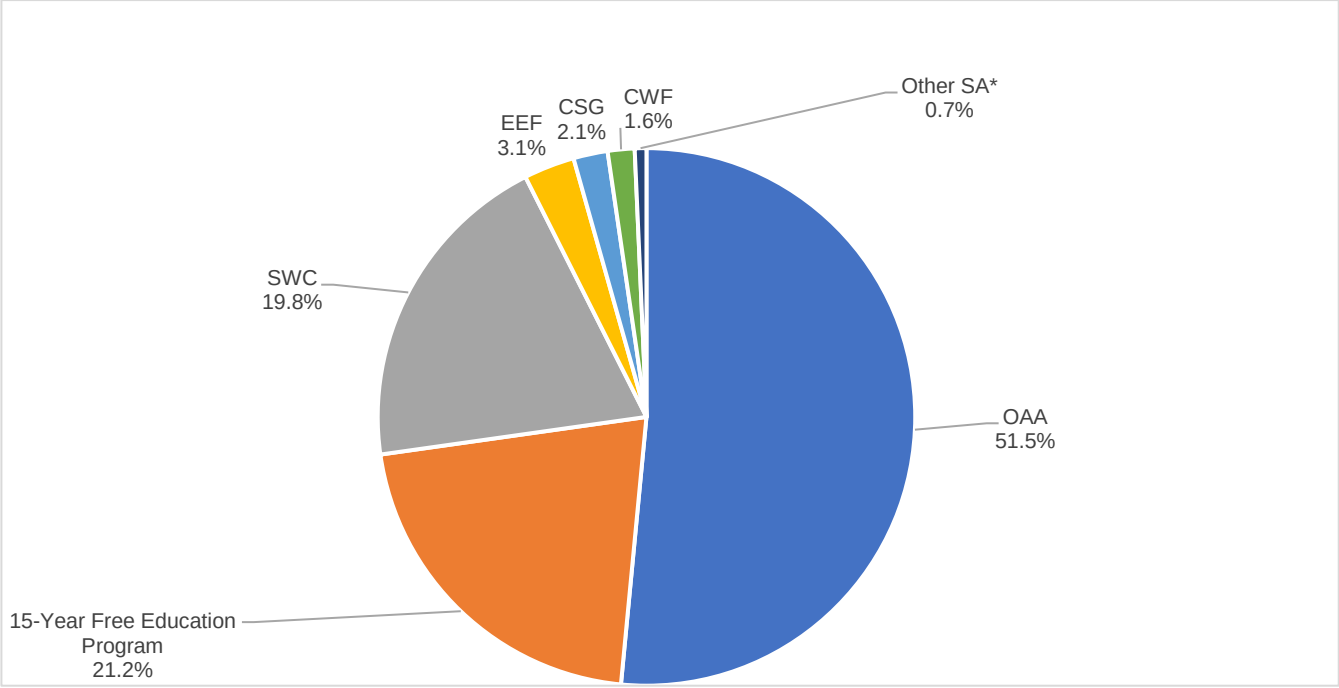
Figure 6-3: Spending on public sector pensions in Thailand, percent of GDP, 2008–2020



Source: World Bank (2022).

290. Data for 2018 show that just over half of social assistance spending is devoted to the Old Age Allowance, Thailand's social pension. In 2018, one fifth of social assistance spending went to the cash and in-kind transfer components of the 15-year free education program and the State Welfare Card (SWC), respectively. The Child Support Grant, a cash transfer for children under 6 years of age, accounted for only 2.1 percent of social assistance spending in 2018.

Figure 6-4: Social Assistance spending composition, 2018



Source: World Bank 2021b
Note: 2018 is the most recent year for which disaggregated social assistance spending data for Thailand are available.
OAA = Old Age Allowance; SWC = State Welfare Card; EEF = The Equitable Education Fund (EEF) – Education Assistance Program and Conditional Cash Transfer Program; CWF = Reducing Inequality Community Welfare Funds Program. Other SA* includes Fund for School Lunch of Primary School Program, Baan Mankong (Secure Housing Scheme), Child Subsidy to Poor Household Program, and Universal Non-contributory Allowance for People with HIV/AIDS.

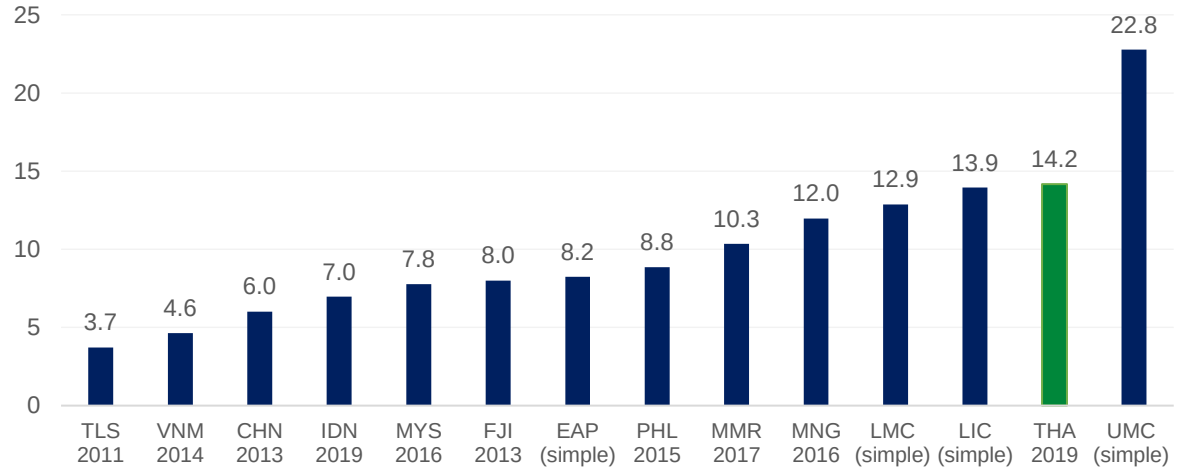
291. The provision of social assistance acted to significantly reduce poverty and inequality in 2019, but leakage of transfers remains significant. Without cash transfers from social assistance programs the poverty headcount (defined here as the 20th percentile) would have been 22 percent higher than it was in 2019; this impact is somewhat lower than the simple average for upper middle income countries for which data between 2010 and 2019 are available (25.2 percent, ASPIRE database).[151] Social assistance also brought the poor closer to the poverty line; without these transfers the poverty gap would have been almost 38 percent higher in 2019, a substantial impact compared to the simple average for upper middle income countries of just 13.2 percent (ASPIRE database).[152] Finally, income inequality has also been impacted by social assistance transfers: it is estimated that the Gini coefficient would have been almost 6 percent higher without such transfers. Nonetheless, while spending on social assistance has become more pro-poor over time, leakage to higher income groups remains significant. In 2019, around 27 percent of social assistance benefits went to households in the poorest quintile and only 52 percent benefited households in the bottom two quintiles. As such, nearly half of social assistance benefits accrue to households not in the bottom 40 percent, with over 11 percent benefitting households in the richest quintile.

292. Though Thailand's social assistance programs appear generous compared to other EAP countries, benefit amounts are low compared to the poverty line and to the upper middle-income country average. Social assistance benefit amounts represented, on average, 14.2 percent of household consumption in the poorest quintile in 2019. Benefit adequacy is higher in the poorest quintile in rural areas (15.2 percent) than in the corresponding urban quintile (11.2 percent, ASPIRE database). Compared to EAP countries for which data are available, the share of benefits in the first quintile is relatively high in Thailand. However, the share is significantly lower than the simple average for upper middle-income countries (Figure 6-5). The amounts transferred to the poorest quintiles are also small in absolute terms. Based on 2019 SES data, the average monthly payment from social assistance transfers is THB 1,108 per household (THB 369 per capita), much lower than Thailand's average monthly poverty line of THB 2,763 per capita.[153] In particular, the OAA, ranging between

[151] The corresponding population-weighted average is 16.3 percent.
[152] The corresponding population-weighted average is 8.5 percent.
[153] They are also much lower than the Thailand's monthly US$5.5/day (2011) PPP poverty line of THB 2,329 per capita"

THB 600 and THB 1,000 per month, has not been adjusted for over a decade (World Bank 2022); the State Welfare Card provides even lower monthly payments, ranging from THB 200 to THB 300 per month for each beneficiary, depending on their household income.[154] Low benefit amounts are, in part, a reflection of low overall spending and benefits being spread thinly across a large share of the population.

Figure 6-5: Adequacy of social assistance programs, first quintile, international comparison



Source: ASPIRE database.

Note: The chart shows social protection benefit amounts as a percentage of the consumption in the first quintile. EAP, LMC, UMC, and LIC simple averages use latest available data between 2010-2019.

6.3 Spending efficiency, effectiveness, and equity

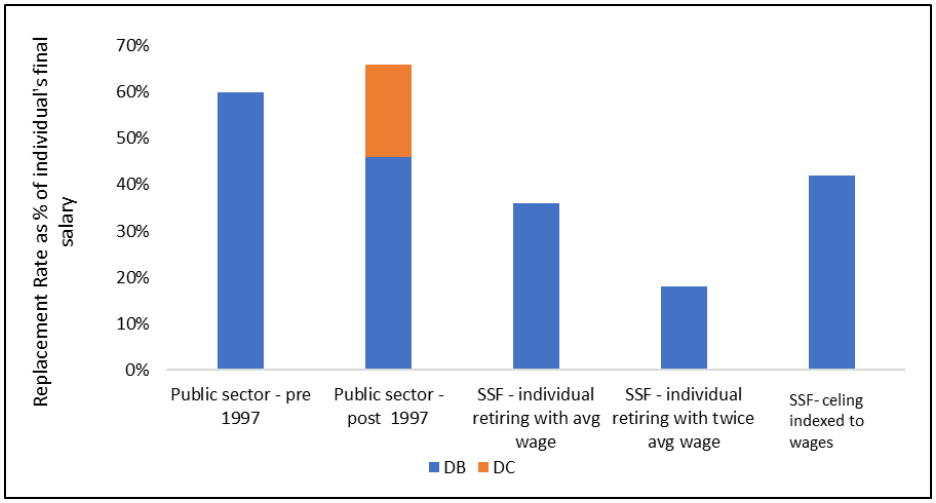
293. The social protection system is fragmented and in need of reform. Most poor and vulnerable households in Thailand do not receive a full package of support. While there are a large number of programs (World Bank 2021b identifies 25 social assistance programs and 12 social insurance programs; Annex 6-1 outlines the main social protection programs in the country), each program operates in a silo, with its own processes for outreach, determination of eligibility, enrolment, and payment of benefits. Even though the eligibility criteria for several social assistance benefits are similar (e.g., income threshold), each program proceeds with a separate methodology for identification of potential beneficiaries, leading to increased administrative costs, as well as costs borne by beneficiaries. Under social insurance, there are five contributory pension schemes (three of which are voluntary) with overlapping membership criteria. Over 40 percent of beneficiaries receive benefits from multiple programs, with some receiving both social assistance and social insurance benefits.

294. Thailand does not have a social protection strategy and does not make use of common social protection monitoring and tracking instruments. The country lacks a social protection strategy with indication and guidance for individuals on programs and the expected benefits that each group could receive. Further, despite unique identification with the potential to keep track of beneficiaries, the country lacks an information system to allow for a comprehensive tracking of the coverage and impact of the overall system.

295. The pension system is characterized by high inequity. As shown in Figure 6-6, the pensions that are generated by the unfunded defined benefit (DB) scheme are significantly higher than those that will be generated by the Social Security Fund (SSF) for private sector workers who must also make contributions in order to qualify. This is in large part because the wage ceiling used as the basis for calculating SSF contributions and benefits is not indexed to prices or wages, but rather has remained fixed in nominal terms. This exacerbates the public-private wage differential.

[154] The OAA is a monthly benefit amounting to THB 600 for elderly aged 60-69; THB 700 for those aged 70-79; THB 800 for those aged 80-89; and THB 1,000 for those over 90 years of age.

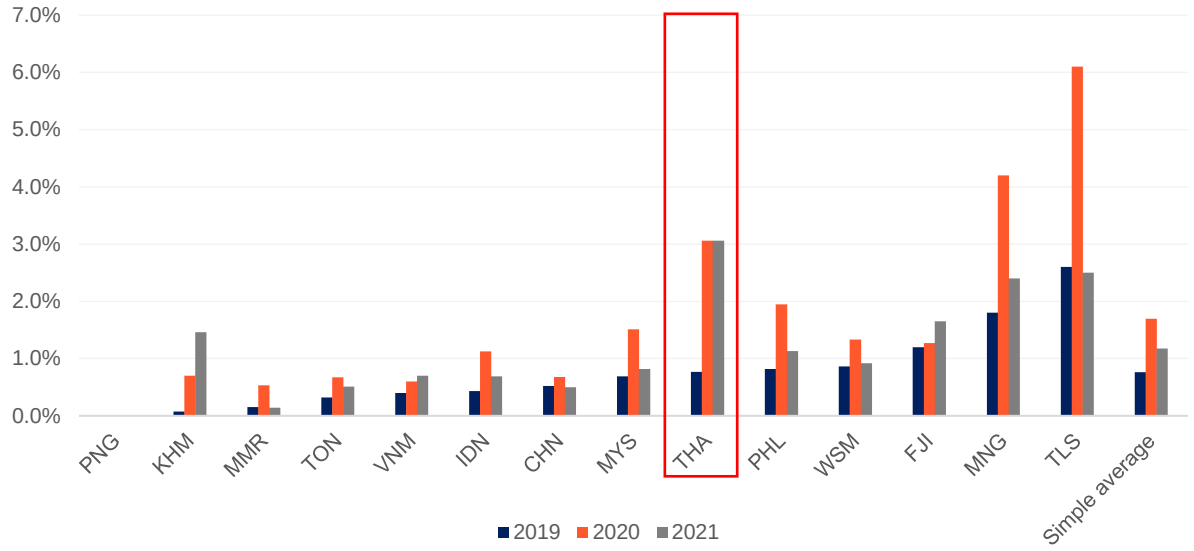
Figure 6-6: Simulated replacement rates as percentage of individual's final wage



Source: World Bank (2022).

296. Spending on social assistance more than tripled to mitigate the impact of COVID-19 but this remarkable response and increased spending was only temporary. As noted in earlier chapters, Thailand's response to COVID-19 was one of the largest in the region, centered on providing social assistance to those impacted, expanding what was previously a relatively modest set of cash transfer programs. The total cost of transfers in 2020 was estimated at THB 386 billion or about 2.3 percent of GDP, bringing total social assistance spending to more 3 percent of GDP, a sharp rise from 0.8 percent in 2019 and a high level in comparison to the rest of the region (Figure 6-7). Temporary emergency programs for informal workers and farmers who would not have been considered vulnerable prior to the pandemic were introduced, and existing social assistance schemes were expanded for the elderly, people with disabilities, children of poor families and for recipients of the State Welfare Card program. The increase in spending was sustained in 2021, and although spending on the State Welfare Card and Old Age Allowance are expected to increase, overall social assistance spending is not expected to remain at 2020/21 levels going forward.

Figure 6-7: Spending on social assistance pre- and post-COVID-19, EAP



Source: World Bank EAP Economic Update 2022.

Note: Only EAP countries for which data are available are shown.

297. Emergency assistance appears to have expanded the number of households benefiting from some form of social assistance by just under 10 percent; social assistance covered approximately 81.5 percent of the population during the pandemic in 2020. This expansion came from an already high base: in 2018, 72 percent of households already received some form of social assistance, so that Thailand had some of the highest pre-COVID coverage in the region (Table 6-1). Given that the No One Left Behind benefit (aimed at informal or self-employed workers outside of agriculture) and Assistance to Farmers alone reached more than 30 percent of the population (23.7 million individuals from a registered population of 66 million), a significant proportion of people who received these benefits already had access to other forms of assistance, either directly or indirectly by living in households where other members received programs.[155] Moreover, the 'We Win' Stimulus Program for At Risk Communities Affected by COVID-19 covered 33.2 million people, about half of the Thai population.[156]

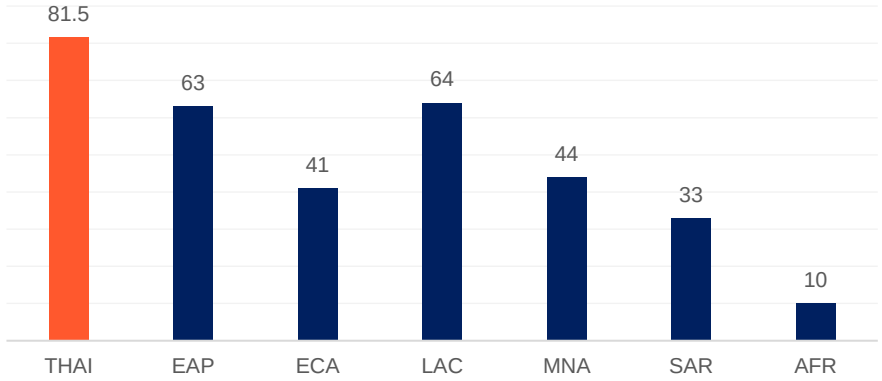
Table 6-1: Coverage of social assistance before and during the COVID-19 pandemic, EAP comparison, 2020

Country	Pre-COVID beneficiaries	Pre-COVID beneficiaries receiving top-up	Pre-COVID beneficiaries receiving new payments	New beneficiaries	Total beneficiaries
Percentage of population					
China	3.1	3.1	0	2.9	5.9
Cambodia	1.5	0	1.5	14.9	16.3
Fiji	34.0	34.0	0	14.1	48.1
Indonesia	13.3	13.3	0	51.7	64.9
Lao	NA	NA	NA	0	NA
Malaysia	63.5	0	63.5	24.7	88.2
Mongolia	85.5	85.5	14.4	0	99.9
Myanmar	3.4	3.4	0	45.9	49.3
PNG	0.52	0	0	0	0.52
Philippines	39.8	17.5	22.3	44.5	84.3
Samoa	26.8	26.8	26.8	73.2	100.0
Thailand	71.3	21.1	50.2	10.4	81.5
Timor-Leste	66.0	0	66.0	27.4	93.4
Tonga	36.1	36.1	0	29.1	65.1
Vietnam	21.5	21.5	0	9.4	30.9

Note: The figure for China is a lower bound due to the lack of subnational data.
Source: World Bank, 2021b.

[155] The No One Left Behind Benefit and the Assistance to farmers each amounted to a monthly subsidy of THB 5,000 per month per beneficiary for three months in 2020.
[156] The 'We Win' Stimulus amounted to THB 7,000 per beneficiary for two months. The program excluded those with income of THB 300,000 or more per year (or those with savings of over THB 500,000) as of 31 December 2021, government officials, workers in state enterprises or social welfare recipients.

Figure 6-8: Percent of population covered by COVID-19 social assistance programs, Thailand and regional comparison

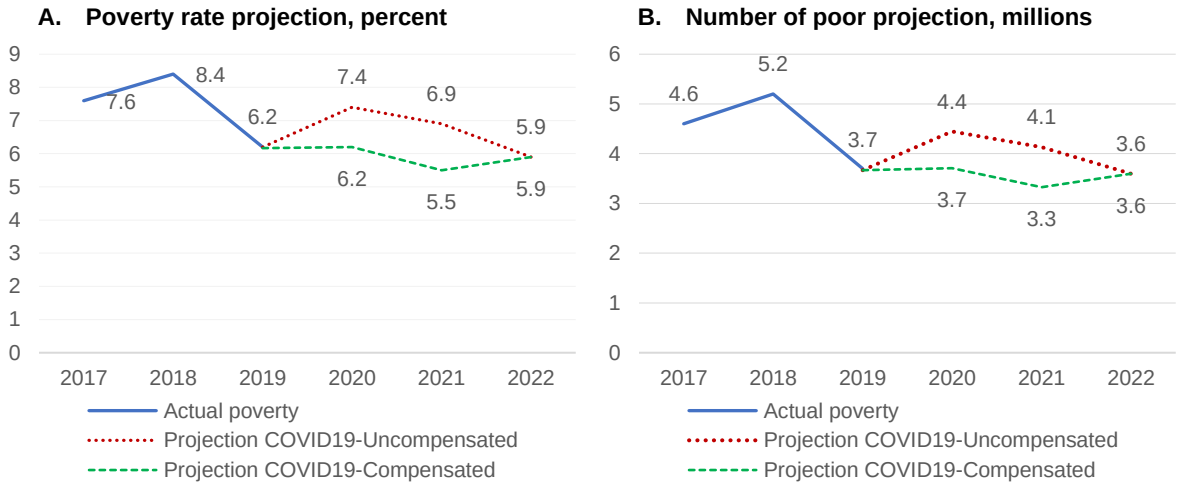


Source: Thailand: World Bank staff estimates; regional data: World Bank, 2022b.

Notes: Weighted average of population coverage in 80 low- and middle-income countries that have scaled up social assistance programs in response to COVID, excluding India and China. Percent of population covered represents individuals living in households which have received a COVID social assistance payment as of March 2021.

298. COVID-19 relief measures helped avoid an increase in poverty and inequality in 2020. The economic shock associated with COVID-19 adversely affected employment, incomes, and poverty, but the government's social protection response was impressive in mitigating its impact. In 2020, the national poverty rate posted only a marginal increase of 0.6 percentage points (6.2 percent in 2019 and 6.8 percent in 2020). The consumption Gini coefficient remained stable at 35 percent. Results from a World Bank simulation model show that in the absence of this government response, poverty, measured at US$5.5/day (2011) PPP, would have increased by around 1.2 percentage points in 2020 (Figure 6-9, panel a), adding about 780,000 poor people, of which 270,000 would have been children aged 0 to 14. Inequality would have increased as well, with the consumption-based Gini coefficient increasing from 35 percent in 2019 to over 36 percent throughout 2020-22 and the income-based Gini coefficient rising from 43 to 44 percent during the same period (World Bank, 2021c).

Figure 6-9: Impact of Thailand's COVID-19 social assistance emergency response on poverty



Source: World Bank 2021c; projections based on SES 2019, using macro-microsimulation model.

Note: Poverty rates are based on the international line of US$5.5/day (2011 PPP). Projections for 2022 assume that emergency response programs will end.

299. The COVID-19 response shows that there is opportunity to increase and better target social protection spending over the longer term, and to integrate different programs to improve the efficiency of this spending, thereby having a greater impact on poverty and inequality per baht spent. The international evidence shows that there is scope in Thailand to increase spending on social protection more permanently, when the current COVID-19

measures are phased out. In fact, benefit levels could be increased and targeting improved, thereby reducing inclusion and exclusion errors. This would ensure that vulnerable beneficiaries receive adequate support to lift them out of poverty and that newly vulnerable beneficiaries receive support, while limiting the support provided to those who are not in need. Integrating many of the current programs, many of which have overlapping objectives, could result in significant savings and increase efficiency. One example of benefit overlap involves the State Welfare Card and the Old Age Allowance. According to 2010 Household Socioeconomic Survey data, among the 19.2 million individuals who were benefitting from either the State Welfare Card or the Old Age Allowance, 20 percent were receiving both benefits. Under the new eligibility criteria for the State Welfare Card established in 2022, an individual cannot be receiving any other social assistance; initial simulations using 2019 Household Socioeconomic Survey data show that the removal of the overlap between these two programs would lead to more efficient poverty reduction.[157] Such options would help to improve the efficiency of social protection spending (as measured by its impact on poverty and vulnerability), while containing the overall fiscal cost.

300. The response brought to light the challenges that Thailand's social protection system was facing before the pandemic hit, and provides the opportunity to build back better, by investing in a more efficient and effective social protection system. The pandemic response forced the government to temporarily link social protection and other databases to quickly determine who should receive support. Consolidating these temporary measures and moving towards a permanent integration of data and analytics across programs could help build a dynamically updated social registry. This would improve the efficiency and impact of social programs and also open up possibilities for innovative policies including expansion of social insurance coverage to the informal sector.

301. The prolonged effect of COVID-19 has resulted in an increase in the share of the population considered to be vulnerable and in need of support. A large share of the population that was not in need of support before the pandemic is now vulnerable and would require support to avoid a large increase in poverty and disinvestment in human capital. The risk of loss of human capital is high and there is a need to preserve and ensure increased investments in early years.

302. The crisis also further underscores the need to ensure that the social protection system covers the large informal sector in Thailand at all times, not only during crises, and that new vulnerable groups are adequately protected. Some groups have been disproportionally affected by the COVID-19 pandemic like informal workers in badly hit sectors, children, and ethnic population living in rural areas. Of those, several are covered by existing social protection programs and part of the negative impact could be mitigated but there are still marginal risks and tradeoffs for government consideration. Without considering an expansion of coverage to those new vulnerable groups and increasing the benefit amounts, a large share of the population will fall in poverty and the risks of a long-lasting impact on human capital are particularly high.

6.4 Steps toward a more efficient social protection system

303. Increasing social assistance benefit amounts and improving targeting towards the poor could have a significant impact on poverty at a low cost. A range of different reforms have been modelled focusing on both program design and implementation; they are benchmarked against both 2019 baseline programs and 2022 diesel price support policies.[158] The two main programs examined are the OAA and SWC (together accounting for approximately 0.6 percent of 2019 GDP), and for both a range of program design changes were examined. Two key design features are benefit levels and coverage. Benefit amounts are currently low enough that, if increased and maintained well below the minimum wage, should not necessarily lead to labor market disincentives; in fact, cash transfers can sometimes facilitate labor force participation and employment by allowing beneficiaries to widen their job search.[159] In addition, improved targeting of benefits to poorer households was also modelled, drawing upon international lessons and best practices for potential improvements in Thailand (see Box 6-1). In the case of OAA, improved targeting means reducing coverage and targeting benefits toward poorer households or maintaining coverage but targeting higher benefits only to poorer households. In

[157] Under the simulations, all current OAA recipients continue to receive the OAA but stop receiving the SWC. In order to keep the same number of SWC beneficiaries, the SWC is reassigned using a probabilistic model that maintains the same targeting level by decile.
[158] The simulations are based on the 2019 Socioeconomic Household Survey.
[159] One other way to not discourage formal job take-up is to introduce gradual, rather than sudden, withdrawal of benefits for beneficiaries who become formally employed or disregard part of labor income.

the case of SWC improved targeting means maintaining existing coverage levels but covering a larger proportion of poorer households by excluding richer households. The reform scenarios do not restrict the receipt of either the OAA or SWC at the individual level. Instead, they allow for the overlap present in the 2019 survey data. Since the 2022 eligibility criteria for the SWC disqualify individuals from receiving the benefit if they are social welfare recipients, simulations were also conducted including the removal of the overlap between the SWC and the OAA at the individual level; the removal of the overlap leads to greater poverty and inequality reduction in each reform scenario.[160] The design and targeting of each scenario, its cost and impacts on poverty and inequality are presented in Table 6-2 and summarized below. The impact on poverty by age group is shown in Table 6-3.

- **OAA reform scenario 1 ("poverty line"):** raise benefit level to poverty line (THB 2,329 per month[161]) for all existing beneficiaries
- **OAA reform scenario 2 ("flat 1,250"):** raise benefit level to THB 1,250 per month for all existing beneficiaries
- **OAA reform scenario 3 ("two-tier"):** raise benefit level to THB 2,000 per month for beneficiaries in B40 and maintain benefit at current levels for those in T60
- **OAA reform scenario 4 ("tapered"):** taper benefits by income quintile (THB 2,000 for quintile 1, THB 1,500 for quintile 2, THB 1,000 for quintile 3, THB 500 for quintile 4 and remove benefits for quintile 5)
- **SWC reform scenario 1 ("30 percent"):** raise benefit levels to 30 percent of poverty line (THB 700 per month)
- **SWC reform scenario 2 ("targeting"):** improve targeting for SWC with current benefit and coverage levels
- **SWC reform scenario 3 (30 percent with targeting"):** improve targeting for SWC with current coverage levels but benefit raised to 30 percent of poverty line (THB 700 per month)
- **Current emergency response ("fuel subsidies"):** diesel price support (THB 5.99 per liter excise removed, THB 4 per liter subsidy applied (net THB 10 per liter change)

304. The most cost-effective OAA reform is tapering benefits by income but a two-tier option has similar outcomes and may be politically and technically easier to implement. The largest impacts on poverty and inequality come from raising OAA benefit levels to the poverty line for all existing beneficiaries (OAA reform scenario 1), reducing poverty by 2.7 points and inequality by 1.5 points (as measured by the Gini Index).[162] However, this would require an additional THB 206 billion or 1.2 percent of 2019 GDP, at a cost of THB 76.5 billion per percentage point of poverty reduced. Tapering benefits according to income (OAA reform scenario 4) is the most cost-effective reform, costing just THB 33 billion per point of poverty reduced.[163] At THB 74 billion or 0.4 percent of 2019 GDP, it would reduce inequality by 1.3 points and poverty by 2.2 points.[164] However, having four tiers of benefits (any existing beneficiaries predicted to be in quintile 5 lose their benefits) would likely be difficult to implement in practice, especially given high informality; its implementation may also raise political economy concerns since the benefit would be entirely removed for quintile 5. The simpler version of increasing benefits to THB 2,000 for existing beneficiaries predicted to be in the bottom 40 percent of households (applying the targeting outcome shown in Box 6-2) and leaving other benefits as is (OAA reform scenario 3) has almost the same impacts at only a slightly total higher cost (THB 91 billion) and cost per point of poverty reduced (THB 41 billion), while having the merits of being simpler to implement and not reducing benefits for any existing beneficiaries. Even a simple

[160] As an example, under the reform scenario with 10% VAT, no exemptions, increase OAA (tapered) and increase SWC with improved targeting, removing the overlap and reassigning the SWC using a probabilistic model would lead to a reduction in inequality of 2.74 ppts and the reduction in poverty of 4.46 ppts; this is in contrast to a 2.88 ppt reduction in inequality and a 3.66 ppt reduction in poverty when the overlap from the survey data is maintained. The two simulations have the same fiscal cost.
[161] US$5.5/day (2011) PPP poverty line.
[162] For the population ages 60+, which is the target population of the OAA, poverty would fall by 5.35 ppts versus the status quo and by 5.51 ppts if the SWC is removed from current OAA recipients and reallocated such that coverage and targeting remains the same; this reallocation of the SWC further reduces poverty among those aged 60+ since many elderly live in households with younger adults.
[163] In the simulation, an imperfect targeting of the withdrawal is applied: 25 percent of quintile 1 receive THB 1500, while 75 percent receive THB 2000; 25 percent of quintile 2 receive THB 2000, while 50 percent receive THB 1500, 25 percent receive THB 1000, and so on.
[164] For the population ages 60 poverty would fall by 4.52 ppts versus the status quo and by 4.60 ppts if the SWC is removed from current OAA recipients and reallocated such that coverage and targeting remains the same.

increase of benefits to THB 1,250 for all existing beneficiaries (OAA reform scenario 2) is more cost-effective (THB 55 billion per point of poverty) than increasing benefits to the poverty line, as many existing beneficiaries have some income and therefore do not require a benefit equivalent to the poverty line to escape poverty.

305. There is also potential for high-impact reform to the SWC, including at no extra cost through improved targeting. Increasing benefits to 30 percent of the poverty line for existing SWC beneficiaries (SWC reform scenario 1) would cost relatively little per percentage point of poverty reduced (THB 38 billion). This reform would cost THB 72 billion (0.4 percent of 2019 GDP) and reduce poverty by 1.9 points and inequality by 0.9 points. Alternatively, more modest impacts (0.5 points of poverty and 0.1 points of inequality) can be achieved at no extra cost if the targeting improvements outlined in Box 6-2 are achieved (SWC reform scenario 2).[165] Improving both targeting and benefit levels (SWC reform scenario 3) results in the most cost-effective outcome of any of the OAA and SWC scenarios evaluated (THB 24 billion per percentage point of poverty reduced), costing the same as scenario 1 but reducing poverty by 3.0 points.

306. The recommended set of OAA and SWC reforms together would cost an additional 0.9 percent of GDP and reduce poverty by 4.5 points. If the tapered OAA reform is combined with the improved SWC targeting and increased benefit levels, the total cost would be THB 146 billion (0.86 percent of GDP) but would reduce poverty by 4.5 points and inequality by 2.4 points. This poverty reduction is around nine times more than that achieved by current diesel price support policies, at around the same cost. The reduction in excise and subsidized price fluctuates in cost depending on the international price for oil but is estimated at an average of THB 10 per liter or a total cost each month of THB 133 billion (0.79 percent of GDP), yet reduces poverty by only 0.5 points and in fact *increases* inequality slightly by 0.1 points as more of the benefits are consumed by richer households. Even the least cost-effective reform modelled here (OAA benefits at the poverty line) is around four times more cost effective than fuel subsidies. Chapter 7 looks further at how these social assistance reforms can be combined with tax reforms to increase net fiscal revenues while reducing poverty and inequality.

Table 6-2: Fiscal and distributional impact of increasing State Welfare Card and Old Age Allowance benefits and improving targeting

	Impact				
	Fiscal (THB bn)	Inequality (Gini)	Poverty (percentage points)	Cost per point of poverty (THB million)	Fiscal (percent of 2019 GDP)
OAA reform scenario 1: Raise OAA to poverty line (THB 2,329/month)	-205.7	-1.50	-2.69	76.48	-1.22%
OAA reform scenario 2: Raise OAA to THB 1250/month	-75.3	-0.64	-1.36	55.17	-0.45%
OAA reform scenario 3: OAA bottom 40% - THB 2000/month, top 60% keep baseline OAA	-91.2	-1.23	-2.21	41.34	-0.54%
OAA reform scenario 4: OAA tapered (from THB 2000 to 0, by quintile)	-73.6	-1.26	-2.20	33.48	-0.44%
SWC reform scenario 1: Increase SWC to THB 700, or 30% of poverty line	-71.7	-0.89	-1.89	37.99	-0.42%
SWC reform scenario 2: Improved targeting of SWC	-1.2	-0.13	-0.48	2.50	-0.01%
SWC reform scenario 3: Improved targeting of SWC and increase to 30% of poverty line	-71.8	-1.20	-3.02	23.77	-0.43%
OAA scenario 4 and SWC scenario 1: Increase OAA (tapered) and SWC	-145.3	-2.08	-3.64	39.96	-0.86%
OAA scenario 4 and SWC scenario 3: Increase OAA (tapered), increase SWC with improved targeting	-145.5	-2.38	-4.51	32.27	-0.86%
Current emergency response ("fuel subsidies"): 10 THB price reduction of diesel	-132.9	0.15	-0.48	276.24	-0.79%

[165] A very small increase in budget of THB 1 billion is estimated due to the poorer mix of families under improved targeting being eligible for higher average benefits under the existing benefit rules.

	Impact				
	Fiscal (THB bn)	Inequality (Gini)	Poverty (percentage points)	Cost per point of poverty (THB million)	Fiscal (percent of 2019 GDP)
10% VAT, no exemptions, increase OAA (tapered) and increase SWC	99.5	-2.42	-2.65	-37.52	0.59%
10% VAT, no exemptions, increase OAA (tapered) and increase SWC with improved targeting	99.4	-2.74	-3.66	-27.14	0.59%

Source: World Bank staff simulations based on 2019 SES data.

Table 6-3: Poverty impact of increasing State Welfare Card and Old Age Allowance benefits and improving targeting by age group

	Impact on poverty by age group (percentage points)		
	0-17	18-59	60+
OAA reform scenario 1: Raise OAA to poverty line (THB 2,329/month)	-3.32	-1.42	-5.35
OAA reform scenario 2: Raise OAA to THB 1250/month	-1.54	-0.65	-3.00
OAA reform scenario 3: OAA bottom 40% - THB 2000/month, top 60% keep baseline OAA	-2.68	-1.14	-4.47
OAA reform scenario 4: OAA tapered (from THB 2000 to 0, by quintile)	-2.64	-1.13	-4.52
SWC reform scenario 1: Increase SWC to THB 700, or 30% of poverty line	-2.72	-1.49	-2.19
SWC reform scenario 2: Improved targeting of SWC	-0.96	-0.36	-0.43
SWC reform scenario 3: Improved targeting of SWC and increase to 30% of poverty line	-4.76	-2.31	-2.99
OAA scenario 4 and SWC scenario 1: Increase OAA tapered and SWC	-4.94	-2.42	-5.60
OAA scenario 4 and SWC scenario 3: Increase OAA (tapered), increase SWC with improved targeting	-6.71	-3.11	-5.90
Current emergency response ("fuel subsidies"): 10 THB price reduction of diesel	-0.78	-0.42	-0.39
10% VAT, no exemptions, increase OAA (tapered) and increase SWC	-3.27	-1.52	-4.96
10% VAT, no exemptions, increase OAA (tapered) and increase SWC with improved targeting	-5.25	-2.32	-5.33

Source: World Bank staff simulations based on 2019 SES data.

307. The modelling indicates that finding ways to improve the targeting of social assistance benefits could lead to significant additional gains in poverty reduction. Though targeting of social assistance is generally pro-poor, about half of social assistance benefits reach individuals who are not in the bottom 40 percent. But some progress is already being made on this front. In particular, changes to eligibility criteria for the State Welfare Card were introduced in 2022. These changes take into take into account income and financial assets at the household level and new criteria have also been introduced with respect to limits on the size of real estate and land asset holdings. A limit has also been placed on the size of loans held, and applicants may not have a credit card. Importantly, SWC beneficiaries cannot be current recipients of social assistance, which should eliminate the significant overlap between recipients of the SWC and the OAA, leading to more efficient poverty reduction, as shown by simulations using 2019 Households Socioeconomic Survey data. These are promising changes that may lead to lower inclusion errors for this particular benefit, though it may also be necessary to ensure that the asset filters do not lead to significant exclusion errors. At the same time, there were more than 14.6 million eligible applicants in 2023. It will be important to assess the incidence of inclusion and exclusion errors of the latest round of SWC targeting using household survey data when available. The Old Age Allowance could also benefit from some level of means testing, given that a significant share of the fifth quintile receives this benefit. Box 6-2 provides some recommendations for how targeting could be further improved in Thailand.

Box 6-1: Experience from around the world on effectiveness of public spending on social protection and impacts on human capital accumulation

Impact evaluations of cash transfers generally show that – contrary to common misperceptions that beneficiaries will misuse benefits or become permanently dependent on "handouts" – using money to meet basic needs leads to positive impacts on household welfare, productive work, and long-term growth via human capital formation, among others. For example, it is estimated that $1 worth of cash transfers injected in local economies generates between US$0.3 – US$2.6 (e.g., Ethiopia, Ghana, Kenya, Lesotho, Malawi, Zambia and Zimbabwe). Extensive evidence shows that cash transfers provided while children are in utero and during early childhood boost subsequent learning, health, nutrition, cognitive and socio-emotional skills, and even earning potential as adults (e.g., Brazil, Cambodia, Colombia, Egypt, Madagascar, Nicaragua, South Africa). Cash transfers can also help spur entrepreneurship, and help recipients to acquire work experience and render useful services. In order to harness the effects of cash transfers, an increasing number of productive inclusion programs provide a more integrated package of cash, assets (e.g., livestock) and trainings that can boost self-employment, consumption and investment. And where labor demand is low, public works can provide temporary jobs in productive labor-intensive activities (e.g., climate-smart agriculture in the Sahel) or social services (e.g., childcare for working mothers in urban areas).

Another function of cash transfers is facilitating job transitions and skills acquisition. As countries embark on structural reforms for competitiveness, cash transfers can also offset the private costs of labor reallocation and reskilling, especially when connected with other programs like active labor market policies (e.g., Argentina, Ethiopia). Cash transfers help enhance resilience to shocks by households and communities efficiently, making them an important instrument in countries that are highly vulnerable to climate shocks such as Thailand. In Ethiopia, Kenya and Somalia, regular and timely cash transfers reduce the need for post-crisis emergency assistance, including saving US$2.3 – US$3.3 worth of relief aid for every $1 of cash transfers invested. Finally, cash transfers can reduce violence and improve psychological wellbeing. Evidence from Bangladesh, Ecuador, India and Mali shows that cash transfers can reduce intimate partner violence within households, decrease depression among women, and bolster self-confidence.

Source: Gentilini, Ugo, personal communication

Box 6-2: Improving targeting of social assistance in Thailand

Targeting of both major social assistance programs, SWC and OAA, is progressive, with a greater coverage of poorer households than richer ones. Nonetheless, targeting outcomes could be improved, allowing greater redistribution for the same budget. This box briefly summarizes the improved targeting assumptions used in the simulations for Chapters 6 and 7 and potential ways to improve targeting in practice.

The SWC covers 19 percent of the population. Of the poorest 20 percent of people by income (quintile 1), 35 percent receive SWC, compared to just 3 percent of the richest 20 percent (Figure Box 6-2-1). While the program clearly covers more poor than rich, many poorer households remain excluded while many non-poor households are included (for example, nearly one in five of the middle quintile receive SWC). Perfect targeting would mean that all of quintile 1 is covered and no one in any other quintile. However, perfect targeting would mean knowing the income of the entire population and being able to select the poorest to receive benefits. In reality, with much of Thailand having informal employment and incomes which are not observed, the income of most households can only be estimated. This is the case in most non-OECD countries. For an improved SWC scenario, the total program size is kept constant (19 percent of the population) but coverage of quintiles 1 and 2 is improved while those of richer quintiles are reduced; the targeting outcomes of a similar sized program in the Philippines (the 4P program) are used as a benchmark. The 4P program covers 22 percent of the population with a greater coverage of quintile 1 and quintile 2 than SWC (51 percent and 35 percent, respectively) and less of quintile 5 (just 1 percent). An improved targeting profile is simulated in Figure Box 6-2-2 which is more closely aligned with the outcomes of 4P.

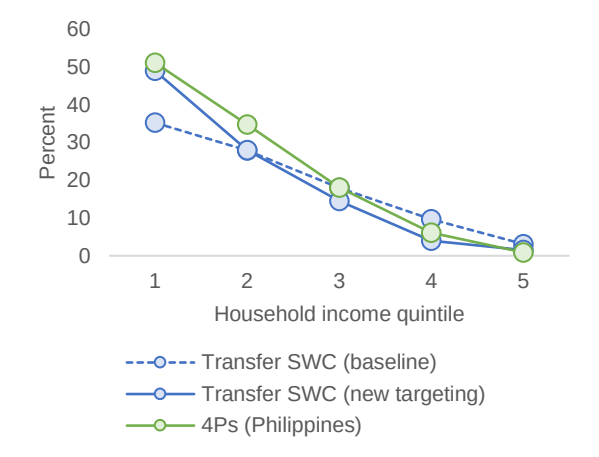
The simulated targeting improvements for OAA are slightly different than for SWC. OAA covers 61 percent of the population aged 60 years and older. To improve budget effectiveness, Chapters 6 and 7 simulate concentrating benefits on a smaller number of beneficiaries while trying to maintain coverage of poorer people. In this scenario, coverage is

Box 6-2: Improving targeting of social assistance in Thailand

capped at 29 percent of those aged 60 years or older and is targeted at poorer households. The improved targeting simulation starts from a benchmark proxy-means test example from a recent major work on targeting (Grosh, Leite, Wai-Poi and Tesliuc 2022) which has a coverage of 30 percent. Small improvements are made over this benchmark to reflect the potential in Thailand to use administrative data to improve targeting (see below).

Figure Box 6-2-1: Improved SWC targeting outcomes are simulated in line with a similar program in the Philippines

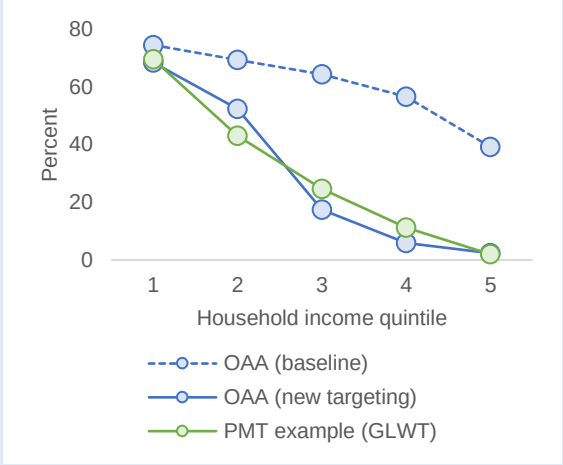
(Program coverage by household income quintile)



Source: 2019 SES and World Bank calculations (Thailand); Family Income and Expenditure Survey 2013 (Philippines)

Figure Box 6-2-2: Improved OAA targeting outcomes are simulated based on recent international work

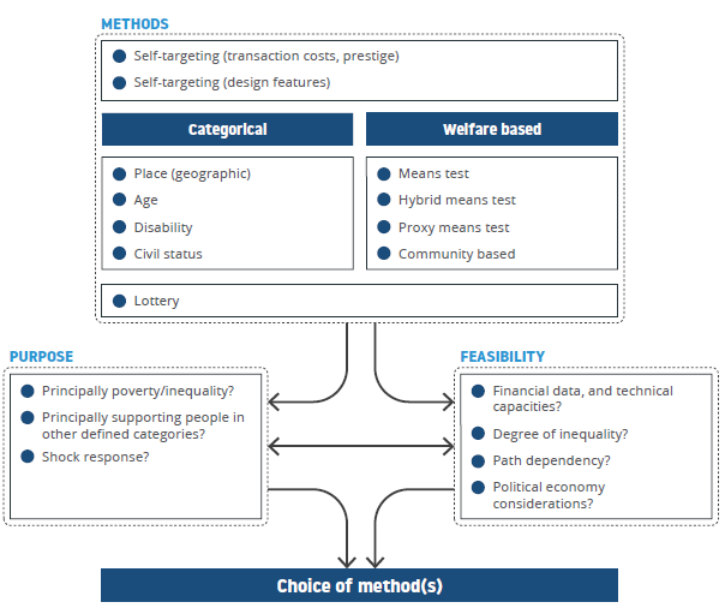
(Program coverage by household income quintile)



Source: 2019 SES and World Bank calculations (Thailand); PMT example from Grosh, Leite, Wai-Poi and Tesliuc (2022)

How can targeting be improved in Thailand? When individual and household income is not directly observed, there are a range of different methods which can be adopted –with some error– to determine eligibility for social assistance. A recent review of international targeting experience suggests a number of lessons (Grosh, Leite, Wai-Poi and Tesliuc 2022). First, there are several different targeting methods and no strict ranking between them. In fact, often countries use a mix of methods to best target programs. Whatever method(s) chosen, the mix needs to be customized to the country and program-specific context, considering institutional capacity, data availability, program and policy objectives and budgets (Figure Box 6-2-3).

Figure Box 6-2-3: How to best target social assistance depends on both policy objectives and the country context



Source: Grosh, Leite, Wai-Poi and Tesliuc (2022).

Box 6-2: Improving targeting of social assistance in Thailand

Second, shocks and changes in household welfare over time are important considerations for targeting. Households move in and out of poverty all the time due to illness and accident, job loss or other misfortune. Shocks can also happen at the community, regional or national level, as COVID-19 and the current food-fuel price shocks from the war in Ukraine most vividly demonstrate. Different targeting methods differ in their ability to take shocks into account. An Adaptive Social Protection (ASP) framework would not only account for shocks in its targeting methods, it would also consider what types of shocks it prepares for; who should be prioritized for assistance when they happen (e.g. ,those already poor, those made poor by the shock or those who lose the most even if they do not fall below the poverty line); whether the response should be broad and fast but less targeted, or more narrow and focused but require greater ex-ante pre-identification; and to what extent risks should be managed ex-ante with mandated or facilitated insurance programs. Targeting methods will vary with the answers to these questions.

Third, big data and new technologies can help improve targeting. Recent advances in matching administrative data allow richer households to be screened out of social assistance programs ("affluence testing"). For example, people with high formal incomes can be identified through personal income tax returns and social security contributions, and removed from beneficiary lists. Eligibility thresholds can also be applied for households with observed wealth above certain levels (such as in property and vehicle registration databases).

Finally, good delivery systems are critical for reaching the poor and minimizing targeting errors. Regardless of which targeting methods are used, good targeting outcomes will depend upon good implementation of systems. This in turn will require a focus on and investments throughout the delivery system:

- Improve outreach and communication so that the intended people know what programs they are eligible for and how to access them.
- Reduce transaction costs (time and travel).
- Develop dynamic intake processes so that potential beneficiaries can apply at any stage (and as their need arises) rather than waiting years for mass recertification.
- Develop regular re-certification or exit processes based on program objectives and expected changes in household welfare.
- Prepare for shocks, with operational guidelines and financing outlined in advance.
- Invest in systems and staff capacity, as well as data management and data protection.
- Use a case management approach in order to tailor social benefits and services to specific household needs.

308. Investing in effective delivery systems can also lead to a more efficient allocation of resources. Integrating different programs and databases, including program intake, eligibility criteria, and benefit delivery would allow for better targeting and ultimately a more efficient allocation of resources. In response to the COVID-19 pandemic Thailand was able to quickly integrate existing data and agile, on-line applications to create a kind of instant social registry. Thailand successfully leveraged a robust and universal digital ID, sophisticated and interoperable digital platform, and a number of administrative databases to filter eligibility for new cash transfer programs. Such building blocks can help Thailand develop a 'virtual' or 'federated social registry' that monitors the situation of households in normal times as well as crises. In the long run, investing in effective delivery systems can prove to be cost effective, as has been the case in several countries (Box 6-3).

Box 6-3: Effective delivery systems for social protection: significant investments that pay off through increased efficiency

Investments in effective delivery systems for social protection systems can represent substantial up-front costs that are difficult to track and quantify. Examples of ways in which delivery systems for social protection programs can be made more efficient include the setup of social registries, investments in management information systems, introduction of digital payments, and increased outreach to vulnerable groups. In particular, social registries collect information on the socioeconomic situation of poor or vulnerable households, thereby providing a central mechanism to identify potential program beneficiaries; they rely on management information systems and can be

Box 6-3: Effective delivery systems for social protection: significant investments that pay off through increased efficiency

especially important tools for shock responsive social protection. Costs involved in setting up social registries include human resources, software and IT infrastructure development, maintenance and system upgrades, hardware procurement, training and capacity building, help desk staffing, and administration facilities, among others. In general, delivery system investment costs can be spread across various stages of the delivery chain,[a] across central and local governments and across various donors. In addition, costs can be spread out over time, though they may be more significant in the short run.

Nonetheless in the long-run, investments in delivery systems facilitate planning and coordination. leading to administrative cost savings and more efficient delivery and, ultimately, greater impact of social protection programs. Information systems and tools used across programs to identify and enroll beneficiaries, make payments, and manage information not only improve the user experience and save time and costs on the part of applicants and beneficiaries, but they can also lead to economies of scale and help tackle fraud and error. This was the case in Brazil, where the unemployment insurance program was able to block US$385 million in erroneous payments by cross-checking data against the National Database of Social Information and in Romania, where cross-checks across various national databases (tax administration, social assistance, health care, pensions, disability) led to the recovery of about US$1.65 million. Reduction of paperwork can also lead to significant savings in processing time. In Turkey, investments in information systems led to a reduction in the time needed to process applications from registration to enrollment decisions by 20 percent, generating savings of one million full-time equivalent person days per year and overall savings of $39 million per year, significantly higher than the US$13.1 million invested to develop the system (World Bank 2022a). Finally, in Colombia, electronic collection of information for potential beneficiaries under the System of Identification of Social Program Beneficiaries (SISBEN) reduced the costs of updating and registering new families by almost 50 percent (ibid.).

Notes:
Stages across the delivery chain include outreach; intake and registration; assessment of needs and conditions, eligibility and enrolment, determination of benefits and service package; notification and onboarding; provision of benefits and/or services; beneficiaries compliance, updating and grievances; and exist decisions, notifications, and case outcomes (Lindert et al., 2020).

6.5 Conclusion and recommendations

309. Thailand's social protection system has demonstrated its importance as a means of reducing poverty and inequality and helping households cope with risk. The government responded swiftly and effectively when the COVID-19 crisis hit, reaching over 80 percent of households with some form of assistance, However, prior to the pandemic, this assistance was largely inadequate and large segments of the population lack access to social insurance; leakage of social assistance benefits to upper quintiles remains significant; and the fragmented nature of the social protection system results in inefficiencies in intake, take-up, and delivery of benefits. Moreover, overall social assistance spending prior to the pandemic remained at low levels, reflecting benefit levels that were also low, in absolute terms and compared to the poverty line.

310. Higher social assistance spending, more in line with countries at a similar income level, would have a greater impact on poverty and inequality in Thailand and can be financed in ways that are consistent with overall fiscal sustainability (as shown in Chapter 1). The simulations of a modest increase in the two main social assistance programs demonstrate this potential impact and show that these are much more effective interventions than others that purport to help the poor but disproportionately benefit higher income people. Moreover, properly designed social assistance (and direct transfers in particular) has been shown to have positive impacts on productive work and long-term growth via human capital formation.

311. Moving away from blanket subsidies and exemptions and getting the maximum impact from social assistance requires better targeting. Recently, eligibility criteria for the State Welfare Card have been revised to consider the assets of the household, not just the individual. Given that poverty is a household phenomenon this is a step in the right direction. The introduction of a greater number of asset filters should help to reduce inclusion errors, provided that

administrative databases, such as cadastre data, are up to date. Combining such asset and means tests with a proxy-means test, however, could potentially better capture informal income thereby further reducing inclusion errors. Designing and implementing a proxy-means test for Thailand could be considered as a medium-term solution for improving targeting in the country. In the short-term, increased outreach and communication, facilitating intake processes and reducing transaction costs for beneficiaries could reduce exclusion errors and contribute to improved targeting; the introduction of case management could be considered as a longer-term solution. The 2022 eligibility criteria for the State Welfare Card states that individuals cannot be currently receiving social assistance. This is also a step in the right direction toward the elimination of overlaps between social benefits; in particular, the OAA and SWC have significant overlap and simulations indicate that making current OAA recipients ineligible for the SWC while maintaining the number of SWC direct beneficiaries at roughly 19 percent of the population would lead to greater poverty reduction.

312. Better targeting mechanisms would allow for much more cost-effective social assistance spending, limiting the fiscal impact of increases to benefit amounts while maintaining poverty reduction gains. This report recommends considering the following:

- An increase of the Old Age Allowance (OAA) to THB 2000 per month for the poorest beneficiaries, with the amount of the allowance tapering (or being maintained at current levels) for higher income recipients. Maintaining the benefit amount at current levels for higher income recipients may be desirable to the extent that there are political economy constraints associated with targeting the OAA more tightly.

- An increase of the State Welfare Card benefits to 30 percent of the poverty line (THB 700 per month), and an improvement in the targeting of these payments. An improvement in targeting which increases the coverage of the bottom 40 percent (while keeping the overall number of beneficiaries constant) could lead to a significant additional impact on poverty reduction (over 1 ppt), over and above the impact of increasing the benefit amount.

313. In the medium term, greater investments in delivery systems and reducing the fragmentation of the social assistance system would also increase the efficiency of spending. This includes integrating program databases and intake of beneficiaries, consolidating eligibility criteria and delivery of benefits (including reduction of overlapping benefits) and introducing case management, as well as establishing a federated social registry that would enable the social protection system to become more shock responsive. This is particularly important in light of Thailand's significant exposure to natural disasters that have a greater impact on the livelihoods of the poor and vulnerable. In terms of delivery of benefits, Thailand could consider changing the way benefits are delivered under the State Welfare Card towards electronic delivery of cash into beneficiaries' bank accounts, as was done with COVID-19 top-up payments in 2020. Another alternative could be to issue electronic prepaid cards or mobile wallets that restrict payment for, say, alcohol and tobacco but otherwise allow recipients to spend their benefits as they see fit, rather than being restricted to use in specified shops, which may be far away or may not necessarily fully meet their needs. Such changes would increase efficiency of the program as it would allow beneficiaries to better meet their spending needs.

314. Regarding public pensions, parametric reforms could improve both the fairness and the financial sustainability of existing schemes, and increase the overall coherence of what is currently a fragmented system. The current system is marked by high inequities and fragmentation, and there are concerns regarding long-term fiscal sustainability. Several reforms have already been proposed by the SSO but the major fiscal burden will continue to be due to much more generous civil service pensions. The following reforms are recognized as international good practice and are appropriate for both the SSF and the defined benefit scheme for public sector workers:

- Increase retirement age gradually to reach 65 in the long run, with the possibility of early retirement and actuarially fair reductions

- Shift to lifetime earnings as the base for calculation of the initial pension value

- Price indexation of pensions in progress

- Indexation of the ceiling for pensionable earnings to wage growth (this is relevant for the SSO).

315. These measures would make each of the schemes more equitable and sustainable. The retirement age increase would reduce intergenerational inequities as life expectancy continues to increase and would equalize public and private sector retirement ages. Moving from end of career to a lifetime average wage base eliminates the inherent bias toward high-skilled workers who typically have steeper age-earnings profiles. It also reduces average pensions and improves the long-run finances of the scheme. Automatic price indexation is the rule in the vast majority of OECD countries because it ensures that pensioners do not lose purchasing power but reduces the arbitrary differences between cohorts that result from discretionary (and often politically motivated) adjustments to pension values. The real value of SSF benefits will diminish rapidly if the ceiling for pensionable earnings is not indexed and remains constant in nominal terms. Previous analysis has shown that absent reforms, wage ceiling indexation could see SSF cash-flow deficits emerge in the 2040s, with reserves exhausted in the following decade. In order to ensure the sustainability of the SSF scheme, therefore, parametric reforms including increasing the retirement age and the contribution rate (which is low by international standards) are required, in combination with indexation reforms to improve the adequacy and equity of the pensions provided.[166]

316. Finally, making changes to the existing pension schemes for the formal sector will have limited impact as long as coverage remains low. The voluntary schemes have not increased coverage of the informal sector significantly, rising by a little over one percentage point per year over the last decade. At the current rates, Thailand will have reached European levels of demographic aging but most of the elderly will not be eligible for a pension that prevents a sharp decline in living standards after retirement. Countries that have managed to expand pension coverage quickly, such as China and Korea, have done so with much greater incentives in terms of matching contributions and in some cases, even paying the full contribution for the poor or unemployed. Just as in the case of Thailand's pioneering approach to achieving universal health coverage twenty years ago, a bold policy is required to achieve universal pension coverage. While this would require a significant fiscal commitment, it would also help offset the need for future spending on the OAA program as the population ages and it could increase household and therefore national savings as long as the program was not financed by borrowing. Once again, an improved ability to target and to differentiate between the heterogeneous informal sector would allow for a more targeted approach to social insurance expansion.

[166] Palacios, R., and H. Jain. 2021. Pension Provision in Thailand. Washington, D.C.: World Bank. https://documents1.worldbank.org/curated/en/099350103222229818/pdf/P1720900cd169c0ac08f8106c5e056d5dbf.pdf

CHAPTER 7
RESPONDING TO CLIMATE CHANGE

Chapter 7: Responding to Climate Change

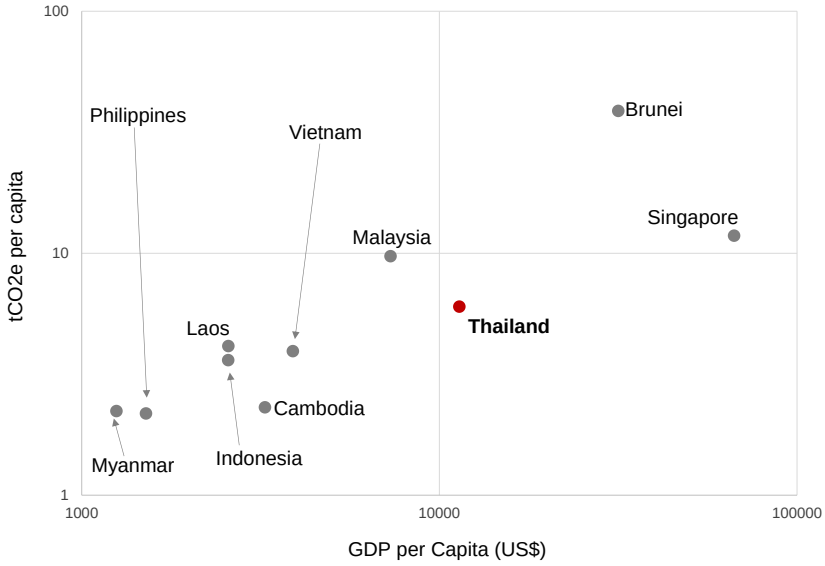
7.1 Introduction

318. This chapter introduces some of the risks to macro-fiscal stability that are posed by climate change and discusses how fiscal policy could address these risks. It examines various strategies for climate change mitigation and adaptation through a fiscal lens, assessing the possible implications for overall government spending and revenue collection. It concludes by providing recommendations to promote the adequacy, efficiency and equity of the government's fiscal policy response to the challenges posed by climate change. Broader issues around climate change in Thailand are not explored in this chapter but will be covered in future World Bank analytical support.

319. Thailand is highly vulnerable to climate change. Thailand is ranked as the third most vulnerable country in Southeast Asia to climate change, and the eighth most vulnerable country in the world. Its long coastlines, fragile agricultural system and susceptibility to extreme weather events make the country particularly vulnerable to climate change. As well as agriculture, the water and tourism sectors are particularly exposed to climate impacts, for example from increased occurrence of tropical storms, floods and droughts.

320. Thailand is not a large emitter of greenhouse gas emissions but in the absence of further policy actions its emissions will increase as its economy grows. Thailand's CO_2 emissions accounted for less than 0.9 percent of the global total in 2018.[167] Its per capita emissions are comfortably below the global average but are higher than those in several other ASEAN countries, reflecting higher income levels (Figure 7-1). Thailand's emissions per unit of GDP are also above the global average rate. At COP27, Thailand has pledged to reduce greenhouse gas emissions by 30-40 percent below a business-as-usual baseline level by 2030, which allows only a small increase in emissions over 2020-2030. Current uncertainties around COVID-19 recovery and the war in Ukraine mean it is not clear whether current policies are adequate to stabilize and reduce emission levels; additional policies may still be needed to meet the NDC targets.

Figure 7-1: Per Capita GDP and GHG Emissions in ASEAN Countries, 2018



Source: CAIT and WDI databases.

Note: Emissions levels exclude land use, land use change and forestry emissions.

321. Fiscal policy can play a critical role in reducing Thailand's contribution to climate change. Ambitious climate change mitigation can be achieved by combining well-designed tax policies that raise the price of carbon with regulatory and other non-tax instruments. The carbon prices assessed in Section 7.5 could raise revenues worth 1 percent of GDP; broader measures could potentially raise revenues worth at least 2 percent of GDP. The revenues raised from these

[167] CAIT database, see http://cait.wri.org/

instruments could be used to support other climate policies, including investments in measures to adapt to a changing climate. Fiscal policy could also facilitate the transition to a greener, low-carbon economy by providing direct investment in climate-smart infrastructure, such as renewable power generation and supporting research and development (R&D) in climate-smart technologies.

322. Fiscal policy will also need to play a role in adapting to climate change in Thailand. Climate change adaptation requires minimizing damage from climate-related natural disasters and reducing the costs of chronic impacts like loss of agricultural productivity. Climate adaptation measures could reduce some, but not all, of the associated costs of a changing climate. Many climate adaptation measures include large infrastructure projects, for example to provide protection against flood damage. Such infrastructure is usually regarded as a 'public good' because of the difficulty in identifying clearly who will benefit from it. Climate adaptation would therefore necessitate an increase in government spending, which would need to be accommodated by Thailand's overall fiscal framework.

323. Environmental fiscal reform could help Thailand meet the challenges posed by climate change and the need to reduce greenhouse gas emissions, while relieving pressure on public budgets. This chapter explores the current policy framework and estimates the likely levels of public spending that will be required to reduce emissions within Thailand and to adapt to the effects of a changing climate. It demonstrates the potential to shift more of the tax burden to activities that cause environmental harm, specifically through the release of greenhouse gas emissions. It shows that such a shift in taxation need not lead to economic costs, and would result in higher quality economic growth, with greater protection for the natural environment and improvements to air quality in urban areas. Environmental taxes could help fund actions to adapt to the effects of a changing climate, and investments in further decarbonization measures to meet Thailand's international commitments on emission reductions. However, the measures assessed in this chapter would not be sufficient to fully cover the costs of responding to the climate challenge.

7.2 Thailand is vulnerable to climate change

324. Thailand is especially vulnerable to the effects of climate change because of its long coastlines, fragile agriculture system and susceptibility to extreme weather events.[168] Examples of extreme weather events include tropical storms, floods and droughts. Climate change and variability is already causing severe impacts on Thailand's economy and its ecosystems. Estimates of the damage to the economy by mid-century range from 1 percent of GDP to 44 percent of GDP[169] (compared to a scenario with no climate impacts), indicating the high level of uncertainty around future climate impacts. Future World Bank analysis will include a detailed estimate of climate damages, based on Thailand's specific circumstances. However, potential costs in the range of 10-20 percent of GDP seem plausible, given previous World Bank analysis in nearby countries and Thailand's vulnerability to climate shocks.

325. These climate vulnerabilities could have direct impacts on macro-fiscal sustainability, both in the short and long terms. Although there is no comprehensive study of current climate costs to Thailand, there are several different channels through which economic production could be reduced through climate change. Damage to physical capital and infrastructure will reduce production. Labor productivity may be reduced due to increased temperatures or greater incidence of disease or illness. Some economic activities, including tourist activities, may lose international competitiveness. Any lost production will lead to reduced tax revenues and there may also be needs for increased public spending. For example, resources will be needed to repair or replace damaged public assets and compensation may be needed for owners of damaged private assets. Healthcare costs may also increase. Additional uncertainty could negatively impact investment levels, economic growth, asset prices and the government's credit rating.

326. The costs of flooding alone in Thailand are high. Since 1990, almost every province in Thailand has experienced flooding. The 2011 floods caused 680 deaths and resulted in economic damages to property worth an estimated THB 1.43 trillion[170] (12.6 percent of GDP). More than 5.5 percent of Thailand's land mass was under water at the time. Thailand's manufacturing and export sectors in Bangkok, Ayutthaya, Nakorn Sawan, Pathum Thani, and Samutsakorn were particularly

[168] https://climateknowledgeportal.worldbank.org/sites/default/files/2021-08/15853-WB_Thailand%20Country%20Profile-WEB_0.pdf
[169] https://web.stanford.edu/~mburke/climate/map.php; https://www.swissre.com/risk-knowledge/mitigating-climate-risk/economics-of-climate-change-impacts-for-asia.html
[170] https://openknowledge.worldbank.org/handle/10986/26862

affected. The Thai government lost an estimated 3.7 percent of tax revenues in 2011 and 2.6 percent of revenues in 2012 because of the flooding. The public sector faced THB 141 billion of losses to property and an estimated reconstruction bill of THB 388 billion (3.4 percent of GDP). Bangkok remains especially vulnerable to flooding, having suffered six other major flooding events since 1980, despite the introduction of flood control measures (Box 7-1). Although several flood prevention measures have since been taken in Bangkok, they have often ended up diverting water to neighboring areas and increasing their vulnerability.[171] Thailand's Third Biennial Update Report (TBUR) on climate change[172] notes that total rainfall is currently increasing despite a reduction in the number of rainy days, which increases the future risk of flooding. Rising sea levels will further increase the flooding risks.

327. Thailand is vulnerable to the effects of coastal erosion. A combination of sea level rise and changing weather patterns could further accelerate coastal erosion. The TBUR reports that about 600km (23 percent of Thailand's coastline) is affected by an erosion rate of one to five meters per year. The total loss of land is estimated at 2 km^2 per year, with a value of THB 6 billion (0.04 percent of GDP). Cities and economic activities in coastal areas are especially vulnerable to coastal erosion.

Box 7-1: Bangkok flooding

There is particular concern about the vulnerability of Bangkok and its perimeter provinces to the impacts of flooding and coastal erosion. Bangkok lies on the delta of the Chao Phraya River, approximately 25 km inland from the Gulf of Thailand. The area is less than 2 meters above sea level and sits on former marshy land that is subject to periodic flooding. In addition, Bangkok is sinking because of excessive underground water use and the weight of large-scale high-rise development, suggesting that permanent water incursion may become possible. The TBUR notes that Bangkok is one of the most vulnerable cities in the world to the effects of changing rainfall patterns, sea level rises and coastal erosion. In 2015, Thailand's National Reform Council suggested that Bangkok could be submerged within 15 years if preventative action was not taken. An academic study in 2019 suggested that much of the area could lie under water by 2050.[173] An estimated 12 million people could be displaced, with a substantial share of the people affected already living below the poverty level.[174, 175]

328. Thailand is also vulnerable to droughts and water shortages, with particularly adverse effects on the agriculture sector. Changes in weather patterns resulting from climate change are increasing the frequency of droughts and water shortages. Agriculture (which accounts for about 9 percent of GDP) is particularly vulnerable to water shortages, with highly water-intensive rice production especially susceptible. A lack of rainfall also contributes to the overuse of fresh water from aquifers, leading to subsidence and land sinking in areas such as Bangkok. Changes in weather patterns resulting from climate change are increasing the frequency of droughts and water shortages. Costs to the government in providing compensation (mainly to farmers) are expected to increase over time. In 2019, it was reported that the government provided a one-off payment of THB 25 billion (0.15 percent of GDP) to farmers to compensate directly for damage to crops from drought and flooding.[176] Further measures to support affected farmers were also announced with a cost of THB 60 billion (0.36 percent of GDP).

329. Other important economic sectors including tourism and manufacturing are also exposed to the impacts of climate change. Tourism, which is mainly located on coastlines and accounts for an estimated 12 percent of GDP, is vulnerable to flooding and coastal erosion. The manufacturing of goods for exports is concentrated in and around Bangkok and is therefore vulnerable to flooding. Water supply, although small in economic terms, provides a critical input to several other sectors (including agriculture and tourism). Careful management of water resources will be important in reducing

[171] https://documents1.worldbank.org/curated/en/866821468339644916/pdf/571100WP0REPLA1egacities01019110web.pdf
[172] https://unfccc.int/documents/267629
[173] https://www.nature.com/articles/s41467-019-12808-z
[174] https://www.imf.org/en/Publications/CR/Issues/2021/06/02/Thailand-2021-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-50192
[175] https://documents1.worldbank.org/curated/en/866821468339644916/pdf/571100WP0REPLA1egacities01019110web.pdf
[176] https://www.bangkokpost.com/thailand/general/1755944/struggling-farmers-get-compensation

subsidence and preventing low-lying coastal areas from sinking further but will become more difficult if the frequency of droughts increases.

7.3 The need for adaptation

330. There is already an urgent and pressing need in Thailand to adapt to the effects of a changing climate. The country has already taken some adaptation measures, for example in the preparations and responses to disasters laid out in the National Disaster Prevention and Mitigation Plan from 2015. Public spending on 'Environmental Protection', has increased from less than THB 2 billion in 2012 to THB 14.7bn in 2021 (0.1 percent of GDP, or 0.6 percent of total public expenditure). However, the climate threats that Thailand faces will continue to grow. The costs of adapting to a changing climate will increase further.

331. Thailand's National Adaptation Plan (NAP) is designed to meet the challenges of a changing climate.[177] The design phase of the NAP started in 2015 but the final version has not yet been submitted to the United Nations. The NAP aims to improve resilience in all sectors, to strengthen capacity and awareness, and to accelerate the development of research, knowledge, and technology. The NAP has identified six focus areas: Water, agriculture/food, tourism, public health, natural resources, and human settlements. In each focus area, the NAP consolidates national, local, and sectoral expertise to develop a strategy for managing the effects of climate change. Target indicators have been suggested in each case although they are not always quantified. Thailand's NDC summarizes the aims within each focus area (Table 7-1).

Table 7-1: Summary of Thailand's National Adaptation Plan

Focus area	Aims
Water resources management	Increase water security and reduce loss and damage from water-related disasters, by developing mechanisms for integrated water resources management and building adaptive capacity and climate resilience
Agriculture and food security	Maintain productivity and food security by increasing the ability to respond and manage risks in the agricultural sector
Tourism	Strengthen capacity towards climate resilience and sustainable growth by enhancing disaster management and climate risk reduction
Public health	Enhance the capacity of the public health system to manage health risks and reduce health impacts from climate change, by developing health impact surveillance and prevention mechanisms and enhancing access to good quality public health services
Natural resources management	Sustainably manage natural resources and biodiversity to respond to climate change impacts, by enhancing the conservation, rehabilitation and sustainable use of natural resources and biodiversity, and strengthening public participation
Human settlements and security	Enhance the capacity of individuals, communities and cities to adapt to climate change impacts in accordance with the local context, by developing mechanisms to manage climate risks and impacts

Source: Adapted from Thailand's NDC.

332. The management of water resources is a key component of Thailand's NAP that will need public funding. The frequency of floods and droughts, and the high human and economic cost associated with them, makes water management a priority in Thailand. Thailand has developed National Water Resources Management Strategies (2015-2026) and a 20-Year Master Plan on Water Resources Management (2018-2037). The plans include targets for improving the sustainable provision of high-quality water across the country, for example through improved infrastructure of water collection and storage. The plans also include additional infrastructure to reduce the impacts of high rainfall, for example through improving drainage systems and protecting riverbanks. In many cases it will be difficult to match the beneficiaries of the measures to the costs, so the adaptation measures are effectively public goods and a substantial public investment could be required.

333. A study from 2010 estimated the costs of protecting against flood damage in Bangkok at up to THB 56.9 billion[178] (0.4 percent of GDP in 2020). Such an investment would be one-off and would protect against what was

[177] http://t-plat.deqp.go.th/en/nap-0-en/nap-en-main/

[178] Figures updated to 2020 prices. See page 57 https://documents1.worldbank.org/curated/en/866821468339644916/pdf/571100WP0REPLA1egacities01019110web.pdf

previously described as a '1 in 100' year event, but which will become more common because of climate change. It involves a combination of early warning systems, physical assets like dikes and pumping systems, land use changes and information campaigns. A further THB 1.0 billion would be required annually for operational and maintenance costs. The measures would reduce the land area flooded by about half and the costs of flooding by a similar proportion.

334. The private sector has taken some adaptation measures to protect against future floods, reducing potential public adaptation costs. After the 2011 floods, the Industrial Estate Authority of Thailand revised its design criteria for prevention measures, including improving drainage, raising flood barriers and installing water monitoring and warning systems. Some food and beverage companies undertook climate risk scenario assessments to identify risks of flooding or water shortages among operating plants. More recently, large companies have been disclosing climate risks for the Task Force on Climate-Related Financial Disclosures (TCFD). Private sector adaptation measures make sense where the benefits to individual companies are clear. Further cooperation between the public and private sectors could potentially limit duplication of efforts and reduce future public costs.

335. Aside from the water management sector, the NAP proposes the development of new physical infrastructure. For example, in the tourism sector there are measures to develop new infrastructure to reduce environmental footprints. Some of the costs of new infrastructure may be borne by the private sector. However, as with flood prevention, it may be difficult to identify clearly the beneficiaries and therefore a substantial contribution from public budgets may be required.

336. World Bank analysis suggests that the cost of making new transport infrastructure climate resilient could be relatively modest, though retrofitting existing infrastructure would be more costly. The analysis suggests that the increase in costs of climate proofing the new transport infrastructure would be only an additional 1.4 percent on top of current spending on new transport infrastructure, which could reduce related climate damages by nearly 70 percent. If annual investment in transport infrastructure matches recommended estimates[179], the annual additional cost would be THB 2.9 billion each year, increasing over time in line with GDP growth. However, this figure assumes that resilience is only added to climate-exposed infrastructure; costs could increase by a factor of five if the resilience measures are not well-targeted.[180] It should also be noted that the cost of retrofitting existing transport infrastructure to make it climate resilient could be much higher than the cost of climate-proofing new infrastructure.

337. The NAP also includes many non-infrastructure measures that are aimed at building public and private sector capacity. For example, the development of hazard mapping and early warning systems that allow government officials and private companies to forecast and prepare for climate events is a common theme across the focus areas. Most of the focus areas also consider the development and roll-out of new climate-friendly management practices and new technologies. In addition, there are measures that aim to build support networks. In most cases, these measures will require public-sector coordination and, although some measures are relatively low-cost, coordination issues mean that they will require predominantly public funding. International support is already being provided for some initial activities in the agriculture sector.[181]

338. There are no specific cost estimates of Thailand's NAP available yet and costs are highly uncertain. The NAP is both ambitious and far-reaching, covering the critical sectors of Thailand's economy. The measures in the NAP that aim to improve infrastructure will have high up-front costs, at least some of which will require public funding. The measures that seek to improve coordination and management will have lower up-front costs, but increased public-sector involvement, for example in maintaining early-warning systems, would mean persistent long-run costs. There will also be additional public costs for climate-proofing other public investments that are not formally part of the NAP.

339. Drawing on global estimates, annual public adaptation costs will likely exceed 1 percent of Thailand's GDP by 2030. UNEP's *Adaptation Gap Report 2021* reports that developing countries may need to spend US$ 140-300bn each year

[179] See page 9 https://openknowledge.worldbank.org/handle/10986/31291
[180] https://openknowledge.worldbank.org/bitstream/handle/10986/31916/WPS8896.pdf?sequence=4&isAllowed=y
[181] https://www.adb.org/sites/default/files/project-documents/53099/53099-001-tar-en.pdf, https://www.fao.org/in-action/naps/en/, https://www.fao.org/in-action/scala/en

on adaptation by 2030[182]. The likely upper end of this range is equal to 1 percent of current GDP in the developing world; it is derived from a review of national and sectoral studies[183] that are then aggregated to get a global total. However, given Thailand's particular vulnerability to climate change, its adaptation cost as a share of GDP is likely to be higher. Furthermore, the UNEP report notes that, by 2050, the annual cost could increase further to 1.6 percent of 2020's GDP level. IMF analysis finds that the annual cost of making all infrastructure climate resilient by 2025 would be 1.6 percent of GDP on average for all emerging markets.[184] This analysis builds on previous World Bank work[185] and draws on engineering-based estimates of the costs of improving resilience[186]. The report also acknowledges Thailand as having 'above-median' adaptation costs. In this chapter we take costs of 1.6 percent of GDP as a median estimate for adaptation costs. Formal estimates of the benefits of the adaptation measures are not yet available, but a halving of the costs of climate damages (i.e. to 5-10 percent of GDP based on the rough estimate of damages above) is plausible. It is important to note that adaptation measures would not fully eliminate the need for compensation to farmers and the other public costs of climate change.

7.4 Thailand is taking action to reduce emissions

340. Thailand is not currently a major global emitter of greenhouse gases. In 2018, Thailand's greenhouse gas emissions accounted for 0.9 percent of the global total. Its emissions per capita are lower than the global average rate but its emissions per unit of GDP are higher than the global average rate. Although greenhouse gas emission levels in Thailand steadily increased over 1980-1995 and 2000-2013, over 2013-2019 they remained broadly flat (Figure 7-2). Total emission levels have fallen during the covid-19 pandemic but are likely to return to previous levels once the economy fully reopens.

341. The fiscal impact of reducing emissions levels depends on the choice of instruments used. As this chapter discusses, some measures to reduce emissions will have fiscal costs, while carbon pricing instruments could raise revenues. However, the potential loss of revenues from fuel excise duties is a long-term concern.

342. Industry, power, transport, and agriculture account for most of Thailand's GHG emissions. In 2018, the power sector contributed 21 percent of Thailand's total GHG emissions (Figure 7-2). Industry accounted for a 26 percent share, transport 18 percent and agriculture 17 percent. Remaining emissions are attributed to other energy production (7 percent) buildings (4 percent) and waste (6 percent). Most power sector GHG emissions are CO_2 and most agricultural emissions are methane and nitrous dioxide. Industrial emissions include a growing proportion from F-gases. Industry, the power sector, transport and agriculture all face different decarbonization challenges in the coming decades and the availability of technological options to reduce emissions varies substantially across these sectors.

[182] The range is based on uncertainties and the rate of climate change. The report suggests that more recent estimates are closer to the top end of the range. Thailand's cost is estimated by taking a simple GDP share and hence ignores specific national vulnerabilities, likely underestimating the actual cost. See https://www.unep.org/resources/adaptation-gap-report-2021

[183] See page 12 https://unepdtu.org/wp-content/uploads/2018/10/unep-gap-report-2016-web-6-6-2016.pdf

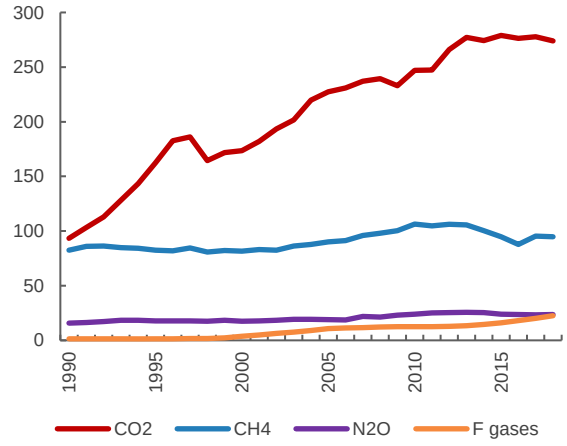
[184] https://www.imf.org/en/Publications/staff-climate-notes/Issues/2022/03/16/Macro-Fiscal-Implications-of-Adaptation-to-Climate-Change-512769

[185] https://openknowledge.worldbank.org/bitstream/handle/10986/31916/WPS8896.pdf?sequence=4&isAllowed=y

[186] This cost would include the measures to protect Bangkok and Thailand's transport system described earlier.

Figure 7-2: Structure of Greenhouse Gas Emissions in Thailand

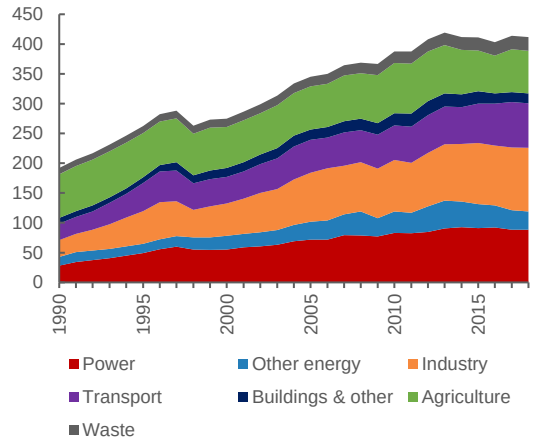
GHG emissions in Thailand, mtCO2eq



Source: EDGAR database[187].

Note: Excluding land use and land use change

Sectoral shares of total greenhouse gas emissions, 2018, mtCO2eq



Source: World Bank staff calculations, using the EDGAR database.

343. Thailand's greenhouse gas emission reduction measures so far have focused on the energy and transport sectors. Prior to 2020, Thailand's international climate commitments were underpinned by a Nationally Appropriate Mitigation Action (NAMA) roadmap that focused on the energy and transport sectors. The largest reported emission reductions have come from renewable electricity generation and the use of bioenergy for generating heat. There have likely been only small public costs from the measures so far.

344. Further measures to reduce greenhouse gas emissions in Thailand could bring economic and financial benefits. The following section shows that measures to reduce fuel consumption would reduce Thailand's dependence in imported fuel, boosting domestic activity rates. Measures to improve energy and resource efficiency could boost industrial competitiveness and related technological developments can enhance wider productivity. Improvements to air quality may also bring economic benefits through health effects. Finally, achieving emission reduction targets is likely to be a pre-requisite for gaining access to international finance to help fund adaptation measures.

345. Thailand's most recent Nationally Determined Contribution (NDC) submitted to the UN pledges a reduction of at least 30 percent of all greenhouse gas emissions below a baseline level by 2030. The target will increase to 40 percent below baseline by 2030 if the country receives access to technology development and transfer, financial resources, and capacity building support. The speed of economic recovery post-covid will determine how easy it is to meet the NDC targets.

346. Thailand submitted a new Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) to the UNFCCC in 2022, pledging to peak emissions in the 2020s and to reach carbon neutrality by 2050 and net zero emissions by 2065 (Figure 7-3). The LT-LEDS will guide the country towards low-carbon development and serve as a basis for enhancing its subsequent NDCs. It builds on previous plans and lays out an approach for emission reductions, again with a strong focus on the electricity and transport sectors. . The macroeconomic assessment in the previous LT-LEDS suggested that most of the costs of decarbonization would arise in the period when emissions fall rapidly.

[187] See https://edgar.jrc.ec.europa.eu/dataset_ghg60 and Crippa et al (2021): https://data.europa.eu/doi/10.2904/JRC_DATASET_EDGAR

Figure 7-3: Thailand's Long-Term Low Greenhouse Gas Emission Scenario

Source: LT-LEDS (https://unfccc.int/sites/default/files/resource/Thailand%20LT-LEDS%20%28Revised%20Version%29_08Nov2022.pdf).
Note: IPPU denotes Industrial Processes and Product Use. LULUCF denotes Land Use, Land-Use Change and Forestry.

347. Thailand's previous NDC included 15 specific measures to reduce greenhouse gas emissions, with some potential costs to government. The NDC roadmap outlined 115.6 mtCO2eq of potential savings by 2030, mainly focusing on energy and transport. The previous Power Development Plan (PDP) estimated that costs of developing the power sector would be 0.4 percent of GDP annually. Although renewable costs have fallen, the level of climate ambition has increased and there is a moratorium on new coal power plants. A modest increase in costs is therefore expected, likely mostly to be borne by the consumers of electricity.

348. Thailand's measures to reduce greenhouse gas emissions from transport include regulatory efforts, petroleum excise duties and vehicle taxation based on CO_2 emissions. Excise duties are designed to reduce fuel consumption in vehicles, as well as raise revenues. There is both an excise duty on petroleum consumption and a tiered vehicle excise duty that is based on the vehicle's fuel efficiency. In fiscal year 2019, the revenues from petroleum taxes were THB 210bn and from vehicle taxes THB 133bn[188] (1.2 and 0.8 percent of GDP, respectively[189]), although in 2022 rates were reduced.

349. Climate policy in the industrial and buildings sectors is mainly focused on energy efficiency and currently carries a small cost to government. The Energy Conservation Promotion Act provides a general framework for energy efficiency for large industrial users, and mandates under the Building Energy Code and Factory Energy Code set standards for new commercial and residential buildings. Aside from ensuring enforcement, these policies have limited cost to public budgets. In addition, there are some incentives to promote energy efficiency, the use of rooftop solar and other renewable electricity generation in commercial and industrial buildings, which have a modest cost to the government. There are no excise duties on electricity or heating fuels in Thailand.

350. Thailand still subsidizes some uses of energy, at a substantial fiscal cost. Fuel subsidies in Thailand have two purposes: to stabilize prices and to reduce prices for low-income households. In 2022, as fuel prices increased in response to the war in Ukraine, Thailand introduced additional measures to stabilize prices, particularly of motor fuel. These measures – including reductions in excise duty and subsidies from the oil fund – are costly (see Chapter 2). Moreover, the Oil Fund, which aims to stabilize prices, poses a significant contingent liability to the government. The Oil Fund is designed to protect fuel users from large changes in international commodity prices. By fixing fuel prices, it makes a profit when oil

[188] http://interweb.excise.go.th/contents.php?lang=en&m=2&sub=8
[189] For comparison, duties on fuel and cars in the US raised 0.2 percent of GDP each in 2019. In the UK fuel duties raise 1.3 percent of GDP but duties on cars only 0.3 percent of GDP (source: OECD Revenue Statistics, 2021).

import prices are low, and a loss when import prices are high. In 2022, with oil prices at high levels following the onset of war in Ukraine, the Oil Fund was making a substantial loss, though replenishments have subsequently been made in 2023 as oil import prices have declined (see Chapter 2).

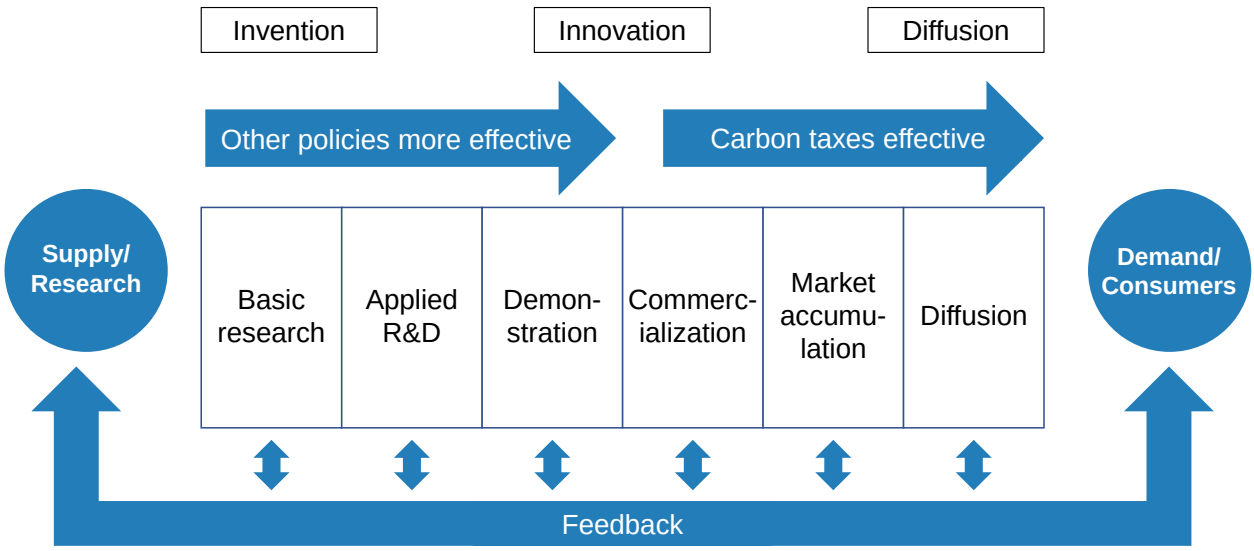
7.5 The potential for carbon pricing

351. Additional policies will be required to meet Thailand's emission reduction targets; carbon pricing could be an effective tool for getting there. As the economy recovers post-covid, GHG emissions will also increase, unless measures are taken to prevent emissions growth. Plans to reduce emissions in the power sector and transport sector (see Section 7.6) will slow emission increases, but it is likely that policies will be needed in other sectors too. Carbon pricing offers a possibility to reduce emissions across the whole economy. Carbon pricing could take the form of either a carbon tax, where the price is fixed, or an Emission Trading Scheme (ETS), where the rate of emission reduction is fixed. In this report we outline two specific proposals that have the potential to efficiently reduce emissions while at the same time raising revenues that can then be allocated to other uses: i) an ETS for the manufacturing sector (in this section) and ii) a carbon tax on the road transport sector (in Section 7.6). The choice of instruments and sectoral coverage is based on previous analysis and available current technologies, as described below.

352. Carbon pricing may be an efficient way of reducing CO_2 emissions and it could raise revenues for Thailand's government. CO_2 emissions result from 'market failure' because they cause damage to wider society without being incorporated into the pricing framework. The market failure provides strong justification for public intervention. In theory, a carbon price aligns firms' incentives with those of wider society by including the cost of emissions in the market price. The carbon price thus adapts firm behavior in a way that increases overall benefits to society. Carbon prices also allow firms to determine the lowest-cost ways to reduce emissions, thereby minimizing the overall cost of emission reduction. At the same time, and in contrast to most other climate policies, carbon pricing could raise revenues for Thailand's government, even from the informal sector. These revenues could be used to support low-carbon development, which usually increases the political feasibility of ambitious climate policy.

353. The effectiveness of carbon pricing instruments depends on market structures and the availability of low-carbon technology. For carbon pricing to be effective at changing behavior, a market system in which prices can freely change is required. If there are price rigidities, imposing a carbon price will still raise public revenues, but may not change behavior. Similarly, carbon pricing is only an effective way of reducing GHG emissions if there are low-carbon alternative technology options available. In sectors where low-carbon technologies do not yet exist, other policies, for example amending planning guidelines or public procurement, may be more appropriate in developing capacity (Figure 7-4).

Figure 7-4: The Innovation Chain



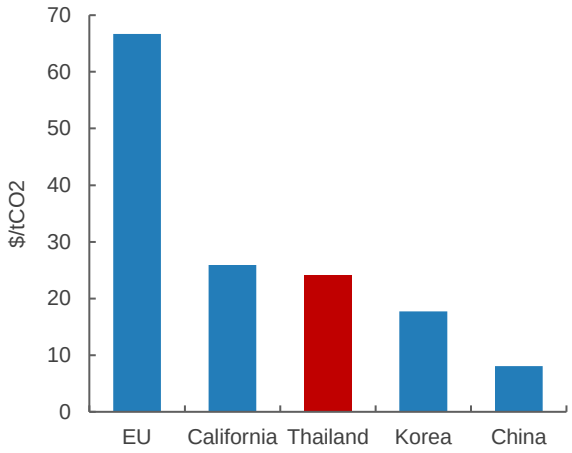
Source: Adapted from Grubb et al (2014)

354. Thailand's Voluntary Emission Reduction Program (T-VER) could provide the basis for future emissions trading. T-VER was set up in 2013 by Thailand's Greenhouse Gas Management Organization (TGO). It is a system of carbon credits that works at the individual project level, like how carbon offset schemes work in some other countries. Examples of projects covered by T-VER include energy efficiency schemes, renewable energy, and forestry/agriculture developments. T-VER could provide the framework for a future ETS if it was expanded and turned into a compulsory scheme.

355. Thailand could consider introducing an ETS for the manufacturing sector.[190] Previous World Bank analysis has found that, despite initial set-up challenges and higher administration costs, an ETS was preferred to a carbon tax by business, because of the perceived flexibility and the negative perception associated with introducing a new tax[191]. ETS allowances could be provided to business for free in a three-year pilot phase, then auctioned to all companies covered by the scheme, which would raise revenues for the Thai government. Proceeding in this manner it would be possible, although challenging, to auction all allowances by 2030. The World Bank's Partnership for Market Readiness (PMR) program helped to establish the legal basis for an ETS in Thailand and administration costs could be reduced by building on existing frameworks. The manufacturing sector was chosen because it includes a variety of production processes, some of which have low-carbon technology options. The power sector was excluded because of its market structure. Transport and households were excluded because of high transaction costs and lack of low-carbon technology options; however, some form of carbon tax may now be suitable for the transport sector (see Section 7.6).

356. By setting an appropriate cap on manufacturing emissions, an ETS could help Thailand to meet its international climate commitments. The modelling in the World Bank report found that an ETS with a cap that reduced emissions by 44 $mtCO_2eq$ (potentially enough to meet the NDC target if other sectors cut emissions too) would set a carbon price of THB 908/tCO_2 on energy and process emissions from the manufacturing sector. Although the carbon price is high compared to those used in some other countries, it is around one third of the current price applied in Europe (see Figure 7-5). Companies included in the ETS could potentially use offsets to cover up to 15 percent of their emissions through T-VER projects. Including offsets would reduce the ETS carbon prices, while simultaneously reducing GHG emissions in sectors not covered by the ETS. For example, the forestry sector has a key role in meeting Thailand's climate targets (see Section 7.7) but would not be included in the ETS.

Figure 7-5: How Thailand's Carbon Price Could Compare to Those in Other Countries



Source: Carboncredits.com, October 2022

[190] World Bank: Carbon Pricing in Thailand – Options Analysis.
[191] The previous study was carried out in 2018/19 and it is possible that other instruments would be preferrable in the post-covid economy. This issue will be explored in the forthcoming Country Climate Development Report for Thailand.

Box 7-2: Emission trading and the power sector

The effectiveness of an ETS or other carbon pricing instrument could be enhanced substantially if it also included the power sector, but this would require structural reform of the sector in Thailand. Almost all ETS operations around the world cover the power sector because the sector can reduce GHG emissions through technology switching. However, Thailand's highly regulated and centralized market structure would currently make an ETS ineffective in the sector because of a lack of competitive pressure which allows costs to be passed on to consumers. Power sector reform would therefore be needed to make carbon pricing effective in the sector; this will be explored in future World Bank analysis.

357. It is estimated that an ETS for the manufacturing sector could raise THB 194 billion annually by 2030 (0.8 percent of GDP), if all allowances are auctioned. The GDP impacts of the ETS depend on how quickly companies pass on the higher costs to households, and how the revenues generated are used by the government. In the modelling, higher costs for industry lead to a GDP loss of 0.2 percent compared to a baseline case because companies pass a share of the additional costs on to households (leading to loss of real income) and exports (leading to a loss of trade). However, if 30 percent of the revenues are used to reduce taxes on incomes, there could be a small increase in GDP (Table 7-2)[192]. There thus could be a 'double dividend' effect of improved economic performance (and increased public revenues) while simultaneously reducing GHG emissions. The benefits to GDP would largely occur through reduced imports of fossil fuels (i.e. a reduction in the fossil fuel intensity of output) and an improved trade balance. However, there could still be a negative impact on employment because of job losses in the extraction and carbon-intensive sectors. Further use of the revenues to reduce other taxes could increase GDP further and offset the negative employment effect at aggregate level.

Table 7-2: Macroeconomic Impacts of An ETS on Industry in Thailand, 2030 (% from baseline)

Share of revenue used to reduce other taxes	Net revenue gain (% of GDP)	GDP impact	Employment impact
0%	0.8	-0.2	-0.2
10%	0.7	-0.1	-0.2
30%	0.6	0.1	-0.1
100%	0.0	0.6	0.1

Note: Scenario variants with no offsets.

Source: World Bank Carbon Pricing in Thailand report.

358. Potentially harmful competitiveness effects from an ETS are unlikely to be substantial because Thailand is not a major exporter of carbon-intensive products; competitiveness concerns from not reducing emissions may be more serious. If Thailand's trading partners do not implement carbon pricing or equivalent climate policy, manufacturing in Thailand could be placed at a competitive disadvantage. There could potentially be 'carbon leakage' where production in Thailand moves to other countries, leading to economic cost without reductions in global emissions. However, in practice, there is little international evidence of industry relocating because of climate policy. The sectors most likely to be affected are those that are carbon-intensive, lack low-cost decarbonization options and are commonly traded. Aside from some petroleum, Thailand is not a major exporter of products in these sectors. In contrast, fears of loss of competitiveness from not reducing emissions are growing. An estimated 78 percent of multinational companies claim they will remove high-carbon producers from their supply chains from 2025. If Thai companies do not take measures to reduce their carbon footprint, there is a risk they may become cut off from global supply chains[193].

359. The impacts of a manufacturing-sector ETS on households in Thailand need not be substantial and could be offset by targeted use of a share of the revenues generated. There would be some impact on households because the prices of some manufactured goods would increase. Impacts on lower-income households would likely be largely felt through higher food prices, for example because of higher fertilizer costs. However, these effects could potentially be offset

[192] In theory, the measure would also draw in more of the informal sector because all consumers would pay higher prices for manufactured goods, and formally recognized workers would pay lower tax rates.

[193] https://www.sc.com/en/media/press-release/carbon-dated-multinational-companies-planning-to-cut-suppliers-by-2025-for-failing-to-curb-carbon-emissions/

by using some of the revenues from the ETS to supplement incomes (in line with the social assistance recommendations in Chapter 6). To the extent that the power and buildings sectors are not included in an ETS, households would not face higher electricity prices, and the impact on households would be limited to the pass-through from higher prices of manufactured goods.

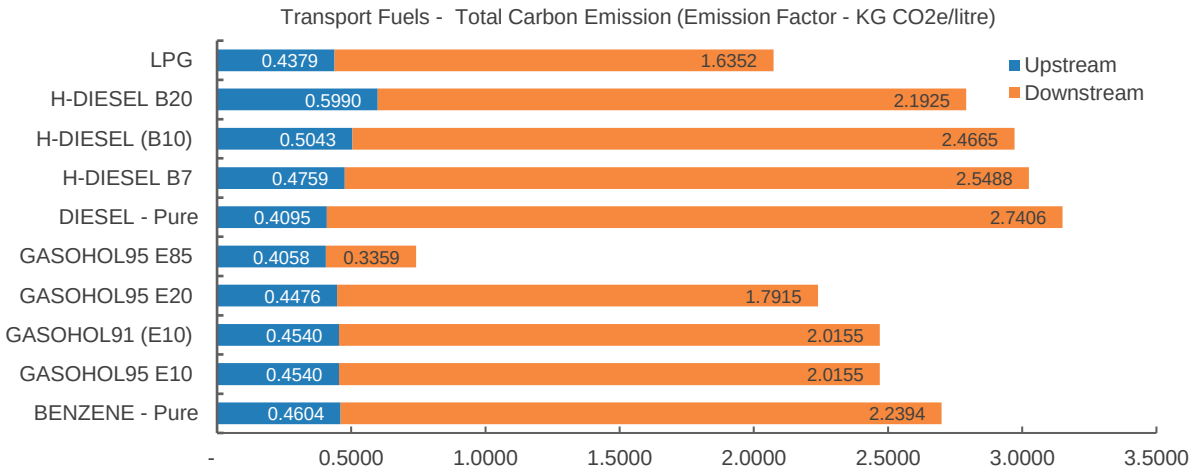
7.6 Carbon pricing in the road transport sector

360. Recent advances in the electrification of passenger vehicles have increased the scope for carbon pricing in the road transport sector. In 2018, transport accounted for 18 percent of Thailand's GHG emissions, with the largest share coming from road transport. Without further policy measures, transport emissions are likely to increase as the economy recovers, making it difficult to achieve emission reduction targets. Carbon pricing may be an effective policy instrument for the sector because it is not highly regulated, is not subject to competitiveness concerns and, with recent developments in electric vehicles (EVs), has low-carbon technologies available. Carbon pricing in the road transport sector could therefore both raise public revenues and reduce greenhouse gas emissions in Thailand.

361. Decarbonizing transport could have additional benefits in Thailand. Reducing greenhouse gas emissions is not the only reason to develop further the transport system. For example, a rapid roll-out of charging infrastructure will create jobs in the construction sector and, as already recognized by the Government of Thailand, developing domestic EV production could boost both export revenues and local employment levels. A shift to EVs would improve air quality in urban areas, reducing both healthcare costs and the estimated 40,000 deaths each year in Thailand that are linked to air pollution. A shift to public transport, or reduction in overall journeys taken, would also ease pressure on Thailand's roads.

362. Existing excise duties on road transport fuel could be adjusted to reflect the fuel's carbon content. Currently there are excise duties on petroleum, but other transport fuels are not taxed and the Oil Fund effectively subsidizes fuel when commodity prices are high. Rates of excise duty could be adjusted to reflect the carbon content of the fuels that are used (see Figure 7-6), which could incentivize more biofuel blending. This would effectively establish a carbon tax for the sector without needing the creation of a new instrument. The tax would apply to the use of vehicles. The excise duty applied to the purchase of new vehicles already differentiates between different levels of CO_2 emissions between vehicles. For cars, tax rates range from 2 percent for battery electric or fuel cell vehicles, to 40 percent for large conventional vehicles. For motorcycles, the tax rate is 1 percent for electric or highly efficient vehicles, but 18 percent for the most polluting vehicles.

Figure 7-6: Carbon Footprint of Transport Fuels in Thailand



	BENZENE - Pure	GASOHOL9 5 E10	GASOHOL9 1 (E10)	GASOHOL9 5 E20	GASOHOL9 5 E85	DIESEL - Pure	H-DIESEL B7	H-DIESEL (B10)	H-DIESEL B20	LPG
Upstream	0.4604	0.4540	0.4540	0.4476	0.4058	0.4095	0.4759	0.5043	0.5990	0.4379
Downstream	2.2394	2.0155	2.0155	1.7915	0.3359	2.7406	2.5488	2.4665	2.1925	1.6352

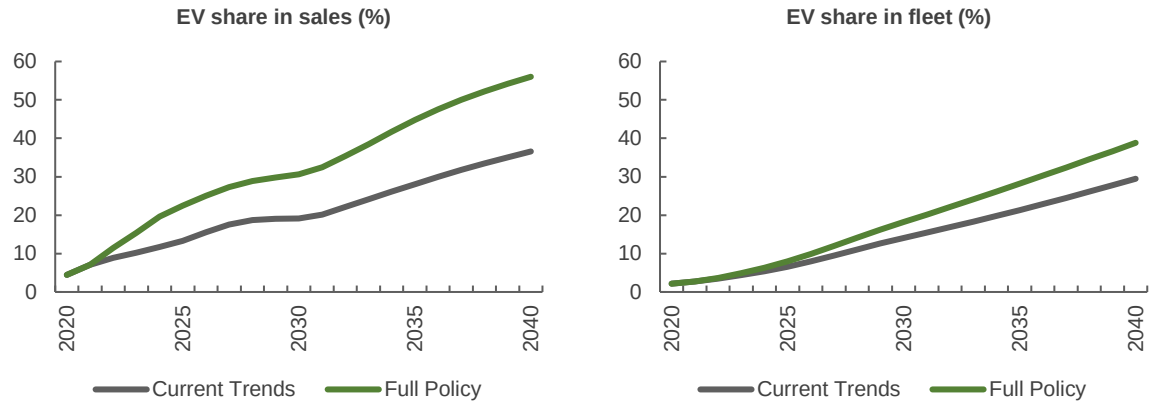
Source: Authors' calculations

*Fuel Consumption 2564 - EPPO

http://www.eppo.go.th/index.php/th/energy-information/situation-oil-electric?orders[publishUp]=publishUp&issearch=1

363. The market share of low-carbon vehicles is currently low. Current estimates give electric vehicles a market share of at most 2 percent in Thailand (most of which are in fact hybrid vehicles). As a result, the required infrastructure for electric vehicles, including public charging points, remains relatively underdeveloped. Even with plans to electrify the public fleet of vehicles (with all new sales for the public fleet being zero-emission by 2025[194]), model simulations suggest that current policy will not be sufficient to meet the target of 30 percent EV sales by 2030 (see 'current trends' in Figure 7-7). This section discusses the fiscal implications of policies that could make the target achievable.

Figure 7-7: EV market shares in new vehicle sales and in the vehicle fleet



Source: World Bank staff calculations using the FTT:Transport model.[195]

364. As a single measure, carbon-based pricing of road transport could raise revenues, but will have limited environmental benefits. There are two ways in which higher fuel costs could reduce greenhouse gas emissions. The first is through a reduction in distance travelled in private vehicles, in part by avoiding some journeys and in part by shifting some travel to public transport. The second is through a shift toward smaller cars. The model simulations show that a carbon price of THB 908/tCO_2 (the same rate used for manufacturing in the previous section) would increase fuel costs by only 7-8 percent, and would therefore have only a limited impact on either total distance travelled or choice of vehicle. Estimates of fuel price elasticities typically range between zero and one, suggesting that fuel consumption and related greenhouse gas emissions would only fall by around 5 percent.[196] Model results suggest there is no induced shift to electric vehicles so the policy would not contribute to the government's 2030 target for EV sales.

365. A substantially increased carbon price applied to road transport fuel would reduce demand for private passenger transport but would still not incentivize large-scale adoption of electric vehicles. A carbon price that increases fuel prices by 75 percent would reduce the average size of cars and the market share of large cars would fall by around 1.5 percentage points. There would also likely be a noticeable shift toward public transport and fewer journeys would be taken overall. However, even very high fuel prices provide only a weak incentive to invest in electric vehicles. Take-up rates for EVs are influenced much more by high up-front vehicle purchasing costs and the availability of charging infrastructure. Fuel taxation does not influence either of these factors and therefore has only a limited impact on EV take-up rates. Fuel taxation does, however, raise revenues that could be used for improving the transport system.

366. Carbon-based pricing of road transport fuels could help with the transition to decarbonizing the transport sector, but only in combination with other policies. Achieving a rapid transition to electric vehicles will require a combination of different policies. The main constraint on the speed of transition is the low base from which EVs are starting and a general lack of supporting infrastructure (mainly charging points). The Government of Thailand could therefore speed up EV uptake by either guaranteeing an initial market for EVs (as it to some extent already is through electrifying the public

[194] https://www.rvo.nl/sites/default/files/2021/10/E-Mobility%20in%20Thailand.pdf
[195] Lam and Mercure (2021), https://www.sciencedirect.com/science/article/abs/pii/S221462962100044X?dgcid=author#s0155
[196] https://www.taylorfrancis.com/chapters/edit/10.4324/9780203983645-13/long-run-demand-elasticities-gasoline-mikael-franz%C3%A9n-thomas-sterner

fleet) or by expanding the existing network of charging points to encourage private sector uptake. A recent World Bank analysis showed that providing the enabling infrastructure for EVs could be at least six times more cost-effective than buying or subsidizing EVs directly.[197] The green lines in Figure 7-7 show the simulation results for a scenario in which the government forces 5 percent of the vehicle fleet to electrify (e.g. by mandating licenses for taxis) and adds the charging infrastructure that is estimated for the same number of vehicles, encouraging further uptake. Combined with the moderate carbon tax of THB 908/tCO_2, this full set of policies is sufficient to increase the share of EVs in new vehicle purchases to around 30 percent by 2030 and to over 55 percent by 2040. The carbon price is thus only effective when other measures are introduced as well.

367. Carbon pricing in the road transport sector could also generate positive GDP impacts. Further model simulations using the World Bank's Carbon Pricing Assessment Tool (CPAT) show that applying carbon pricing on road transport fuel use and using the revenues for investment in EV and other infrastructure would have a small cost to GDP initially (0.1 percent). However, by 2030 the package of measures could increase GDP by 0.1 percent. These increases in GDP will persist because Thailand can permanently reduce its imports of oil and refined transport fuel. In this scenario Thailand's energy security also improves.

368. Carbon pricing on motor fuel could raise revenues in the short term to cover transition costs such as investing in charging points for electric vehicles. Table 7-3 provides an illustration of the possible impacts on public budgets of implementing the policies required to electrify road transport. A carbon tax of THB908 on motor fuels could raise around THB 60bn pa initially, with revenues gradually declining as the vehicle fleet electrifies, which also reduces revenues from existing excise duties. The revenues from the carbon tax could be used to pay for some of the near-term costs of switching to electric vehicles, for example in electrifying the public fleet or helping early adopters (e.g. taxis) to electrify. The revenues could also be used to provide charging infrastructure.

Table 7-3: Illustrative impacts of electrifying transport on Thailand's public budget[198]

	2025	2030	2035	2040
On GDP (%):	0.0	0.1	0.1	0.1
On public budgets (% of GDP):				
Fuel/carbon duties	0.3	0.2	-0.1	-0.7
Vehicle excise duties	-0.1	0.0	0.0	0.0
EV switching costs	-0.2	-0.2	-0.2	0.0
New infrastructure	-0.1	0.0	0.0	0.0
Public transport costs	-0.1	0.0	0.0	0.0
Total	-0.2	0.0	-0.3	-0.7

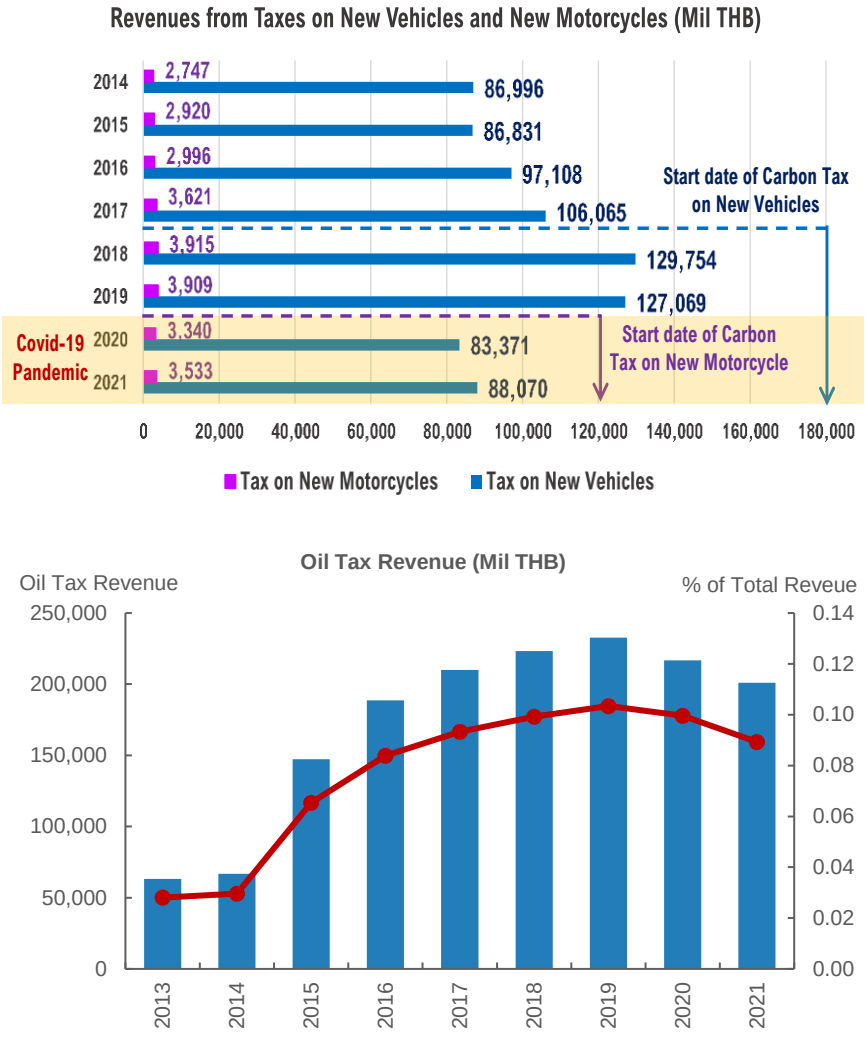
Source: World Bank staff calculations

369. In the long run, fuel tax collection would fall as a result of these measures. Excise duties on oil products are an important source of government revenue in Thailand, accounting for around 1.2 percent of GDP (see Figure 7-8). Excise duties on vehicles account for a further 0.8 percent of GDP. Although higher tax rates in the short term will boost revenues, a combination of electric vehicle take-up and improved efficiency in conventional vehicles will reduce all oil and vehicle excise duty revenues over time.

[197] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/225111639490843204/the-global-diffusion-of-electric-vehicles-lessons-from-the-first-decade

[198] Final values depend on the policy mix and are illustrative only. Here it is assumed that 20 percent of mandated EV purchase costs are covered by the public sector, either through direct purchases or subsidies, although excise duties on EVs are levied from 2030. Additional public investment in infrastructure and public transport are assumed to be made in the mid 2020s.

Figure 7-8: Revenues from Vehicle and Oil Excise Taxes



Source: Excise Tax Department

370. Electrifying public transport in Thailand would carry a modest additional public cost. In 2017 Thailand had 157,799 buses[199] of which 13,728 were publicly owned and on fixed routes in 2021. The cost of an electric bus is currently estimated to be US$ 550,000 compared to US$ 400,000-US$ 500,000 for a conventional bus in 2021.[200] If current buses were to be replaced with electric buses at the end of their lifetimes, the additional cost to Thailand's government of electrifying the fleet could be THB 45bn (0.3 percent of GDP), spread over several years. The figure could be substantially higher if buses were retired early (although many buses in Thailand are already beyond expected lifetimes) and there would also be some costs for charging equipment. However, battery costs will continue to fall and there are potential substantial cost savings from reduced diesel consumption. The lifetime cost of an electric bus is likely to become comparable to a diesel bus by around 2030, meaning that all the additional initial cost of more expensive buses would be offset by fuel savings.

371. Overall, increased fuel taxation is likely to be a critical part of efforts to decarbonize Thailand's road transport sector, but it will not cover all the costs to the public sector. As previously noted, carbon pricing is an effective instrument at reducing emissions only if technological alternatives are available. Currently, low uptake rates of electric vehicles mean that alternatives to conventional cars are still limited for many people, so any benefits in terms of reduced emissions will be realized through increased use of public transport, where it provides a viable alternative. By encouraging the development of charging infrastructure through public and private means, EVs will become realistic purchase options

[199] https://www.who.int/publications/i/item/9789241565684
[200] Department of Land Transport. In 2021, 120 electric buses were due to become operational. These are excluded from the calculation.

for a larger share of the population in Thailand, particularly as EV costs continue to fall. Fuel taxes will then incentivize a shift towards EVs, while simultaneously providing revenues to cover initial public investment costs and to offset losses for vulnerable groups. The scenarios developed in this report showed that a modest fuel tax increase could provide sufficient revenues to cover most of the investment costs in private vehicles (although more would be needed for public vehicles), while raising fuel prices by only 7-8 percent. The revenues from this tax could be used to cover most of the short-term investment costs of electrifying transport, but by 2035 the loss of revenues from existing fuel excise duties will mean that alternative sources of funding will be required.

7.7 The importance of the forestry sector

372. The forestry sector can make a critical contribution to both climate change adaptation and mitigation in Thailand if it is adequately supported. Most importantly, the forests play an important role in regulating the water cycle. The forests help control the water cycle by regulating precipitation, evaporation, and flows. The process of absorbing water and releasing water vapor in turn supports agricultural production that provides one quarter of jobs in Thailand. Forests also serve as buffers to natural calamities like floods by blocking and slowing down the flow of the runoff. At sea, mangrove forests protect Thailand's coastlines from storm damage and coastal erosion. Thailand's forests are also home to many plant and animal species and are therefore important for biodiversity.

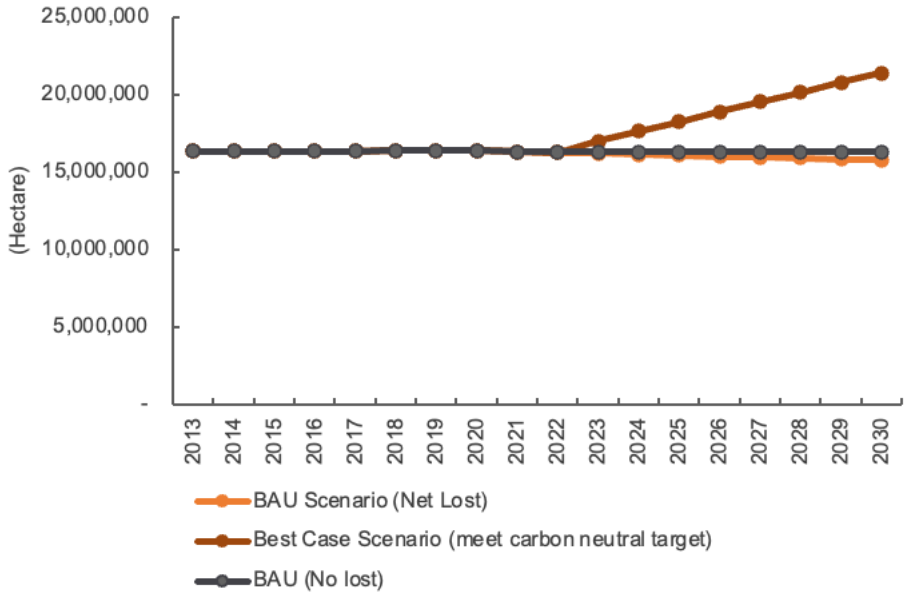
373. A more actively managed forestry sector could contribute to all six focus areas of Thailand's National Adaptation Plan. Forestry itself falls under the natural resources management category of the plan (see Table 7-1). However, it contributes to the other five focus areas as well. In addition to providing water management services that support agriculture, the forest creates benefits for tourism and human health. The role of the forest in reducing the exposure of human settlements to flooding is likely to be particularly important in coming decades. Restoring and increasing forest coverage is therefore already recognized as a key component of adapting to climate change in Thailand.

374. The forestry sector also makes a positive contribution to reducing total GHG emissions. The sector releases 12.3 mtCO2e/year of GHG emissions but absorbs 28.6 mtCO2e/year of emissions. It is therefore already a net reducer of GHG emissions. Thailand's LT-LEDS aims to increase annual net emission removals from the sector from 90 to 120 mtCO2e/year by 2050, which would offset more than 25 percent of current GHG emissions and would be a key factor in bringing emissions towards net-zero in the second half of the century.

375. Despite efforts to increase forest coverage, the overall share of forested land is decreasing. In 2020, forests covered 31.6 percent of Thailand's land mass. The corresponding share in 2008 was 33.4 percent. Despite efforts by several agencies in Thailand to promote reforestation, satellite images show that the level of forest coverage is decreasing by around 0.3 percent per year. Some forest has been degraded because of natural forest fires. However, the main reasons for deforestation on land are human encroachment and illegal logging. At sea, mangrove forests have been cleared for shrimp farming, with the pollution from these farms causing further damage.

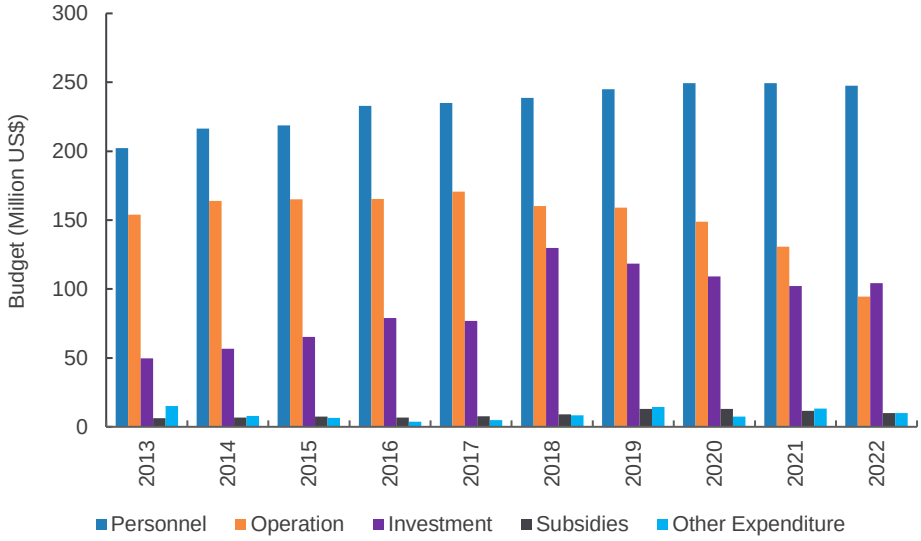
376. To meet the LT-LEDS target, around 40 percent of Thailand's land mass would need to be covered by forest. The share of land covered by forest would need to increase by more than half. Figure 7-9 shows that the government will face a double challenge: Deforestation would need to be virtually curtailed (moving from orange line to grey line in the figure) so that no existing forest land is lost, and substantial efforts would be needed to reforest parts of the country (grey line to brown line).

Figure 7-9: Forest Coverage Over 2022-2037



Source: Land Use Change Drivers, Law, Policy, Forest Institution and Governance, A National REDD+ Strategy, TEI 2020

Figure 7-10: Forestry Budget Based on Expenditure Category



Source: Department of National Park, Wildlife and Plant Conservation, Royal Forest Department and Department of Marine and Coastal Resources

377. Most of the funding for forestry comes to agencies through the Ministry of Natural Resources and Environment. In 2022, the US$ 544m funding for the forestry management program was 0.1 percent of GDP. Funding for forestry grew over 2012-2019 to peak at around US$ 630m but has since fallen because of budgetary pressures related to COVID-19. In contrast, the forest in Thailand has been valued for both the direct use values and the indirect use values from the mitigation and adaptation benefits of the inland forest and the coastal mangrove forest at US$ 33.3bn (6.1 percent of GDP).[201] (See Annex 7.1 Total Economic Values of Forest in Thailand) The funding is used for monitoring, forest management, forest protection and biodiversity conservation, fire management, reforestation, research, and legal

[201] Estimated from data and prior studies from the Department of National Park, Wildlife and Plant Conservation (DNP) and the Laem Phak Bia Environmental Research and Development Project.

implementation. Almost half the expenditure covers personnel costs, one third is used for other direct operating costs and the rest mostly funds investment (Figure 7-10). The agencies supplement their public income, for example by charging entrance fees to national parks and forest confession fee. However, this share of income currently accounts for only 6.1 percent of the agencies' total revenues. Private sector financial support accounts for only around 2 percent of revenues.

378. Despite higher personnel and investment spending, the total area of forest coverage has not changed. Notably, substantial real and nominal-terms increases in investment spending aimed at developing new forest have not led to an increase in tree cover area. Current targets for tree cover area look well out of reach. The trend from recent years suggests that additional spending on its own will not be sufficient to meet the targets; better planning is needed too. Transformation to area-based management through integrating multi-ministry and multi-departmental resources will be critical to increase forest cover area. Forest area-based management was demonstrated through the Community development schemes like Mae Fah Luang Foundation and The Royal Initiative Discovery Foundation, which have proven to be highly effective. The schemes have used only 40 percent of the budget allocated by the government to reforest and maintain forest cover over ten years, with the critical factor being local communities' engagement with rights to generate income from their local forests. The community forestry movement is growing, with an increasing number of communities formally registering as community forests since the passing of the Community Forest Act in November 2019. From 2011 to 2019 the registered land for community forests increased from 0.47 to 1.22 million hectares. Each registered community forest must submit its forest management plans to be approved by RFD; in return, RFD grants the community the forest access and rights to forest products.

379. Nevertheless, a substantial increase in private and public sector funding to the forestry sector would be required if Thailand is to meet its LT-LEDS targets. Based on the Comptroller General's Office reforestation and maintenance cost over ten years, the cost to increase forest coverage in line with the stated target would be nearly US$ 15bn (3 percent of GDP). It is possible that this cost could be reduced to US$ 7.1bn, if the land was used for economic forest plantation, rather than converted to natural forest (which would be better for biodiversity). However, even plantation costs in Thailand are high compared to those in other countries. The average cost of the government's allocation in the past ten years was US$ 2,150 per hectare, compared to US$ 1,200-1,600 in China. Community schemes returned lower costs of around US$ 1,000 per hectare. Any private land purchases would increase costs further. As noted above, better planning would be required to ensure that the additional spending is effective at increasing forestry coverage.

380. International support for the forestry sector may become necessary to cover the funding required to meet the LT-LEDS target. The current small share of self-generated revenues (for example from park entrance fees) within the sector suggests that it will not be possible to scale up income to the levels required to meet the LT-LEDS target. Public financing could be required, although there is no current mechanism in place. An alternative option would be to seek international support. Thailand has completed the Forest Carbon Partnership Facility to prepare for the REDD+ program. The latest progress on REDD+ implementation in Thailand is the submission of the Forest Reference emission Level to the UNFCCC in 2020.

Box 7-3: Flexible funding to manage uncertainty in the forestry sector

Forest fires degrade forest quality, destroy wildlife, and contribute to air pollution; direct economic costs are estimated at US$ 130m annually with much higher indirect costs. The number of forest fires each year is rising, despite increases in spending on fire protection (US$ 22.4m in 2022). Although the Thai government recognizes the need to reduce forest fires, current regulations are ineffective. The economic cost of forest fires, for example from loss of tourism activity is US$ 130m each year[202]. The economic damages caused by the health effects of increased air pollution could be as high as US$ 377m each year[203]. The preparation of budget requests for forestry is lengthy and rigid, making it difficult to deal with uncertainty around natural forestry processes, including forest fires. The budget request system takes 2-3 years for implementation. In some cases, urgent budget requests cannot be accommodated to cope with natural disaster risks. For example, in the case of forest fires, prescribed burning to prevent forest fires

[202] Estimated by the Bank of Thailand.
[203] Estimated by researchers at Chiang Mai University.

Box 7-3: Flexible funding to manage uncertainty in the forestry sector

may not be necessary during the El Nino year, but the budget has been approved and must be used. Additional flexibility could ensure better value from public expenditure in the sector and increased capacity to manage fires.

381. Offsets linked to an Emission Trading Scheme could also provide support to the forestry sector. For example, the ETS described for the manufacturing sector could generate US$ 3bn pa in offsets. These offsets could be provided by the forestry sector if they can be appropriately verified (e.g. building on the current T-VER program) and, if a sufficient proportion is used for forestry, could even cover the costs to meet the LT-LEDS target. Thailand's national Voluntary Emission Reduction Scheme (tVER) provides a template for such plans. In 2021, ten projects were registered with a total expected emission reduction of 334,285 tCO2e sequestrations per year.

382. To summarize, the forestry sector will be a critical component of Thailand's response to climate change, but currently lacks a viable investment funding model. The forestry sector will play a key role in both climate adaptation and in reducing Thailand's own emissions. It is an important part of the country's long-term emission reduction strategy. However, current annual public funding of US$ 0.54 billion falls well short of the amounts needed to increase forest coverage in line with the LT-LEDS target. An additional US$ 1.5 billion pa over ten years is required to reforest sufficient areas of land, potentially reducing to US$ 0.7 billion pa depending on the type of forest expanded (community schemes could potentially reduce costs further). A small share of this additional funding could come from raising park entrance fees and an expansion of the commercial forestry sector. The bulk of the funding would need to come through government revenues (including from carbon pricing), private sector investment in commercial forests, international support through REDD+, or the use of offset mechanisms in a carbon pricing scheme.

7.8 Macro-level outcomes

383. Unless Thailand takes measures to adapt to climate change, the macro-fiscal impacts will be substantial. Although highly uncertain, the GDP cost of climate change could be 10 to 20 percent by mid-century, with noticeable impacts possible even this decade. Losses of public infrastructure and compensation to private business owners could make the impacts on public budgets even higher. Climate change also increases the possibility of extreme outcomes, such as the potential need to relocate the city of Bangkok, which would require levels of public financing well beyond that discussed elsewhere in this chapter.

384. The costs of climate change adaptation measures would likely be much lower than the costs of not acting, providing justification for immediate action. The measures needed to adapt to climate change require substantial upfront expenditure (e.g., on new infrastructure) and incur annual running costs. Some of these costs could potentially be met by either the private sector or through international support, but because of the public goods nature of many of these measures, government contributions will be required. Some of the proposed climate adaptation measures could have immediate benefits, for example by reducing the costs of flood damage or providing fresh water during droughts. Although the included adaptation measures would substantially reduce the cost of climate change in Thailand, it is difficult to estimate by how much, and it is not possible to reduce the cost to zero. For example, agriculture would likely need further support because of less predictable weather patterns. However, the benefits of adaptation will almost certainly exceed the costs.

385. The net annual cost of climate change measures to Thailand's public sector could be 1 percent of GDP by 2030 and 1.5 percent by 2040. The cost of climate adaptation in Thailand is uncertain and depends on the policy mix, but it could increase from near zero today to 1.6 percent of GDP in the 2030s (see Section 7.6). As most adaptation measures are public goods, much of this cost will be borne by the government. In contrast, much of the cost of decarbonization may be borne by the private sector, and our analysis shows that public policy costs may be offset by carbon pricing measures that could raise up to 0.8 percent of GDP by 2030. However, revenues from fuel excise duties (1.2 percent of GDP) could fall rapidly if vehicles are electrified in line with government targets. Excise duties from car purchases (0.8 percent of GDP) could also fall because low-carbon vehicles are covered by lower tax rates, but revisions to excise duty rates after 2025 could offset this loss relatively easily once electric vehicles gain market share. It is assumed that other climate costs, including in the transport and forestry sectors, require a relatively modest net public contribution. Based on these assumptions, the net

cost of climate change adaptation and mitigation measures to Thailand's public sector will be around 1 percent of GDP by 2030, rising to 1.5 percent by 2040 (Table 7-4).

Table 7-4: Illustrative budget impacts of climate adaptation and mitigation measures (% of GDP)

	2025	2030	2035	2040
Adaptation costs	-0.6	-1.6	-1.6	-1.6
Manufacturing carbon pricing	0.3	0.8	1.0	1.0
Fuel excise duties	0.3	0.2	-0.1	-0.7
Vehicle excise duties	-0.2	0.0	0.0	0.0
Other transport measures	-0.4	-0.2	-0.2	0.0
Forestry sector costs	-0.1	-0.1	-0.1	-0.1
Other mitigation costs	0.0	-0.1	-0.1	-0.1
Total	**-0.7**	**-1.0**	**-1.1**	**-1.5**

Source: World Bank staff calculations

7.9 Key policy recommendations

Recommendation 1: Invest in climate adaptation measures to reduce future risks

386. Public spending on climate adaptation measures will place a burden on public budgets but should provide a strong return on initial investments. The analysis in this chapter has shown that there should be a priority on investment that reduces the impacts of climate change. If these investments were able to halve overall damages from climate change, they could generate benefits of three to six times their costs (based on a rough estimate of damages). They would also reduce the risk of extreme high-cost outcomes, particularly relating to Bangkok but also to vulnerable groups in other areas. Many adaptation investments are public goods and would therefore require public support. Costs could be minimized if steps are taken to identify vulnerable infrastructure and carrying out this exercise should be regarded as a priority. Some measures, including flood prevention around Bangkok, may return immediate benefits and could be prioritized. Other measures, including building early warning and community-based systems, could provide benefits with smaller public costs.

Recommendation 2: Consider enhancing further Thailand's level of climate change mitigation ambition

387. Thailand has already made commitments to reduce its own emissions but the public costs of doing so need not necessarily be substantial if the right policy mix is chosen. Thailand's current level of climate ambition was increased in its 2022 NDC submission but falling technology costs could give scope for further increases. International support for climate adaptation (see below) will be easier to obtain if Thailand is visibly reducing its own emissions. Mitigation costs should be smaller than adaptation costs and much of the cost may be met by the private sector (e.g., in sectors such as electricity generation where low-carbon options are already cost-effective). However, some sectors will require public support or coordination to engage in emission reductions and there will be a cost to reducing the public sector's emissions. The policies assessed in this chapter could potentially achieve Thailand's NDC target, depending on how other sectors develop post-covid. The impacts of these policies on GDP would be largely neutral and there are potential improvements to air quality.

Recommendation 3: Introduce carbon pricing, alongside other measures to reduce greenhouse gas emissions

388. A portfolio of policies is required to address climate change in Thailand, but carbon pricing will be important for supporting overall budgets. The level of complexity involved means that it is difficult to estimate the overall budgetary impacts of climate change mitigation policies. Broadly speaking, policies can be grouped into three categories: i) those that require substantial public funding, including addressing the public sector's own emissions, ii) regulatory measures that push costs to the private sector and require only limited public funding, and iii) policies that raise revenues while simultaneously reducing greenhouse gas emission levels. It will not be possible to meet ambitious climate targets without using a combination of all three types of policy. Carbon pricing covers the set of policies in the third group, including carbon taxes and Emission Trading Schemes; this chapter explored the possibility of introducing carbon pricing in the

manufacturing and road transport sectors. Carbon pricing policies are important not just because they provide the necessary incentives for private sector operators to reduce GHG emissions, but because they raise public revenues as well. Revenues from carbon pricing could also be used to offset some of the negative socio-economic impacts of other climate policy impacts (including the carbon pricing itself) and to protect vulnerable populations from the impacts of climate change and extreme weather events. Explicit guidelines on the use of the revenues from carbon pricing (either for mitigation or adaptation purposes) could improve the political feasibility of price-based measures.

Recommendation 4: Explore options for other sources of finance to fund adaptation and mitigation activities

389. This chapter has identified numerous costs that will need to be borne by the public sector. Although some costs may be recouped from higher tax receipts, other sources of financing should also be investigated. Measures may be needed to attract private sector investment, for example in the forestry sector. It is possible that some international finance may become available for mitigation measures if Thailand increases its level of ambition in reducing emissions; possible examples include cooperation through Article 6 of the Paris Agreement. Other mechanisms like using offsets in Emissions Trading Schemes may be valuable in getting finance to other sectors.

Recommendation 5: Increase resources for climate-related research and education in Thailand

390. Further research into the effects of climate change and climate change policy on Thailand is needed. This chapter has taken a broad view of climate change and looked in depth at the manufacturing, passenger vehicles and forestry sectors. However, all sectors of the economy will be affected by climate change and therefore there is a broad need for climate awareness. Similarly, all sectors will need to take action to reduce greenhouse gas emissions, if Thailand is to meet its own long-term net-zero ambitions and stay in line with international targets. The ultimate impacts of climate change on public budgets in Thailand are highly complex and will depend on the interaction of all these effects across all the different sectors. Action taken on climate change in the rest of the world will also impact Thailand's economy, for example by determining the costs of clean technology or the costs of travel for foreign tourists. These issues will be explored further in future World Bank analysis.

CHAPTER 8
TAXES, TRANSFERS AND EQUITY

Chapter 8: Taxes, Transfers, and Equity

8.1 Introduction

391. This chapter examines the impacts of fiscal policies on poverty and inequality. Fiscal policy can be a key instrument for reducing poverty and inequality while financing important investments in public services and growth. This chapter uses the Commitment to Equity (CEQ) method to estimate the distributional welfare consequences of Thailand's public revenues and expenditures, quantify the impact of these fiscal activities on both inequality and poverty, and estimate how effectively they redistribute income between the rich and the poor. The analysis aims to inform reforms to improve the poverty and distributional impacts of fiscal policies.

392. Thailand's fiscal system reduces the Gini Index of inequality by 8.9 points (around the upper middle-income country (UMIC) average), while poverty falls by 0.9 points (7th highest of UMIC countries with data). In total, fiscal policy reduces the Gini Index of inequality in Thailand by 4.2 points when considering only the impact of taxes and cash benefits of transfers, and 8.9 points when also including health and education in-kind benefits.[204] In the international context, the cash impact on inequality is 12th-best out of 58 countries with available CEQ data, and 4th-best out of 24 UMICs. However, when non-cash benefits are included, Thailand falls in international rankings, 22nd out of 58 countries and 13th out of 24 UMICs. Poverty is estimated to fall by 0.9 points from fiscal policy. This is 15th-best out of 56 countries with comparable data and 7th best among UMICs.

393. However, Thailand's spending on health, education and social protection is low by international standards, as is tax revenue collection; the reforms recommended in this report would increase both while maintaining progressive fiscal policy outcomes on poverty and inequality. While social spending does help reduce poverty and inequality in Thailand, overall levels are low. At the same time, overall spending is constrained by low total tax revenue collection, particularly low VAT collection. As recommended in this report, the following reforms would increase spending on critical public services and raise revenue for this additional spending in a progressive manner:

- Increasing direct taxation, especially from personal income taxes
- Increasing indirect taxation on general consumption
- Increasing health taxes on tobacco, alcohol, and sugar-sweetened beverages, as well as introducing digital and carbon taxes
- Increasing spending on health and education
- Strengthening tax administrative capacity
- Avoiding spending on subsidies to mitigate higher fuel and food prices
- Improving targeting of direct transfers

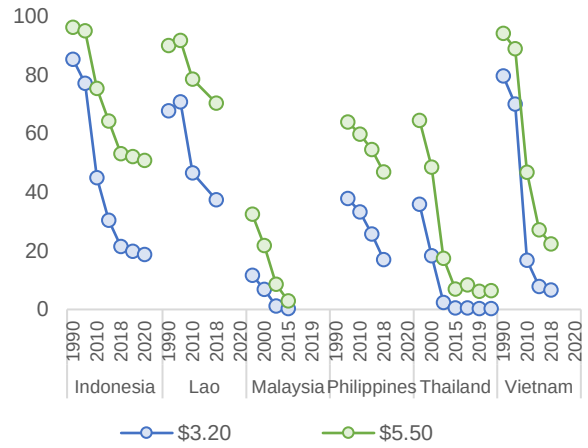
8.2 Poverty and inequality in Thailand

394. Prior to the COVID-19 pandemic, Thailand had made faster progress in reducing poverty than most regional peers, but disparities in income and consumption continued to be higher relative to other countries in the region. Over the past three decades, the poverty rate based on the $5.5 per person per day in 2011 Purchasing Power Parity (PPP) exchange rate upper-middle income country (UMIC) international line fell by 58 percentage points in Thailand; only Vietnam (72 points) and Indonesia (67 points at the $3.20 lower-middle income country (LMIC) line) had larger reductions (Figure 8-1). From 2015 onwards, only Malaysia had a lower UMIC poverty rate than Thailand. Thailand has also achieved important reductions in inequality, but in 2019 income inequality was still the highest in the region (Figure 8-2). In 2017/18, Thailand ranked 13th out of 63 countries globally for which income Gini coefficients are available. In terms of consumption inequality, Thailand performed better, ranking 45th out of 72 countries with available consumption Gini coefficients, but it continues to rank higher than half of countries in East Asia and the Pacific (EAP) that have available data for this period.

[204] This is the baseline Pensions as Deferred Income (PDI) scenario. The results are very similar if pensions are treated as a government transfer (PGT), see technical appendix for full results.

Figure 8-1: Thailand achieved the fastest poverty reduction in East Asia …

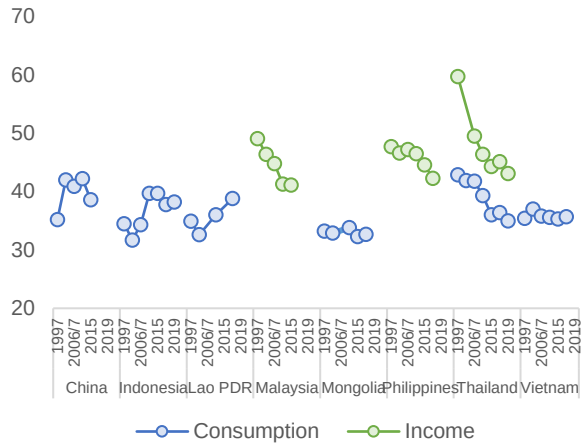
(Poverty rate at 2011 PPP international poverty lines)



Source: World Development Indicators and SES 1990-2020.
Note: Nearest year of available data taken for 1990, 2000 and 2010.

Figure 8-2: …but inequality remains high albeit declining

(Gini Index)



Source: PovcalNet and SES 1990-2020.

395. The severe economic contraction caused by COVID-19 led to widespread job and income losses. During the onset of the pandemic (March to May 2020) about 70 percent of the national workforce saw their income fall by nearly half, with informal sector workers and low-income households being hit the hardest.[205] Over 500,000 jobs were lost in manufacturing, wholesale and retail trade, and accommodation and food services, and there was a progressive return of workers back to agriculture.

396. Thanks to massive social transfers, poverty only slightly increased by 0.6 percentage points in 2020. It is estimated that more than 44 million Thais have benefitted from social assistance and social insurance programs during the pandemic. Simulations indicate that social protection measures have mitigated the 1.2 percentage point increase in poverty that is estimated to have otherwise occurred during 2020 in the absence of the government's response (TEM July 2021).

397. Despite the large social assistance response achieving high coverage, households remained under pressure. A rapid phone survey implemented from April to June 2021 showed that around 80 percent of households received government assistance during the pandemic (Belhaj Hassine Belghith and Arayavechkit 2021).[206] The proportion is higher among low-income households (86 percent) than high-income households (71 percent), and among those experiencing negative income shocks (84 percent) than those not (66 percent). Despite the high coverage of social assistance, food insecurity increased, and substantial income declines have forced households to resort to negative coping strategies such as reducing food consumption and increasing debt.

398. A fourth wave of COVID-19 in 2021 slowed the recovery with vulnerable groups bearing a disproportionate burden. The survey also showed that while national employment remained stable at 68 percent between March 2020 and June 2021, there were significant differences across regions and certain demographics, with employment declining in urban areas and Bangkok but increasing in rural and Northern areas as many individuals who lost employment moved into the agricultural sector. Individuals in low-income households, women and those in low education groups were the most negatively impacted. Furthermore, increasing care responsibilities during the pandemic have negatively affected the employment status of married women and those in households with children, especially in urban areas. In addition to challenges in employment, the survey indicated that over 70 percent of households have experienced a decline in income, increasing to 80 percent of households in rural areas and low-income groups.

[205] Surveys of Thai workforce and micro and small businesses conducted by the Asia Foundation in May and September 2020.
[206] https://blogs.worldbank.org/eastasiapacific/impact-covid-19-thailands-households-insights-rapid-phone-survey.

8.3 Fiscal policy and equity

399. Fiscal policy is a key government instrument with several roles. It can be used to provide public goods and services, for macroeconomic stabilization, helping to dampen the impact of adverse shocks, to stimulate economic growth and to aid poverty reduction (Horton and El-Ganainy 2020). The COVID-19 pandemic brought into sharp relief the role that fiscal policy can play in mitigating shocks. It is also an important part of financing the necessary public investments in physical and digital infrastructure and human capital needed for countries to transition to higher incomes.

400. This chapter looks at the relationship between fiscal policy and poverty and inequality reduction in Thailand. Fiscal policy is also one of the few instruments which governments can use to reduce inequality in the short-term. It is not just that fiscal policy finances public investments which can promote growth as well as reduce poverty and inequality in the long-term; it can also affect the household income distribution today. Different households pay various taxes and benefit from public spending in different ways. The net effect determines the extent to which fiscal policy directly reduces poverty and inequality. The choice of public spending can also affect how much poverty and inequality are reduced in the longer-term.

401. Lower inequality tends to be associated with faster and more sustainable growth. Inequality can undermine progress in human capital accumulation, dampen demand, cause political and economic instability that discourages investment, and undercut the social consensus required to adjust in the face of shocks, and thus it tends to reduce the pace and sustainability of long-term growth. Ostry et al. (2014) finds that, for a given level of redistribution, lower post-fiscal inequality is correlated with faster and more durable growth. Similarly, Dabla-Norris et al. (2015) shows that an increase in the income share of the B40 is associated with higher GDP growth. Other studies have found that the relationship between income inequality and economic development is non-linear, switching from positive to negative at relatively low levels of income inequality (Grigoli and Robles, 2017). Fiscal policy is the main instrument used by governments to address acute needs and promote long-term growth, with wide-ranging impacts on poverty and inequality (World Bank, 2022c).

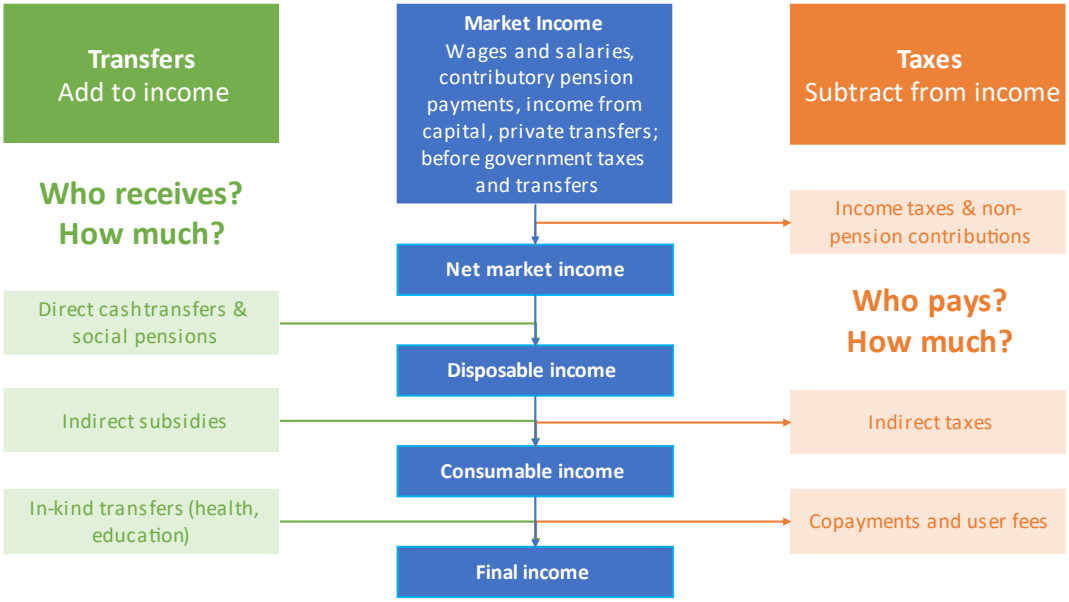
8.4 The commitment to Equity framework

402. To determine the impact of fiscal policy on household welfare, the Commitment to Equity (CEQ) framework of fiscal incidence analysis is used (Lustig 2018).[207] Under this framework, household income is assessed at different stages, as outlined in Figure 8-3. First, a household's market income is the total income it received from wages and salaries, rents and dividends, private transfers and remittances and contributory pension income.[208] This is the income a household generates before it encounters the fiscal system and is also called its pre-fiscal income. Some households pay personal income taxes and non-pension social security contributions which reduce their market income. Some households receive direct transfers (including social pensions) from the government as part of the social safety net, which increases their market income. The net effect after direct taxes and direct transfers is a household's disposable income: how much money does it have to spend on goods and services, or to save? Disposable income is equivalent to the measured consumption in the Thailand Socio-Economic Survey (SES). Second, when a household does buy goods and services, it pays indirect taxes (such as VAT, GST or Sales tax or special excises on particular goods) which means its disposable income buys less, but it might also benefit from indirect subsidies (such as cheaper fuel or electricity) which means its disposable income buys more. How much of different goods and services a household can afford to buy, after considering both indirect taxes and subsidies, is called consumable income. When considering only cash-based fiscal instruments, this is also a household's post-fiscal income. Finally, a household may also use public services such as send their children to a public school or visit a health center or hospital. In this case the public spending benefits are non-cash. Including this non-cash spending results in a household's final income (the post-fiscal income if non-cash spending is included).

[207] The CEQ approach was developed by the Commitment to Equity Institute (CEQ Institute) at Tulane University. The methodology, implementation guidelines, applications, and software of the CEQ approach can be found in Nora Lustig (Ed.), Commitment to Equity Handbook. Estimating The Impact of Fiscal Policy on Inequality and Poverty (pp. 3-55). Brookings Institution Press. 2018.

[208] Pensions can either be treated as deferred income – a person makes contributions when they are working and this is in effect saving, and then they draw down on this income when they retire – or they can be treated as government taxes and transfers – contributions are treated as a tax and payments are treated as a transfer. In the case of Thailand the baseline treats pensions as deferred income. See the data annex for the results when pensions are treated as taxes and transfers and the technical annex for greater discussion of this point.

Figure 8-3: Definition of income concepts and the role of fiscal instruments



Source: Lustig (2018).

403. This framework allows two key questions to be answered. First, who pays a particular tax or receives a particular benefit? For example, how much VAT is paid by poorer households and how much by richer households, both in baht and as a percentage of their market income? Second, what is the net impact of all taxes and transfers on different households? For example, which households pay more in taxes than they receive in benefits and which pay less? How does this net fiscal impact affect poverty and inequality in Thailand?

404. The objective of this chapter is to ask whether pre-COVID-19 fiscal policy in Thailand made the household income distribution more equal, and which instruments contribute to any such effect. The results are put in international perspective and insights from international experience are summarized, while specific policy recommendations are discussed in the concluding chapter of the report which follows. The data and methodology used to produce these results are discussed further in the technical appendix (Appendix A).

405. The CEQ framework has two important advantages. First, it assesses both tax and expenditure policies, including direct taxes (personal income tax, PIT) and pension and social insurance contributions; indirect taxes on consumption, such as VAT and excises on tobacco and alcohol or fuel; direct transfers; indirect subsidies (for a range of goods and services, sometimes as subsidized final items and sometimes as subsidized inputs); and in-kind spending (for example, education and health benefits, which are not received by households as cash). Moreover, the framework not only assesses as much tax and spending as possible but also examines their joint rather than individual effect, so the net impact on households is estimated. Second, it uses a standardized methodology, making it comparable across countries and time and allowing international benchmarking, as this chapter does.

406. It is also important to note what the CEQ framework does not do. Because the framework takes an accounting approach, it does not include behavioral effects (such as consumer substitution and labor market decisions, although it does model tax evasion and non-take up of social benefits), general equilibrium effects (such as the multiplier effect of cash transfers on the economy and the second-round tax effects this may create), or intertemporal effects (such as the long-run benefits of public education). Nor does it cover all taxes and spending or all people. In particular, it does not generally include corporate income tax or infrastructure spending and can suffer from low coverage of the richest people, who are often under-represented in household surveys.[209]

[209] The likely distributional impact of missing taxes and spending as well as the longer-term benefits of spending on health and education are discussed further in World Bank (2022).

8.5 Taxes and spending

Composition of revenues and expenditures (2019)

407. Thailand's tax revenues rely more on indirect than direct taxes; 62 percent of total tax revenue is captured in the current analysis, which excludes corporate income taxes. Thailand collected 17 percent of GDP in tax revenues in 2019,[210] below both the EAP and UMIC average (see Chapter 2). Indirect taxes such as VAT and excises are responsible for greater revenue collection than direct taxes such as CIT and PIT (Table 8-1), which is standard in developing countries; only OECD countries collect a majority of revenues through direct taxes (World Bank, 2022). Around 42 percent of tax revenue is from direct taxation, mostly CIT, which contributes about 25 percent to tax revenue while PIT contributes only 11 percent. VAT and excises each contribute about a similar amount as CIT (21 and 24 percent, respectively), with the latter mainly coming from fuel excises (prior to their reduction during the Ukraine food-fuel crisis; see later discussion). About 62 percent of total tax revenues (PIT, SSC, VAT and excises) are included in the CEQ analysis, although only around 34-47 percent of total PIT, VAT and excise revenues are modelled, reflecting in part missing top income households from the survey data; PIT cannot be calculated on the income from these households, nor VAT and excises on the resulting consumption.[211]

Table 8-1: 62 percent of total 2019 tax revenues in Thailand are included in the CEQ analysis

	% Rev	% GDP	Included	Macro-validation*
Tax revenues	82.2	17.1		
Income taxes	34.1	7.1		
Personal income tax	8.7	1.8	Yes	39.7%
Social security contributions	4.9	1.0	Yes	78.8%
Corporate income tax	20.6	4.3	No	
Property taxes	1.1	0.2	No	
General taxes on goods and services	36.3	7.6		
VAT*	16.9	3.5	Yes	37.7%
Excises*	19.4	4.0	Yes	55.5%
Taxes on international trade	2.8	0.6		
Customs duties	2.8	0.6	No	
Other taxes	7.9	1.6		
Non-tax revenues	17.8	3.7		
Total revenues	100.0	20.9		

Source: UNU-WIDER Government Revenue Dataset 2021: General Government.

Note: GDP in 2019 is THB 16,896 billion and total revenues are THB 3,526 billion**.** Macro-validation is the ratio of each simulated tax or spending item to the administrative total.

408. Just under half of all spending is included. Of the 20.5 percent of GDP which Thailand spends on public expenditure, nearly half (8.8 percent of GDP) is spent on social protection, education and health (Table 8-2), all of which is captured in the analysis in this chapter. Of the 3.1 percent of GDP spent on social protection, 0.8 percent goes on direct social assistance transfers, mostly Old Age Allowance (OAA) and the State Welfare Card (SWC).[212] About 2.3 percent goes on social insurance, or contributory pensions. In the baseline methodological approach these are treated as deferred income

[210] 16 percent excluding social contributions.

[211] For the purposes of macro-validating the modelled CEQ VAT and excise with administrative data, we use only that part of VAT collected attributed to households (so excluding that from non-residents, government purchases and intermediate consumption with limited right to deduct VAT). VAT forgone from exemptions is not broken out amongst these categories and so is pro-rated according to the VAT collected.

[212] The 2019 Socio-economic survey (SES) data show larger spending on social assistance than administrative data (1.2 percent of the GDP in the first and 0.8 percent in the latter). CEQ results use 1.2 percent of GDP.

and included in market or pre-fiscal income. Around one-third of education spending goes on secondary school, a little under that to tertiary spending.

Table 8-2: 44 percent of total 2019 public spending in Thailand is included in the CEQ analysis

	% Exp	% GDP	Included	Macro-validation
Social protection	15.0	3.1		
Direct transfers	3.9	0.8	Yes	59%
Old age allowance	2.0	0.4		
Unconditional cash transfers[1]	0.9	0.2		
Other	1.0	0.2		
Social insurance[2]	11.1	2.3	Yes	-
Education	14.8	3.0	Yes	86%
Pre-primary and primary	0.7	0.1		
Secondary	5.4	1.1		
Tertiary	3.9	0.8		
Not defined/classified	2.9	0.6		
Subsidiary serv. to education	1.9	0.4		
Health	13.9	2.7	Yes	99%
Other spending	63.0	12.9		
Total expenditures	100.0	20.5		

Source: GFS and TEM July 2021.

Notes: Total expenditures are estimated at THB 3,456 billion. Over 90 percent of unconditional cash transfers are from the State Welfare Card (SWC) program. Macro-validation is the ratio of each simulated tax or spending item to the administrative total. Contributory pensions are treated as deferred savings under the baseline CEQ approach used in this chapter. As such, they are not included in the main CEQ results and do not require macro-validation.

409. Thailand tripled social assistance spending to mitigate the impact of the COVID-19 crisis on firms and households. The Thai COVID-19 response was one of the largest in the region and beyond, with over 80 percent of the population receiving some sort of support. This support came by way of additional payments to existing beneficiaries as well as an expansion of temporary support to new beneficiaries; see Chapter 6 for greater detail.

410. Moreover, with the compounding Ukraine food-fuel price crisis, it has enacted a series of price controls. Inflation reached a 14 year-high in July 2022 and the government intervened through price controls and subsidies to contain the inflationary pressures. While price increases are projected to moderate over the short term, these measures impose a significant fiscal cost and aggravate the fiscal deficit (Thailand Monthly Economic Monitor August 2022, EAP Economic Update 2022).

Impact of taxes and spending on the household income distribution

411. The progressivity of a fiscal system can be thought of either in terms of what share of taxes are paid and benefits received by richer households and poorer households, or how much these amounts paid and received represent relative to each household's income. Each household in Thailand pays some taxes and receives some benefits from public spending. If the taxes paid are more than the benefits received, they are a net contributor; if the benefits outweigh the taxes, they are a net beneficiary. This chapter groups every household into an income decile – groups of ten percent of the population ranked from the poorest 10 percent by market income (decile 1) to the richest 10 percent (decile 10). How each decile benefits and contributes and by how much can be presented in two different ways. The first is to show the total tax paid by each decile (or the total benefits received). The second is to show the same pattern of taxes or benefits but as a percentage of average income for each decile. That is, one way of thinking the progressivity of a fiscal system is to ask what share of taxes and benefits go to each income decile? Another is to ask how much are taxes and benefits for each decile relative to their income? Both types of charts are used throughout this chapter and Box 8-1 discusses further how to read and interpret them.

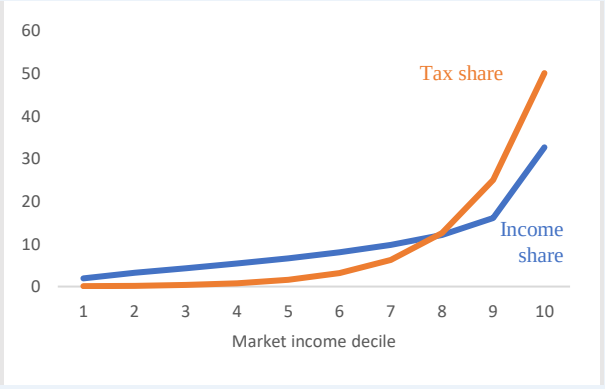
Box 8-1: Incidence curves, concentration shares and fiscal progressivity

The *incidence* of a particular tax or transfer is how much it represents relative to a household's market income. A transfer that provides poorer households a greater benefit than for richer households is progressive *with respect to income*. The *concentration* of a particular tax or transfer is how much of the total tax is paid or benefit received by a household. A transfer in which more goes to poorer households in absolute terms (that is, of the total budget) than richer households is progressive *with respect to the share of benefits*. Any transfer in which poorer households receive an equal or greater share of benefits as the rich will reduce inequality: as the rich have a greater share of income to begin with, the post-transfer shares of income will be more equal. For a tax to reduce inequality, not only must the rich pay a greater share of it, but they must also pay a greater share than they already enjoy of total household income. This may seem counterintuitive, but consider an example where A earns $10 and B earns $90. A pays $5 in tax while B pays $10. B is paying a greater share of tax (67 percent) but because she has an even greater share of income (90 percent), the tax is inequality increasing: the post-tax incomes are $5 and $80, where B now has 94 percent of total income.

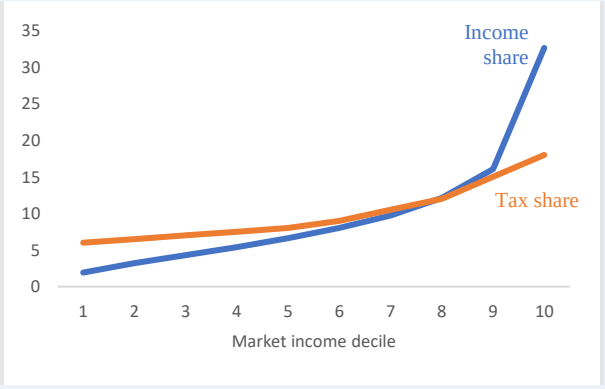
Figure Box 8-1-1 shows two examples of taxes, both where richer households pay a greater share, one where it reduces inequality because the share paid by the rich is greater than their share of total income, and another where inequality is increased because even though the rich pay a greater share of the tax, it is less than their share of income, meaning their post-tax income share *goes up*. Note that the concentration shares add up to 100 percent.

Figure Box 8-1-1: Inequality Increasing and Reducing Concentration Shares

Concentration Shares (market income and inequality decreasing tax)
(percent of total, by decile)



Concentration Shares (market income and inequality increasing tax)
(percent of total, by decile)

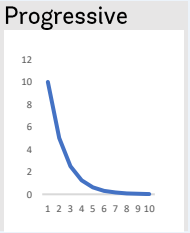


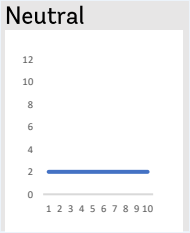
Source: Authors' elucidation

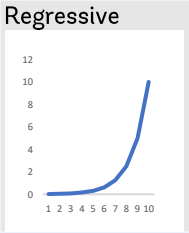
The *incidence* of a particular tax or transfer is how much it represents relative to a household's market income. A transfer that represents a greater percent of income for poorer households than for richer households (or a tax which represents a greater percent of income for richer households) is progressive *with respect to income*. Figure Box 8-1-2 shows stylized examples of progressive, neutral, and regressive incidence curves, first for a transfer, subsidy or other benefited received by households and second for a tax paid. Note that the points of the incidence curve do not add up to 100; their height will depend on both the size of the tax or transfer and a decile's average market income.

Figure Box 8-1-2: Progressive, Neutral, and Regressive Incidence Curves

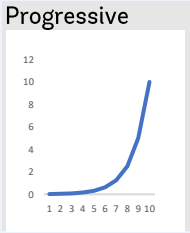
Incidence Curve
(transfer, subsidy or benefit as percent of market income, by decile)

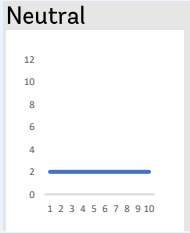


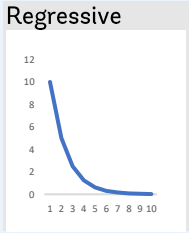




Incidence Curve
(percent of total tax, by decile)







Source: Authors' elucidation.

Box 8-1: Incidence curves, concentration shares and fiscal progressivity

It is possible for an instrument to have a regressive concentration but progressive incidence. This is often the case with fuel subsidies; richer households consume much more fuel (and therefore a greater share of the total subsidy) than poorer households, but the meagre benefits to the poor represent a greater share of their even more meagre incomes. It is also possible for an instrument to have a progressive concentration but regressive incidence. This is often the case with indirect taxes such as VAT; richer households pay a greater share of the total tax because they consume more, but poorer households pay more relative to their income (and poor incomes are closer to consumption than rich incomes). In fact, indirect taxes and subsidies can be seen as mirror images of each other. A more exact way to both represent progressivity / regressivity and quantify it is with Lorenz Curves of income and Concentration Curves (not shares) of a tax or transfer.

Source: World Bank (2022)

412. The Thai fiscal system in 2019 was quite progressive, with a greater share of net contributions coming from richer households, driven by progressive taxation, and a greater share of net benefits going to poorer households. Figure 8-4 shows the total taxes paid by each household market income decile, the total benefits received and the net impact. A number of features are salient. First, in cash terms (that is, excluding the non-cash benefits of health and education spending), Thais in the poorest two deciles are net cash beneficiaries – they receive more in cash benefits than they pay in tax. The next two deciles roughly breakeven, neither paying nor benefiting more, while the richest six deciles are all net cash contributors. Moreover, decile one receives more net cash than decile two while each of the richest six deciles contributes an increasing amount into the fiscal system, with the richest 10 percent of households contributing three times more than the next richest 10 percent. When non-cash benefits are also included, the first seven deciles become net beneficiaries and only the richest decile remains a significant net contributor, paying THB 209 bn more in taxes each year than they receive in benefits. By contrast, the poorest 20 percent receive nearly as much in net terms, or THB 225 billion. While a greater share of education, health and cash transfers goes to poorer households than richer ones, the main driver of the strong net contributions by the richest households is the high share of total tax they pay.

413. The net benefits represent a large share of income for the poorest households, although they are more modest in cash terms and even the richest households do not contribute significantly relative to their incomes. Figure 8-5 shows the same pattern of taxes and benefits but as a percentage of average income for each decile. The net benefits to the poorest decile represent 70 percent of their market income; that is, their incomes are 70 percent higher after paying taxes and receiving benefits than from what they earn themselves or receive from friends and family. However, education and health benefits make up most (86 percent) of the net impact;[213] in cash terms the poorest decile is only 10 percent better off. And both net benefits for other poor households and net contributions from richer households are smaller as a percentage of incomes. No other decile than the poorest one pays or receives in cash more than 10 percent of their income except for the richest decile, which pays 17 percent of their income in cash.

[213] Education and health benefits are attributed at the cost of delivery.

Figure 8-4: The majority of households are net beneficiaries, although not in cash terms

(Concentration of taxes and transfers by decile, THB billions annually)

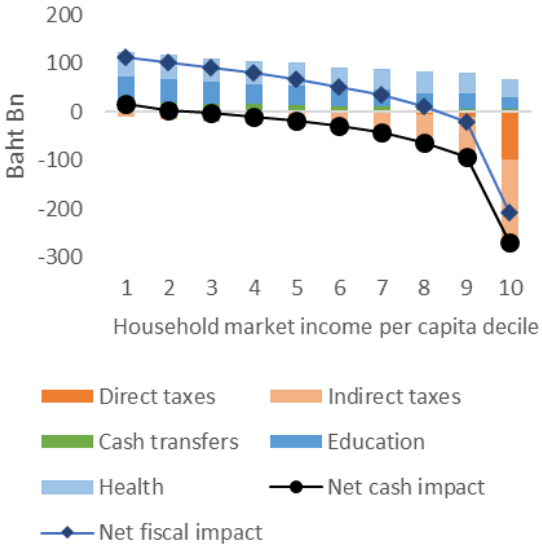
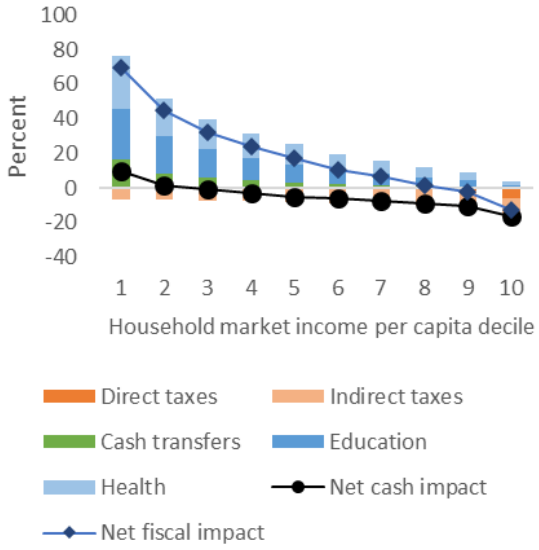


Figure 8-5: Benefits are significant for poorer households relative to their incomes

(Incidence of taxes and transfers by decile, percent of market income)



Source: World Bank calculations

414. The progressive fiscal system reduces inequality in Thailand. Pre-fiscal income inequality – the Gini Index when measured using market income – is 37.5 points. With richer households paying more of their income in direct taxes and poorer households benefitting more from direct transfers, inequality falls to 35.0 (Figure 8-6).[214] The payment of indirect taxes further reduces inequality slightly to 34.0 but it falls more sharply again to 28.6 points after including health and education benefits. In total, fiscal policy reduces the Gini Index of inequality in Thailand by a considerable 8.9 points.[215]

415. Poverty is also reduced, with the greatest declines coming in areas with the highest initial poverty rates. If poverty were measured in Thailand based on each household's market income, the poverty rate at the international UMIC poverty line of $5.50 would be 9 percent. However, after accounting for direct taxes and transfers received, the poverty rate falls to 6.2 percent.[216] Indirect taxes create some burden for households, resulting in a poverty rate of 8.1 percent, or a decline of 0.9 percentage points after all taxes are paid and cash benefits received (Figure 8-7).[217] The largest reductions in poverty from fiscal policy come in the initially poorest regions; the poverty rate in the Northeast falls from 16 percent in pre-fiscal terms to 13.3 percent in post-fiscal terms, or a decline of 2.7 points, while in the North it falls from 12.8 percent by 1.5 points. Little reduction is seen in the already very low poverty regions of Bangkok and Central, but neither is there much impact in the South which has a pre-fiscal poverty rate only slightly higher than post-fiscal. The larger impact of fiscal

[214] The current analysis uses the consumption welfare aggregate from SES data and equates it to disposable income, constructing market income backwards by adding back direct taxes and subtracting direct transfers (see technical appendix for more detail). This ignores the role of savings across the distribution. If we use survey income (instead of consumption) as the starting point and equate it to market income, the pre-fiscal Gini is 45.5, falls to 38.5 after including tax and benefits, suggesting that fiscal policy reduces the income Gini Index by 7 points. The lower impact of fiscal interventions on income Gini than consumption Gini is due to the fact that household income is higher than consumption, particularly in top deciles, and thus the effect of fiscal interventions is lower when measured as a proportion of income than when measured as a proportion of consumption.

[215] This is the baseline Pensions as Deferred Income (PDI) scenario. The results are very similar if pensions as treated as a government transfer (PGT), see technical appendix for full results.

[216] If we use the survey estimates of social assistance transfers without benchmarking to administrative data (that is spending on social assistance would be 1.2 percent of GDP instead of 0.8 percent), fiscal policy is found to reduce inequality by 9.1 points and poverty by 2.6 points.

[217] This is the baseline Pensions as Deferred Income (PDI) scenario. When pensions are not treated as market income, initial poverty is higher (12.3 percent compared to the 10.6 percent under PDI) because those receiving pensions have a lower initial income, and since the pensions are then treated as a government transfer, poverty ultimately falls further once fiscal policy is accounted for, to the same 8.1 percent, increasing the impact of fiscal policy on poverty to 4.2 points (compared to 2.6 points under PDI); see technical appendix for full results.

policy on poverty in the North and Northeast compared to the other regions is explained by two factors. The first, and most important one, is related to the fact that 40 percent of households above the median of income distribution in these regions receive enough transfers (net of direct taxes) to close the gap to the poverty line, while this is not the case in the Central and Southern regions. The second, though less important, factor is due to the fact that the net effect of direct transfers less taxes is slightly higher among poor households in northern regions than in the South.

Figure 8-6: The net impact is to reduce inequality at all stages of fiscal policy

(Impacts of fiscal policy on Gini Index)

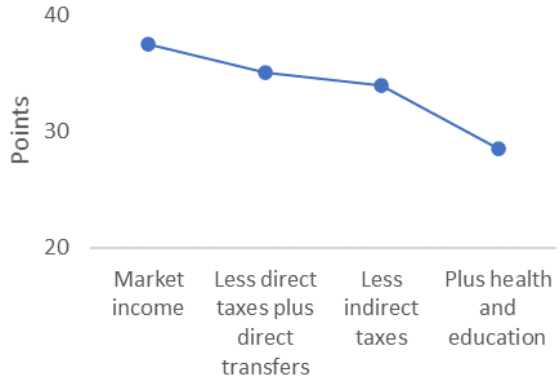
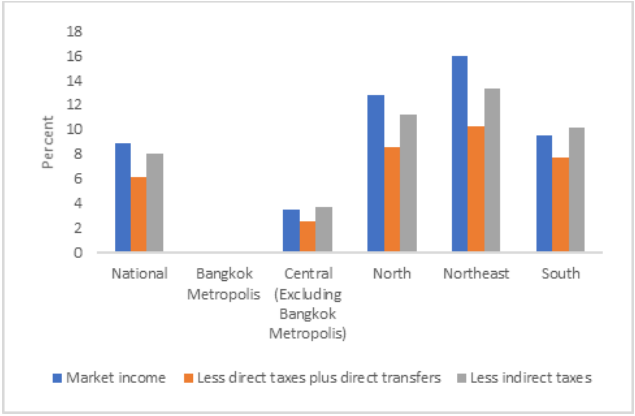


Figure 8-7: Fiscal policy also reduces poverty, and by more in poorer regions

(Poverty headcount rate at different income stages, by region)



Source: World Bank calculations

Note: The results presented treat social security pension contributions as compulsory savings and pension receipts as deferred income, and so as part of market income and not as taxes and transfers.

416. Moreover, the COVID-19 cash support to households also helped prevent an increase in poverty more recently. As Chapter 6 discusses, to mitigate the economic impacts of the COVID-10 crisis on Thai households, the government introduced a significant social assistance response. This included the mobilization of large new emergency programs for informal workers and farmers, and through vertical expansion of existing social assistance schemes for the elderly, people with disabilities, children of poor families and for recipients of the SWC program. The new emergency programs are estimated to have reached 30.7 million individuals or approximately 81.5 percent of households (Sharpe et al. 2021, TEM July 2021). With a total cost estimated at THB 388 billion (38.6 percent of the government's one trillion THB emergency response and recovery package) COVID-19 cash transfers amounted to 2.5 percent of GDP, additional to regular expenditures of 0.8 percent of GDP for social assistance programs, bringing total social assistance to about 3.2 percent of GDP in 2020. The national poverty rate in 2020 increased by 0.6 percentage points, but World Bank estimates suggest that without the public social assistance response, poverty would have increased by around 1.2 percentage points, suggesting a response cost of around THB 323 billion per percentage point of poverty mitigated.

417. A mix of fuel subsidies and cash transfers in response to broad-based inflation in 2022 due to the Ukraine war has also mitigated poverty impacts, albeit in a less efficient manner than during COVID-19. With global food and fuel prices sharply higher in 2022 due to the war, Thailand employed a dual approach to soften the impact on households. The price of diesel was regulated below the international price while the diesel excise was reduced by more than two-thirds. At the same time, top-up payments of THB 200 per month were made to existing SWC beneficiaries. In the absence of any government response, it is estimated that inflation would have led to 2.7 percentage point increase in poverty. The government's diesel subsidy is estimated to reduce the poverty impact of inflation by 0.5 percentage points (or 18 percent). Although the cost of the subsidy varies month-to-month based on changes in international fuel prices and occasional policy adjustments made by the government, it is estimated that the subsidy costs approximately THB 10 per litre (or roughly THB 11.1 billion per month in total).[218] A monthly cash transfer – top-ups of THB 200 – paid to 13.4 million existing State Welfare Card (SWC) beneficiaries from February to April and again from September to October is estimated to reduce the poverty impact of inflation by 0.9 points (or 35 percent) at a cost of THB 2.6 billion. Together, the two responses are estimated to

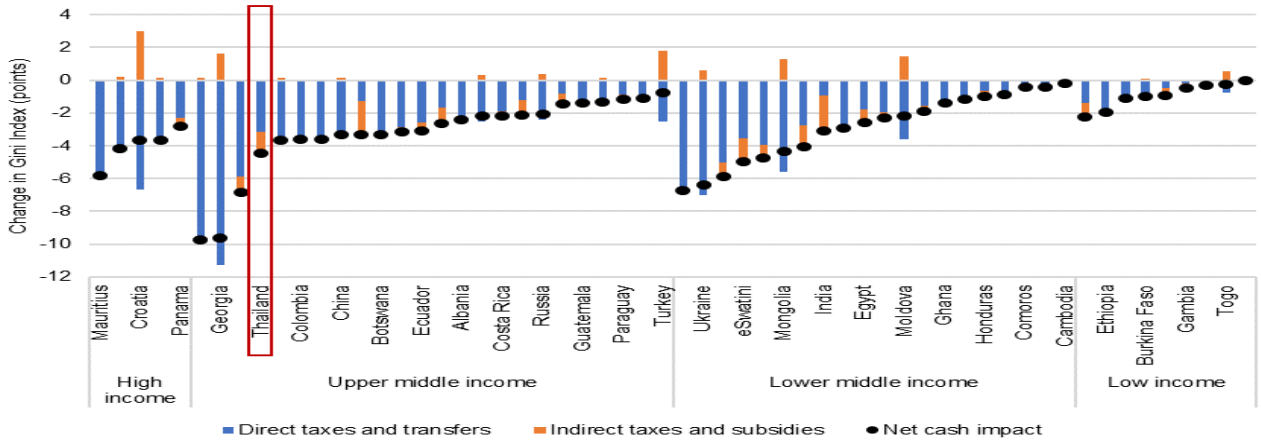
[218] The fiscal cost includes both the cost to the State Oil Fund of maintaining the diesel price cap (THB 35 per litre) and the forgone revenue from reducing the diesel excise (from THB 5.99 per litre to 1.34). A total cost of THB 10 per litre is used in the modelling, a monthly representative subsidy which is similar to that of July 2022.

mitigate about half of inflation's poverty shock impact (around 1.4 points), at a combined cost of THB 13.7 billion, about a similar magnitude to the COVID-19 response. However, because richer households also benefit from fuel subsidies (and by considerably more than poorer ones), the Ukraine crisis response has had a greater fiscal burden, costing THB 10.1 billion per point of poverty reduction, over three times more expensive than the cost of the SWC payments alone. In fact, had the same budget been spent on higher SWC top-up payments instead, overall poverty would have decreased by 0.8 points.

The progressivity of Thailand's fiscal policy in international perspective

418. Thailand's fiscal system does more to reduce inequality in cash terms than in most other countries with comparable data. The impact of taxes and cash benefits in Thailand in 2019 was to reduce the Gini Index by 4.2 points from its pre-fiscal level. This is both a significant reduction in absolute terms and a strong performance in international context, being the 12th best out of 58 countries with available CEQ data and 4th best out of the 24 UMICs (Figure 8-8). Like most countries which achieve significant reductions in inequality through the cash components of fiscal policy, direct taxes and transfers play the largest role.

Figure 8-8: Thailand's fiscal policy reduces inequality in cash terms more than most countries…

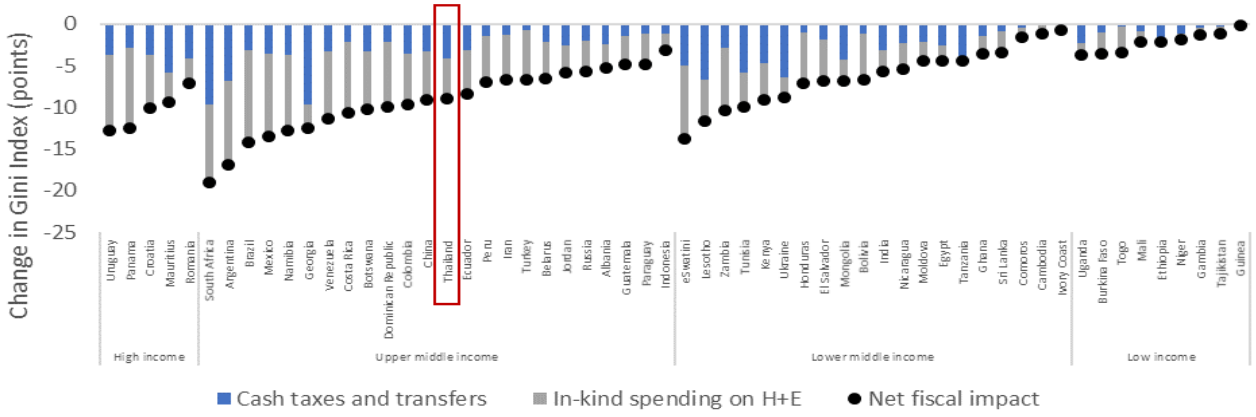


Source: World Bank estimates based on CEQ Data Center on Fiscal Redistribution, OECD and World Bank data

419. Non-cash health and education benefits further reduce inequality in Thailand, although by less than in many other countries. Health and education services are benefits to households not received in cash and so are not included in the impacts of fiscal policy on inequality in cash terms just discussed. Nonetheless, they do represent real benefits to households; when valued at their cost of delivery, they further reduce inequality in Thailand by another 4.7 points to 8.9 points in total. In spite of this, Thailand's net fiscal impact on inequality when non-cash benefits are included falls closer to average in international rankings, 22nd out of 58 countries and 13th out of 24 UMICs (Figure 8-9). While health and education benefits do reduce inequality in Thailand, they do so by less than elsewhere, where the 58-country average impact is 4.4 points and the UMIC average is 6.0 points. Similarly, as the figure shows, these non-cash benefits are responsible for around two-thirds of total inequality reduction by fiscal policy in other countries on average, compared to just over half in Thailand (in part because Thailand spends less on both than the UMIC average and in part because of differences in enrolment across the income distribution). This being said, given the non-cash nature of the health and education benefits and the difficulty in valuing them,[219] Thailand's strong inequality reduction in cash terms bears emphasising.

[219] There are good reasons not to think the value of these non-cash public services to households is the same as the cost to governments of delivering them. If there are quality issues, the value to households could be significantly lower than the cost of provision. One approach is to adjust the value of the benefits to different households based on differences in human capital outcomes across the income distribution using the global socioeconomic-adjusted Human Capital Index (S-HCI; Dsouza, Gatti and Kraay, 2019); see Rodriguez and Wai-Poi (2021) for the original application to CEQ and Wai-Poi *et al*. (2022) for an application in the region to Vietnam. S-HCI data are not available in Thailand, so the progressive nature of health and education benefits presented here likely represents an upper bound, especially given the differences in test results across the income distribution documented. However, the true benefit of public health and education to households is in the returns to human capital when children become adults; these benefits are not modelled at all and can be both inequality and particularly poverty reducing. This is discussed in World Bank (2022).

Figure 8-9: …however the impact on inequality is only average for UMICs once non-cash education and health benefits are included



Source: World Bank estimates based on CEQ Data Center on Fiscal Redistribution, OECD and World Bank data

420. The poverty reduction achieved by Thailand's fiscal policy is also a strong outcome relative to other countries. Poverty at the UMIC $5.50 line is reduced by 0.9 points in Thailand. Not only is this 15th best out of 56 countries with comparable data and 7th best amongst UMICs, the majority of countries outside of HICs actually see short-term poverty increase as indirect taxes leave poorer households out-of-pocket relative to the cash transfers they receive (Figure 8-10). As noted earlier, indirect taxes – VAT and excises – do place a burden on the poor in Thailand but this is more than offset by targeted cash transfers.

Figure 8-10: Thailand's fiscal policy reduces poverty unlike most middle income countries

Source: World Bank estimates based on CEQ Data Center on Fiscal Redistribution, OECD and World Bank data.

Note: Income category-relevant international poverty lines are used for each country: $1.90 per person per day (in 2017 PPP terms) for LICs; $3.20 for LMICs; $5.50 for UMICs and HICs. Countries with older CEQ data use 2011 PPP rates.

The distributional impact of different fiscal instruments in Thailand

421. This section looks at each of the major fiscal instruments on both the revenue and expenditure side to better understand their particular distributional impact. Thailand's fiscal system has already been shown to be quite progressive, reducing both poverty and inequality significantly. This section looks at the role each major fiscal instrument plays in this outcome: who pays particular taxes and by how much, and who benefits from particular spending and by how much. Understanding individual instruments can show how fiscal policy can be made even more progressive in Thailand, or how fiscal consolidation can be achieved without adversely affecting poorer households.

Household demographics

422. The impacts of fiscal policy depend in part upon household demographics, particularly the benefits of public education and pensions. Poorer households are more likely to have children and to have more of them than richer ones. Over half of the poorest 30 percent of households have at least one child, many two or more, compared to one-fourth or less of the richest 30 percent (Figure 8-11). Childless households with elderly members (who might benefit from social pensions) represent around 30 percent of households at all income levels, but households with no young or old dependents are a much more common phenomenon amongst richer households; 59 percent of households of the richest quintile.

423. However, education spending benefits also depend on whether children go to public schools and whether they stay there. Enrolment rates at the primary and secondary level are near 100 percent in Thailand, so the greater number of children in poorer households also mean more students come from poorer households. Students are also increasingly more likely to go to private schools as households get richer, meaning they do not benefit from public school spending (Figure 8-12). However, public tertiary education is considerably more expensive (THB 61,000 per student) than primary (THB 39,000 per student) and secondary (THB 32,000 per student) and is largely enjoyed by the richer half of the income distribution, particularly the richest 20 percent.

Figure 8-11: Poorer households are much more likely to have children…

(Household demographic composition by income decile)

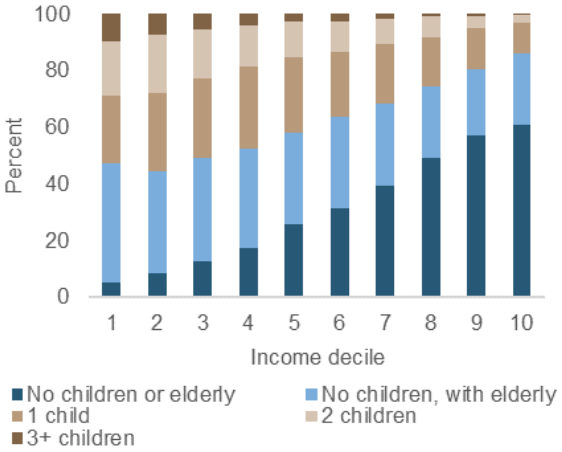
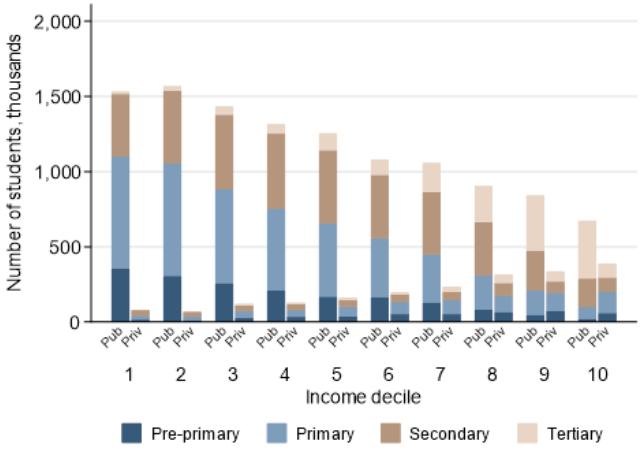


Figure 8-12: …but richer children are more likely to be enrolled in expensive public tertiary education

(Children enrolled by schooling level and income decile)



Source: 2019 SES and World Bank calculations.

Note: Children are defined as aged below 18 years and younger (end of compulsory schooling and elderly as aged 60 years and above (eligible for social pension).

The impact of different taxes and spending on poverty and inequality

424. Poverty falls because the cash transfers received by poorer households more than offset their tax burden from VAT and excises. Very few poorer households pay direct taxes such as PIT, so they have little impact on the poverty rate. However, all households pay some VAT on their consumption and most pay some excises on tobacco, alcohol, sugar-sweetened beverages and vehicles and their parts. By themselves these indirect taxes would increase poverty by 1.1 percentage points. However, the cash transfers received by poorer households decrease poverty by 2 points, more than offsetting the indirect tax burden, accounting for the net reduction in poverty of 0.9 points (Figure 8-13).

425. At the same time, *all* fiscal instruments in Thailand help reduce inequality, with PIT contributing the most on the tax side and direct transfers, education and health benefits all playing a part on the spending side. As discussed earlier, the cash transfer, education and health benefits represent a greater percentage of income for poorer households than richer ones, and so reduce inequality by 1.2, 2.3 and 2.8 points on the Gini Index respectively. Moreover, while taxes are a burden to all households and increase poverty, because richer households pay more relative to their income, taxes also reduce inequality in Thailand. Direct taxes, mainly PIT, do the most to equalize (1.1 points) but VAT (0.5 points) and excises, mostly on fuel (0.9 points), also contribute. Thus, all fiscal instruments in Thailand contribute to the 8.9 points reduction in equality by fiscal policy.

Figure 8-13: Cash transfers more than offset the tax burden for poorer households, reducing poverty by 0.9 points

(Impact on poverty reduction by instrument, percentage points)

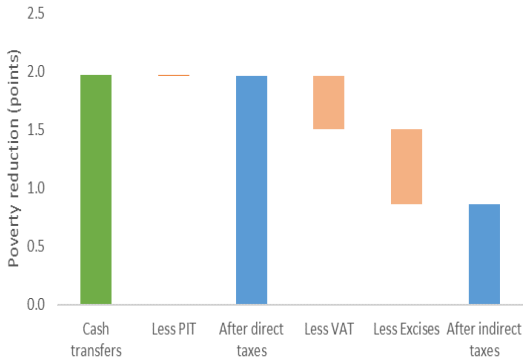
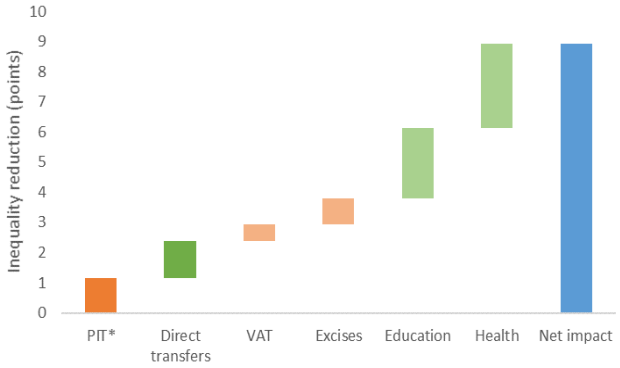


Figure 8-14: All of Thailand's fiscal instruments reduce inequality to a degree, reducing the Gini by 8.9 points in total

(Impact on inequality reduction by instrument, percentage points)



Source: World Bank calculations

Notes: Marginal effects on poverty and inequality reduction are presented. The marginal impact of each instrument is the size of each bar. The cumulative impact is the ending point of each bar. A bar starts at the ending point of the last instrument. A green positive bar represents contribution to poverty or inequality reduction. An orange negative bar represents an increase in poverty or inequality. Individual sub-components are scaled to the marginal effect of each fiscal category. For example, the marginal effects of VAT and excises are scaled to sum to the marginal effect of indirect taxes as a category.

The incidence and concentration of different taxes and spending

426. Direct tax collection is constrained by degree of informality in employment. Direct taxes – personal income tax and social security contributions – are based on a worker's earnings. Their payment generally depends upon them being withheld by a worker's employer; informal workers generally do not submit tax returns, declare their income or pay direct taxes, including many richer self-employed professionals. Thus, the degree of direct tax collection will depend on how formal or informal employment is in a country. Around half of all workers are formal (waged or salaried) in Thailand, with formal workers much more likely to be in richer household income deciles (Figure 8-15). A combination of progressive tax rates and minimum income thresholds for direct taxes combined with high rates of informality amongst poorer households mean direct taxes are structurally progressive. However, the relatively high rates of informality even among the richer households who make up the main income tax base will limit potential revenue generation from these progressive taxes.

427. Richer households are more likely to pay any direct taxes, although considerably more poorer households make social security contributions than pay PIT. Rich households are more likely to pay direct taxes than poorer ones. Nearly half of the richest decile are estimated to pay PIT, more than double the rate of the second richest decile; only 10 percent of decile 8 pays PIT and almost no household in the poorest half of the distribution does (Figure 8-16). Social security contributions (SSC) are also more likely to be paid by richer households, but a much larger proportion of poorer households also make contributions, making SSC less progressive. Three in ten people in decile 5 pay SSC and around 10 percent of the poorest two deciles do as well. It is important to remember that SSC *for pensions* are not considered taxes in the baseline Pensions as Deferred Income approach of the current analysis, but it is nonetheless useful to understand how these forced savings reduce disposable income across the distribution. They are included in the current direct tax analysis for this reason despite being excluded from the baseline poverty and inequality impact results; other SSC (e.g., unemployment and health) are presented separately and are included in the baseline results.

Figure 8-15: Formal workers are more likely to come from richer households, but informality is common even in richer deciles

(Employment formality by decile, percent)

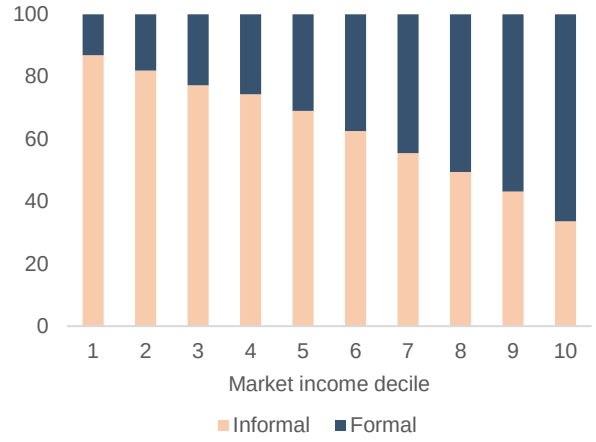
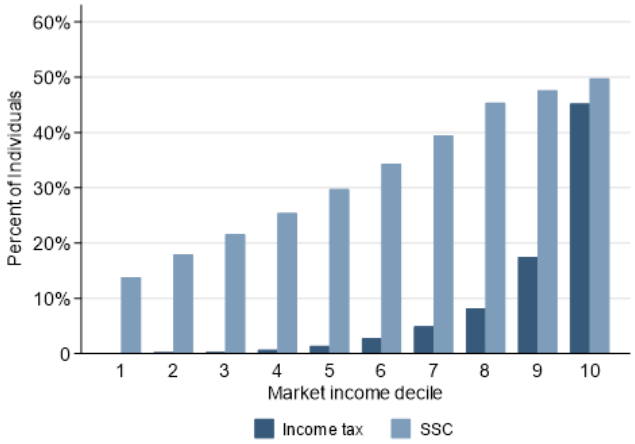


Figure 8-16: Social Security contributions are paid much more broadly across the income distribution than income tax

(SSC and PIT coverage by decile, percent)



Source: World Bank calculations

428. At least half of all direct taxes and most PIT are paid by the richest 10 percent of people, likely even more, although the burden is less than one-tenth of their average income. Richer households pay a much greater share of direct taxes than poorer households. In fact, the high percentage of decile 10 paying PIT and the increasing PIT rates with income mean that around half of all direct taxes – and two-thirds of PIT – come from decile 10 (Figure 8-17), driven primarily by PIT receipts.[220] Moreover, with some of the richest households likely missing from the household survey in the current analysis, it is likely that the total amount of PIT paid by decile 10 is even higher. While the total number of PIT payers from the tax administrative data are captured in the survey, only 47 percent of total PIT paid is modelled, indicating that a small number of the richer households who are responsible for large PIT payments have not been captured, those surveyed are underreporting incomes or both.[221] Nonetheless, the average direct tax burden for decile 10 is less than 9 percent of market income (Figure 8-18), suggesting that greater revenues could be generated from PIT in a progressive manner while leaving the burden on taxpayers at a reasonable ratio to incomes; Chapter 2 discusses PIT reforms.

[220] Direct taxes include not just PIT but also tax on interest, rental income, remittances and lottery winnings. PIT makes up the large majority of direct taxes; a full breakdown is given in the technical annex.

[221] World Bank (2022) discusses missing top incomes in household surveys and notes that it is a common phenomenon in most countries; see, for example, Lustig (2019) and Ravallion (2022). This is reflected in the usually large gap between both total income/consumption in household surveys and the national accounts, and between the total PIT revenue estimated in surveys and the total revenue collected in administrative data. See Lustig (2019) for a discussion of reasons for missing top incomes in survey data. Indeed, in all countries, PIT tends to be quite concentrated, with a small number of rich taxpayers paying a large share of total taxes; to the extent that these households are not included, the PIT incidence and concentration curves can be underestimated at the top. A few studies have tried to evaluate the extent of missed income by merging survey data with administrative data from tax returns; Piketty (2003) and Piketty and Saez (2003) are the key reference works, and Atkinson and Piketty (2007, 2010) represent the main cross-country studies. Blanchet, Flores, and Morgan (2022) discuss how these two types of datasets can be merged and illustrate this with data from a few countries. For example, the share of national income going to the richest 1 percent of households in Chile increases from 14 percent in the survey data to 17 percent once tax administrative data are included; this increases the Gini index from 64 to 69 points. In Brazil, the top 1 percent's share increases from 10 percent to 24 percent and the Gini index from 51 to 62 points.

Figure 8-17: Half of all direct taxes come from the richest decile, primarily from PIT

(Direct taxes by decile, BHT millions)

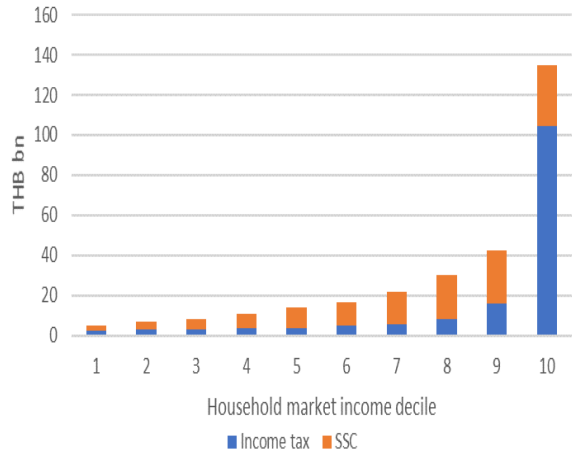
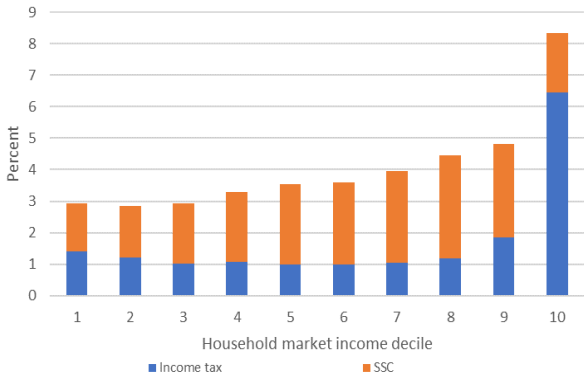


Figure 8-18: Significant social security contributions mean direct taxes are less progressive than from PIT alone

(Direct taxes by decile, percent of market income)



Source: World Bank calculations

429. Richer households also pay a larger share of total indirect taxes and a higher effective rate relative to their incomes, although poorer households pay significantly more indirect taxes than they do direct taxes. Half of all indirect tax revenue comes from the richest *two* deciles (unlike the richest decile for direct taxes), with richer households still paying a significantly higher share of total indirect taxes collected; the poorest half of the population contribute only 20 percent of the total (Figure 8-19). VAT is the single largest indirect tax for all households but excises all together are higher, driven by the direct and indirect effects of fuel excises for everyone, combined with vehicle excises for richer households.[222] The effective indirect tax rate is both flatter than for direct taxes – the richest households do pay a higher percentage of their income than other households but the gap is smaller – and higher – the poorest decile pays 6.8 percent of their market income in indirect taxes Figure 8-20 while the second richest decile pays 10.4 percent of income in direct taxes.

430. As in other countries, informal purchases lower total revenue collection and reduce the effective tax rate on the poor, although the impact is more muted in Thailand than elsewhere. The VAT burden modelled here not only includes preferential rates and exemptions on different goods and services, matched to individual household consumption baskets, but also informality of purchases. Purchases from informal establishments (such as a streetside vendor) often do not charge VAT. Since poorer households tend to have a larger share of informal consumption, their effective VAT rate can be lower (although the final price of informal purchases does include embedded VAT charged on formal inputs used in the production of informally purchased items). Unlike for many countries, the Thailand survey data include place of purchase and so informality can be directly modelled. As in other countries, informal purchases do make up a larger share of poor consumption with nearly 20 percent of VAT on consumption of the poorest half of households going unpaid compared to less than 10 percent for richer households, although this level of informality is significantly below developing country averages.[223] The relatively low level of informality limits the forgone revenues although the highest amount foregone still accrues to richer households due to their higher consumption levels.

[222] The progressivity of excises on tobacco, alcohol and sugar-sweetened beverages depends not only on their share in the consumption basket of different households but also whether the dynamic effects of reduced consumption, greater health and productivity and higher wages are modelled. See Fuchs et al. (2019) for a summary of tobacco excise analysis across a range of different developing countries and Fuchs et al. (2020) for an example of dynamic incidence analysis for sugar-sweetened beverages. The dynamic impacts are not modelled here but health excises in Thailand are currently a small component of households' total tax burden.

[223] See Bachas et al. (2020) for a survey of over 30 developing countries.

Figure 8-19: Half of all indirect taxes come from the richest two deciles, split between VAT and excises

(Indirect taxes by decile, THB billions annually)

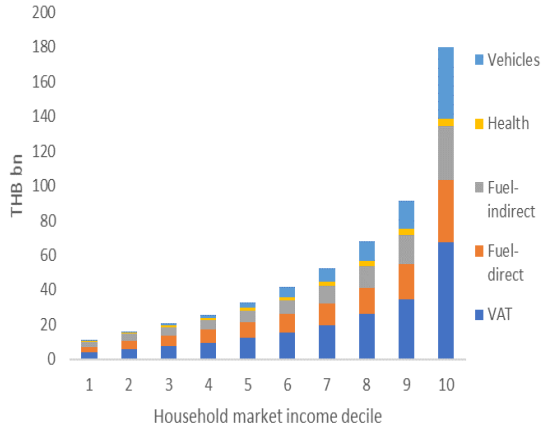
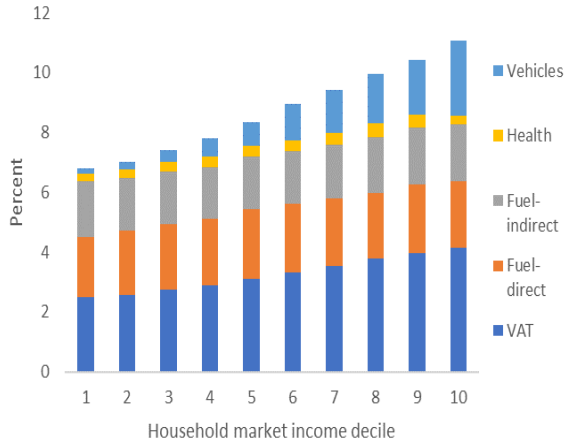


Figure 8-20: Indirect taxes represent a significant share of income for poorer households

(Indirect taxes by decile, percent of market income)



Source: World Bank calculations

Note: VAT paid is based on VAT rate schedules and household consumption baskets. Direct fuel excise is based on fuel purchased by households; indirect fuel excise is based on use of fuel as an input to the production of other goods and services (as captured in the Input / Output table) and each household's consumption of those goods and services. Other excises are based on direct consumption only. Health excises are on tobacco, alcohol and sugar-sweetened beverages' vehicle excises are on purchases of vehicles, motorcycles, parts and engine oil.

431. The poor receive a greater share of transfers than the rich and the benefits are even greater relative to their incomes, but the targeting of transfers could be improved. Old Age Allowance (OAA, a social pension) and State Welfare Card (SWC, a targeted cash transfer) make up most direct transfers in Thailand and are discussed further in Chapter 6. The majority of these transfers go to poorer households; 60 percent of all transfers go to the poorest four deciles and 22 percent go to the poorest decile (Figure 8-21). However, a third of all transfers go to the richest half of the population and nearly 10 percent to the richest two deciles. Better targeting of transfers away from richer households – 32 percent of the richest two deciles and 59 percent of the next richest four deciles receive any social assistance (Figure 8-23) – would create budget space for more generous benefit levels.

432. Transfer benefits represent around a third of market income for the poorest decile but significantly less for deciles 2 and 3. For those in the poorest decile who receive benefits, average transfers are equivalent to 32 percent of their pre-fiscal income, but this falls to 14 percent for decile 2 and again from there (Figure 8-22), so better targeting with more generous transfers could achieve a greater impact on poverty and inequality at no extra cost. The significant impact of transfers on poverty in Thailand is partly due to poverty being solely concentrated in the poorest decile. If the poverty line were higher (and many households in decile 2 churn in and out of poverty), the impact of transfers on poverty would be significantly less as the relative transfer value to deciles 2 and 3 is much lower.

Figure 8-21: A larger share of cash transfers goes to the poor…
(Cash transfers by decile, BHT billions annually)

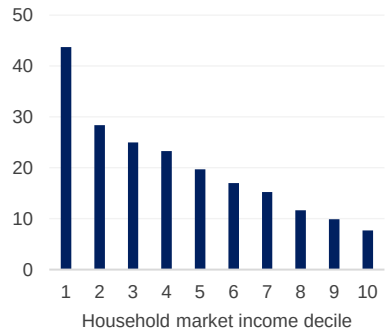


Figure 8-22: … but benefit levels are low…
(Cash transfers by decile, benefit levels as percent of market income)

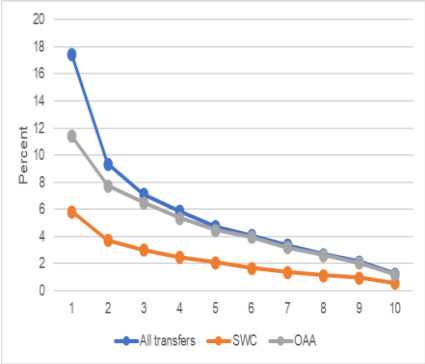
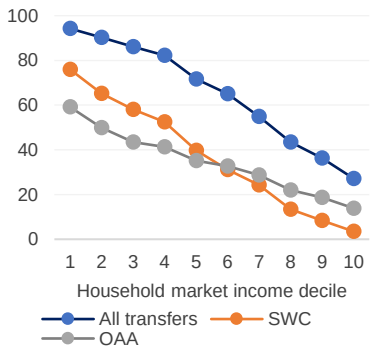


Figure 8-23: …while many richer households also benefit
(Cash transfer coverage by decile, percent)



Source: World Bank calculations. Benefits by decile are the average for households receiving them.

433. Health spending is spread evenly across the income distribution reflecting near universal coverage, but benefit levels are low. The share of health spending is relatively neutral in Thailand across deciles (by design); the poorest decile receives 11 percent of total public health spending, the richest decile 8 percent and the rest of the population in between (Figure 8-24). This reflects near universal coverage of households (Figure 8-25); the slightly lower coverage of the richest decile (80 percent) is due to opting out of the public health system and into private care. Although households with private insurance are also eligible for public health care, they are treated as not benefiting from it as they do not utilise it. However, the benefits relative to incomes are relatively low for all households due to low overall health spending;[224] benefits are equivalent to 16 percent of market income for decile 1 and 11 percent for decile 2, not worth more than 10 percent of income for any other decile and in fact are less than 5 percent of income for the top half of the distribution (Figure 8-25), although it is important to emphasise that these benefits are not cash and the value to the household may be less than the cost of delivery to the government (the basis for valuing the benefits used here).

Figure 8-24: Health spending is relatively flat across the distribution…
(Health spending by decile, BHT billions annually)

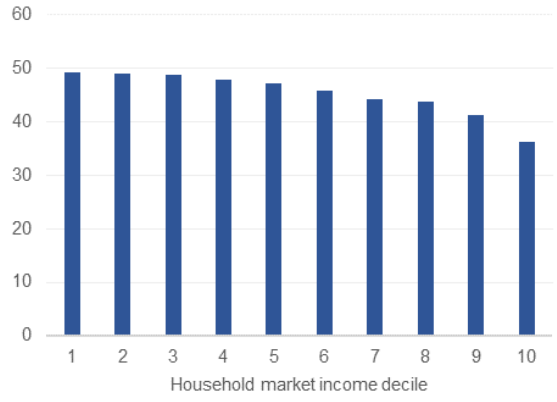
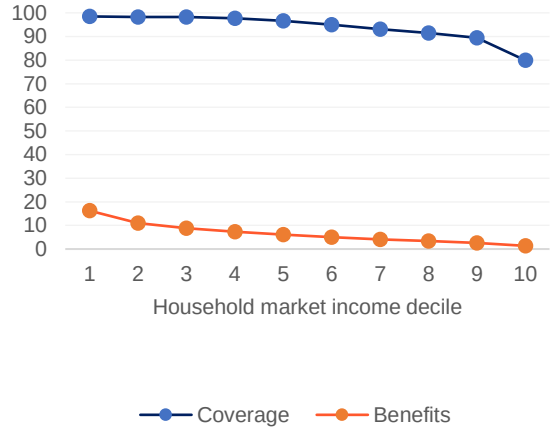


Figure 8-25: …reflecting near universal coverage. The value of benefits is low
(Health spending by decile, coverage and benefit levels as percent of market income)



Source: World Bank calculations

[224] Thailand spent 2.9 percent of GDP on public health spending in 2017, compared to the 4.9 percent average for East Asia and the Pacific and 4.0 percent for UMICs.

434. Education utilisation reflects the greater number of children in poorer households and greater use of private education by richer ones while benefit levels are greater than in health and social assistance. No more than two-thirds of households in any decile have children in public school, as is expected given the large number of Thai households without any children. Poorer households are more likely to benefit from public education with 59 percent of the poorest four deciles having children in public school, which declines as households get richer (with fewer children who are more likely to go to private school) and falls to a quarter for the richest two deciles (Figure 8-27). However, richer children are much more likely to stay in school through to the much more expensive tertiary stage. As a result, while much more primary school spending goes on poorer households, almost all tertiary spending goes on richer households and the net impact is to spread total education spending somewhat evenly across the distribution, although still favouring the poor slightly (Figure 8-26). The benefit levels (based on the cost of spending) represent a greater percentage of income for poorer households, more than both health and social assistance benefits. The value to the poorest decile is 48 percent of market income and is 36 percent for the second poorest decile (Figure 8-27).

Figure 8-26: Education spending shares are relatively even as richer households enjoy most tertiary spending

(Education spending by level by decile, BHT billions annually)

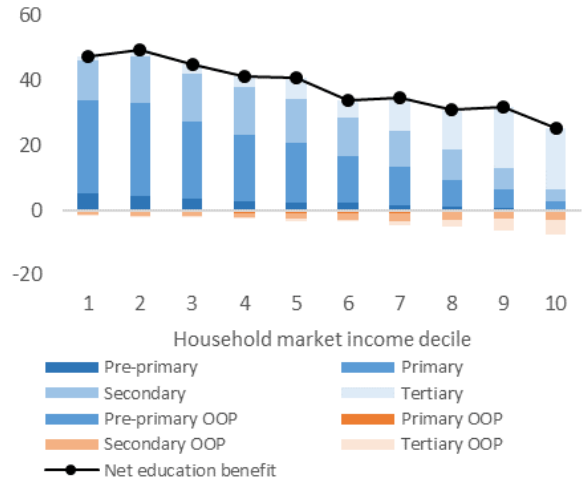
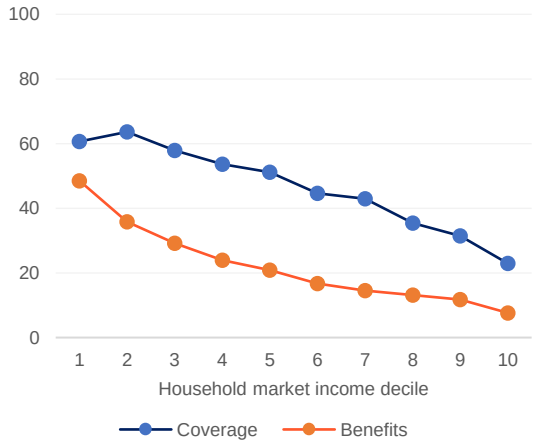


Figure 8-27: Coverage reflects more children in poorer households and richer children going to private schools while benefit levels are higher than health and SP

(Education spending by decile, coverage and benefits as a percent of market income)

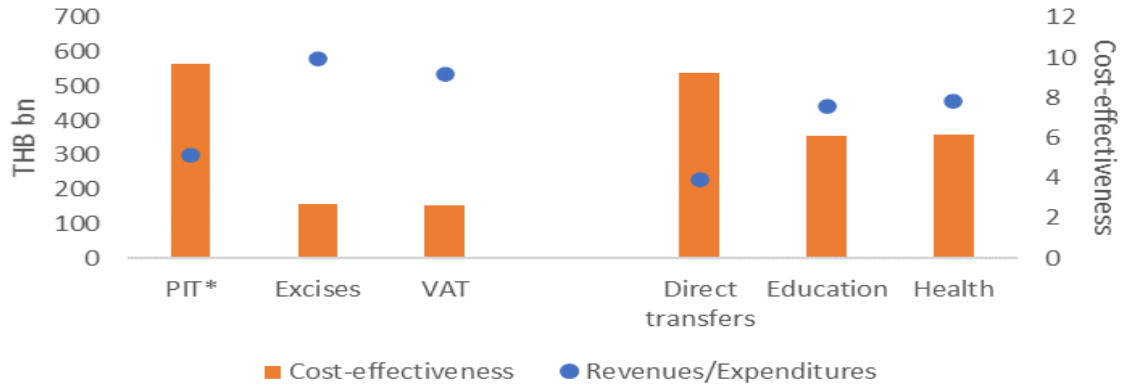


Source: World Bank calculations

435. Different taxes and spending have different impacts on inequality (and poverty), depending on both their size and progressivity. The impact of a fiscal instrument on inequality will depend on both: (i) how much it benefits poorer households relative to richer ones (in the case of spending, or collects in the case of a tax); and (ii) how much in total is spent on it (or revenues collected with it in the case of a tax). To measure the net impact of these two drivers, a redistribution cost-effectiveness indicator can be calculated, equal to the change in Gini Index (or the marginal contribution of a fiscal instrument) divided by the expenditure of the instrument (in the case of spending or the revenues collected in the case of a tax). That is, how much inequality reduction is achieved for each *baht* spent / raised? What is the redistributive bang-for-the-buck of different spending and tax choices?

436. Thailand's fiscal mix includes a significant weight of more cost-effective redistribution spending but less of more progressive revenue streams. PIT is a very progressive tax, collecting half of the revenue from the richest decile and reducing inequality by much more per *baht* raised than the less progressive VAT and excises (Figure 8-28). However, because it collects only a quarter of the joint revenues of VAT and excises (Figure 8-28), it has only around the same total impact on reducing inequality (Figure 8-13). On the spending side, social assistance spending is more cost-effective in reducing inequality per baht spent than health and education (Figure 8-28; although redistribution is not the primary purpose of human capital development) and receives 43 percent of the budget spent on the other two, meaning it has around half the impact on inequality in total (Figure 8-13). Consequently, while Thailand balances reducing inequality and developing human capital well on the spending side, it could reduce inequality more by growing its share of revenue collected from PIT.

Figure 8-28: Indirect taxes raise more revenue but reduce inequality proportionally less than direct taxes; direct transfers are the most cost-effective spending



Source: World Bank calculations

Notes: Cost-effectiveness is points of Gini Index reduction per THB millions of tax raised or benefit spent. PIT includes other small direct taxes such as on property rental, gifts and remittances, interest, and lottery winnings.

8.6 Conclusions and recommendations

437. While Thailand's fiscal policy already has a progressive impact, the reforms recommended in this report would particularly benefit lower-income households. The World Bank 2022 Poverty and Shared Prosperity Report focuses on the role of fiscal policy in reducing inequality and poverty and contributing to an inclusive recovery in the aftermath of COVID. Its conclusions include a discussion of how best to pursue progressive fiscal policy in countries at different income and capacity levels. For those UMICs seeking to transition to HICs, it emphasises a range of reforms which are fully aligned with the recommendations in this PREA:

- Increasing direct taxation, especially from personal income taxes
- Increasing indirect taxation on general consumption
- Increasing health taxes on tobacco, alcohol, and sugar-sweetened beverages, as well as introducing digital and carbon taxes
- Increasing spending on health and education
- Strengthening tax administrative capacity
- Avoiding spending on subsidies to mitigate higher fuel and food prices
- Improving targeting of direct transfers

438. There is scope for Thailand to both collect more revenue and deploy a more progressive tax mix with heavier reliance on PIT. As per Chapter 2, Thailand collects considerably less PIT (1.7 percent of GDP) than UMIC average (2.8 percent).[225] As this chapter has shown, Thailand's PIT is very progressive with most revenue coming from richer households, but it contributes only a quarter as much revenue as VAT and excises. Consequently, Thailand both collects less total revenue than other UMICs and has a less progressive mix. An increase in PIT collection would boost overall revenues and equity.

439. VAT exemptions and preferential rates are an expensive tax expenditure which can be rationalized. The current VAT rate is 7 percent while a number of items receive preferential rates or are exempted. Potential reforms include eliminating preferential rates and exemptions and increasing the base VAT rate. Preferential rates are generally an inefficient means of supporting the poorest households, as while they are often on staple goods which represent a larger

[225] Thailand data from IMF WoRLD revenue database and UMIC average from World Bank (2022).

share of poor consumption, they are also consumed by richer households and usually in larger quantities, meaning that more of the tax expenditures end up benefitting richer households. Removing such exemptions is a central fiscal reform for raising additional revenue in the short-term in a progressive manner (World Bank, 2022). However, any increase in VAT rates, whether to the base rate or through removal of exemptions will have an adverse impact on poorer households, which should be mitigated (see below).

440. Health taxes on alcohol, tobacco and sugar-sweetened beverages can not only increase revenues today, they can significantly reduce health expenditures tomorrow and are also progressive. Health taxes contribute an average of 0.4 percent of GDP each for tobacco and alcohol and 0.1 percent for sugar-sweetened beverages in OECD countries (World Bank, 2022). Excises on harmful consumption raise revenue in the short-run but also reduce long-term health spending as household internalise the negative externalities of using alcohol, tobacco and sugar-sweetened beverages. Although these items often make up a larger share of the consumption basket of poorer households, these households are more responsive to the higher prices after excise increases, reducing their consumption by more and so benefitting more from better long-term health and productivity, increasing lifetime wages and reducing out-of-pocket health expenditures. In fact, the pro-poor nature of the long-term benefits outweigh the regressive nature of the short-term burden, making health taxes progressive in the longer-run.[226]

441. Greater indirect tax collection could come through digital and carbon taxes; both are likely to reduce inequality although may increase poverty at the same time without accompanying mitigation measures. Thailand saw very high e-commerce sales growth in 2020; fully capturing sales on e-commerce and digital services would raise short-term revenue and improve VAT efficiency while also making local service operators more competitive in the local market (see Chapter 2). The progressivity of such a tax would require further analysis but to the extent to which e-commerce and digital services are more commonly used by richer households, such taxes may be inequality reducing. Similarly, a tax on carbon has also been estimated to have a progressive impact.[227]

442. More progressive revenue collection can be facilitated by investments in tax administrative capacity. Administrative constraints can partly explain relatively low direct tax revenue collection. In addition to PIT withholding by firms, World Bank (2022) notes that the consolidation of increasingly digitized data sources could expand the tax base to capture capital and mixed income, including capital gains, property rental, and some self-employment, using third-party data and the combination of records from multiple agencies, while international tax agreements on information exchange could reduce the extent of international tax avoidance.

443. Greater investment in human capital and social assistance would both increase future growth and achieve greater inequality reduction. Thailand's investments in human capital are pro-poor but the total spending level lags other UMIC countries, as shown in Chapters 3 to 6. This means that their contribution to reductions in inequality is also commensurately lower.

444. The impact of social assistance spending on poverty and inequality can be improved by strengthening delivery mechanisms. A significant percentage of richer households benefit from social transfers in Thailand. Stronger targeting of these transfers could redirect these transfers towards increasing the adequacy of benefit levels for poorer households. Thus, inequality can be further reduced by the fiscal system without increasing spending. At the same time, COVID-19 has shown that Thailand needs to strengthen its social protection delivery chain to better protect vulnerable households in times of shock (see Chapter 6).

445. While some of these revenue enhancing reforms (e.g. to the VAT) would negatively impact the poorest, these effects could be mitigated by social assistance spending, while preserving net fiscal gains. VAT reforms could increase tax revenues by as much as THB 245 billion, or VAT collection by 40 percent. The CEQ model from this chapter has been used to simulate the removal of current VAT preferential rates and exemptions (see Chapter 2 for further discussion), an increase in the base VAT rate from 7 percent to 10 percent with the current exemption structure, and a combination of both (a flat 10 percent VAT rate with no exemptions). The CEQ modelling indicates that the combined reform of a higher 10

[226] For example, see Fuchs *et al*. (2019) for a comparative study of tobacco taxes and Fuchs *et al*. (2020) for an example of sugar-sweetened beverage excises in Kazakhstan.

[227] See Saelim, Supawan. Carbon tax incidence on household consumption: Heterogeneity across socio-economic factors in Thailand. 2019.

percent rate with the elimination of exemptions could raise as much as THB 245 billion. This reform will affect poorer households, even if the impact is borne more by richer ones. If uncompensated, the full VAT reforms would increase poverty by 1.5 percentage points, though they would reduce inequality by 0.3 points due to their progressive form.

446. The impact on the poor of the VAT reforms could be more than offset by the social assistance reforms in Chapter 6; together the VAT and social assistance reforms would raise THB 100 billion (0.6 percent of GDP) while reducing poverty by 3.6 points. The OAA reforms (2.1 point poverty reduction) or SWC reforms (2.9 point reduction) discussed in Chapter 6 would more than offset the impact of the VAT reforms on poverty, while each costing less than a third of the amount of the additional VAT revenues collected. The preferred OAA and SWC reforms taken together would still cost significantly less than the new VAT revenues at THB 145 billion (0.86 percent of GDP) and reduce poverty by 4.4 points (inequality by 2.3 points). These reforms together would cost around the same amount as the current diesel price subsidy and reduction in diesel excise, which only leads to a poverty reduction of 0.5 points, as much of the benefit accrues to non-poor households. The preferred scenario therefore is a combination of i) increasing VAT to 10 percent with no exemptions; ii) some form of tapered increase of the OAA; and iii) an increase of SWC transfers to 30 percent of the poverty line with better targeting. This package of reforms would result in a net increase of tax revenues by THB 100 billion and a reduction of poverty and inequality by 3.6 points and 2.6 points, respectively. A summary of the fiscal costs and the impact on inequality and poverty of the different VAT reforms and compensating options is presented in Table 8-3, with the social assistance reforms discussed in greater depth in Chapter 6.

Table 8-3: Fiscal and distributional impacts of VAT reforms and compensating measures for households

		Fiscal (THB bn)	Inequality (Gini)	Poverty (% points)	Cost per % point of poverty reduction (THB million)	Fiscal (% of GDP)
Revenue reforms						
	7% VAT, no exemptions	+111	-0.1	+0.8		0.7%
	10% VAT with current exemptions	+87	-0.2	+0.4		0.5%
	10% VAT, no exemptions	+245	-0.3	+1.5		1.5%
Household compensation						
Scenario 1	Raise OAA to poverty line	-196	-1.4	-2.6	76.9	-1.2%
Scenario 2	Raise OAA to THB 1250/month	-77	-0.6	-1.3	61.1	-0.5%
Scenario 3	OAA tapered (B40 receive THB 2000/month, T60 keep current OAA)	-83	-1.1	-2.1	40.3	-0.5%
Scenario 4	OAA tapered (from 2000 to 0, by quintile)	-71	-1.2	-2.1	34.9	-0.4%
Scenario 5	Increase SWC to 30% of poverty line	-73	-0.9	-1.9	38.6	-0.4%
Scenario 6	Increase OAA tapered and SWC	-145	-2.0	-3.6	40.2	-0.9%
Scenario 7	Improved targeting of SWC	-2	-0.1	-0.4	4.0	0.0%
Scenario 8	Improved targeting of SWC and increase to 30% of PL	-73	-1.2	-2.9	25.3	-0.4%
Scenario 9	Increase OAA (tapered), increase SWC (improved targeting)	-145	-2.3	-4.4	32.9	-0.9%
Scenario 10	10 THB price reduction of diesel	-133	+0.2	-0.5	276.2	-0.8%
Preferred scenario						
	10% VAT, no exemptions, increase OAA (tapered) and SWC (targeted)	+100	-2.6	-3.6	-27.8	0.6%

Annexes

Annex 1-1: Reforming fiscal rules

Following the 1997 Asian Financial Crisis, the Thai government established a set of fiscal rules to guide fiscal policy settings. Fiscal rules aim at correcting distorted incentives and containing pressures to overspend, particularly in good times, so as to ensure fiscal responsibility and debt sustainability. Thailand has focused on expenditure/budget balance and public debt rules while eschewing revenue rules. The public debt and expenditure rules served as guidelines and were not legally binding, with the exception of the budget deficit rule promulgated in the Public Debt Management Act (2005).

The 2018 Fiscal Responsibility Act (FRA) enshrined fiscal rules on debt ceilings and annual budget allocations, building on the budget balance rule in the 2005 Public Debt Management Act (PDMA). These rules were intended to bolster fiscal discipline and ensure that adequate budgetary resources are available to finance priority expenditures. Three rules typically receive the most attention:

- Public debt should be less than 70 percent of GDP (this limit was raised from 60 percent of GDP in 2021).
- Budgeted capital expenditure must be no less than 20 percent of the annual budget and must not be less than the fiscal year budget deficit.
- The budget deficit cannot exceed 20 percent of the amount of the annual budget and 80 percent of the expenditure budget set out for principal repayment.

There is also a suite of other less well-known fiscal rules applying to debt and spending decisions (Table Annex 1-1). Among others, these rules apply to the foreign currency composition of public debt, the budget for debt service, and the level of multi-year expenditure commitments. Compared with other countries (Box Annex 1-1: International Developments in Fiscal Rules), Thailand's fiscal rule framework is complex, and there may be scope for improvement in how the framework guides and constrains fiscal policy settings in practice.

Table Annex 1-1: Selected fiscal rules under the Fiscal Responsibility Act (2018) and Public Debt Management Act (2005)

Selected Fiscal Rules under Fiscal Responsibility Act (2018) and Public Debt Management Act			
	Reference	**Ratio (%)**	**Enforcement**
Public Debt Rules			
Public Debt to GDP	FRA Section 50	≤70%	FRA Sections 50, 51.2-3 and 5, 80; Sections 95 and 97 of Public Audit Act of 2018
Government Debt Service to Forecasted Annual Revenue	FRA Section 50	≤35%	FRA Section 11(4); Fiscal Policy Committee notification (2020); Public Debt Management Policy Committee notification (2018)
Public Debt in Foreign Currency to Total Public Debt	FRA Section 50	≤10%	FRA Section 56 and 57
Public Debt in Foreign Currency to Exports Income	FRA Section 50	≤5%	FRA Section 56 and 57
Budget Allocation			
Budget Deficit	PDMA Section 21	≤ 20% of the amount of annual expenditure budget plus ≤ 80% of the expenditure budget set out for principal repayment	PDMA
Budget for Capital Investment	FRA Section 20	> 20% of the annual budget and no less than the FY budget deficit	FRA Section 20

Selected Fiscal Rules under Fiscal Responsibility Act (2018) and Public Debt Management Act			
	Reference	**Ratio (%)**	**Enforcement**
Budget for Debt Repayment as share of annual budget	FRA Section 11(4)	2.5-4.0% of total budget	PDMA Section 13;
Central Budget Expenditures and Emergency Reserve items as share of annual budget	FRA Section 11(4)	2.0-3.5% of total budget	FRA Section 20(6); Fiscal Policy Committee notification (2020)
Commitment to total expenditure ratio (new multi-year commitment budget)	FRA Section 11(4)	≤ 10% (in annual budget law)	BPA Section 18 and 26; Fiscal Policy Committee notification (2018)
Commitment to total expenditure ratio (new multi-year commitment budget approved annual budget law)	FRA Section 11(4)	≤ 8%	BPA Section 42; Fiscal Policy committee notification (2019)
Stock of fiscal liability for expenses or revenue loss from compensation arising from quasi-fiscal activities	FRA Section 28	30% of total budget	BPA Section 19(5); Fiscal Policy Committee notification (2018)

Source: Public Debt Management Office and Fiscal Policy Office, Ministry of Finance, Thailand.

Under the FRA, the Fiscal Policy Committee determines the quantitative limits that are applied by the fiscal rules and periodically reviews these limits. Except for the capital expenditure and the budget deficit rules (FRA and PDMA), legislation does not state the quantitative limits for each rule. These are instead determined by the Fiscal Policy Committee, which is chaired by the prime minister, includes representatives from the major economic and fiscal agencies, and is mandated to determine, monitor, report on and enforce the fiscal rules. The committee is specifically tasked with:

- periodically reviewing the FRA benchmarks at least every three years, setting numerical limits for the expenditure and public debt and expenditure ratios (Sections 11 and 50), with the ability to make temporary changes under extraordinary circumstances. The committee therefore has the flexibility to respond to macroeconomic shocks. For example, in October 2021, the committee raised the public debt ceiling from 60 to 70 percent of GDP, to accommodate the government's large fiscal response to the COVID pandemic. The committee is required to publish its decisions on the setting of fiscal rules.
- preparing the Medium-Term Fiscal Framework (MTFF). The MTFF must be prepared within the last three months of each fiscal year. It is based on medium-term macroeconomic projections and revenue and expenditure forecasts for a three-year period. Annual budget allocations must be consistent with the projections for the first year, but the outer two-year projections are indicative.
- The FRA stipulates that the Ministry of Finance must present a consolidated financial report detailing relevant indicators and all sources and uses of public funds to the Cabinet, Fiscal Policy Committee and the public. If any fiscal rules are not met, the Ministry of Finance is required to provide an explanation and recommend mitigation measures to the Cabinet (for public debt) or to the National Assembly (for annual budget allocations).

By necessity, Thailand's large COVID response was implemented off-budget to circumvent rigid expenditure/budget balance rules. In response to the COVID-19 pandemic, the Thai parliament approved an emergency decree to borrow up to 1.5 trillion baht off-budget (9.6 percent of GDP) to fund mostly cash transfers to vulnerable households in 2020-2021. In FY2020 and FY2021, the government had already committed 14.7 percent and 19 percent of the annual budgets, hence, not enough on-budget space was left to respond to the severe impact of COVID-19 given the rigid budget balance rule (PDMA). However, repeated off-budget borrowing raises concerns regarding comprehensiveness of budgeting and undermines the credibility of the framework by fuelling the perception that rules can be circumvented.

While fiscal policy outcomes to date have been sound in Thailand, it is not clear that the fiscal rules framework is fit for purpose in all respects. While the public debt rule provides an important anchor for fiscal policy, for many of the other rules a careful review is warranted as to whether they are necessary and fit-for-purpose.

- The public debt to GDP rule has the advantage of capturing the impact of all revenue and expenditure decisions, including off-budget expenditure funded by borrowing.[228] For instance, the impacts of the recent COVID fiscal response funded by off-budget emergency borrowing decrees were captured by the public debt rule, but not by the expenditure or budget balance rules. While the recent increase in the public debt ceiling to 70 percent of GDP was justifiable given the circumstances, to preserve credibility future adjustments to the level of the ceiling should be minimized. An alternative approach – also allowable under the FRA – is to retain the debt limit if there is a future instance in which an economic shock is likely to see this limit breached, and instead ensure the communication and implementation of a medium-term plan to return the public debt level to below the ceiling.
- The rule that budgeted capital expenditure is bound to be no less than 20 percent of the annual budget and must not be less than the fiscal year budget deficit suffers from range of issues in practice. If the intent is to ensure adequate capital spending, it fails to the extent that capital budget execution is typically very low in Thailand, so even if the capital budget is > 20 percent of the total budget, actual capital spending is much lower. This is a recurring issue (see chapter 3 on capital budget execution) and worsens budget credibility. The rule is also set on a cash basis which over-measures actual public investment in physical capital, while the denominator does not respond to large off-budget spending of the sort seen as a response to COVID-19. Finally, the rule seems to unnecessarily limit flexibility in the government's ability to respond to shocks: there may be circumstances in which the government would justifiably want to spend less than 20 percent of its budget on capital spending (e.g. when a focus on relief spending was justified in the immediate aftermath COVID-19)
- The complications from having many rules at once can make compliance more challenging due to possible overlaps and inconsistencies, without necessarily ensuring better fiscal outcomes.

Box Annex 1-1: International Developments in Fiscal Rules

Following the Global Financial Crisis, a *second generation of fiscal rules* has emerged, focusing on enhancing the rules' enforceability and flexibility. As a result, fiscal rule frameworks have become more complicated, often to the point of impeding their ability to frame and guide fiscal policy effectively (Davoodi 2022).

Countries showed flexibility in adapting and using fiscal rules during the pandemic (IMF Fiscal Rules Database). Many countries activated escape clauses to temporarily suspend the rules limits within the fiscal framework, allowing for flexibility to adopt extraordinary fiscal support to households and firms. Countries without escape clauses resorted to ad-hoc suspensions or modifications of the rules or introduced new fiscal rules**.**

Countries have steadily increased fiscal rules during the last two decades. Countries now average 3 fiscal rules up from about 2 in the early 2000s (IMF Fiscal Rules Database). While multiple rules could help ensure greater fiscal discipline or achieve multiple fiscal objectives, multiple rules contribute to the complexity of the fiscal framework (including conflict between rules and objectives) and make compliance more difficult to explain and monitor. In some cases, the large number of rules was related to institutional inertia and political constraints in eliminating existing rules (Caselli 2018).

The most common rules have been a combination of a debt rule together with operational limits on expenditures and/or budget balance. Out of the economies with fiscal rules in 2021, one third had a debt rule together with a deficit limit and an expenditure ceiling, while another quarter of economies had a debt rule combined with a budget balance rule. Thailand falls into this category as it has a combination of debt and budget balance/expenditure rules. Debt rules are particularly common in developing economies, with over 80 percent of EMDEs having adopted them. The majority of national debt rules, Thailand's included, is set as a debt limit or ceiling, while a minority (about 10 percent) uses a forward-looking (medium-term) anchor concept (Finland, United Kingdom). Unlike Thailand, Countries with expenditure rules target the total, primary or current expenditure and often exclude certain budget components. These include capital spending from the expenditure rule or set a floor of capital spending as countries face development needs (Thailand, Costa Rica, Peru,). Other countries exclude interest payments, pension

[228] The main indicator of public debt tracked by the Public Debt Management Office is broad by international standards. It includes the central government's debt, guaranteed and non-guaranteed debt of the non-financial state enterprises, the SFIs (guaranteed debt only), the Financial Institutions Development Fund, and the autonomous agencies (the Energy Fund Administration Institute and the National Village and Urban Community Fund). It excludes local authorities' debt which is excluded in the Public Debt Management Act.

Box Annex 1-1: International Developments in Fiscal Rules

(France), or nondiscretionary unemployment benefits (Spain). Thailand, however, explicitly sets a rule on interest payment.

Many countries have progressively enhanced flexibility, enforcement, and monitoring of fiscal rules. There were a range of reforms to improve flexibility and operational relevance of fiscal rules, through more detailed forward-looking guidance in the event of economic shocks given in escape clauses, as well as to enhance the monitoring and enforcement of the rules outside the government to fiscal councils, for example, which have become more common in Europe.

International experience show that countries with second-generation fiscal rules tend to face challenges on three fronts. *A "spaghetti bowl" of rules.* Incremental amendments through institutional inertia creates overlaps, inconsistencies, and confusion, possibly undermining credibility. Thailand faces a complicated set of rules enshrined across several laws. *Complexity of more flexible rules.* The trend toward complexity is not new but it has gained momentum during the past decade. The need to make rules more flexible has been the main factor behind their growing sophistication. In Thailand, the public debt ceiling is flexible but the capital budget allocation and budget balance rules remain rigid. *Low compliance.* Breaches of the rules have been quite frequent and have not diminished during the past decade despite numerous amendments. Thailand has been largely compliant. However, off-budget borrowing, as observed during the COVID pandemic and great flood of 2011, essentially circumvented the budget balance rule and undermines credibility. Difficulty in costing quasi-fiscal schemes, such as the rice pledging scheme (2011-2013) funded through government-directed loans from state owned banks, also raises credibility risks.

Annex 1-2: Reforming fiscal institutions

Core economic institutions[229] in Thailand have historically played an instrumental role in development of the economy. Key roles have been: responsive economic planning, promoting and sustaining macro-fiscal stability with resilience, providing financing for large transformative infrastructure development, and delivering on economic priorities. From 1970s to late 1990s these institutions planned, provided for, and monitored implementation of policies that helped propel Thailand from a low to a higher middle-income country in a single generation.

Following the Asian financial crisis of 1997, Thailand reoriented institutions towards economic stability by introducing for example a strict fiscal sustainability framework and inflation targeting. At that time, the fiscal sustainability framework entailed accrued public debt to GDP below 50 percent, debt service obligations below 15 percent of budget, a balanced budget and capital spending at 25 percent of the budget. Inflation targeting entailed a jump in transparency, greater independence and accountability through the appointment of the central bank governor, and appointment of a monetary policy committee, composed of both internal and external members, that communicates its policy deliberations, actions, and outlook.

Although governance at the institutional level improved, institutions became fragmented and risk averse and were not able to fully implement planned large public infrastructure and reforms over the past decade. For example, construction on the Bang Pa-in Nakorn Ratchasima expressway only began in 2017 despite the project having been planned for more than two decades. Overall economic growth slowed to below 4 percent while disbursement remained below 60 percent over 2010-2019 while macroeconomic fundamentals remained strong.

Transforming economic and fiscal institutions will be a critical part of Thailand's 20-year national strategy to achieve high-income. These institutions ought to be able to effectively plan and specify priority programs and investments, allocate resources to these priorities, and ensure their implementation. In particular, it is important that:

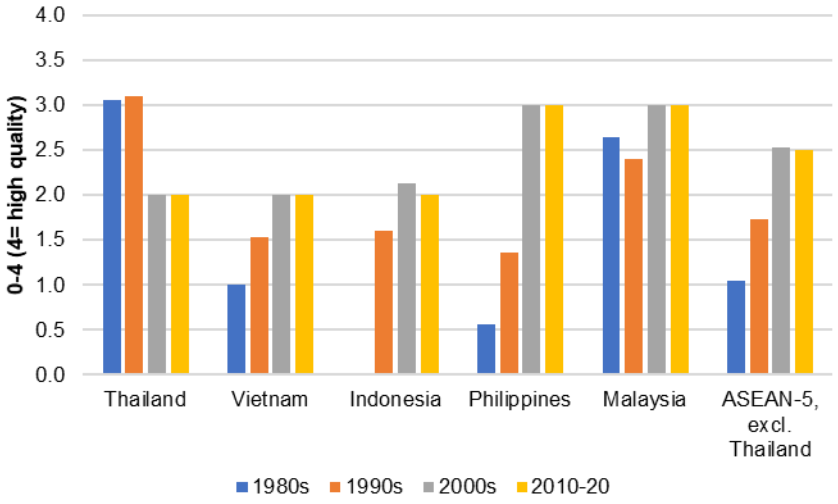
- Economic and fiscal institutions have the structures and processes that formulate an integrated medium-to-long term economic plan and the capacity for transparent appraisal of a transformative investment program; fiscal policy is linked to a credible medium-term investment program; budget execution and financial reporting systems are linked to the budget plan.
- All resources go through the budgeting system and process, irrespective of source of financing. This includes all revenues, support provided by state-owned enterprises and specialized financial institutions, and debt flows. This means there are minimal off-budget financing flows.
- All government policies are transparently costed and disclosed, together with the associated budget documentation, to promote internal accountability and external credibility, as the public gains a view on how public resources are generated and spent. According to the Global Open Budget Index (2021), Thailand scores low (58/100) on budgetary transparency, behind Indonesia (70) and Philippines (68).[230]

At present the core economic institutions are fragmented and do not have adequate capacity to formulate and execute complex integrated programs that underpin the National Strategy. Institutional fragmentation has meant that each department has instituted processes/rules/operating procedures that in totality overwhelm implementing agencies. While previous strengths appear to have atrophied, Thailand has the potential to reap significant gains from transforming its institutions of economic and fiscal management.

[229] National Economic and Social Development Council, Ministry of Finance, Bureau of the Budget, Bank of Thailand.

[230] This part of the OBS measures public access to information on how the central government raises and spends public resources. It assesses the online availability, timeliness, and comprehensiveness of eight key budget documents using 109 equally weighted indicators and scores each country on a scale of 0 to 100. A transparency score of 61 or above indicates a country is likely publishing enough material to support informed public debate on the budget. budget.org/sites/default/files/country-surveys-pdfs/2021/open-budget-survey-thailand-2021-en.pdf

Figure Annex 1-2: Evolution of Bureaucratic Quality



Source: Political Risk Services, International Country Risk Guide

Because of fragmentation, no single entity has overarching responsibility/oversight for achievement of government's economic and fiscal targets. NESDC devotes all resources to planning, BOB focus purely on budget allocations based on its performance-based budgeting system, and the MOF focuses attention on fiscal policies and off-budget spending. Thailand is one of only a few middle-income countries without a fully operational medium term economic and fiscal framework (MTFF) linked to the budget system. In Asia, high income countries like Korea, Singapore, and Japan have MTFF, and middle-income countries such as Vietnam, India, Indonesia, and the Philippines also utilize MTFFs.

Thailand can transform its economic and fiscal institutions so that they are fit-for-purpose to implement the 20-year National Strategy, while responding to the pressures of aging and remaining flexible for adaptation over time. In the absence of core economic agencies with appropriate institutional structures and capacity endowments at the central government level, it will be difficult for Thailand to drive the 20-year National Strategy, formulate and coordinate transformative programs as global and regional developments and mega trends unfold in the future. Most countries in the OECD, including in East Asia – notably Japan, Korea, and Singapore – have in the last 20 years undertaken significant transformation of core economic management institutions in order to achieve a combination of following outcomes: (i) linking economic policies to the budget; (ii) sustain macro-fiscal discipline; (iii) promote efficiency through targeted spending; and (iv) improving public investment management.

Some options Thailand could consider are:

- Integrating the Ministry of Finance, the NESDC, and the Bureau of the Budget into a single agency with a strong public investment management function.
- Integrate the budgeting and financial management functions and policy functions under a single entity, and develop a strong public investment management function with a functional medium term public investment program.
- Establish an independent Economic and Fiscal Council or strengthening the Fiscal Policy Committee to coordinate economic and fiscal policies to implement large transformative policies and more targeted spending while adhering to transparency and accountability.

Annex 2-1: Stochastic Frontier Analysis for tax effort estimates

A country's tax gap is the ratio of actual taxes over tax potential, based on existing economic and other conditions. The tool is widely used as a measure of the efficiency of tax collection. The analysis can identify specific issues within each tax instrument that could be the focus for enhancing tax policy and efficacy of tax administration.

The approximation of the tax frontier, based on cross-country assessment, is an important tool for estimating tax potential and thereby the size of the tax gap for any given country. The tax potential of 64 countries is determined using a stochastic frontier analysis (SFA). The sample covers only high and middle-income countries, with a population of at least 20 million (with the exception of a few HICs for which population may be lower), and natural resource rents of below 20 percent of GDP. Low-income countries, small countries with low populations, and countries with a high share of natural resource income are structurally very different from high-income, large, economically diverse countries. The SFA is based on a production function approach, whereby a set of country characteristics (inputs) determine how much an individual country could be collecting (i.e., tax potential). The SFA assumes that collections are below potential. An efficiency score of between 0 and 1 is assigned to each country based on the distance between actual tax collections and estimated tax potential. A higher number indicates higher efficiency/tax effort. It is also important to note that the country's characteristics are limited to macro-structural factors and do not include policy or institutional factors. The results of the SFA are in line with expectations (Table Annex 2-1): GDP per capita, the non-agriculture share of the economy, urbanization and openness (as proxied by the share of exports and imports in GDP) all expand the tax frontier; while age dependency and informality (as proxied by share of self-employed) reduce the tax frontier. The negative coefficient of Log GDP per capita squared implies a non-linear relationship with the tax-to-GDP ratio.

Table Annex 2-1: Results from Stochastic Frontier Analysis

Log tax-to-GDP ratio	(1) Exponential	(2) Half-Normal	(3) Truncated-Normal
Log GDP per capita	0.318***	0.345***	0.318***
	(0.119)	(0.131)	(0.119)
Log GDP per capita squared	-0.025***	-0.027***	-0.025***
	(0.007)	(0.008)	(0.007)
Log non-agri share	0.535***	0.843***	0.536***
	(0.095)	(0.095)	(0.095)
Log urban share of population	0.567***	0.559***	0.567***
	(0.059)	(0.062)	(0.059)
Log age dependency ratio	-0.079*	-0.032	-0.079*
	(0.041)	(0.051)	(0.041)
Log openness	0.128***	0.116***	0.128***
	(0.009)	(0.010)	(0.009)
Log self employed share	-0.081***	-0.076***	-0.081***
	(0.021)	(0.026)	(0.021)
Observations	1586	1586	1586

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: WB Staff estimates

Annex 2-2: Structure of income tax, deductions, and allowances

	Income from Salary worker	Income from Self-employed or business owner	Income from holding or leasing assets
Tax form	**PND 91:** Tax return form for taxpayers who receive income under section 40 (1) of the Thai Revenue Code	**PND 90:** Tax return for income earners in general cases, including business, commerce, agriculture, industry, transport, and construction	**PND 90:** Tax return for income earners of income from property rent and investing in the stock exchange
Deductible expenses	50% of the assessable income capped at THB 100,000	60% of income or actual expenses	**Interest, dividend:** cannot be deducted **Rental income:** 10 – 30% of income or actual expenses
Standard allowances	- Personal allowances: THB 60,000 - Spouse allowance: THB 60,000 - **Child allowance** (maximum of three children each): THB 30,000 per child - **Parent allowance:** THB 30,000 per parent (ages over 60) - **Maternity and pregnancy allowance**: Actual payment but not exceeding THB 60,000 - Care of disabled or incapacitated family member: THB 60,000 each - Care of a disabled or an incapacitated person other than a family member: THB 60,000		
Special allowances	- Social security fund contributions: Maximum of THB 9,000 per year - **Life insurance premium**: Not more than THB 100,000 per year - **Health insurance premium**: Not exceeding THB 15,000 per year (when combined with life insurance premium does not exceed THB 100,000) - Health insurance premium for parents: Not exceeding THB 15,000 - **Interest on mortgage**: Maximum of THB 100,000 per year - **Contributions to the Provident Fund**: 15% of total wages but not exceeding an allowance of THB 500,000 - **Contributions to the Retirement Mutual Fund**: 30% of total assessable income subject to tax with a maximum allowance of THB 500,000 - **Super Savings Fund (SSF) allowance**: 30% of the total income, capped at THB 200,000 (when combined with provident fund and investment in RMF may not exceed THB500,000) - **Donations to specified charities**: Actual donated amount up to 10% of taxable income after all other allowances are deducted - **donations to education and state hospitals**: **Double deductions** (combined deduction from donations does not exceed 10% of taxable income after all other allowances are deducted) - **Debit Card Processing Fees:** 100% deductions for fees paid between November 2016 to December 2021		
Special allowances during COVID-19	- Deduction of 1.5 times interest expenses: from 1 April 2020 to 31 December 2020 - **Investment in Super Savings Fund Extra:** individuals investing in a Super Savings Fund Extra (SSFX) between 1 April to 30 June 2020, can deduct the actual investment amount, capped at 200,000 baht, as an allowance for only tax year 2020. - **Increase in tax allowance on health insurance premiums:** maximum personal income tax allowance on health insurance premiums paid from 1 January 2020 onwards for either a life or non-life insurance policy in Thailand has been increased from 15,000 baht to 25,000 baht (combined with life insurance premium does not exceed THB 100,000) - **Shop Dee Mee Kuen campaign:** deductions of up to 30,000 baht when purchasing products and services with a value-added tax (VAT) component during October 23 to December 31, 2020 and January 1 to February 15, 2022		

Source: Revenue department, KPMG, luther-lawfirm, mazars[231]

[231] https://www.mazars.co.th/Home/Insights/COVID-19-impact/Tax-Measures-on-COVID-19
https://www.luther-lawfirm.com/fileadmin/user_upload/PDF/Broschueren/Memo_Personal_Income_Tax_in_Thailand_Oct2021.pdf

Annex 3-1: Fiscal decentralization and service delivery

With the enactment of the 1997 Constitution and subsequent 2007 Constitution, Thailand embarked on a series of public sector reforms designed to decentralize public finances, decision making, and service delivery. The decision to transition towards a decentralized unitary system of local self-government was undertaken with the goal of strengthening democratic participation, bringing service delivery and decision making closer to the people, addressing regional disparities, and enhancing central and local accountability for service delivery performance. In 2012, after more than a decade of decentralization reforms, a joint report by the World Bank and the Royal Thai Government—*Public Financial Management Report: Improving Service Delivery* (the 'PFM Report 2012')—evaluated the program's many achievements, identified the challenges that had emerged, and provided options for overcoming these issues and building consensus around key focus areas for Thailand's service delivery reform program looking ahead. This section summarizes developments in Thailand's central-local government relations over the past decade since that assessment.

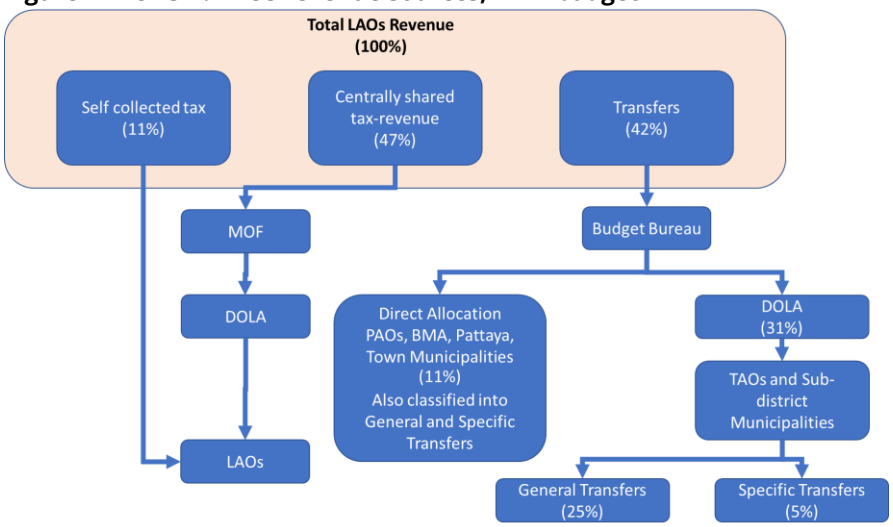
LAOs[232] share of total government revenue has gradually increased over the past decade but remains below the 35 percent share specified in law. The Decentralization Act of 1999 originally stated that the central government must increase the share of LAO revenue to at least 35 percent of total government income by 2006. In 2009, the target was revised to 25 percent, but it was mandated that the ratio could not be lower than the previous year and must move toward 35 percent as the LAOs expanded their duties and responsibilities. The share of LAOs revenue to total government income was 27.8 percent in FY15 and was projected to be close to 30 percent in FY22.

However, LAOs remain dependent on the central government for over 40 percent of their revenues, with close to an additional 50 percent collected centrally. LAOs have three revenue sources: (i) locally levied revenue (self-collect), such as property and land taxes, local maintenance taxes, signage taxes and fees such as garbage and sewage collection; (ii) centrally shared tax-revenue such as VAT, Specific Business Tax, Liquor Tax, Excise Tax, and mineral and petroleum royalties; and (iii) central government transfers (also known as 'LAO subsidies'). While the first two are closely related to economic activity, the final component is adjusted by the central government to obtain the targeted LAO annual revenue share. Figure Annex 3-1 summarizes the structure of LAOs revenue sources for FY22, and the governance arrangements for requesting and allocating resources.[233]

[232] There are currently 7,850 LAOs, of which 76 Provincial Administrative Organization (PAO) constitute the higher tier of local government. The urban population within each province is demarcated into city (Nakorn), town (Mueng) or sub-district (Tambon) municipalities (2,007 LAOs) depending on population size, density, level of revenue collected by local authorities and administrative capacity for municipal development. The rural population is assigned to a Tambon Administrative Organization (5,770 TAOs). Additionally, Bangkok Metropolitan Administration (BMA) and Pattaya City exist as special administrative organizations.

[233] While the COVID-19 shock has impacted the overall LAO revenue envelope, it has not dramatically changed the composition. Local revenues increased from 9.6 percent of total LAOs revenue in FY15 to 11 percent in FY22. The centrally shared tax-revenue also increased from 45.5 percent in FY15 to 47 percent in FY22. This was offset by a slight decline in central government transfers from 43.9 percent to 42 percent.

Figure Annex 3-1: LAOs revenue sources, FY22 budget



Source: Budget Bureau and WB staff.

Regional disparities in public spending and outcomes remain significant. For example, in 2020, around 60 percent of public spending was concentrated in Bangkok (which represented only 34 percent of GDP and 13 percent of the population).[234] Service delivery disparities mirror expenditure disparities and are correlated with disparities in human development outcomes. For example, there remain significant regional differences in the quality and coverage of core public goods and services—such as access to improved water sources, internet access, doctors per capita, and teacher quality—with Bangkok and the central region significantly outperforming the North, Northeast and South.[235] These differences are also correlated with imbalances in economic sectors and growth, productivity, and wealth.[236] For example, GDP per capita in Bangkok is almost seven times higher than in the Northeastern region, and poverty ranges from 0.2 percent of the population in Bangkok to 13-15 percent in the North and Northeast.[237]

Service delivery remains concentrated in the central government, meaning that the vision of a decentralized unitary government has not yet been fully realized. Two key reasons for this are that: (i) LAOs were created without rolling back deconcentrated central institutions[238] which have continued to perform traditional command and control functions over local authorities, limiting LAO autonomy to decide on service delivery; and (ii) many of Thailand's multitude of small LAOs are financially unviable, making coordination very challenging. These issues make the provision of services at the local level less efficient and administratively expensive. In addition, accountability at the local level is constrained by a lack of information on service delivery performance and fiscal operations. These issues were identified in the PFM Report 2012 and persist today.

Three key actions can help to address these key issues and make public service delivery more efficient: (i) roll back the deconcentrated arms of the central government at the provincial level and link LAOs directly with line and sector agencies[239]; (ii) clarify and demarcate functional roles between central government and local authorities and prepare a

[234] This reflects planned central government spending and actual LAO spending in 2020 (actual central government spending by province was not available). This compares to 2011, when Bangkok accounted for 72 percent of public spending, 26 percent of GDP and 17 percent of the population.

[235] For example, there are three times more doctors per capita in Bangkok than in other regions, and up to 30 percent of households in the Northeast lack access to an improved water source, compared to less than 10 percent in Bangkok. In education, 20 percent of teachers in Bangkok have a graduate degree, compared to just 9 percent in Mae Hong Son province in the Northern region, and teachers in Bangkok had 23.5 years of experience, on average, compared to 10.8 in Mae Hong Son (World Bank. 2015. *Thailand – Wanted: A Quality Education for All*. Washington, DC: World Bank).

[236] World Bank. 2020. *Taking the Pulse of Poverty and Inequality in Thailand*. Washington, DC: World Bank.

[237] Ibid and Office of the National Economic and Social Development Council. 2020. *Gross Regional and Provincial Product*. NESDC: Bangkok.

[238] For example, provincial and district offices and personnel continue to report directly to the central government agency (including the Department of Provincial Administration, DOPA).

[239] The role of the Department of Local Administration at the Ministry of the Interior should transition from command and control to facilitation and coordination.

model of decentralized service delivery, especially as they relate to health and education services; and (iii) administratively consolidate LAOs into larger, more financially viable entities through fiscal grants and other incentives. In addition, the efficiency of service delivery could be improved by publishing information on service delivery performance against benchmarks, providing detailed fiscal operations information of LAOs, and ensuring that citizen voice is present in the management of health and education facilities. Several of these actions overlap with the recommendations from the PFM Report 2012, reflecting the persistent nature of the key issues that continue to hold back greater decentralization. The following sections summarize recent developments related to these three key actions, and efforts to enhance accountability at the local level.

Making access to services more equitable

A 2020 reform to the transfer formula for General Transfers substantially increases the equalization element, which can help to address regional variations in expenditure.[240] Prior to the reform, the General Transfers from DOLA were allocated as follows (Table Annex 3-1-1): 5 percent revenue equalization element to LAOs based on budgetary needs (i.e., revenue-expenditure gaps); the remaining 95 percent was allocated to PAOs, Municipalities and TAOs. Of this amount, 10 percent went to PAOs. Of the remainder, 40 percent went to municipalities and 60 percent to TAOs. The allocations to individual municipalities and TAOs were determined based on the following formula: 35 percent allocated equally between LAOs, and 65 percent on a per capita basis. The reform—which was announced at the December 2020 NDC meeting but did not come into effect until FY22—eliminates the 5 percent revenue equalization element and changes the formula for allocating resources to individual municipalities and TAOs to the following (Table Annex 3-1-2): 30 percent allocated equally between LAOs, 15 percent on a per capita basis, 15 percent based on area size, and 40 percent based on budgetary needs.[241] The new formula was also extended to the General Transfers under the Direct Allocation pathway.

The reform should support reduced regional disparities. The new formula should significantly increase the equalization impact of the transfers, helping to reduce the variation in regional expenditure. Over time, this should also contribute to reduced disparities in service delivery and ultimately regional human development outcomes (although this will also depend on LAO capacity and the quality of spending).

Table Annex 3-1-1: Historical allocation of General Transfers from DOLA

General Transfer Allocation
1. 95% to LAOs
(a) 10% to PAOs
(b) 90% to Municipalities and TAOs
(i) 40% to Municipalities
Of which: 35% allocated equally
65% allocated per capita
(ii) 60% to TAOs
Of which: 35% allocated equally
65% allocated per capita
2. 5% to LAOs based on revenue-expenditure gap

Source: PFM Report 2012.

Table Annex 3-1-2: FY22 allocation of General Transfers from DOLA and via the Direct Allocation pathway

General Transfer Allocation
100% to LAOs
(a) 10% to PAOs
(b) 90% to Municipalities and TAOs
(i) 40% to Municipalities
Of which: 30% allocated equally
15% allocated per capita
15% allocated by area
40% based on revenue-expenditure gap
(ii) 60% to TAOs
Of which: 30% allocated equally
15% allocated per capita
15% allocated by area
40% based on revenue-expenditure gap

Source: NDC Meeting Minutes, December 16, 2020; and World Bank staff.

Financing for LAO development priorities remains low and capacity constraints that limit access exacerbate regional disparities. Under the DOLA-administered transfers, General Transfers can be used for general LAO administration and nine mandatory activities, the largest of which are related to public health services, education management, and school feeding programs. Specific Transfers can be used for pre-determined activities covering local infrastructure development priorities, education, health, water management, and environmental projects.[242] However, at only 5 percent of total LAO

[240] The reform was agreed at the National Decentralization Committee meeting on December 16, 2020, but implementation did not commence until FY22.
[241] The reform makes the transfer formula similar to the formula used to allocate VAT transfers to LAOs, which typically uses a formula consisting of population, area, and budgetary need to determine the allocations.
[242] See Figure 6 from the PFM Report 2012 for a summary.

revenues, the allocation available for LAO development priorities via the Specific Transfers appears low. Further, only LAOs with sufficient capacity to develop adequate project appraisal documents are able to access these funds, exacerbating regional disparities. It is not yet clear whether the introduction of the Direct Allocation pathway will result in a net increase in funding for LAO development priorities.

Reforming central-local government relations system to deliver more responsive, coordinated, and effective public services

A 2020 reform to the governance framework for central government transfers seeks to provide greater autonomy to LAOs. The reform—announced at the National Decentralization Committee (NDC) meeting on December 16, 2020—introduced 'Direct Allocations' from the Budget Bureau to 292 higher-capacity LAOs (3.7 percent of the 7,850 LAOs) (Figure Annex 3-1). This gave these LAOs the responsibility to submit their own budget requests directly to the Budget Bureau, instead of having to go through the Department of Local Administration (DOLA). The reform is planned to be extended to a further 2,238 LAOs (28.5 percent) in FY23, with subsequent waves of LAOs to be included in FY24 and FY25. As the reform is implemented, this should result in a higher percentage of LAO revenues being disbursed via the Direct Allocation pathway, rather than via DOLA.

However, the central government still retains considerable influence over LAOs' budget allocations and retains control over key administrative functions. While the 2020 reform is expected to reduce DOLA's oversight of LAO budget requests, the requests must still be approved by the provincial governor (appointed by the central government, reporting to the Ministry of Interior, MOI). This is to ensure that LAO budgets are aligned with the National Economic and Social Development Plan. Thus, the central government retains influence over the allocation of LAO resources. Over the past decade, there has been some shift in the MOI's role away from command and control and towards coordination. LAOs work closely with sector agencies on service delivery issues and are part of key decision-making bodies. However, MOI (via DOPA) retains significant control, including of key functions such as licensing and drafting legislation.

There remains considerable overlap in central/local service delivery responsibilities. As outlined above, the 2021 reform has facilitated more direct linkages between LAOs and the Budget Bureau. Some higher-capacity LAOs are gradually assuming more responsibility for service provision, and coordination between central and local government agencies in the health and education sectors has improved somewhat. However, there remains a lack of clear demarcation of functions between central government and local authorities.[243] For example, in 2002 the health sector introduced the Universal Coverage Scheme, and in 1999 the National Education Act established 176 devolved Education Service Areas across the countries and provided significant financial autonomy to schools. Both these centrally managed service delivery programs continue to operate in parallel to LAO health and education activities. Thus, while some larger and higher-capacity LAOs are gradually assuming more responsibility for service provision, there remains considerable overlap and tension between central and local activities.

However, coordination between central and local government agencies in the health and education sectors has improved somewhat. For example, the Primary Health Care System Act 2019 explicitly requires coordination between the central government, LAOs, the private sector and civil society. The Primary Health Care System Committees also include representatives from LAOs. While these committees do not allocate resources, they do set priorities for local service delivery. For example, they were responsible for preparing LAO COVID-19 health plans.

There has been no consolidation of the multitude of small LAOs, meaning that coordination remains challenging and costs of service delivery less efficient, due to a lack of economies of scale and high administrative costs. In 2011, there were over 3,000 LAOs with fewer than 5,000 residents. Such small administrative units result in high administrative costs which crowd out public expenditures on service delivery, put strain on the coordination mechanisms with central government, and cause fragmentation in service delivery. Despite these inefficiencies, to date there has been no consolidation of small, unviable LAOs. Financial incentives for small LAOs to administratively consolidate into larger, more financially viable entities would deliver efficiency gains and resolve some of the coordination challenges. This could be accompanied by the active provision of asymmetric service delivery responsibilities to LAOs—with smaller and/or lower capacity LAOs taking on a much narrower

[243] The fundamental lack of clear demarcation of functions between central government and local authorities in the Decentralization Act of 1999 remains unresolved.

set of service delivery responsibilities than the larger and/or higher capacity ones. The cut-off could be either number of registered residents or by level (i.e., municipality). Improved monitoring and evaluation of LAO performance would facilitate the allocation of responsibilities based on performance.

Fostering more accountability and efficiency in delivery of public services

There has also been some progress on improving transparency of local fiscal operations and procurement, though accountability at the local level remains constrained by a lack of information on service delivery performance. Transparency of LAO procurement has improved over the past decade. In general, LAOs publish announcements of tenders and winning bids on their own websites. CGD publishes a reference price database for common goods and services on its website twice a year. Combined, this provides some information to citizens that can be used to assess the efficiency of LAO spending. More information is also available on local fiscal operations compared to a decade ago. In FY21, 99 percent of LAOs provided financial reports to the central government comprising revenue, expenditure, assets, and debt statistics. This has enabled the authorities to produce a consolidated general government financial statement—a key deficiency in 2012. However, LAOs are not required to provide audited financial statements, and MoF and the Budget Bureau are not mandated or able to track LAO spending or operating accounts.[244] Thus, it is difficult to determine the fidelity of LAO financial information. Further, there is very limited monitoring and evaluation of LAO service delivery performance, due to capacity constraints at both the central and local levels.[245] Combined with the lack of audited financial statements, this undermines transparency and accountability of LAOs.

Conclusion

Despite gradual progress over the past 20 years, the vision of a decentralized unitary government has not yet been fully realized. Important progress on the decentralization agenda has been made in the past decade. LAOs' budget autonomy and share of government revenue have gradually increased. Coordination between central and local government agencies in the health and education sectors has improved. There have also been encouraging improvements in transparency, which can help foster increased accountability and citizen engagement in local decision making. However, there remains considerable overlap in central/local service delivery responsibilities and a multitude of small, unviable LAOs. These factors drive up administrative costs, impair central-local coordination and blurs lines of accountability, inhibiting effective and accountable delivery of services at the local level. The central government also retains influence over the allocation of LAO resources and control of key administrative functions, which undermines LAO autonomy.

A well-functioning system of central-local government relations and proactive expenditure policy can help address persistent regional disparities in access to public services. Persistent regional disparities are a risk to stable, inclusive, sustainable growth and development in Thailand. As the nation continues to develop, a large proportion of production is likely to continue to be concentrated in Bangkok and the central region, due to agglomeration effects, international transport links, and Bangkok's role as the administrative capital. Thus, the key policy challenge will be to make access to public services more uniform across the country—both in terms of quantity and quality. Accomplishing this task will require a refocusing of expenditure policy towards regions that are deficient in terms of service delivery, with the aim of bringing them towards the Bangkok standard. The 2020 reform to increase the equalization element of the intergovernmental fiscal transfer formula is an important step in this direction. To complement the reform, the authorities could also consider increasing the allocation to Specific Transfers that finance LAO development priorities (or providing greater flexibility for LAOs to use General Transfers for development priorities). Providing responsive and accountable public services are also necessary for maintaining citizens' trust in government and fostering cohesion within a unitary state like Thailand. Without

[244] The CGD recently developed a new Government Fiscal Management Information System to increase efficiency and integrate the LAO financial management system with the central government. However, the current system only covers Provincial Administrative Organization, city municipality, and town municipality levels (there is a plan to expand to the sub-district municipality and Sub-district Administrative Organization levels in FY23). Further, there has been no progress on establishing a common chart of accounts, which limits comparability. DOLA has also been allocated budget to develop a new e-Local Authority Accounting System (due to serious technical deficiencies with the current system) which is expected to be operational by FY24.

[245] Since 2015, DOLA has published on its website an annual "Local Performance Assessment" report of LAOs covering 5 dimensions: (i) overall management; (ii) human resources management and council works; (iii) finance and fiscal management; (iv) public services; and (v) good governance. The dimensions cover 41 categories with 190 indicators. However, the annual publication only provides aggregate information, not information by LAO, severely limiting its use to inform citizens and improve transparency, accountability, and citizens' voice.

a reversal of current regional disparities in access to public services and addressing tensions in the central-local architecture, the country runs the risk of eroding public trust in government, which could lead to further political instability and polarization.

Three actions can help Thailand to realize the goal of a decentralized unitary government and improve delivery of public services: (i) address regional variations in expenditure and capacity to make access to public services more uniform across the country; (ii) transition fully to a unitary decentralized form of government with clearly demarcated roles and accountability structures between different levels of government (especially in the health and education sectors) and administratively consolidate small LAOs into larger, more financially viable entities; and (iii) establish national service delivery standards, publish annual performance reports on these benchmarks, and requiring LAOs to publish audited financial statements to improve transparency of local government fiscal operations.

Annex 5-1: Indices of school input quality and learning outcomes

Table Annex 5-1: Classification of schools into different clusters based on the 10 school input quality indices

	Disadvantaged				Average				Advantaged			
	Mean	*SD*	*Min*	*Max*	Mean	*SD*	*Min*	*Max*	Mean	*SD*	*Min*	*Max*
10 School input quality indices:												
School leadership and management quality index	-0.966	*0.801*	*-2.903*	*0.755*	-0.001	*0.915*	*-2.493*	*1.379*	0.676	*0.676*	*-1.429*	*1.379*
Student-centric teaching index	-1.181	*0.981*	*-2.972*	*0.883*	0.123	*0.834*	*-2.141*	*0.883*	0.561	*0.568*	*-1.310*	*0.883*
Classroom management index	-1.245	*0.889*	*-4.563*	*0.165*	0.130	*0.772*	*-2.109*	*1.210*	0.583	*0.725*	*-1.561*	*1.210*
Teacher development index	-0.977	*1.234*	*-4.161*	*0.785*	0.158	*0.830*	*-6.039*	*0.785*	0.365	*0.680*	*-1.410*	*0.785*
Infrastructure, utility, and service facility indices:												
Sports field, canteen, library and multifunction auditorium	-0.382	*0.814*	*-1.733*	*1.430*	-0.336	*0.784*	*-1.733*	*1.929*	0.935	*0.910*	*-0.726*	*3.158*
Buildings and classrooms are adequate and have solid construction	-0.564	*0.799*	*-1.995*	*1.567*	-0.278	*0.783*	*-1.995*	*1.758*	0.919	*0.901*	*-1.047*	*2.339*
Adequacy of service facilities	-0.556	*0.580*	*-1.124*	*1.067*	-0.406	*0.561*	*-1.124*	*1.691*	1.192	*0.934*	*-1.124*	*3.257*
Safe and hygienic utilities and lavatory facilities	-0.730	*0.822*	*-2.515*	*0.914*	-0.196	*0.903*	*-2.515*	*1.417*	0.864	*0.635*	*-0.927*	*1.667*
School well-equipped with appropriate teaching supplies	-0.940	*0.929*	*-2.833*	*0.660*	-0.075	*0.855*	*-2.833*	*1.477*	0.776	*0.645*	*-1.636*	*1.477*
Students are well-equipped with learning materials	-1.008	*1.463*	*-3.792*	*0.595*	0.212	*0.676*	*-3.792*	*0.595*	0.285	*0.668*	*-2.330*	*0.595*
Share of personnel (teachers and administrators) with professional qualification or higher	0.384	*0.205*	*0.000*	*0.900*	0.416	*0.173*	*0.043*	*0.875*	0.418	*0.172*	*0.063*	*0.917*
Student learning outcome index	-0.834	*0.869*	*-2.724*	*0.779*	-0.035	*0.923*	*-2.660*	*1.749*	0.634	*0.778*	*-1.762*	*1.749*
Total student enrolment	**184.2**	***162.9***	***15.0***	***932.0***	**237.5**	***254.5***	***10.0***	***1908.0***	**313.3**	***332.2***	***21.0***	***1850.0***
Share of non-poor students	0.528	*0.224*	*0.017*	*0.960*	0.569	*0.217*	*0.025*	*0.958*	0.604	*0.221*	*0.103*	*0.976*
Total number of schools	52				148				75			
Total number of students	9,578				35,151				23,495			

Source: World Bank (2022): "Thailand: Fundamental School Quality Level (FSQL) Instrument Validation."

Annex 5-2: Recent evidence of the association between human capital and economic growth

The analysis in this section follows the approach of Hanushek and Woessmann (2012) in estimating the effect of human capital on economic growth, using the OECD PISA 2000 average test score in math and science as a measure of human capital across countries. It should be emphasized that this study benefited from having a 19-year timeframe of average annual GDP per capita growth rate after the year 2000 to estimate the effect of education on economic growth. As a result, our analysis relies minimally on extrapolating the cognitive skills of the student cohorts not yet in the labor force to those of the actual workforce directly contributing to the observed growth. This allows our estimation to much more convincingly avoid the reverse causality problem that could potentially have affected the results of the original study. Furthermore, the use of a single recent assessment, which employed careful sampling rules and modern psychometric testing procedures ensures that the human capital measure used is of high quality and consistency across countries. The growth models are estimated using data on 57 PISA sample countries, where the dependent variable is the average annual growth rate in GDP per capita over the 2000–2019 period. The regression results for the basic models are presented in columns (1) – (6) of Table Annex 5-2.

Table Annex 5-2: Average Years of Schooling versus Cognitive Skills in Growth Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Years of schooling 2000	0.145*	0.062		0.145*	0.077	
	(0.084)	(0.084)		(0.084)	(0.088)	
Cognitive skills 2000		1.374***	1.519***		1.112**	1.306***
		(0.446)	(0.385)		(0.418)	(0.347)
Log GDP per capita 2000	-0.910***	-1.271***	-1.244***	-0.981***	-1.256***	-1.223***
	(0.145)	(0.180)	(0.179)	(0.144)	(0.158)	(0.156)
Trade openness				0.667***	0.503***	0.475***
				(0.139)	(0.132)	(0.136)
Number of observations	57	57	57	57	57	57
R-squared	0.396	0.513	0.504	0.494	0.564	0.550

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Dependent variable: Average annual growth in GDP per capita 2000-2019

Column (1) presents the estimated regression coefficients obtained using the traditional growth model specification with initial average years of schooling of adults aged 25 years and older in 2000 as measure of human capital. The schooling attainment coefficient shows that each year increase in average schooling is associated with a statistically significant 0.145 percentage point higher average annual growth rate in GDP per capita over the 19 years. The traditional model explains about 40 percent of the total variation in growth rates. Adding measured cognitive skills of 15 year-old students in 2000 to the model in column (2) increases this to 51 percent. The coefficient estimate indicates that a one standard deviation increase in test scores is associated with 1.374 percentage point higher average growth rate and the estimate is statistically significant at the 1 percent level. Furthermore, we find that the schooling attainment variable becomes redundant once the direct cognitive skill measure is added to the model. The coefficient on the cognitive skill variable increases to 1.519 once the redundant years of schooling variable is discarded in model (3).

Columns (4) to (6) of Table Annex 5-2 repeat the analysis on these basic results, but include an additional control variable for institutional differences in initial trade openness (Trade/GDP in 2000). The conclusions reached are essentially the same as before, but the magnitudes of the coefficient estimates for the human capital variables become smaller. Nevertheless, the models presented in Table Annex 5-2 indicate that a one standard deviation increase in cognitive skills is associated with between 1.112 to 1.519 percentage points higher average annual growth rate in GDP per capita. These estimates are all statistically significant at conventional levels and are economically very substantial.

Annex 5-3: Evidence on reforms to improve learning outcomes

Evidences from World Bank (2020), PISA 2018: Thailand Country Report

There are several ways in which Thailand could reform its basic education system in order to improve student learning outcomes. A recent World Bank (2020) report on Thai basic education concludes that educational outcomes are driven by five key factors or foundations for success. These are: educational resources, quality instruction, learning time, inclusive learning environment, and family support. Table Annex 5-3-1 presents the mean values of the various indices studied in the report for all Thai schools in the sample, as well as for schools categorized into different socio-economic groups.[246] These indices were included as regressors in the regression analyses, whose results are reproduced in Annex 5-3-2.

Table Annex 5-3-1: Mean Values of Selected Indices – Overall and by School Socioeconomic Group

	Thailand	Disadvantaged	Average	Advantaged
Exposure to bullying	0.204	0.378	0.301	-0.151
Sense of belonging	-0.396	-0.476	-0.442	-0.228
Adaptive instruction	0.210	0.175	0.178	0.307
Classroom disciplinary climate	0.340	0.317	0.319	0.404
Quality assurance	0.297	0.305	0.241	0.401
Parental involvement in school-related activities	1.051	0.935	0.872	1.514
Parents' emotional support	-0.146	-0.301	-0.203	0.117
Shortage of educational staff[247]	0.044	0.485	0.125	-0.548
Shortage of educational material[248]	0.373	0.828	0.541	-0.402
Shortage of educational resources[249]	0.271	0.796	0.423	-0.542

All indices have been normalized so that OECD schools have a mean of zero and a unit variance.
Source: World Bank (2020): "PISA 2018 Thailand Country Report."

Consider the "Shortage of educational resources index" for example. After controlling for a rich set of student background characteristics and the other indices, it was estimated that a one standard deviation (OECD scale) increase in the index is associated with a statistically significant 6.7 points decline in the PISA reading performance of Thai students. From Table Annex 5-3-1, we can infer that addressing the shortages in educational resources (including educational staff, educational materials, and school physical infrastructure) could have substantial impact on student learning since the shortage index for an average Thai school was 0.27 SD above the OECD mean. Importantly, the difference in the index values between the Disadvantaged and Advantaged schools was as high as 1.34 SD. Eliminating this resource allocation disparity could, therefore, substantially reduce achievement inequality between socioeconomic groups.

Thai students also reported a weaker sense of belonging and were more exposed to bullying at school than did students in OECD countries, on average. The problems were again more pronounced in Disadvantaged schools. Furthermore, the average student in Thailand perceived weaker emotional support from his or her parents than did the average student across OECD countries. The estimated econometric models suggest that addressing all of these perceived shortcomings could amount to large positive impact on learning and lower achievement inequality.

[246] Advantaged (Disadvantaged) schools are those schools which were ranked in the top (bottom) 25 percent in terms of average student body Economic, Social, and Cultural Status (ESCS) index.

[247] A "Shortage of Educational Staff Index" was constructed from principals' responses to four specific questions. Specifically, PISA asked principals whether the schools' capacity to provide instruction is hindered by: "A lack of teaching staff", "Inadequate or poorly qualified teaching staff", "A lack of assisting staff", and "Inadequate or poorly qualified assisting staff." For each question, the principals had to select one response from "Not at all", "Very little", "To some extent", and "A lot." The answers to the four questions are then given scores and combined to construct the index.

[248] School principals were also asked whether their schools' capacity to provide instruction is hindered by: "A lack of educational material", "Inadequate or poor-quality educational material", "A lack of physical infrastructure", and "Inadequate or poor-quality physical infrastructure." The answers to these four questions were then given scores and combined to construct a "Shortage of educational material index."

[249] A single "Shortage of educational resources index" was constructed based on the original eight variables making up the "Shortage of educational staff" and the "Shortage of educational material" indices.

Table Annex 5-3-2: Hierarchical Linear Model Regression of PISA 2018 Reading Scores - Thailand

	Model 1	Model 2
Sense of belonging index	8.143***	8.151***
	(1.678)	(1.680)
Exposure to bullying index	-8.783***	-8.823***
	(0.770)	(0.768)
Classroom disciplinary climate index	5.851***	5.861***
	(1.372)	(1.374)
Adaptive instruction index	2.127*	2.121*
	(1.239)	(1.243)
Quality assurance index	6.062	6.754
	(4.432)	(4.596)
Age	-5.953	-6.017
	(3.990)	(3.984)
Grade	16.670***	17.125***
	(2.811)	(2.811)
Female	23.326***	23.301***
	(1.980)	(1.971)
Economic, social, and cultural status index	5.800***	6.015***
	(2.043)	(2.049)
Economic, social, and cultural status index squared	1.410**	1.419**
	(0.657)	(0.655)
Parents' emotional support index	7.499***	7.445***
	(1.134)	(1.136)
Parental involvement in school-related activities index	2.688	2.407
	(2.000)	(2.080)
Shortage of educational resources index	-4.807	-6.687**
	(2.923)	(3.014)
Urban	24.418***	
	(8.881)	
Intercept	468.842***	474.305***
	(62.690)	(62.373)
Log between school cluster standard deviation $ln(\sigma_{sch})$	3.426***	3.456***
	(0.091)	(0.085)
Within cluster standard deviation $ln(\sigma_e)$	3.909***	3.909***
	(0.016)	(0.016)
Observations - Schools	290	290
Observations - Students	7,981	7,981

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: World Bank (2020): "PISA 2018 Thailand Country Report."

Moreover, the report finds that the prevalence of student absenteeism in Thailand was higher than on average across OECD countries and highest among all EAP countries. About 39 percent of students in Thailand, as compared to only 21 percent of students on average across OECD countries, had skipped a day of school at least once in the two weeks prior to the PISA test. While at least 90 percent of students in the majority of countries and economies in the EAP had never skipped a day of school, only 61 percent of students in Thailand reported the same. Student absenteeism was more frequently observed among boys and disadvantaged students. After accounting for students' and schools' socioeconomic profiles, the study finds that students who skipped school once or twice in the two weeks prior to the PISA test scored 11.7 points lower than

those who had not skipped school during the same period. Skipping a whole day of school five or more times was associated with a decrease of 20.4 score points in reading.

The report concludes that certain factors in the home and school environment can increase the likelihood that students skip school. After accounting for the socioeconomic profiles of students and schools, students were less likely to have skipped a day of school at least once in the two weeks prior to the PISA test when they have less frequent exposure to bullying, have a more positive classroom disciplinary climate, and value school more strongly. Students who received more emotional support from their parents were also less likely to skip school. These key factors in the school and home environment present important points of consideration for policymakers and educators in developing interventions to address student absenteeism.

Evidences from World Bank (2018), Thailand: Enhancing Efficiency and Value for Money of Public Expenditures in the Education Sector

Another recent World Bank (2018) report provides econometric evidences from Thailand for the presence of institutional features that are complementary to local autonomy in schools. Specifically, the study sheds light on the set of accountability-enhancing activities or policies, or their combination with local autonomy which could lead to improvement in student performance. Employing Thailand's subset of PISA 2009 data, supplemented with indicators of school autonomy and accountability developed by World Bank's researchers under the Systems Approach for Better Education Results (SABER) initiative, the study finds that increased autonomy can significantly improve learning outcomes in schools with strong accountability regime, especially with regard to personnel management, where the impacts are relatively large (Table Annex 5-3-3).[250] [251] The study finds "Publication of school and student assessments" and "Comparisons of school and student performance reports" to be very important activities for personnel autonomy to yield favorable outcomes. Specifically, the publication and the reporting of test results which allow appropriate comparisons to be made with other schools (with similar student and school characteristics) is an important tool for parents and community to hold principals and teachers accountable.

Table Annex 5-3-3: Estimated Marginal Effects on PISA Mathematics Score of Personnel Autonomy Measures

	Autonomy in the hiring and firing of principals	Autonomy in teacher appointment and deployment	School council's role in teacher tenure or transfer	Management of nonteaching staff and teacher's salaries
Strong Accountability School	37.872	4.609	21.329	20.698
Weak Accountability School	-6.374	-48.569	-8.000	-31.201

Table Annex 5-3-4: Estimated Marginal Effects on PISA Mathematics Score of Budget and Academic-Content Autonomy Measures

	Authority over management of the operational budget	Authority to raise additional funds for the school	Academic autonomy index
Strong Accountability School	14.883	8.516	31.148
Weak Accountability School	-2.009	-2.061	17.314

Source: World Bank (2018): "Thailand: Enhancing Efficiency and Value for Money of Public Expenditures in the Education Sector"

The study also finds that effective parental oversight is crucial for the achievement of optimal within-school budget allocation (Table Annex 5-3-4). In terms of the two indicators of autonomy in school budget management, their interactions with the constructed "Budget accountability index" have the expected positive signs, but the coefficient estimates are not statistically significant at conventional levels. Nevertheless, the interactions with the "Constant pressure from many parents

[250] A 'Strong Accountability School' is defined as a school with 'Advanced' scores for "Publication of school and student assessments" and "Comparisons of school and student performance reports," and there is "Constant pressure from many parents on very high academic standards and to have students achieve them".

[251] Consider the "Autonomy in the hiring and firing of principals" variable. For a 'Strong Accountability School', going from no autonomy to full autonomy over this indicator would increase the expected student achievement by as much as 37.9 points on the PISA scale. On the other hand, for a school with 'Latent' scores on the two selected accountability indicators and there is no constant pressure from many parents on very high academic standards ('Weak Accountability School'), going from no autonomy to full autonomy over this indicator would *reduce* the expected student achievement by 6.4 points.

on very high academic standards" indicator are significantly positive, suggesting that effective parental oversight is crucial for the achievement of optimal within-school budget allocation. The empirical findings further indicate that enhanced academic autonomy leads to better performance when student assessment results are used by schools to determine changes to their pedagogical practices, personnel, and training needs of their teachers (although the coefficient is not statistically significant). Once again, the study finds significant positive interaction between academic-content autonomy and the "Constant pressure from many parents on very high academic standards" indicator.

Annex 5-4: Enrolment and spending by education level

Figure Annex 5-4-1: Enrolment Rates by Education Level vs. Logarithm of GDP per Capita

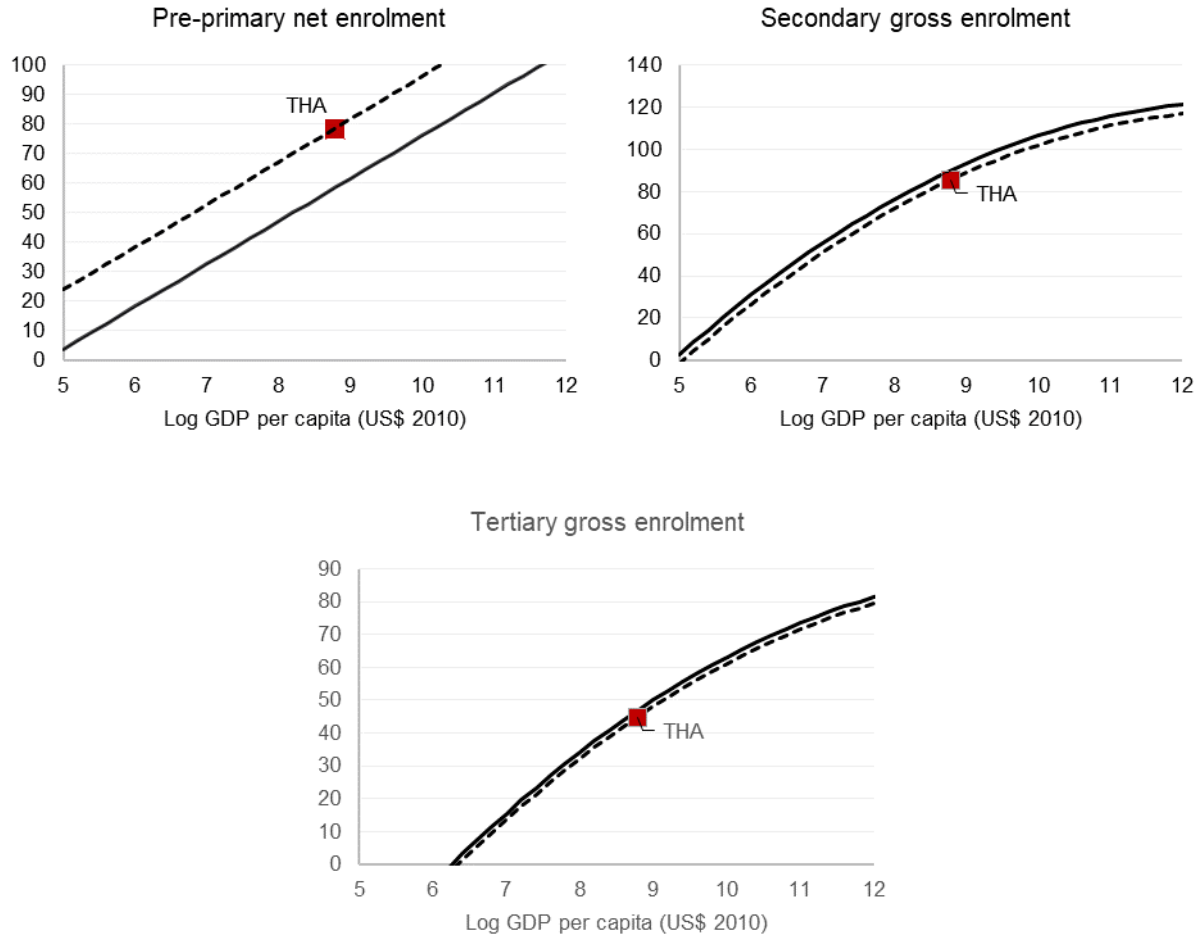
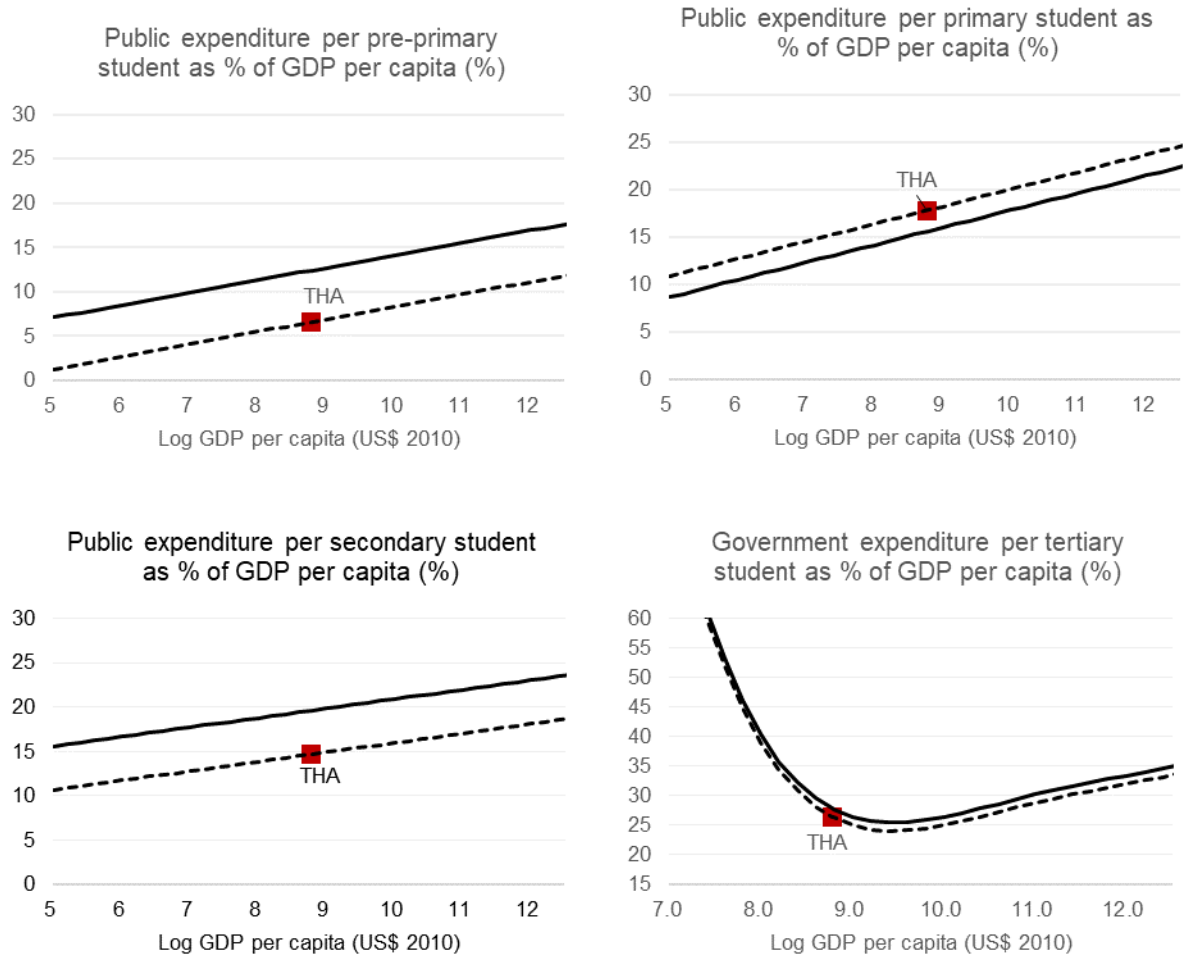


Figure Annex 5-4-2: Public Expenditure per Student as Percentage of GDP per Capita by Education Level vs. Logarithm of GDP per Capita



Annex 6-1: Social protection programs

Table Annex 6-1: Main social protection programs, number of beneficiaries, targeting modality, and budget

Program name	Program description	Number of beneficiaries	Targeting modality	Budget allocated
Social assistance				
Child Support Grant	Cash transfer of THB 600/month to poor families with children up to 6 years of age.	2019: nearly 700,000 children 2020: about 1.5 million children	**Means test and categorical:** Poor pregnant women or mothers of children who are Thai nationals under the age of 6. Not for beneficiaries of social security funds, welfare, other benefits from government agencies, or state enterprises (excludes occasional allowances), and not in state care. Total household income must be less than THB 100,000 per person per year[252]	THB 2.056 billion (approved by the Cabinet as of 19 February 2020)
Social Welfare Card	Monthly cash transfer via beneficiary cards to buy items at Thong Fah shops for poor working age households. Those with incomes below B30,000/ year receive THB 300 /month. Those with incomes between THB 30,000-100,000/year receive THB 200 /month. A THB 500 monthly subsidy for public transport is also issued, as well as a discount of THB 45 for cooking gas every 3 months.	2020: 13.9 million[253] 2021: 13.65 million[254]	**Means test:** Thai citizens, over 18 years old, unemployed or with an annual income below THB100,000, holds no financial assets worth more than THB100,000, and does not own real estate. **Criteria modified in 2022 and now include:** No other assistance being received; cannot be a monk, pensioner, prisoner/detainee, under state welfare residences, government official; HH income < THB 100k p/a (includes spouse's income though hard to track if marriage not registered; Savings in bank account < THB 100k p/a (including spouse); Asset filters: Individual: ○ Condo: 35 sqm ○ Land: ▪ 1 Rai (1,600 sqm) of land not for agriculture use ▪ ≤10 rai of land for agriculture use ○ Land and House:	The government allocated THB 40 billion to finance state welfare smartcard holders in fiscal year 2020[256] THB 48 billion were earmarked in 2022.[257]

[252] https://csg.dcy.go.th/th/support/how-to-register
[253] https://newsinfo.inquirer.net/1339094/covid-19-pandemic-thailand-extends-electricity-water-subsidies-for-another-year
[254] https://thethaiger.com/hot-news/economy/opening-day-of-2022-welfare-sees-1-86-million-people-register
[256] https://www.bangkokpost.com/business/1822089/family-income-joins-new-welfare-criteria
[257] https://www.bangkokpost.com/thailand/general/2369976/b48bn-welfare-card-boost

Program name	Program description	Number of beneficiaries	Targeting modality	Budget allocated
			▪ ≤ 25 sqm house ▪ ≤1 rai for residence and other usage ▪ ≤10 rai for agriculture use ○ Total land not exceed 10 rai for agriculture use and 1 rai for non-agriculture use Household: ○ Condo: 35 sqm/person and co-owners ○ Land: ▪ 2 Rai (3,200 sqm) of land not for agriculture use ▪ Land: ≤20 rai of land for agriculture use ○ Land and house: ▪ ≤ 25 sqm house /person and co-owners ▪ ≤2 rai for residence and other usage ▪ ≤20 rai for agriculture use ○ Total land may not exceed 20 rai for agriculture use and 2 rai for non-agriculture use • No credit card • HH mortgage debt < THB 1.5 million; <THB 1 million for car loan • Passport showing a lot of foreign travel not eligible • May not own stock market shares Registrant verification process will be individually done and will follow by household verification (if applicable).[255]	
15-year Free Education Programme (FEP) **Type: Social Assistance (cash or in-kind)** **Since: 2009**	The FEP provides universal quality education for all children from preschool through the high school level and vocational education, covering formal, non-formal, and informal education. Includes per-student grants to primary and secondary schools. Administered by schools	All children in Thailand including stateless and ethnic minority children and	----	In 2019, the budget was B27,468,378,300 [259]

[255] https://welfare.mof.go.th/

[259] https://www.matichon.co.th/education/news_1442704

Program name	Program description	Number of beneficiaries	Targeting modality	Budget allocated
Implemented by: Ministry of Education[258]	(learning and teaching activities, schoolbooks, and student development activities), or by transfer (student uniforms and learning materials) in-cash or in-kind.	children of migrants.		
Primary School Lunch	Enacted to alleviate nutritional problems among school children. Schools can apply for funds (B20 per person per day) allocated by the Department of Local Administration for nutritious lunches for students.[260]	"30,000 primary schools; 1.8 million primary children and nearly 700,000 in early years education, or about 30% of all students."[261]	**Categorical:** children attending free primary education who are malnourished (weight for age) or poor.	
Old Age Allowance	Monthly benefit for elderly without other pension income depending on age: THB 600 for elderly aged 60-69; THB700 for those aged 70-79; THB800 for those aged 80-89; and THB1,000 for those over 90 years of age.	2019: 9.09 million individuals[262]	**Categorical:** over the age of 60 and not covered by formal social insurance schemes.	THB 5,602 million as of 2020[263]
Allowance for Persons with Disabilities		2020: 1.84 million individuals[264]	**Categorical**: anyone assessed as having a disability and holding a PWD card.	THB 1,475 million in expense as of 2020[265]
Social insurance				
Civil Servant Pension Program **Type: Old Age Pension** **Since:1902** **Implemented by: Ministry of Finance**	Pension program for civil servants. As either a gratuity or a pension upon retirement (individual decision). Payment is equal to the last salary received multiplied by the number of years of employment, divided by 50. Includes amendments to the 65-year-old Pension Act, which caps the retirement age at 60.		**Categorical**: Central government employees, local government officials, some SOEs	The defined benefit pension expenditure for public servants in 2019 totaled THB 223,762 million
The Government Pension Fund (GPF)	Long-term compulsory savings fund with defined contributions from government officials. An addition to the original pension system	2020: 1,088,288 members	**Categorical:** All civil servants except the political branch; civil servants prior to 27 March 1997 and registered as a member by	In 2020, the net asset value

[258] http://www.moe.go.th/index.php/
[260] http://worldfood.apionet.or.jp/thai.pdf
[261] http://worldfood.apionet.or.jp/thai.pdf
[262] 2019 NCOP "The Situation of Thai Elderly 2019". National Commission on Older Persons.
[263] http://www.nakhonsawan.go.th/joomla/index.php?option=com_content&view=article&id=2541:2020-02-04-07-01-04&catid=26:2018-02-15-04-16-33&Itemid=217
[264] https://www.prachachat.net/finance/news-408562
[265] http://www.nakhonsawan.go.th/joomla/index.php?option=com_content&view=article&id=2541:2020-02-04-07-01-04&catid=26:2018-02-15-04-16-33&Itemid=217

Program name	Program description	Number of beneficiaries	Targeting modality	Budget allocated
Type: Old Age Pension **Since: 1996** **Managed by the Committee of Government Fund under the Ministry of Finance.**[266]	guaranteeing pension payments and savings to its members.		26 March 1997; Newly appointed or transferred civil servant since 27 March 1997.	was THB 967,691,636,570
Social Security Fund (Sections 33 and 39) **Type: Other social insurance** **Since: 1991** **Implemented by: Social Security Office, Ministry of Labor.**[267]	Contributory social insurance scheme for private employees in firms with 20 or more workers, covering 18.84% of the population for: sickness, injury, maternity, invalidity, death, unemployment, old age. SSS Section 33 covers those employed in non-agricultural establishments aged 15 and older. Employers with at least one employee must register their employee(s). SSS Section 39 covers those previously insured under Section 33 who contributed for not less than 12 months or no longer employees but wish to remain insured.	2019: Section 33: 11,686,393 Section 39: 1,648,118[268] 2020: Section 33: 11,124,209 Section 39:1,799.786[269]	General population aged over 15 who are not civil servants or deemed exempted by the Social Security Law.	In 2017, expenditure on SSF sections 33, 39 and 40 (see below) totaled THB 78,145 million covering old-age, child allowance, unemployment, sickness, maternity and invalidity benefits.[270]
Social Security Scheme for Informal Workers (SSS Section 40) **Type: Other social insurance** **Since: 1991** **Implemented by: Social Security Office, Ministry of Labor.**[271]	Contributory insurance scheme for informal economy workers, i.e., self-employed or family workers not covered by any social security system. Section 40 covers: Package 1 – Illness, invalidity and death benefits; (monthly contributions: THB 70 by the insured); Package 2 - Illness, invalidity, death, and old-age (lump sum) benefits; (monthly contribution: THB 100 by the insured);	2019: Section 40: 3,242,579 [272] 2020: 3,508,970[273]	Informal economy workers Ages 15-65[274], i.e., self-employed workers or family workers who are not an insured person pursuant to section 33 and 39 of the Social Security Scheme.[275]	See above

[266] https://www.gpf.or.th/thai2019/Index/index.php
[267] https://www.sso.go.th/wpr/assets/upload/files_storage/sso_th/4fe3599e47b4578591db2ab1af138d26.pdf
[268] Source: SSO, link here
[269] SSO Report 2020.
[270] SSO Report 2017.
[271] https://www.sso.go.th/wpr/assets/upload/files_storage/sso_th/4fe3599e47b4578591db2ab1af138d26.pdf
[272] Source: SSO, link here
[273] SSO Report 2020.
[274] https://www.thairath.co.th/news/local/bangkok/1733415
[275] Source: SSO, link here

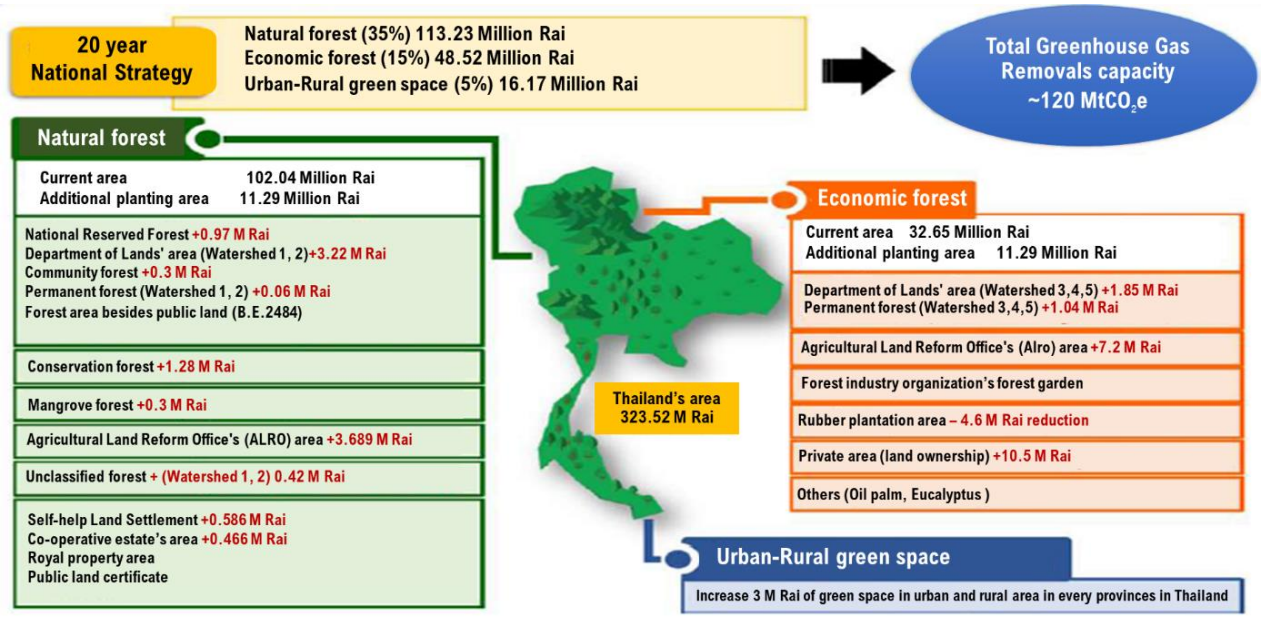
Program name	Program description	Number of beneficiaries	Targeting modality	Budget allocated
	Package 3 – Illness, invalidity, death, old-age, and child benefits (monthly contribution: THB 300 by the insured).			
Social Security Fund for Old Age Pension **Type: Old Age Pension** **Since: 2014** **Implemented by: The Office of Social Security under the Ministry of Labor.**	Part of the SSF program, a savings tool incorporated into the Social Security Fund to ensure that retired employees receive minimum income. Each employee and employer is required to contribute 3% of their salary to the SSF for Old Age Pension. Upon retirement at 55, the retiree can elect to receive either a lump sum payment or monthly payments.	13 million	In either case, retirees receiving Old Age Pension are not eligible for the non-contributory Old Age Allowance.	—
Workers Compensation Fund **Type: Other insurance** **Since: 1974** **Implemented by: Social Security Office.**[276]	Insurance for employees of private firms, government agencies, non-profit organizations, and foreign firms against work related injuries that can result in loss of income. Funded with employer contributions, compensating employees who die, are injured, suffer loss of organs or disabled due to work-related causes.	As of March 2018, the fund comprised: Section 33: 10,913,304 members Section 39: 1,384,583 members.	The scheme covers employees in the formal private sector (companies with one or more employees) and regular migrant workers.	In 2018 it was THB 3,007 million.
National Savings Fund (NSF) **Type: Old Age Pension** **Since: 2011** **Implemented by: Ministry of Finance.**[277]	Expand contributory public pension scheme for workers in the informal sector (not covered under state pension programs or private provident funds). Voluntary defined contribution system. Calculated on the basis of 1) the deposit, 2) contribution and 3) benefit derived from the deposit and the contribution.	2020: 2,294,322 members.	The program targets workers in the informal sector age 15-60 years.	
The Provident Fund Program **Type: Old Age Pension** **Since: 1987** **Implemented by: Securities and Exchange Commission (SEC)**[278]	Voluntary benefit scheme between employers and employees who set up a fund committee to oversee the provident fund. Aims for employees to have savings for retirement, disability, or for the family if the employee dies. Employees receive a lump sum at the termination of their employment or upon retirement.[279]	Second quarter of 2019: 9,008 employers and 3,060,504 employee members	Employees of private companies, government enterprise employees and government permanent employees.	

[276] https://www.sso.go.th/wpr/main
[277] https://www.nsf.or.th/index.php/2016-04-07-12-33-30/2018-01-10
[278] https://www.thaipvd.com/content/60
[279] https:/7 /www.set.or.th/education/th/begin/mutualfund_content14.pdf

Annex 7-1: Estimation of total economic values of forest in Thailand

This section estimates the economic values of forest in Thailand. The analysis is based on the specified forest target area for the national carbon sink until 2037 according to the 20-Year National Strategy as illustrated in Figure Annex 7-1-1.

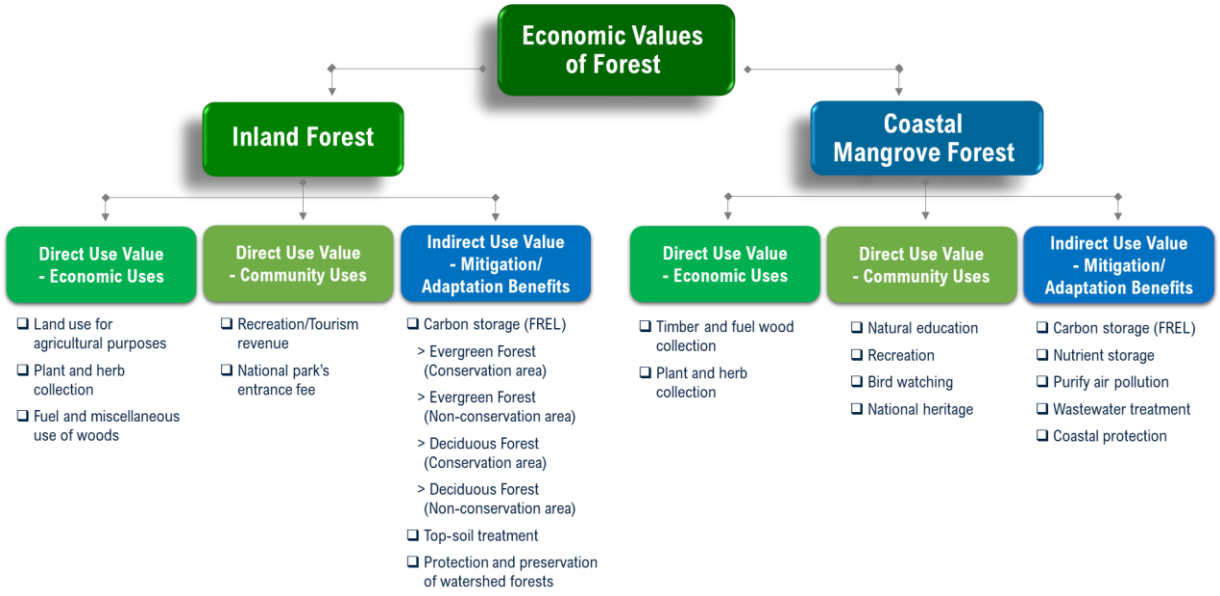
Figure Annex 7-1-1: Thailand National Target of Carbon Sink in the 20-Year National Strategy 2017-2037



Source: Thailand's 20-Year National Strategy 2017-2037, Department of National Park, Plant and Wildlife Conservation (DNP)

The framework of analysis focuses on the 2 main types of forest areas as shown in Figure Annex 7-1-2, which are (i) inland forest, and (ii) coastal mangrove forest. In terms of economic values, the benefits of forest are estimated in terms of direct uses and indirect uses applying as per the usages allowed in the respective areas of both types of forest.

Figure Annex 7-1-2: Framework of analysis of the Estimation of Total Economic Values of Forest in Thailand



Source: Author's accumulation

The analysis in this study is established based on the secondary estimation from the prior studies. Based on the literature review[280], the inland forest in this analysis consists of 3 types of values – (a) direct value of economic uses from land use for agricultural purposes, plant and herb collection, and fuel and miscellaneous use of woods, (b) direct value of community use for recreation/tourism revenue and national park's revenue, and (c) indirect value of mitigation and adaptation benefits from the carbon storage, topsoil treatment, and protection/preservation of watershed forests. With a similar principle[281], the literature review of the coastal mangrove forest in this study also covers 3 types of values – (a) direct value of economic use from the timber and fuel wood collection and plan and herb collection, (b) direct value of community use in term of natural education, recreation, bird watching, and national heritage, (c) indirect value from biodiversity benefits in term of nursery and food habitat of aquatic animal, benthos habitat, as well as genetic diversity and biodiversity source, and (d) indirect value from mitigation/ adaptation benefits from carbon storage, nutrient storage, purifying air pollution, wastewater treatment, and coastal protection.

Apart from the prior studies from the literature reviews, the estimation of the natural park's revenue is based on the statistics of average revenues of the National Parks, Plants, and Wildlife Conservation (DNP) during 2017-2019 before the Covid-19 pandemic. In addition, the carbon storage capacity in this study is estimated based on Thailand's Forest Reference Emission Level (FREL) submitted to the UNFCCC in December 2021[282] and the carbon price is estimated at USD 4.9 per ton CO2 based on the average price per tonCO2 of forestry and land during Q1/2019-Q3/2021[283]

Table Annex 7-1-1: Assumptions for Estimation of the Total Economic Values of Forest in Thailand

Assumptions	
Avg annual Inflation 2010-2021	**1.35%**
Avg annual Inflation 2014-2021	**0.50%**
Projected annual Inflation 2022-2037	**2.00%**
Discount rate	**3.00%**
Exchange rate	**34.33**

Sources:
[1,2] https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?end=2021&locations=TH&start=1960&view=chart
[3] Weighted-average Interbank Exchange Rate as of June 1, 2022, Bank of Thailand,
https://www.bot.or.th/english/_layouts/application/exchangerate/exchangerate.aspx

To project the estimation, Table Annex 7-1-1 summarized some additional required assumptions to enable the estimation of the total economic values of forest in Thailand. With this framework of analysis and the assumptions, the time-series analysis of the economic benefits of the 2 main types of forest in Thailand is constructed. To enable the progress of forest plantation in this analysis, the target areas of each type of forest associated with each type of economic benefit are assumed to increase equally over the years of the target period until 2037.

[280] Department of National Park, Plant and Wildlife Conservation (2010), Economic Valuation Project of National Park Resources Case Study: Doi Inthanon National Park : The Complete Report, Thailand
[281] Wiwatthanapornchai, Sitthinan & Piputsitee, Chucheep & Boonyawat, Samakkee. (2014). The Economic Value of Laem Phak Bia Mangrove Ecosystem Services in Phetchaburi Province, Thailand. Modern Applied Science. 8. 10.5539/mas.v8n5p36.
[282] Thailand's Forest Reference Emission Level and Forest, https://redd.unfccc.int/files/thailand_frel_frl_report.pdf
[283] Forest Trends' Ecosystem Marketplace. 2021. 'Market in Motion', State of Voluntary Carbon Markets 2021, Installment 1. Washington DC: Forest Trends Association.

Table Annex 7-1-2: Estimation of Total Economic Values of Forest in Thailand as of 2022

Inland Forest		Valuation Method	National Area (2022) Existing Area	Addition	2022
	Area/Target Area (KM2)				
Direct use value - Economic use	Land use for Agricultural purposes	MVA	7,392.00	8,592.00	173.57
	Plant and Herb Collection	MVA	61,792.00	8,592.00	689.78
	Fuel and Miscellanous use of Wood	MVA	7,392.00	3,440.00	127.18
Direct use value - Community use	Recreation/Tourism Revenue	TCM	92,144.00	2,048.00	136,556.40
	National Park's Revenue (Avg 2017-2019)	Statistics	92,144.00	2,048.00	2,460.00
Indirect use value - Mitigation/ Adaptation benefits	Carbon storage (FREL)	FREL	158,926.81	3,654.04	540,146.31
	> Evergreen Forest (Conservation Area)	FREL	43,190.45	949.98	254,339.43
	> Evergreen Forest (Non-conservation Area)	FREL	13,721.15	71.98	53,371.38
	> Deciduous Forest (Conservation Area)	FREL	54,991.01	1,540.01	139,222.77
	> Deciduous Forest (Non-conservation Area)	FREL	47,024.20	1,092.07	93,212.73
	Top soil treatment	CVM	163,968.00	3,654.04	189,331.73
	Protection and preservation of watershed forests	CVM	135,053.18		179,006.58
Total In-land Forest (NPV as of 2022)					1,048,491.56
Coastal Mangrove Forest/Ecosystem			Existing Area	Addition	2022
	Area/Target Area (KM2)		2,016.00	480.00	
Direct use value - Economic use	Timber and Fuel Wood Collection	PEV	2,016.00	480.00	4,020.61
	Plant and Herb Collection	PEV	2,016.00	480.00	7,060.37
Direct use value - Community use	Natural education	PEV	2,016.00	480.00	7,564.05
	Recreation	PEV	2,016.00	480.00	3,861.55
	Bird watching	PEV	2,016.00	480.00	4,886.59
	Nation Heritage	PEV	2,016.00	480.00	9,684.81
Indirect use value - biodiversity	Nursery and food habitat of aquatic animal	PEV	2,016.00	480.00	6,238.57
	Benthos habitat	PEV	2,016.00	480.00	9,278.33
	Genetic diversity and biodiversity source	PEV	2,016.00	480.00	6,450.65
Indirect use value - Mitigation/ Adaptation benefits	Carbon storage (FREL)	FREL	2,016.00	480.00	10,530.54
	Purify air pollution	PEV	2,016.00	480.00	5,213.54
	Wastewater treatment	PEV	2,016.00	480.00	7,546.38
	Coastal protection	PEV	2,016.00	480.00	9,826.20
	Nutrient storage	PEV	2,016.00	480.00	6,424.14
Total Coastal Mangrove Forest (NPV as of 2022)					93,646.74
Total Economic Benefits of Forest (NPV as of 2022)					1,142,138.30

Source: Author's Estimation

Based on the estimation in Table Annex 7-1-2, with underlying assumptions, the economic valuation of both the inland forest and coastal mangrove forest in Thailand as of 2022 were estimated at approximately THB 1.05 trillion and THB 93.65 billion, respectively. Therefore, Thailand's forest could generate economic values approximately as high as THB 1.14 trillion (USD 33.28 billion). With the projection up to the national target forest area in the year 2037, the total economic benefits of the forest in Thailand are approximately as high as 1.56 trillion per year (USD 45.64 billion).

Furthermore, in terms of cost-benefit analysis, as illustrated in Table Annex 7-1-3, while the positive economic benefits of forests range between THB 1.14-1.67 trillion each year, the country's annual fiscal budget related to the forestry sector is only THB 15-19 billion each year[284]. This, therefore, reflects that the average current fiscal expenditure each year invests only about 1.5 percent of the economic value that the forest in Thailand has actually created. It is worth noting that the analysis is estimated based on the scenario with the main assumptions that forest protection is effective without deforestation and forest degradation over the years and the national sinking target could be achieved in 2037. Hence, in the case where deforestation and forest degradation exist from various drivers that negatively impact the quantity and quality of the total forest, this indicates that the country needs to put even more effort and more critical investment in forest protection and forest plantation than 66 times of the current budget allocation.

[284] Average fiscal budget to the DNP, RFD, FIO, DMCR during 2013-2022

Table Annex 7-1-3: Estimation of the Economic Values of the Forest Area in Thailand until 2037

Inland Forest		Valuation Method	National Area (2022) Existing Area	Addition	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
	Area/Target Area (KM2)																			
Direct use value - Economic use	Land use for Agricultural purposes	MVA	7,392.00	8,592.00	173.57	188.49	203.70	219.22	235.05	251.19	267.66	284.46	301.59	319.07	336.89	355.08	373.62	392.54	411.83	431.51
	Plant and Herb Collection	MVA	61,792.00	8,592.00	689.78	709.01	728.63	748.65	769.06	789.88	811.12	832.78	854.88	877.42	900.41	923.86	947.77	972.17	997.05	1,022.43
	Fuel and Miscellanous use of Wood	MVA	7,392.00	3,440.00	127.18	133.09	139.10	145.24	151.51	157.89	164.41	171.05	177.83	184.75	191.80	198.99	206.33	213.81	221.45	229.23
Direct use value - Community use	Recreation/Tourism Revenue	TCM	92,144.00	2,048.00	136,556.40	139,459.69	142,421.05	145,441.64	148,522.63	151,665.25	154,870.72	158,140.30	161,475.27	164,876.94	168,346.64	171,885.74	175,495.62	179,177.69	182,933.41	186,764.24
	National Park's Revenue (Avg 2017-2019)	Statistics	92,144.00	2,048.00	2,460.00	2,512.85	2,566.75	2,621.73	2,677.81	2,735.01	2,793.35	2,852.87	2,913.57	2,975.48	3,038.64	3,103.06	3,168.76	3,235.78	3,304.14	3,373.87
Indirect use value - Mitigation/ Adaptation benefits	Carbon storage (FREL)	FREL	158,926.81	3,654.04	540,146.31	550,955.90	561,981.69	573,227.99	584,699.21	596,399.87	608,334.53	620,507.89	632,924.71	645,589.87	658,508.34	671,685.17	685,125.54	698,834.72	712,818.08	727,081.11
	> Evergreen Forest (Conservation Area)	FREL	43,190.45	949.98	254,339.43	259,427.88	264,618.11	269,912.13	275,312.04	280,819.95	286,438.02	292,168.44	298,013.48	303,975.42	310,056.59	316,259.39	322,586.24	329,039.64	335,622.09	342,336.20
	> Evergreen Forest (Non-conservation Area)	FREL	13,721.15	71.98	53,371.38	54,440.48	55,530.95	56,643.24	57,777.77	58,934.99	60,115.36	61,319.33	62,547.39	63,800.00	65,077.67	66,380.89	67,710.17	69,066.04	70,449.03	71,859.68
	> Deciduous Forest (Conservation Area)	FREL	54,991.01	1,540.01	139,222.77	142,008.89	144,850.74	147,749.42	150,706.07	153,721.86	156,797.97	159,935.59	163,135.97	166,400.36	169,730.03	173,126.30	176,590.49	180,123.97	183,728.11	187,404.34
	> Deciduous Forest (Non-conservation Area)	FREL	47,024.20	1,092.07	93,212.73	95,078.65	96,981.89	98,923.20	100,903.33	102,923.06	104,983.19	107,084.52	109,227.88	111,414.10	113,644.05	115,918.60	118,238.64	120,605.07	123,018.84	125,480.89
	Top soil treatment	CVM	163,968.00	3,654.04	189,331.73	193,357.70	197,464.19	201,652.81	205,925.20	210,283.04	214,728.03	219,261.93	223,886.50	228,603.57	233,414.97	238,322.61	243,328.39	248,434.30	253,642.32	258,954.50
	Protection and preservation of watershed forests	CVM	135,053.18		179,006.58	182,586.71	186,238.44	189,963.21	193,762.48	197,637.73	201,590.48	205,622.29	209,734.74	213,929.43	218,208.02	222,572.18	227,023.62	231,564.10	236,195.38	240,919.29
Total In-land Forest (NPV as of 2022)					1,048,491.56	1,573,649.85	1,558,794.65	1,544,071.37	1,529,479.06	1,515,016.82	1,500,683.72	1,486,478.82	1,472,401.21	1,458,449.96	1,444,624.14	1,430,922.83	1,417,345.10	1,403,890.02	1,390,556.68	1,377,344.14
Coastal Mangrove Forest/Ecosystem			Existing Area	Addition	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
	Area/Target Area (KM2)		2,016.00	480.00		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
Direct use value - Economic use	Timber and Fuel Wood Collection	PEV	2,016.00	480.00	4,020.61	4,162.34	4,306.91	4,454.37	4,604.78	4,758.20	4,914.68	5,074.29	5,237.10	5,403.16	5,572.55	5,745.32	5,921.55	6,101.30	6,284.65	6,471.66
	Plant and Herb Collection	PEV	2,016.00	480.00	7,060.37	7,309.26	7,563.13	7,822.07	8,086.19	8,355.60	8,630.39	8,910.68	9,196.58	9,488.19	9,785.64	10,089.03	10,398.50	10,714.15	11,036.11	11,364.52
Direct use value - Community use	Natural education	PEV	2,016.00	480.00	7,564.05	7,830.70	8,102.67	8,380.09	8,663.06	8,951.68	9,246.08	9,546.36	9,852.66	10,165.07	10,483.74	10,808.78	11,140.32	11,478.49	11,823.42	12,175.25
	Recreation	PEV	2,016.00	480.00	3,861.55	3,997.68	4,136.53	4,278.15	4,422.61	4,569.96	4,720.25	4,873.55	5,029.92	5,189.41	5,352.10	5,518.03	5,687.29	5,859.93	6,036.02	6,215.64
	Bird watching	PEV	2,016.00	480.00	4,886.59	5,058.85	5,234.55	5,413.77	5,596.58	5,783.04	5,973.23	6,167.22	6,365.09	6,566.92	6,772.79	6,982.77	7,196.96	7,415.42	7,638.26	7,865.55
	Nation Heritage	PEV	2,016.00	480.00	9,684.81	10,026.22	10,374.45	10,729.65	11,091.95	11,461.50	11,838.44	12,222.92	12,615.08	13,015.09	13,423.10	13,839.28	14,263.77	14,696.75	15,138.40	15,588.87
Indirect use value - biodiversity	Nursery and food habitat of aquatic animal	PEV	2,016.00	480.00	6,238.57	6,458.49	6,682.81	6,911.62	7,145.00	7,383.05	7,625.86	7,873.52	8,126.14	8,383.81	8,646.63	8,914.72	9,188.16	9,467.07	9,751.56	10,041.74
	Benthos habitat	PEV	2,016.00	480.00	9,278.33	9,605.41	9,939.03	10,279.32	10,626.41	10,980.45	11,341.57	11,709.91	12,085.62	12,468.84	12,859.73	13,258.43	13,665.11	14,079.92	14,503.03	14,934.60
	Genetic diversity and biodiversity source	PEV	2,016.00	480.00	6,450.65	6,678.05	6,909.99	7,146.57	7,387.89	7,634.03	7,885.09	8,141.18	8,402.38	8,668.81	8,940.57	9,217.77	9,500.50	9,788.90	10,083.06	10,383.10
Indirect use value - Mitigation/ Adaptation benefits	Carbon storage (FREL)	FREL	2,016.00	480.00	10,530.54	10,742.00	10,957.68	11,177.67	11,402.07	11,630.95	11,864.41	12,102.55	12,345.44	12,593.19	12,845.90	13,103.66	13,366.57	13,634.74	13,908.28	14,187.29
	Purify air pollution	PEV	2,016.00	480.00	5,213.54	5,397.33	5,584.79	5,776.00	5,971.03	6,169.97	6,372.88	6,579.85	6,790.97	7,006.30	7,225.94	7,449.97	7,678.49	7,911.57	8,149.32	8,391.82
	Wastewater treatment	PEV	2,016.00	480.00	7,546.38	7,812.40	8,083.74	8,360.51	8,642.82	8,930.77	9,224.48	9,524.06	9,829.64	10,141.32	10,459.24	10,783.52	11,114.29	11,451.67	11,795.80	12,146.81
	Coastal protection	PEV	2,016.00	480.00	9,826.20	10,172.59	10,525.90	10,886.29	11,253.88	11,628.82	12,011.26	12,401.35	12,799.24	13,205.10	13,619.06	14,041.31	14,472.00	14,911.31	15,359.40	15,816.45
	Nutrient storage	PEV	2,016.00	480.00	6,424.14	6,650.60	6,881.59	7,117.20	7,357.53	7,602.66	7,852.69	8,107.72	8,367.85	8,633.19	8,903.83	9,179.88	9,461.46	9,748.67	10,041.62	10,340.43
Total Coastal Mangrove Forest (NPV as of 2022)					93,646.74	96,788.17	99,992.43	103,260.78	106,594.49	109,994.88	113,463.27	117,001.04	120,609.55	124,290.24	128,044.55	131,873.93	135,779.91	139,764.00	143,827.78	147,972.83
Total Economic Benefits of Forest (NPV as of 2022)					1,142,138.30	1,670,438.02	1,658,787.09	1,647,332.15	1,636,073.56	1,625,011.70	1,614,146.99	1,603,479.86	1,593,010.77	1,582,740.20	1,572,668.69	1,562,796.76	1,553,125.01	1,543,654.03	1,534,384.46	1,525,316.98

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Note:

** Carbon storage capacity is based on the Forest Reference Emission Level (FREL) and the carbon price is based on the price per tonCO2 of forestry and land sector from Ecosystem Marketplace Insight Report, State of the Voluntary Carbon Markets 2021*

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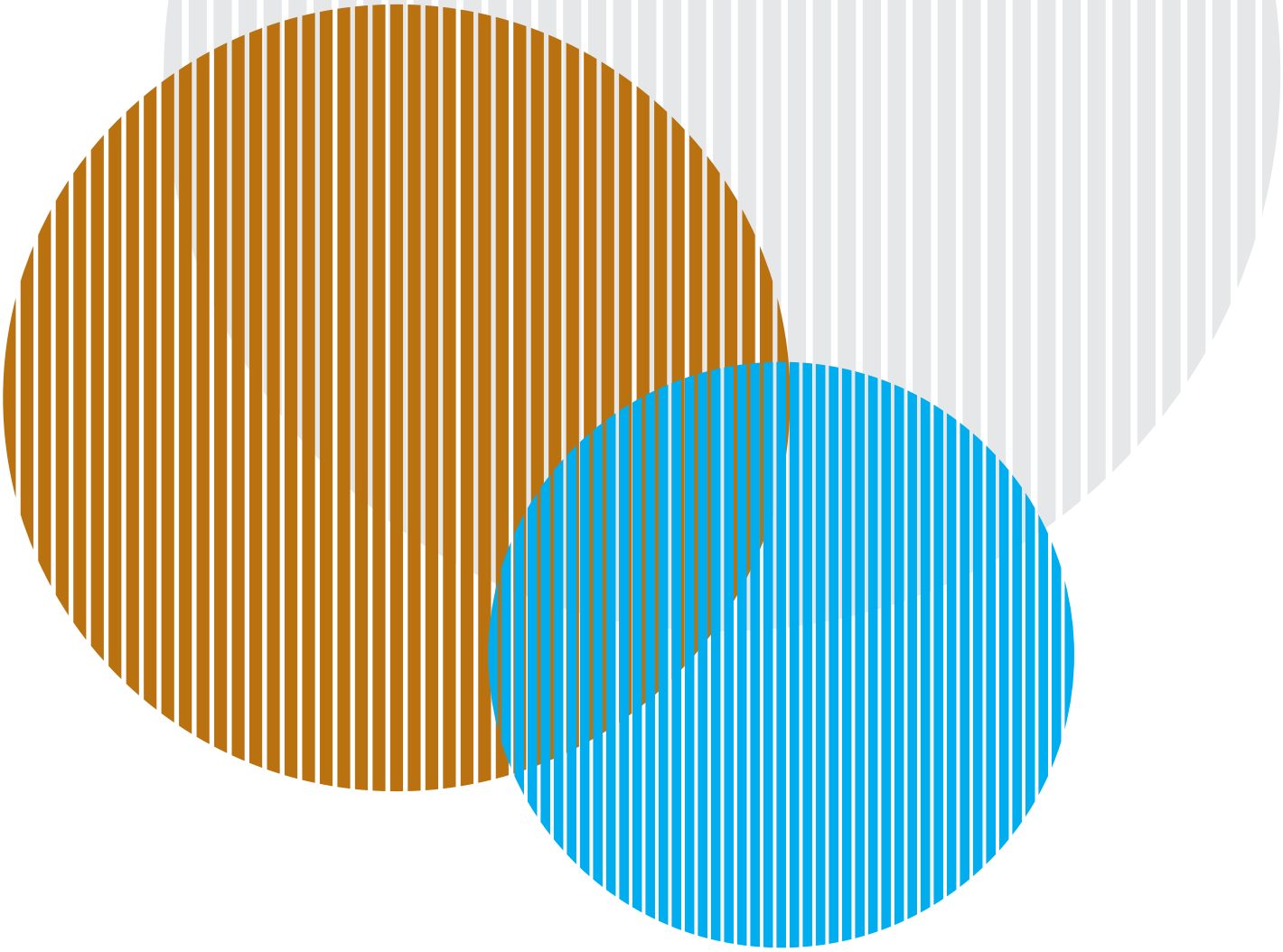

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