Multi-dimensional Review of Thailand

VOLUME 2. IN-DEPTH ANALYSIS AND RECOMMENDATIONS

OECD dev DEVELOPMENT CENTRE

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Foreword

Thailand embarked on an OECD Multi-dimensional Country Review (MDCR) in July 2017. The review is a first deliverable of the 2018-19 Country Programme between Thailand and the OECD and aims at supporting public action by the national authorities of Thailand in sustaining sustainable development and progress in the well-being of its citizens.

Development is not about getting everything right, but about getting right what matters most. Economic growth matters, but is just one facet of development. Policy makers are required to reconcile economic, social and environmental objectives to ensure that their country's development path is sustainable and that the lives of its citizens improve. OECD Multidimensional Country Reviews (MDCR) help governments chart this path through the identification of key constraints and policy recommendations to overcome them.

The MDCRs are composed of three distinct phases: *Initial Assessment*, *In-depth Analysis and Recommendations*, and *From Analysis to Action*. This approach allows for progressive learning and co-creation of reforms that fully respond to the country's specific challenges and opportunities and come with guidance on implementation. Throughout, the process conjugates expert policy analysis with participatory approaches including Foresight and Governmental Learning that involve actors from the private and public sectors, civil society, and academia. Analytical work is based on all available statistics on Thailand, including well-being, macro- and microeconomic data, at national, sectoral, household and firm levels, using both domestic and international sources.

This report is the result of the second phase of the MDCR of Thailand and lays out pathways for three transitions to build Thailand's capabilities and achieve its goal of sustainable development. The first transition is from a growth path with high structural inequalities and informality to one that focuses on unlocking the full potential of all regions and builds on convergence as a driver of structural transformation. A more effective organisation of multi-level governance, particularly with regards to financial resources, is a crucial capability Thailand needs to develop to support a new growth agenda. Under the current system, the complex organisation and uneven distribution of power and resources across central government bodies and local administrations contributes to co-ordination problems and poor institutional capacity. More effective multilevel governance is also crucial for the third transition, which pertains to water and the environment. Moving from a resource-intensive growth path with costly natural disasters to one characterised by sustainable development will require a new approach. In the case of water, this means moving from ad-hoc responses to effective management of water security.

This MDCR intends to assist Thailand in formulating development strategy and to support the policy reforms needed to achieve further sustainable and inclusive development. This report comes at a time where Thailand faces important decisions on its future development path and needs to focus on creating the capabilities necessary for the next stages of sustainable development. While the recommendations are intended to support policy action by Kazakhstan's national authorities, the findings are also relevant for academics, the private sector and civil society.

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Acronyms and abbreviations

12ᵗʰ Plan	Twelfth National Economic and Social Development Plan
ASEAN	Association of Southeast Asian Nations
BMA	Bangkok Metropolitan Administration
CAGR	Compound Average Growth Rate
EEC	Eastern Economic Corridor
EIA	Environmental Impact Assessment
EUWI	European Union Water Initiative
FUA	Functional Urban Areas
FY	Fiscal year
GDP	Gross Domestic Product
GPP	Gross Provincial Product
GHSL	Global Human Settlement Layer
IBRD	International Bank for Reconstruction and Development
IMF	International Monetary Fund
JPY	Japanese Yen
LAO	Local Administrative Organisation
MDCR	Multi-dimensional Country Review
MIRT	Multi-year investment programme
MWA	Metropolitan Waterworks Agency
NESDB	National Economic and Social Development Board
NPD	National Policy Dialogue
NPR	National Performance Reserve
NSO	National Statistical Office
NWRC	National Water Resources Committee
OECD	Organisation for Economic Co-operation and Development
PAO	Provincial Administrative Organisation
PIT	Personal income tax
PPP	Purchasing power parity
SAO/TAO	Sub-district/Tambon Administrative Organisations
SEA	Strategic Environmental Assessment

SEC	Southern Economic Corridor
SEZ	Special economic zone
SNG	Subnational government
THB	Thai Baht
TVET	Technical and Vocational Education and Training
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization

Executive summary

This second volume of the Multi-dimensional Country Review (MDCR) of Thailand builds on the results of the first one, which identified the main constraints to enable new growth by unlocking the full potential of all of Thailand's regions (OECD, 2018). It provides recommendations in three key areas: regional development, multi-level governance, and water security. A third volume will propose a way of prioritising policy interventions and a framework for measuring policy implementation.

Thailand aspires, by 2037, to become a high-income economy enjoying "security, prosperity and sustainability" (2017 National Strategy Preparation Act). Strong growth since the 1970s enabled the country to join the group of upper-middle-income economies in the early 2010s. Economic success has brought impressive social advancement. Based on national definitions, poverty has plummeted from 60% in 1990 to 7% today, while education and health services have considerably expanded and improved. At the same time, economic development has taken a toll on the environment and the benefits of prosperity have not been shared evenly nationwide. Moreover, a very large share of the labour force remains in informal work.

Moving forward, Thailand needs to achieve three transitions that can boost its capabilities to sustain faster but also more inclusive economic growth. The first transition is from a growth path with high structural inequalities and informality to one that focuses on unlocking the full potential of all regions and builds on convergence as a driver of structural transformation. The second transition to a more effective organisation of multilevel governance. Under the current system, the complex organisation and uneven distribution of power and resources across central government bodies and local administrations contribute to co-ordination problems and poor institutional capacity. The third transition pertains to water and the environment. Moving from a resource-intensive growth path with costly natural disasters to sustainable development will require a new approach. In the case of water this means moving from ad-hoc responses to effective management of water security.

A new growth path: unlocking the potential of regions

Thailand's growth path has created large disparities that stand in the way of the next stage of development. Past approaches to regional strategies gave rise to path dependence in productivity growth and affected regional productivity potential. Taking a closer look at Thailand's peripheral provinces and cities suggests that convergence has started Speeding it up requires building the capabilities of all regions, provinces and municipalities to make the most of their potential.

Thailand should move towards regional policies that put local innovation in the driver's seat and balance economic, social and environmental objectives. Local discovery of potential as well as setting objectives of development require an open process that is adaptable to the needs of each region. The geographic scope of regional development policies should moreover be flexible and focus on functionality: neighbouring administrations that face specific similar issues should have room for coordination.

Data analysis should support this processes, building on best performers to profile regions and provinces, assess potential and detect bottlenecks. An analysis of provinces at the productivity frontier points to superior human capital and public services as the distinguishing

attributes of high performance provinces and cities. Based on these insights, innovative regional policies will need to support secondary cities as crucial leverages of growth outside of Bangkok, and focus on skills development as a tool of regional and urban policy

Making multi-level governance work for more effective development

Decentralisation was mandated in Thailand's Constitution in 1999; since then, several decentralisation reforms with ambitious quantitative targets have been implemented. However, Thailand's governance system remains highly centralised. The strong central government control over subnational governments has not led to uniform service levels or harmonised revenue bases. On the contrary, there are marked fiscal disparities between Thailand's subnational governments. Thailand's dual multilevel governance and high number of subnational governments (LAOs) makes the governance system complex and fragmented.

There are several alternatives available for Thailand to tackle the current problems. A clear nationwide plan should be developed to prepare for reforming the subnational government structure, financing system and spending and revenue assignments. The LAOs should be empowered by enhancing their spending and revenue autonomy. Reorganising the current spending assignments between government levels should be another priority. Merger reforms or enhanced co-operation should be considered to build adequate capacity of subnational governments. A stronger own revenue base would contribute to self-rule and accountability of Thailand's subnational governments. Reform of financing system should include property tax reform and transfer system reform, but a considerable strengthening of local revenue base would include giving LAOs at least one important tax base. One option to consider would be to allow a local surtax on the central government personal income tax. Furthermore, subnational capacities to finance infrastructure in order to contribute to regional development need strengthening, as does subnational capacity for strategic planning and territorial development.

Moving towards effective management of water security

Thailand is facing increasing water risks. A growing population, economic growth and the looming threats posed by climate change are expected to make sustainable water management significantly more difficult in the coming years. These challenges can be captured under the overarching theme of "water security", described as maintaining acceptable levels of risk in four main areas: the risk of water shortage; the risk of inadequate water quality; the risk of excess water and the risk of undermining the resilience of freshwater systems. In the Thai context, water security particularly covers the issues floods and droughts, water use and allocation, water quality and the impacts of pollution.

As poor water security will hold back Thailand's growth plans, the government needs to move from a crisis response to a risk-management approach. Data and information, cohesive policies, strong leadership and a clarity on roles, responsibilities and decision-making is necessary to facilitate the move to a risk-based approach to water security. In addition, better governance and coordination between local and national authorities on water management is needed. Thailand should also make better use of economic instruments, such as water charges, and ensure stakeholder management and engagement to facilitate any reform.

Chapter 1. Overview: The three transitions to move Thailand to the next stage of development

Thailand is a fast emerging country that aspires to become a high-income economy by 2037. Strong growth since the 1970s enabled the country to join the group of upper-middle-income economies in the early 2010s and has seen Thailand perform well in many areas. At the same time, the benefits of prosperity have not been shared evenly nationwide and the economic development has taken a toll on the environment. Moving forward, Thailand needs to achieve faster but also more inclusive economic growth. To get there, Thailand needs to address three main transitions: enabling new growth by unlocking the full potential of all Thailand's regions; developing more effective methods of organisation and collaboration between actors and levels of government; managing water security and disaster risk. Based on the analysis in the subsequent chapters, the overview sets policy-recommendations to address these three cross-cutting challenges.

Thailand is striving to realise an ambitious long-term development vision. Strong growth since the 1970s enabled the country to join the group of upper-middle-income economies in the early 2010s and has seen Thailand perform well in many areas. Poverty has plummeted and well-being has improved considerably, notably with respect to health and education. At the same time, economic development has taken a toll on the environment and the benefits of prosperity have not been shared evenly nationwide. Moreover, a very large share of the labour force remains in informal work. Moving forward, Thailand needs to achieve faster but also more inclusive economic growth. Getting there will require making the most of every region and developing more effective methods of organisation and collaboration between actors and levels of government.

The Multi-dimensional Country Review (MDCR) is being undertaken to support Thailand in achieving its development objectives. It consists of three phases and reports. This second volume provides in-depth analysis and policy recommendations to address three cross-cutting constraints identified in the initial assessment (OECD, 2018[1]). The third and final phase of the MDCR will focus on moving from analysis to action.

This overview describes the three cross-cutting constraints addressed in this report, which were identified in the Initial Assessment of this MDCR through a focus on the "five Ps" of the 2030 Agenda: People, Prosperity, Partnerships, Planet and Peace. The overview then summarises the analyses and recommendations provided for each of these constraints in the succeeding chapters. The question of how to enable new growth by unlocking the full potential of all Thailand's regions provides the overarching framework for in-depth analysis and policy recommendations in regional development, water security and multi-level governance.

Thailand's cross-cutting challenges

Thailand aspires to become a high-income economy by 2037 enjoying "security, prosperity and sustainability" based on its sufficiency-economy philosophy (2017 National Strategy Preparation Act). The National Strategy sets out five broad objectives in this regard: (i) *economic prosperity* – to create a strong and competitive economy driven by innovation, technology and creativity; (ii) *social well-being* – to create an inclusive society that progresses without leaving anyone behind by realising the full potential of all members of society; (iii) *human resource development and empowerment* – to transform Thai citizens into "competent human beings in the 21st century" and "Thais 4.0 in the first world"; (iv) *environmental protection* – to become a liveable, low-carbon society with an economic system capable of adjusting to climate change; and (v) *public sector governance* – to improve public sector administration and reduce corruption.

To achieve these objectives, Thailand can build on its strong record, but must overcome the recent slowdown in economic transformation and living standards. To achieve high-income status by 2037, Thailand must increase its growth in real GDP from its current level of 3.9% to 5.5%. Held back by limited investment and structural reform over past years, Thailand has lost some ground vis-à-vis regional competitors and has experienced a slowdown in the transformation of its economic structure (OECD, 2018[1]). Growth has also become less inclusive, with the share of those in precarious employment stagnating at around half of the working population following the mid-2000s, after falling from 70% in the late 1980s (Figure 1.1). Today, only 11% of Thai citizens say that they can live comfortably with their current income (Gallup, 2017[2]).

Figure 1.1. Per capita incomes have soared, but the share of formal employment has progressed at a lower rate
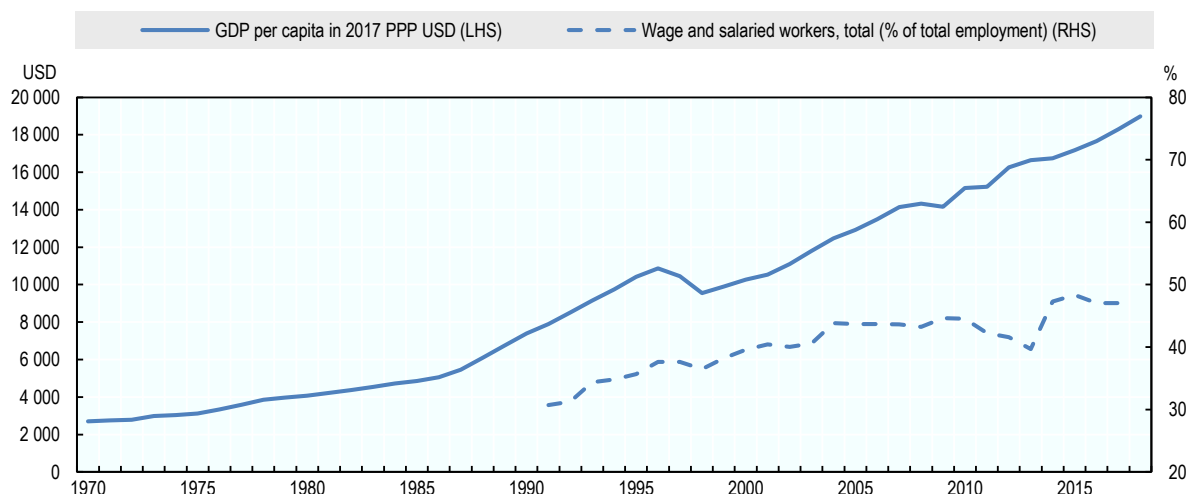
Source: (World Bank, 2017[3]) and (Conference Board, 2017[4]).

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Environmental challenges, in particular relating to water, must also be better managed. Thailand's natural environment is a vital asset and underpins key economic sectors and millions of livelihoods. As in many emerging economies, rapid economic growth has been achieved through the intense use of natural resources, exerting a heavy environmental toll. Thailand is also exposed to cycles of flooding and drought that cause loss of life and economic disruption. While natural climatic variables are important drivers of these phenomena, lack of integrated water management hinders an effective response to these challenges. Poorly planned urban expansion, the intensification of agriculture, and the deterioration or loss of watershed forests have led to the decline of flood-retention areas and flood plains, while water consumption behaviours, agricultural and industrial land development, urbanisation and population growth have all contributed to droughts (OECD, 2018[1]).

New impetus must be found to drive gains in productivity and quality of life. Growth in productivity is among the key determinants of economic growth. It is driven by many factors, including skills and capital investments, innovation, and the quality of the institutional and physical environment. The reallocation of labour from less to more productive activities is also important. Productivity growth from all of these drivers seems to have slowed down significantly. At the same time, drivers of quality of life, such as education, health, employment, access to social services, social connections and empowerment seem to have plateaued and remain unequally distributed across Thailand and its regions (OECD, 2018[1]).

Figure 1.2. Global patterns suggest that the large disparities between Thailand's regions pose a significant challenge on the path towards a high-income economy

Panel A. High regional disparity is an obstacle to growth

Panel B. GDP per capita across Thailand is so diverse that different regions can be compared to countries at all stages of development

Note: The Gini index measures the degree of inter-regional inequalities. An index equal to 0 implies no inequality – all resources are equally redistributed across the country. An index equal to 1 implies extreme inequality – all resources are concentrated in only one region. The analysis is based on OECD regional typology, and in particular on regional inequalities among Territorial Level 2 (TL2) regions. TL2 broadly corresponds to the first tier of subnational government. For comparative purposes, TL2 regions in Thailand correspond to the country's 77 provinces.
Source: Authors' calculations based on national accounts, as provided by NESDB, and (World Bank, 2017[3]).

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Global patterns suggest that the large disparities between Thailand's regions pose a significant obstacle to further transformation. Only one other country (Russia) for which comparable data are available has reached a higher level of GDP per capita with a level of regional inequality as high as that of Thailand. The differences in per capita income between the poorest and richest regions of Thailand can be compared to the difference between Zambia and Poland (Figure 1.2). At such high levels, poorer regions increasingly risk being left behind as a result of unfulfilled potential, while labour and capital markets in already advanced areas are likely to become saturated with an oversupply of workers and investments.

At the same time, regional and provincial growth patterns suggest that much potential remains untapped outside the current centres. Although their levels are lower, the poorer regions of Thailand have shown consistently higher growth than Bangkok in both production and productivity since the beginning of the 2000s. The same holds for Thailand's secondary cities which have grown faster than Bangkok and will play a key role in boosting regional development and the country's long-term growth more broadly. In other words, the "catching-up" process has begun in some areas and has the potential to become a significant driver of further transformation if well supported.

Figure 1.3. Three capabilities for Thailand 2037
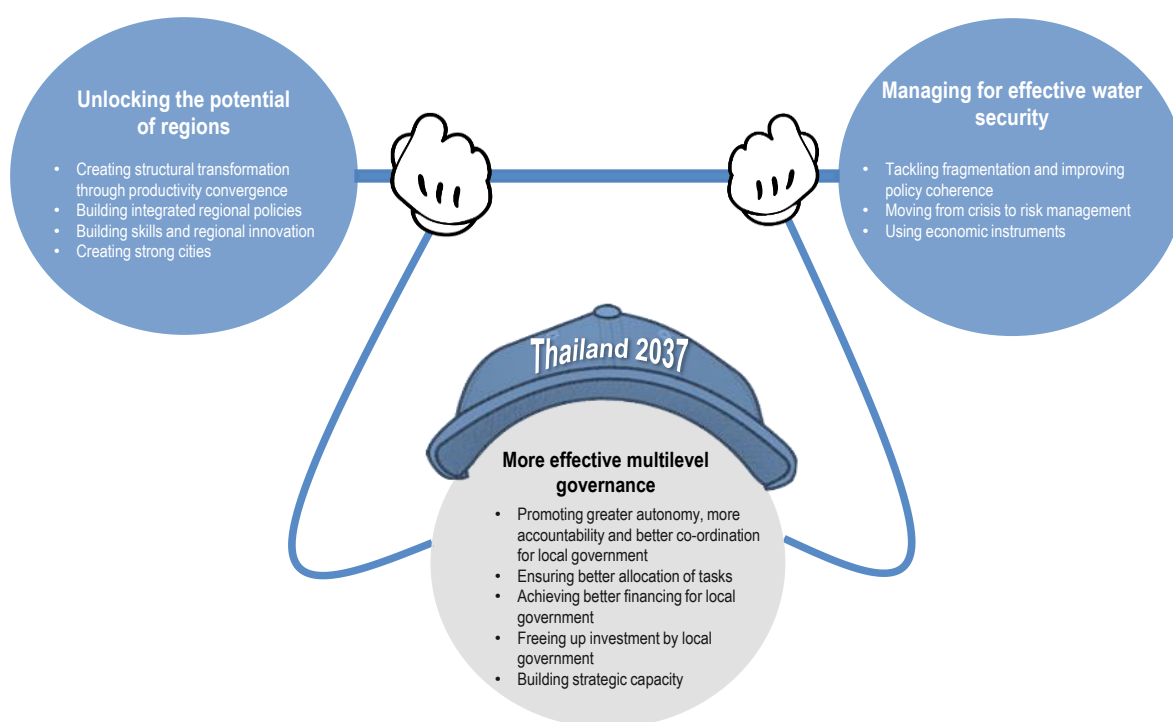
Source: Authors' own work.

To maximise the potential for convergence, Thailand must develop the necessary capabilities in terms of organisation and economic geography. The slower pace of economic transformation, quality job creation and reduction of regional inequalities in the new millennium has put pressure on the political system and the ability of the state to respond to the growing need for better public services and environmental management. Boosting convergence means building the capacity of all regions, provinces and municipalities to ensure they can make the most of their potential. The current highly centralised system of planning and policy is not sufficiently nimble to achieve this objective and needs reform. At the same time, the ability to self-organise at meso-levels, such as regions, must be further developed. The same is true for the urban structure of Thailand: the level of urban development outside Bangkok remains low, but the potential is there and must be supported.

This report lays out pathways for three transitions to build Thailand's capabilities and achieve its goal of more effective multi-level governance (Figure 1.3). The first transition is from a growth path with high structural inequalities and informality to one that focuses on unlocking the full potential of all regions and builds on convergence as a driver of

structural transformation (Chapter 2). A more effective organisation of multi-level governance, particularly with regard to financial resources, is a crucial capability Thailand needs to develop to support a new growth agenda. Under the current system, the complex organisation and uneven distribution of power and resources across central government bodies and local administrations contributes to co-ordination problems and poor institutional capacity (Chapter 3). More effective multilevel governance is also crucial for the third transition, which pertains to water and the environment. Moving from a resource-intensive growth path with costly natural disasters to one characterised by sustainable development will require a new approach. In the case of water, this means moving from ad-hoc responses to effective management of water security (Chapter 4).

A new growth path: Unlocking the potential of Thailand's region

Past policies for regional development and structural transformation have created today's productivity landscape

Past approaches to regional strategies gave rise to path dependence in productivity growth and affected regional productivity potential. Since the 1970s, the government has implemented several regional policies and created alternative industrial development areas. However, the productivity gains from transformation of the economic structure were distributed unevenly across Thai regions. As of 2015, regions that benefited most from place-based policies, including the East, Bangkok Metropolitan Area and Centre, were those enjoying the highest productivity levels. The other four regions scored relatively poorly when compared to the best performers and the overall national level. A map of regions and provinces is provided in Annex 1.A at the end of this chapter.

Changes in sectoral composition and labour flows explain regional productivity growth. Thai regions have been going through major structural transformation, although along different paths. The shift-share analysis of sectoral composition and labour flows can identify the role that economic activities play in attracting investments and workers, making it a useful tool to understand patterns of regional development.

In the Northeast, within-sector productivity growth in the agriculture and manufacturing drove regional productivity growth; social and environmental challenges persist, nonetheless. New industrial estates in the region attracted factories and investments for the production of electronic components and, most of all, parts of vehicles made of natural or synthetic rubber. The Northeast has moreover become the second largest region in terms of rubber production because of innovative processing methods. However, in spite of outstanding progress, environmental unsustainability, informality, cross-border competition and demographic flows can undermine catching-up potential in this region.

In the North, special economic zones boosted growth in Chiang Mai and Lamphun, but did not benefit neighbouring provinces. The North shows similar development patterns to the Northeast's. Until the 1970s, agriculture dominated and the manufacturing activities were scattered in small-scale companies. Since the 1980s, the establishment and consolidation of special economic zones in the Lamphun Province has turned the area into a major regional trade hub. The fast urbanisation of Chiang Mai further attracted investments and created job opportunities. However, growth did not benefited surrounding provinces: the North still remains one of the poorest regions in Thailand.

In the West, within-sector productivity growth is offset by misallocation of the labour force, which might be explained by a lack of coherent regional policy in the region. Although manufacturing and agriculture have experienced a significant increase in labour

productivity, workers in the West prefer to reallocate away from these increasingly productive sectors. Regional policies have traditionally overlooked the West because of its proximity to more important sources of growth – for example, the Centre and the Bangkok Metropolitan Area.

In the South, a shrinking primary sector gave way to rising tourism and related services; however, this trend poses some social and environmental challenges. Almost half of employees in the sector are still informal and, thus, lack systematic insurance against unemployment. Moreover, tourism may threaten the eco-sustainability and biodiversity of the area if not regulated and controlled. Finally, the rise of the tourism sector triggered a reallocation of workers towards low-innovative and non-tradable sectors such as construction and retail trade. The potential expansion of these sectors could eventually offset the beneficial effect of tourism sector.

In the Centre and East, past industrial policies drove the reallocation of the labour force towards increasingly more productive sectors in the regions. Today, provincial productivity builds on those industrial policies and the high-quality infrastructures that followed. The latter include regional highways that link the regions to Bangkok; deep-sea ports and local airports connecting the area to global markets and value chains; and broad electricity, water and telecommunications coverage.

Moving towards more broad-based and innovative regional development policies

Moving forward, Thailand is adopting a more comprehensive regional development agenda. In December 2017, the government entrusted the National Economic and Social Development Board (NESDB) with the review and rationalisation of existing spatial policies as part of more comprehensive regional development plans. The NESDB will coordinate the creation of regional development plans, going beyond the traditional focus on special economic zones (SEZs), which necessarily left large parts of the country out. Regional development plans will focus on bringing to the fore the particular strengths of each of the seven regions.

The new agenda for regional development must balance economic, social and environmental objectives. Past interventions aimed at boosting development in Thailand's regions have focused solely on growth in small areas. Future strategies should aim at combining a broader set of objectives, including social cohesion and environmental sustainability. The right mix between social and economic as well as environmental objectives may vary across the country.

Getting regional development planning right will require placing local innovation and discovery in the driver's seat. Mastering this process of discovery at each level (national, regional, local) is key to successful economic development and continued productivity and employment growth. The overarching lesson from the 'smart specialisation' agenda and past attempts at regional development in the European Union and elsewhere is that this process of discovery must be driven and mastered by local and regional actors. The role of government intervention is important but it is subsidiary. Policy intervention is required not to select the areas or activities for investing public resources but to facilitate and support the discovery process (OECD, 2013[5]).

The process and instruments for innovative regional development should be performance-based, flexible and reflect the specific needs and capabilities of each region. Placing local discovery and ownership in the driver's seat of innovative regional development requires

an open process that is adaptable to the needs of each region. More advanced regions might require less in terms of direct support and can be supported simply with mutually agreed performance targets and related instruments. Areas with lower capabilities might require more in terms of direct assistance and a stronger level of oversight to ensure accountability (OECD, 2018[6]). Strong evaluation and performance measurement frameworks must be built into all approaches from the beginning and should be widely accessible to guarantee transparency, as a key building block of local ownership.

Similarly, the geographic scope of regional development policies should be flexible and focus on functionality. The current administrative organisation in Thailand offers the opportunity to include flexibility in the definition of regions for the new strategies. Data analysis can help to identify the most functional clusters of provinces for regional strategies. Functional areas may involve different provincial clusters and change over time. Neighbouring administrations that do not find co-ordination over specific issues particularly necessary today, may find it advantageous in the face of future global trends and shocks.

Data analysis should support local discovery processes, building on best performers to profile regions and provinces, assess potential and detect bottlenecks. Identifying each region's best-performing province in terms of productivity, for example, helps classify other provinces as "converging" or "diverging" with respect to specific objectives. This convergence-divergence analysis shows that most of the best-performing provinces inherited industrial estates created during the 1980s. In certain cases, agriculture, education and tourism have been pushing some provinces to the productivity frontier. Once regional best performers and their potential for productivity growth are identified, their characteristics can help devise policies for lagging provinces.

Intra-regional convergence analysis shows that the majority of provinces are catching up, but the gap with those that are lagging is widening (Figure 1.4). Among all regions, the Northeast and East stand out in terms of convergence. Most of the top 20% fastest converging provinces in Thailand are situated in the Northeast. In the East, all provinces are converging towards the productivity frontier. However, convergence does not occur at the same rate everywhere.

Figure 1.4. The majority of provinces are catching up, but some are still lagging behind in the North and Northeast
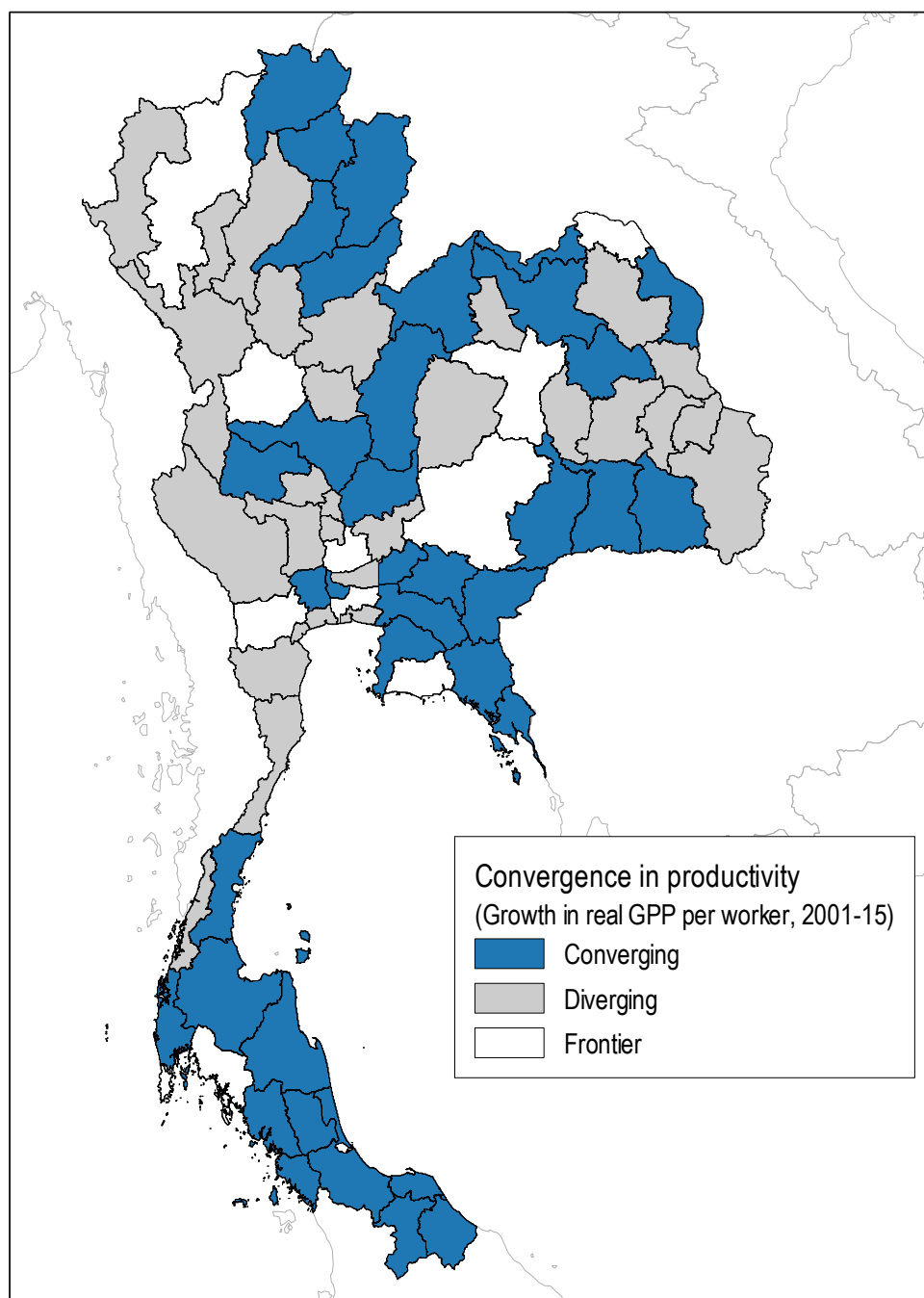
Note: Productivity is the ratio between real provincial GDP and number of workers in a province. The regional frontier is the average output per worker among the top 10% most productive provinces in a region. Convergence (or divergence) status is based on the compound average growth rate (CAGR) of provincial productivity between 2001 and 2015.
Source: Authors' calculations based on national accounts, as provided by the NESDB.

Supporting secondary cities as engines of growth outside of Bangkok

Secondary cities can generate new opportunities for regional development in Thailand, but need the appropriate infrastructure. As the capital grew, cost of life in Bangkok increased, roads became congested, and services overcrowded. Secondary (or intermediary) cities may therefore play an increasingly important role in regional economy and should become a leverage for regional development – especially in provinces that are converging to or diverging from the regional best performers. In fact, secondary cities in Thailand have been attracting more and more people than Bangkok since the beginning of the 2000s (Figure 1.5).

Figure 1.5. Secondary cities in Thailand are attracting more people

Comparison between the evolution of urban population in the Bangkok agglomeration and the evolution of urban population in secondary cities

Note: "Urban population outside of Bangkok" measures the share of urban population in the capital. "Urban population in secondary cities" measures the share of urban population outside of Bangkok. In 2000 (reference year for the comparison), 6,395,429 people lived in Bangkok, 32% of the urban population. In 2017, the figure increased to 9,898,653 (29% of the urban population).
Source: Authors' work based on (World Bank, 2017[3]).

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Policies to develop secondary cities require shaping a new definition of urban areas with the help of satellite data. Supporting cities with policy requires a good understanding of what constitutes a secondary city and where they are located. At present, there is no clear definition of urban areas in Thailand. However, geospatial data can help to identify secondary cities by looking beyond traditional administrative boundaries. Satellite imagery of 41 identified secondary cities showed widespread urban agglomerations in the East, while density is highest in the West.

Targeted surveys should support satellite data by assessing the needs of secondary cities, the structure of the local economy and its dynamics, and the state of local infrastructure. These secondary cities can trigger growth outside Bangkok and across Thai regions. Unlocking their potential should be at the core of new integrated regional policies.

Secondary cities need to have the capacity to respond to challenges specific to their location. Integrated regional policies need the right institutional framework to successfully improve the management of network services. Furthermore, citizens' participation can help handling such challenges as large seasonal inflows of tourism. Thailand is a major global

tourist destination. Seasonal inflows of tourists are an opportunity, but can dangerously stretch the capacity of secondary cities. Therefore, involving people who live and work in the city in governing the phenomenon and shaping the appeal of their city is paramount to prevent or manage possible negative externalities.

Skills development as a tool of regional and urban policy

Secondary and tertiary education are important drivers of productivity growth at the level of provinces and must be core elements of regional and urban policy. Better secondary education characterises provinces that converge towards the productivity frontier, while better higher education distinguishes frontier provinces. However, regional disparities remain large. While 53% of workers have completed at least upper secondary education in Bangkok, only 27% have done so in the Northeast. Regional policies should focus particularly on technical and vocational education and training (TVET) concerning secondary education, and on provincial universities for higher education.

Work- and skill-oriented training provides higher returns for both students and the economy, but needs to be expanded. Employment surveys across all regions show that students that decide not to pursue higher education obtain better salaries if they complete upper secondary vocational training rather than upper secondary general education. Moreover, technical and vocational education and training (TVET) graduates are more likely to find better-paid and qualified jobs. However, despite these clear advantages, there is a lack of sufficient focus on TVET both in terms of students' aspirations and government investment. Only one out of three upper secondary school students are enrolled in vocational programmes nationwide – far below the government's target. The share of TVET graduates in the workforce is smallest in the North and Northeast, despite a significant salary premium for such graduates in these regions.

To serve regional development, TVET must be embedded in the local economy and focus on relevant and timely skills formation. School curricula should be linked to local labour needs. As regional needs differ across the country, matching curricula with market needs requires a close partnership between employers, social partners and TVET institutions. Schools should complement work-based training with traditional coursework, as this provides a dynamic and practical framework for trainees that facilitates hiring, and is also cost-beneficial for the state. Finally, schools, the private sector and local authorities should work together to implement models that forecast the future need of teachers based on local socio-economic trends and student behaviour and preferences.

Thailand is home to leading universities, but provincial institutions are struggling despite their potential as powerful engines for local innovation and productivity growth. Research universities in Thailand are gaining ground in the global scene and have already introduced innovation into certain industries. However, the country could do more to leverage provincial *Rajabhat* universities and tighten the partnership between the local private sector and government. International experience suggests that local tertiary institutions can stimulate local entrepreneurship and innovation. Moreover, higher education institutions provide content and audiences for local cultural programmes that ultimately contribute to the appeal of a province. Local universities can play their role for development only if local leadership enjoys enough autonomy to fine-tune coursework and teaching modalities to local economic structure and issues. To strengthen private-public-academia partnerships, all actors must design and manage a common long-term agenda. Representatives from the private sector and local authorities should be part of university boards, and university leaders must also be included in the design of the local development agenda.

Effective and innovative regional development necessitates fiscal and institutional reforms

The new regional policy framework requires dynamic actors with the freedom to experiment at each level of government. Local and provincial layers of government need to be given the flexibility and means to experiment, as opposed to implementing top-down policies designed at the central level. Experimentation allows policy makers to learn from the "small-step" interventions they pursue to address local issues. Experimental processes require mechanisms that capture lessons and ensure that these are used to inform future activities (Andrews, Pritchett and Woolcock, 2013[7]).

Fiscal tools and transfers need to support dynamic actors with better allocation formulas and a focus on results. Thailand's provinces have traditionally relied on inter-governmental transfers, the size of which was based mostly on population thresholds. As part of the new regional development plans, the current government has linked the distribution of grants to a set of socio-economic characteristics in the provinces. In addition, results-based transfers could be a useful tool. Part of the allocation of the existing general transfers could be conditional on the achievement of socio-economic targets that would close the gaps between best-performing, converging and diverging provinces. The data used to measure results should be publicly accessible to encourage public scrutiny and debate.

Making multi-level governance work for Thailand's transitions

Decentralisation was mandated in Thailand's Constitution in 1999. Since then, Thailand has initiated several decentralisation reforms with ambitious quantitative targets. The current target is to devolve 359 functions and to distribute 35% of central government net revenues to the Local Administrative Organisations (LAOs). As of 2017, a total of 256 functions and 28% of net revenues had been transferred.

Thailand's 7 852 subnational governments form a fragmented entity. There are currently two subnational government tiers. The upper subnational level consists of 76 Provincial Administrative Organisations (PAOs). The local level contains 2 441 municipalities and 5 333 Sub-district/Tambon Administrative Organisations (SAOs/TAOs). The subnational governments have directly elected Councils and administrators. The city of Bangkok and the city of Pattaya have a special status with more powers and autonomy than the other LAOs. The complexity of Thailand's subnational government poses a challenge for efforts to co-ordinate public service provision both across and within government levels (Figure 1.6).

Thailand's multi-level governance is further complicated by the co-existence of the deconcentrated central government administration and LAOs, which operate side by side. The 76 state Provinces (Changwat) form the core of the deconcentrated administration. The governors and other head officials of the state Provinces are appointed by the Ministry of Interior. The Provinces are further divided into districts (Amphoe) and sub-districts (Tambon).

The financing of Thailand's subnational government is highly centralised. Only 10% of the revenue of the LAOs is collected locally. Central transfers comprise 48% of subnational government revenues while shared tax revenues make up 42%.

Figure 1.6. Subnational administrative structure in Thailand
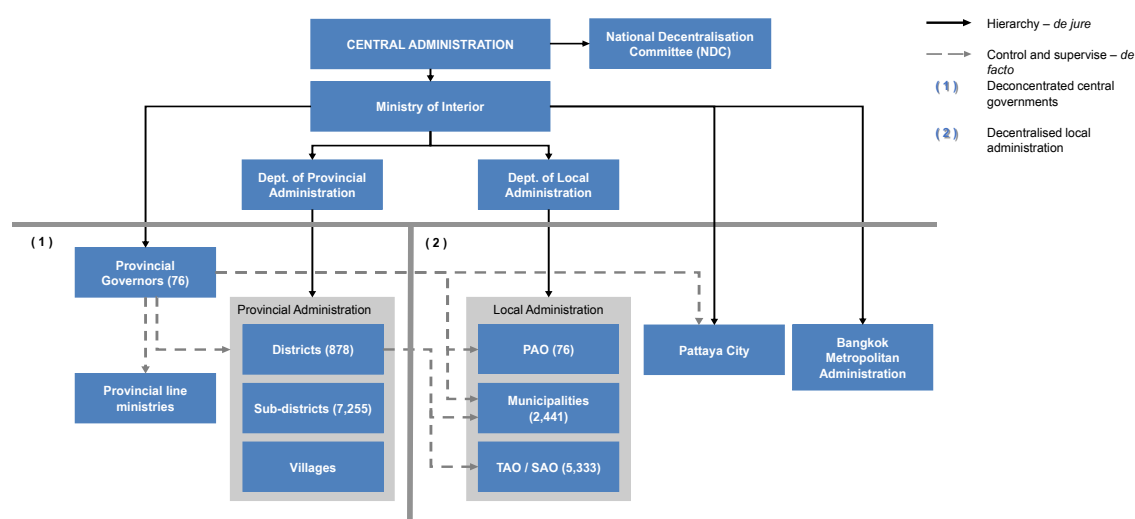
Source: Authors' own work based on (NESDB/Thammasat University, 2009[8]); (World Bank, 2012[9]).

Local state officials monitor and supervise the LAOs in many ways, thereby limiting the autonomic decision making of LAOs. For example, central government officials have the right to approve the annual budget plans of LAOs, dissolve local councils and even dismiss local councillors. While such strict central government control reduces problems that can arise from asymmetric information between central and LAOs, the system is very bureaucratic. Crucially, the arrangement also diminishes opportunities to gain efficiency benefits from local innovations and localised solutions.

Strong central government control over LAOs has not led to uniform service levels or harmonised revenue bases. On the contrary, there are still marked fiscal disparities between Thailand's LAOs. In particular, the differences between locally collected per capita tax revenues and per capita spending are high. Central government transfers and shared tax revenues are much more equally distributed. The current financing system is therefore unable to reduce differences in tax bases and spending needs between LAOs. Due to low revenue powers, LAOs are often not able to compensate for the lack of central grants with their own revenues. This leads to underfunding of service provision at the subnational level.

Underfunding and low subnational revenue capacities contribute to variances in spending and service provision between LAOs. An examination of spending differences between Thailand's LAOs reveals considerable differences in per capita spending between LAOs in all spending categories. This situation is a source of inequality in access to services and in service quality (Figure 1.7).

The average population size for Thailand's LAOs is 8 000 inhabitants, which is among the lowest in Asia. Small population size combined with significant differences in tax bases and weak fiscal equalisation can considerably hamper public service provision. Although there have been plans to reform the subnational government structure, to date no major merger reforms have been implemented in Thailand.

Most assignments transferred to LAOs are shared between PAOs and municipalities. This suggests an overlap in responsibilities. A significant overlap in assignments would be problematic especially from the co-ordination aspect. Overlapping assignments can also

incentivise LAOs to avoid costs, for example, by transferring responsibilities to other levels of government. Uncoordinated assignments can lead to inefficiency in service delivery resulting from tendencies to "pass the buck".

Figure 1.7. Marked differences between subnational government per capita spending suggest inequality in service provision

Gini coefficients of per capita expenditures of main spending categories
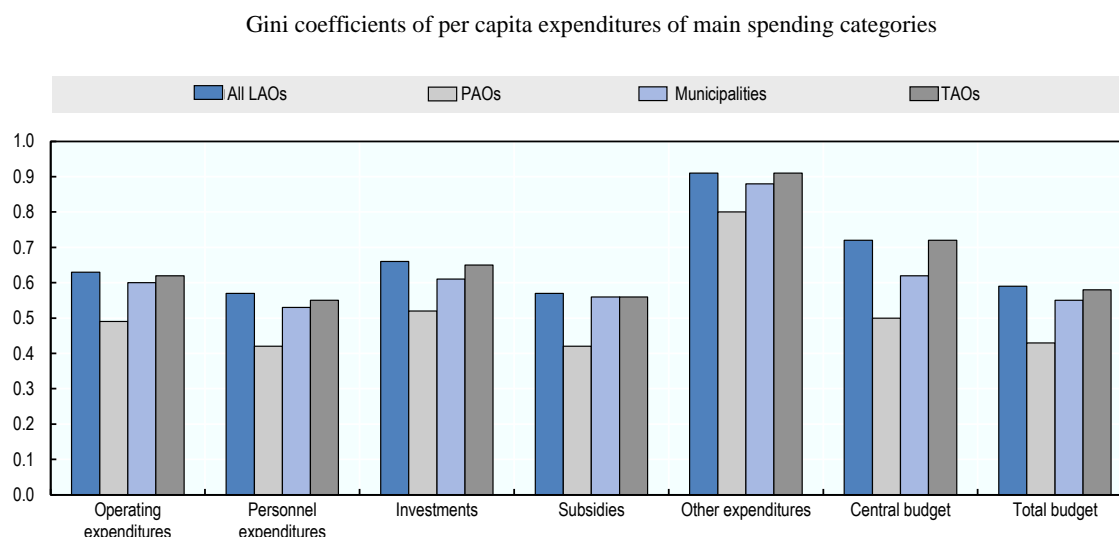
Note: Gini coefficients have been calculated using samples of LAOs.
Source: (Laovakul, 2017[10]).

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Revising the dual model of governance would enable more benefits to be reaped from local autonomy

In addition to transferring more tasks and money to LAOs, Thailand could consider empowering LAOs by enhancing their autonomy. Stronger autonomy could result in more efficient public service delivery. A safe way to start strengthening local autonomy would be to focus first on public services that are particularly local in nature, such as local infrastructure, elementary education and kindergartens. Improved local autonomy would facilitate local innovations in service provision and help to consider differences in local needs and preferences.

Strengthening local autonomy should involve reforming the relationship between deconcentrated central government and autonomous subnational government sectors. The reform should be implemented gradually, making sure that the LAOs have adequate capacity and resources to take greater responsibility for spending and financing the assignments. Instead of the current "top down" management of LAOs, the central government could focus on creating political and financial incentives for LAOs to deliver services in a way that supports national policy goals.

Thailand could also consider strengthening the central government's ability to co-ordinate LAOs in ways that do not involve direct interference in LAOs' operations. A comprehensive statistical database of Thailand's LAOs would improve the information base used in national decision making. It would also enable a gradual policy shift from the

current direct management of LAOs to a more indirect steering of LAOs. Data should be collected on the main financial indicators and service costs, while indicators on service needs and other major factors affecting the costs should also be created. These data should be made freely available for all stakeholders and citizens. There are several examples from other countries that could be utilised and applied to Thailand's situation in this respect.

Better clarified roles, tasks and powers of each level of government would contribute to the efficiency and transparency of public service delivery

Reorganising the current spending assignments between government levels should be a priority when considering reform of Thailand's LAOs. Aligning subnational capacities and resources with their spending assignments would reduce duplication and overlap between PAOs, municipalities and Tambon communities. In addition, clearer responsibilities and powers would enable more efficient central monitoring of subnational tasks.

Subsidiarity, economies of scale and benefit spillovers should be among the main criteria when selecting the most suitable level of government for each public service. A general prescription is that local public goods, such as local infrastructure and elementary schooling, should be assigned at the lowest level of government. This is because local decision makers are often best informed about local preferences and factors that affect the cost of service production. Public services with important redistributive features (e.g. specialised health care, secondary and higher education) are often best suited for higher levels of government, mainly because redistribution at the local level would be inefficient. In the same vein, public services with considerable positive externalities or benefit spillovers, such as major roads or main water pipelines, are also usually better provided by higher levels of government.

While there is an abundance of examples of reforms from other countries, such a reform should consider carefully Thailand's political, historical and ethnic characteristics. In practice, the decision on the "best" division of fiscal responsibilities between central, intermediate and local governments varies from country to country. However, experience from practices adopted in various countries suggests that successful multi-level governance reforms on spending assignments are possible.

Thailand should seek ways to better utilise economies of scale in subnational public service provision

An important rationale for reforming the LAOs is fragmentation and the significant differences in fiscal capacities. Merger reforms or enhanced co-operation can contribute to the capacity building of LAOs and therefore support the measures to clarify assignments.

The central government should take the lead in the planning process. There should be a clear nationwide plan on the optimal subnational government structure (i.e. the number of municipalities and the average size of each type of subnational government). The planning should be based on the best available data on fiscal capacities and factors that affect costs.

If a merger reform turns out not to be feasible, the alternative way forward would be to increase co-operation between LAOs. While there are some risks related to transparency and accountability in the intermunicipal or interregional co-operative arrangements, co-operation does provide a comparatively easy and flexible way to utilise economies of scale. Among the positive aspects are that co-operation does not rule out later merger decisions and that LAOs can also withdraw from co-operation if they find that it is no longer

beneficial for them. Inter-municipal co-operation is also often an important first step for later mergers.

A reform of the financing system would help reduce fiscal disparities between LAOs

The reforms on spending assignments and subnational government size should be followed by a reform of the financing system. As noted, a stronger revenue base would contribute to self-rule and the accountability of Thailand's LAOs. Strengthening the revenue bases of LAOs involves several measures.

A property tax reform would considerably improve the subnational revenue base. The reform should therefore involve updating property values and improving tax collection. However, taking into account the significant tasks assigned to LAOs, even an improved property tax would not be sufficient to fund the bulk of subnational spending. Assuming that the goal to strengthen the subnational revenue base is accepted, Thailand should consider allocating at least one important tax base to LAOs. One option would be to permit a local surtax on the central government personal income tax. The central government could take care of tax administration, while the LAOs would be allowed to decide tax rates in their jurisdictions within a band set by the central government. A strengthened local tax base should be accompanied with adequate fiscal rules, especially to regulate local borrowing and budget balancing.

Thailand should also consider reducing the weight of tax sharing in subnational revenues. This would give more room to strengthen LAOs' revenue bases. In addition, part of the revenues currently allocated through revenue sharing could be used to finance the general transfer system.

The current excessive use of specific and conditional grants in subnational government financing is problematic for many reasons. For instance, LAOs currently compete with each other for central government financing, which does not encourage local communities to co-operate to solve local and regional problems. Specific grants also incentivise LAOs to submit a large number of project proposals in order to secure local financing. This is an inefficient way to allocate central government funding to LAOs because it increases administrative work. Excessive use of specific and conditional grants may also draw the attention of LAOs away from local needs and preferences.

Based on these considerations, it is recommended that Thailand consider increasing the weight of the general grant in the grant system. The general grant formula should also be altered to better take into account the differences in tax-raising capacities and service needs between LAOs. This would help support the poorest LAOs or those likely to face the highest costs, or both.

Strengthening subnational capacity for strategic planning and territorial development could contribute to regional growth

The differing human resource capacities between Thailand's fragmented subnational government sector constitute yet another challenge for the multi-level governance system. To tackle the problem, Thailand could consider establishing formal and informal co-operation and co-ordination mechanisms between LAOs. These forums would help share experiences of best practices and prepare joint subnational proposals. Subnational government associations could have a key role in this process.

The joint forums could also involve negotiations with the central level. A systematic dialogue between LAOs and central government could lead to better understanding of the needs and problems at different levels of government and consultation in the design, implementation and monitoring of reforms.

Towards effective management of water security

Thailand has an intense and complex relationship with water. Water is key to driving the agricultural sector – the principal user of water – and supporting growth in the manufacturing sector. Both of these sectors create water quality challenges either through diffuse run-off or point source discharges. Extreme seasonal and regional variations in terms of precipitation pose significant challenges in terms of water quantity, with floods and droughts a persistent threat. Wastewater infrastructure is underdeveloped and there is widespread discharge of municipal and industrial wastewater into rivers causing pollution and negative health impacts.

Thailand's water challenges can be captured under the overarching theme of "water security". Water security can be described in terms of maintaining acceptable levels of risk in four main areas: (i) the risk of water shortage, (ii) the risk of inadequate water quality, (iii) the risk of excess water and (iv) the risk of undermining the resilience of freshwater systems. In the Thai context, water security includes issues relating to floods and droughts, water use and allocation, water quality and the impacts of pollution (OECD, 2013[11]). Water security issues are a prominent feature of day-to-day life in Thailand. The 1 000 Baht banknote features images of high-profile flood defence infrastructure projects, including the Khlong Lat Pho floodgate project, functioning as a constant reminder of the importance of these challenges.

Improving water security is key for Thailand's future prosperity in the face of continuing intensive growth and the uncertainties of climate change. The availability of sufficient water of sufficient quality at the right time underpins Thailand's ambition to achieve high-income status by 2036. Demand for water in the country's main economic sectors, including industry and agriculture, is increasing and putting pressure on national water resources. Exacerbating the management challenge is Thailand's vulnerability to natural disasters, which affects both its regional development and its international reputation. Adopting a risk-based approach is recommended to prioritise action and ensure optimum use of human and financial resources.

Many of Thailand's water security challenges are rooted in difficulties with multi-level governance and policy coherence. These challenges are also common in other countries and a number of policy instruments exist to help address the situation. Water management is sensitive to and dependent upon good multi-level governance. Diagnosing multi-level governance gaps is a crucial first step to overcoming obstacles and promoting more effective water policy and management. For example, any country facing sectoral fragmentation of water roles and responsibilities across public actors (policy gap) may also suffer from conflicting goals (objective gap). In addition, siloed approaches to governance may hinder policy makers from actively sharing information (information gap). This, in turn, undermines capacity-building at the subnational level (capacity gap) (OECD, 2012[12]; OECD, 2015[13])

Action is needed on two fronts to strengthen the capacity of state authorities in water resources management – at the technical and the financial level. It is important to implement the use of economic instruments as a policy instrument where relevant and

needed. Economic instruments can trigger greater engagement among water users, foster the rational use of water resources and ensure sustainable financing for service providers. In addition, the willingness to pay among various sectors and the affordability of water bills should also be analysed thoroughly and taken into consideration.

Improving water security in Thailand is a journey that starts with a common vision

Strong leadership and clarity on roles, responsibilities and decision-making is key to facilitating improvements in Thailand's water sector. A large number of actors are involved in water management at both the national and regional level, and this was found to impact decision making on issues including infrastructure planning and development, as well as water quality compliance and monitoring. While national strategy documents, including the 12th National Economic and Social Development Plan (NESDP), aim to allocate roles and responsibilities for different agencies to drive progress in water management, in practice the link to financial planning is weak, limiting implementation.

The OECD's Principles on Water Governance provide a framework to understand whether water governance systems are performing optimally and to help adjust them where necessary. There are 12 principles to help governments design and implement effective, efficient and inclusive water policies. The first water governance principle is: "clearly allocate and distinguish roles and responsibilities for water policy making, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities". This a critical first step for Thailand and there is a need to examine the roles and responsibilities of existing entities and map them against strategic objectives. Gaps and overlaps then need to be identified and addressed (OECD, 2018[14]) (OECD, 2015[15]).

The 12th NESDP contains a number of recommendations that have the potential to address these governance and fragmentation issues. These include: (i) the passing of a Water Resources Bill, which clearly outlines the objective of the water sector and maps out roles and responsibilities of the different entities; (ii) the formation of a cross-ministerial National Committee on Water Resources Management to promote co-ordination and policy coherence and (iii) recommendations to strengthen the role of river basin management.

Cross-ministerial dialogue is key to driving policy coherence. For example, discussions with stakeholders in Rayong province indicated a tension between the agricultural sector and the growing industrial sector with regard to future water demands. As Special Economic Zones including the Eastern Economic Corridor develop, policy discussion and coherence will be crucial. Improving water management therefore requires a coherent approach between water policies and other sectoral and environmental policies. In particular, the nexus between water, energy, food, climate and biodiversity presents significant challenges for water management, and has been attracting increasing policy attention in recent years. Increasing the coherence of policies (policy objectives and policy instruments) across these areas is essential if governments wish to meet the range of policy goals while not undermining water management objectives (OECD, 2016[16]).

Thailand is in the process of setting up its National Water Resources Committee (NWRC), a high-level committee chaired by the Prime Minister's office. The NWRC is supported by a range of high-level officials including Deputy Prime Ministers and the heads of 12 governmental agencies. While a structure for the committee is proposed, there still remain roles to be filled. In particular, the role for River Basin Committees is unclear and the sanitation sector appears under-represented.

There may be an opportunity for a National Policy Dialogue on water to develop policy packages for consideration by this high-level decision-making committee. A National Policy Dialogue on water could be an opportunity for inter-sectoral co-ordination involving relevant agencies, academia, industry and civil society, and would allow broad consultation on evidence-based water policy issues ahead of presentation to government. The OECD has experience of facilitating these platforms in both OECD and non-OECD countries.

Tackling multi-level governance will facilitate the move to improved water security

Water security is about learning to live with an acceptable level of water risk. This requires a better understanding of the risks, ensuring that the level of risk used for planning and policy purposes takes into account social preferences, and managing risks and trade-offs between risks and across water and other policy objectives at the least cost to society. This requires a common vision and co-operation at all levels of an administration, including a common understanding of the water risks for each sector and region, and a clear vision of the use of economic instruments and financing.

Thailand typically finds itself in crisis management mode, responding to events after they occur. For example, budget allocation for flood recovery is easier to secure than budget allocation for flood defence and preparation. Embracing a risk-based approach to water management will help alter this mind-set and facilitate the allocation of funds to projects that add most value to society. Thailand needs to move from a crisis response to a risk-management approach.

The pressures on water security have increased with Thailand's continued growth. In addition to heavy monsoons, the causes of floods include the decline of flood retention and flood plain areas due to urbanisation, industrial development and intensification of the agricultural sector. Severe droughts in 2015 and 2016, in particular in the upper-middle part of the country, caused irrigation problems in many areas and had a major impact on the agricultural sector. This sector is the main water user and accounts for over 54% of all water distributed in 2017. Losses and water use inefficiencies are known to be high, at times compounding the challenge of water stress. This situation is made worse by climate change, which will increase the frequency and intensity of extreme weather events in Thailand.

Regional development and water security are closely linked, as water security challenges affect the different regions of Thailand in a variety of ways. The Northeast region suffers from regular droughts but also flash floods, while the South is regularly hit by typhoons and floods. As a result, agricultural productivity in these regions (and the North) have suffered in recent years. Heavy industry and manufacturing is located in areas such as Rayong in the East, resulting in localised water quality challenges. However, the region can also be affected by flooding, as witnessed in 2011, when economic damage and losses from floods in the manufacturing sector were estimated at USD 32 billion (OECD, 2013[17]). As a result of the flooding, a number of international firms relocated to lower risk areas, impacting regional economies and Thailand's international reputation. In general, the annual average recorded damages account for a not insubstantial share of GDP (Figure 1.8).

Adopting a risk-based approach to managing water security will signify a shift from reactive to more proactive policies. Instead of responding to water crises, which can often entail excessive costs to society, governments can establish a process to carefully assess and manage the risks in advance and review these on a regular basis. Once set, the

acceptable levels of water risks should be achieved at the least possible cost. Economic instruments, such as charging appropriately for water use and pollution, can help to achieve this (OECD, 2013[11])

Figure 1.8. Annual average damage from flood events as a share of GDP
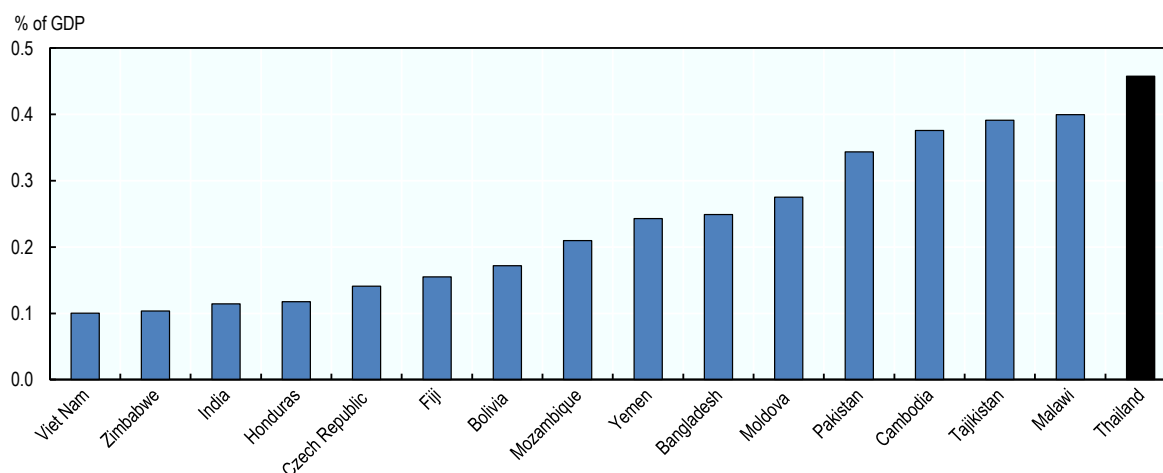
Note: Annual average damage was calculated based on damage reported between 1971 and 2015 and converted to constant 2015 USD based on the US Bureau of Labor Statistics' Historical Consumer Price Index for All Urban Consumers (CPI-U). GDP figures are taken from the World Bank for the year 2014 in current USD.
Source: (OECD, 2016[18]) based on EM-DAT.

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The OECD publication Water Security for Better Lives provides guidance on how to apply a risk-based approach to water security through a three-step process: "know the risks", "target the risks" and "manage the risks" (OECD, 2013[17])

In OECD countries, the majority of efforts to date have focused on "knowing" the risk by building the scientific evidence base and disseminating information. Much more can be done to better "target" and "manage" water risks, particularly in response to a changing climate. In terms of policy responses, information-based instruments such as flood risk maps, decision support tools for risk management and adaptation guidance for local governments are by far the most widely used. Thailand has had success in this area in terms of flood risk maps and weather forecast data. However, it is acknowledged that more could be done to share these data with relevant agencies at all levels of government and to incorporate them into land-use planning and decision making.

A number of tools exist to help target and manage risk. Several countries are revising laws and regulations such as sustainable water abstraction limits, building codes and land-use planning, and are adjusting economic instruments such as water tariffs, water-related environmental taxes, and flood insurance schemes to reduce baseline stress on water systems, raise financing and address increasing flood risks. Japan has introduced regulations and guidance on land use in disaster-prone areas as well as unified flood control measures, while Australia has introduced water trading to allow scarce water resources to be transferred to ensure maximum productive use and to respond dynamically to the changing availability of and demand for water (OECD, 2013[11]; OECD, 2013[17]).

Policy responses are necessarily country specific and are based on risk-assessment and broad acceptance of national priorities. Thailand reports mixed performance in this area, while regulatory based tools such as permits for drilling of wells exist, responsibility is often held between a number of agencies, each with their own records, as was seen in Nong Khai province. There is typically no centralisation of data or information, and monitoring and enforcement is inconsistent. In Rayong province, risks of water shortages have been targeted and managed through investment in strategic storage reservoirs with some success.

Economic instruments will have a role to play in supporting the move to improving water security. Instruments such as water charges are underutilised and compound the challenges of water management. Where charges exist, they are typically low. As a result, incentives for users to conserve water are lacking. The ability to finance, invest in and deliver effective water and sanitation services is also reduced. There is an opportunity to review the structure and use of economic instruments, and reform this area in line with overall strategic objectives for the water sector.

Scenarios for Thailand's future

Thailand will face rapid changes in the global and local environment on the path towards a high-income economy in 2037. The changes and unforeseen events in technology, social norms and behaviours, and the natural environment, as well as in the national and international political and economic environment will be enormous. Looking back, the advent of social media and its impact on both culture and communication, as well as the intensification of global value chains and significant changes in the global economic balance towards emerging economies, were hard to predict in 2000. New trends and changes, unknown today, will occur over the next 19 years and shape Thailand's development opportunities.

Box 1.1. Why use scenarios?

Strategic foresight and scenario-based approaches are used as a fast and flexible method to analyse alternative plausible futures to traditional forecasts. They are often utilised to complement forecasting exercises, by integrating unquantifiable trends (political, social and behavioural) and "shocks" to the system (e.g. financial crises or environmental disasters), or as a means of reducing the complexity of multiple interactions to explore the implications of a specific trend or combination of trends.

While scenarios often use data-based research and quantifiable trends, they are not built by means of projections. However, as with projections, scenarios are explained by means of a storyline. Scenarios are stories developed by considering the ways in which different trends can be combined to create a different context, and used to think through the policy implications in terms of policy options, new policy incentives or trade-offs that could affect implementation.

Scenarios are a useful tool when formulating recommendations. They are user-driven and thus account for stakeholder perspectives and assumptions, ensuring that a wider array of policy contexts are considered in the formulation of recommendations.

Identifying these trends, anticipating their impacts and integrating this understanding into policy planning through the use of scenarios can help make Thailand more resilient (Box 1.1). To ensure that the recommendations in this report are pertinent in the face of

these trends, a number of scenarios were developed to test recommendations against global developments, and foresee their consequences in terms of policy contexts, incentives and trade-offs to implement reforms.

Thai stakeholders have developed scenarios for Thailand that explore trends for the 2037 horizon. Following the 2017 workshop, which explored Thailand's desired future and vision (OECD, 2018[1]), stakeholders from academia, government and civil society came together in Bangkok in June 2018 to explore trends and develop scenarios (Box 1.2).

Box 1.2. Scenarios for the future of Thailand 2037

Four alternative scenarios with a 2037 horizon were developed as part of the Thailand MDCR. They highlight the implications of external and domestic shocks on the context in which Thailand will pursue its development strategy.

The workshop "Scenarios for the future of Thailand" took place in June 2018 in Bangkok. Fifty participants including government officials and representatives of the private sector, civil society and academia explored internal and external drivers of future change in and for Thailand. The workshop identified CO_2 emissions and social cohesion as two key drivers and the basis for scenario development.

Participants discussed the implications of the various scenarios for policy, with specific reference to the three main focus areas in the report, namely water management, regional development and multi-level governance. The four scenarios for the future of Thailand 2037 are as follows:

"The Uprising" – cohesive society, high CO_2 emissions

Artificial intelligence and robots spread quickly and take over many jobs hitherto performed by humans. The higher rate of technological change creates increasing amounts of waste from discarded items, more energy consumption and higher emissions. High pollution leads to health problems, loss of biodiversity and natural disasters. Combined with mounting unemployment this results in social pressure and disenfranchisement. The turning point comes when people group together to fight the machines. This Uprising is victorious and results in a more cohesive society with less conflict. The common cause and experience generate new heights of social cohesion and shape common core values, allowing for the creation of stable political institutions. The government can thus begin to implement policies and investments to protect the environment, including taxes and charges, as well as greater decentralisation and community-based development. Green technology and green education help to reduce emission and conserve water resources.

"Hell after tomorrow" – individualistic society, high CO_2 emissions

With the flow of foreign investments into heavy industry in Thailand, CO_2 emissions skyrocket. Simultaneously, social media and new gadgets allow for people to retreat completely into their personal space minimising the need for physical interaction. As emissions rise, so do water levels, raising the possibility that people might have to live on water. New technology emerges for floating houses and ocean filter technology for drinking water. Seaweed and insects may constitute the main sources of nutrition. Public health and social spending increases as society ages faster, family ties weaken and mental health issues conceivably arise. The fiscal pressure is enormous. New technology is

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required to cope with the hydrological disaster such as a pipeline network and filter technology to produce clean water.

"Home alone" – individualistic society, high CO2 emissions

People sit in front of their computers and manage things from there. They have no need to go outside for any activities. The continuation of digital services such as online shopping combined with new technology enables people to manage everything from home. Behaviour and lifestyles change accordingly. People stay at home and lose interest in social contact and wider society. Pollution keeps rising because people consume too much, use more power and create more CO2. There is no more responsibility or accountability. People become self-centred. Ageing, mental health and healthcare provision more broadly become huge challenges.

"Fly me" – individualistic society, low CO2 emissions

Natural resources are being depleted, however people are not aware of their actions. A pollution crisis leads to health problems and frequent natural disasters. Confronted with these impacts, Thai society shifts. People become more aware of their actions and better policies help overcome the environmental challenges. Enabled by new technology, people work almost entirely from home, and commuting is no longer necessary. Access to education is much improved and technology based (e.g. remote learning system and self-schooling), but no longer involves much social contact. Autonomous self-learning also leads to the disappearance of degrees in higher education as every student creates their own selection of coursework from a vast offer. Technology also helps with health care and the elderly are able to take care of themselves thanks to a better health care network. People live longer.

"Enlighted green community" – cohesive society, low CO2 emissions

People become increasingly self-centred and exclusively focused on profits and production. Social and environmental responsibility matter little. Increasing industrial and manufactual activities result in more pollution. The areas near factories suffer from heavy pollution leading to conflicts in those areas. The suffering communities use social media to communicate with each other and find the power to push back against the polluters. This becomes a turning point for Thai society. People begin to care about the environment more widely and focus on new green technology. They also change their behaviour and mindset and society becomes more cohesive. The networking of local communities is key to solving many pressing environmental issues, especially around water. Thailand achieves the Sustainable Development Goals by 2030.

Policy recommendations

Goal to reach	Recommendations of the Multi-Dimensional Review of Thailand
CHAPTER 2: A NEW GROWTH PATH: UNCLOKING THE POTENTIAL OF REGIONS	
1. Moving towards more broad-based and innovative regional development policies	
1.1. Innovative regional development strategies that are multidimensional, flexible and driven by local discovery and ownership	1.1.1. Ensure that targets of regional development plans and results-based allocation measures balance economic, social and environmental objectives. Targets and objectives should be informed by sound data analysis and continuous consultation between central and local governments, stakeholders and citizens.
	1.1.2. Place local innovation and discovery at the centre of regional development plans. Focus on facilitating discovery by regional and local actors. The central government should not select the areas or activities for investing public resources but rather facilitate and support the discovery process.
	1.1.3. Build flexibility into regional development instruments and initially experiment with different approaches adapted to regions' capabilities.
	1.1.4. The geographic scope of regional development policies should be flexible and focus on functionality. Data analysis can help to identify the most functional clusters of provinces for regional strategies.
	1.1.5. Strong evaluation and performance measurement frameworks must be built into all approaches from the beginning. Data on results should be widely accessible to guarantee transparency and enable public scrutiny.
2. Supporting secondary cities as the centrepieces of regional policies	
2.1. Define secondary cities in Thailand	2.1.1. Identify secondary cities as functional urban areas. The combination of geospatial data and local micro-data would allow for an exact definition of the pool of users of urban infrastructure, both in the core of cities and their hinterlands.
	2.1.2. Carry out local surveys to assess the needs of secondary city residents to deepen the above analysis. These surveys should complement a database on the financing, costs, availability and quality of subnational government services, as proposed in Chapter 3.
2.2. Design and implement a new urban policy agenda specific to secondary cities	2.2.1. Equip local authorities and secondary cities with the power and fiscal tools to address local needs. Effective decentralisation reforms will be key. Chapter 3 discusses detailed policy recommendations along this line.
	2.2.2. Given the cross-boundary nature of secondary cities, permanent consultation among local administrations should guide strategies of investment in infrastructure. Local co-ordination can be enforced through formal institutions and more effective decentralisation policies, as well as informal institutions and voluntary interjurisdictional agreements.
	2.2.3. Citizen participation should be ensured to create ownership of new urbanisation agendas. Local authorities should further promote informal fora and other physical and virtual places where citizens can interact with local administrators and issues.
3. Skills development as a tool of regional policy	
3.1. Invest in better and more relevant skills to adapt the workforce to the needs of the place-specific and regional labour market	3.1.1. Identify the place-specific and regional productive sectors and incorporate their current and future needs into the curricula. TVET institutions need to provide their students with the necessary skills to access the best job opportunities and outcomes. Therefore, the curricula of training programmes must target the most productive sectors and work to identify the key competencies those sectors require.
	3.1.2. Ensure that TVET programmes are reactive and can adapt to the changing needs of the local labour market. Structural transformation has an impact on the skills that employers look for in the workforce. TVET institutions should therefore continuously update their curricula to adapt to evolving labour market needs.
	3.1.3. Increase the involvement of local entrepreneurs and private sector in the design of education curricula, technical programmes and workplace education. Through discussions with the private sector, TVET institutions will be able to develop education curricula that respond directly to labour market needs. Partnerships between TVET institutions and the private sector are also crucial to understanding the current and future needs of the labour market. Consider fiscal incentives to encourage private sector participation in TVET.
	3.1.4. Complement traditional coursework with work-based training. TVET institutions should include in their coursework two- to six-month mandatory training and internships in affiliated firms.

3.2. Ensure that the TVET sector becomes more attractive for young people	3.2.1. Guarantee each vocational institution a certain degree of autonomy in order to better match students' ambitions and market needs. 3.2.2. Introduce counsellors that can help students explore different schools and programme options. Counsellors should have extensive and accurate knowledge of the characteristics of the local labour market and enterprises.
3.3. Invest resources in the development of provincial universities, corresponding to integrated regional policies	3.3.1. Tighten the relationship between provincial universities, local authorities and the private sector. Universities, local firms and government management should exploit synergies by designing, enhancing and monitoring a common long-term agenda for local skills development. 3.3.2. Promote provincial universities as centres of entrepreneurship. In collaboration with local authorities and Chambers of Commerce, universities can become incubators of local start-ups, by providing general advice and guidance, training, one-to-one advice, legal start-up costs, business competitions and incubation.

4. Support the implementation of regional policies with fiscal and institutional reforms

4.1. An institutional and fiscal environment conducive to experimentation at all levels of government	4.1.1. Pursue decentralisation reforms and thereby allow local decision makers to experiment through "small-step" interventions. Chapter 3 discusses more specific recommendations, as well as policy tools to decentralise fiscal and political power efficiently in Thailand. 4.1.2. Redesign the formula for the distribution of general grants to complement population thresholds with socio-economic criteria. Chapter 3 discusses more specific recommendations as well as policy tools to establish local fiscal capacity. 4.1.3. Complement the new formula for general grants with a move to results-based transfers conditional on the achievement of socio-economic targets that would close the gaps between best-performing, converging and diverging provinces.. Targets should match the characteristics and needs of different places. The data used to measure results should be publicly accessible to encourage public scrutiny and debate. 4.1.4. Boost local capacity of co-ordination across layers of governance. Local authorities should develop their capacity to interact both vertically (state-province-districts-municipalities) and horizontally (between municipalities). Chapter 3 provides specific recommendations on how effective decentralisation policies can serve this purpose.

CHAPTER 3: MAKING MULTI-LEVEL GOVERNANCE WORK FOR MORE EFFECTIVE REGIONAL DEVELOPMENT

1. Revising the dual model of multi-level governance

1.1. Enhance the autonomy of LAOs	1.1.1. Move towards more indirect control and co-ordination of Local Administrative Organisations (LAOs) by the central government. 1.1.2. Strengthen the deconcentrated central government units' capacity to consult and monitor LAOs. As these capacities accumulate, gradually diminish the direct interference of deconcentrated central government in subnational government decisions. In addition, strengthen subnational capacities to take over service tasks in order to gradually transfer all or most service tasks that satisfy local needs to LAOs.
1.2. Improve the accountability and transparency of subnational government decision making	1.2.1. Create financial and political incentives for LAOs to meet the targets set by central government. This should be achieved by reforming the transfer system and developing enabling normative regulation that sets minimum standards, but leaves the responsibility of service provision to LAOs. 1.2.2. Local elections and elected councils and mayors of LAOs play important roles in supporting successful decentralisation reform. Local elections should be strengthened with core guidelines and arranged on a regular basis. 1.2.3. Strengthen the fiscal base of LAOs, especially the base for own source revenues. 1.2.4. Develop monitoring and prevention of corruption at all levels of government.
1.3. Strengthen the ability of central government to co-ordinate LAOs in ways that do not involve direct interference in LAOs' operations	1.3.1. Invest in an extended statistical database that covers all LAOs. Create a set of indicators that cover the financing, costs, availability and quality of subnational government services, for use in decision making. Make all data and indicators publicly available. 1.3.2. Create a formal negotiation framework or body for subnational and central government representatives to discuss service level and quality targets, the financing of LAOs, and current and planned reforms. Establish informal forums for dialogue between central and LAOs in order to help promote co-operative arrangements and enable more co-ordinated actions.

2.	**Reconsidering spending assignments**	
2.1. Ensure an efficient and improved allocation of assignments between levels of government	2.1.1.	Clarify the assignment of responsibilities across government levels, taking into account the type of service (local, redistribution, externalities), especially in social services and education. In addition, use information on potential economies of scale and capacity differences to improve the efficiency of assignments. Make sure that there is no major duplication in assignments between government levels and that the resulting assignments are clear to all stakeholders.
3.	**Enhancing economies of scale**	
3.1. Ensure a stronger subnational government with visibly improved capacity to operate and take over devolved and delegated assignments	3.1.1.	Prepare a nationwide reform of subnational government structure. The reform should define the target number and size of LAOs at each government level. It should be based on decisions on spending assignments between levels of government and on the best available information on economies of scale, externalities, local democracy aspects and efficiency differences in service delivery. The reform should include both mergers and enhanced co-operation between LAOs. The reform should be developed and implemented in consultation with all main stakeholders and should be made public.
	3.1.2.	A choice between forced and voluntary merger reforms should be made based on the national reform plan. If a voluntary merger approach is adopted, LAOs must have adequate incentives for entering mergers. Make sure that the resulting structure of LAOs supports the overall fiscal policy targets.
	3.1.3.	Promote and support co-operative arrangements between LAOs. If necessary, alter the legal system to allow for voluntary and obligatory co-operation.
4.	**Reforming subnational government financing**	
4.1. Strengthen own source revenues	4.1.1.	Carry out a reform of subnational government's own source revenues. A key target of such a reform should be ensuring, at the macro level, that the majority of subnational government revenues are based on own tax and other own revenue sources.
	4.1.2.	Strengthen the property tax base by updating property values that are currently outdated.
	4.1.3.	Allow the subnational government level (at least the Provinces and municipalities) to tax income by means of a surtax on central government PIT. LAOs should be allowed to choose tax rates within limits set by the central government.
	4.1.4.	Simultaneously establish/update the fiscal rules on budget balancing and borrowing.
	4.1.5.	Reduce the weight of shared tax revenues and grants in the financing system.
4.2. Introduce a new grant system that supports equity between LAOs	4.2.1.	Increase the weight of the general grant in the grant system considerably at the expense of specific and conditional grants.
	4.2.2.	Reform the formula used to define the general grant to take into account differences in both fiscal bases and service costs.
5.	**Strengthening subnational capacities to finance infrastructure**	
5.1. Ensure that local information and innovation drive public investment	5.1.1.	Strengthen subnational skills to invest using own revenue sources, borrowing and private sector financing. Make information available for different options for financing and set up training for subnational government administrators.
	5.1.2.	Ease central government control of subnational investment and instead establish new frameworks for co-operation and co-ordination of subnational and central government investments.
	5.1.3.	Strengthen abilities among major metropolitan governments to use indirect financing and management tools such as public-private partnerships, procurement, private financing and joint project management with several LAOs and private companies.
6.	**Enhancing subnational capacities for strategic planning and territorial development**	
6.1. Strengthen the human resource capacities of LAOs	6.1.1.	Revise and update strategies for human resource management. Collect statistical data on subnational human resources to support this approach. Continue and enhance efforts to train local administrators especially in strategic planning aspects.
CHAPTER 4: OPPORTUNITIES TO IMRPOVE WATER AND DISASTER RISK MANAGEMENT		
1.	**Moving from crisis management to risk management to increase water security**	
1.1. Adopt and implement a risk management approach to water security issues	1.1.1.	Use the National Water Resources Committee, supported by high quality analysis and data, to confirm levels of acceptable risk that are accepted and transparent to all relevant actors. This must recognise that this could be different for different regions and for different sectors.
	1.1.2.	Ensure better co-ordination and clear roles and responsibilities with regard to disaster preparation and recovery. This would include collection and ownership of data and information sharing.

	1.1.3. Embrace a flexible approach to risk management, embed regular review processes to reflect latest thinking and information to inform the levels of acceptable risk.
	1.1.4. Embed innovation within the sector with a focus on water security matters such as water use efficiency – e.g. enhanced irrigation equipment. Areas of innovation should have a strong business case facilitating adoption.
	1.1.5. Create an inventory and review the performance of the existing suite of regulatory, economic and information based tools that target management of water security risks. Identify underperforming tools and opportunities for new tools based upon latest good international practice. Update the inventory and deploy as required supported by investment in necessary human capital. This might include flood insurance schemes, water quality standards or flood zone maps.
	1.1.6. Review existing regulatory frameworks and support with compliance monitoring and enforcement. This may have a focus on water allocation, water efficiency, permitting and land use. Collect and share data and information around this matter to inform decision making.
	1.1.7. Long term climate resilient forecasts must be considered and embedded in design and build of infrastructure and followed through to operation. The use of Environmental Impact Assessments or Strategic Environmental Assessments may be a good tool to embed this practice.
	1.1.8. Raise awareness of water security issues throughout all sectors and society. This would include water use efficiency, disaster preparation and recovery.
1.2. Focus efforts on tackling pollution issues in each basin	1.1.1. Develop a clear understanding on the sources of and extent of pollution in each river basin. Develop a central database shared with relevant actors.
	1.1.2. Develop data to understand the impact of pollution in each river basin locally and downstream, this would be based on capacity of the receiving water body. Share this data with relevant actors and use it to prioritise action..
	1.1.3. Ensure that the river basin committees have the capacity to use local knowledge and data in order to identify sources of pollution and tackling them..
	1.1.4. Tackling pollution should link to the work on economic instruments and create an incentive to drive behaviours that are aligned with overall strategic objectives. This could be based on the polluter pays principle.
	1.1.5. Support action with a strong regulatory framework and robust compliance monitoring and enforcement. Collect and share data and information around this matter to inform decision making.
	1.1.6. Link actions, for example new infrastructure requirements, to long term strategic and financial planning. This ensures visibility of water quality issues and optimises likelihood of implementation.
2.	**Tackling fragmentation, multi-level governance and improving policy coherence**
2.1. Critically review the performance of the water sector at a central and local level against long term strategic objectives. Consider the impact of multi-level governance issues	2.1.2. Benchmark performance of the sector against long term strategic objectives. Document policy gaps, objective gaps, information gaps and capacity gaps and develop an action plan to close them.
	2.1.3. Evaluate the potential of policy tools to align central and regional objectives related to water. This could include incentivised performance contracts similar to those used in Brazil. Robust performance indicator schemes would aid implementation.
2.2. Pursue adoption and implementation of the Water Bill as proposed in the 12th NESDP	2.2.4. The Water Bill should state clearly the objectives of the water sector.
	2.2.5. The existing actors, their remits as visualised in their founding Acts and their actual activities should be mapped against the sector objectives in the Bill. This would cover both national and local entities.
	2.2.6. Gaps and overlaps in roles and responsibilities should be clearly identified.
	2.2.7. Ensure clear owners of strategy development, policy making and long term planning. Ensure budget cycles are aligned to long term plans. Ensure that the appropriate data is available to support this activity.
2.3. Reform the National Water Resources Committee under the Water Bill as proposed in the 12th NESDP	2.3.1. Ensure that the Committee has high level political support and ownership.
	2.3.2. Ensure that the Committee has a clear remit in terms of decision making and setting strategic direction.
	2.3.3. Ensure that the Committee has the correct representation including from relevant ministries, river basin committees and the wastewater sector. Ensure cross-sectorial issues are captured, for example water management and economic development.
	2.3.4. The Committee should meet regularly and keep complete and transparent records of meetings and action lists.

2.4. Ensure sufficient advantage is leveraged from river basin committees and management	2.4.1. These structures are currently not effective which is not aligned with international experience. Review this lack of current impact and strategically review how they can support the overall management of water resources including potential roles in stakeholder management, data collection, infrastructure specification, planning and forecasting and charging. 2.4.2. If the roles of river basin committees are to be strengthened, they must add value and not create another layer of bureaucracy. Provide clear guidance on roles and mandates of these committees. 2.4.3. Some river basin committees may have stronger capacity and add more immediate value to the sector than others. Consider strengthening the remit of committees in one or two key river basins rather than all 25. These may become pioneer committees and set the scene for future development of others. 2.4.4. Review the roles of river basin management and committees with regard to water security matters – ensure sufficient value is added from these structures. This might include consultations on infrastructure requirements and cost benefit analyses.
2.5. Consider establishment of a National Policy Dialogue on Water	2.5.1. A National Policy Dialogue on water could be established to feed into the National Committee on Water Resources Management. 2.5.2. The National Policy Dialogue could be chaired by the Ministry of Natural Resources who serves as secretary for the National Committee on Water Resources Management. Representatives from relevant ministries and agencies, academia, the private sector and civil society would also be represented. 2.5.3. The National Policy Dialogue would be empowered to conduct projects and deliver analysis to support the objectives of the National Committee on Water Resources Management. It would establish the evidence base to support strategy and policy decisions and provide a platform for consultation on issues ahead of presentation to the high level committee.
3. **Strengthen the role of economic instruments to increase water security, drive behavioural changes and ensure financing**	
3.1. Determine the potential for economic instrument reform. This would include clear roles and responsibilities on development and implementation	3.1.4. Develop a robust financial plan of the real costs of managing the water sector today and in the future and align with potential revenue from economic instruments. Identify funding gaps. Align a financial strategy to the water strategy and prioritise action. Data must be available and accessible to key entities. 3.1.5. Review existing subsidies and economic incentives and tackle those that increase vulnerability. This might include crop selection and water intensity in different areas. 3.1.6. Ensure economic instruments are aligned with strategic policy objectives and set correct incentives e.g. behaviour change. 3.1.7. Review and set a clear role for river basin management within the framework of economic instruments. This might include contributing to the financial plan, including priority infrastructure specifications. 3.1.8. Conduct analysis to determine ability-to-pay and willingness-to-pay of different sectors. A long term understanding of affordability constraints will support tariff development.
3.2. Ensure stakeholder management and engagement to facilitate any reform	3.1.9. Ensure any changes in tariffs are well understood and communicated to the public and water users. They must have political and public support and understanding to be effective.

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Annex 1.A. Thailand's regions and provinces

1 - Chiang Mai
2 - Lamphun
3 - Kamphaeng Phet
4 - Nakhon Ratchasima
5 - Nong Khai
6 - Khon Kaen
7 - Ratchaburi
8 - Phuket
9 - Krabi
10 - Chonburi
11 - Rayong
12 - Ayutthaya
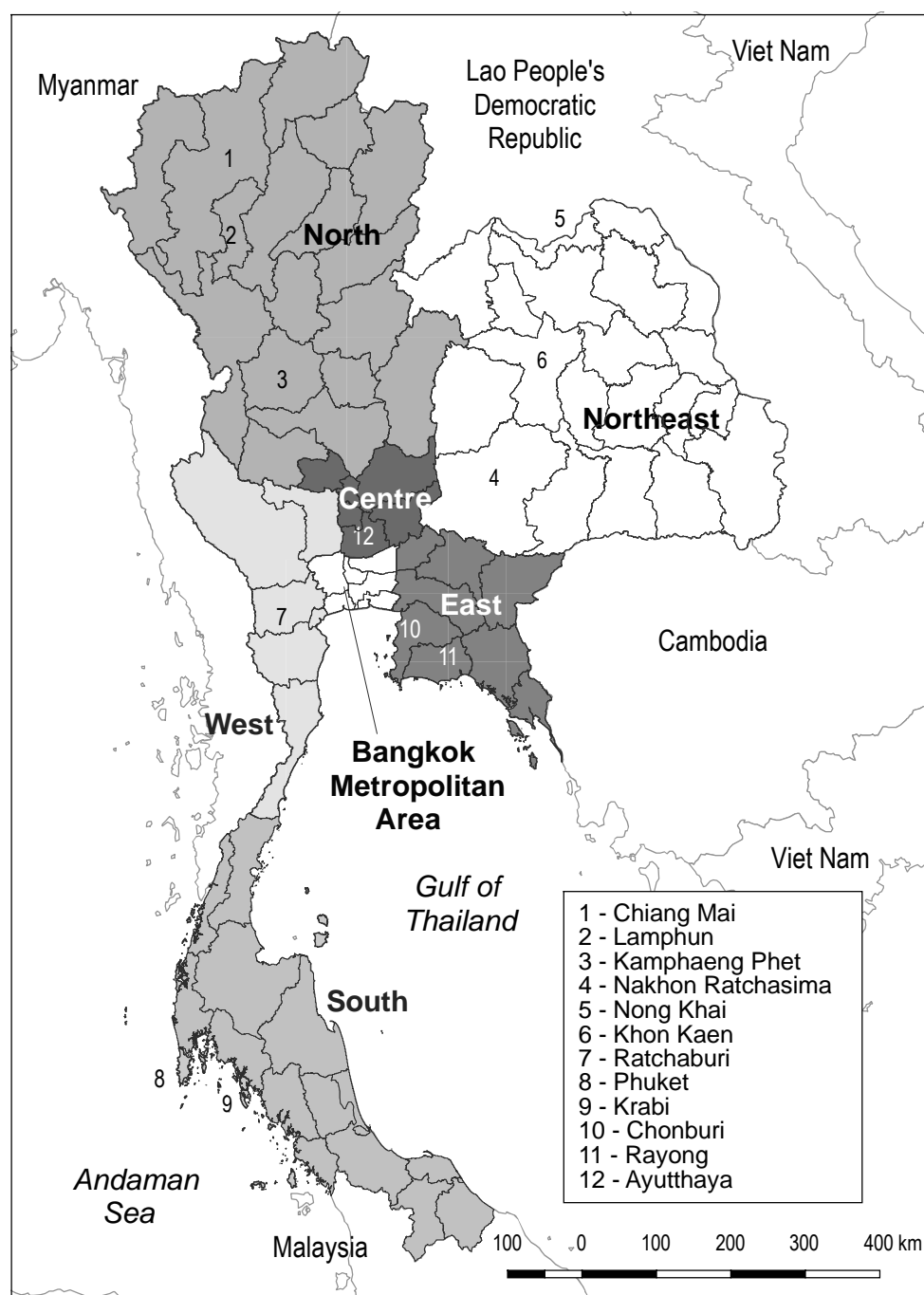
Note: Only provinces that are mentioned throughout the next chapters are reported.
Source: Authors' own work.

Chapter 2. A new growth path: Unlocking the potential of regions

Thailand's growth path has created large disparities that pose a risk to development. However, a closer look at the country's peripheral provinces and cities suggests that convergence is underway and that much can be done to boost this trend. Productivity drives economic performance and enables rising incomes. Policy makers therefore need to learn lessons from Thailand's best-performing provinces and cities. This chapter examines previous policies designed to develop Thailand's regions and assesses the resulting productivity landscape across regions. Given the limited available resources, past policies have focused on the few areas of the country that showed rapid success. Going forward, more broad-based and innovative regional policies that put local innovation in the driver's seat, provide flexible support and that learn from best performers will be necessary. An analysis of provinces at the productivity frontier points to superior human capital and public services as the distinguishing attributes of high-performing provinces and cities. Based on these insights, regional policies will need to support cities as the centrepieces of integrated regional development policies and focus on skills development as a tool of regional and urban policy.

Regional and urban disparities in Thailand present a pressing structural challenge that must be addressed by boosting convergence

Thailand has undergone a deep structural transformation over the last few decades, but has recently lost momentum. Since 1970, GDP growth per capita has averaged 4.2% per year, and in 2016 income per head stood at 42% of the OECD average. Thailand has evolved from a largely rural country into a hub of manufacturing and services, fully integrated with global value chains for automobile and electronics (Annex Figure 2.A.1). As the country changed the structure of its economy, manufacturing activities began to attract an increasingly larger share of workers. The share of the primary sector in total GDP fell from 23% in 1990 to 9% in 2017; however, agricultural activities still employ one-third of the Thai workforce, mostly in informal and vulnerable jobs. As a result of informality, as well as weak demand arising from lacklustre global trade and slow capital formation, Thailand's recovery has not yet returned to pre-global financial crisis growth rates (OECD, 2018[1]).

Figure 2.1. GDP per capita across Thailand is so diverse that different regions can be compared to countries at all stages of development
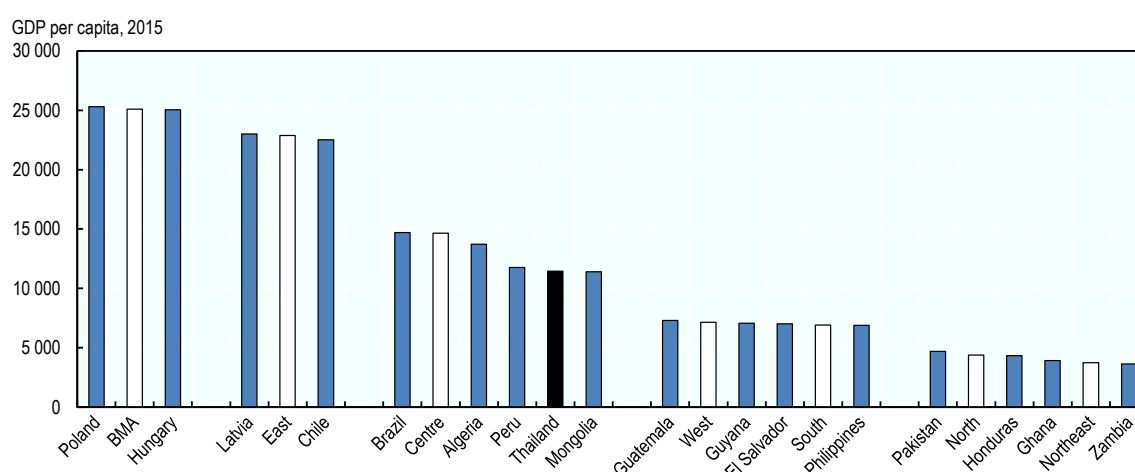
Note: For comparative purpose, GDP per capita is measured in PPP (constant 2011 international USD).
Source: Authors' work based on national accounts as provided by the NESDB and (World Bank, 2017[2]).

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Today, Thailand's regions are at widely different levels of economic development, illustrated here by countries at various stages of development (Figure 2.1). The Bangkok Metropolitan Area is the best performer, with GDP per capita (in PPP (constant 2011 international USD) at levels similar to Poland and Hungary at around USD 25 000. The East follows closely with about USD 23 000 that places it between Latvia and Chile. The Centre also performs above the national average with a GDP per capita similar to that of Brazil or Algeria (about USD 15 000). Thailand's average of about USD 11 500 per capita is similar to Peru and Mongolia. The poorer provinces are the West and South, with about USD 7000 similar to Guatemala or the Philippines. The North and Northeast are significantly poorer and with levels of per capita GDP close those of Pakistan or Honduras in the case of the North (USD 4 400) and to that of Ghana or Zambia in the case of the Northeast (USD 3 700).

Bangkok and a few industrial and touristic hubs have been driving structural transformation. Between 2001 and 2015, the share of manufacturing activities increased in the Central region and now amounts to 63% of regional GDP.[1] In the same period, industry (including manufacturing and construction) minimised the role of the agricultural sector in the East, and in 2015 accounted for more than 50% of local GDP. Over time, the Bangkok Metropolitan Area has become a major pole of services, with trade, transport, real estate and business activities representing 54% of GDP – 10 percentage points higher than in 2001. In addition, some provinces in the South – namely Phuket and neighbouring areas – have become top destinations for global tourism.

Figure 2.2. Thailand's past urbanisation and growth path reflects similar global patterns of transformation

Evolution of GDP-urban share relationship for Thailand between 1990 and 2015
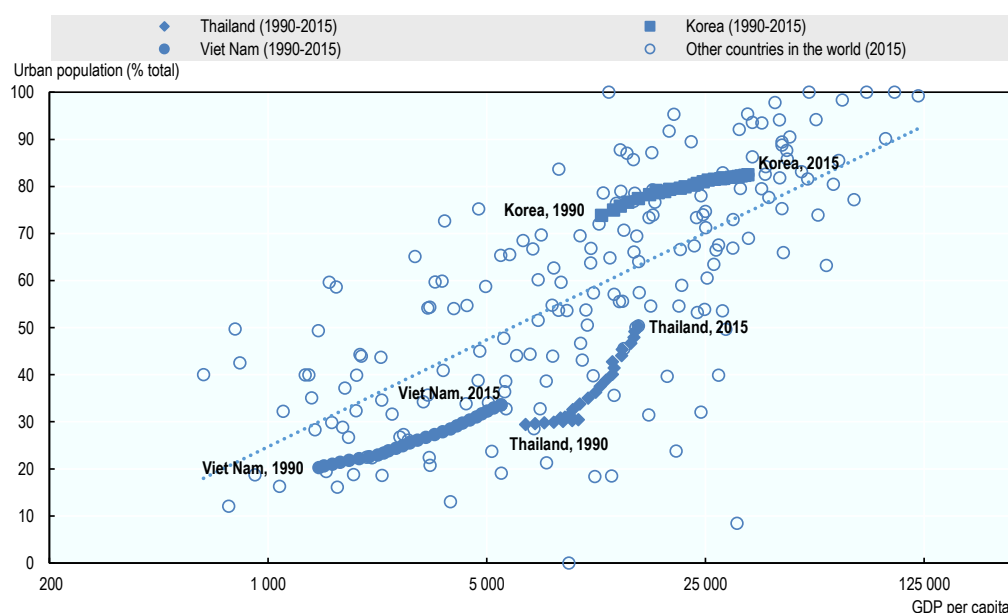
Note: Empty markers represent the share of the urban population and GDP per capita for countries for which data are available in 2015. The blue markers represent the same relationship but across time (from 1990 to 2015) for the three selected countries. For comparative purpose, GDP per capita is measured in PPP (constant 2011 international USD). *Source*: Authors' calculation based on (World Bank, 2017[2]).

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Thailand's experience of high population concentration corresponds to those of other countries at similar stages of structural transformation. Structural transformation refers to the creation of new, more productive activities and the reallocation of labour towards these new activities. In the early stages of a country's transformation, the creation of new, highly productive activities is necessarily concentrated in terms of space, as the capabilities and capital involved are very limited. Driven by these limitations, proactive development policies tend to reinforce concentration at this stage of development. Thus, these early poles of growth and transformation correspond to an urban centre where the elites of business, government and research are concentrated. This was the case in Viet Nam, South Korea and several other countries. Indeed, the profile of Thailand's urbanisation and corresponding growth fits well with global patterns (Figure 2.2).

The same trend is observed in Thailand's urban landscape, where urbanisation plays an important role in economic development, but remains highly concentrated in Bangkok. Because of their high density, cities are a fertile ground for economies of agglomeration and are conducive to a country's growth. Dense urban clusters facilitate the formation of networks and interactions that allow for a more dynamic flow of knowledge, experience and information (Henderson, 2005[3]; Annez and Buckley, 2009[4]; OECD, 2015[5]). At the beginning of the 1960s, one out of four Thais lived in urban areas. In 2015, for the first time, more than half of the population lived in urban areas and in 2017, 36 million people lived in cities. While one-third of these live people in Bangkok and the vicinity, no other urban cluster has more than 500 000 inhabitants.

Figure 2.3. Global patterns suggest that the large disparities between Thailand's regions pose a significant challenge on the path towards a high-income economy

Panel A. Thailand has one of the highest index of regional inequalities among OECD countries
Gini index of regional inequality, 2015

Panel B. High regional disparity is an obstacle to growth
Gini index of regional inequality, 2015

Note: The Gini index measures the degree of inter-regional inequalities. An index equal to 0 implies no inequality – all resources are equally redistributed across the country. An index equal to 1 implies extreme inequality – all resources are concentrated in only one region. The analysis is based on OECD regional typology, and in particular on regional inequalities among Territorial Level 2 (TL2) regions. TL2 broadly corresponds to the first tier of subnational government. For comparative purposes, TL2 regions in Thailand correspond to the country's 77 provinces. GDP per capita is measured in PPP (constant 2011 international USD). *Source*: Authors' calculations based on national accounts, as provided by NESDB.

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However, global patterns also suggest that the large disparities between Thailand's regions pose a significant obstacle to further transformation and must be addressed (Figure 2.3). As of 2015, Thailand's Gini index of regional inequality is significantly higher than that of most other countries at comparable levels of economic development. In fact, except for the

Russia, no other country for which these data are available, has achieved a higher level of GDP per capita with the same level of inequality between regions). With such high regional inequality, poorer areas struggle to develop their potential as opportunities and investments are lacking. At the same time, labour and capital markets in already advanced areas likely become saturated with an oversupply of workers and investments.

The track record of Thailand's provinces over the last decade suggests that, when supported well, convergence can become a powerful engine of development and unlock new sources of growth and transformation. Although their levels are lower, the poorer regions of Thailand have shown consistently higher growth in both production and productivity, since the beginning of the 2000s, than Bangkok (Figure 2.4). With the right policy mix, much more could be done to support further convergence and structural transformation.

Figure 2.4. Poor regions have grown faster than richer ones, displaying potential for convergence

Correlation between real GDP per capita in 2001 and the average GDP growth rate between 2001 and 2015, taking into account the relative size of regional GDP
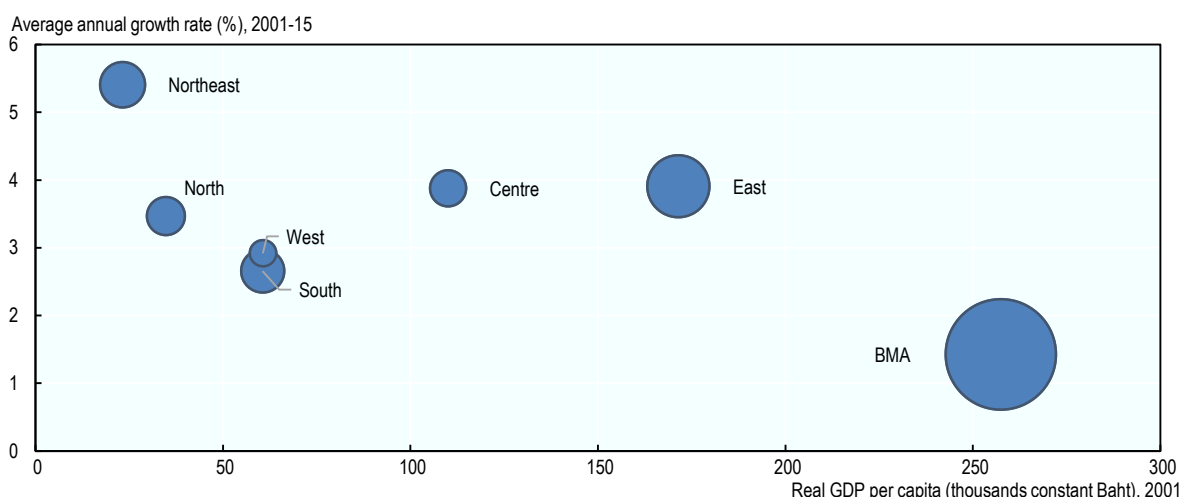
Note: Calculations are based on chained volume measure of real GDP per capita. The Compound Average Growth Rate (CAGR) is used to measure the evolution of real GDP from 2001 to 2015. The size of the circle is proportional to the share of regional GDP to national GDP.
Source: Authors' calculations based on national accounts, as provided by NESDB.

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The same holds for Thailand's secondary cities, which have grown faster than Bangkok and will play a key role in boosting regional development and Thailand's long-term growth potential more broadly. Over the past 17 years, growth in the Bangkok Metropolitan Area has not kept up with the overall increase in the urban population. As structural transformation spread from Bangkok, the Centre and the East towards the rest of the country, current and prospective workers in rural areas migrated to secondary cities, seeking better industrial and non-farm activities (Christiaensen and Todo, 2014[6]). In most developing and developed countries, large metropoles such as Bangkok are rarely the main determinant of a country's economic performance. Secondary cities help spread the linkages with global supply chains throughout the country, diversify the economic structure

and labour force, and offer alternatives to young workers searching for new and more remunerative opportunities (Frick and Rodríguez-Pose, 2018[7]). Their integration with surrounding rural areas plays an indispensable role in spreading the dividends of economic transformation to otherwise marginalised villages.

Policy makers need to learn from the best-performing provinces and cities, and target productivity, human capital and access to services. Productivity drives economic performance and enables rising incomes. The next section of this chapter examines past policies designed to develop Thailand's regions and assesses the resulting productivity landscape across regions. Given the limited available resources, these policies focused on a few areas of the country that showed rapid success. Going forward, more integrated regional policies that learn from the best local performers and provide flexible support will be necessary (section 3). An analysis of provinces at the productivity frontier points to superior human capital and urban public services as the distinguishing attributes of high performance provinces. Based on these insights, integrated regional policies will need to support cities as the centrepieces of integrated regional development policies (section 4) and focus on skills development as a tool of regional and urban policy (section 5). Section 6 reviews a possible toolkit of policies that could support regional integrated policies. More details are discussed later in Chapter 3. Aspects of this analysis are shared by the 12th NESDP, which provides several important policy suggestions (Box 2.1).

Box 2.1. Regional development and the 12th National Economic and Social Development Plan

The 12th National Economic and Social Development Plan (NESDP) identifies the concentration of economic activities in Bangkok and the Central region as the main source of disparities among regions. On this basis, it provides guidelines to boost spatial development along the three main policy axes analysed by this chapter: tailor-made regional agendas, urban development and human capital formation.

Regional development. The objectives set by the Plan are: a more equitable distribution of regional growth and economic opportunities, a reduction in disparities in terms of Gross Regional Product per capita, and a reduction in the Gini coefficient among regions. The Plan also identifies development strategies for six regions: the Centre, East, North, Northeast and South regions and the Bangkok Metropolitan Area. Moreover, the Plan envisages a spatial agenda building on current place-based policies, in particular the special economic zones and the Eastern Seaboard Areas. This chapter recommends moving away from traditional place-based policies towards "integrated regional policies". These polices are more flexible instruments to pursue socio-economic targets, resulting from consultation with local stakeholders in areas that transcend traditional administrative units.

Urban development. The 12th NESDP encourages provincial city centres to become liveable cities for all groups of people in society. It provides recommendations for the four main groups of existing urban centres: Bangkok and urban areas in the metropolitan vicinity, urban areas in Chiang Mai and Phitsanulok, urban areas in Khon Kaen and Nakhon Ratchasima, and urban areas in Phuket and Hat Yai. The current government also aims to enhance the infrastructure and capabilities of secondary cities, essentially to boost local tourism. This chapter recommends leveraging cities to unleash untapped local potential and promote integrated regional development. In addition, it proposes bypassing standard classifications of urban areas in favour of using innovative methodologies and big data to identify secondary cities.

Human capital formation. According to the 12th NESDP, the current education system does not provide pupils with the knowledge and skills that the labour market needs. Skills mismatch may ultimately lead to low-qualified and informal jobs. The Plan therefore recommends implementing improvements in educational quality through Dual Vocational Education and Co-operative Education, with a view to enabling the workforce to attain the requisite skills before entering the labour market. It also encourages the participation of regional universities and vocational institutions in the development of the local community. This chapter builds on the Plan's existing guidelines and further emphasises the need for regional universities to "localise" the services they offer. It provides recommendations on how TVET and regional universities can help shape students' skills and feed entrepreneurial initiative based on the socio-economic characteristics of integrated regions.

Source: NESDB (2017), National Economic and Social Development Plan, 2017-2021.

Past policies for regional development and structural transformation have created today's productivity landscape

Past regional policies: an overview

Regional policies date back to the 1970s and initially targeted Bangkok and the East. At the time, the Ministry of Industry created the Industrial Estate Authority of Thailand (I-EA-T) to manage industrial estates, areas where factories could cluster to benefit from fiscal incentives and favourable infrastructure. The first General Industrial Zones were created in the Bangkok Metropolitan Area – Pathum Thani (1971) and Bangkok Metropolis (1973 and 1979) – and Chonburi (1976). As of 2015, the East region has the highest number of industrial estates (23) followed by the Centre and West (19).

Strategies to create alternative industrial development areas outside the East and Centre followed in the 1980s. The fifth national economic and social development plan (1982-1986) promoted a place-based approach, identifying 24 centres in the outer regions to generate non-agricultural employment opportunities through increased investments, industrial promotion and strengthening of local fiscal capacity. The plan identified a few of these centres as priority targets: Chang Mai in the North; Khon Kaen and Nakhon Ratchasima in the Northeast; and Songkhla, Phuket, Krabi and Surathani in South. In the 1980s, the Thai government launched the Eastern Seaboard Development Programme following the discovery of natural gas in the Gulf of Siam at the end of the previous decade. The programme aimed to boost industries that use gas as raw material as well as related downstream industries in Chonburi, Chachoengsao and Rayong. In the 1990s, the Thai Board of Investments increasingly sponsored local or foreign investors that chose to settle in rural areas, promote export-oriented activities and transfer technology from abroad.

Past approaches to regional strategies gave rise to path dependence in productivity growth and affected regional productivity potential. Productivity gains from economic structural transformation were distributed unevenly across Thai regions. As of 2015, the regions that benefited initially from place-based policies were those that enjoyed the highest productivity levels. Output per worker varied from THB 497 000 in the Bangkok Metropolitan Area to THB 477 000 in the East region and THB 318 000 in the Centre. The other four regions scored relatively poorly compared to the best performers and the national average. The Northeast has remained the least productive region – in 2015, its productivity levels were approximately six times lower than those in the Bangkok Metropolitan Area, and almost three times lower than the national average.

Changes in sectoral composition and labour flows explain regional productivity growth

Thai regions have undergone major structural transformations, though along different paths. An examination of the evolution of sectoral composition between 2001 and 2015 highlights three different patterns of structural transformation (Figure 2.5). The service sector in the Bangkok Metropolitan Area grew stronger. The transport and storage and real estate sectors expanded, mostly at the expenses of hotels and manufacturing. In the Centre and East, manufacturing gained an even larger role in the local economies. The other regions have a more diverse economic structure. Agriculture remains important in the Northeast and North, although manufacturing is on the rise alongside the financial sector. In the South, the tourism industry has increased its share in regional GDP by 8 percentage points, while the primary sector has shrunk but still accounts for more than 20% of regional GDP. The West is the least dynamic region: the shares of agriculture and manufacturing remain unchanged, while utility provision has assumed more importance.

Box 2.2. Breaking down labour productivity growth through shift-share analysis

Labour productivity growth between two points in time (2001 and 2015 in this chapter) can be broken down into within-sector productivity growth, the reallocation level effect (or *shift-effect*) and the reallocation growth effect (or *cross effect*).

The **within-effect** captures an increase in aggregate productivity due solely to productivity gains in individual sectors.

The **shift-effect** captures changes in overall productivity that stem from a shift of labour between 2001 and 2015 from sectors that were less productive in 2001 to sectors that were more productive (in which case the effect is positive), or from high productive to less productive sectors (in which case the effect is negative). It therefore does not factor in within-effect productivity gains.

The **cross-effect** combines the first two effects and measures the shift of workers towards sectors that are growing in their productivity. A positive cross-effect indicates a reallocation of workers towards increasingly more productive sectors (or away from less productive sectors). A negative effect, instead, captures the misallocation of workers in sectors that are losing productivity momentum.

Figure 2.5. Thai regions have undergone major structural transformation

Sectors that make up 80% of regional GDP, 2001 and 2015
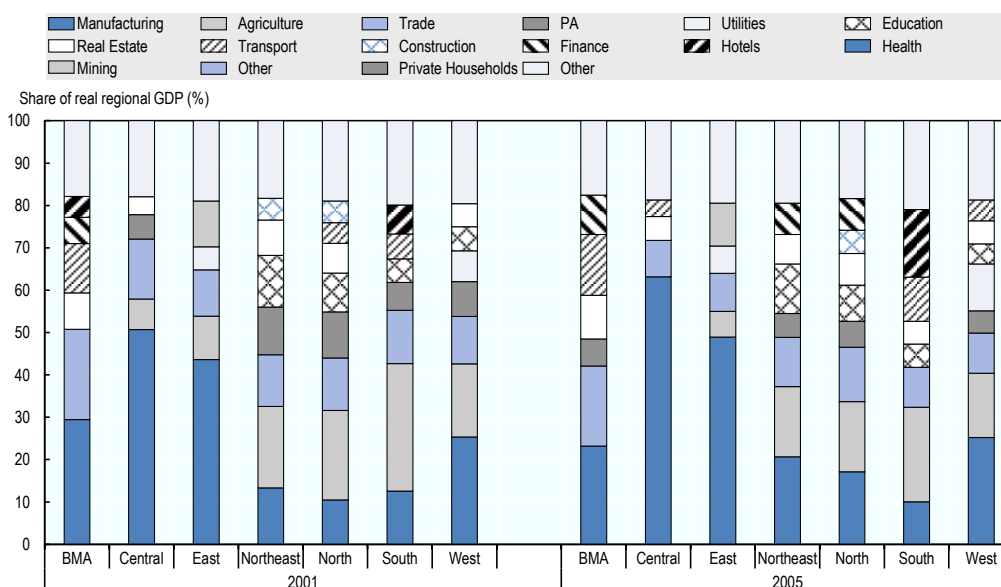
Note: Sectoral shares are based on real regional GDP (chained volume series). The definition of sectors is based on the International Standard Industrial Classification (ISIC Rev. 3.1). The category "Trade" includes wholesale and retail trade. "PA" stands for Public Administration. "Utilities" include electricity, gas and water supply. The category "Real Estate" indicates renting of machinery and equipment, and business activities.
Source: Author's work based on national accounts, as provided by the NESDB.

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Figure 2.6. Regions that lag behind displayed major improvements in overall levels of productivity between 2001 and 2015
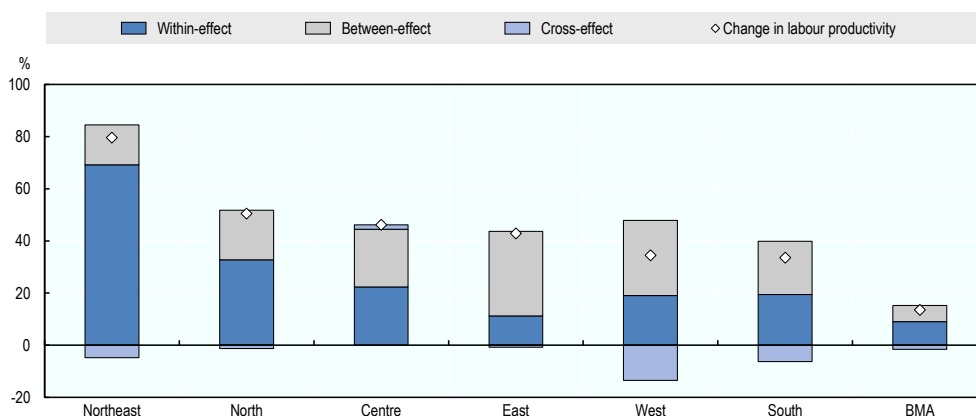
Note: Calculations are based on regional GDP in real terms. Box 2.2 provides details about the within, between and cross effects.
Source: Authors' own calculations based on national accounts, as provided by the NESDB.

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Analysis of sectoral composition and labour flows can serve as a useful tool to understand patterns of regional development (Figure 2.6). The productivity of a country can be decomposed through a shift-share analysis, which isolates the effects of within-sector innovation and labour flows across sectors on productivity growth (Box 2.2). This enables the identification of roles that economic activities play in attracting investments and workers, ultimately defining the patterns of development of each Thai region.

In the Northeast, within-sector productivity growth in the agriculture and manufacturing drove regional productivity growth. In particular, the Northeast produced a notable successful story of complementarities between sectors. In 2004, General Industrial Zone One was established in Nakhon Ratchasima. The new industrial estate attracted factories and investments for the production of electronic components and, most of all, parts of vehicles made of natural or synthetic rubber. Despite the challenging climate, which is characterised by dry seasons, the Northeast has become the second largest region in terms of processed rubber production, accounting for 20% of the 2016 production - or 808 432 tonnes. Government promotion coupled with research and development fuelled the spreading of rubber in the area. Indeed, since the beginning of 2000s, Thai governments have supported the cultivation of rubber to replace traditional crops that were no longer competitive on global markets – such as rice (Sakayarote and Shrestha, 2017[8]).[2] Moreover, innovative techniques in the 1980s and 1990s facilitated the cultivation of rubber even in otherwise unfriendly environments, such as the North.

In spite of outstanding progress, environmental unsustainability, informality, cross-border competition and demographic flows can undermine catch-up potential in the Northeast. The agriculture sector still employs half of the workforce in Thailand. In addition to the precarious nature of the jobs, the sector might be exerting an increasingly heavy toll on the environment. In the fastest growing province of the region – Nong Khai – 76% of new rubber plantations are located in environmentally unsuitable marginal areas and threaten biodiversity conservation, watershed functions and environmental sustainability (Sakayarote and Shrestha, 2017[8]). One-third of the workforce is employed in the trade and construction industry, two of the least productive sectors. The large majority of workers in those sectors have precarious jobs (61% of trade workers and 74% of construction workers). Nong Khai and neighbouring provinces have benefited from trade and capital from the near Lao PDR. The development of six new special economic zones (SEZ) in Lao PDR, just across the border and around Vientiane, could represent a new opportunity for cross-border trade, but also a challenge for the capacity of local enterprises to attract investments. Finally, the number of workers in the region decreased by 3% between 2001 and 2015. One possible explanation is labour outflows – especially young workers: between 2004 and 2013, the Northeast had the second highest average migrant outflow.[3]

In the North, special economic zones boosted manufacturing productivity in a few provinces, leaving others behind. The North exhibits similar development patterns to the Northeast. Until the 1970s, agriculture dominated in the region. Manufacturing activities were scattered across small-scale companies, while products were rudimentary and had low export-potential. Since the 1980s, the establishment and consolidation of special economic zones in the Lampun Province has catalysed investments in the local manufacturing industry, turning the area into a major regional trade hub. The Lampun Province (and in particular Chiang Mai and the surrounding areas) has attracted the majority of economic activities in the region, but has not resulted in development in peripheral areas (Glassman and Sneddon, 2003[9]).

In the West, misallocation of labour offset within-sector productivity growth. As in the Northeast, manufacturing and agriculture – which together represent 40% of regional GDP – have experienced a significant increase in labour productivity. However, the negative cross-effect shows that workers did not move into the most dynamic sectors. In the fastest growing province of the region (Ratchaburi), the share of workers in the primary sector dropped by 10 percentage points to 30%, while in manufacturing it decreased by only 2 percentage points to 19%. Conversely, the share of provincial employment increased, although only slightly, in a battery of other mostly non-tradable sectors (like utilities) and in trade services.

A lack of coherent regional policy in the West may explain the misallocation of the regional labour force. Regional policies have traditionally overlooked the West, probably because of its proximity to more important sources of growth. Only three industrial estates have been created in the region, compared to 23 in the East and 16 in the Centre and the Bangkok Metropolitan Area.[4] Moreover, these estates may not have yet started to attract labour force and investments. As discussed later in the chapter, 2015 satellite data suggest that the region has the lowest number of urban clusters. One of these, Ban Phrachedi Sam Ong, stretches along the border with Myanmar. The region may then rely on cross-border local trade, fuelling further non-tradable and highly informal services. The other two urban clusters are in proximity to the new industrial estates. Should good cross-connections and collaboration between these cities and industrial estates materialise, the potential for growth and positive agglomeration effects is significant.

In the South, a shrinking primary sector has given way to a rising tourism sector and related services. As in the West, the shares of manufacturing and agriculture in regional GDP in the South have shrunk significantly (from 30% to 22% and from 13% to 10%, respectively). However, contrary to the West, the South has developed alternative sources of employment in hotels and restaurants. The share of the tourism sector in regional GDP increased from 10% in 2001 to 16% in 2015, as did sectoral productivity, while the employment share remained stable at 8% in both years.

The rise of the Southern tourism sector poses some social and environmental challenges. First, almost half of the employees in hotels and restaurants are still informal, and therefore lack systematic insurance against unemployment and the seasonality that the job in the sector entails. Second, if not regulated well, tourism may threaten the eco-sustainability and biodiversity of the area. It may moreover place a strain on local watersheds, thereby crowding out precious resources for a still large agricultural sector. Finally, the rising tourism industry has favoured the creation of ancillary activities in low-innovative and non-tradable sectors such as construction and retail trade. Both environmental costs and the proliferation of vulnerable jobs may eventually offset the beneficial effects of a thriving tourism industry.

The Centre and East regions have experienced a pronounced shift of workers towards more productive sectors. Past industrial policies in the Centre and East drove the reallocation of the labour force towards increasingly productive sectors in the regions. In the 1990s, the Centre and the East were already the most highly industrialised regions due to investments in manufacturing and natural gas industries (Kaothien, 1991[10]). Today, provincial productivity builds on those industrial policies and, most of all, on the high-quality infrastructures that followed. Regional highways link the central and eastern provinces to Bangkok, while deep-sea ports (e.g. Sattahip, Laem-Chabang and Map Ta Phut) and local airports (Utapao) connect the area to global markets and value chains. Finally, provinces enjoy broad access to electricity, water and telecommunications.

Moving towards more broad-based and innovative regional development policies

Thailand is continuing to invest in place-based policies. In accordance with its "Thailand 4.0" agenda, the government announced the Cluster-based Special Economic Development Zones Policy in September 2015. The new clusters provide fiscal advantages to resident firms that are active in agro-processing, textiles and garment industries, and rely on advanced technologies. New SEZs have been surging in strategic provinces, especially on the border with neighbouring countries.

The Thai government has moreover allocated THB 1.5 trillion to the development of the Eastern Economic Corridor (EEC) and intends to develop a Southern Economic Corridor (SEC). By 2021, the EEC will have attracted further investments in Chachoengsao, Chonburi and Rayong, all located in the East. The ultimate objective is to transform the area into a hub of technological manufacturing and services, well integrated with neighbouring ASEAN countries. The state has committed to equip firms that operate in the new clusters and in the EEC with public utility and infrastructures crucial for investment projects. These projects include industrial estates, electricity, water supply, transportation and educational institutions at all levels. The SEC aims at making four southern provinces, namely Ranong, Surat Thani, Nakhon Si Thammarat and Chumphon, the gateway to the West, the Royal Coast and the Andaman Sea. According to the government's guidelines, the SEC would specialise in producing and processing agricultural and bio-products, with particular regard to the conservation of the local ecosystem. Tourism and transport infrastructure, including ports and railways, will be additional pillars.

Moving beyond corridors and SEZs, Thailand wants to embark on a more comprehensive agenda for innovative regional development, focusing on the particular strengths and capabilities of each region. In December 2017, the government entrusted the National Economic and Social Development Board (NESDB) with the review and rationalisation of existing spatial policies as part of more comprehensive regional development plans. These plans will focus on bringing to the fore the particular strengths of each of the six regions and coordinate local and national planning.

Innovative regional development strategies must be multidimensional, flexible and driven by local discovery and ownership

The new agenda for regional development must balance economic, social and environmental objectives. Past interventions aimed at boosting development in Thailand's regions have strongly focused on economic objectives. While these direct objectives were often achieved, many projects paid insufficient attention to social and environmental needs and missed the opportunity to create more balanced development (Glassman and Sneddon, 2003[9]). Future strategies for innovative regional development should aim at combining a broader set of objectives, including particularly social cohesion and environmental sustainability. This will ensure that synergies and trade-offs between these different objectives are taken into account. The right mix between socio-economic and environmental objectives may vary across the country. For this reason, prioritisation of objectives cannot be an exclusivity of the state planner. Local administrators, private sector and citizens should interact to identify how to pursue economic, social and environmental objectives in combination and in service of the common interest.

Getting regional development planning right will require placing local innovation and discovery in the driver's seat. Economic development is essentially driven by a process of discovery; discovery of new products, of new markets, of methods production, of

technology, of forms of collaboration and many more. Mastering this process of discovery at each level (national, regional, local) is key to successful economic development and continued productivity and employment growth. For the regional level, the overarching lesson from the 'smart specialisation' agenda and past attempts at regional development in the European Union and elsewhere is that this process of discovery must be driven and mastered by local and regional actors (Box 2.3). The role of government intervention is important but it is subsidiary. Policy intervention is required not to select the areas or activities for investing public resources but to facilitate and support the discovery process (OECD, 2013[11]). Thailand's new agenda for innovative regional development should thus focus on facilitating discovery by regional and local actors.

Box 2.3. Smart specialisation strategy in the EU and the case-study of Portugal

Specialisation and diversification are keys for regions to upgrade by levering local economies of scale and of scope. For this reason, "smart specialisation" strategies are at pillars of the European agenda of innovation, Europe 2020. Through these strategies, European institutions encourage regions to differentiate themselves and to specialise in sectors where they have a comparative advantage.

Portugal is one of the first countries to have put in place a smart specialisation strategy. The strategy had three main components: experimentation, constant involvement of local actors and complementary support of public institutions.

The country has been piloting smart specialisation policies - such as education, health or social inclusion – in selected areas. These policies target well-defined territories, pursue clear and transparent goals, are constantly monitored and evaluated, and their performance is advertised to the public. Once successful, these policies are scaled up and disseminated.

The constant involvement of local stakeholders is fundamental for the process of discovery of local potential. In the Algarve region, for example, the design of the regional smart specialisation strategy involves 90 % of the region's enterprises, all research centres as well as other entities. Local stakeholders are organised in working groups, or "Innovation platforms". These platforms identifies regional innovation gaps and set the goals of innovation strategies. The platforms coordinate relevant actors, facilitate the identification of projects and investments needed, and design potential action plans.

Secondary cities were particularly fertile ground for the development of innovation platforms. As urban areas, they guarantee physical proximity and clustering of entrepreneurs, workers and other association. As bridge between metropolis and the hinterland, they reach out to rural residents more easily, thereby ensuring full ownership of the specialisation strategies.

With smart specialisation strategies, the role of the State has been evolving. Central agencies do not only catalyse private investments anymore. They are instead responsible for building an ecosystem conducive to innovation. The implementation of strategy needs public authorities to identify, evaluate and support emerging lines of regional specialisation through investments in infrastructures and local capabilities.

Source: (European Commission, 2016[12]; Ramos and Rosa, 2018[13])

The process and instruments for innovative regional development should be performance-based, flexible and reflect the specific needs and capabilities of each region. Placing local

discovery and ownership in the driver's seat of innovative regional development requires an open process that is adaptable to the needs and capabilities of each region. More advanced regions might require less in terms of direct support and can be supported simply with mutually agreed performance targets and related instruments. Areas with lower capabilities might require more in terms of direct assistance and a stronger level of oversight to ensure accountability (OECD, 2018[14]). Thailand should thus aim to build flexibility into its future innovative regional development agenda. Initial experimenting with different approaches for different regions could be an option. Strong evaluation and performance measurement frameworks must be built into all approaches from the beginning and should be widely accessible to guarantee transparency, as a key building block of local ownership.

Similarly, the geographic scope of regional development policies should be flexible and focus on functionality. The current definition of regions in Thailand seems to primarily serve a classification and statistical purpose. No administrative regional layer exists. This offers the opportunity to include flexibility in the definition of regions for the new strategies. Data analysis can help to identify the most functional clusters of provinces for regional strategies. Similarly, at the level of cities, commuting and other flows may overstep existing administrative boundaries, requiring a move towards functional urban areas to overcome administrative fragmentation and provide integrated solutions to fast urbanisation (section 2.5). Functional areas may involve different provincial clusters and change over time. Neighbouring administrations that do not find co-ordination over specific issues particularly necessary today, may find it advantageous in the face of future global trends and shocks.

Local discovery processes should be supported with data analysis to profile regions and provinces, assess potential and detect bottlenecks. Identifying each region's best performing province with regards to productivity, for example, allows to classify other provinces as "converging" or "diverging" and develop specific objectives. Alongside data analysis, central government and local stakeholders should consult continuously through surveys and workshops. Surveyed firms, workers and citizens should identify strengths, weaknesses, opportunities and threats to local development. Foresight exercises can help all stakeholders to develop a shared vision of the future.

Building on local best performers as a guide for innovative regional development policy

Identifying best performers on the basis of productivity can be a useful method to set objectives for regional economic development. The new regional development policies can benefit from a systemic assessment of the performance of provinces relative to neighbouring "champions". What follows is a possible classification of Thai provinces based on their labour productivity growth. In each of the six regions, a regional "productivity frontier" is derived from the average output per worker of the top 10% most productive provinces within the region. The compound average growth rate (CAGR) of provincial productivity between 2001 and 2015 is the measure of convergence towards the regional frontier. A province converges towards the regional frontier if the provincial CAGR is higher than that of the frontier. Conversely, a province diverges from the frontier if the provincial CAGR is lower than that of the frontier.[5]

The convergence-divergence analysis shows that most provinces at the frontier have inherited industrial estates from the 1980s. Most regional frontiers are host to long-lasting and important industrial estates.[6] Rayong (East) is the most productive province in

Thailand, and hosts the Map Ta Phut industrial zone – the most recent of the Asian industrial estates – which focuses mostly on processing natural gas and related products, and functions as the cornerstone of the new Eastern Economic Corridor. Ayutthaya (Centre) is the second most productive province in the country and benefits from major industrial estates in the Hi-Tech sector. Rayong and Ayutthaya also attract a significant proportion of investments in the automotive industry in Thailand. Nakhon Ratchasima (Northeast), Ratchaburi (West) and Chiang Mai (North) share similar features. Moreover, all these regions have displayed a positive average growth rate between 2001 and 2015.

In some cases, agriculture, education and tourism have pushed some provinces to the frontier. Some provinces at the frontier do not directly benefit from long-lasting industrial and regional policies. Rather, their productivity levels rely on outstanding performance in the primary, education and tourist sector. Kamphaeng Pet (North) has the largest plantation of tapioca in the country and may have benefited particularly from rapid increase in the volume of trade of this root. Khon Kaen (Northeast) hosts one of the top 10 universities of the country. Tourism has been an important driver of productivity growth in the Southern frontiers of Phuket and Krabi. However, the South is the only region where the productivity frontier actually shrank between 2001 and 2015, possibly because of the rise of less productive ancillary activities.

The majority of provinces are catching up, but the gap with those lagging behind is widening. From 2001 to 2015, labour productivity in provinces at the regional frontier grew on average by 2.5% per year. Lagging provinces have fallen further behind the frontier, as their productivity grew only by 1.3% per year. The average productivity in diverging provinces was only 30% of that of their respective regional frontier province. Converging provinces, on the other hand, grew faster than the respective regional frontier provinces (around 3% per year). The gap with the best regional performers increased only by 2% and the 2015 average productivity in converging provinces was 44% of that of the frontier (up from 35% in 2001).

The Northeast and East stand out in terms of convergence of provinces. Most of the top 20% fastest converging provinces in Thailand are located in the Northeast (Figure 2.7). In the East, all provinces are converging towards the frontier. However, convergence does not happen at the same rate everywhere. Productivity in the first two fastest converging provinces – Chachoengsao and Prachin Buri – is growing at rates respectively 4.5 and 3 percentage points higher than the third best performer in the region. On top of existing place-based policies, the East may need complementary measures to ensure that productivity gains from existing engines of growth spill over onto the respective vicinities.

**Figure 2.7. Eastern provinces are converging but at different rates, northeastern provinces
are keeping pace with the regional frontier and the southern frontier is losing productivity**
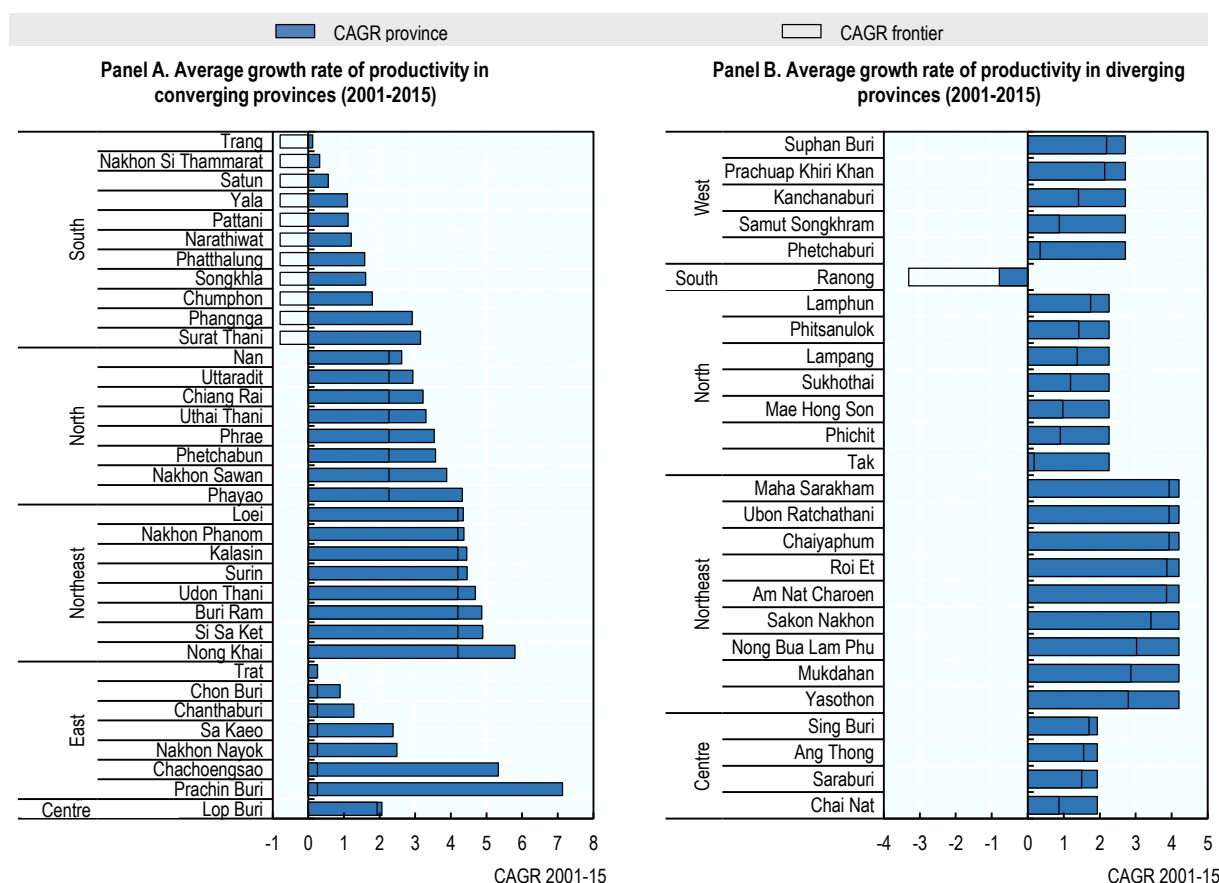
Note: Calculations are based on real GPP. The regional frontier is the average output per worker among the top 10% most productive provinces in a region. Convergence (or divergence) status is based on the compound average growth rate (CAGR) of provincial productivity between 2001 and 2015. Bangkok is not included in the sample.
Source: Authors' calculations based on national accounts, as provided by the NESDB.

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A convergence-divergence analysis to identify the distinguishing attributes of high-performing provinces

Human capital and access to public services emerge as key differences between provinces that perform well and those that lag behind. Once regional frontiers and the potential for productivity growth are identified, integrated regional policies need to address obstacles to growth. In particular, they should address endogenous factors that prevent lagging provinces from converging towards the best regional performers. The analysis below reveals two main differences distinguishing frontier from lagging provinces and converging provinces from diverging ones: human capital and access to services (Figure 2.8).

Figure 2.8. Human capital and access to adequate services drive provincial convergence towards the regional frontier

Odds ratio of being a frontier or converging province with respect to being a diverging province

Panel A. Frontier vs. Diverging

Panel B. Converging vs. Diverging
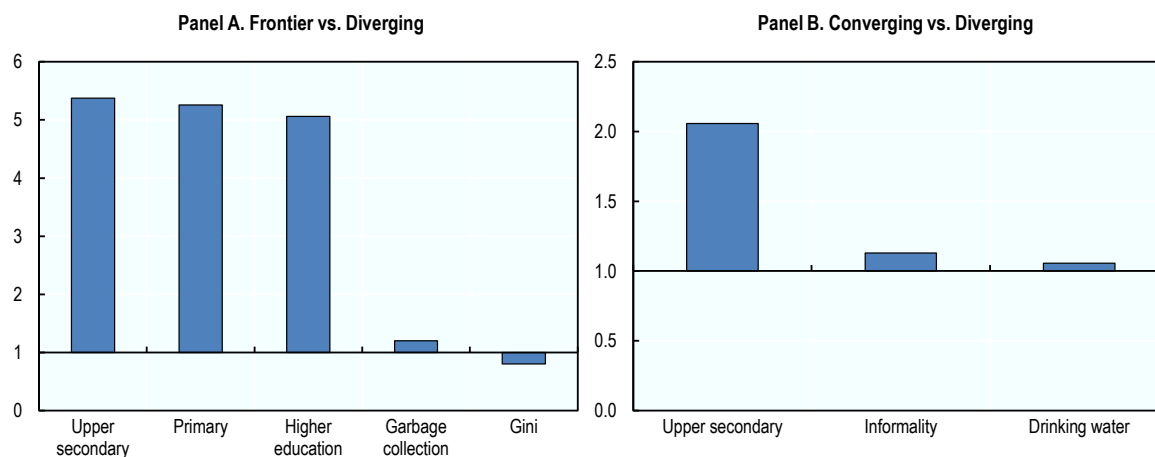
Note: Each bar represents the odds ratio of being a frontier province with respect to being a diverging province (Panel A), or of being a converging rather than a diverging province (Panel B), for an increase in the variable of interest. For example, a 1-percentage point increase in the share of workers who attained upper secondary education implies a two-fold increase in the probability that a province converges rather than diverges. Contrariwise, an increase by 1 unit in the Gini index implies a decrease in the probability that a province lies at the frontier rather than being among those provinces that diverge.

Odds ratios were obtained through a multinomial logit model where the dependent variable is the logarithm of the ratio between the probability of being at the frontier (or converging) and the probability of being a diverging province, given a set of ten control variables including workers' education attainment; share of households with access to garbage collection and drinkable water; Gini index of household inequality; and share of informal workers. Only odd-ratios that are statistically significant are shown.

Source: Authors' calculations based on microdata from Household Survey 2015.

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Access to water and waste disposal services sets frontier and converging provinces apart from those that lag behind. Access to adequate sources of drinking water in municipal areas are significant determinants of convergence with respect to divergence (Figure 2.8, Panel B). Contaminated water, for example, can cause water-borne diseases that threaten children's health, their school participation and potentially their prospective professional opportunities (Miguel and Kremer, 2004[15]). Poor-quality water moreover imposes an extra burden on already limited budgets of poor households. Instead, access to adequate garbage collection and disposal in municipal areas makes provinces increase the likelihood of provinces lying at the frontier rather than diverging. Inadequate waste disposal may threaten the viability of roads and infrastructure that workers or students use every day to commute to their workplace or schools. If burnt, garbage can pollute air and cause respiratory diseases. High-density urban clusters tend to amplify these negative externalities from lagging access to services.

The level of access to basic public services is of particular importance for the performance of cities across Thailand. Thai household surveys show a positive return in terms of salary and monetary income for households living in secondary cities (Table 2.1). The average labour income for households outside Bangkok is 11% higher in urban centres than in rural areas. However, the "urban wage premium" varies across regions, and is significantly

negative in the Centre and Northeast. However, access to drinking water and garbage collection smoothen the negative returns from living in urban areas in all three regions. In fact, the urban wage premium is positive (and increasing in access to services) in the North, where there are two already well-developed urban areas: Chiang Mai and Chiang Rai.

Lower attainment in upper secondary and higher education undermines convergence. Comparisons between frontier and lagging provinces show that provincial human capital endowments matter in two ways (Figure 2.8, Panel A). Provinces that converge towards the frontier have a higher share of workers who attained upper secondary education than diverging provinces, while almost 30% of the workforce in laggard provinces have never completed primary school. At the same time, provinces at the frontier have higher a share of workers who have completed tertiary education than in other provinces.

Thai education strategy should focus on better localising vocational training and universities. A secure and inclusive economic transition depends on the capacity of Thai provinces and regions to upgrade the skills of their labour forces and to generate innovation. Expanding access to upper secondary is crucial for diverging provinces to catch up. In general, 42% of the Thai labour force have completed at most lower secondary education. Thus, strengthening TVET institutes at the upper secondary level helps to build a better-skilled labour force, especially if these schools tailor their coursework to local labour market needs. Better skills would in turn lead to better jobs and higher productivity levels (OECD, 2016[16]). Well-developed universities contribute to attracting R&D investments that could bring innovation and benefit first the local community. Section 2.5 provides policy recommendations to enhance vocational training institutions and universities in Thailand.

Table 2.1. Access to services increases income among urban dwellers

	(1) All regions	(2) East	(3) West	(4) South	(5) Northeast	(6) North	(7) Centre
Urban = 1	0.11***	-0.15	0.03	-0.16	-0.16***	0.19*	-0.22***
Electricity	0.65***	0.91**	-0.30	0.49*	0.79*	1.21***	2.02***
Drinking water	0.31***	0.24***	0.41***	0.26***	0.24***	0.48***	0.24***
Garbage collection	0.2***	0.21***	0.13*	0.05	0.19***	0.21***	0.23***
Adequate sanitation	0.69***	0.81	0.92***	1.05**	0.21	0.88**	0.63
Urban x Drinking water		0.14	-0.11	0.26*	0.30***	-0.15	0.16*
Urban x Garbage collection		0.12	0.18	0.16*	0.11*	0.08	0.11
Regional dummies	Yes	No	No	No	No	No	No

Note: The dependent variable is the logarithm of monetary income as reported by the Households' Socio-Economic Survey (2015). NSO does not distinguish between urban and rural areas, but rather between municipal and non-municipal areas. Hence, "Urban" is a dummy that switches on for households living in "municipal" areas. Interactions were included between the "urban dummy" and a variable capturing the share of households with access to adequate services, namely drinking water and garbage collection. A positive coefficient associated with the "urban" dummy means that salary is higher in municipal areas than in non-municipal areas. A positive coefficient of interaction between the "urban" dummy and access to services implies that urban salaries increase with access to services.
Source: Authors' calculations based on the Households' Socio-Economic Survey, 2015.

Secondary cities as engines of growth outside of Bangkok

Cities attract talent and economic development. Data and the relevant literature show that cities function as important engines of development across a territory. They attract firms and workers, and thereby decrease the cost of matching skills with the needs of enterprises in the labour market. Cities facilitate knowledge sharing and provide a vibrant environment to innovate and experiment. Hence, they help to retain the young and educated in regions that they would otherwise leave, leading to the depletion of human capital (Frick and Rodríguez-Pose, 2018[7]). Therefore, although Thailand's population is ageing and decreasing in size, more educated young people will make up the core of Thailand's future workforce. The distribution of education across municipal and non-municipal areas in Thailand testifies to the attractiveness of cities for educated workers (Figure 2.9).

Figure 2.9. Urban areas attract educated workers

Distribution of urban population aged 15-60 by level of education
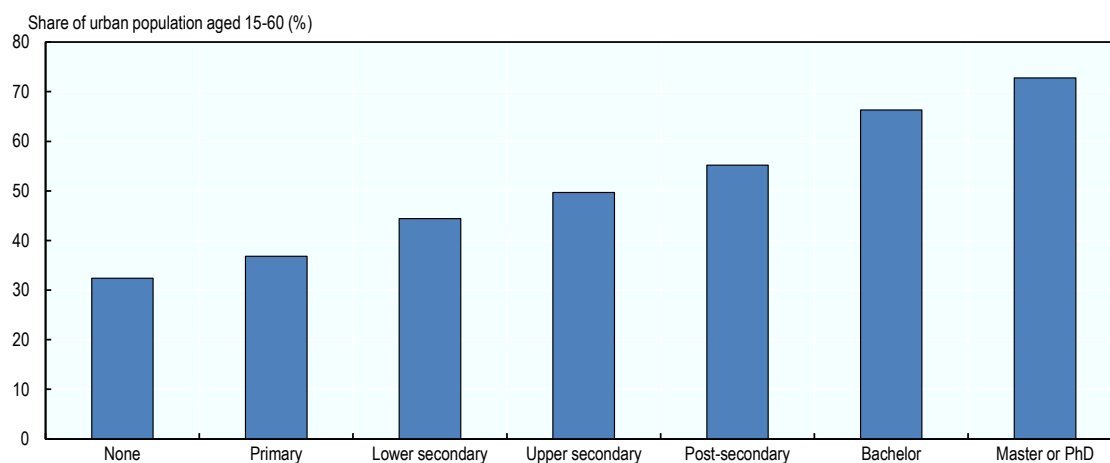
Note: The category "None" includes workers that have neither started nor completed primary education. "Urban" population indicates the share of population in a region that lives in municipal areas, as defined by the National Statistical Office.
Source: Authors' calculations based on the Informal Employment Survey (2016).

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Secondary cities can generate new opportunities for regional development in Thailand, but need the appropriate infrastructures (Box 2.4). For decades, Bangkok has been the main destination for Thais looking for better jobs outside of rural areas. As the capital grew, the cost of life in Bangkok increased, roads became congested and services became overcrowded. More recently, Thais have begun to return to rural areas, while others seek a better life and job opportunities in secondary cities (Figure 2.10) (OECD/UNESCO, 2016[17]). Small cities may therefore play an increasingly important role in the regional economy and should be used as leverage for regional development plans – especially in provinces that are converging to or diverging from the regional frontiers. For continued urbanisation to generate growth, cities need urban infrastructures able to absorb an increasing number of urban dwellers. If not, economies of agglomeration usually associated to cities could turn into negative externalities, undermining local well-being and growth.

Box 2.4. What are secondary cities?

The term "secondary cities" (or "intermediary" cities) was first coined in the 1980s by academics investigating the interaction between urban and rural economies. The characteristics of secondary cities vary with the national context and there is no global consensus on a standard definition. Traditionally, a secondary city would have a population or economy ranging in size between 10% and 50% of a nation's largest city.

Cities Alliance, a joint World Bank and UN-Habitat initiative, classifies secondary cities into three spatial categories. "Subnational cities" are significant economic poles outside of the capital. "City clusters" are town cities that usually locate within 50 km of large metropolitan cities and where firms tend to relocate. "Corridors cities" are cities that develop along major transport corridors.

In Thailand, the third National Economic and Social Development Plan (1972-1976) acknowledged the over-concentration of economic activities in the Bangkok area. As a result, national urban policies aimed at restraining migration from rural areas to the capital. In order to compensate for Bangkok's primacy, the fourth plan (1977-81) stressed the development of regional cities as centres for the development of industrial and commercial activities. The enthusiasm for secondary cities was short-lived, however, and the sixth plan (1987-91) focused rather on governing the overwhelming expansion of the Bangkok Metropolitan Area and developing satellite cities around the periphery. The 12th NESDP envisages policies to strengthen the tourism capabilities of secondary cities, but does not outline a more systematic urban development plan.

Source: (Rondinelli, 1991[18]) and (Roberts, 2014[19])

Integrated regional policies can prepare secondary cities for future urbanisation flows. The contribution of integrated regional policies would be twofold. First, their scope would be independent of traditional administrative boundaries and endogenous to the policy process. For example, as a secondary city sprawls, the pool of users of urban infrastructure may stretch across several pre-existing local administrations. If policy makers base their decisions on those administrative borders, they may overlook the need for integrated networks of services. Integrated regional policies would instead address citizens in the peripheries that would otherwise be at risk of marginalisation. Second, integrated regional policies set socio-economic objectives for urban development that are context-specific. A clear definition of urban areas in Thailand and co-ordinating mechanisms across local administrations are two preconditions for integrated regional polices that well serve secondary cities.

Figure 2.10. Secondary cities are attracting more people

Comparison between the evolution of urban population in the Bangkok agglomeration and the evolution of urban population in secondary cities

Note: "Urban population outside of Bangkok" measures the share of urban population in the capital. "Urban population in secondary cities" measures the share of urban population outside of Bangkok. In 2000 (reference year for the comparison), 6,395,429 people lived in Bangkok, 32% of the urban population. In 2017, the figure increased to 9,898,653 (29% of the urban population).
Source: Authors' work based on (World Bank, 2017[2]).

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Shaping the definition of cities with the help of satellite data

Secondary cities need a clear definition for better urban policies. Thailand divides the country into urban and rural areas according to purely administrative criteria. However, in fast urbanising countries, the boundaries of cities evolve faster than administrative borders. As a result, the traditional distinctions of urban and rural areas may fail to capture the actual urban extent of some areas (Keola, Andersson and Hall, 2015[20]). Secondary cities in Thailand should be defined as a function of the actual pool of users that use (or would use) urban infrastructures. This could be followed by a possible identification of these "functional urban areas", using population densities and the extent of built-up area from satellite data to identify both urban cores and the hinterlands, where workers may settle. Relevant government agencies could integrate this analysis with data on travel-to-work flows to identify more precisely the peripheral labour markets that are effectively integrated with the cores (Box 2.5).

Box 2.5. Using satellite data and travel-to work flows to define "functional urban areas" in Colombia

Under certain conditions, cities can contribute to a country's productivity growth and become its main growth engines. Successful cities provide universal access to basic public services and are efficient labour markets were the costs of matching demand and supply of skills is minimised. Importantly, urban planning of successful cities take into account both residents and daily commuters. These commuters often live outside of the city, in the periphery or in other administrative units. If cities and neighbouring towns do not cooperate

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or if the flows of commuters is underestimated, administrative fragmentation can jeopardise labour markets efficiency.

This is the case in Colombia. One of the reason behind Colombian cities' underperforming productivity is the inadequate transport infrastructure that connects cities with their outskirts. Transportation costs are higher, it takes more time and resources to match demand and supply on labour markets, and well-being is ultimately affected.

The OECD, in collaboration with the European Union, proposed a new definition of Colombian cities – the Functional Urban Areas (FUAs) – that go beyond the traditional administrative borders and take into account the commuting flows. This measurement is moreover standardised across countries, allowing for international comparison of urban policies.

The identification of Functional Urban Areas in Colombia consists of three main steps.

Identification of contiguous densely inhabited city centres. Colombia's territory is first divided into a grid with cells of 1 km2. The Global Human Settlement Layer (GHSL), combined with satellite data on built-up area and information from latest census, provides an estimation of the population in each of these cells. The identification of city centres follows three steps: i) all grid cells of 1 km2 with a density of more than 1 500 inhabitants per km2 are selected; ii) high density clusters are defined as an aggregation of continuous high density 1 km2 grid cells. Only the clusters with a minimum population of 50 000 inhabitants are kept as a high density cluster; iii) an urban core is made up of contiguous municipalities (based on 2005 boundaries) that have more than 50% of their populations living within "high density" cells.

Identification of interconnected city centres that are part of the same functional area. Based on the commuting data derived from the 2005 census, 10 cities over a total of 59 (identified in step 1 above) are highly interconnected. Based on the OECD-EU methodology, two city centres are considered integrated and thus part of the same urban system if more than 15% of the population of any of the city centre commutes to work in another city centre.

Definition of the commuting zone of the FUA, linked by commuting flows to the city centres. In order to delineate the extension of the commuting zone, municipalities were assigned to each city centre if at least 15% of the population in the municipality goes to work to the city centre.

The definition of FUAs in Colombia is helping the country to clearly identify its metropolitan areas, integrating local labour markets and overcoming administrative fragmentation. By providing an integrated set of services to both residents and commuters, FUAs are expected to increase the productivity of cities and thereby of the whole country. Moreover, the inclusion of FUAs in the OECD Metropolitan Database allows for benchmarking of Colombian cities to successful urban experiences in most of the OECD countries.

Source: (Sanchez-Serra, 2016[21])

Geospatial data can help identify Thai secondary cities, by transcending traditional administrative boundaries. Secondary cities can be defined based on Global Human Settlement Layers (GHSL), elaborated by the Joint Research Centre of the European Commission.[7] GHSL divides the country into a 1 km² population grid. For each element of

the grid, it estimates the share of area covered by buildings based on satellite imagery. It then crosses this information with the latest available census data. The derived estimated population density is then used to identify urban areas. The resulting borders of secondary cities transcend existing administrative borders and are rather a function of population distribution and density in contiguous built-up areas.[8]

Urban agglomerations are widespread in the East, while density is highest in the West. The geospatial analysis based on GHSL identifies 41 cities outside of Bangkok. A full list, including related population densities and population numbers, is given in the Annex at the end of this chapter. The East has the highest number of secondary cities, as identified from the satellite imagery. Several are located in the Chonburi province and include Pattaya-Ban Lamung cluster, Chonburi and Phanat Nikhom. Others form the Rayong-Map Ta Phut cluster. The West hosts the lowest number of secondary cities, but includes the city with the highest density among all secondary cities (8 800 people/km^2): Phra Chedi Sam Ong (Figure 2.11). This is an urban agglomeration stretching across the border with Myanmar, with cross-border trade as one of the main economic activities.

Figure 2.11. Urban agglomerations are particularly widespread in the East
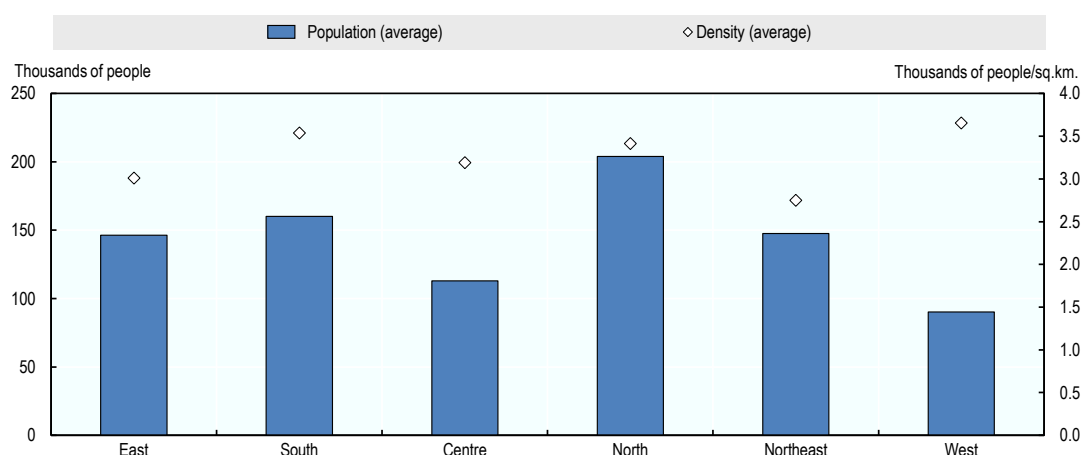
Note: The Centre as shown here excludes the Bangkok Metropolitan Area.
Source: Authors' calculations based on the Global Human Settlement Layer as provided by the Joint Research Centre – the European Commission.

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Targeted surveys should support satellite data to assess the needs of these secondary cities. The Thai government needs to assess the actual nature of these urban agglomerations, as identified from geospatial data. Targeted surveys should be conducted to assess the structure of the local economy and its dynamics, as well as the state of local infrastructure. Since existing surveys and the census still rely on the municipal–non-municipal classification, Thailand may need to design new, tailor-made surveys based on the updated classification of cities. Once the new definition of urban and rural areas comes into force, the National Statistical Office should, moreover, design the next census accordingly.

Enabling secondary cities to develop in response to challenges specific to their location

Integrated regional policies need the right institutional framework to improve the management of network services successfully. Network infrastructures such as transport and water provision, as well as sewage and solid waste management, may overstep traditional administrative divisions. The redefinition of city boundaries is not enough to help mitigating network externalities. Well-functioning integrated urban areas require an institutional framework that provides existing administrations with incentives to co-ordinate. To improve co-ordination at the local level, Thailand needs to step up the current multi-level governance framework. Chapter 3 of this report discusses in more detail how better decentralisation can serve this purpose. Thai secondary cities could rely more on informal rather than formal institutions – without adding complications to an already complex institutional framework. As in Barcelona, they could promote collaboration across jurisdictions based on voluntary agreements (Box 2.6). Successful collaboration may eventually lead to more formalized structures of metropolitan governance. Chapter 4 shows how better management of water basins across jurisdictions can improve the allocation and quality of water.

Box 2.6. How voluntary cooperation between municipalities can give rise to a well-functioning secondary city: The case of Barcelona

Until 2011, local administrations within the Barcelona metropolitan area relied on voluntary co-operation to address planning, transportation and the environment. The *Mancomunitat de Municipis* was a voluntary association of 31 municipalities in the area, with the objective of bringing a common metropolitan perspective to planning and sector specific issues.

The *Mancumitat de Municipis* co-ordinated policies to improve metropolitan infrastructure and public space through interjurisdictional public companies based on voluntary participation. For instance, the Institut Metropolità de Promoció del Sòl i Gestió Patrimonial managed housing and land in the area. The metropolitan transport organisation was in charge of the subway network for seven municipalities and regulated the local taxi system. It moreover tackles traffic issues by jointly manage the road network. The organisation for the environment was responsible for the construction and maintenance of hydraulic infrastructures, water supply, drainage, and wastewater and the treatment of urban and industrial waste.

The *Mancumitat* paved the way for an even more integrated form of metropolitan governance. In 2011, the new Barcelona Metropolitan Area organisation was formed. It fosters increased interjurisdictional coordination by encompassing the *Mancumitat*, and the transport and environment authorities in a two-tier council structure.

Source: (Lozano-Gracia, Panman and Rodriguez, 2012[22])

Citizen participation can help to handle challenges, such as large seasonal tourism inflows. Thailand is a worldwide major tourist destination. Seasonal inflows are an opportunity, but can dangerously stretch the capacity of rising secondary cities. In addition to equipping secondary cities with adequate infrastructure, involving people who live and work in the city in governing the phenomenon is paramount for the internalisation of possible negative externalities. Moreover, residents play a fundamental role in shaping the appeal of their

city, since they inevitably come into constant contact with tourists. In Japan, the growth in urban tourism has made local residents more conscious about their living areas, leading them to undertake spontaneous activities to manage these spaces (Horita, 2018[23]). Tourism-based secondary cities may build on the higher propensity of citizens to contribute to the public good through local forums and other informal institutions that bring them closer to local administrators.

Skills development as a tool of regional and urban policy

Secondary and tertiary education are important drivers of productivity growth at the level of provinces and must be core elements of regional policy. The preceding analysis has demonstrated the importance of human capital, specifically of secondary and higher education for productivity growth in provinces. About 40% of workers have completed at least upper secondary education in Thailand, significantly below the OECD average of 80% (OECD, 2016[24]). The share moreover varies from 54% in the Bangkok Metropolitan Area to 28% in the Northeast (Figure 2.12). Depending on the local demand for skilled workers, policies for regional development should focus on upper secondary vocational colleges and universities as core building blocks for local economic development.[9]

Figure 2.12. There is significant variation in educated workers across regions

Share of employees by level of education attained
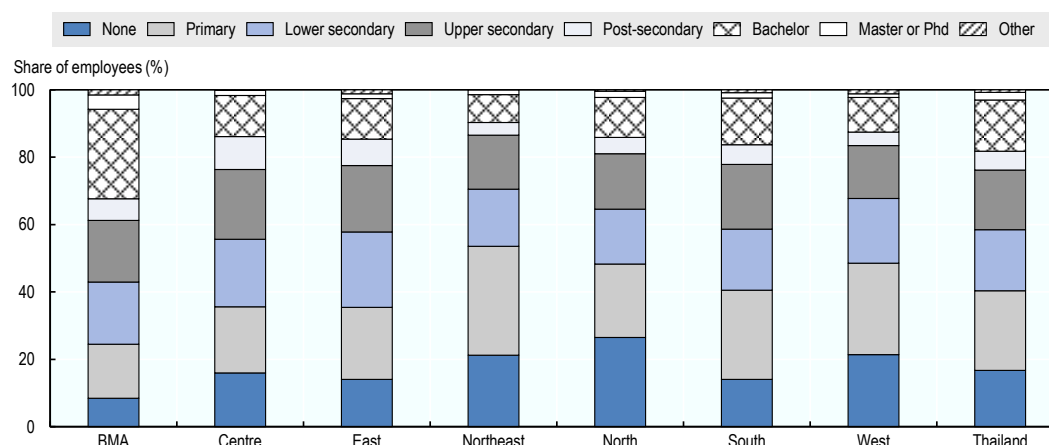
Note: The category "None" includes workers that have neither started nor completed primary education. Employees included all Thai citizens aged between 15-60.
Source: Authors' calculation based on Labour Force Survey (2016) and Socio-Economic Survey (2015).

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Enhancing technical and vocational education and training as an engine of skills development for local economies

Work and skills-oriented training benefits both students and regions more than general education for students that do not attend university. Employment surveys show that, across all regions, students that decide not to pursue higher education obtain better salaries if they complete upper secondary vocational training, rather than upper secondary general education (Figure 2.13) (Tangtipongkul, 2015[25]). The wage premium of TVET over

general secondary education is above 20% in all regions. It is highest in the North and Northeast, where salaries for TVET graduates are even higher than in Bangkok. Moreover, TVET graduates also show higher rates of insertion. At the national level, nine out of ten skilled workers find qualified jobs, and the share is above 90% in every region. Higher salaries and more qualified jobs not only mean that it is more profitable for students to pursue TVET, but also indicate that they are more in demand by firms and more productive and useful to the local economy once employed. This makes sense, as TVET focuses on providing students with practical technical skills that otherwise would have to be acquired on the job. In the strongest TVET systems, firms play an important and active role in defining the curriculum and providing opportunities for practical training.

Figure 2.13. The hourly wage of TVET graduates is higher than the salary of workers with general upper secondary education

Hourly salary for employed TVET graduates, by region
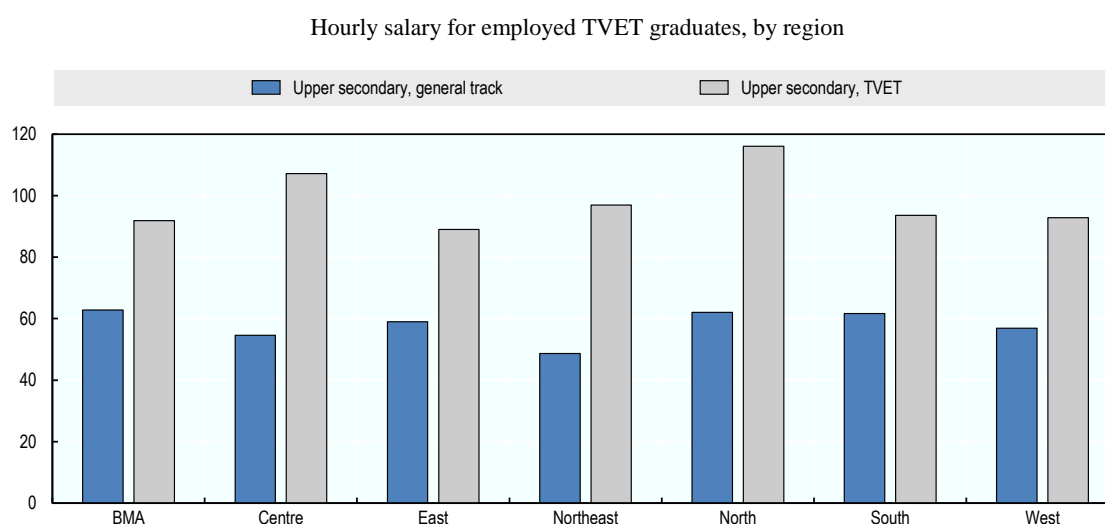
Note: Fitted values of hourly wage by region were obtained by first controlling for age, the squared value of age, occupation status and sectors of economic activity.
Source: Authors' calculations based on the Informal Employment Survey (2017).

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Despite these clear advantages, TVET do not always match the needs of the labour market, or fulfil students' aspirations. Employers often lament a mismatch between the skills that vocational institutes teach and those that industry needs. In the automotive sector, almost half of manufacturers face challenges in hiring skilled workers to fill their vacancies (Pholphirul, 2014[26]). Many of their employees lack the know-how to operate sophisticated, high-technology equipment. At the same time, students' ambitions do not focus on TVET because of a cultural bias towards a more academic education and against vocational training (Tan and Tang, 2016[27]). As a result, 34% of upper secondary school students were enrolled in vocational programmes in 2015 – down from 36% in 2011 and below the government's 45-55% target (OECD, 2018 and MOE, 2017) (Figure 2.14, Panel A). Between 2001 and 2017, the share of workers with a high school degree (and no further education) more than doubled, while that of workers with a TVET degree only rose by one percentage point on average across all regions (Figure 2.14, Panel B). The Northeast and North regions account for the smallest shares of TVET graduates among workers, while

the more industrialised regions of BMA, the East and Centre have shares between 4% and 6%.

Figure 2.14. Enrolment in vocational training is below the government target

Panel A. Most students enrol in the general education stream rather than vocational programmes

Panel B. Upper secondary attainment increased across regions, but mostly for general track schools
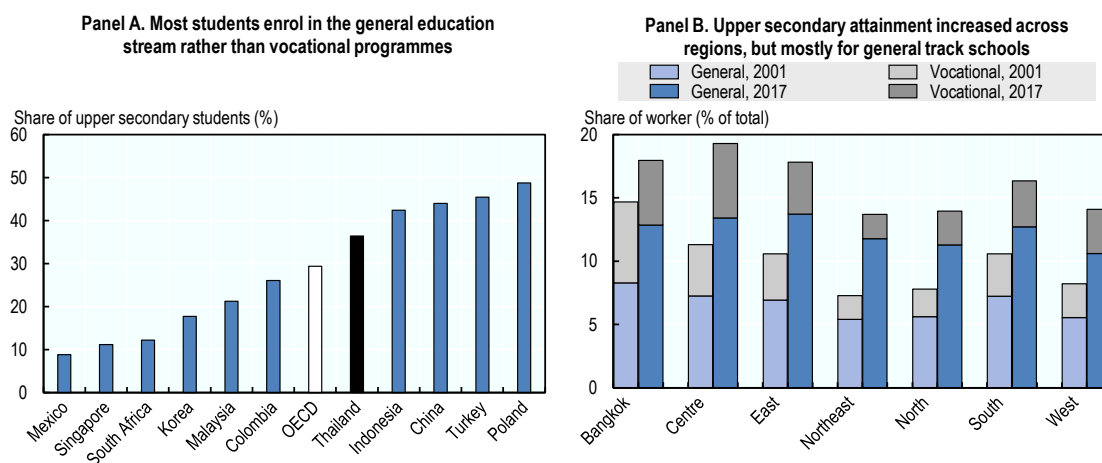
Note: Panel A shows the share of upper secondary students enrolled in vocational programmes across selected countries in the latest available year: 2015, Thailand; 2014, China, Colombia, Malaysia Indonesia, South Africa and the OECD average; 2013, Korea, Poland and Turkey; 2012, Mexico; 2009, Singapore. Panel B shows the share of workers who attained at most upper secondary schools, by stream (general vs. vocational). The upper secondary general track includes academic schools and teachers' training.
Source: Panel A: (World bank, 2017[28]); Ministry of Education (2017). Panel B: Authors' own work based on the Labour Force Survey 2001 and 2017, as provided by NSO.

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Thailand can encourage the success of vocational training by ensuring that curricula build on local labour needs. Provincial authorities, local private sectors and schools can join forces to tailor the content of curricula to regional needs, as they differ across the country. They are indeed best positioned to identify untapped productivity potential and to incorporate current and future needs into schools' coursework. The Thai government, under the aegis of the 12th Educational Development Plan, is expanding co-operation between vocational institutions, the private sector and academia to develop courses that better meet industry needs. Thailand is further establishing vocational education schemes on a bilateral basis between local Chambers of Commerce and relevant public institutions in an effort to meet labour demands in the agricultural and services sectors. However, neither provinces nor schools enjoy particular freedom in adapting technical education to the local economy – with few exceptions (Box 2.7).

Box 2.7. The Thai-Austrian Technical College: A role model highlighting the importance of independence and close collaboration with industry

The Thai-Austrian Technical College was established in 1963 in Eastern Chonburi province in close proximity to the industrial hub of the Eastern Seaboard. An agreement between the Thai Government and the Federal Government of Austria grants the college a special status and the freedom to devise its own curriculum and teaching methods within the broader confines of national education policy. The Austrian government offered technical assistance, machinery, tools and expert advice to assist with the installation of mechanical equipment, while the Thai Government provided land for the construction of school buildings. Today, the college is recognised as a "Super model for technical colleges" and recognised as a national best example. It is self-sufficient and hosts 6 078 students in five fields: mechanics, electronics, automotive, construction and hospitality. It benefits from partnerships with nearby multinational enterprises (especially in the automotive sector) and from proximity to some of the most successful special economic zones in Thailand.

Several lessons emerge from the success story of the Thai Austrian College. First, proximity to and close collaboration with large firms has proven very important. These firms provide opportunities for learning not only for students but also for teachers, and collaborate actively with the college on the continuous development of curricula. Second, to be able to respond and collaborate with firms, the college needs and benefits from a special degree of independence from nationally set curricula and teaching methods. Third, an entrepreneurial and driven leadership has been key to making the most of the given opportunities and continually adjusting the homogeneous national education framework to the needs of local students and business.

Source: Interviews with staff and the website of the Thai-Austrian Technical College: www.tatc.ac.th.

Matching curricula with market's needs requires a close partnership between employers, social partners and TVET institutions. Their active participation in curriculum development helps to ensure that the skills taught correspond to the needs of modern business. For instance, in Latvia the Ministry of the Economy carries out forecasts for medium and long-term skills in the labour market. The Agency for Employment supports intermediation in the labour market, and develops education and training programmes for the unemployed. The participation of employers and unions in curriculum development helps to ensure that the skills taught correspond to the needs of modern business (OECD, 2018[29]). In Germany, regions develop their curricula within a framework agreed with the Ministry of Education, which in turn ensure that 20% of the syllabus reflects local needs. Regions, moreover, determine the number of training programmes and available places in consultation with local authorities and ad-hoc committees (Hippach-Schneider and Weige, 2012[30]).

Work-based training is another essential component of vocational training to form better-skilled workers. The workplace offers a dynamic framework for training, while trainees actively contribute to the fulfilment of the company's objectives. Moreover, the hiring companies can propose practical training to trainees that would then facilitate hiring. The promotion of practical training is also cost-beneficial for the state. Trainees have access to machines and other equipment that already exist in firms and that would be too expensive for public schools to obtain. Several countries have successfully implemented work-based training. In Colombia, for example, the *Servicio Nacional de Aprendizaje* integrates

coursework and classes with internships and practical training hours in affiliated firms (OECD, 2018[29]). In Thailand, the 12th NESDP promotes "Dual Vocational Training" to encourage vocational schools to complement coursework with traineeships in the private sector.

An appropriate framework and system of incentives is necessary to motivate entrepreneurs to participate in vocational education. In Tunisia, payroll tax credits and funding encourage enterprises to organise training, especially if they invest in new technologies. There have also been notable efforts to accredit apprenticeships in the informal sector. Such approaches play a dual role as rewarding learning and skills acquired in the informal economy could help to support social inclusiveness (OECD, 2015[31]).

Counsellors can contribute by informing prospective students about the opportunities that TVET may offer. In spite of the higher returns and entry rates, TVET still suffers from a poor reputation among students and their families. In this context, policies should widen access to information about the coursework and career perspectives of TVET schools. To reach out to prospective students, local authorities can organise local career fairs where TVET and local private sectors showcase the ways in which they collaborate. Schools at primary and lower secondary level should engage counsellors to help students discover their potential and attitudes from an early age. Counsellors should therefore be trained professionals, with an accurate knowledge of the local economy and the capacity to analyse labour data to forecast future market needs. They should also guide pupils through application procedures, the necessary paperwork and deadlines to apply to TVET institutes (McCarthy and Musset, 2016[32]).

Strengthening provincial universities to boost productivity and entrepreneurship on the periphery

Tertiary institutions such as universities and research institutes play an important role in boosting local potential. They contribute to regional and provincial productive systems through four channels: First, they provide the local labour market and knowledge-based industry and services with a highly qualified workforce. Second, they attract investments in research and innovation. Third, they cultivate local entrepreneurial spirit and new business opportunities (OECD, 2007[33]); and, fourth, they can help spreading innovation and growth beyond a region's capital.

To fulfil this role regional tertiary institutions need the right conditions, flexibility and support. Many countries struggle with optimising the role of higher education and research for subnational development. Policies for the sector are often determined at central level, primarily focussing on national objectives and funding gets skewed towards the top institutions. The most successful examples from countries like Korea and Japan show, that individual institutions need the right amount of freedom and flexibility and on that basis take entrepreneurial initiative. Importantly, to attract students and retain graduates in the local labour market universities and cities need to offer an attractive environment (Box 2.8).

Box 2.8. Strengthening the link between higher education and local development: Challenges and possible solutions in OECD countries

OECD countries have been facing several obstacles to the regionalisation of higher education institutions for the sake of local development.

Higher education policies often lack a regional dimension, focusing instead on meeting national aspirations. As with the Rajabhat universities, tertiary and community colleges in OECD countries bear a responsibility to apply research and development to the needs of local industry and labour market. However, these institutions have neither a well-established tradition in research, nor the resources or infrastructure to support this goal.

In Korea, from 2004 to 2008, the central government funded the New University for Regional Innovation project to enhance regional innovation outside the Seoul metropolitan area. The project helped local higher education institutions to attract and retain talent in the regions. The project encouraged the development of programmes to help students acquiring skills in line with the local economy. Participating institutions built productive partnership with local authorities as well as business and industry. They also provided skilled workers and advanced technologies to industrial clusters in the regions. Not all project-affiliated universities succeeded in attracting pupils and training potential high-skilled workers. Successful regional universities required comprehensive and coherent urban policies that provided students with appealing services and amenities.

Imperfect decentralisation excludes local authorities from the design of higher education policies and biases the distribution of research funds. In countries with a centralised higher education system, the capital city and some large metropolitan areas generally have the largest universities and account for a considerable share of higher education institution research. Education policies that target only this handful of spatially concentrated institutions undermine the development of human capital at the periphery. A side effect is that research funds flow consistently towards the same institutions in the same areas, further capping the resources of universities outside already thriving areas.

Some countries have devolved authority in higher education policy to regional governments. This has enabled them to contribute actively to the establishment of higher education institutions and better respond to the needs of the local community. Mexico, for instance, has designed a set of educational policies that aim to improve greater decentralisation. In this framework, the State Commission for Higher Education Planning (COEPES) functions as a co-ordination body managing higher education planning at the regional level. Meanwhile, the National Agency for Science and Technology (CONACYT) provides mixed federal and state funds tied to the development of the regional cluster.

School management may lack sufficient power to shape the mission of local institutions. In 2004, Japanese national universities were transformed into National University Corporations with the authority to own land and buildings and hire staff. Since the members of the faculty were no longer civil servants, the institutions could propose more flexible contracts and salary schemes. Following these changes in governance, institutions found it easier to attract funds from industry organisations rather than individual companies. The scope of their research thereby broadened and university-industry collaborations often evolved into small start-up firms.

Source: (OECD, 2007[33])

Thailand's best-performing provinces host well-developed university poles that attract investments and innovation. The analysis in Section 2.3 shows that the share of workers who complete university degrees is higher in most productive provinces than in those lagging behind. Moreover, the most productive provinces in Thailand host universities that are among the top ranking Asian academic institutions (Buasuwan, 2018[34]). These research institutions – as defined by the current government – have contributed to fuelling regional economic growth on several occasions. For instance, back in the 1990s, researchers experimented with systems to cultivate rubber in the Northeast and North, areas usually unsuited for this type of plantation given their frequent droughts. As seen in section 2.2, innovation helped to boost agricultural productivity in the area. Researchers from Thai universities are still looking for methods to improve yields of rubber plantations (see for instance (Chantuma et al., 2011[35]).

Table 2.2. Provincial universities still attract a large share of students and hence represent an opportunity for local productivity growth

Types of universities	Purpose/Degree focus	Number of institutions	Number of students	Students (% total)
Closed public university	Bachelor to graduate	10	120 917	6%
Autonomous university	Bachelor to graduate	23	562 489	28%
Public open university	Bachelor to graduate	2	322 462	16%
Private university	Bachelor to graduate	41	258 132	13%
Rajabhat university	Provincial university offering bachelor degrees to graduate	38	522 535	26%
Ratchamongkol Technological University	Technological university offering high diplomas to graduate	9	151 811	8%
Private college	Mainly bachelor	19	28 505	1%
Private institute	Mainly bachelor	9	21 067	1%
Community college	Community college	20	16 075	1%
Total		171	2 003 993	

Source: (Buasuwan, 2018[34]) based on data from the Office of the Higher Education Commission.

Regional institutions of higher learning could help lagging provinces catch up, but need attention. Thailand's top universities are expanding across the country through secondary campuses, helping to boost the capabilities of regional centres.[10] To boost the potential of less connected and productive provinces, Thailand builds on its 38 provincial institutions of higher education (Rajabhat) (Table 2.2). These schools have historically had a strong focus on teacher education. In 1995, they evolved into higher learning institutions with a more articulated education offer, in the process becoming local poles for training high-qualified workers. However, the quality of education in these schools remains a concern. For instance, the Office of Higher Education Commission (OHEC), which is in charge of monitoring university standards, has recently expressed concerns over the ways in which regional universities select and assess students. Enrolment is trending downward and some institutions – especially in the Northern provinces and those provinces where the population is ageing fast – may have to close. Provinces that are already lagging behind therefore risk losing potential engines of innovation and productivity growth.[11]

Thai provincial universities can regain importance by tailoring their education offer to local needs. The adaptation of coursework to provincial economic structures might not be enough. The teaching paradigm should also change. Up to 50% of the study work in Aalborg University (northern Jutland, Denmark) is problem-oriented project work. Students work in teams to solve problem areas often defined in co-operation with local

firms and administration. The Aalborg model provides students with transferable skills and authentic work experience; enterprises have a clearer picture of the actual knowledge accumulated and how the students might fit in as prospective employees. The university gains feedback and access to instructive cases and ideas for research and teaching. To further tighten the link with the private sector, universities can hire high-skilled personnel from industry and society as part-time teachers and adjunct professors (OECD, 2007[33]).

Local higher educations are crucial to enhancing local entrepreneurship and creating new business opportunities. Universities often provide the right environment for business ideas to incubate and develop. Following the example of some OECD countries, provincial universities should provide generic start-up advice and guidance, training, one-to-one advice, legal start-up costs, business competitions and incubation (Box 2.9). An even more effective option is to embed entrepreneurial learning into their core curriculum. During these classes, students learn about business disciplines – such as planning, marketing and finance (OECD, 2007[33]).

Box 2.9. Speed MI up: The city of Milan and Bocconi University join forces to develop local entrepreneurship

Since 2005, Italy has allocated funding to universities and research institutes willing to join the "Incubator for start-ups" programme. Under this programme, higher education institutes provide high-level technical assistance to entrepreneurs during the start-up phase (OECD, 2007[33]). In 2013, as part of this programme, the City of Milan, the local Chamber of Commerce and Bocconi University created an incubator to help entrepreneurs build and strengthen business ideas, entitled "Speed MI Up".

Unlike other incubators, Speed MI Up does not enter the capital structure of the start-ups, but rather provides them with a wide range of services. Upon selection through a public tender, selected entrepreneurs gain access to several services including: tutorship and training by the Bocconi faculty; periodical business reviews conducted by an Advisory Board; and a Consulting Bureau on legal, financing, marketing and digital media. Office spaces are clustered to ensure network building and knowledge spill-overs between entrepreneurs. In addition, past, present and future promoted start-ups can sell their products in a market place on the incubator's website.

A selection committee consisting of representatives of the three institutions select aspiring start-up projects based on an elevator pitch, a business plan, candidates' resumes and interviews. Entrepreneurs can access short video courses on how to draw up business plans and directions about delivering the elevator pitch on the incubator's website. Selected candidates can then enjoy the full range of services for two years and, in some cases, for the following five years.

Since 2013, Speed MI Up has incubated several start-ups that have subsequently become thriving local small and medium-sized enterprises in the food-processing industry and trade services and personal services sectors.

Source: Authors' work based on "Speed MI Up Incubator Seeks Innovative Startups" (6 March 2017): www.viasarfatti25.unibocconi.eu.

Effective and innovative regional development necessitates fiscal and institutional reforms

The new regional development plans require a new fiscal relationship between the different layers of government. Thailand's provinces have traditionally relied on inter-governmental transfers, the size of which was based mostly on population thresholds. As outlined in Chapter 3, this system placed less populated provinces at a disadvantage. As part of the new regional development plans, the current government has linked the distribution of grants to a set of socio-economic characteristics in the provinces. Since December 2017, the new "Regional Development Policy Integration Committee", chaired by the Prime Minister and coordinated by the NESDB, is empowered to set and periodically update a formula that regulates the distribution of general grants.[12] The new formula will come into force from the next fiscal year (2018-19) and will take into account the provincial population, the number of poor, household income and the gross provincial product in each province (see Chapter 3 for more details).

Performance-based transfers could be a useful tool. Part of the allocation of the existing general transfers could be conditional on the achievement of socio-economic targets that would close the gaps between frontier converging and diverging provinces. The choice of targets should be the result of a high-level political debate involving representatives from the central government and governments from each region. They should also suit the characteristics and needs of different places in each region. Moreover, targets should be clearly identified and their achievement measured through a series of indicators (Barca, 2009[36]). The way targets are set can facilitate interaction and comparative performance measurement across provinces (Box 2.10).

Once targets are set and grants distributed, the government should monitor the achievement of targets on a constant basis. Systems of performance monitoring depend on four main criteria. First, they should rely on a strong system of indicators and targets and a nationally and internationally accessible database. Second, based on the above indicators, relevant government agencies should undertake periodical in-depth performance assessments with provinces. Third, following the assessment, the system should envisage rewards and sanctions linked to targets. Finally, the systems should encourage public debate around the achievement of targets through the publication of progress scorecards (Barca, 2009[36]).

Box 2.10. Performance-based grants in Italy

Italy has been reforming its approach to regional development policy since the 1990s. Changes concern not only underlying principles, but also policy delivery mechanisms. As in Thailand, the trend towards decentralisation to lower levels of administration has required new ways of co-ordinating a growing number of actors in the field of regional development. In this context, at the beginning of the 2000s, Italy embraced a result-oriented approach to planning and expenditures: the National Performance Reserve.

Table 2.3. Performance-based grants are redistributed according to clear and measurable social and economic objectives

Objective	Indicator
Education: Improve students' competence, reduce drop-outs and broaden population's learning opportunities.	% of early school leavers % of students with poor competencies in reading % of students with poor competencies in math
Child and elderly care: Increase the availability of child and elderly care to favour women's participation in the labour market	% of municipalities with child care services % of children (age 0-3) in child care % of elderly people benefiting from home assistance
Urban waste management: Protect and improve the quality of the environment, in relation to urban waste management.	Amount of urban waste disposed in refuse tip % of recycled urban waste % of composted waste
Water service: Protect and improve the quality of the environment in relation to integrated water services.	% of water distributed % of population served by waste water treatment plants

Initially, the National Performance Reserve had three main objectives: (i) the simplification of public administration, (ii) improvement of spending efficiency, and (iii) the promotion of projects that require co-ordination among local administrators (also known as "Territorial Integrated Projects"). To achieve these objectives, a new mechanism envisaged the redistribution of 4% of 2000-06 EU Structural Funds among Italy's 21 regions conditional on the achievement of a series of targets. The targets were the result of a two-year negotiation that involved high-profile political representatives of the central and regional governments

The National Performance Reserve evolved throughout the 2000s. The Italian National Strategic Framework 2007-13 introduced a new set of targets to improve citizens' quality of life and increase the propensity of business to invest in the south of Italy.

Source: (OECD, 2009[37])

The new regional policy framework requires dynamic actors with the freedom to experiment at each level of government. Local and provincial layers of government need to be given the flexibility and means to experiment, as opposed to implementing top-down policies designed at the central level. Experimentation allows policy makers to learn from the "small-step" interventions they pursue to address local issues. These necessary experimental processes require mechanisms that capture lessons and ensure that these are used to inform future activities (Andrews, Pritchett and Woolcock, 2013[38]). Chapter 3 explores best practices that foster inter-administrative co-operation and further decentralise fiscal and political power.

Policy recommendations

Goal to reach	Recommendations of the Multi-Dimensional Country Review of Thailand
1. Moving towards more broad-based and innovative regional development policies	
1.1. Innovative regional development strategies that are multidimensional, flexible and driven by local discovery and ownership	1.1.1. Ensure that targets of regional development plans and results-based allocation measures balance economic, social and environmental objectives. Targets and objectives should be informed by sound data analysis and continuous consultation between central and local governments, stakeholders and citizens. 1.1.2. Place local innovation and discovery at the centre of regional development plans. Focus on facilitating discovery by regional and local actors. The central government should not select the areas or activities for investing public resources but rather facilitate and support the discovery process. 1.1.3. Build flexibility into regional development instruments and initially experiment with different approaches adapted to regions' capabilities. 1.1.4. The geographic scope of regional development policies should be flexible and focus on functionality. Data analysis can help to identify the most functional clusters of provinces for regional strategies. 1.1.5. Strong evaluation and performance measurement frameworks must be built into all approaches from the beginning. Data on results should be widely accessible to guarantee transparency and enable public scrutiny.
2. Supporting secondary cities as the centrepieces of regional policies	
2.1. Define secondary cities in Thailand.	2.1.1. Identify secondary cities as functional urban areas. The combination of geospatial data and local micro-data would allow for an exact definition of the pool of users of urban infrastructure, both in the core of cities and their hinterlands. 2.1.2. Carry out local surveys to assess the needs of secondary city residents to deepen the above analysis. These surveys should complement a database on the financing, costs, availability and quality of subnational government services, as proposed in Chapter 3.
2.2. Design and implement a new urban policy agenda specific to secondary cities.	2.2.1. Equip local authorities and secondary cities with the power and fiscal tools to address local needs. Effective decentralisation reforms will be key. Chapter 3 discusses detailed policy recommendations along this line. 2.2.2. Given the cross-boundary nature of secondary cities, permanent consultation among local administrations should guide strategies of investment in infrastructure. Local co-ordination can be enforced through formal institutions and more effective decentralisation policies, as well as informal institutions and voluntary interjurisdictional agreements. 2.2.3. Citizen participation should be ensured to create ownership of new urbanisation agendas. Local authorities should further promote informal fora and other physical and virtual places where citizens can interact with local administrators and issues.
3. Skills development as a tool of regional policy	
3.1. Invest in better and more relevant skills to adapt the workforce to the needs of the place-specific and regional labour market.	3.1.1. Identify the place-specific and regional productive sectors and incorporate their current and future needs into the curricula. TVET institutions need to provide their students with the necessary skills to access the best job opportunities and outcomes. Therefore, the curricula of training programmes must target the most productive sectors and work to identify the key competencies those sectors require. 3.1.2. Ensure that TVET programmes are reactive and can adapt to the changing needs of the local labour market. Structural transformation has an impact on the skills that employers look for in the workforce. TVET institutions should therefore continuously update their curricula to adapt to evolving labour market needs. 3.1.3. Increase the involvement of local entrepreneurs and private sector in the design of education curricula, technical programmes and workplace education. Through discussions with the private sector, TVET institutions will be able to develop education curricula that respond directly to labour market needs. Partnerships between TVET institutions and the private sector are also crucial to understanding the current and future needs of the labour market. Consider fiscal incentives to encourage private sector participation in TVET. 3.1.4. Complement traditional coursework with work-based training. TVET institutions should include in their coursework two- to six-month mandatory training and internships in affiliated firms.
3.2. Ensure that the TVET sector becomes more attractive for young people.	3.2.1. Guarantee each vocational institution a certain degree of autonomy in order to better match students' ambitions and market needs.

	3.2.2. Introduce counsellors that can help students explore different schools and programme options. Counsellors should have extensive and accurate knowledge of the characteristics of the local labour market and enterprises.
3.3. Invest resources in the development of provincial universities, corresponding to integrated regional policies.	3.3.1. Tighten the relationship between provincial universities, local authorities and the private sector. Universities, local firms and government management should exploit synergies by designing, enhancing and monitoring a common long-term agenda for local skills development.
	3.3.2. Promote provincial universities as centres of entrepreneurship. In collaboration with local authorities and Chambers of Commerce, universities can become incubators of local start-ups, by providing general advice and guidance, training, one-to-one advice, legal start-up costs, business competitions and incubation.
4. Support the implementation of regional policies with fiscal and institutional reforms	
4.1. An institutional and fiscal environment conducive to experimentation at all levels of government	4.1.1. Pursue decentralisation reforms and thereby allow local decision makers to experiment through "small-step" interventions. Chapter 3 discusses more specific recommendations, as well as policy tools to decentralise fiscal and political power efficiently in Thailand.
	4.1.2. Redesign the formula for the distribution of general grants to complement population thresholds with socio-economic criteria. Chapter 3 discusses more specific recommendations as well as policy tools to establish local fiscal capacity.
	4.1.3. Complement the new formula for general grants with a move to results-based transfers conditional on the achievement of socio-economic targets that would close the gaps between best-performing, converging and diverging provinces.. Targets should match the characteristics and needs of different places. The data used to measure results should be publicly accessible to encourage public scrutiny and debate.
	4.1.4. Boost local capacity of co-ordination across layers of governance. Local authorities should develop their capacity to interact both vertically (state-province-districts-municipalities) and horizontally (between municipalities). Chapter 3 provides specific recommendations on how effective decentralisation policies can serve this purpose.

Notes

[1] Due to data availability, most of the analysis in this chapter focuses on the period from 2001 to 2015.

[2] Between 2010 and 2013, the export value of Thai natural rubber averaged USD 9.3 billion a year. Over the same period, rice had an average export value of USD 5.3 billion a year (Sakayarote and Shrestha, 2017[8]). The decline in the price of rice on global markets motivated rice-growing farmers to produce other crops, such as rubber.

[3] This figure may be compatible with the fact that Northeast is predominantly a rural and ageing society. In this case, a decrease in the absolute numbers of workers would be physiological. The neighbouring North shares similar socio-economic features. However, contrary to the Northeast, it witnessed an increase in the absolute number of employees by almost 5% between 2001 and 2015.

[4] The most recent of these are the Bangsaphan Steel Industry Real Estate (created in 2011) in Prachuab Kiri Khan, and the Khao Yoi Industrial Park (2014) in Petchaburi.

[5] It should be noted that the gap in productivity is only a rough indicator of untapped growth potential. This methodology does not take into account other dimension of local development and can therefore be improved. Relevant govenrment agencies could measure convergence with respect, for instance, the Human Achievement Index.

[6] The convergence-divergence analysis identifies the following provinces as frontiers: Chiang Mai and Kam Phaeng Phet (North), Khon Kaen and Nakhon Ratchasima (Northeast), Rayong (East), Ayutthaya (Centre), Ratchaburi (West), and Krabi and Phuket (South). The analysis does not include the provinces that constitute the Bangkok Metropolitan Authority.

[7] The GHSL dataset is public available here: http://ghsl.jrc.ec.europa.eu/degurba.php. More information about the project is available here: https://ghsl.jrc.ec.europa.eu.

[8] The OECD has been developing an even more accurate definition of so-called functional urban areas (FUA). FUA comprises a set of contiguous local administrative units that are a function of population density as well as commuting times. In Europe, these administrative units correspond to municipalities. In the rest of the OECD countries, the local units composing FUAs are the smallest administrative areas for which national commuting data are available. FUAs can be defined in Thailand as well upon the collection and release of micro-data on commuting times or commuting behaviours (e.g. through updated Population Censuses).

[9] Throughout this section, post-secondary education is considered part of university and tertiary education.

[10] For example, Mahidol University (the hightest-ranked university in Thailand according to the *Times Higher Education and World University Rankings*) has 6 campuses, 4 of which are in the Northeast, East, West and Centre. Thammasat University (3rd-higest ranked according to *QS World University Rankings*, 2018) also has 6 campuses, 4 of which in the North, Northeast, East and South.

[11] "Rajabhat enrolments shrinking", *Bangkok Post* (2 February 2018): www.bangkokpost.com/news/general/1406186/rajabhat-enrolments-shrinking (accessed August 2018).

[12] The overall mission of the committee is to draft new integrated regional policies for all regions.

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Annex 2.A. Thai secondary cities, as identified through geospatial data

Secondary city	Province	Region	Location	Population density (inhabitant per km², 2015)	Population (2015)
Lop Buri	Lop Buri	Centre	Thailand	3 484	128 924
Kamphaeng Phet	Kamphaeng Phet	Centre	Thailand	3 444	72 315
Phra Nakhon Si Ayutthaya	Phra Nakhon Si Ayutthaya	Centre	Thailand	3 338	126 849
Phitsanulok	Phitsanulok	Centre	Thailand	3 000	165 001
Saraburi	Saraburi	Centre	Thailand	2 977	89 309
Nakhon Sawan	Nakhon Sawan	Centre	Thailand	2 904	95 821
Paoy Pet	Sa Kaeo	East	Border with Cambodia	8 778	122 897
Prachin Buri	Prachin Buri	East	Thailand	4 794	86 287
Phanat Nikhom	Chon buri	East	Thailand	3 508	52 621
Chanthaburi	Chanthaburi	East	Thailand	3 394	67 880
Chachoengsao	Chachoengsao	East	Thailand	3 201	57 622
Pattaya	Chon buri	East	Thailand	2 989	242 133
Chon Buri	Chon buri	East	Thailand	2 565	392 467
Bang Lamung	Chon buri	East	Thailand	2 374	168 554
Map Ta Phut	Rayong	East	Thailand	2 253	110 390
Rayong	Rayong	East	Thailand	2 006	138 423
Ban Mae Tao	Chiang Mai	North	Border with Myawadi (MMR)	7 291	131 230
Mae Sai	Chiang Rai	North	Thailand	5 133	153 994
Chiang Rai	Chiang Rai	North	Thailand	3 199	83 166
Chiang Mai	Chiang Mai	North	Thailand	2 818	493 149
Lampang	Lampang	North	Thailand	2 509	85 299
Nong Khai	Nong Khai	Northeast	Border with Lao PDR	3 337	407 100
Udon Thani	Udon Thani	Northeast	Thailand	3 000	149 983
Ubon Ratchathani	Ubon Ratchathani	Northeast	Thailand	2 811	126 488
Khon-kaen	Khon Kaen	Northeast	Thailand	2 656	154 057
Nakhon Ratchasima	Nakhon Ratchasima	Northeast	Thailand	2 533	159 579
Savannakhet	Mukdahan	Northeast	Border with Lao PDR	2 449	66 124
Ranong	Ranong	South	Thailand	4 742	118 553
Sungai Kolok	Narathiwat	South	Border with Malaysia	4 255	55 312
Trang	Trang	South	Thailand	4 078	89 717
Yala	Yala	South	Thailand	3 835	111 221
Phuket	Phuket	South	Thailand	3 707	426 293
Nakhon Si Thammarat	Nakhon Si Thammarat	South	Thailand	3 658	146 307
Hat Yai	Songkhla	South	Border with Malaysia	3 545	297 792
Surat Thani	Surat Thani	South	Thailand	3 064	150 127
Pattani	Pattani	South	Thailand	2 835	76 558
Songkhla	Songkhla	South	Thailand	2 388	162 380
Phrachedi Sam Ong	Kanchanaburi	West	Border with Myanmar	8 792	79 132
Ban Phrachedi Sam Ong	Kanchanaburi	West	Thailand	4 105	102 628
Phetchaburi	Phetchaburi	West	Thailand	3 513	91 335
Ratchaburi	Ratchaburi	West	Thailand	3 341	76 841

Source: Authors' work based on the Global Human Settlement Layer, which is publicly provided by the Joint Research Centre of the European Commission.

Annex Figure 2.A.1. Manufacturing and agriculture are the predominant sectors
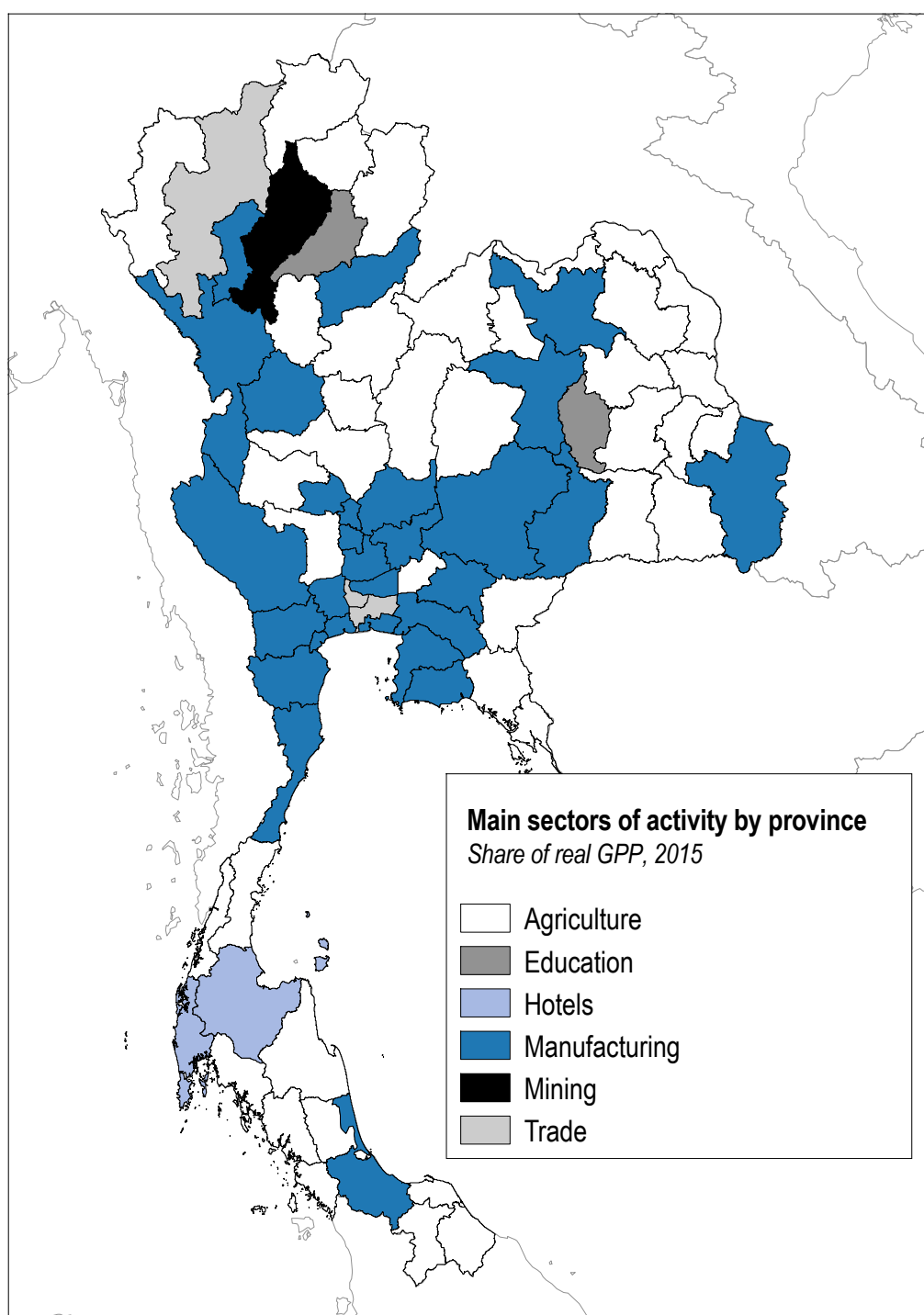
Note: The figure maps the highest share of real GPP in 2015.
Source: Authors' work based on national accounts, as provided by the NESDB.

Chapter 3. Making multi-level governance work for more effective development

Despite several attempts at decentralisation reform since the 1990s, Thailand's governance system remains highly centralised. Strong central government control over subnational governments has not led to uniform service levels or harmonised revenue bases. On the contrary, there are marked fiscal disparities between Thailand's subnational governments. Thailand's dual multi-level governance and high number of subnational governments (LAOs) results in a governance system that is complex and fragmented. There are several alternatives available for Thailand to tackle the current problems. A clear nationwide plan should be developed to prepare for reforming the subnational government structure, financing system, and spending and revenue assignments. LAOs should be empowered by enhancing their spending and revenue autonomy. Reorganising the current spending assignments between government levels should be another priority. Merger reforms or enhanced co-operation should be considered to build adequate capacity among subnational governments. A stronger own revenue base would contribute to self-rule and accountability among Thailand's subnational governments. To that end, LAOs should rely on at least one important tax base: for instance, a local surtax on the personal income tax collected by the central government would be an option. In addition, Thailand should reform other sources of local financing, such as the property tax and the transfer system.

Phase I of the OECD Multi-Dimensional Country Review of Thailand, published in April 2018, focused on the "five Ps" of the Sustainable Development Goals (SDGs): People, Prosperity, Partnerships, Planet and Peace. The report identified a number of areas for development in Thailand, in particular informality, inequality, productivity, the management of natural resources and reforming institutions. The report also touched on areas linked to decentralisation, identifying implementation of reform in this area as a key challenge for achieving better public service delivery in all parts of the country. The OECD recommended that Thailand empower local administrations in order to pursue decentralisation and improve the efficiency of public services.

Thailand's 12th National Economic and Social Development Plan (2017-21) aims to further increase subnational fiscal autonomy (Box 3.1). According to the Plan, Thailand's local administrative organisations (LAOs) will be given greater flexibility in terms of finance and human resource management.

The focus of Phase II of the Multi-Dimensional Country Review is in-depth analysis and recommendations for Thailand. This chapter is dedicated to multi-level governance and decentralisation. Its main aims are to provide an overview of Thailand's multi-level governance from an international perspective, to describe the current challenges faced by multi-level governance and decentralisation in Thailand, and finally to provide some examples and suggestions for possible solutions.

Box 3.1. The 12th National Economic and Social Development Plan and the multi-level governance issue

The 12th National Economic and Social Development Plan (NESDP) highlights the inefficiency of the public management system as a significant obstacle to national development. As such, good governance has been embedded in NESDP as one of the six primary strategies of the 20-year National Strategy. The Plan provides guidelines for better decentralising power, enhancing public participation, and redistributing responsibilities among national, regional and local actors. The Plan proposes five main objectives.

Revision of the dual model of governance. Thailand has started several ambitious decentralisation reforms. The NESDP sets targets to enhance the efficiency of Local Administration Organizations (LAOs). This chapter suggests empowering LAOs further with the provision of specific local public services.

Clarification of roles, tasks and powers of each level of government. The Plan aims at redefining the areas of competence of authorities at the central, regional and local levels in order to minimise task redundancy. Responsibilities should be allocated at the level of government where provision is more cost-effective because of economies of scale and beneficial spillovers.

Step-up public sector's performance. The Plan aims at placing Thailand's public sector among the top performers in the ASEAN countries. This chapter proposes to strengthen the capacity of local authorities to cooperate and coordinate the provision of certain public services.

Reform of financing system. The Plan provides guidelines to improve the management of local revenues by both the central and local governments. This chapter proposes that Thailand should consider giving at least one important tax tool to LAO. Moreover, it encourages a redefinition of shared taxes and of the way general grants are redistributed.

Strengthening the subnational capacity for strategic planning and territorial development. According to the Plan, LAOs should formulate policies with some degree of autonomy. The Plan moreover encourages LAOs to team up with other stakeholders in accordance with good governance frameworks. This chapter recommends establishing formal and informal co-operation and co-ordination mechanisms between LAOs.

Overview of multi-level governance in Thailand from an international perspective: A highly centralised country

This section provides a snapshot of multi-level governance and decentralisation trends in Thailand since the 1990s from an international perspective. It focuses on taxation and spending powers and the structure of LAOs' spending and revenues.

Thailand's multi-level governance framework is highly complex

Decentralisation was mandated by Thailand's Constitution in 1997 and implemented through decentralisation reforms in 1999, 2000, 2002, 2006 and 2008.[1] As a result, Thailand's current system of multi-level governance is based on a dual model: deconcentrated central government units and LAOs that enjoy certain levels of administrative autonomy as established by law (Figure 3.1).[2]

Figure 3.1. Subnational administrative structure in Thailand
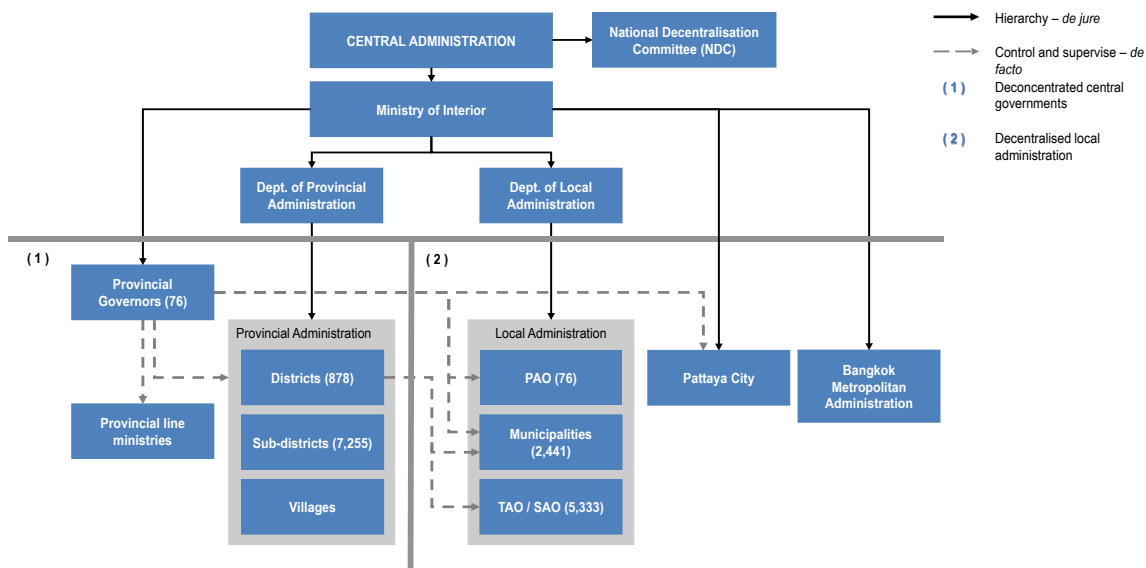
Source: Author's own work based on (NESDB/Thammasat University, 2009[1]; World Bank, 2012[2])

The deconcentrated central government units consist of 76 state Provinces (Changwat). The governors and other head officials of the state Provinces are appointed by the cabinet. The state Provinces are further divided into districts (Amphoe) and sub-districts (Tambon). The state provincial and sub-district officers monitor and supervise the LAOs in numerous ways. For example, provincial government officials have the right to approve the annual budget plans of LAOs, dissolve local councils and even dismiss local councillors.

The local administration sector is composed of several types of LAOs. There are currently 76 Provincial Administrative Organisations (PAOs), 2 441 municipalities and 5 332 Sub-district/Tambon Administrative Organisations (SAOs/TAOs).[3] In total, there are currently 7 852 LAOs in Thailand. The LAOs have directly elected Councils and executives. The Bangkok Metropolitan Administration (BMA) and the City of Pattaya have a special status with greater powers and autonomy than the other LAOs.

While Thailand has made progress in implementing decentralisation, it remains a relatively centralised country. Despite efforts to decentralise power from central to subnational levels, Thailand's public governance model can be characterised as a strongly centralised system. For example, the central government through its local officials can veto the decisions of LAOs, thereby weakening the self-governance of LAOs, municipalities and SAOs/TAOs.

International perspectives on decentralisation in Thailand

Thailand is not the only country with a complex subnational governance model. Many other Asian countries have several government tiers with a large number of government units. Looked at from the aspect of government tiers, Thailand's two-tier local administration[4] model resembles the systems in Indonesia and Japan. Pakistan, the Philippines, the Republic of Korea and Viet Nam have three tiers; China has four tiers; and India has one tier in urban areas and three tiers in rural areas. In each of these countries, multi-level governance is more complicated and diverse than the number of tiers suggest. For example, countries may assign funding asymmetrically, favouring specific tiers of local government or strategic categories of spending. In some cases, the countries have multiple types of subnational government operating at the same levels with comparable legal status (Naoyoki and Morgan, 2017[3]).

The average population size of LAOs also varies considerably within Asian countries. In Thailand, the average population size of 8 000 inhabitants is one of the lowest among Asian countries, and very small compared, for example, with Indonesia's 500 000 inhabitants (e.g. Table 3.1).

Table 3.1. Thailand compared with other Asian

Country	GDP per capita, current PPP USD (2014)	Total population, million (2014)	Urban population, %	Type of state	Number of subnational governments (2014)	Average size of local government, (inhabitants)
PRC	12 855	1 401.60	55.6	Unitary	2 852	491 445
Indonesia	10 517	254.5	53	Unitary	508	500 894
India	5 701	1 295.30	32.7	Federal	250 671	5 167
Japan	38 634	127.1	93	Unitary	1 741	73 004
Korea, Rep. of	25 998	50.4	82.2	Unitary	228	221 053
Malaysia	25 639	29.9	74.7	Federal	149	200 671
Philippines	6 969	101.8	44.4	Unitary	42 028	2 422
Thailand	14 242	67.7	50.4	Unitary	7 874	8 598
Viet Nam	5 629	93.4	33.6	Unitary	11 145	8 380

Note: Average size is calculated by dividing the total population by the number of subnational governments.
Source: (OECD & UCLG, 2017[4])

Thailand's subnational government expenditure as a share of general government spending (17.7% in 2013 and 12.8% in 2016) and as share of GDP (3.9% in 2013 and 2.4% in 2016) is one of the lowest among Asia-Pacific countries and very low compared with OECD countries (Figure 3.2). For example, among Asia-Pacific countries the average shares for

public spending and GDP are 37.5% and 11.5%, respectively (OECD & UCLG, 2017[4]; IMF, 2018[5]).

Figure 3.2. Subnational government expenditure as a percentage of GDP and public expenditure in Thailand compared with OECD countries
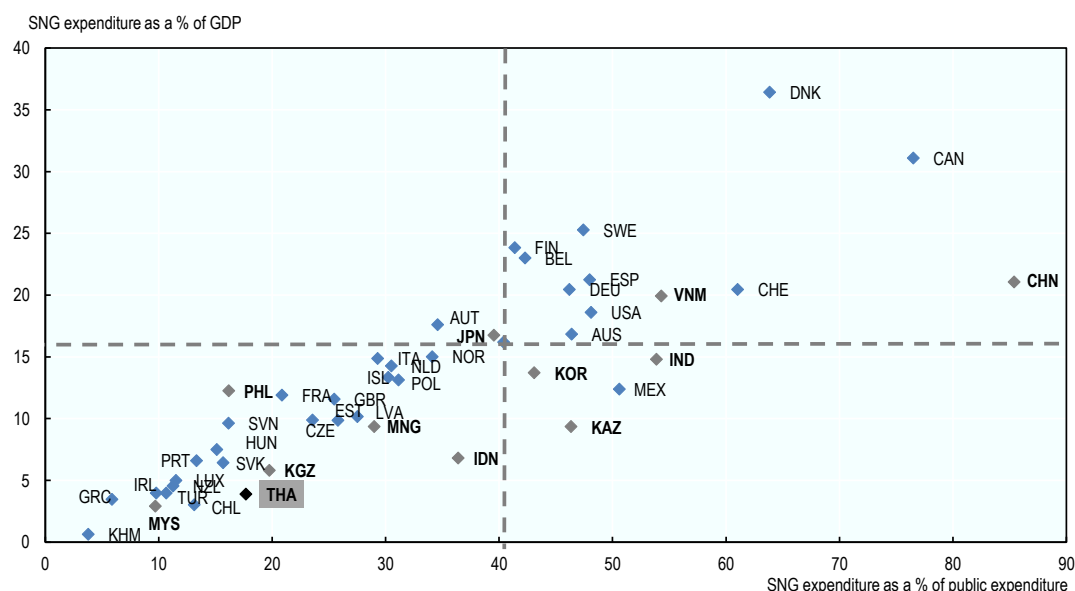
Source: OECD based on (OECD & UCLG, 2017[4]).

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The autonomy of subnational government in Thailand seems weak from the perspective of revenues. The share of subnational tax revenue in total tax revenue is one of the lowest among Asia-Pacific countries (the share was 7.8% in 2013 and 8.4% in 2016) (Figure 3.3 – Panel A). Only Cambodia, the Philippines and New Zealand have lower values. Correspondingly, the share of grants in all subnational revenues is exceptionally high in Thailand (Figure 3.3 – Panel B) (OECD & UCLG, 2017[4]; IMF, 2018[5]).

Overall, Thailand's subnational spending and revenue autonomy is modest at best. This conclusion seems to hold even when factoring in for the difficulties of comparing indicators of subnational spending and revenue shares across countries.[5] The low spending shares and the fact that PAOs, municipalities and SAOs/TAOs are tightly regulated by central government officials, jointly lead to the conclusion that the degree of decentralisation in Thailand is comparatively low.

Figure 3.3. The autonomy of subnational government is weak from the perspective of revenues

Panel A. Share of subnational tax revenues (%) of total tax revenue in Asia/Pacific countries

Panel B. Structure of subnational government revenue, 2016 (%)
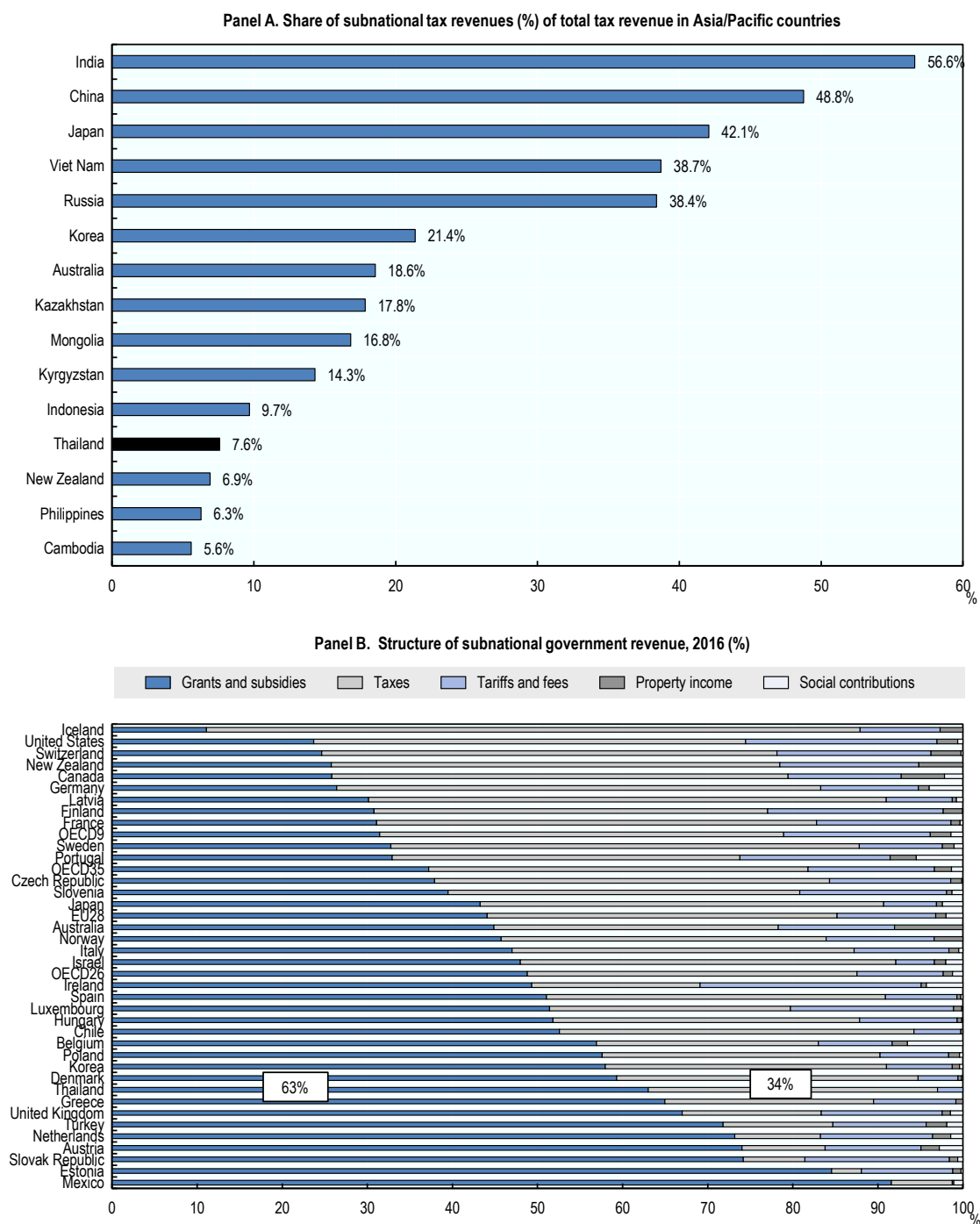
Source: Panel A: OECD elaboration based on (OECD & UCLG, 2017[4]). Panel B: (OECD, 2018[6]; OECD & UCLG, 2017[4]).

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Due to strict central government regulation, subnational government debt in Thailand is low from an international perspective. In 2013, Thailand's subnational government debt was 3.7% of GDP and 7.8% of general government debt (OECD & UCLG, 2017[4]). The share is lower in Indonesia and Korea, whereas in Australia, China and Japan the debt shares are much higher. In Japan, local government debt accounts for 37% of GDP and 15% of all public debt, while the same shares amount to 15% and 36% in Australia and 30% and 59% in China.

Since March 2018, LAOs have been allowed to borrow for three purposes: investment projects, debt restructuring and local government pawnshops. The debt service ratio must not exceed 10% of local government revenue (calculated by using a three year moving average of revenue data).[6] LAOs must apply for central government permission to borrow. Permission is granted if they can provide a financial plan and follow a standard accounting system.

Thailand's LAO investments constitute about 50% of general government investments and 1.5% of GDP (OECD & UCLG, 2017[4]; IMF, 2018[5]).[7] These figures place Thailand in the middle group of Asia-Pacific countries.

Thailand's fiscal decentralisation framework: Wide-ranging tasks and underutilised own revenues

This section concentrates on fiscal decentralisation and subnational finance, elaborating on the expenditure allocation across levels of government as well as the local revenue structure. Some approaches and guidelines developed by the OECD are introduced in order to tailor them to the context of Thailand.

Assignment of responsibilities across levels of government should be clarified

LAOs have been assigned a number of important tasks (Table 3.2). In principle, the tasks have been transferred according to the capacity of each level: the lowest levels of local administration are responsible mainly for local public goods and services, such as public health promotion, kindergartens and local infrastructure. Table 3.2 shows, however, that many assignments overlap among government tiers, which suggests that they are not as clear as they could be.

Thailand has been devolving numerous tasks to local government, but local autonomy remains weak. Assignment of responsibilities to different levels of governments is based on the decentralisation reforms of 2002 and 2008, which ambitiously mandated the devolution of 359 central government functions. However, the central government keeps tight control of local governments by defining the services that can be provided at the local level with numerous Acts. To date, 256 functions have been transferred to LAOs.

The responsibilities of the Bangkok Metropolitan Administration (BMA) are the same as those of the Provinces. The BMA is responsible, among others, for the implementation of local development plans and co-ordination between local authorities in its area, liquid and solid waste management, inter-municipal transportation, infrastructures, commerce and tourism, local culture, arts, and the protection and promotion of traditions.

Staff spending (30%), operating expenditure (23%) and investments (22%) constitute the major spending categories of LAOs, on average. The remaining categories are divided between subsidies (8%) and other expenditures (6%) (Figure 3.4). While these spending categories are the most important on average, it is worth mentioning that PAOs and the

BMA deviate from this trend. In Bangkok, "other expenditures" constitutes the largest spending category (26%), whereas in PAOs investments (39%) are the most important spending type.

Table 3.2. Spending assignment across government levels

	Central government	PAOs	Municipalities, SAOs, BMA and Pattaya City
Defence	✓		
Foreign Affairs	✓		
Justice	✓		
Police	✓		
Fire fighting		✓	✓
University	✓		
Higher education	✓	✓	
Elementary and secondary education	✓	✓	✓
Kindergarten			✓
Public health	✓	✓	
Public health and Curative services	✓	✓	
Public health promotion	✓	✓	✓
Social welfare administration	✓	✓	✓
Pension payment			✓
Elderly and child care centres		✓	✓
Infrastructure investment	✓	✓	✓
Urban planning		✓	✓
Waterways and harbour maintenance		✓	✓
Water sewage maintenance		✓	✓
Maintain of local order, stability of communities and society		✓	✓
Planning and promotion of local commerce and tourism		✓	✓
Natural resources and environment management and protection	✓	✓	✓
Art, culture and local wisdom	✓	✓	✓

Source: (Laovakul, 2017[7]).

The main spending functions of LAOs comprise general administration, central budgeting, education, housing and local amenities (Table 3.3). The share of other expenditures such as health and social work is very small. While this classification of expenditure is not fully comparable to that used in international statistics on subnational government spending (COFOG), the high share of administrative expenditure and "central budgeting" in Thailand's subnational spending raises questions.[8] In OECD countries, on average, purely administrative expenditures usually constitute only a small fraction of subnational government expenditures.[9] It is nevertheless clear that education and housing are by far the most important subnational government spending functions out of all public services assigned to LAOs.

The fact that the Provincial Administrative Organisations (PAOs) are often responsible for the same tasks as municipalities and TAOs/SAOs suggests an overlap in responsibilities. A significant overlap in assignments would be problematic, especially from the perspective of co-ordination, as uncoordinated assignments can lead to inefficiency in service delivery.

Figure 3.4. Operating expenditure and staff spending constitute a major share of local administration expenditure

Main spending types as a % of total expenditure in all LAOs and the main subgroups in 2016
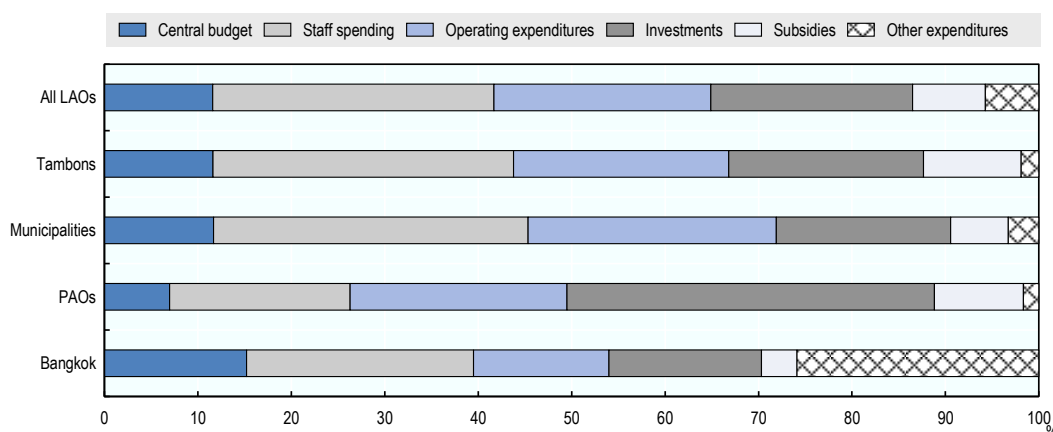
Note: Figure shares are calculated from total spending in Thai Bahts.
Source: Thailand Department of Local Administration and author's calculations.

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Overlapping assignments can also incentivise LAOs to avoid costs, for example, by transferring responsibilities to other levels of government. While to some degree this potential problem always exists in the case of shared service responsibilities, unclear responsibilities can intensify "passing the buck" behaviour. This issue is discussed in more detail in the next section.

In Thailand, the situation is further complicated by central government intervention in LAO decisions. Local offices of central government often operate in parallel with the local administration sector, which confuses service delivery.

Many of the functions assigned to Thailand's LAOs currently seem to be underfunded or even unfunded. The main underlying reason is failure on the part of the current grant system to take into account the fiscal disparities and service needs of LAOs. In addition, as the revenue powers of Thai LAOs are restricted, and as the regional differences in tax bases are substantial, LAOs are often unable to draw on their own resources to compensate for the lack of central grants. Regional differences in tax bases reflect the differing production potential among Thailand's regions, as discussed in Chapter 2.

Table 3.3. General administration and education are the main spending functions of Thailand's LAOs

Spending of local administration by function, % of total expenditure

Function	Percentage
Education	19.16
General administration	22.65
Public health	4.17
Agriculture	0.63
Industry and public works	6.79
Commerce	0.75
Strengthening the community	1.13
Housing and community amenities	18.23
Social work	0.84
Maintaining domestic peace	1.75
Religion, culture and recreation	1.53
Central budgeting	22.37
Total local expenditure	100

Note: The data used to calculate the shares do not include the Bangkok Metropolitan Area.
Source: (Laovakul, 2017[7])

Underfunding and low subnational revenue capacities contribute to variations in spending and service provision between LAOs. An examination of spending differences between Thailand's LAOs reveals marked differences in per capita spending between LAOs in all spending categories (see Figure 3.5 for Gini coefficients on per capita spending).[10] This situation is a potential source of inequality in access to services and service quality.

Figure 3.5. Marked differences between subnational government per capita spending suggest inequality in service provision

Gini coefficients of per capita expenditures of main spending categories
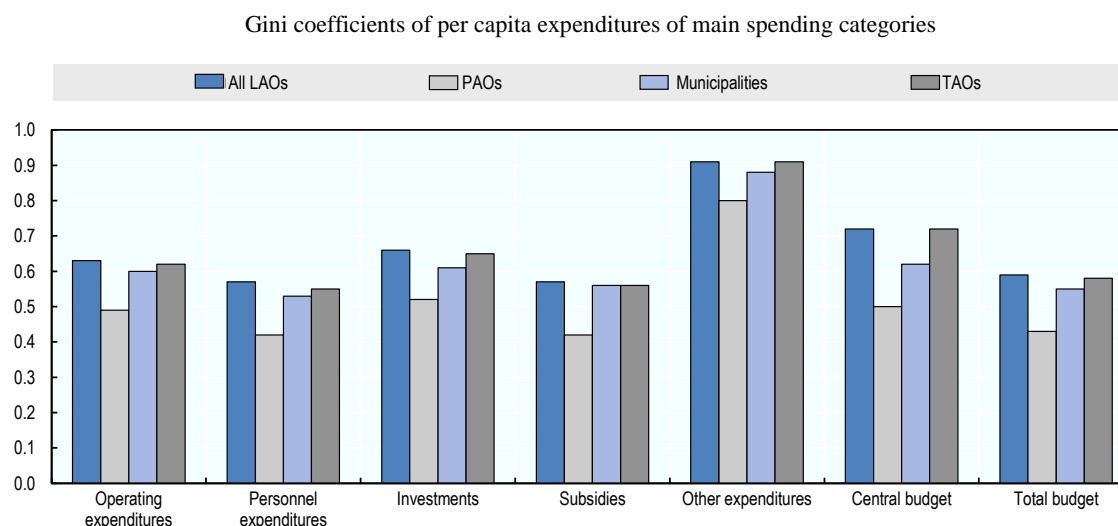
Note: Gini coefficients have been calculated using samples of LAOs. *Source:* (Laovakul, 2017[7])

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Transfers and shared tax revenues dominate subnational government revenues

Tax revenues comprise less than 10% of all revenues for LAOs. The main own tax revenue source is the building and land tax, which constitutes 16% of tax revenues (this calculation also includes tax sharing). Other local tax revenues, including local development tax, signboard tax, animal slaughter tax, bird nest collection tax, retail sale of cigarettes, and tobacco and gasoline taxes (only for PAOs), are considerably less important in this respect (Figure 3.6). In addition, PAOs and the BMA are allowed to collect hotel taxes. Other revenues of LAOs include fees, fines and permission charges, revenue from property, revenue from public utility provision and other revenues (Thailand Department of Local Administration).

Central government financing to LAOs consists of tax-sharing arrangements and transfers. The main source of shared tax revenue is value added tax (VAT) (28% of tax revenues), but central government shares also other revenues with the LAOs. The other shared revenues include business tax, alcohol and beer tax (23%), excise tax, motor vehicle tax and fee (14%), property registration fee, gambling fee, mineral fee, petroleum fee and other miscellaneous revenues (Figure 3.6).

Figure 3.6. Breakdown of subnational government taxes by category, 2016
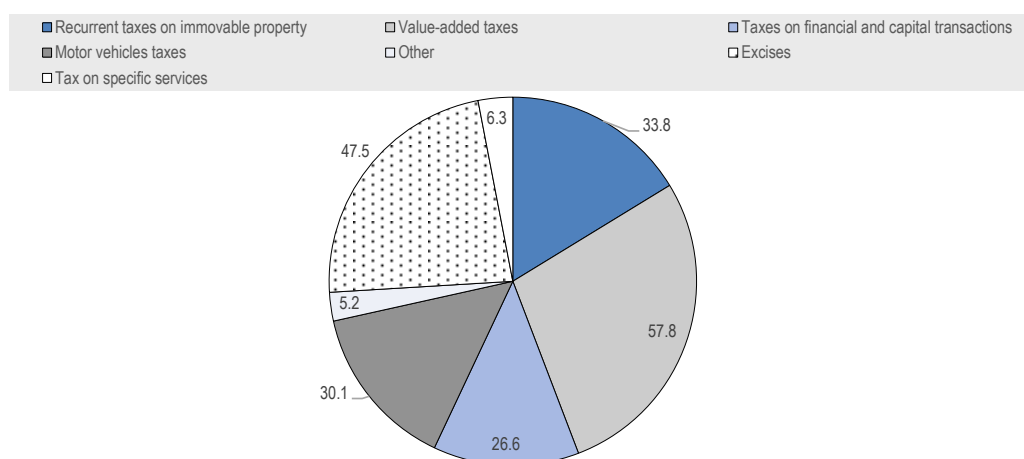
Source: OECD elaboration based on IMF data – Government Statistics

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The volatility of shared tax revenues is a potential source of unstable public service delivery. Value-added tax and other shared tax revenues are dependent on economic cycles, which poses a problem for ensuring stable public service delivery.[11] This is also a potential source of pro-cyclical fiscal policy. In order to avoid sudden cuts in public service delivery, LAOs need to build financial buffers. However, these can be difficult to manage efficiently. The current system may also lead to subnational government budget deficits, which LAOs may find difficult to cover. While Thailand's Public Debt Management Act states that central government will not be responsible for LAO debt, the volatility of revenues may nevertheless increase demands for central government bailouts.

Since the decentralisation reform of 1999, a certain level of revenue has been guaranteed from the central government to LAOs. In 2007, it was mandated that the central government would distribute no less than 25% of net revenues. This level has risen gradually with the

current government target at 35%. As a result, the proportion of central government net revenue distributed to LAOs has increased from 13% in 2000 to 28% in 2017. The share is estimated to reach 29% for the fiscal year 2018 (OECD, 2018[6]).

A high share of central government financing of LAOs may lead to inefficient subnational government decision making (Kim and Blöchliger, 2015[8]). The major role of central government grants and tax-sharing arrangements in subnational financing may reduce the fiscal responsibility of LAOs. This may happen if LAOs expect central government intervention or bailouts in the event that problems occur. Such expectations can "soften" LAOs' budget constraints and thereby distort their decisions on spending and borrowing. The central government transfers are currently divided in general-purpose, specific and conditional grants.

"General-purpose grants" could help close vertical fiscal gaps, but their definition leaves fiscal imbalances between LAOs unsolved. "General-purpose grants" are distributed proportionally to the difference between the expenditure of basic services and own revenue (that is, not including grants) of each LAO (Laovakul, 2017[7]; Laovakul, 2018[9]; Sudhipongpracha and Wongpredee, 2015[10]). The LAOs have had full discretion using the general grant. However, the formula used to define the general grant has not taken into account the revenue-raising capacities nor the service needs of the subnational governments. As a result, the general grant has been unable to reduce fiscal imbalances between LAOs. For fiscal year 2019-20 the general purpose grant formula will be changed to factor in the revenue-raising capacities of Provinces. To measure this capacity, Thailand's Regional Development Policy Integration Committee will use indicators such as GDP per capita, household income, number of poor in each province, efficiency to implement the provincial plan and efficiency in local budget management.

Figure 3.7. Transfers and tax sharing dominate local administration revenues

Revenue by main source, percentage of total revenue

Source: (Laovakul, 2017[7]; Laovakul, 2018[9]).

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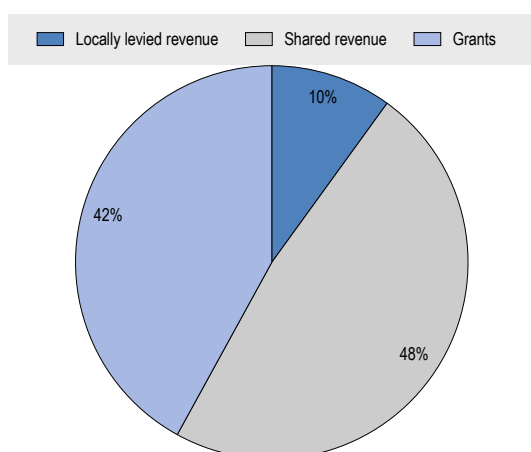
"Conditional grants" are used to finance public services that appear high on national government priorities, notably in education or health care (e.g. school lunches, student achievement programmes, HIV-infected patients' stipends, elderly people's stipends).

"Specific grants" are used to finance certain public services such as village water supply. The recipient LAOs must return the unspent specific grants at the end of the fiscal year to the Ministry of Finance.

In 2016, intergovernmental grants and shared revenues (mainly VAT but also other shared revenues) made up 90% of total local government revenues (Figure 3.7). Own revenues (locally levied revenues) therefore represented just 10% of the total revenues for LAOs.

There are major differences between Thai LAOs in terms of own revenues. In general, cities and towns are clearly better positioned to collect own revenues (Figure 3.8). Nevertheless, all types of Thailand's municipalities – including the biggest cities – must rely on central government financing. It is also noteworthy that the revenues available to PAOs are smaller than those available to other types of LAOs. This is largely because PAOs lack a specific responsibility and instead oversee the whole area covered by their province. As a result, municipalities and even TAOs handle a much larger budget than PAOs. The capacity of PAOs to assist municipalities or TAOs when needed is therefore debatable.

Figure 3.8. There are considerable differences in revenues between LAOs

Revenues in different types of Thai subnational governments, Bahts per capita in 2016
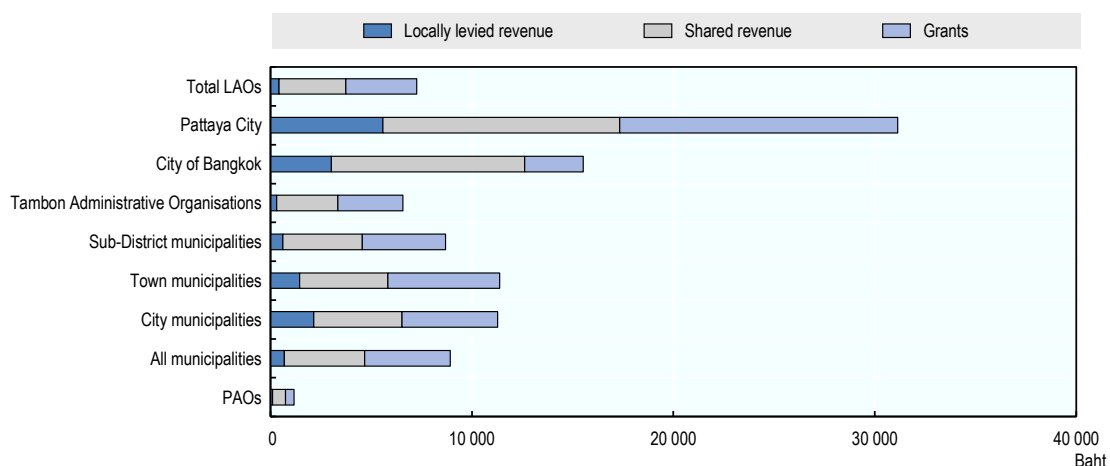
Source: Thailand Department of Local Administration and author's calculations.

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The current financing system applied to Thailand's LAOs fails to even out fiscal disparities and differences in the costs of public service provision arising from varying service needs in different parts of the country. The Gini coefficients of subnational revenues show that revenues collected from own sources are very unequally distributed. At the same time, funding from the central government (shared taxes and grants) is surprisingly equally divided (Figure 3.9). This observation applies for all types of LAOs. Central transfers and shared revenues do not equalise the differences in LAOs' own revenue bases.

LAOs do not have strong incentives to tax their current tax bases. Localities with higher per capita income and therefore higher tax potential income receive a disproportionate amount of general-purpose grants (Sudhipongpracha and Wongpredee, 2017[11]; Sudhipongpracha and Wongpredee, 2015[12]).[12] LAOs that could develop a relatively self-

sufficient revenue base do not face the incentive to do so. The current system end up diverting resources from LAOs with weak fiscal capacity and that therefore would need more assistance.

The transfer system and shared revenue system should be changed in order to guarantee equal service provision in all parts of Thailand. The richest LAOs should be able to finance the bulk of their spending using their own revenue sources. Central transfers should target mainly areas with a low tax base and/or high service needs, such as a higher share of young or elderly people. As discussed in Chapter 4, pollution, poor environmental performance, and low access to water and sanitation may point at higher needs for water security.

Figure 3.9. The Gini coefficient of subnational government revenues by type of revenue and type of LAO, per capita

Revenues in different types of Thai subnational governments, Baths per capita in 2016
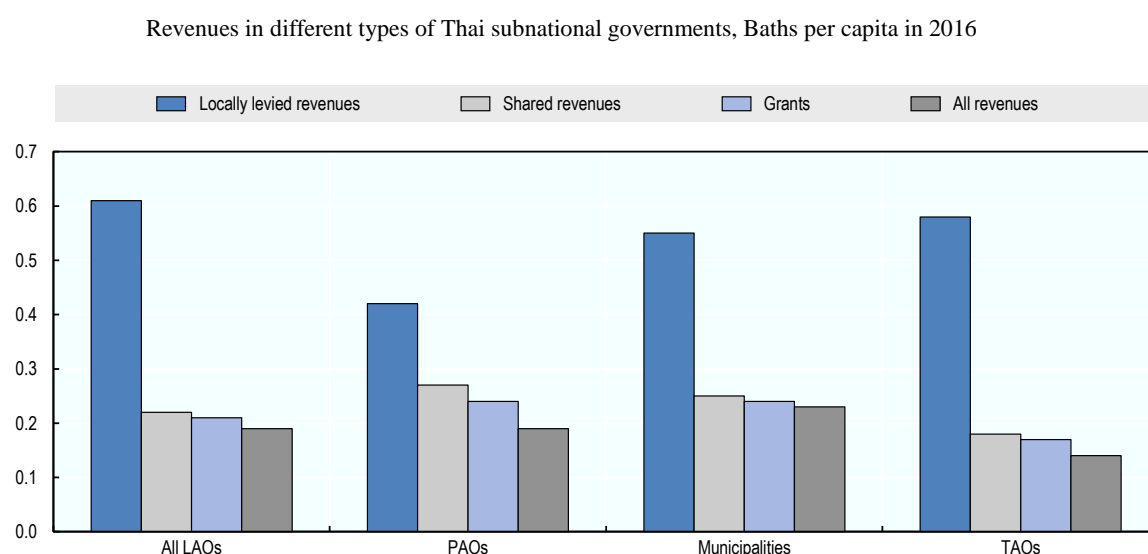
Note: Calculations have been made using samples of LAOs.
Source: (Laovakul, 2017[7]; Laovakul, 2018[9]).

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Addressing the challenges

This subsection discusses alternative ways to tackle the main challenges posed by decentralisation and multi-level governance in Thailand. The discussion focuses on issues raised in the previous sections of this chapter: the dual model of governance, spending assignments, economies of scale, the financing system and subnational capacities. Each of these is discussed in more detail in the following sections. As an introduction to this discussion, it should be mentioned that the OECD has identified 10 pre-conditions for making decentralisation work (Box 3.2). Among these, the focus on clarifying assigned responsibilities and functions, as well as strengthening subnational capacities and co-ordination mechanisms, is fundamental. Other pre-conditions are linked to allow some room for territorially specific policies and the possibility for asymmetric decentralisation, with differentiated sets of responsibilities given to different types of regions/cities. Such mechanisms are critical to provide institutional and fiscal arrangements that better respond to local needs.

Box 3.2. Ten guiding principles for effective assignment of responsibilities to make decentralisation work

1. Clarify the sector responsibilities assigned to different government levels: while inevitably most responsibilities are shared across levels of government, it is crucial to ensure adequate clarity and mutual understanding of the role of each level of government in the different policy areas to avoid duplication, waste and loss of accountability.

2. Clarify the functions assigned to different government levels: equally important as clarity in the assignment of policy areas, is clarity in the different functions that are assigned – financing, regulating, strategic planning, implementing or monitoring.

3. Ensure balance in the way different responsibilities and functions are decentralised: balanced decentralisation – (i.e. when the various policy functions are decentralised to a similar extent) – is conducive to growth. Ensuring balance in the way various policy functions are decentralised is essential to allow for complementarities across policies and integrated policy packages for effective territorial development approaches.

4. Align responsibilities and revenues and enhance subnational fiscal autonomy: the allocation of resources should be matched to the assignment of responsibilities assigned to subnational governments. Subnational governments should control a portion of subnational resources in order to promote their accountability.

5. Actively support subnational capacity building by the central government for the human, institutional and strategic dimensions of subnational governments: greater responsibilities at the subnational level need to be complemented with human resources capable of managing them. Too often this dimension is underestimated. Capacity development at the subnational level, particularly in poor or very small municipalities, must be actively supported with resources from the centre, and will require long-term commitment.

6. Build adequate co-ordination mechanisms across levels of government: since most responsibilities are shared, it is crucial to establish governance mechanisms to manage those joint responsibilities. Such tools for vertical co-ordination include, for example, platforms for dialogue, fiscal councils, contractual arrangements, conditionality, standing commissions and intergovernmental consultation boards.

7. Support cross-jurisdictional co-operation through specific organisational arrangements or financial incentives, to increase efficiency through economies of scale in investment or public service delivery.

8. Allow for asymmetric arrangements and pilot experiences: allow the possibility for asymmetric decentralisation, in which differentiated sets of responsibilities are given to different types of regions/cities, based on population size, urban/rural classification or fiscal capacity criteria. Ensure flexibility in implementation, allowing for pilot experiences in specific places/regions – and permanent adjustments through learning-by-doing.

9. Effective decentralisation requires complementary reforms in the governance of land-use, citizen participation and innovative public service delivery and governance.

10. Enhance data collection and strengthen performance monitoring: monitoring and data collection need to be carried out to monitor the effectiveness of subnational public service delivery and investments. Monitoring systems need to be designed in such a way

to provide useful data for decision making and peer learning and with a limited number of indicators.

Source: (Allain-Dupré, Chatry and Moisio, 2018[13]; OECD, 2018[14])

Revising the dual model of governance

In order to reap more benefits from decentralisation, Thailand could consider giving greater autonomy to LAOs. For instance, the interrelationship between deconcentrated regional central government authorities and LAOs could be altered gradually in ways that enhance the role of LAOs. At the same time, it is important to ensure that LAOs have adequate capacity and resources to take over both spending and financing responsibilities. In this respect, Thailand could benefit from the experiences of Poland, where a relatively successful decentralisation reform was implemented in the 1990s and thereafter (Box 3.3).

Thailand's central government could create political and financial incentives for LAOs to deliver services in ways that support important national policy goals. Such a policy could replace the current "top-down" management of LAOs. Reforms on the subnational financing system and normative regulation on public service provision would be important components in this change. These are discussed in more detail in the following subsections.

Box 3.3. Decentralisation reform in Poland: A sequential approach to giving more autonomy to subnational governments

Poland provides a relatively successful example of the implementation of decentralisation reform. While it is not possible to measure precisely the effects of decentralisation on Polish society, Poland has performed well, for example, in terms of World Governance Indicators, compared with its neighbours and other former communist countries.

As a result of decentralisation reforms in the 1990s, Poland is now considered the most decentralised country in Central and Eastern Europe. Between 1995 and 2014, the share of subnational government expenditure in total public expenditure increased by more than 9 percentage points, from 23% to 32%.

As a result of the decentralisation reforms of 1990s and thereafter, Poland has transformed from a very centralised country to a decentralised one. One key factor behind the success of this reform was preparatory planning in local governance, which began during the 1980s under the Communist regime. The new model of local government was implemented relatively quickly after the political change (IBRD/World Bank, 2015). Another important factor in its success is the gradual and systematic way in which the reform was implemented. New responsibilities were transferred hand in hand with capacity building at the subnational level. In addition, new fiscal rules and territorial contracts were introduced to control and co-ordinate the decentralisation process. Considerable effort was taken to ensure that all stakeholders understood the goals of the reform and the likely outcomes. Training and information activities, often organised through non-governmental organisations, thus played a key role in implementation of the reform.

Although the decisions involved in the decentralisation reforms were taken very quickly after the collapse of communism, implementation took place in stages. Municipal self-governance was established first, and was followed thereafter by the introduction of regional authorities. Another important aspect of the Polish reform is that subnational government revenues were decided after the finalisation of spending assignments. Following the 2004 Act on Local Government Revenue, which modified the financing of subnational governments, subnational governments gained more financial autonomy, with a decrease in the share of central transfers. The use of earmarked grants was reduced, while tax sharing on personal income tax (PIT) and corporate tax revenues was introduced.

Source: (OECD, 2008[15]; Regulski and Drozda, 2015[16]; Kaufmann and Kraay, 2018[17]).

The overall complexity of Thailand's decentralised system should be reduced. At present, both the municipalities and TAOs operate at the second tier of local administration. Municipalities are classified into three subgroups. The reforms on multi-level governance should aim to improve the accountability and transparency of subnational government decision making. Clarifying the subnational government structure and reducing the overlap between deconcentrated central government and the local administration are key measures in this respect.

Thailand should also consider the use of experimentation and staged implementation before applying reforms across the board. In some countries, such as Sweden (see Box 3.4), the government has managed to reassign tasks from the deconcentrated central government to LAOs using regional experiments and a voluntary approach. While this kind of reform is slower than a "big bang" approach, it encourages learning-by-doing and allows decisions to be revised during the reform process, if needed.

Box 3.4. Reforming the dual multi-level governance in Sweden

Sweden is one of the most decentralised countries in the world in terms of public service delivery and expenditure. About 25% of the country's GDP is accounted for by subnational government expenditure, and the subnational government enjoys extensive spending, taxing and decision-making autonomy. In Sweden, nearly all redistributive tasks have been devolved from the central government to counties and municipalities. Sweden has a two-tier system of subnational government consisting of 20 County Councils and 290 municipalities:

- County Councils (landsting) are run by directly elected assemblies and are mostly responsible for health services (80% of their budget). Counties may also engage in promoting culture, education and tourism. The responsibility for regional and local public transport is shared between the municipalities and the County Councils. Ten County Councils have responsibility for regional development policy. In addition, the municipality of Gotland, which is an island, has the responsibilities of a County Council.

- Municipalities (kommuner) are also run by directly elected councils. Municipalities are responsible for basic and secondary education, kindergarten, elderly care, social services, communications, environmental protection, fire

departments, public libraries, water and sewage, waste management, civil defence, public housing and physical infrastructure.

Until the late 1990s, the County Administrative Boards (central government agencies) were responsible for regional development in each county. In 1997/98, Sweden launched a reform to transfer these competencies from regional central government agencies (CABs) to autonomous counties. However, the national government has not imposed a single model on the counties, but rather provided different regionalisation options (OECD, 2010). In essence, it has promoted an asymmetric and bottom-up approach to regionalisation as a gradual and experimental process – a laboratory of regionalisation.

The underlying idea is that decentralised policy making leads to more innovation in governance. From 1997 onwards, Sweden developed various regionalisation options in terms of political representation and responsibilities in different regions and in different phases. These included directly elected regional councils in the two "pilot regions" of Skåne and Västra Götaland, resulting from the mergers of two and three countries, respectively; an indirectly elected regional council for Kalmar; and a municipality with regional functions for Gotland. The second phase (2002-07) was initiated by the Parliamentary Act of 2002, which made it possible for counties – if all local municipalities agreed – to form regional co-ordination bodies (indirectly elected bodies in line with the Kalmar model) to co-ordinate regional development work.

The third phase of experimentation, which began in 2007, corresponds to a renewed bottom-up demand for regionalisation. It started with the publication of recommendations for the future of governance at the regional level, published by the Committee on Public Sector Responsibilities in February 2007. The Committee argued for the extension of the "pilot region" model, which had been assessed positively, the merger of current counties, and the creation of six to nine enlarged regions in order to address long-term challenges such as ageing. To date, the reform has not been applied in full, but the bottom-up demand for regionalisation has persisted. As of 1 January 2015, ten councils out of 21 counties are responsible for regional development.

Source: (OECD, 2018[14]; OECD, 2017[18])

Thailand should also consider strengthening the ability of the central government to co-ordinate with LAOs in ways that do not involve direct interference in LAOs' operations. An important measure in this regard is the expansion of the statistical database on LAOs to better inform national decision-making. This will require building a comprehensive data collection on the main financing indicators and service costs in all LAOs. For instance, Chapter 4 discusses the data required to improve the management of water security.. In addition, there is a need to gather data on service needs and other major factors affecting costs, as well as main service outcomes.[13] These data should be made freely available for all stakeholders and private citizens. The Thai government could benefit from examining the recent developments in Colombia in this respect (Box 3.5).

Box 3.5. Examples of subnational government databases

The Norwegian KOSTRA system is widely recognised in the OECD area as a best practice. KOSTRA is an electronic reporting system for municipalities and counties. It can publish input and output indicators on local public services and finances, and provide online publication of municipal priorities, productivity and needs. KOSTRA integrates information from local government accounts, service statistics and population statistics. It includes indicators of production, service coverage, needs, quality and efficiency. The information is easily accessible via the Internet and facilitates detailed comparison of the performance of local governments. The information is frequently used by local governments themselves as well as by the media and researchers. Although individual local governments could use KOSTRA more efficiently (e.g. by systematic benchmarking), the system has helped to facilitate comparisons of municipalities, thereby promoting "bench-learning" or "bench-marketing".

Largely inspired by Norway's KOSTRA model, Colombia has recently made considerable efforts to facilitate reforms on subnational governments by creating online databases on regional statistics. The National Planning Department of Colombia has prepared several new indicator systems to monitor territorial-level developments and the administrative and managerial performance of subnational governments. For example, the National Planning Department has jointly developed an online tool called TerriData with its domestic and international partners, in order to review and compare key data from Colombia's departments and municipalities. TerriData currently consists of data on demographics, education, health, public services, public finances, and security for departments and municipalities. Investments in information bases contribute to the ability of central government to steer and monitor developments in subnational governments. In addition, the 2018 census – the first census to be undertaken since 2005 – will improve the quality of territorial statistics. Regular censuses are particularly important for territorial indicators. The resulting datasets are open to all to enable subnational governments and other stakeholders to benefit from this information.

Source: (Allain-Dupré, Chatry and Moisio, 2018[13]; OECD, 2017[19])

There are some examples of open data platforms already in use in Thailand which are designed for local project monitoring. For instance, one such database reports the progress of all the central government projects in each province (www.padme.moi.go.th). The data are provided by the Ministry of Interior's provincial government officials and do not include LAO data. Another example is a database that reports the progress of all projects operated by LAOs in each province (e-plan.dla.go.th). The data are provided by LAO officials.

More detailed information on Thailand's LAOs would enable a gradual policy shift from the current direct management of LAOs to a more indirect "steering by information" approach. Sufficient good quality data would enable the steering to focus on monitoring service outcomes instead of "micromanaging" input use and service production process. While data collection processes and setting up databases would require additional resources, the savings gained over time from reduced administrative work would likely exceed the costs of the initial investment.

Reconsidering spending assignments

Reorganising current spending assignments between government levels should be a priority when reforming Thailand's subnational government. Better clarified roles, tasks and powers for each level of government would contribute to the efficiency and transparency of public service delivery. In addition, reducing duplication and overlapping assignments between PAOs, municipalities and TAOs would enable more efficient central monitoring of LAO tasks.

Several countries currently grapple with similar challenges (Box 3.6). While the detailed recommendations to address assignment problems need to be tailored to each country's situation, the alternative paths forward are often the same. The following paragraphs discuss the possible solutions.

Box 3.6. Examples of lack of clarity in assignments

In Brazil, there is a lack of clear division of responsibilities in a number of areas, such as health care, education, social security, welfare, agriculture and food distribution, environmental protection, sanitation and housing.

In Chile, at the municipal level, the current system of responsibilities is quite complex with few exclusive competencies and 13 shared competencies whose dividing lines between central or municipal interventions are not well established and are subject to change. Additional tasks are regularly attributed to municipalities without financial or technical compensation. Shared responsibilities, especially education and health, represent a significant burden on municipal budgets. Until the adoption of the law on municipal staff in 2016, municipalities lacked the option to adapt their human resources – either quantitatively or qualitatively – to these new functions.

In Colombia, the cumbersome allocation of responsibilities across different levels of government complicates the funding system making it difficult to assess whether a specific service, whose management corresponds to different layers of the administration, is appropriately financed.

In Finland, the 2007 reform on local government structures demonstrated that many provincial, regional and local actors share responsibilities, which engenders problem of co-ordination and possible overlapping.

In France, a 2017 report from the "Cour des Comptes" suggested a need to further clarify the allocation of competencies between departments and intercommunalités and to strengthen efforts to pool functions across municipalities. The report also regrets that the "compétence générale" clause was suppressed for regions and departments, but not municipalities, thus inhibiting clarification of the roles of the different tiers of government.

In Mexico, expenditure responsibilities are not clearly defined, with overlapping responsibilities in the two key areas of health and education.

In Peru, a lack of clear delineation of competencies has produced uncoordinated overlaps and a lack of ownership.

Source: (Allain-Dupré, Chatry and Moisio, 2018[13]; OECD, 2017[19])

The assignment of responsibilities within each public service area depends largely on the type of the service. While the economic theory on fiscal federalism cannot offer precise

answers with regard to the choice of optimal fiscal assignment, some inferences can however be made (see Box 3.7 for a more detailed discussion). On the one hand, the lowest level of government are better placed to provide local public services, such as streetlights, local schools and child daycare. Local decision-makers have more information about local preferences, needs and costs of provision. On the other hand, higher levels of government may provide public services that entail economies of scale more efficiently and at a lower cost. Similarly, higher levels of government are often best suited to take care of public services with important redistributive features (e.g. specialised health care, secondary and higher education) and with considerable positive externalities or spillovers (e.g. major roads or main water pipelines).

Box 3.7. Assigning allocation, redistribution and stabilisation tasks

The traditional fiscal federalism literature divides public tasks into three branches: allocation, redistribution and stabilisation functions (Musgrave and Musgrave, 1980). The general consensus is that the allocation function – that is, the provision of public services – can be the responsibility of both the central and subnational level of governments. Responsibility is best applied at the central level when the services in question have no specific local interest. Subnational responsibility is justified when the benefits of the goods or services are spatially limited. Moreover, according to Oates' "Decentralisation theorem" (1972), the subnational level is most suited to providing services and goods, unless the central government has a clear advantage in provision. An example of this would be considerable economies of scale in provision.

According to Musgrave and Musgrave (1980), the redistribution and stabilisation functions fall mostly under the responsibility of central government. In particular, central government is considered best suited to deal with monetary or fiscal policy. It is also widely accepted that the redistribution function should be carried out mostly at the central level, as the central government is more able to implement income redistribution from the rich to the poor and establish minimum standards of public services across regions (King, 1984[20]).

"Pure local goods" such as local infrastructure (streetlights, local roads), sewage, land use planning or basic education, are usually considered best suited for subnational government provision. It is nevertheless quite common for subnational governments to be involved, at least in some way, in the provision of services with redistributive features. In the Nordic countries, for example, even health, education and welfare services have been delegated from the centre to subnational governments. In the case of decentralised redistribution, the central government usually retains responsibility for co-ordination and ensuring the equity of citizens in different parts of the country. This can be achieved, for example, by using transfers from central to subnational governments, or through normative regulation (minimum standards), or both.

Ideal spending assignments between levels of government are almost impossible to accomplish in practice. This is mainly because there is always a certain degree of "path dependency" present in decentralisation and because radical reforms of multi-level governance are hard to bring about. In addition, the conditions in countries and regions often vary considerably due to historical, geographic, institutional, cultural and capacity-based reasons. However, although a common policy method is hard to come by, some trends are common to all countries in terms of the ways responsibilities are assigned

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across local and intermediary levels of government. Table 3.4 below provides an overview of features common to the assignment of responsibilities.

Since the capacity of subnational government units to accept the responsibility ultimately defines the spending assignment, asymmetric decentralisation can be a way forward. A phased in, or sequential, approach could then be worthwhile. Asymmetry in provision is more easily arranged in cases of "pure local public services", because local preferences dominate and there is less need for central government interference. In cases of redistributive services, the choice between uniform and asymmetric provision is more difficult, because of aspects related to equity and the need to ensure a standard or minimum level of provision in all parts of the country, among others. The obvious alternative to asymmetric arrangement would be to strengthen the existing subnational governments.

Source: (Oates, 1972[21]; Musgrave and Musgrave, 1980[22]; King, 1984[20]).

In practice, decisions regarding the "best" division of fiscal responsibilities between central, intermediate and local governments varies from country to country and depends on the institutional setting, history and politics. The experience from practices adopted in various countries suggests, however, that these basic theoretical principles have in general been applied (Table 3.4).

Table 3.4. Assignment of responsibilities across subnational governments: A general scheme

Municipal level	Intermediary level	Regional level
A wide range of responsibilities – General clause of competence – Eventually, additional allocations by the law **Community services** – Education (nursery schools, preelementary and primary education) – Urban planning and management – Local utility networks (water, sewerage, waste, hygiene, etc.) – Local roads and city public transport – Social affairs (support for families and children, elderly, disabled, poverty, social benefits, etc.) – Primary and preventative healthcare – Recreation (sport) and culture – Public order and safety (municipal police, fire brigades) – Local economic development, tourism, trade fairs – Environment (green areas) – Social housing – Administrative and permit services	**Specialised and more limited responsibilities of supra-municipal interest** **An important role of assistance towards small municipalities** **May exercise responsibilities delegated by the regions and central government** **Responsibilities determined by the functional level and the geographic area:** – Secondary education or specialised education – Supra-municipal social and youth welfare – Secondary hospitals – Waste treatment treatment – Secondary roads and public transport – Environment	**Heterogeneous and more or less extensive responsibilities depending on countries (in particular, federal vs unitary)** – Services of regional interest: – Secondary/higher education and professional training – Spatial planning – Regional economic development and innovation – Health (secondary care and hospitals) – Social affairs, e.g. employment services, training, inclusion, support to special groups, etc. – Regional roads and public transport – Culture, heritage and tourism – Environmental protection – Social housing – Public order and safety (e.g. regional police, civil protection) – Local government supervision (in federal countries)

Source: (OECD, 2016[23]).

While the complete elimination of overlapping assignments is not possible, several country examples demonstrate that successful multi-level governance reform on spending assignments can be accomplished (see Box 3.8 for a more detailed description).

Box 3.8. Examples of reforms on shared responsibilities

Denmark reformed its subnational government in 2007. The reform reassigned the tasks between levels of government, merged municipalities and reduced the number of intermediate governments (counties). As a result of the reform, counties were granted responsibility for the most demanding healthcare services including hospital services. Municipalities gained responsibilities for health promotion, social welfare and education. One of the aims of the structural reform was to reduce both the degree of shared assignments and the incentives for cost shifting between government levels. In order to tackle the latter issue, the municipalities were obliged to co-finance the rehabilitation services and training facilities provided by the counties.

Spain reformed its multi-level administrative structures in 2013 with the aim of clarifying municipal competencies and preventing duplication. The main goal of the reform was "one Administration, one competency". The reform reduced competencies that were not attributed by law or delegated by other administrations without adequate resources (known as "improper competencies"). The reform intended to improve the definition of local competencies. It started by establishing a list of core competencies. Competencies not included in this list were referred to as "non-core competencies". In any event, whenever competencies are delegated from upper levels of government to lower levels of government, it is compulsory to provide corresponding resources earmarked to finance the services involved.

In Japan, the 1988 Municipal Government Act provided a reference framework for the distribution of responsibilities across levels of government, establishing a distinction between mandatory responsibilities (including some that are shared with central government or delegated) and optional responsibilities. The 1999 Decentralisation Law eliminated opaque central decision making on local responsibilities and clarified competencies more generally. Subsequent waves of reform have continued to develop the goals of greater municipal autonomy, clear delineation of responsibilities and proper financing.

In the Netherlands, the Dutch decentralisation reform that was carried out during 2012-2014 aimed to reallocate competencies between the different levels of government, in particular by re-enforcing provincial and municipal responsibilities and by establishing simpler and clearer divisions of responsibilities between the different public actors, thereby helping to avoid the overlapping of functions.

Source: (Allain-Dupré, 2018[24]; The Ministry of Health, 2017[25]).

In addition to reducing overlapping assignments, the reorganisation of spending assignments should work to ensure that each government level is assigned tasks that they can deliver in practice. Accordingly, the reorganisation should take into account the current and short/medium-term financial and human capacities of the various LAOs. Building financial and human resource capacities, however, involves many aspects and may involve several measures, such as reforming the financing system, mergers, enhanced co-operation of LAOs and training the local public service administrators. These are discussed in more detail in the following sections.

Enhancing economies of scale

Local fragmentation can make provision of local services inefficient. Thailand's LAOs consist of nearly 8,000 units, which is high in international terms. There are large differences in per capita revenues and spending between LAOs. Hence, an important rationale for reforming Thailand's LAOs is local fragmentation. In addition, the differences in fiscal and human resource capacities raise questions about equity in public service quality and access to services, as discussed in Chapter 2.

If full decentralisation is pursued, structural reforms could simplify administrative structure and improve spending efficiency. As previously discussed, Thailand's municipalities and TAOs have both been assigned important tasks that require adequate capacities. Merger reforms or enhanced co-operation (voluntary or mandatory) can contribute to the capacity building of LAOs and therefore support measures to clarify assignments. However, efforts to centralise the current assignments of municipalities and TAOs or transfer them to PAOs would naturally reduce the need for radical merger reforms or co-operation.

Merger reforms may involve top-down decisions or bottom-up choices. Mandatory approaches have been chosen in Japan (during the "Great Sh wa", 1953-1999), New Zealand (1989), Denmark (2007), Greece (2011) and Turkey (2008 and 2012). Forced amalgamations have been carried out either with strict pre-determined plans and numbers of subnational governments or with more flexible objectives. Targets have been used – and reached – in Japan and New Zealand. Municipal amalgamations in Finland, Iceland, Luxembourg, Netherlands, Norway and Japan ("Great Heisi" consolidation ongoing since 2006) followed a bottom-up approach (OECD, 2017[19]).

Voluntary merger reforms can be successful, especially when LAOs (often municipalities) see clear benefits from the boundary reform. That is why in some cases special grant schemes have been formed to create incentives to merge. In other cases, LAOs have been promised more important tasks after successful merger reforms. Municipalities may also conclude that their current or future spending assignments are too demanding for them without a merger.

Irrespective of the eventual choice between "top-down" or "bottom-up" approaches to mergers, the central government should take the lead in the planning process. Both voluntary and forced merger reforms can fail, especially when they involve much political bargaining that in turn might inflate costs and imply financing schemes. There should be a clear national plan on the optimal local administration structure (i.e. the number of municipalities and the average size of each type of LAO). The planning should be based on best available data on the fiscal capacities and factors that affect costs. In addition, the final decision between forced and voluntary merger should take into account best practices from other countries and the opinions of LAOs.

If a merger reform turns out not to be feasible, the alternative way forward is to increase co-operation between LAOs. While there are some risks involved related to transparency and accountability in intermunicipal or interregional co-operative arrangements, co-operation does provide a comparatively easy and flexible way to utilise economies of scale. Moreover, as discussed in Chapter 2, co-operation agreements do not rule out later merger decisions and are flexible enough for LAOs to withdraw when they do not benefit from them anymore.

Reforming subnational government financing

If decentralisation reform is to proceed, the weight of own revenues in the financing of Thailand's LAOs should be increased. At present, only around 10% of Thailand's LAO spending is covered by own revenues. For LAOs to be truly autonomous and accountable, a considerably larger share of their financing should be based on own revenues. Thailand should therefore seriously consider implementing a comprehensive reform of subnational government tax bases.

Box 3.9. The subnational property tax in the OECD area

The property tax is a cornerstone of local taxation in many countries, but its implementation and management faces many obstacles. The merits of the property tax are regularly praised by economists: visibility, lack of tax export, productivity thanks to the stability of tax bases and a solid return on tax collection, lack of vertical tax competition by exclusive or priority allocation to the municipal level, implicit progressivity (property values rise alongside the revenue of their owners) and horizontal equity. These merits do not conceal the weaknesses and limits inherent in its practical application and management, which raise debates and encounter many difficulties. Such obstacles explain the fact that the importance of recurrent taxes on property in subnational tax revenue and GDP remains modest, although it varies considerably across countries.

Figure 3.10. Subnational recurrent taxes on property in the OECD and Ukraine
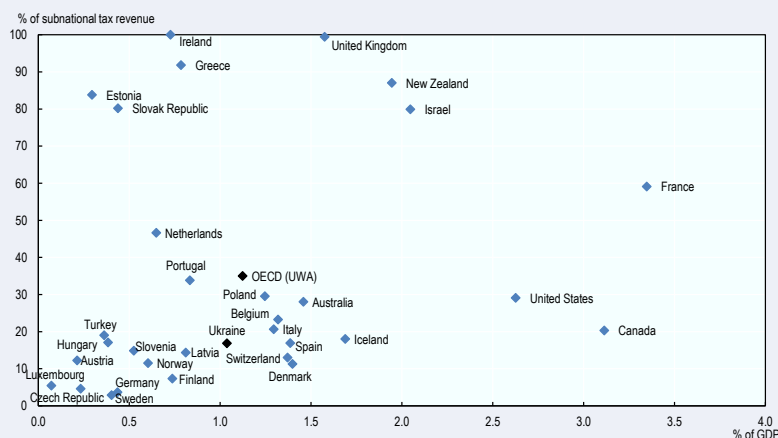
Note: 2016 is the year of reference for Ukraine; 2013 and 2014 are the reference years for the other countries. Includes: taxes on land, buildings or other structures (D29a) and current taxes on capital (D59a).
Source: Based on data from OECD National Accounts for Ukraine and the State Treasury (OECD, 2017[26]; OECD, 2016[23]).

StatLink ⎙▨⬛ https://doi.org/10.1787/888933847961

In the OECD area, recurrent taxes on property represent 35% of subnational tax revenue on unweighted average, but between 90% and 100% of local tax revenue in Australia, Ireland, Israel, New Zealand and the United Kingdom, most of which are Anglo-Saxon

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countries (Figure 3.10). At the other end of the spectrum, recurrent property taxes represent a minor local tax revenue source (less than 10%) in the Nordic countries (Finland, Norway and Sweden), Estonia, Luxembourg, Switzerland and Turkey (OECD, 2016c). They account for 17-30% of local tax revenue in Hungary, Iceland, Japan, Korea and Poland. As a percentage of GDP, recurrent taxes on property range from 0.1% in Luxembourg to 3.1% in Canada and 3.3% in France, the unweighted OECD average amounting to 1.1%.

A property tax reform would be an important first step. The reform could focus on updating information on property values, which are now outdated (the values currently in use stem from the 1980s). Property tax is generally considered to be one of the least distorting taxes and can provide a stable revenue source for LAOs (Box 3.9). Thus, the use of property tax, which currently accounts for less than 1% of all tax revenues in Thailand, should be encouraged. It is therefore promising that a law on land and building tax is currently being examined by the National Legislative Assembly (NLA).

Going further, Thailand should consider allocating at least one important tax base, such as the personal income tax (PIT), to LAOs to strengthen their own revenue base. Property tax and other current local tax and revenue bases cannot be expected to fund a major share of subnational spending, especially because LAOs have been assigned significant tasks. Defining an optimal tax strategy involves taking several aspects into account, including economic efficiency, competitiveness, fairness, revenue performance and administrative cost. Since the main problem of Thailand's subnational revenues is the narrow revenue base, the alternatives are approached here from the perspective of revenue performance. Taking into account the fact that LAOs already receive a share of VAT, this leaves one main alternative, namely the income tax base, or personal income tax (PIT).[14]

The most efficient way to collect local income tax in Thailand would likely be to define the local tax as a surtax on the central government PIT. In general, the yield of a local income tax depends on the coverage of the tax, the rate structure, and the effectiveness of tax assessment and collection. For efficiency reasons, tax collection and other administration should therefore remain with the central government. The LAOs should, however, be allowed to decide tax rates in their jurisdictions. In order to alleviate risk for vertical tax competition (which could lead to overly high income taxation), and to increase the co-ordination of income taxation, the central government could set upper and lower limits for tax rates. Such limits should also take into account the overall burden on tax payers and Thailand's competitive position in the region.[15] The use of PIT as a subnational revenue source is discussed in more detail in Box 3.10.

A local tax reform should be accompanied by adequate fiscal rules. The volatility caused by revenues from the current shared tax bases poses a problem for Thailand's LAOs. A local PIT would also be prone to economic cycles, although probably to a lesser degree than VAT.[16] Fiscal rules should therefore come with a particular focus on regulating local borrowing and budget balancing.

Box 3.10. Personal income tax in OECD countries: A significant source of revenue for subnational governments

In OECD countries, personal income tax (PIT) can represent a significant proportion of subnational tax revenue. In countries such as Denmark, Finland, Iceland and Sweden, where the share of PIT in subnational tax revenue ranges from 82% to 97%, personal income tax is a local own source tax, not a shared tax. In Denmark, the local PIT is collected by the central government together with the national PIT. In Finland, the base of the local PIT tax is determined by the central government, but municipalities have full control over the rate. In Sweden, subnational tax revenues come almost entirely from the local PIT, which is an own source tax, levied independently from the national PIT. Municipalities and counties have the same tax bases but decide independently to set their tax rate.

In Norway, the revenue from the PIT on ordinary income is collected by the municipalities for the central government, the counties and the municipalities. The split of PIT revenues between the three levels of government is determined by parliament as part of the national budget. The tax level is set annually by the Norwegian parliament as the maximum level of municipal income tax. In principle, counties and municipalities can lower the income tax rate for their municipality, but in practice all use the maximum rates. In Portugal, the two autonomous regions enjoy a certain degree of tax autonomy. They are able to retain nearly all of the PIT generated within their territories, and exercise strong control over the rate and base. Portuguese municipalities receive a local PIT surtax capped at 5% of tax receipts collected from local residents, although municipalities can decide to reduce this percentage. In Italy, the PIT is a shared tax and an own source tax. Part of the PIT receipts are shared and local governments can also choose to levy a surtax on the PIT.

In Japan, the government launched in 2002 an ambitious reform of all three major sources of revenues of subnational governments – local taxes, the local allocation tax and specific grants. This came to be known as the "Trinity Reform". FY 2003 saw JPY 4 trillion worth of reforms to targeted subsidies. In the following year, FY 2004, JPY 3 trillion worth of revenues were transferred from the central government to subnational governments, with a portion of the income tax shifted to local governments as a personal residents' tax. The local tax system in Japan is a complicated entity with many taxes and only limited autonomy for local governments. In 2012 OECD recommended Japan to start a comprehensive tax reform to reduce barriers to the effective use of existing powers to set local tax rates, and encourage local governments to rely primarily on existing local taxes on personal income, consumption and property, as they are relatively stable (NESDB/Thammasat University, 2009[1]).

Finally, in some unitary countries such as Latvia, Poland and Slovenia, the PIT is shared and accounts for more than 50% of subnational tax revenue. In Estonia, Lithuania, Romania and the Slovak Republic, the PIT was considered a shared tax between the central and subnational governments, until a recent reform of the System of National Accounts. Under the new methodology, PIT receipts have been reclassified as central government transfers and no longer as tax revenue.

Source: (OECD, 2018[27]; OECD, 2018[28]).

A transfer system would be important to account for the marked differences of income tax bases between LAOs. For instance in Thailand's rural and remote areas, the share of agriculture is high, and taxable income in agriculture is often very low. Furthermore, in some LAOs (especially the big cities) the share of the unofficial workforce may be quite high, which can limit the efficiency of tax collection. At the same time, taxing powers could incentivize LAOs to improve their tax bases and tax collection, which in turn could contribute to solving the problem of unofficial labour force. Since it is likely that the per capita income tax revenues would vary considerably between LAO's, the transfer system should be designed to take into account these differences.

Thailand should also consider reducing the weight of tax sharing in LAO revenues, as this clearly represents a source of volatility. As discussed above, the financing system reform should focus primarily on strengthening the LAOs' own revenue bases. Some of the revenues currently allocated through revenue sharing could be used to finance the general transfer system.

There are strong arguments for reforming the transfer system as well. In particular, the weight of the general grant in the grant system should be increased relative to specific grants. The existing excessive use of specific and conditional grants in LAO financing is problematic for many reasons. For example, LAOs are currently incentivised to compete with each other for central government financing. This race does not encourage local communities to co-operate to resolve local and regional problems. In addition, the emphasis on specific grants incentivises LAOs to submit a large number of project proposals in order to secure local financing. This is an inefficient way to allocate central government funding to LAOs, because it increases administrative work, among other reasons.

In addition, specific and conditional grants may draw the attention of LAOs away from local needs and preferences. These grants may distort local decision making and eventually weaken allocative efficiency. For example, in Norway, the use of earmarked grants that aim to boost elderly care services was successful in this respect, but side effects included reduced spending on education, reduced childcare coverage and increased budget deficits (Borge, 2016). Earmarking may also weaken the transparency and accountability of local decision making compared to scenarios where LAOs are steered in accordance with legal obligations and are funded with general grants.

Thailand should also consider altering the general grant formula to better take into account the differences in tax-raising capacity and service needs among LAOs. Ideally, the grant system would incorporate models based upon the capacity to tax as well service costs. This would enable the system to support the poorest LAOs or those that have the highest costs, or both (see Box 3.11 for an example).

Thailand could benefit from the experiences of intergovernmental grant system reforms carried out in other countries. In Australia, a comprehensive grant reform was carried out in 2009, which replaced the old system based largely on specific grants with a formula-based general grant system. In Switzerland, the fiscal equalisation system was reformed in 2007. The new system consists of three elements: (i) horizontal tax revenue equalisation between cantons, (ii) federal aid to cantons with below-average tax-raising capacity, and (iii) a federal equalisation fund for cantons with high geographic-topographic or socio-demographic spending. To compensate for the additional federal spending linked to the vertical equalisation fund, the federal government reduced the cantons' share in the federal income tax from 30% to 17% (Blöchliger and Vammalle, 2012[29]). In Sweden, the fiscal equalisation system has been based on general grants since 1990s and the Swedish government has put considerable effort into designing and implementing the transfer

system. In Italy, a reform is ongoing to introduce grants that equalise the costs of provision of public services and call for more responsibilities of local governments (Box 3.11).

Box 3.11. Data-driven approaches to equalise fiscal capacity and spending needs across regions: the cases of Sweden and Italy

Sweden: income equalising formula

The income equalisation grant equalises calculatory tax revenues between municipalities and between counties. The calculatory tax revenue is defined using the actual tax base per capita times the average tax rate. Local governments with a per capita tax revenue below 115% of the average tax receive a grant, and local governments with a tax above 115% of the average tax pay a fee according to a special formula. The formula can be written as follows (for receiving municipality/county):

$$Grant_i = tax\ rate_j\ x\ (1.15\ x\ tax\ base_j - tax\ base_i)\ x\ C_k$$

where $Grant_i$ is the tax equalising grant for municipality/county i, $tax\ rate_j$ is the country average municipal/county tax rate, $tax\ base_j$ is the average municipal/county tax base, and $tax\ base_i$ is the tax base of municipality/county i. The result is multiplied with compensation rate C_k, which is 0.95 for municipalities and 0.9 for counties.

The main purpose of the income equalisation grants is to equalise differences in the local tax base. In 2015, there were large differences in the municipal tax bases, ranging from a minimum of SEK 191 500 *per capita* to a maximum of SEK 504 400 *per capita*. The majority of the municipal tax bases, however, are grouped near the mean tax base (SEK 239 934 per capita).

Municipalities/counties where the tax base is above 115% of the country average have to pay a contribution to the equalisation system. If the tax base is between 115% and 125% of the country average, the compensation is 0.60 times the exceeding amount of the tax base. For the part of the tax base that exceeds 125% of country average, the municipality pays 0.85 times the exceeding amount.

In 2015, a total of 38 out of the 290 municipalities had a tax base higher than 115% of the average tax base in the country, and had to pay a fee to the system. Twenty of these municipalities are located in the Stockholm County area.

Italy: grants to equalise costs of provision of local public services

Italy has been introducing grants that equalise the spending capacity of local authorities. The aim is twofold. In terms of equity, equalisation grants guarantee that all authorities have enough resources to provide local services with uniform standards of quantity and quality. In terms of efficiency, equalisation grants cover only "standard costs" of provision of public services. The grants therefore stimulate higher accountability of local administrators, since expenditure levels above standard costs must be financed directly by local resources.

In Italy, equalisation grants are distributed according to a two-stage procedure. First, every fiscal year an equalisation fund is defined. A fixed amount of resources is then redistributed based on the estimation of "standard costs" for each local public service and municipality. The estimation of "standard costs" takes into account the type of

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services provided, the territorial features and the social-economic and demographic characteristics of the resident population. More in details, "standard costs" for each local administration i and service j are estimated using a five-step procedure.

First, the estimation of the following model provides the Standard Expenditure Needs for a service j (e.g., public roads maintenance):

$$y_{ij} = \alpha_j + \beta_j X_{ij} + \gamma_j W_{ij} + \varepsilon_{ij}$$

where, y_{ij} is the local per capita expenditure of municipality i in service j, X_{ij} are variables that capture local preferences and needs (e.g. number of vehicles per resident) and environmental characteristics that impact the total productivity of input needed (e.g. morphological characteristics of the local administration). W_{ij} is a set of variables that capture the costs of input (e.g. the average staff expenditures per employee).

Second, once the coefficients of the above empirical model are estimated, the expected values ($\hat{y}_{ij}$) of the current expenditure of each municipality are obtained as:

$$\hat{y}_{ij} = \hat{\alpha}_j + \hat{\beta}_j X_{ij} + \hat{\gamma}_j W_{ij}$$

Third, the Theoretical Standard Expenditure Needs for local administration i and service j are computed according to the following formula:

$$FS_{ij} = \hat{\alpha}_j + \hat{\beta}_j X_{ij} + \hat{\gamma}_j W_j^*$$

where $\hat{\alpha}, \hat{\beta}, \hat{\gamma}$ are estimated in the first step. W_j^* is a set of targeted costs of input. The definition of these targets determine the reward for local administrations that are particularly efficient in managing resources.

Fourth, the allotment coefficient for each service j and local administration i is computed as:

$$FS\_CR_{ij} = \frac{N_{ij} \cdot FS_{ij}}{\sum_i N_{ij} \cdot FS_{ij}}$$

The total standard expenditure need of each local administration is determined by the aggregion of all the allotment coefficients. The final ratio gives the share of equalisation fund to be distributed to each municipality.

As of today, the distribution of equalisation grants based on standard costs applies to municipalities only. The evaluation of standard costs for regions is ongoing.

Source: (OECD, 2017[18]; Blöchliger and Vammalle, 2012[29]; Ballanti et al., 2014[30])

Strengthening subnational capacities to finance infrastructure

The central government tightly control LAOs' access to finance for local projects. As previously discussed, about 50% of all public investments in Thailand are carried out by LAOs. These investments are financed by LAO reserve funds, project grants and borrowing. However, most Thai LAOs rely on central government to finance their

investments. Only the wealthiest LAOs have considerable reserve funds for investments. The use of these reserves is tightly regulated by the central government. In addition, the lenders for LAO borrowing consist mostly of institutions that are controlled by central government.

The grants for infrastructure investments are mostly earmarked and conditional. LAOs send their project proposals to the central government for project funding. Projects are ranked first by the line ministry and then by the Bureau of the Budget. If the project is approved for central government funding, the grant is usually paid as a conditional grant.

As discussed in the previous section, the current system may distort local decision making by drawing the attention of LAOs away from local needs and preferences. This can weaken allocative efficiency in two main ways. First, central government officials do not necessarily possess all the relevant information to select the most productive and effective investments. Second, LAOs may propose a project that is not necessarily the best option for the local community, but one that they think will be accepted by the central government.

Figure 3.11. OECD instrument: Recommendation on Effective Public Investment Across Levels of Government

Pillar 1
Co-ordinate across levels of governments and policies

• Invest using an integrated strategy tailored to different places
• Adopt effective co-ordination instruments across levels of govt
• Co-ordinate across SNGs to invest at the relevant scale

Pillar 2
Strengthen capacities and promote policy learning at all levels of government

• Assess upfront long term impacts and risks
• Encourage stakeholder involvement throughout investment cycle
• Mobilise private actors and financing institutions to diversify sources of funding and strengthen capacities
• Reinforce the expertise of public officials & institutions
• Focus on results and promote learning from experience

Pillar 3
Ensure proper framework conditions for public investment at all levels of government

• Develop a fiscal framework adapted to the objectives pursued
• Require sound and transparent financial management at all levels
• Promote transparency and strategic use of procurement
• Strive for quality and consistency in regulatory systems across levels of government

Source: (OECD, 2014[31]; OECD, 2014[32]).

The current financing system is also problematic from the perspectives of co-operation and co-ordination. As the financing system is based on applications sent by LAOs, this practice encourages LAOs to compete with each other for funding. The financing system may therefore discourage LAOs from co-operating with each other in investment projects. This limits the opportunities to utilise local innovation for public investment.

Thailand could ease the control over LAOs' investments and giving more decision-making power to LAOs in order to better reap the benefits of decentralisation. Instead of maintaining direct control of LAOs, Thailand could address co-ordination issues by establishing new frameworks for horizontal and vertical dialogue and co-operation.

The OECD has developed a Recommendation on Effective Public Investment Across Levels of Government to help countries assess the strengths and weaknesses of their public investment capacity in a multi-level governance framework. The tool is designed to help countries apply a whole-of-government approach to setting priorities for improvement.

The OECD Recommendation consists of 12 Principles which have been divided into three pillars: (i) co-ordination of public investment across and within levels of government and policies, (ii) strengthening capacities for public investment and promoting policy learning at all levels of government, and (iii) ensuring proper framework conditions for public investment at all levels of government (Figure 3.11).

As autonomous entities, LAOs should be able to finance most investments with own reserves and borrowing. The central government could still provide grant funding for investments but to a lesser degree. For this to be possible, LAOs ought to have at least one strong tax base available to them, such as the PIT.

In addition to direct funding sources for investment (own savings, transfers, borrowing), Thailand's government jointly with LAOs could develop local capabilities to utilise indirect funding sources (e.g. public-private partnerships, private equity, utilising joint public entities as responsible project organisations) (Figure 3.12). It should be noted, however, that some financing tools, such as public-private partnerships, require considerable expertise before they can be utilised. Such skills can be realistically expected only in the main metropolitan areas.

Figure 3.12. Potential investment funding sources for subnational governments
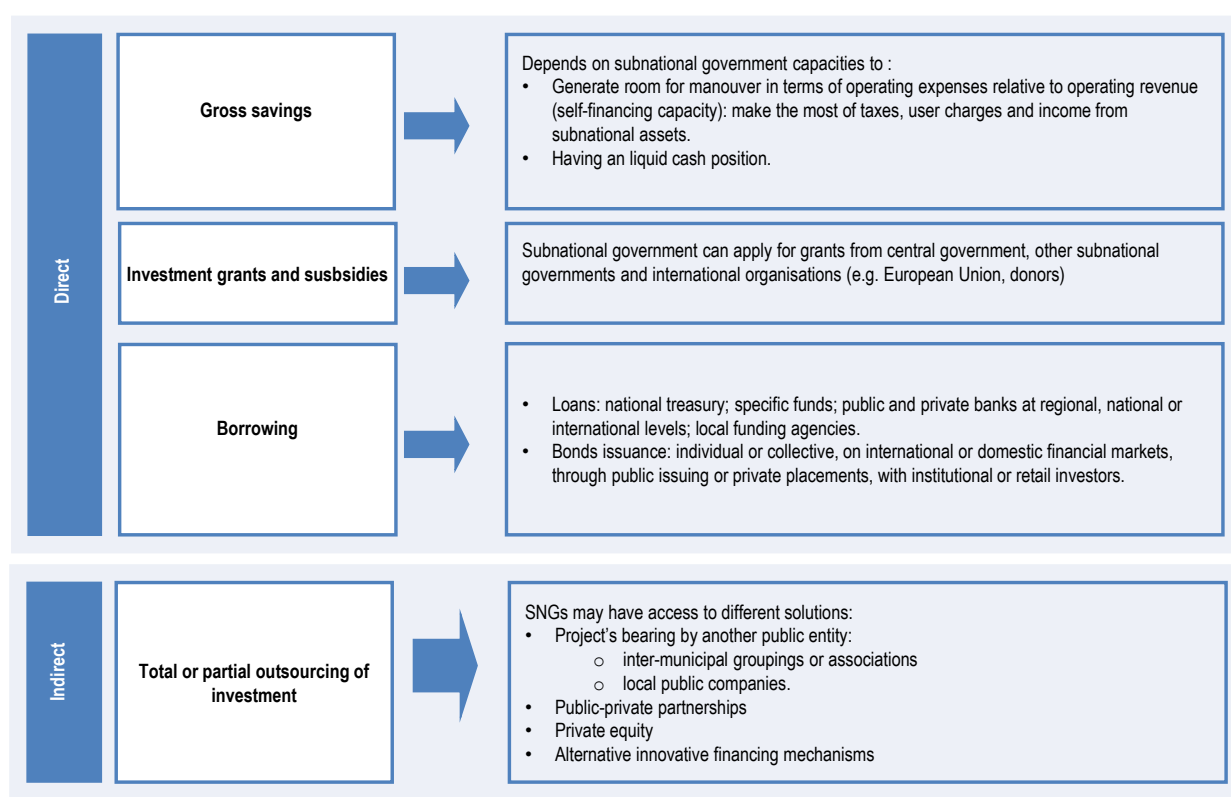
Source: (OECD, 2016[33])

Enhancing subnational capacity for strategic planning and territorial development

This section discusses briefly the subnational capacities for strategic planning and territorial development in Thailand, focusing on human resources management and strategic planning, as well as vertical and horizontal co-operation. Chapter 2 discusses forms of coordination between local administrations to integrate service provision in a metropolitan area. Chapter 4 shows how better management of water basins across jurisdictions can improve the allocation and quality of water.

The differing fiscal and human resource capacities available in varying sections of Thailand's fragmented local administration sector constitute one of the main challenges of the multi-level governance system in Thailand. Nevertheless, lack of current human capacities at the local administration level ought not be used as an argument against decentralising. It is possible to develop human capacities with systematic training programmes (top-down), and with learning-by-doing and sharing information and best practices between LAOs themselves (bottom-up). Subnational government associations could have a role in this process (e.g. Box 3.12).

Box 3.12. Associations of subnational government can help disseminate information on best practices

Associations of subnational governments are often essential to public administration reform processes, as these intermediation bodies regroup information and provide stable negotiating partners for the government, thereby helping to reduce substantial information asymmetries and high transaction costs.

In Finland, the working groups in charge of drawing up the reform included members from the two coalition government parties and opposition parties, as well as members from the Finnish Association of Local and Regional Governments. This allowed the reform to gain wide political support, despite a change of government during the reform process. The organisation, representativeness and capacities of such bodies, and the quality of the relationships and trust between them and the government are key to the process; in contrast, their fragmentation may generate difficulties.

In France, the multiplicity of associations representing the interests of subnational governments at each level and within each level, while mirroring the diversity and vigour of local leadership, also makes it more difficult to build consensus and rally potentially diverging interests to uphold common positions.

Source: (OECD, 2017[19])

Thailand could also consider developing a strategy for LAO human resources management. The training of officials working in LAOs should be continued and intensified. In addition, statistical data on the public sector workforce should be developed further to help enhance human resource management.

Thailand could consider establishing formal and informal mechanisms for dialogue between LAOs and central government in order to advance the decentralisation process and to utilize all relevant information available. Many OECD countries have established co-operation and co-ordination mechanisms between central and subnational governments to empower subnational governments. The experience from these countries show that such

arrangements can ease the planning and implementation of multilevel governance reforms. The instruments can be both formal and informal and they generally aim to promote dialogue and co-ordination across levels of government. The benefits of such structures include sharing experiences of best practices and preparing joint subnational proposals. The joint forums may also involve negotiations with the central level. In any case, a systematic dialogue between subnational governments and central government can lead to better understanding of the needs and problems at different levels of government and consultation in the design, implementation and monitoring of reforms (see Box 3.13 for some examples).

In 2017, Thailand introduced the Regional Development Policy Integration Committee as a new effort to integrate the policies and plans concerning regional development. The committee is chaired by the Prime Minister, comprises representatives from LAOs, private sectors, concerned government agencies, and NESDB as the secretariat. This committee could be a platform for LAOs to exchange ideas with the central government. The experiences of this Committee should be evaluated and, if found successful, the format could be extended to deal with other subnational government issues such as local tasks and funding.

Box 3.13. Co-ordination platforms for regional development and subnational investment

In order to ensure that their various levels of government take a more co-ordinated approach to regional development and public investment, many OECD countries make use of vertical and horizontal co-ordination platforms. These can include institutional mechanisms, co-financing arrangements, formalised consultation of subnational governments and platforms for regular intergovernmental dialogue. Practices in Australia, the Netherlands, New Zealand, Portugal and the United Kingdom provide relevant examples.

Infrastructure Australia was established in 2008 by Australia's federal government to co-ordinate investments of national importance with Australian states and territories. Infrastructure Australia advises the national government on investment priorities in the transport, communication, energy and water sectors, and helps states identify infrastructure projects that align with national priorities. Infrastructure Australia assesses individual state or territory applications for funding under the Building Australia Fund, which is the country's main mechanism for financing critical infrastructure projects.

In the Netherlands, the various levels of government establish their own vision documents – the Spatial Vision on Infrastructure and Spatial Planning at the national level, the Provincial Structural Vision at the provincial level and zoning plans at the municipal level. These documents serve as inputs to Area Agendas, which help all levels of government discuss and align their questions and projects in the physical domain (i.e. housing, industry, infrastructure, public transport, environment and water). Within the multi-year investment programme, each region has its own collective Area Agenda, which contains the co-ordinated vision, goals, questions and projects of the various regional government levels. Aligning the visions, goals and projects of each level of government leads to better solutions, greater efficiency and ultimately greater effectiveness. While formal discussions take place multiples times per year, decision making on the content of Area Agendas occurs at an annual meeting at the political level, with the outcome discussed in Parliament.

New Zealand's Government Policy Statement establishes high-level priorities for transport investment, which are then implemented through the New Zealand Transport Agency (NZTA) in collaboration with subnational governments. NZTA officials work with each local authority to determine co-funding arrangements for the maintenance and renewal of the country's regional and local roads (approximately 90% of all roads). Vertical co-ordination is largely confined to investment in Auckland. Auckland Council's special plan sets out long-term priorities for public investment, and is designed to guide the investment decisions of central and local government, particularly in transport, as well as in social infrastructure (e.g. schools and hospitals).

Portugal's Comissão de Coordenação e Desenvolvimiento Regional (CCDR) was created in 1979 for the purpose of planning. Currently, CCDR activities cover: spatial planning, promoting strategic and integrated regional development planning, monitoring the design and implementation of deconcentrated policies, and providing an opinion on the national government's public investment expenditure programme (PIDDAC) at the regional level. In accordance with the EU Cohesion Policy, each region was requested to draft its own Regional Strategy 2020 under the direction of the CCDR, in order to improve collaboration among the CCDR, municipalities and the regional directorates of various ministries operating in the regions.

To improve local-level horizontal co-ordination, the UK government is encouraging the development of Combined Authorities, wherein cities and surrounding districts combine to create a representative entity with a legal status. The entity may share transport and economic development functions, as well as any other functions that their constituent authorities agree to share. To establish a combined authority, local authorities must develop a governance review that includes a recommendation for establishing such a legal structure for their area. The Greater Manchester Combined Authority, for example, was established in 2011. Other Combined Authorities were established in the Northeast, West Yorkshire, Sheffield and Liverpool in April 2014. The Authorities in Greater Manchester, Sheffield and West Yorkshire were offered additional powers via "devolution deals" in late 2014 and early 2015.

Source: (OECD, 2017[19])

Policy recommendations

Goal to reach	Recommendations of the Multi-Dimensional Country Review of Thailand
1. Revising the dual model of multi-level governance	
1.1. Enhance the autonomy of LAOs.	1.1.1. Move towards more indirect control and co-ordination of Local Administrative Organisations (LAOs) by the central government. 1.1.2. Strengthen the deconcentrated central government units' capacity to consult and monitor LAOs. As these capacities accumulate, gradually diminish the direct interference of deconcentrated central government in subnational government decisions. In addition, strengthen subnational capacities to take over service tasks in order to gradually transfer all or most service tasks that satisfy local needs to LAOs.
1.2. Improve the accountability and transparency of subnational government decision making.	1.2.1. Create financial and political incentives for LAOs to meet the targets set by central government. This should be achieved by reforming the transfer system and developing enabling normative regulation that sets minimum standards, but leaves the responsibility of service provision to LAOs. 1.2.2. Local elections and elected councils and mayors of LAOs play important roles in supporting successful decentralisation reform. Local elections should be strengthened with core guidelines and arranged on a regular basis. 1.2.3. Strengthen the fiscal base of LAOs, especially the base for own source revenues. 1.2.4. Develop monitoring and prevention of corruption at all levels of government.
1.3. Strengthen the ability of central government to co-ordinate LAOs in ways that do not involve direct interference in LAOs' operations.	1.3.1. Invest in an extended statistical database that covers all LAOs. Create a set of indicators that cover the financing, costs, availability and quality of subnational government services, for use in decision-making. Make all data and indicators publicly available. 1.3.2. Create a formal negotiation framework or body for subnational and central government representatives to discuss service level and quality targets, the financing of LAOs, and current and planned reforms. Establish informal forums for dialogue between central and LAOs in order to help promote co-operative arrangements and enable more co-ordinated actions.
2. Reconsidering spending assignments	
2.1. Ensure an efficient and improved allocation of assignments between levels of government.	2.1.1. Clarify the assignment of responsibilities across government levels, taking into account the type of service (local, redistribution, externalities), especially in social services and education. In addition, use information on potential economies of scale and capacity differences to improve the efficiency of assignments. Make sure that there is no major duplication in assignments between government levels and that the resulting assignments are clear to all stakeholders.
3. Enhancing economies of scale	
3.1. Ensure a stronger subnational government with visibly improved capacity to operate and take over devolved and delegated assignments.	3.1.1. Prepare a nationwide reform of subnational government structure. The reform should define the target number and size of LAOs at each government level. It should be based on decisions on spending assignments between levels of government and on the best available information on economies of scale, externalities, local democracy aspects and efficiency differences in service delivery. The reform should envisage both mergers and enhanced co-operation between LAOs. The reform should be developed and implemented in consultation with all main stakeholders and should be made public. 3.1.2. A choice between forced and voluntary merger reforms should be made based on the national reform plan. If a voluntary merger approach is adopted, LAOs must have adequate incentives for entering mergers. Make sure that the resulting structure of LAOs supports the overall fiscal policy targets. 3.1.3. Promote and support co-operative arrangements between LAOs. If necessary, alter the legal system to allow for voluntary and obligatory co-operation.
4. Reforming subnational government financing	
4.1. Strengthen own source revenues.	4.1.1. Carry out a reform of subnational government's own source revenues. A key target of such a reform should be ensuring, at the macro level, that the majority of subnational government revenues are based on own tax and other own revenue sources. 4.1.2. Strengthen the property tax base by updating property values that are currently outdated. 4.1.3. Allow the subnational government level (at least the Provinces and municipalities) to tax income by means of a surtax on central government PIT. LAOs should be allowed to choose tax rates within limits set by the central government.

	4.1.4. Simultaneously establish/update the fiscal rules on budget balancing and borrowing. 4.1.5. Reduce the weight of shared tax revenues and grants in the financing system.
4.2. Introduce a new grant system that supports equity between LAOs.	4.2.1. Increase the weight of the general grant in the grant system considerably at the expense of specific and conditional grants. 4.2.2. Reform the formula used to define the general grant to take into account differences in both fiscal bases and service costs.
5. **Strengthening subnational capacities to finance infrastructure**	
5.1. Ensure that local information and innovation drive public investment	5.1.1. Strengthen subnational skills to invest using own revenue sources, borrowing and private sector financing. Make information available for different options for financing and set up training for subnational government administrators. 5.1.2. Ease central government control of subnational investment and instead establish new frameworks for co-operation and co-ordination of subnational and central government investments. 5.1.3. Strengthen abilities among major metropolitan governments to use indirect financing and management tools such as public-private partnerships, procurement, private financing and joint project management with several LAOs and private companies.
6. **Enhancing subnational capacities for strategic planning and territorial development**	
6.1. Strengthen the human resource capacities of LAOs.	6.1.1. Revise and update strategies for human resource management. Collect statistical data on subnational human resources to support this approach. Continue and enhance efforts to train local administrators especially in strategic planning aspects.

Notes

[1] The Constitution was reformed in 2007. In 2017, a new Constitution was issued following the coup in 2014.

[2] Deconcentration should not be confused with decentralisation. Decentralisation implies delegating and devolving powers to autonomous subnational tiers. Deconcentration reorganises responsibilities within organisations. For example, some tasks may be shifted within central government from the main office to local offices.

[3] Municipalities are divided into city municipalities, town municipalities and sub-district municipalities.

[4] Subnational government tiers in Thailand – or Local Administrative Organisations (LAOs) - consist of provinces, municipalities and SAO/TAOs. Throughout the text, the terms "subnational government" and "LAO" are used interchangeably.

[5] For instance, in some cases the spending share of subnational governments in total public spending can be quite high, but actual autonomy may be low. This may be due to central government control and delegated expenditure on behalf of central government, leaving little spending power to subnational governments.

[6] The average revenue is calculated from the revenue projection from LAO's Budget Document of the year that the borrow takes place, and the revenue from two years before.

[7] According to IMF statistics and the UCLG/OECD publication, in 2012 local government investment in non-financial assets amounted to 1.5% of GDP. Central government investment in Thailand accounted for 3.0% of GDP at the same time. LAOs therefore represented 50% of general government investments in 2012. IMF figures for 2016 display slight variations with local governments representing 1.6% of GDP and central government 3.1% of GDP. Accordingly, LAOs are responsible for 52% of general government investments in this year.

[8] Central budgeting is a special is a special spending category, which is reserved for emergencies.

[9] In the OECD area, the two primary areas of subnational spending were education (25%) and health (18%) in 2016. These are followed by three spending areas that each amounted to around 14% of subnational spending: social protection, economic affairs and general public services (administration).

[10] The Gini coefficient measures statistical dispersion. It is commonly used to measure inequality of incomes. A Gini coefficient of 0 would indicate perfect equality and a Gini coefficient of 1 would indicate full inequality among values. The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive.

[11] A shared tax revenue system may also favour richer and densely populated localities because shared tax revenues are allocated mainly based on population size.

[12] Tax potential is measured using per capita income.

[13] Some examples of service need indicators in healthcare include demographics (age and sex), health status and socioeconomic status of population. Examples health care outcomes include premature deaths, patient injuries, infections and complications. In education, examples of need factors could be number of inhabitants in school age, adult literacy rate, number of pupils in need for special instruction. Education outcome indicators could be for instance OECD Pisa results, national (standardised) learning test results, number of students who finished primary/secondary education and share of dropouts.

[14] VAT is comparable to local sales tax revenue tax, with the exception that the VAT rate is the same everywhere and that the central government takes care of collection.

[15] Thailand and Viet Nam apply a 35% PIT, Indonesia is at 30%, Malaysia is at 28%, Laos is at 24% and Cambodia is at 20%.

[16] Personal income tax base is usually less volatile than a VAT base. If subnational governments are allowed to set tax rates they can adjust they in accordance with economic cycles.

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Chapter 4. Moving towards effective management of water security

Thailand has an intense and complex relationship with water. Water is key to driving the agricultural sector – the principal user of water – and supporting growth in the manufacturing sector. Both of these sectors create water quality challenges through diffuse run-off or point source discharges. Extreme seasonal and regional variations in terms of precipitation pose significant challenges in terms of water quantity, with floods and droughts a persistent threat. This chapter discusses the challenges faced by the water sector and draws links between multi-level governance and regional development issues. Policy recommendations are presented that intend to improve policy coherence and decision making, explore opportunities to increase the use of economic instruments, and take a long-term, risk-based approach to infrastructure development and water security.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Poor water security will hold back Thailand's growth plans

Improving water security is key for Thailand's future prosperity in the face of continuing economic growth and climate change. Availability of sufficient water of sufficient quality at the right time is crucial to Thailand's ambition to achieve high-income status by 2036. The relationship between water management and the economy is strong, and investments in good water management can be considered as longer-term payback for increased economic growth and poverty reduction.

Thailand faces increasing water risks. An expanding population, continued economic growth and looming threats posed by climate change are expected to make sustainable water management significantly more difficult in the coming years. These challenges can be captured under the overarching theme of "water security", a term that describes the maintenance of acceptable levels of risk in four main areas: (i) the risk of water shortages, (ii) the risk of inadequate water quality, (iii) the risk of excess water, and (iv) the risk of undermining the resilience of freshwater systems. In the Thai context, water security includes issues relating to floods and droughts, water use and allocation, water quality and the impacts of pollution (OECD, 2013[1]).Water security issues are a prominent feature of day-to-day life in Thailand. The 1 000 Baht banknote features images of high-profile flood defence infrastructure projects, including the Khlong Lat Pho floodgate project, functioning as a constant reminder of the importance of these challenges.

While Thailand is endowed with substantial water resources, it remains vulnerable to significant flood and drought risks. The country receives, on average, 1,374 mm of precipitation per year, significantly higher than the global average of 990 mm (FAO, 2011[2]). However, this rainfall is seasonal and subject to regional disparities, heightening the risks of severe flooding and drought. Natural climatic risks are exacerbated by poorly planned urban expansion, the intensification of agriculture, the deterioration or loss of watershed forests (contributing to floods), water consumption behaviours, agricultural and industrial land development, urbanisation and population growth (contributing to droughts).

Climate change is expected to exacerbate water risks even further. National projections indicate that heavier precipitation is expected in areas that already receive high levels of rainfall, such as the southern peninsula, increasing the potential for flooding. Precipitation is expected to decline even further in the arid, inland Northeast region, increasing the likelihood of drought (ONEP, 2015[3]). According to the Climate Change Vulnerability Index, Thailand is one of 16 countries in the extreme risk category, indicating extreme vulnerability to future climate change impacts over the next 30 years (Apipattanavis, Ketpratoom and Kladkempetch, 2018[4]). The Climate Change Vulnerability Index is released by global risks advisory firm Maplecroft and is one of a number of tools available to organisations to identify areas of risk within their operations, supply chains and investments. It evaluates 42 social, economic and environmental factors to assess national vulnerabilities across three core areas. These include: exposure to climate-related natural disasters and sea-level rise; human sensitivity, in terms of population patterns, development, natural resources, agricultural dependency and conflicts. The index also assesses future vulnerability by considering the adaptive capacity of a country's government and infrastructure to combat climate change.

With regard to water quality, diffuse and point source discharges are a concern. Wastewater infrastructure is underdeveloped and there is widespread discharge of municipal and industrial wastewater into rivers, resulting in pollution and negative health impacts. Rivers

in urban areas, especially the lower Chao Phraya River where Bangkok is located, are polluted from factory discharges. Sources of pollution include pesticides, fertilisers, urban sewage and pharmaceutical residues (Netherlands Embassy in Bangkok, 2016[5]).

The pressures on water security have increased with Thailand's continued growth. An increasing population and economic, agricultural and industrial expansion, are exerting greater pressure on water systems. Projections find that, by 2027, Thailand will need to secure 5 billion m3 more water to satisfy increasing demand (Apipattanavis, Ketpratoom and Kladkempetch, 2018[4]). In addition to heavy monsoons, the causes of floods include the decline of flood retention and flood plain areas due to urbanisation, industrial development and intensification of the agricultural sector. Water shortages in Bangkok have resulted in the over-pumping of groundwater, which depletes precious supplies and leads to land subsidence, further increasing the risk of floods.

Demand for water in the country's main economic sectors, including industry and agriculture, is increasing, putting pressure on national water resources. Agriculture, which is the dominant industry and employs three out of ten Thais, is a major water user (Apipattanavis, Ketpratoom and Kladkempetch, 2018[4]), with recent data from NESDB reporting that the agricultural sector accounted for over 54% of all water distributed in 2017. Severe droughts in 2015 and 2016, in particular in the upper-middle part of the country, caused irrigation problems in many areas and had a major impact on the agricultural sector. Losses and water use inefficiencies are known to be high, at times compounding the challenge of water stress.

Regional development and water security are closely linked, with water security challenges impacting the different regions of Thailand in different ways. The Northeast region suffers from regular droughts but also flash floods, while the South is regularly hit by typhoons and floods. As a result, agricultural productivity in these regions (and the Northern region) has been severely impacted in recent years. Heavy industry and manufacturing is located in areas such as Rayong in the East, which creates localised water quality challenges. However, the area is also vulnerable to flooding, as occurred in 2011, with economic damage and losses in the manufacturing sector estimated at USD 32 billion (OECD, 2013[6]). As a result of the floods, a number of international firms relocated to lower risk areas, impacting regional economies in the process.

Thailand needs to move from a crisis response to a risk management approach. The country is typically in crisis management mode, responding to events after they occur. Budget allocations for flood recovery are easier to secure than budget allocations for flood defence and preparation. Embracing a risk-based approach to water management would help facilitate the allocation of funds to projects that add most value to society.

Data and information, cohesive policies, strong leadership, and clarity on roles, responsibilities and decision making are needed to facilitate the move towards a risk-based approach to water security. Thailand lacks a common understanding of the water risks affecting each sector and each region. This has been found to impact decision making on issues including infrastructure planning and development, as well as water quality compliance and monitoring, thereby impeding action. A significant number of actors are involved in water management at both the national and regional level, which further complicates decision making.

Moving to a risk-based approach to water security requires better governance and co-ordination between local and national authorities on water management. The legislative and institutional framework needs to be strengthened, as Thailand currently lacks a single

law governing integrated water management. The lack of a shared vision between institutions prevents adoption of national policies and laws, and while national strategy documents and master plans exist, institutional and political issues prevent implementation. Fragmentation in water management results in spill-down effects on other sectors, as well as regional and international markets (Netherlands Embassy in Bangkok, 2016[5]).

Economic instruments, such as water charges, are underutilised and compound water security challenges. Where charges exist, they are typically low. As a result, incentives for users to conserve water are lacking. The ability to finance, invest in and deliver effective water and sanitation services is also reduced. Poor compliance with existing regulations and the absence of financial disincentives to pollute create additional problems (Netherlands Embassy in Bangkok, 2016[5]).

Phase I of the OECD's Multi-Dimensional Country Review of Thailand found that issues with water security were preventing economic growth and damaging the environment. The policy recommendations presented in this chapter aim to tackle these issues with practical advice and approaches based on OECD experience. The 12th National Economic and Social Development Plan shares some of this analysis and provides important policy suggestions already (Box 4.1).

Box 4.1. The water resources management strategies in the 12th National Economic and Social Development Plan and the contribution of this chapter

The 12th National Economic and Social Development Plan (NESDP) identifies the deterioration of natural resources and environmental quality as an obstacle to sustainable growth. In particular, climate change and natural disasters have become a major concern in Thailand. Specifically, floods and droughts have significant impacts on the Thai economy. To tackle these issues, the Plan envisages polices to improve water security at the national level and to manage the water resources more efficiently.

Water security. The Plan sets several objectives in order to improve water security in Thailand. In particular, it aims at making water supply systems available in every village, improving the efficiency of water for irrigation, industrial and consumption purposes, and reducing the impact of floods and droughts. In this respect, this chapter recommends the adoption and implementation of an integrated risk management approach to water security issues, as well as focus efforts on tackling pollution issues in each water basin.

Water resources management. The 12th NESDP encourages better management of water resources through the design and implementation of resources management plans. The promulgation of the Water Resources Bill envisions the establishment of a National Committee on Water Resources Management with associated watershed committees becoming a key driver of water resources management at the local level. Based on these recommendations, this chapter highlights the importance of multi-level governance to improve efficiency. It encourages pursuing the creation of the National Water Resources Committee and suggests the establishment of a National Policy Dialogue.

Moving from crisis management to risk management will increase long-term water security

Investing in water security will help Thailand tackle regional development issues and strengthen its international reputation. Thailand experiences frequent water-related extreme events, and natural hazards such as floods, typhoons, tropical storms and droughts are expected to increase in the future. Water risks overall are likely to worsen, driven by a combination of climate change and development patterns, and while Thailand is accustomed to living with and responding to these risks, the costs to Thai society and the consequences for development can be considerable. Figure 4.1 shows that annual average recorded damages account for a not insubstantial share of GDP.

Figure 4.1. Annual average damage from flood events as a share of GDP
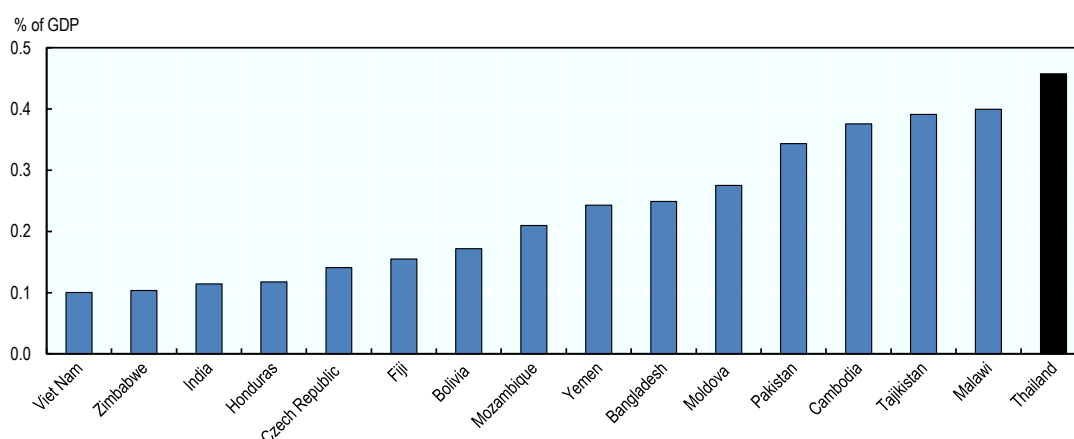
Note: Annual average damage was calculated based on damage reported between 1971 and 2015 and converted to constant 2015 USD based on the US Bureau of Labor Statistics' Historical Consumer Price Index for All Urban Consumers (CPI-U). GDP figures are taken from the World Bank for the year 2014 in current USD (http://data.worldbank.org/indicator/NY.GDP.MKTP.CD).
Source: (OECD, 2016[7]) from EM-DAT.

StatLink 📊 https://doi.org/10.1787/888933847980

The costs of water insecurity to society highlight the magnitude of the risks. A recent study commissioned by the OECD and the Global Water Partnership (GWP) indicates that water insecurity costs the global economy about USD 500 billion annually, resulting in a total drag on the world economy of 1% or more of GDP (Sadoff et al.[8]). The 2011 floods in Thailand caused a drop in 4th quarter GDP growth of 12%, motivating the Thai Central Bank to cut rates to aid GDP recovery after the floods (Box 4.2 and Haraguchi and Lall, 2015[8] for more details of the impacts of the 2011 floods). The 2017 Allianz Risk Barometer identifies business interruption, including supply chain disruption, as the number one international business risk for the fifth successive year. The Risk Barometer is produced annually and identifies the top corporate perils, and potential solutions. The 2017 report is the sixth version and is based on the responses of more than 1 200 risk experts from over 50 countries. Concern about interruptions in supply chains is seen shifting increasingly towards events that require better risk management of societal and environmental factors (OECD, 2018[9]).

Different regions experience different water risks, potentially deepening existing regional imbalances. The Northeast region suffers from regular droughts as well as flash floods, while the South is regularly hit by typhoons and floods. Heavy industry and manufacturing is located in areas such as Rayong in the East, resulting in localised water quality challenges. Drought will have a more disruptive impact on regions where the primary sector is rain-fed rice production and irrigation canals and water distribution systems are still lacking (Franzetti, Pezzoli and Bagliani, 2017[10]).

Different water risks can increase income disparities. Lower-income groups tend to invest less in water security management and often live in areas characterised by higher water risk (e.g. areas with poor water quality or flood risks). They are thus more exposed to water insecurity and potentially "pay" a higher share of the costs of policy inaction (e.g. health costs) than higher income groups. In addition, water insecurity can marginalise those who lack access to capital (e.g. to invest in well-deepening as a result of falling water tables) (OECD, 2013[6])

Box 4.2. Policy inaction bears considerable risk: Some global impacts of the 2011 floods

The costs of policy inaction can be considerable, not least because water insecurity can have global impacts. This is because local water risks may have an impact on global commodity markets (e.g. a major drought in a food-exporting country drives up food prices worldwide) and disrupt supply chains on a global scale (e.g. the 2011 Thai floods led to the closure of multinational electronics and vehicle industries, with impacts cascading throughout the global economy) (OECD, 2013[1]).

In response to the 2011 floods in Thailand, a number of global companies including Sony and Honda actually relocated from the central province to Rayong province in order to minimise their business risks. Regions that are unable to manage risks are unlikely to be competitive over the long term.

International reputation is also at stake. For example, Thailand is one of the production hubs for global automobile manufacturers, in particular for Japanese automakers. Japanese firms and their family companies account for approximately 90% of sales and exports of automobiles in Thailand. Toyota has reported that they plan to move some of their production to different regions, for example in the United States, in order to change their globally centralised production system to a regionally independent production system. Toyota has also asked about 500 of their suppliers to disclose details of their supply chains. They found that 300 production sites could be vulnerable to risks and requested that these suppliers mitigate risks by introducing measures such as diversifying procurement, securing alternate facilities and increasing inventories (Haraguchi and Lall, 2015[11]).

Moving towards a risk management approach is a three-step process

The OECD publication Water Security for Better Lives provides guidance on how to apply a risk-based approach to water security through a three-step process: "know the risks", "target the risks" and "manage the risks". Box 4.3 presents the three-step process (OECD, 2013[6]).

Box 4.3. Moving towards a risk management approach is a three-step process

Know the risks

A frequent significant obstacle to improving water security is lack of knowledge about water risks and their scale. In general, agreement about acceptable levels of water risks is more likely if there is a common understanding of the problem at hand, its causes and its impacts, underpinned by a robust risk assessment. In addition to undertaking scientific and technical risk assessments, governments should take into account the risk perceptions of stakeholders. This promotes transparency and accountability and can contribute to informed public debate about the acceptable level of risk. Acceptance of a particular approach or instrument by stakeholders and their willingness to pay for risk management are strongly linked to their degree of awareness of the water-related risk being addressed. Discussions of risk in water planning should not be dominated by uncertainty about hydrological conditions. Due attention must be given to economic, social, cultural and environmental factors, which can play a more important role than hydrological uncertainties.

A number of countries are taking steps to reduce the risk information gap. For example, flood risk maps are now required in many OECD countries, including in the European Union (pursuant to the 2007 EU's Floods Directive).

Target the risks

The acceptable level of water-related risk for society should depend on a balance between economic, social and environmental consequences and the cost of amelioration. The limit of cost-effective or practical water management is also an element to consider when evaluating the cost of amelioration. Indeed, completely eliminating risk is often technically impossible or just too costly.

Governments need to undertake systematic assessments of the expected costs and benefits of options in order to manage water risks and properly evaluate risk-risk trade-offs.

Targets for water risks should vary in accordance with different water uses. For example, large dams designed to protect downstream populations might be built to survive a once in 1 000-year flood. Residences and major roads might be built to avoid inundation from a 1:100 year-flood, while minor roads and recreational facilities might only be secured from a 1:10 year flood.

Manage the risks

Allocating water risks among residential, agricultural, industrial and environmental uses raises significant political economy questions. Uncertainty about the values placed by producers and consumers on potential changes in water security can make any systematic effort to compare the costs and benefits of proposed targets complex for both decision makers and stakeholders. A risk-based approach allows risks to be assigned to the actors most likely to be able to manage them efficiently. For example, flood risks may be addressed more cost efficiently through flood insurance or by compensating farmers to convert their land into flood plains, instead of through government investment in the construction of additional levies.

Once set, targets for water risks should be achieved as cost-effectively as possible. When considering which particular instruments to use to meet a given target for water risk – from among direct regulatory measures, market-based instruments and public financial support – an assessment should be made of how each instrument, or mix of instruments, is likely to contribute to the goals of water security and economic efficiency.

Source: (OECD, 2013[1])

In OECD countries, the majority of efforts to date have focused on "knowing" the risk by building the scientific evidence base and disseminating information. Much more can be done to better target and manage water risks in a changing climate. In terms of policy responses, the most widely used approaches are information-based instruments such as flood risk maps, decision support tools for risk management and adaptation guidance for local governments. Thailand has had success in this area with flood risk maps and weather forecast data. However, it is acknowledged that more could be done to share these data with the relevant agencies at all levels of government and to incorporate them into land use planning and decision making. Centralising data on asset performance, asset health and investment needs, in addition to financial information, water quantity and quality data, would support this objective.

A number of tools exist to target and manage risk. Several countries are revising laws and regulations such as sustainable water abstraction limits, building codes, land use planning, and are adjusting economic instruments such as water tariffs, water-related environmental taxes, and flood insurance schemes to reduce baseline stress on water systems, raise financing and address increasing flood risks. Japan has introduced regulations and guidance on land use in disaster-prone areas as well as unified flood control measures, while Australia has introduced water trading to allow scarce water resources to be transferred to ensure maximum productive use and to respond dynamically to changing availability of and demand for water (OECD, 2013[1]; OECD, 2013[6]).

Policy responses are necessarily country specific and are based on risk assessment and broad acceptance of national priorities. Thailand reports mixed performance in this area, while regulatory based tools such as permits for drilling of wells exist, responsibility is often held between a number of agencies, each with their own records, as was seen in Nong Khai province. There is typically no centralisation of data or information, and monitoring and enforcement is inconsistent. In Rayong province, risks of water shortages have been targeted and managed through investment in strategic storage reservoirs with some success.

Once risks are identified and accepted, the next challenge is to finance long-term climate resilient water infrastructure. Some OECD countries still struggle with financing water infrastructure, particularly with the added costs of climate change adaptation. For countries that have taken steps to addressing financing issues, several approaches have been taken. Countries such as Australia, Canada, France and Sweden have allocated dedicated general adaptation funding from public budgets at the national level, some of which is allocated to water. Others (e.g. Germany and the United Kingdom) are mainstreaming adaptation actions into existing budgetary arrangements. Water-related support for adaptation frequently forms part of specific water programmes and projects (e.g. the Delta Fund in the Netherlands and Flood Prevention Programmes in the Czech Republic). OECD countries including Chile, Estonia, Hungary, Mexico, Slovenia and Turkey have received funding from international funding mechanisms (including EU Structural and Cohesion Funds) to advance the adaptation of water systems. Other countries have dedicated funding for

general climate change adaptation from national budgets, some of which is allocated to water systems (OECD, 2013[1]; OECD, 2013[6]).

Moving towards a risk-based approach will help prioritise action

Thailand's response to floods typically focuses on interventions after the event and restoration to the pre-flood situation. Recovery measures need to go further and aim to strengthen resilience ahead of the next disaster.

In order to invest in strengthening resilience, conventional thinking needs to change. For example, budget allocation for flood recovery is currently easier to secure than budget allocation for flood defence and preparation. Thailand is reluctant to "invest in uncertainty" and protect assets against disaster, yet can mobilise resources quickly to recover from events.

Strengthening resilience requires a longer-term view that incorporates climate change impacts. An examination of Thailand's response to climate change impacts on infrastructure is illustrative of the current gap. Efforts to incorporate resilience into infrastructure decisions encounter barriers characterised by mismatches between rigid funding requirements for infrastructure projects and the uncertainty inherent in climate change projections. As historical climate information is typically used to inform infrastructure planning and design, incorporating climate projections means adding an element of uncertainty, which requires both technical and cultural acceptance. Thailand's investments in transportation infrastructure are explored in Box 4.4. The business case for investing in long-term resilience is strong and requires communication and cross-ministerial acceptance.

Box 4.4. Considering climate impacts in transportation infrastructure investments

Thailand is in the process of planning ambitious investments in transportation infrastructure, and while sustainability is an element of this plan, an explicit consideration of climate resilience is not. The planned transportation infrastructure project budget for 2017 was USD 25.6 billion. The long-lived nature of infrastructure assets means that decisions made now will lock-in vulnerability if they fail to consider climate impacts. The location of transportation infrastructure can drive development patterns, and has the potential to increase the concentration of people and assets in areas of high flood risk. In addition, the way transportation is built and maintained can increase vulnerability if plans do not account for changing conditions.

Growing climate risks, such as increased high-intensity precipitation events, can have serious implications for transport infrastructure and the communities they serve. Direct impacts include temporary or permanent flooding of roads, damage to bridges and ports, increased maintenance costs due to damage and service disruption. When transport systems fail, they can have far-reaching social and economic consequences, such as preventing access to jobs, schools and hospitals. During the 2011 floods, sections of 1 700 roads, highways and bridges were damaged or destroyed (UNDP, 2012[12]).

Improving the climate resilience of new or existing infrastructure can be achieved by reducing its exposure or sensitivity to climate-related hazards through a wide range of context-specific adaptation responses. A non-exhaustive summary of the impacts of increase extreme precipitation on transport infrastructure and adaptation responses is presented in Table 4.1. Adopting a resilient approach to transportation infrastructure

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also means accepting that some disruptions are occasionally unavoidable, and minimising the consequences of disruptions when they do occur (ITF, 2016[13]).

Table 4.1. Adaptation responses for transport infrastructure

Consequence of extreme precipitation on transport infrastructure	Adaptation responses
Flooding of land transport infrastructure	Developing new, adverse climate condition-resilient paving materials; overlaying roads with more rut-resilient asphalt
Rail washouts	Using the most efficient technologies to ensure sealing and renewal of asphalt concrete
Increase in weather-related crashes, traffic disruptions and delays	Broader use of efficient road maintenance methods
Collapse of embankments, mudslides, landslides and slope failures	Conducting risk assessments for all new roads
Flooding of subways and public transport facilities (e.g. bus depots)	Upgrading road drainage systems
Inability for transport workers to get to their work	Increasing warnings and providing updates to dispatch centres, crews and stations
Reduced construction and maintenance work hours	Shifting construction schedules to drier parts of the year

Source: (ITF, 2016[13]).

Thailand is not alone in these challenges. OECD countries are grappling with ways to include resilience considerations in infrastructure projects. One approach that would work well in the Thai context is layering climate change considerations into existing infrastructure EIA (Environmental Impact Assessment) and SEA (Strategic Environmental Assessment) guidelines. Traditionally, EIA and SEA guidelines have involved assessing the possible impacts, whether adverse or beneficial, that a proposed infrastructure project may have on the environment. In Australia and the Netherlands, the scope has been expanded to examine the impact of climate change on a project (Vallejo and Mullan, 2017[14]).

It is time for Thailand to move to a more proactive approach to water security management, a risk-based approach. A risk-based approach addresses water security first and foremost by determining acceptable levels of different risks in terms of the likelihood that they will occur and the potential economic or other impacts if they do, and balancing this against the expected benefits of improving water security. While it is generally too expensive and often technically impossible to fully eliminate water-related risks, a risk-based approach can help to ensure that the implicit level of risk implied by different policy actions reflects societal values (OECD, 2013[1]).

A risk-based approach allows flexibility and enables the accepted level of risk to be adjusted at relatively short notice should more cost-effective measures to mitigate the risks become available, or if new opportunities for economic development warrant action to further reduce the level of risk. For example, a new housing or industrial development may justify increasing flood defences for a neighbouring river – measures that might not be justified if the land was used instead for agriculture or a natural park.

In practice, however, it is often natural disasters – and not new opportunities – that prompt countries to revisit the acceptable levels of water risks implicit in their policies and measures. For example, countries often revisit flood defence standards following a hurricane or major storm, or address water shortage challenges during or following a major

drought. A risk-based approach triggers a move from reactive to more proactive policies. Instead of responding to water crises, which can often entail excessive costs to society, governments can establish a process to carefully assess and manage risks in advance and review them on a regular basis.

Thailand needs to consider the acceptable levels of risk for its different regions and sectors. A number of cities worldwide – including Amsterdam, London and Shanghai – have protection against flood events of a magnitude expected to occur on average only once in 1 000 years. Planning in New York prior to Hurricane Sandy in 2013 protected the city against a one in-a-hundred-year event. This approach was reviewed following the storm, highlighting how cities typically respond after an event.

Setting acceptable levels of water risk should be the result of well-informed policy choices and trade-offs with other related – and sometimes conflicting – security objectives (e.g. food, energy, climate and biodiversity). Such trade-offs occur because policy measures aimed at security or other policy objectives in one area may result in spill-overs in another. For example, objectives to enhance food security can lead to overuse of pesticides and fertilisers, contributing to water pollution. Once set, the acceptable levels of water risks should be achieved at the least possible cost. Economic instruments, such as charging appropriately for water use and pollution, can help to achieve this objective (OECD, 2013[1]).

Water security is about learning to live with an acceptable level of water risk. This requires a better understanding of the risks, ensuring that the level of risk used for planning and policy purposes takes into account social preferences, and managing risks and trade-offs between risks and across water and other policy objectives at the least cost to society.

Improved water security depends upon good governance

Good water management, including water security, is sensitive to and dependent on good multi-level governance. Multi-level governance comprises the interactions between public authorities at national and subnational levels. It influences all policies that rely on the institutions, frameworks and relationships that support decision making and implementation processes between national and subnational levels of government, including subnational development planning. The institutions and actors involved in multi-level governance include levels of government, agencies, parliament, the judiciary, civil society and social partners. Multi-level governance gaps should be identified and considered systemically, as they are deeply interrelated and can exacerbate one another. For example, any country facing a sectoral fragmentation of water roles and responsibilities across public actors (policy gap) may also suffer from conflicting goals which pull the sector in different directions (objective gap). As a result of silo approaches, policy makers may not actively share information (information gap). This, in turn, undermines capacity-building at the subnational level (capacity gap), and local actors, users and private actors have to multiply their efforts to identify key contacts in the central administration. Diagnosing the gaps is a primary step in overcoming obstacles and promoting more effective water policy (OECD, 2012[15]; OECD, 2015[16]).

Many of the management and co-ordination issues observed in Thailand are common in other countries and are typically considered symptomatic of poor multi-level governance. Some 31 actors from central government are involved in water and wastewater management in Thailand. While national strategy documents, including the 12th NESDP, aim to clarify roles and responsibilities for different agencies to drive progress in water

management, in practice the link with financial planning is weak, limiting the implementation of strategic objectives. A number of policy tools and responses exist to improve performance in this area. Action is needed on two fronts to strengthen the capacity of state water agencies: the technical and the financial level.

It is vital to improve the technical capacity of state agencies. Their ability to collect and use data and to perform the necessary technical and administrative duties is essential for the interface with water users and other sectors of administration. To build capacities in state agencies requires persistency and continuity. These institutions are often characterised by frequent changes in top management associated with political cycles. Recruitment should therefore be based on professional capacity, with a strong focus on public policy continuity. Attracting and keeping qualified staff and building capacity at the state level is necessary to generate real and viable improvement in water management.

There can be no effective water governance without sustainable funding of the water sector. It is important to implement the use of economic instruments as policy instruments where relevant and needed. Not only do economic instruments generate revenues for state administrations, they can also trigger greater engagement among water users and foster the rational use of water resources. The willingness to pay of the various sectors and the affordability of water bills should be analysed thoroughly and taken into consideration (OECD, 2015[17]).

The OECD's Principles on Water Governance provide a framework to understand whether water governance systems are performing optimally and to help adjust them where necessary. There are 12 principles to help governments design and implement effective, efficient and inclusive water policies. The first water governance principle is: "clearly allocate and distinguish roles and responsibilities for water policy making, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities". This has particular relevance for Thailand (OECD, 2018[18]; OECD, 2015[19]). The OECD Principles on Water Governance aim to enhance water governance systems that help manage "too much", "too little" and "too polluted" water in a sustainable, integrated and inclusive way, at an acceptable cost, and in a reasonable time-frame. The Principles are rooted in broader principles of good governance: legitimacy, transparency, accountability, human rights, rule of law and inclusiveness and are developed on the premise that there is no one-size-fits-all solution to water challenges worldwide, but a menu of options building on the diversity of legal, administrative and organisational systems within and across countries.

Each country must determine the roles and numbers of entities required to deliver its objectives with regard to water management. A survey of 17 OECD countries in 2010 found that the number of authorities involved in water policy making at the central level ranged from two to 15 (OECD, 2012[15]). Given the regional variations in Thailand with regard to water resource availability, water security and associated governance challenges, a number of relevant lessons might be learned from Brazil's experience of empowering states to attain a certain level of institutional and technical development in water management. This experience includes the development of national targets and objectives for the water sector and blending them with regional objectives and challenges. Box 4.5 presents the case of "the Pact", an instrument to better integrate water management between Brazil's federal and state levels of government.

Thailand needs to examine the roles and responsibilities of its existing entities and map them against its long-term strategic objectives for the water sector. Gaps and overlaps need to be identified and addressed. The 12th NESDP contains a number of recommendations

that have the potential to address the key governance issues. This includes the passing of a Water Resources Bill, which clearly outlines the objective of the water sector and maps out roles and responsibilities of the different entities. It is proposed to strengthen the mandate of the cross-ministerial National Committee on Water Resources Management to promote co-ordination and policy coherence, and recommendations to strengthen the role of river basin management. The Committee has been established under the Regulation of the Office of the Prime Minister and bringing it under the Water Bill will increase its authority in the face of competing legislation (Office of the National Economic and Social Development Board, 2017[20]). The 12th NESDP is currently preparing to undergo a mid-term review, which is expected to reveal the extent of the progress made against the wide-reaching targets set in the plan, including improving compliance monitoring and the introduction of the polluter-pays principle.

Box 4.5. A robust policy response to closing water governance gaps: The example of Brazil

The Pact – a flexible multi-level governance contract

Brazil is a key partner country of the OECD and is working to strengthen water resources management at the state level. In 2011, the Brazilian National Water Agency (ANA) launched the National Pact for Water Management, a multi-level governance contract that aims to strengthen the capacity of states to manage water resources in an integrated manner.

As a voluntary-based co-operation agreement, the Pact is a powerful instrument to better integrate water management between federal and state levels. The rationale behind the Pact is that water resources management in Brazil will only improve if the National Water Resources Management System is better integrated with state water resources management systems (OECD, 2015[17]).

The Pact also aims to foster convergence and reduce regional discrepancies across states, while working to establish a "coherent diversity" of state water management systems. Its overarching goals consist of: (i) establishing commitments among federative units to overcome common challenges and lack of harmonisation; (ii) encouraging multiple and sustainable use of water resources, especially in shared river basins; (iii) promoting an effective articulation between water resources management and regulation processes at national and state levels; and (iv) empowering states towards greater capacity and awareness in dealing with water risks.

The programme guidelines are well conceived and robust. They incorporate guidance on strengthening state water resources management systems, commitments to specific targets associated with a vision of the future (prognosis), institutional development based on the aspirations of states and control of targets defined in the contract. All states have embarked on the programme, which underscores the flexibility of the Pact and the general perception that it is adaptable to states at different stages of development.

States were clustered into homogeneous categories according to their degree of water management complexity, in order to better address specific needs in terms of legal, planning, information and operational instruments, human resources and governance. In addition, the Pact included a financial incentive mechanism to accelerate implementation. The mechanism allocated BRL 100 million (approximately USD 27 million) for water management over five years, distributing funds equally to

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states that reach established goals. Rewards were based on progress in achieving targets rather than on specific outputs (OECD, 2017[21]).

The Pact promotes consistency, integration and dialogue across levels of government, with capacity-building and support to decentralised water policy. Goals set in the Pact contribute to reducing information gaps between federal and state institutions. The Pact reflects the subsidiarity principle, which preserves the autonomy of states while engaging them in a shared responsibility to reach common goals (OECD, 2017[21]). The Pact has no equivalent in OECD countries in terms of comprehensiveness and sophistication. The implementation process is clearly defined and includes specific mid-term and final targets, as well as the delineation of responsibilities and accountability across institutions.

Source: Adapted from (OECD, 2015[16]; OECD, 2017[21])

River basin management has the potential to drive water security improvements in Thailand

Managing water resources at a basin scale is considered good practice, and a number of opportunities and benefits exist to manage water in this way in Thailand. The OECD's Council Recommendation on Water states that water policies should be set up and implemented based on long-term water management plans, preferably at river basin, or aquifer level (OECD, 2016[22]).

Thailand has invested significant resources in defining 25 river basins and, therefore, needs to determine how best to leverage these structures to drive improvements in water security. Any developments in this area must help address existing governance and fragmentation issues and not increase the burden on current actors in the water sector. At present, there is doubt regarding the benefits of managing water using the basin principle and a general feeling that River Basin Committees – multi-stakeholder bodies that provide oversight for each river basin – are ineffective with no financial mechanisms or authority to contribute to improvements in water management.

Many international actors have converged towards the principle of managing water at a basin scale. Organisations including the Global Water Partnership, the International Network of Basin Organisations and UNESCO have produced guidelines for water management in basins, which typically divide the role of basin institutions into three main functions: (i) monitoring, investigating, co-ordinating and regulating; (ii) planning and financing; and (iii) developing and managing. More importantly, they advise river basin organisations to look at the "big picture" and aim to become the leading voice on basin-wide issues, while keeping constituencies and decision makers in all sectors and at all levels, in both the public and private sectors, fully informed and involved (OECD, 2015[17]). In particular, UNESCO's recommendations form part of a series of documentation on strategic water management and include recommendations on basin water allocation planning.

The 12th NESDP foresees an enhanced role for river basin management in the future of Thailand's water sector. This includes driving integrated water management in each basin, the development and implementation of water resources management plans for each basin, and increasing stakeholder participation (Office of the National Economic and Social Development Board, 2017[20]). Analysing the roles and responsibilities of the various actors involved in water management in Thailand presents an opportunity to review the roles of River Basin Committees and the value they add to the water sector. Such committees may

be better placed to address or inform governance gaps and identified overlaps through a broad local perspective on water management and water security issues.

Box 4.6 presents some of the functions of basin institutions in Thailand that may add value to and increase water security. There is a clear potential for these organisations to become the voice of water management within a country, representing stakeholder views, understanding local water quantity and quality issues, and developing infrastructure priority requirements.

Box 4.6. A potential role for river basin committees and management in Thailand

Thailand needs to decide how best to leverage advantage from its existing River Basin Committees. The activities outlined below are examples of actions that can be achieved via effective, empowered basin organisations. If used correctly, these may help tackle some of the policy, governance and fragmentation issues seen in Thailand's water sector today.

Planning and project development

1. Designing plans that are tailored, result-oriented, realistic, forward-looking and coherent with national objectives

2. Co-ordinating across sectors to achieve an integrated approach

3. Co-ordinating levels of government to ensure complementarities and achieve economies of scale across boundaries

4. Involving stakeholders in planning to develop inclusive plans that reflect local concerns

5. Building technical and managerial capacities in subnational institutions.

Finance and budgeting

6. Linking multi-year strategic plans to annual budgets

7. Decentralising fundraising and allocating funds to priority investments

8. Mobilising private sector financing without compromising the long-term financial sustainability of public investment projects

9. Determining appropriate user fees and charges

10. Devising and implementing economic instruments

11. Learning how to deal with the requirements and restrictions of public expenditure, including public procurement.

Implementation

12. Engaging in transparent practices

13. Designing and using monitoring indicator systems with realistic performance-promoting targets.

Evaluation

14. Sharing experiences and conducting rigorous ex-post evaluations

15. Using monitoring and evaluation information to enhance decision making.

Source: Adapted from (OECD, 2015[16]).

Policy coherence and cross-ministerial dialogue is key to the acceptance of policy reforms

While river basins may have a role to play in the future of Thailand's water management, cross-ministerial dialogue is key to driving policy coherence. For example, discussions with stakeholders in Rayong province indicated tension between the agricultural sector and the growing industrial sector with regard to future water demands. The dialogue exposed water allocation issues and also highlighted the role of water in supporting policies for economic growth. Policy discussion and coherence will become increasingly crucial during the development of Special Economic Zones, including the Eastern Economic Corridor.

Improving water security requires a coherent approach to water policies and other sectoral and environmental policies. In particular, the nexus between water, energy, food, climate and biodiversity presents significant water security challenges and has attracted increasing policy attention in recent years. Increasing the coherence of policies (policy objectives and policy instruments) across these areas is essential if governments wish to meet the range of policy goals, but not undermine water management objectives.

Thailand is in the process of setting up its National Water Resources Committee (NWRC). This high-level committee is chaired by the Prime Minister's office and supported by a range of high-level officials including Deputy Prime Ministers and the heads of 12 governmental agencies. While a structure for the committee has been proposed, roles still remain to be filled. In particular, the role of River Basin Committees is unclear and the sanitation sector appears to be under-represented. Nevertheless, the NWRC in Thailand has the potential to address some of the policy coherence concerns outlined above.

Box 4.7. National Policy Dialogues as a process

National Policy Dialogues (NPDs) on water are the main operational instrument of the European Union Water Initiative (EUWI) component for Eastern Europe, the Caucasus and Central Asia.

NPDs are policy platforms where stakeholders meet to advance water policy reforms. They are driven by demand from the host countries. A variety of stakeholders participate in the meetings, such as ministries and government agencies and institutions, as well as non-governmental organisations, academia, the business community and parliamentary bodies.

Discussions at NPD meetings are substantiated by robust analytical work and international good practice. For instance, reviews of water pricing benefit from assessments of affordability and competitiveness impacts of alternative pricing scenarios, and development of river basin management plans build on similar experiences in European countries.

The main outcomes are policy packages, such as legislative acts, national strategies, ministerial orders and plans for implementation. These policy packages are then used to support high-level decision making.

Eastern European, Caucasian and Central Asian countries benefit from the ongoing EUWI National Policy Dialogues in many ways, not least through better co-operation with EU Member States. Improved co-ordination with donors on water issues helps to increase the cost-effectiveness of Official Development Assistance provided by EU Member States as well as other donors. Furthermore, NPDs provide opportunities to

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transfer best practices and knowledge from EU Member States and a number of international organisations (notably, the OECD and UNECE who facilitate NPDs) to beneficiary countries.

Similar processes have been facilitated by the OECD in Brazil, Jordan, Mexico, the Netherlands, the Republic of Korea and Tunisia, to strengthen multi-level governance and support ambitious policy reforms on water pricing, financing or water allocation regimes. National Policy Dialogues consist of iterative and inclusive multi-stakeholder consultation processes which gather information, as well as build consensus on diagnoses and recommendations, and improve buy-in of reforms. They conclude with Action Plans developed to identify concrete options and champions to implement the suggested policy recommendations.

Source: Adapted from (OECD, 2016[23]).

A National Policy Dialogue on water could be an opportunity for detailed inter-sectorial co-ordination and analysis to support high-level decision making (Box 4.7). The OECD has experience of facilitating these platforms in both OECD and non-OECD countries. Key outcomes typically take the form of evidence-based policy packages oriented towards practical implementation.

Better use of economic instruments can improve water security

Policy interventions to manage water risks and facilitate trade-offs between different risks need to draw on the full range of policy instruments at the disposal of governments. These include traditional command and control instruments such as regulations, standards and permits, as well as economic instruments including taxes, charges and tradable quota schemes (OECD, 2013[6]).

Economic instruments provide an opportunity to change the behaviour of consumers and key sectors and to raise much needed financing for the sector. By changing incentives through the use of price mechanisms, economic instruments can better signal the value of water among competing uses, including for environmental purposes (Box 4.8).

Box 4.8. EU conditionalities as an approach to align investment in water infrastructures with water policy compliance

Making funding of water infrastructure investments contingent on compliance with key legislative requirements can foster compliance with national policies. Through its funding programme for the period 2014-20, the European Union supports the implementation of water-related policies and legislation by providing financial incentives to member countries, applying ex ante conditionalities that member countries must fulfil in order to qualify for the provision of such financial support. This ensures that investments are coherent and consistent with EU legislation and policies. If ex ante conditionalities are not met, the European Commission can suspend any payments in their support. Water-related investment under funds intended for water-related programmes and projects to support regional development are subject to an ex ante conditionality and a number of criteria that relate specifically to whether member countries satisfy the most essential requirements of EU water legislation. Requirements applicable to all water-related programmes include the existence of:

- compliant river basin management plans

- compliant water-pricing policies

- a relevant monitoring network

- compliant environmental objectives and use of exemptions

- a summary of the programmes of measures that will deliver the objectives set.

Similarly, funds intended to support rural development are subject to an ex ante conditionality related to payment of support for investments in irrigation systems, concerning:

- the creation of a water-pricing policy that recovers environmental and resource costs

- the existence of a river basin management plan for the basin concerned

- the use of water metering

- a minimum requirement for water savings.

To be fair and effective, conditionalities should be attached to outcomes under the control of the parties, and cannot be affected by third-party failure. For example, farmers are most likely eligible to receive funding to meet environmental requirements, provided they comply with obligations incumbent on themselves, independent of whether their local public sector bodies comply with their obligations.

Source: Adapted from (OECD, 2015[16])

The use of economic instruments throughout Thailand is inconsistent and is not necessarily aligned with key policy objectives. Raw water is charged based on a national tariff from the 1940s, potable water is charged at very low levels defined on volumetric rates set by the utility providing the service, and wastewater services are typically free for the majority of the population. Where wastewater charges do exist, collection rates are often low. The Metropolitan Waterworks Agency, which provides potable water to Bangkok and its environs, charges for potable water based on a tariff established in 1999 (Table 4.2).

Thailand has an opportunity to review and update its water tariffs. When the typical tariff for drinking water for residential consumers in the Bangkok Metropolitan Area of Thailand is considered against the typical water tariff charged in OECD countries, the opportunity to assess and potentially update tariffs is clear. Such an assessment would determine the cost of service and undertake an analysis of affordability. For the purposes of illustration, data collected from OECD countries which shows Thailand at the lowest end of the range is displayed (Figure 4.2).

Table 4.2. Water tariffs charged by Bangkok's Metropolitan Water Agency (WMA)

| Type 1 Residence		Type 2: Commerce, Government Agency, State Enterprise and Industry	
Monthly Volumetric Consumption Band (m³)	Tariff (BHT/m³)	Monthly Volumetric Consumption Band (m³)	Tariff (BHT/m³)
1-30	8.50	0-10	9.50
	Not less than 45.00 Baht		Not less than 90.00 Baht
31-40	10.03	11-20	10.70
41-50	10.35	21-30	10.95
51-60	10.68	31-40	13.21
61-70	11.00	41-50	13.54
71-80	11.33	51-60	13.86
81-90	12.50	61-80	14.19
91-100	12.82	81-100	14.51
101-120	13.15	101-120	14.84
121-160	13.47	121-160	15.16
161-200	13.80	161-200	15.49
Over 200	14.45	Over 200	15.81

Note: MWA is charged for raw water at a rate of USD 0.005/m³. This charge is levied by the Royal Irrigation Department based on a tariff originally set in the 1940s. MWA clean the raw water and sell it to consumers based on a tariff set in 1999.
Source: Bangkok MWA annual report 2017.

While it is an opportune moment for Thailand to consider how to strengthen existing and introduce new water and wastewater charges, the reform journey remains technically and politically challenging. The 12th NESDP indicates a desire to enhance the use of economic instruments. The plan describes "collecting wastewater treatment fees to cover the costs of operation and maintenance (O&M)"; "creating incentives for behavioural change towards sustainable consumption of water"; "conducting a study to identify proper and fair fiscal measures, following the Polluter Pays Principle, prior to putting it into effect". Technical challenges include establishing customer registers and collection mechanisms, while political issues focus around affordability for vulnerable customers and strategies to address sectors such as agriculture. Table 4.3 presents the enabling steps that Thailand should evaluate before considering reform of its existing economic instruments.

Recent OECD experience in the Republic of Korea considered reform of economic instruments and identified a number of prerequisites ahead of introducing reform. These included multi-stakeholder buy-in as a result of a nationwide consultative process; clear communication regarding the objective of the charge, and transparency in the design of the charge and the use of collected revenues; and action to ensure that the opportunity costs of using water and the scarcity risks are clearly reflected in the charge (OECD, 2017[24]).

Figure 4.2. The unit price of water and the cost of sanitation services to households are higher in OECD countries than Thailand
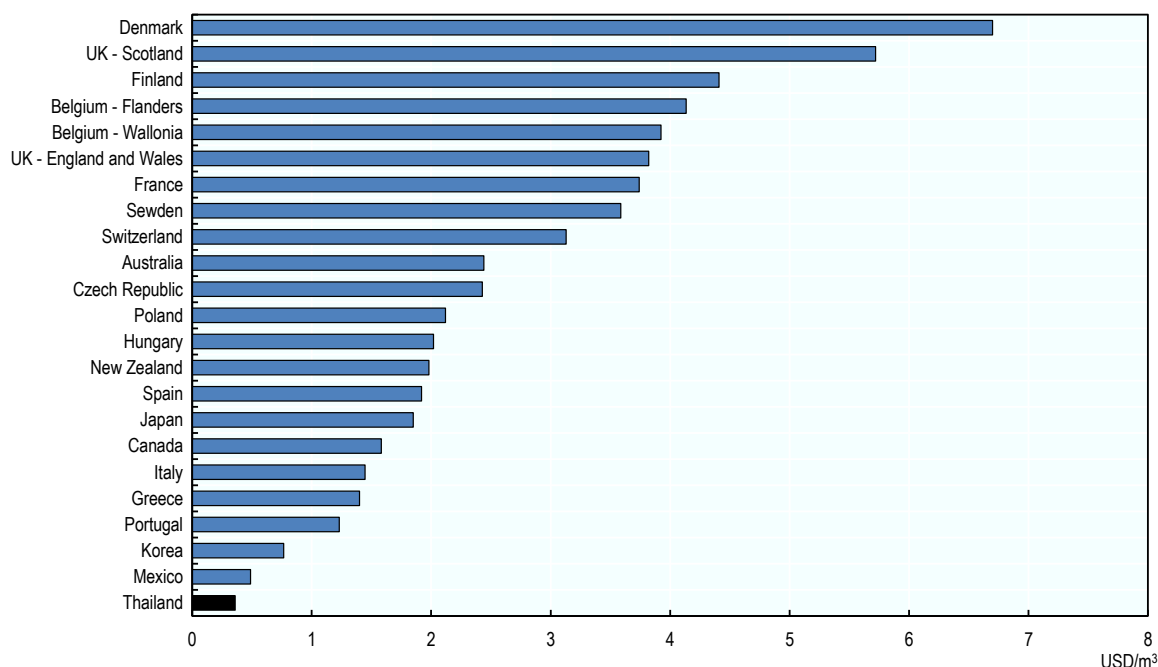
Note: The volumetric tariff for Thailand was set in 1999. OECD country unit prices are taken from a survey dated 2007-08. The data is presented in its raw form and is not corrected for PPP.
Source: Adapted from the OECD webpage "Water – The right price can encourage efficiency and investment" (accessed June 2018) and the Bangkok Metropolitan Water Agency Annual Report 2017.

StatLink 📊 https://doi.org/10.1787/888933847999

When reviewing its use of economic instruments, Thailand must consider the existence of any subsidies that may have a negative impact on water security or be misaligned with the over-arching objectives of the water sector. More coherent policy approaches are slowly beginning to take shape in a growing number of OECD countries. For example, agricultural policy reform over the last 20 years has, in part, removed policy inconsistencies and helped to address water risks from agricultural activities. However, much more needs to be done including by exploiting potential win-wins (e.g. taking steps to increase both water and energy efficiency). Energy policies to enhance food security can have negative spill-over effects on water. For example, electricity subsidies to farmers for the pumping of groundwater can adversely affect the sustainability of groundwater resources (OECD, 2013[1]).

Policies that impact water, energy, agriculture and the environment are often formulated without sufficient consideration of their inter-relationships or their unintended consequences. The siloed nature of many government approaches to policy development in different areas is the key contributor to this incoherence. This translates into differences in temporal scales between energy, agricultural and water policy objectives (e.g. forward-looking water plans are often developed around a 50-60 year horizon, while energy plans look up to 20-30 years ahead, and agricultural planning generally adopts a much shorter time horizon).

Table 4.3. Enabling steps for developing water charges in Thailand

Good practice	Activity
Align water charges with policy objectives	• Understand the behaviour and current practices that require change in alignment with key strategic objectives • Determine the scale and impact of current charges, and identify any harmful subsidies • Understand the opportunity costs of using water in each basin and region • Establish links to the risks and consequences of floods, droughts and pollution
Build capacities	• Enhance the ability of relevant actors, such as River Basin Committees and Water Agencies, to conduct economic analysis • Embed economic analysis into decision making, including around setting water charges and affordability assessments
Enhance the knowledge and information base	• Determine how water is used and valued • Establish good quality accessible data and turn it into information to support decision making • Establish a reliable inventory that identifies, as a minimum, large water users and uses • Decide which sectors get water where and when, and at what price, and recognise different basin and regional requirements • Understand the status of water resources including pressures and priority actions in each basin and region
Strengthen the institutional framework	• Establish clear roles and responsibilities including guidance on setting charges and allocation and spending of revenues
Manage water charges at the right scale and enhance co-ordination	• Determine central and regional roles and responsibilities for setting charges and collecting revenues
Deploy water charges in combination with other policy instruments	• Consider water allocation regimes and water quality standards • Establish links to water resources management plans and the planning cycle and infrastructure development needs • Provide support with monitoring, enforcement and regulatory capacity
Consider accompanying measures to support reform or deployment of water charges	• Consider the impact of reform of charges • Develop support mechanisms to support the transition process • Promote best practices and best available technologies • Consider financial support mechanisms
Develop water resources management plans that drive water charge decision making for each basin and region	• Identify priority areas for action (health/social/environment/economy) • Develop a strategic financial plan linked to an action plan and an affordable timescale • Ensure integration with other plans to establish a whole-of-government approach to water security
Facilitate spending that contributes to enhanced water security and demonstrates benefits to users	• Consider allocation of revenues to visible projects that benefit basins and regions where charges are levied • Support willingness-to-pay by building confidence in charges levied

Source: Adapted from (OECD, 2017[24])

The economic distortions caused by the frequently vast under-pricing of water used in agriculture have been compounded in many instances by agricultural policies, particularly those linked to the production of particular commodities. Such linked support draws resources, including water, into the activity in question, thereby driving up the price of water for other users and the volume of agricultural subsidies. For example, Thailand recently had to abandon a minimum price scheme for rice that may have distorted farmer incentives to grow more resilient crops. As a rule, farmers have free access to (or are charged only a nominal fee for) water that they pump themselves. Several countries continue to offer preferential tariffs for electricity used to pump water for irrigation (OECD, 2018[25]).

In Thailand, decisions over agricultural policies, which are often linked to trends in the export market, have a significant impact on water management. For example, in Rayong province a recent trend to move away from growing rubber to the more water-intensive fruit durian has doubled water consumption in certain areas. This policy has had a direct impact on water availability and creates pressure when resources are scarce. In addition, if trends are not well managed they can lead to oversupply of certain products, thereby impacting prices and further reducing the economic value of the irrigation water used.

The appropriate use of economic instruments, particularly when implemented in conjunction with other policy instruments, can transform water sector performance. Box 4.9 presents a case study from Israel where appropriate pricing of water supported long-term water security objectives and promoted innovation within the sector.

Box 4.9. Appropriate pricing of water can drive water security objectives, change user behaviour and promote innovation

Agricultural water pricing in Israel

Due to increasing water scarcity, water prices in the agricultural sector in Israel have risen 100% over the past decade. This increase in prices led to substantial changes in agricultural practices including a move to drip irrigation, the adoption of more appropriate crops, the removal of water-intensive trees and replantation with water-saving types, and increase in the use of recycled and desalinated water sources. As a result, agricultural water demand has declined significantly; desalinated and recycled sources of water now make up around 50% of irrigated water use. Despite the significant decline in agricultural water use, efficiency gains have meant that agricultural production has actually increased. Furthermore, higher water prices and increased use of alternative water sources have stimulated technological innovation and exports of water technology grew by 21% in 2006 and 28% in 2007.

Source: (OECD, 2013[1])

Policy recommendations

Goal to reach	Recommendations of the Multi-Dimensional Country Review of Thailand
1. Moving from crisis management to risk management to increase water security	
1.1. Adopt and implement a risk management approach to water security issues	1.1.1. Use the National Water Resources Committee, supported by high quality analysis and data, to confirm levels of acceptable risk that are accepted and transparent to all relevant actors. This must recognise that this could be different for different regions and for different sectors. 1.1.2. Ensure better coordination and clear roles and responsibilities with regard to disaster preparation and recovery. This would include collection and ownership of data and information sharing. 1.1.3. Embrace a flexible approach to risk management, embed regular review processes to reflect latest thinking and information to inform the levels of acceptable risk. 1.1.4. Embed innovation within the sector with a focus on water security matters such as water use efficiency – e.g. enhanced irrigation equipment. Areas of innovation should have a strong business case facilitating adoption. 1.1.5. Create an inventory and review the performance of the existing suite of regulatory, economic and information based tools that target management of water security risks. Identify underperforming tools and opportunities for new tools based upon latest good international practice. Update the inventory and deploy as required supported by investment in necessary human capital. This might include flood insurance schemes, water quality standards or flood zone maps. 1.1.6. Review existing regulatory frameworks and support with compliance monitoring and enforcement. This may have a focus on water allocation, water efficiency, permitting and land use. Collect and share data and information around this matter to inform decision making. 1.1.7. Long term climate resilient forecasts must be considered and embedded in design and build of infrastructure and followed through to operation. The use of Environmental Impact Assessments or Strategic Environmental Assessments may be a good tool to embed this practice. 1.1.8. Raise awareness of water security issues throughout all sectors and society. This would include water use efficiency, disaster preparation and recovery.
1.2. Focus efforts on tackling pollution issues in each basin	1.1.1. Develop a clear understanding on the sources of and extent of pollution in each river basin. Develop a central database shared with relevant actors. 1.1.2. Develop data to understand the impact of pollution in each river basin locally and downstream, this would be based on capacity of the receiving water body. Share this data with relevant actors and use it to prioritise action.. 1.1.3. Ensure that the river basin committees have the capacity to use local knowledge and data in order to identify sources of pollution and tackling them.. 1.1.4. Tackling pollution should link to the work on economic instruments and create an incentive to drive behaviours that are aligned with overall strategic objectives. This could be based on the polluter pays principle. 1.1.5. Support action with a strong regulatory framework and robust compliance monitoring and enforcement. Collect and share data and information around this matter to inform decision making. 1.1.6. Link actions, for example new infrastructure requirements, to long term strategic and financial planning. This ensures visibility of water quality issues and optimises likelihood of implementation.
2. Tackling fragmentation, multi-level governance and improving policy coherence	
2.1. Critically review the performance of the water sector at a central and local level against long term strategic objectives. Consider the impact of multi-level governance issues.	2.1.1. Benchmark performance of the sector against long term strategic objectives. Document policy gaps, objective gaps, information gaps and capacity gaps and develop an action plan to close them. 2.1.2. Evaluate the potential of policy tools to align central and regional objectives related to water. This could include incentivised performance contracts similar to those used in Brazil. Robust performance indicator schemes would aid implementation.

2.2.	Pursue adoption and implementation of the Water Bill as proposed in the 12th NESDP	2.2.1. The Water Bill should state clearly the objectives of the water sector. 2.2.2. The existing actors, their remits as visualised in their founding Acts and their actual activities should be mapped against the sector objectives in the Bill. This would cover both national and local entities. 2.2.3. Gaps and overlaps in roles and responsibilities should be clearly identified. 2.2.4. Ensure clear owners of strategy development, policy making and long-term planning. Ensure budget cycles are aligned to long-term plans. Ensure that the appropriate data is available to support this activity.
2.3.	Reform the National Water Resources Committee under the Water Bill as proposed in the 12th NESDP.	2.3.1. Ensure that the Committee has high level political support and ownership. 2.3.2. Ensure that the Committee has a clear remit in terms of decision making and setting strategic direction. 2.3.3. Ensure that the Committee has the correct representation including from relevant ministries, river basin committees and the wastewater sector. Ensure cross-sectorial issues are captured, for example water management and economic development. 2.3.4. The Committee should meet regularly and keep complete and transparent records of meetings and action lists.
2.4.	Ensure sufficient advantage is leveraged from river basin committees and management	2.4.1. These structures are currently not effective which is not aligned with international experience. Review this lack of current impact and strategically review how they can support the overall management of water resources including potential roles in stakeholder management, data collection, infrastructure specification, planning and forecasting and charging. 2.4.2. If the roles of river basin committees are to be strengthened, they must add value and not create another layer of bureaucracy. Provide clear guidance on roles and mandates of these committees. 2.4.3. Some river basin committees may have stronger capacity and add more immediate value to the sector than others. Consider strengthening the remit of committees in one or two key river basins rather than all 25. These may become pioneer committees and set the scene for future development of others. 2.4.4. Review the roles of river basin management and committees with regard to water security matters – ensure sufficient value is added from these structures. This might include consultations on infrastructure requirements and cost benefit analyses.
2.5.	Consider establishment of a National Policy Dialogue on Water.	2.5.1. A National Policy Dialogue on water could be established to feed into the National Committee on Water Resources Management. 2.5.2. The National Policy Dialogue could be chaired by the Ministry of Natural Resources who serves as secretary for the National Committee on Water Resources Management. Representatives from relevant ministries and agencies, academia, the private sector and civil society would also be represented. 2.5.3. The National Policy Dialogue would be empowered to conduct projects and deliver analysis to support the objectives of the National Committee on Water Resources Management. It would establish the evidence base to support strategy and policy decisions and provide a platform for consultation on issues ahead of presentation to the high level committee.
3.	**Strengthen the role of economic instruments to increase water security, drive behavioural changes and ensure financing**	
3.1.	Determine the potential for economic instrument reform. This would include clear roles and responsibilities on development and implementation.	3.1.1. Develop a robust financial plan of the real costs of managing the water sector today and in the future and align with potential revenue from economic instruments. Identify funding gaps. Align a financial strategy to the water strategy and prioritise action. Data must be available and accessible to key entities. 3.1.2. Review existing subsidies and economic incentives and tackle those that increase vulnerability. This might include crop selection and water intensity in different areas. 3.1.3. Ensure economic instruments are aligned with strategic policy objectives and set correct incentives e.g. behaviour change. 3.1.4. Review and set a clear role for river basin management within the framework of economic instruments. This might include contributing to the financial plan, including priority infrastructure specifications. 3.1.5. Conduct analysis to determine ability-to-pay and willingness-to-pay of different sectors. A long-term understanding of affordability constraints will support tariff development.
3.2.	Ensure stakeholder management and engagement to facilitate any reform	3.1.6. Ensure any changes in tariffs are well understood and communicated to the public and water users. They must have political and public support and understanding to be effective.

Goal to reach	Recommendations of the Multi-Dimensional Country Review of Thailand
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1.1. Adopt and implement a risk management approach to water security issues	1.1.1. Use the National Water Resources Committee, supported by high quality analysis and data, to confirm levels of acceptable risk that are accepted and transparent to all relevant actors. This must recognise that this could be different for different regions and for different sectors. 1.1.2. Ensure better coordination and clear roles and responsibilities with regard to disaster preparation and recovery. This would include collection and ownership of data and information sharing. 1.1.3. Embrace a flexible approach to risk management, embed regular review processes to reflect latest thinking and information to inform the levels of acceptable risk. 1.1.4. Embed innovation within the sector with a focus on water security matters such as water use efficiency – e.g. enhanced irrigation equipment. Areas of innovation should have a strong business case facilitating adoption. 1.1.5. Create an inventory and review the performance of the existing suite of regulatory, economic and information based tools that target management of water security risks. Identify underperforming tools and opportunities for new tools based upon latest good international practice. Update the inventory and deploy as required supported by investment in necessary human capital. This might include flood insurance schemes, water quality standards or flood zone maps. 1.1.6. Review existing regulatory frameworks and support with compliance monitoring and enforcement. This may have a focus on water allocation, water efficiency, permitting and land use. Collect and share data and information around this matter to inform decision making. 1.1.7. Long term climate resilient forecasts must be considered and embedded in design and build of infrastructure and followed through to operation. The use of Environmental Impact Assessments or Strategic Environmental Assessments may be a good tool to embed this practice. 1.1.8. Raise awareness of water security issues throughout all sectors and society. This would include water use efficiency, disaster preparation and recovery.
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2. **Tackling fragmentation, multi-level governance and improving policy coherence**	
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2.3.	Reform the National Water Resources Committee under the Water Bill as proposed in the 12th NESDP.	2.3.1. Ensure that the Committee has high level political support and ownership. 2.3.2. Ensure that the Committee has a clear remit in terms of decision making and setting strategic direction. 2.3.3. Ensure that the Committee has the correct representation including from relevant ministries, river basin committees and the wastewater sector. Ensure cross-sectorial issues are captured, for example water management and economic development. 2.3.4. The Committee should meet regularly and keep complete and transparent records of meetings and action lists.
2.4.	Ensure sufficient advantage is leveraged from river basin committees and management	2.4.1. These structures are currently not effective which is not aligned with international experience. Review this lack of current impact and strategically review how they can support the overall management of water resources including potential roles in stakeholder management, data collection, infrastructure specification, planning and forecasting and charging. 2.4.2. If the roles of river basin committees are to be strengthened, they must add value and not create another layer of bureaucracy. Provide clear guidance on roles and mandates of these committees. 2.4.3. Some river basin committees may have stronger capacity and add more immediate value to the sector than others. Consider strengthening the remit of committees in one or two key river basins rather than all 25. These may become pioneer committees and set the scene for future development of others. 2.4.4. Review the roles of river basin management and committees with regard to water security matters – ensure sufficient value is added from these structures. This might include consultations on infrastructure requirements and cost benefit analyses.
2.5.	Consider establishment of a National Policy Dialogue on Water.	2.5.1. A National Policy Dialogue on water could be established to feed into the National Committee on Water Resources Management. 2.5.2. The National Policy Dialogue could be chaired by the Ministry of Natural Resources who serves as secretary for the National Committee on Water Resources Management. Representatives from relevant ministries and agencies, academia, the private sector and civil society would also be represented. 2.5.3. The National Policy Dialogue would be empowered to conduct projects and deliver analysis to support the objectives of the National Committee on Water Resources Management. It would establish the evidence base to support strategy and policy decisions and provide a platform for consultation on issues ahead of presentation to the high level committee.
3.	**Strengthen the role of economic instruments to increase water security, drive behavioural changes and ensure financing**	
3.1.	Determine the potential for economic instrument reform. This would include clear roles and responsibilities on development and implementation.	3.1.1. Develop a robust financial plan of the real costs of managing the water sector today and in the future and align with potential revenue from economic instruments. Identify funding gaps. Align a financial strategy to the water strategy and prioritise action. Data must be available and accessible to key entities. 3.1.2. Review existing subsidies and economic incentives and tackle those that increase vulnerability. This might include crop selection and water intensity in different areas. 3.1.3. Ensure economic instruments are aligned with strategic policy objectives and set correct incentives e.g. behaviour change. 3.1.4. Review and set a clear role for river basin management within the framework of economic instruments. This might include contributing to the financial plan, including priority infrastructure specifications. 3.1.5. Conduct analysis to determine ability-to-pay and willingness-to-pay of different sectors. A long-term understanding of affordability constraints will support tariff development.
3.2.	Ensure stakeholder management and engagement to facilitate any reform	3.1.6. Ensure any changes in tariffs are well understood and communicated to the public and water users. They must have political and public support and understanding to be effective.

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