Timor-Leste Public Expenditure Review

Changing Course: Towards Better and More Sustainable Spending

WORLD BANK GROUP

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Acronyms

ADB	Asian Development Bank
ADN	National Development Agency
ANAAA	National Agency for Academic Assessment and Accreditation
ANATL	Administration of Airports and Air Navigation of Timor-Leste
APA	Autonomous Public Agencies
APORTIL	Port Authority of Timor-Leste
ASEAN	Association of Southeast Asian Nations
ASYCUDA	Automated System for Customs Data
BCTL	Central Bank of Timor-Leste
BFM	Budget and Financial Management
BNCTL	National Commercial Bank of Timor-Leste
CAFI	Administrative Council of the Infrastructure Fund
CBA	Curriculum-Based Assessment
CE	Compensation of Employees
CFTL	Consolidated Fund for Timor-Leste
CHCs	Community Health Centres
CNAP-NFS	Consolidated National Action Plan for Nutrition and Food Security
CNE	National Electoral Commission
CNEFP	National Centre for Employment and Vocational Training
CNR	National Rehabilitation Centre
COFOG	Classification of The Functions of Government
CPF	Country Partnership Framework
CPI	Consumer Price Index
CPV	Commitment Payment Vouchers
CSC	Civil Service Commission
CTT	Conditional Cash Transfer
DALYs	Disability-Adjusted Life Years
DBFTL	Dalan Ba Futuru Timor-Leste
DHIS-2	District Health Information System-2
EAP	East Asia and Pacific
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
EMIS	Education Management Information System

ESI	Estimated Sustainable Income
ESP	Education Sector Plan
FCV	Fragility, Conflict and Violence
FDCH	Human Development Capital Fund
FDTL	Timor-Leste Defense Force
GAVI	The Vaccine Alliance
GDP	Gross Domestic Product
GIS	Geographic Information System
GMI	Gross Mixed Income
GNI	Gross National Income
GOS	Gross Operating Surplus
GPBP	Geospatial Planning and Budgeting Platform
GVA	Gross Value Added
HCI	Human Capital Index
HCP	Human Capital Project
HFCE	Household Final Consumption Expenditure
HFO	Heavy Fuel Oil
HMIS	Health Management Information System
HNGV	National Hospital Guido Valadares
HPs	Health Posts
IF	Infrastructure Fund
IFMIS	Integrated Financial Management Information System
INDMO	National Institute for the Development of Manpower
INFORDEPE	National Institute for the Training of Teachers and Educational Professionals
INS	National Health Institute
INSS	National Institute of Social Security
IPC	Infection Prevention and Control
IPV	Inactivated Polio Vaccine
IT	Information Technology
JEE	Joint External Evaluation
JICA	Japan International Cooperation Agency
JPDA	Joint Petroleum Development Area
LMICs	Lower-Middle Income Countries
LNG	Liquefied Natural Gas
MAPS	Methodology for Assessing Procurement Systems
MCAE	Coordinating Ministry of Economic Affairs
MDGS	Millennium Development Goals

MEYS	Ministry of Education, Youth and Sports
MHESC	Ministry of Higher Education, Science and Culture
MMR	Maternal Mortality Ratio
MNLCA	Ministry for the Affairs of National Liberation Combatants
MoF	Ministry of Finance
MoH	Ministry of Health
MPS	Major Projects Secretariat
MPSI	Ministry of Planning and Strategic Investment
MPW	Ministry of Public Works
MSA	Ministry of State and Administration
MSSI	Ministry of Social Solidarity & Inclusion
MTC	Ministry of Transport and Communications
MTDS	Medium-Term Debt Management Strategy
NCD	Non-Communicable Diseases
NER	Net Enrolment Rates
NESP	National Education Strategic Plan
NGO	Non-Governmental Organization
NHSSP	National Health Sector Strategic Plan
NPC	National Procurement Commission
OOP	Private Out-of-Pocket
OPM	Office of the Prime Minister
OSM	Open Street Maps
PDD	Decentralized Development Program
PDID	Integrated District Development Planning
PDL	Local Development Program
PEFA	Public Expenditure and Financial Management (PEFA)
PER	Public Expenditure Review
PFM	Public Financial Management
PHC	Population and Housing Census
PHC	Primary Health Care
PIM	Public Investment Management
PIMA	Public Investment Management Assessment
PNDS	National Village Development Program
PNTL	National Police of East Timor
PPP	Public-Private Partnerships
PR	Referendum Package
PSC	Production-Sharing Contracts

PV	Photovoltaic
RAEOA	Special Administrative Region Authority of Oé-Cusse Ambeno
RA-GAP	Revenue Administration Gap Analysis
RAMS	Estrada Road Asset Management System
REER	Real Effective Exchange Rate
RoRK	Rate of Return to Capital
RTTL	Radio Television of Timor-Leste
SAMES	Autonomous Drug and Medical Equipment Service
SDGs	Sustainable Development Goals
SDP	Strategic Development Plan
SEJD	State for Youth and Sports
SEPFOPE	Secretariat of State for Vocational Training and Employment
SIGTAS	Standard Integrated Government Tax Administration System
SISCa	Integrated Community Health Services
TADAT	Tax Administration Diagnostic Assessment Tool
TEA	Tax Expenditure Assessment
TPAF	Tax Policy Assessment Framework
TSA	Treasury Single Account
UAV	Unmanned Aerial Vehicles
UHC	Universal Health Coverage
UNTAET	United Nations Transitional Administration in East Timor
UNTL	National University of Timor-Leste
USD	United States Dollar
VAT	Value-Added Tax
VGF	Viability Gap Funding
WHO	World Health Organization
ZEESM	Special Economic Zones for Social Market Economy

Acknowledgements

Disclaimers

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Executive Summary

Crucial changes in fiscal policy are required to avert an abrupt and painful adjustment within a **decade.** Since 2006, successive governments have embraced an extreme expansionary fiscal policy stance based on large spending and low taxation. This stance is unsustainable and requires a major overhaul. Very high public expenditure levels (averaging about 86 percent of GDP in 2008-2019) and low domestic revenue collection (below 12 percent of GDP) are placing strong pressures on the country's petroleum wealth. The Petroleum Fund is expected to deplete in about 10 years, owing to the imminent end of petroleum revenues and large withdrawals to finance the state budget. The development of additional petroleum reserves – such as Greater Sunrise – remains highly uncertain. The exhaustion of the Petroleum Fund would lead to a strong fiscal adjustment, which would jeopardise the delivery of basic public services and threaten social cohesion. It is therefore vital to preserve these assets to ensure that future generations – equipped with sound knowledge, youthful energy, and a modern vision – have sufficient resources to shape their own destiny. Meanwhile, effective investments to enhance human capital outcomes are needed.

The fundamental challenge facing the country is to transform its petroleum wealth into prosperity for the entire population. Large public spending has failed to sustain economic growth and significantly improve living standards. Its impact on human capital accumulation has also been limited. The justification for frontloading public spending is thus increasingly untenable. This PER highlights three main challenges: (i) lack of aggregate fiscal discipline, owing to high expenditure levels coupled with low domestic revenues; (ii) low efficiency and effectiveness of spending, partly due to resource misallocations; (iii) and operational constraints, caused by public financial management bottlenecks. These challenges are mutually reinforcing, as the low quality of spending compounds sustainability concerns, and operational weaknesses affect the quality of spending. Fiscal responsibility requires a re-prioritisation of spending (towards human capital) and a consolidation of unessential and poorly-targeted outlays, as well as improvements in domestic resource mobilisation. A strong focus on quality and sustainability is indispensable, even in sectors that warrant greater attention – such as education and health. In sum, Timor-Leste requires better – rather than larger – budgets.

Macroeconomic Performance

Accelerating and sustaining economic growth is key to reduce poverty and raise living standards. Economic growth has decelerated sharply over the past decade – from 11 percent in 2008 to 3-4 percent in 2014-2016 – while recessions since 2017 have jeopardised hard-won gains (Figure 0.1). Living standards have broadly improved since 2006, but economic growth has not benefited households proportionally. In terms of its main drivers, economic activity has been strongly supported by public expenditure, while the private sector remains incipient. Construction and public services have been the key sectoral drivers of output, but these engines are unlikely to be sustainable. This calls for a revamped economic model – with broad political support – to promote sustainable and inclusive growth. A coherent medium-term economic strategy should be based on the country's endowments and emerging opportunities.

Figure 0.1: GDP growth (annual, %)
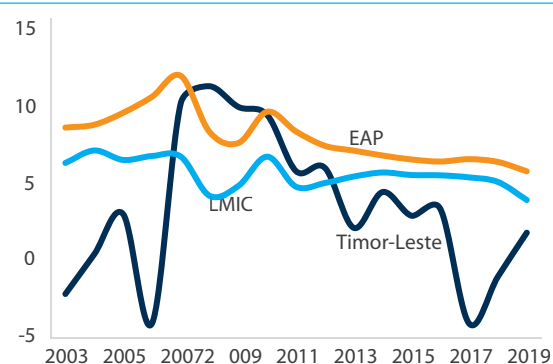
Source: Ministry of Finance and WDI.

Figure 0.2: Public expenditure (% GDP)
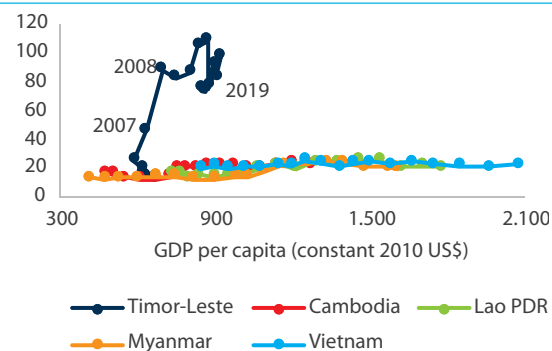
Source: Ministry of Finance and International Monetary Fund.

Public expenditure levels have been very high, which coupled with limited domestic revenues has contributed to large budget deficits. Public expenditure levels have been among the highest in the world – averaging over 80 percent of GDP since 2007 (Figure 0.2). Nonetheless, high public spending has not translated into strong and sustained economic growth, as the latter has been decelerating since 2008. Public spending is perpetuating a vicious cycle of resource misallocation, which is fuelling large (fiscal and trade) deficits and weighing on economic growth, which is then offset with further unproductive public

spending. Domestic revenues remain small (at less than 12 percent of GDP), while the Estimated Sustainable Income (ESI) is gradually declining – owing to a depleting petroleum wealth. Hence, the fiscal deficit is very large (at about 30 percent of GDP in 2017-2019) and predominantly financed by excess withdrawals from the Petroleum Fund. The public debt stock is low – albeit growing – and mostly composed of external concessional lending. Nonetheless, it would be advisable to prepare a medium-term debt management strategy, upgrade software, and improve the monitoring and reporting of fiscal risks.

Large budget deficits threaten fiscal sustainability and endanger macroeconomic stability. The Petroleum Fund is used to bridge the large financing gap created by high spending and low domestic revenues. The fact that the ESI, as a fiscal rule, has been consistently breached over the past 10 years is a matter of concern. The Petroleum Fund could be depleted in a decade, owing to the exhaustion of offshore petroleum reserves and large asset withdrawals to finance large state budgets (Figure 0.3). Future petroleum developments – such as Greater Sunrise – could provide additional revenues, but they would also require large upfront costs. The exhaustion of the Petroleum Fund could lead to a sudden and agonising fiscal adjustment with significant consequences to service delivery and human development. A prudent management of the Petroleum Fund is thus crucial to ensure that future generations can benefit from these savings. A medium-term binding commitment to the ESI could contribute to a gradual reduction in the fiscal deficit – ideally in the context of a medium-term fiscal framework. Fiscal rules and a stronger medium-term perspective would improve decision-making by facilitating budget prioritisation and focusing scarce (human) resources – in terms of planning, coordination, and supervision – on those priorities.

Figure 0.3: Petroleum Fund (USD million)
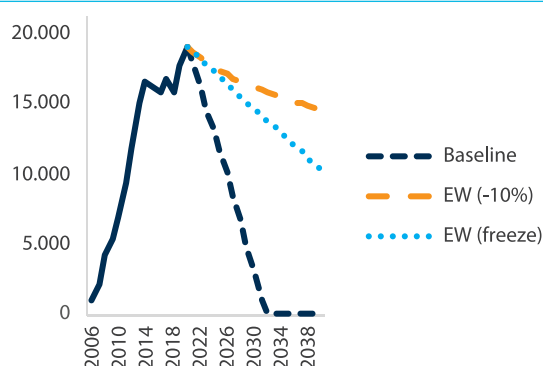
Note: Scenarios for excess withdrawals comprise a freeze (dotted line) and an annual 10 percent decline (dashed line).
Source: Ministry of Finance and World Bank staff projections.

Figure 0.4: Current account (% GDP)
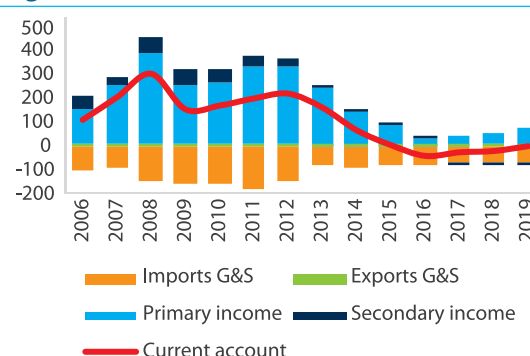
Source: Central Bank.

External imbalances are equally worrying, since they can also jeopardise macroeconomic stability. The current account has typically recorded large surpluses, but its balance has deteriorated sharply in recent years – mainly due to declining primary incomes associated with petroleum revenues (Figure 0.4). The trade deficit remains very large (at 55 percent of GDP), owing to limited production capabilities and low exports. The financial account has typically recorded new investments by the Petroleum Fund, but there has been a (net) divestment in recent years. Divestments in foreign assets finance current account (and fiscal) deficits, but pose a threat to the sustainability of the Petroleum Fund – especially since withdrawals have regularly exceeded the ESI.

Domestic Revenue

Domestic revenues are very low by international standards, averaging less than 12 percent of GDP since 2008. The stated policy objective is to achieve a domestic revenue level of 18 percent of GDP by 2023, which is about 50 percent higher than the current levels. Tax revenue is particularly low, averaging 8 percent of GDP since 2011 (Figure 0.5). Although tax revenues have increased through time, this has been indirectly supported by growing public spending. The composition of tax revenues has changed somewhat since 2002, with income and excise taxes growing in importance. Revenue collection has broadly kept pace with economic activity, but it needs to go well beyond that benchmark – as it remains considerably below regional and income peers (Figure 0.6). Improved domestic revenue mobilisation efforts can help bridge the very large budget financing gap, and thus enable the funding of critical public spending without depleting the Petroleum Fund.

Figure 0.5: Tax revenue (% GDP)
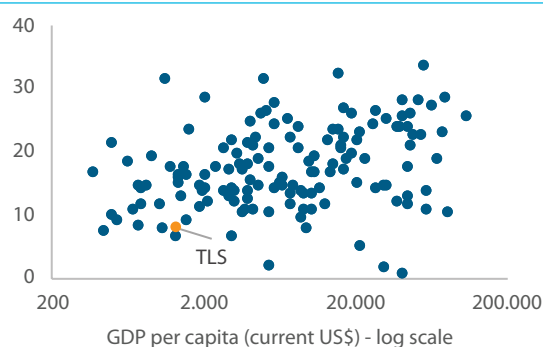
Notes: Averages for 2015-2019.
Source: Ministry of Finance and International Monetary Fund.

Figure 0.6: Tax revenue (2017, % GDP)
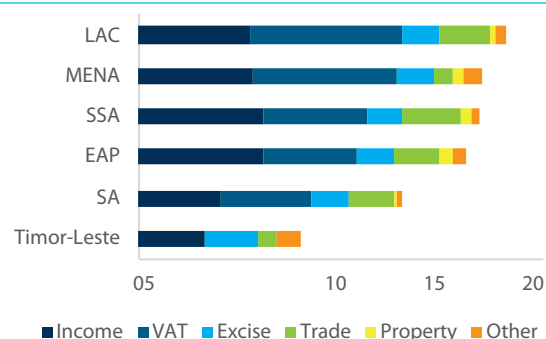
Source: World Bank.

The legislation governing Timor-Leste's revenue framework was approved more than 10 years ago and needs to be updated. The tax regime is based on the provisional legislation passed by the United Nations Transitional Administration in East Timor (UNTAET). In 2008, the Parliament passed the Taxes and Duties Act – an overarching law governing direct and indirect taxes. Most of the modifications reduced the statutory tax rates applied, which was enabled by growing (offshore) petroleum revenues and a view to attracting foreign investment. The Taxes and Duties Act has some shortcomings, which undermine the efficiency and effectiveness of the tax system.

Tax reforms are needed to ensure that revenue levels are adequate to sustainably finance public expenditures. A modern tax system can contribute to greater economic efficiency and equity. A prioritised and sequenced set of tax reforms (relating to both policy and administration) should be pursued in the coming years. Measures to diversify revenue sources, expand the tax base, and improve compliance are key to generate sufficient domestic resources to bridge the large budget financing gap – especially by enabling the funding of key public services without threatening fiscal sustainability. In addition, taxation is known to promote transparency and accountability – between citizens and the state. However, strong political commitment and ownership is required, especially bearing in mind the presence of a large sovereign wealth fund that may reduce the incentive for reforms.

The implementation of tax policy and administration reforms could (at least) double tax revenue collection. The tax framework comprises several types of taxes, although value-added and property taxes

are notably absent. The lack of a value-added tax accounts for much of the gap to its peers. Moreover, the current income tax rate is among the lowest statutory tax rates in the world. Average effective tax rates are also low, owing to a narrow tax base as well as limited compliance and enforcement. Estimates on the tax potential suggest that, if existing gaps in tax policy and administration are addressed, tax revenue collection could (at least) double. It is imperative to mobilise additional domestic revenues to ease pressures on the Petroleum Fund.

In terms of tax policy reforms, revising the current tax instruments and increasing tax rates could yield significant benefits. Introducing a value-added tax (VAT) would generate considerable revenue in an efficient manner. Concerns over its regressive nature could be addressed through pro-poor public spending or through targeted exemptions. Raising (outdated) excise tax rates – especially on tobacco and alcohol – and introducing a sugar tax would increase revenues while tackling emerging health and environmental concerns. Streamlining and raising income tax rates could boost revenues without deterring business activity or undermining the purchasing power of individuals. Even at 15 percent, the corporate tax rate would remain low by international standards, and thus unlikely to affect (foreign) investment. A property tax could also support the diversification of tax sources and raise further revenue in the medium term. Hence, a new tax regime could comprise a broad-based consumption tax (VAT), an excise tax regime, an (integrated) income tax, and an import duty compliant with international standards (including ASEAN) – which could be supplemented by a property tax. This would implicitly lead to the elimination of the sales tax and the services tax to avoid duplication. Minimising discretionary tax exemptions could also yield significant benefits, while reporting tax expenditures would enhance transparency and support their gradual phasing out.

With regard to tax administration reforms, a focus on modernising systems and building human capacity is crucial. The implementation of revenue policies depends critically on the quality of revenue administration. Improving revenue administration is vital to increase (voluntary) tax compliance, enhance tax collection, and reduce costs. Key areas of improvement include taxpayer registration, access to information, risk management, and auditing. A modern revenue administration should comprise clear and simple regulations (to facilitate their application and compliance), efficient collection systems and procedures, risk-based analysis, service orientation, function-based organizational structures, and a high level of automation. Some of these can be supported by information technology (IT) solutions. The adoption and full implementation of appropriate IT systems (e.g. ASYCUDA and SIGTAS) will reduce collection costs, enhance information sharing across relevant agencies, integrate and mainstream tax procedures, and minimise errors and arrears. In addition, efficient revenue generation would require a revision of existing legislation, as well as building institutional and human capacities within the Tax and Customs Administrations – including enhancing and clearly defining their powers.

Public Expenditure

Government expenditure has been very high during the past decade and among the highest in the world. Public spending has grown substantially since the mid-2000s, averaging 86 percent of GDP between 2008 and 2019 (Figure 0.7). Large increases in public spending resulted from a broad-based surge in most appropriation categories. There has been a moderate shift in the composition of public spending, with transfers increasing in importance. Capital expenditures have been quite volatile. Moreover, budget credibility has been undermined by regular mid-year revisions – either through budget rectifications or virements. Systematic over- and under-budgeting reflects poor planning, budgeting, and/or implementation – as well as delays in the approval of the state budget. Poor budget execution likely leads to sub-optimal outcomes in terms of the efficiency and effectiveness of public spending.

Figure 0.7: Public spending (% GDP, 2014-19)
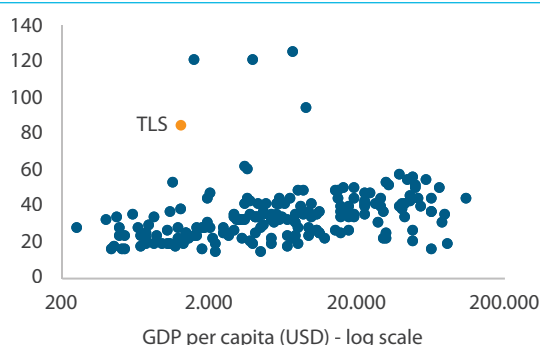
Source: Ministry of Finance (BOOST) and IMF.

Figure 0.8: Functional categories (USD million)
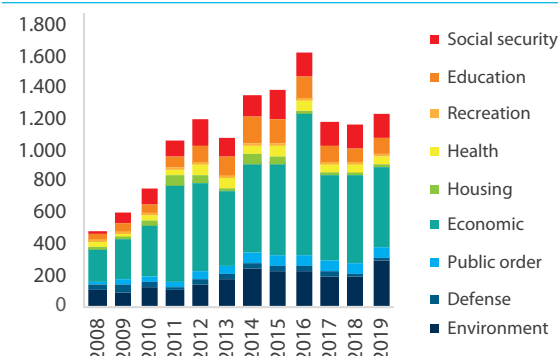
Source: Ministry of Finance (BOOST).

The allocative efficiency of public spending should be improved to better reflect stated priorities and existing challenges. Public expenditure has been skewed towards economic infrastructure – mainly electricity and roads – which could be partly justified by its inherent high costs (Figure 0.8). However, the country faces large human development challenges, such as high stunting levels and poor learning outcomes. Given this, there is scope for an improved allocation of resources, particularly due to very limited spending on social infrastructure relating to health, education, and water & sanitation. Moreover, key economic sectors with growth potential – agriculture, tourism, commerce, and industry –– only account for one percent of total expenditure.

The effectiveness of public capital spending has been low, calling for improvements in public investment management. Estimates suggest that the impact of public (capital) expenditure on economic activity has been very limited (Figure 0.9). Much of the spending leaks into imports, as there is limited domestic production capacity to satisfy this demand. Moreover, the large expansionary fiscal policy stance is not contributing to ease supply-side constraints and is thus jeopardising fiscal sustainability. Public expenditure is therefore failing to support medium-term economic growth. Moreover, the rate of return on capital has been declining, suggesting that public investment management has been deteriorating. It is therefore crucial to make improvements along the entire project cycle to enhance the impact of public spending on economic growth. It will be crucial to undertake critical public investment management reforms, with a particular focus on project appraisal (e.g. robust cost-benefit analysis) and project selection – as set out by the Public Investment Management Assessment (PIMA) – see Annex B.

Figure 0.9: Fiscal multiplier (investment)
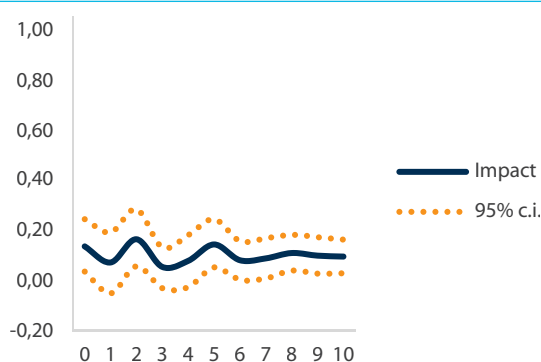
Source: World Bank staff estimates.

Figure 0.10: Fiscal rigidity (USD million)
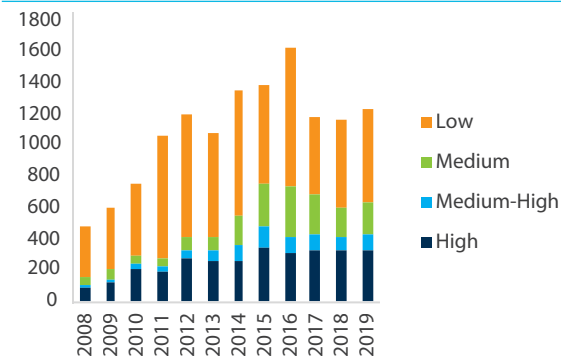
Source: Ministry of Finance (BOOST) and staff calculations.

Rigid expenditures have been increasing, but there is still ample scope for fiscal adjustments. The share of rigid expenditures in total spending has risen through time, which is concerning because it constraints the scope for discretionary policy (Figure 0.10). Given concerns over medium-term fiscal sustainability, a potential fiscal adjustment could be costly if rigid expenditures continue to rise – especially if these are legally binding. It is thus important to curb key items before they build a strong momentum that is difficult to halt. At present, there is still significant scope for changes in budgeting – particularly to consolidate and reallocate resources across categories to improve efficiency and effectiveness. However, there are some risks in salaries (set to grow with decentralisation), professional services (dependence on consultants), fuel for generators (exposed to volatile international oil prices), and pensions (generous contributory and non-contributory schemes) – among other categories.

Spending on salary & wages warrants further scrutiny and improvements in human resource planning. Expenditure on salary & wages has grown progressively through time. The wage bill is relatively large when compared to regional and income peers – at about 12 percent of GDP. Expenses related to temporary contracts, as well as payments to consultants and advisors, are recorded under professional services in the goods & services category – which leads to a significant underestimation of costs. Information on the composition of the civil service needs to be better consolidated among relevant institutions to provide an accurate representation of the civil service – and should include information on headcounts, remuneration levels, and competencies. Developing adequate pay and employment policies and improving human resource planning will be key to improve the efficiency and sustainability of the civil service.

There is scope for consolidating spending on goods & services, while a procurement reform can improve competitiveness and transparency. Spending on goods & services grew rapidly until 2014, although it has moderated since then. Spending on professional services remains the largest item, while spending on fuel for generators has varied noticeably due to volatile international oil prices. However, spending on maintenance of equipment & buildings has not kept up with the accumulation of capital assets. Items under goods & services have been systematically over-budgeted, which may signal poor planning and uncovers considerable scope for consolidation. Items that need to be contained include professional services, fuel for generators, and other miscellaneous services. Curbing the overall budget for goods & services will support fiscal sustainability, while a reform of procurement systems would increase competitiveness and transparency.

Spending on public grants merits greater selectivity, while reforms are needed to secure the sustainability of the social protection system. Spending on public transfers, which mainly comprise personal benefit transfers and public grants, has increased considerably. Spending on social protection partly reflects the country's political and socio-economic legacy, but it does not necessarily target the poorest or the most vulnerable. The veteran programme provides generous benefits and accounts for most spending, while Bolsa da Mae benefits are small. The new contributory social security scheme system is also generous and raises sustainability concerns. Public grants comprise a wide range of institutional transfer payments, most notably to the RAEOA-ZEESM. Other public grants include the capitalisation of banks, support to state-owned enterprises, and payments to private institutions. Enhancing selectivity (and transparency) of public grants and reforming the social protection system would improve the impact of public spending while securing fiscal sustainability.

Growing institutional fragmentation is a concern that should be carefully considered, since it affects decision-making. Public transfers to municipalities started in 2017, although municipalities also receive funds through some line ministries. There are concerns regarding the scope and pace of decentralisation, especially owing to limited capacities and high coordination costs. For example, an allocation formula could be developed based on needs (e.g. poverty levels and human development outcomes) and capacity

to implement. The proliferation of autonomous public agencies (APAs) has also contributed to greater institutional fragmentation. Given limited (managerial) capacities and inability to generate revenue, it would be important to stem the increase in APAs and possibly consolidate them – following a careful review.

Persistent challenges in the public financial management system will need to be addressed. There are several PFM challenges along the budget cycle that undermine service delivery. For instance, few sectors have updated (and costed) medium-term sector plans, which undermines their ability to plan strategically. There is limited use of evidence in the preparation and allocation of budgets, which contributes to allocative inefficiencies in spending. Budget execution is affected by delayed budget approvals and disbursements, as well as procurement bottlenecks. Fiscal monitoring is onerous, while there are very few evaluations of the impact of spending. The recent Public Expenditure and Financial Management (PEFA) assessment evaluated the strengths and weaknesses of Timor-Leste's PFM system. It is now crucial to develop a prioritised and sequenced PFM reform action plan that identify the key measures that will lead to the highest performance payoffs.

Health

Timor-Leste has come a long way in rebuilding its health system and improving health outcomes. From focusing on reconstructing basic health service infrastructure to more recent developments in increasing the size of its health workforce, significant strides have been made in equipping the public health service delivery network. The country's achievement of health-related Millennium Development Goals is particularly laudable. Emerging challenges include a shifting burden of disease towards non-communicable diseases (NCDs) and ensuring preparedness against public health threats such as COVID-19, while continuing to make progress on infectious diseases, maternal and child health, and nutritional outcomes.

An increase in health spending over the years has enabled critical investments in the health sector. In 2018, total health spending was $94 per capita, equivalent to 7.6 percent of GDP. Public health expenditure comprised most of this spending, which has helped to protect the population against large and impoverishing health expenditures. The country has begun to experience a 'health financing transition', in which health spending increases as national income rises and development assistance declines. The sustainability of health programs that have been predominantly financed by external sources may be at risk. Furthermore, a large share of the increase in health spending has gone towards a higher wage bill for doctors, which is neither efficient nor sustainable in the long term.

Higher spending on health has not translated into markedly better service availability and quality. Health service utilisation remains relatively low, with just 2.5 outpatient visits per person per year – lower than in many other countries. There is uneven access to care across geographic areas and by socioeconomic strata, with rural and poor households generally receiving poorer quality care. COVID-19 is likely to exacerbate these inequities through various channels: disruptions to essential health and nutrition services, including critical outreach services to hard-to-reach communities; and disproportionate impact on the livelihoods of poor households due to movement restrictions and a slowdown in economic activity.

Changes in the institutional and policy context have also led to shifts in health spending patterns. With the establishment of autonomous agencies and the decentralisation of selected health functions to municipalities, planning and budgeting have become fragmented, and there is even greater budget uncertainty than under the previous centralised model. In practice, autonomous agencies have limited control over their budgets, while municipalities have found it challenging to spend effectively while having to juggle different funding sources and reporting requirements. While these reforms were intended

to improve the responsiveness of budgetary allocations to needs on the ground, the overall PFM system remains sluggish and continues to hinder budget execution – with impacts on service delivery.

Looking ahead, a key priority will be to address the high rate of childhood stunting. At 46 percent, childhood stunting is currently an impediment to human capital development which, if reduced, will positively contribute to economic growth. Key interventions include multi-sector coordination and policy reforms, improvements to nutrition-specific services in the health sector, and behaviour change communication.

Improving the efficiency of spending is key to raising the effectiveness of health service delivery. An important agenda is to review both the level and quality of expenditure. The key issues identified and discussed in this chapter suggest that strengthening the quality of spending will require reforms not just within the sector or at the level of program implementation, but also in government-wide processes, such as public financial management, that impact the health sector. Institutional arrangements also need to be reviewed to improve responsiveness and accountability. Establishing financial rules and regulations that strike a balance between control and flexibility over spending decisions would help to increase both autonomy and accountability of spending units. Municipal authorities could also be empowered to reallocate funds as needs change without having to request approval for small virements and be allowed to carry over and re-invest efficiency gains. This will have to be backed by robust accountability mechanisms, such as linking performance indicators to decisions on inter-fiscal transfers.

A cohesive operational plan for the health sector would help to improve coordination among health sector entities. The increased complexity of the organisation of the health sector has not been coupled with mechanisms to ensure effective collaboration and coordination among its various entities. Autonomous agencies have limited flexibility in practice and remain financially dependent on fiscal transfers. Better communication and integrated planning with MoH would help improve the timely flow of information and enhance planning processes.

Within the health sector, there will be a need to significantly rethink investment and spending decisions. Two areas which would benefit from a review of key policy directions are PHC and human resources. In PHC, prevention, early detection, and treatment of NCDs is an emerging and growing need. Here, adequate funding for NCD care and competency-based training for health workers will be needed. There is much work to be done to improve the availability and quality of essential health services at the PHC level. One option for which a lot of groundwork has already been done is to introduce an Essential Service Package. Enforcing standardised guidelines and care protocols for essential services would help to assure a minimum service standard and raise quality of care. The development of the health workforce would benefit from shifting away from a focus on increasing headcount, toward ensuring an appropriate skills-mix, equitable distribution, and improving competencies. This would include revisiting staffing levels and skills-mix, especially in hard-to-reach areas that are currently underserved.

COVID-19 and recent natural disasters have also highlighted emergency preparedness and response as a critical area for improvement. The country's ability to prepare for and respond to emergencies will need to be strengthened through investments in surveillance and surge capacity, comprehensive risk assessments, and effective coordination mechanisms, among others. Key components of the health system that are vital for the delivery of routine health services – such as procurement and supply chain systems – will need to be reviewed and strengthened to ensure that they are ready during both peacetime and crisis situations.

Finally, investing in the health information system and encouraging the use of data for decision making will be a critical underlying element to all the reforms mentioned above. Multiple administrative systems and reporting requirements run in parallel to one another and are not able to provide up-to-date and reliable information on critical inputs and outputs. Consolidating health information systems will be a useful step towards acquiring a better perspective on the performance of the health sector. This would enable policymakers to collect, review, and use data effectively to inform both day-to-day management and longer-term planning, thereby becoming more responsive and effective in delivering health services to the population.

Education

Significant efforts have been made to rebuild the education system and improve access to education. At independence, much of the school infrastructure was either damaged or in poor condition, while the departure of Indonesian teachers left a large gap in the workforce. Since then, there have been considerable efforts to rehabilitate and build new schools, train and recruit teachers, and improve service delivery. Enrolment levels have increased and learning outcomes have improved – especially with regard to youth literacy. Despite progress in several areas, many pertinent challenges still remain. Enrolment rates in pre-school – a key foundation for later skills – are low, while repetition rates in the early grades are very high. Enrolment in the first cycle of basic education is high, but learning outcomes remain low. Overall, access to education has improved, but the quality of education is lagging.

Increases in education spending have supported an expansion of services, but there are concerns about its composition and sustainability. Public spending on education has increased significantly through time, signalling an intention to expand and improve education services. Although spending has declined in recent years, it remains relatively high by international standards – at about 7 percent of GDP in 2019. Nonetheless, this does not necessarily suggest that education is being prioritised, since the sector only accounts for 9 percent of total public expenditure. Moreover, the composition of spending has changed considerably. The wage bill has risen substantially, while spending on capital & development has been very limited. Streamlining some categories of education spending is needed to ensure sustainability – especially since demographic trends will place further pressures on the education system.

Spending on education has not translated into commensurate improvements in learning outcomes. Comprehensive assessments in the early grades show low levels of student learning. Efficiency analysis suggests that the use of both financial and human resources could be improved to achieve better outcomes. For instance, literacy levels are lower than most countries with similar levels of public spending per student (in primary education) – especially in the EAP region. Using the pupil-teacher ratio – instead of public spending – leads to similar conclusions for both literacy and test scores. Hence, better learning outcomes would have been expected for the current level of public spending. Conversely, many countries have achieved similar learning outcomes with less resources. Overall, improvements could be made to tackle inefficiencies in the education system.

Improving the allocative and technical efficiency of public spending on education would help boost learning outcomes. While higher budget allocations can facilitate school construction and teacher hiring, improving the quality of public spending is equally important – to secure good value for money. In particular, improving the efficiency of the basic education system is key to ensure that investments in subsequent education levels have a strong impact. While secondary education requires further investments – as overcrowded classrooms suggest – these will only yield strong results if basic education is able to provide the expected knowledge and skills to students. A small cohort of students is currently pursuing

technical training, which will maintain the dependence on foreign labour despite the large number of university graduates. Finally, new investments in school rehabilitation need to be counterbalanced with adequate spending in goods & services (e.g. textbooks) and personnel salaries and incentives.

High repetition rates in the early grades of formal schooling requires immediate attention. Several measures can be undertaken with a view to reduce student repetition. These include improving pre-school coverage and quality – especially in remote areas – to ensure that all children are school ready when they enter grade 1. This would be more effective and less costly than grade retention. Moreover, enhancing the school feeding program would support the physical and cognitive development of young children. Additional measures could include reducing class sizes and providing individualised support to those with difficulties – through remedial classes, peer instructing, involving assistant teachers, and tutoring. Using classroom testing to assess which students require more attention, coupled with more effective teaching methods, would be key for improving the quality of education. The language challenge can be tackled either through further language training for teachers and materials provided, or advice on transition from (de facto) mother tongue usage.

Producing and attracting sufficient numbers of good teachers is of paramount importance. Current data – such as on student-teacher or teacher-to-class ratios – and demographic projections suggest that there is a need to recruit teachers. However, it is important that the education system attracts and produces teachers with the right competences and set of skills. This ought to be the priority for human resources. Continuous in-service training and professional development, as well as better teacher management can also play an important role. Although teachers receive some level of feedback (written or oral evaluation assessment) there are limited incentives for good performance. Hence, providing monetary and non-monetary incentives could improve teacher performance (e.g. reduce absenteeism), as well as providing adequate training (e.g. for mixed-age classrooms). Better monitoring is needed, while inspection reports should be made public – e.g. to reveal the true extent of teacher absenteeism. A formula should be developed for adequately staffing classrooms (including redeployment) and ensure that teacher skills are suited to student needs.

Improving infrastructure can have a significant impact on learning outcomes. The rehabilitation and construction of school buildings are important, since this seems to be a binding constraint. Classrooms are overcrowded and a significant number are in poor conditions, which affect students' ability to learn. School infrastructure standards should be developed, together with a rating scorecard to allow an accurate assessment and effective prioritisation of infrastructure upgrading. Moreover, it is also crucial to improve connective infrastructure, water & sanitation, electricity, and ensure that facilities are regularly maintained – especially since these also impact the learning environment and student absenteeism. In particular, lack of access to pre-schooling and secondary education should be addressed by improving connective infrastructure (or even by providing bicycles), since students in rural areas walk to school – or the expansion of schools in remote areas to improve accessibility. For pre-school education, either one year can be added to primary schools (for 5 year-olds), or community facilities can be used (for 3-5 year-olds) – depending on the specific context and location.

Appropriate monetary and non-monetary incentives could boost school attendance. Student absenteeism is one of the key reasons for school repetition. A national campaign highlighting the benefits of schooling, scholarships, and enhancing Bolsa da Mae – a cash-transfer program conditional on school attendance – could reduce the opportunity cost (of working) and improve school attendance. The school feeding program alone does not seem sufficient to tackle absenteeism, partly because of some challenges in its implementation. Affordability of education can be a considerable constraint even in countries that

provide free education – i.e. no school fees. Moreover, shortening travel distances (through improvements in connective infrastructure) could also facilitate access.

School management can also be improved through better data and processes. Improving the Education Management Information System (EMIS) is key to enable an adequate monitoring of performance and better decision making. The implementation of a fit-for-purpose ICT policy in education could support both school management and teaching methods. School inspectors currently collect data on pre-school and basic education schools, although these are not publicly available. These inspectors could collect a (wider) range of information through innovative mechanisms, such as GPS-enabled tablets that confirm school location and visually capture the quality of infrastructure – with pictures sent to a central repository that automatically processes the information. Improved data access, analytics and visualisation for baseline and recurrent public finance and service delivery results could be enhanced through the creation of 'digital dashboards' for budget and execution data. Decentralisation and digitisation of data collection will also enhance timely submission of data and result in improved accuracy.

Digital Information

Insights from the geospatial platform created for this PER illustrate the opportunities for strengthening budget decisions. This chapter described an optimisation framework to demonstrate the value of integrating digital data in a web-based platform for validation and analysis purposes. The geospatial planning and budgeting platform (GPBP) drew on both official and crowd-sourced spatial data, and applied open-source codes to produce policy scenarios to support decision making. A GPBP application highlighted gaps in access to public services, specific data sources that need to be improved, and how resource allocations can be enhanced given a set of constraints. The development of a platform that can be used on a continual basis highlights the value of embracing a transformative digital agenda to improve (programmatic) planning and budgeting processes. In fact, the platform underscores the power that geospatial data and modelling can bring to public resource prioritisation – especially from a multi-sectoral perspective. It also highlights the importance of allowing users to provide feedback on data quality. The work has gone beyond providing a one-off appraisal that can quickly be outdated by creating a dynamic tool that can be replicated, refined, and scaled up to address other pressing questions (e.g. education access or medical staffing distribution).

Digital innovations do not automatically improve decision making, but they provide a critical input for consideration. The results emerging from digital platform applications need to be subject to further quantitative and qualitative examination – such as cost-benefit analysis. Digital innovations alone will not yield greater efficiency and equity in public expenditure, but they can be an important input to decision making processes. Stakeholder engagement and stewardship are crucial to secure uptake and impact. To influence decision making, any approach needs to resonate with the ultimate end-users. Strong commitment and facilitation will be required to bring together stakeholders from across sectors for a more tangible policy dialogue. Digital platforms can also promote transparency and accountability through a greater use of evidence. Elements of the political economy need to be considered – as decisions on the location of new facilities are often driven by local political pressures rather than evidence. Digital platforms can therefore strengthen multi-stakeholder engagement – across different administrative levels and sectors – which will likely to improve transparency and accountability of decisions affecting the use of public resources.

The use of credible and timely data is crucial to strengthen the evidence base of the budget preparation process. The state of sectoral digital data – which underpins decision making and accountability – should be a key consideration when reviewing sectoral budget requests. Developing basic data standards will be particularly important to improve the data quality and timeliness. Stronger data collection efforts – relating to both administrative and survey data – are required for ensuring that relevant and comprehensive data is available to inform policy making. The forthcoming Population and Housing Census – scheduled for 2022 – presents a major opportunity to strengthen the country's ability to use geospatial data for public service delivery. While the 2015 Census already incorporated a strong element of geospatial referencing, the quality of this data can be further improved. The GPBP provides an agile way to elicit feedback on existing data and can promote transparency, accountability, and ownership of data sources. It is therefore important to enhance the quality and availability of digital data for a realistic set of areas where evidence-based planning and budgeting can be improved.

Enabling data integration and developing problem-driven applications is essential for improved planning and budgeting. Making budget decisions based on fragmented and outdated data will result in a misallocation of resources. Evidence-based planning and budgeting typically requires a systematic integration of relevant data from a broad set of sources – including key public information systems. Secure web-based data sharing platforms can improve data management, which can help strengthen sectoral budget submissions. Moreover, refining and delivering on selected applications with budget relevance can yield considerable benefits. Open-source resources increasingly provide a readily-available set of tools that can be deployed to produce relevant policy scenarios. Basic geospatial mapping of key data also provides the opportunity to introduce relevant smartphone, satellite, and even UAV imagery. Once these approaches have been tested and validated, they can be mainstreamed into the decision-making processes. The GPBP application served to illustrate the potential of better data integration. Further improvements in data integration and new model extensions for selected applications with budgetary relevance would improve the use of evidence for policy making.

Building in-house awareness and enhancing capacities are vital to enable a stronger use of evidence in budget preparations. The GPBP integrates multi-sectoral data and can be expanded for continuous and increasingly-refined exercises. The platform also highlights how existing information systems could be more effectively integrated and strengthened to better support planning and budgeting processes. In essence, it tries to address the disconnect between top-down targets and bottom-up capabilities and engagement – by strengthening results-based frameworks. However, this innovative approach requires investments in building in-house awareness and technical capacities. User-centric platforms can reduce the complexity and costs (in terms of time and money) by which users can apply digital innovations. However, this requires ensuring a combination of user-friendly technologies and support to stakeholders to strengthen budget preparations. It is therefore crucial to progressively empower and build the capacity of decision-makers at different levels (e.g. central ministries and municipalities) to use digital technologies.

Table 1: Policy recommendations

Reform area	Action	Timeline	Impact
Macroeconomic framework	Gradually reduce the fiscal deficit through a binding commitment to the ESI, ideally in the context of a medium-term fiscal framework.	2-5 years	Very high
	Develop a coherent medium-term economic strategy based on the country's endowments and emerging opportunities.	1-2 years	High
	Prepare a medium-term debt management strategy, upgrade software, and improve the monitoring and reporting of fiscal risks.	1-2 years	Moderate
Domestic revenue	Raise outdated excise tax rates (e.g. on alcohol and tobacco) and Introduce a sugar tax to increase revenues and improve health outcomes.	1-2 years	Very high
	Introduce a value-added tax (VAT) to enhance domestic resource mobilisation, while adopting complementary measures to ensure equity.	1-2 years	Very high
	Produce an assessment evaluating the potential of a property tax, and regularly report on tax expenditures (while planning a gradual phasing out).	1-2 years	High
	Streamline and raise income tax rates, with a view to promoting greater alignment with regional peers.	1-2 years	High
	Improve revenue administration by modernising the tax system and investing in capacity.	2-5 years	High
Public expenditure	Undertake critical public investment management reforms – especially on project appraisal and selection – as outlined by the PIMA.	1-2 years	Very high
	Enhance the selectivity (and transparency) of public grants and reform the social protection system.	1-2 years	High
	Develop adequate pay and employment policies for the civil service, and improve human resource planning.	1-2 years	High
	Curb the budget for goods & services and initiate a procurement reform (following the MAPS).	1-2 years	High
	Pursue critical public financial management reforms – with a focus on service delivery – as informed by the recent PEFA assessment.	1-2 years	Very high
Health	Making the reduction of childhood stunting a national priority via government-wide multisectoral action	Short-term	Very high
	Provide health sector entities with greater flexibility over spending decisions coupled with increased accountability mechanisms.	Medium-term	Very high
	Increase investments to support effective delivery of routine health services, as well as build resilience to respond to health emergencies.	Medium-term	High
	Rationalise human resources for health, while ensuring an appropriate skills-mix, equitable distribution, and improved competencies.	Medium-term	High
	Enhance the health information system by consolidating data sources, improving usability, and encouraging the use of data in decision making.	Medium-term	High

Reform area	Action	Timeline	Impact
Education	Improve pre-school coverage and quality, especially in remote areas, in order to ensure that all children are school ready when they enter grade 1.	1-2 years	Very high
	Attract and produce teachers with the right competences and skills in sufficient quantity to address teacher shortages and in anticipation of demographic trends.	2-5 years	Very high
	Improve school infrastructure (construction and rehabilitation) to significantly reduce overcrowded classes and multiple shifts.	2-5 years	Very high
	Boost school attendance through appropriate monetary and non-monetary incentives.	1-2 years	High
	Improve school management through better data and processes (e.g. upgrading EMIS to enhance performance monitoring and decision making).	2-5 years	High
Digital information	Enhance the quality and availability of digital data for a realistic set of areas where evidence-based planning and budgeting can be improved.	1-2 years	Very high
	improve data integration and model extensions for selected applications with budgetary relevance.	1-2 years	High
	Progressively empower and build capacity of decision-makers at different levels to use digital technologies.	2-5 years	High

Introduction
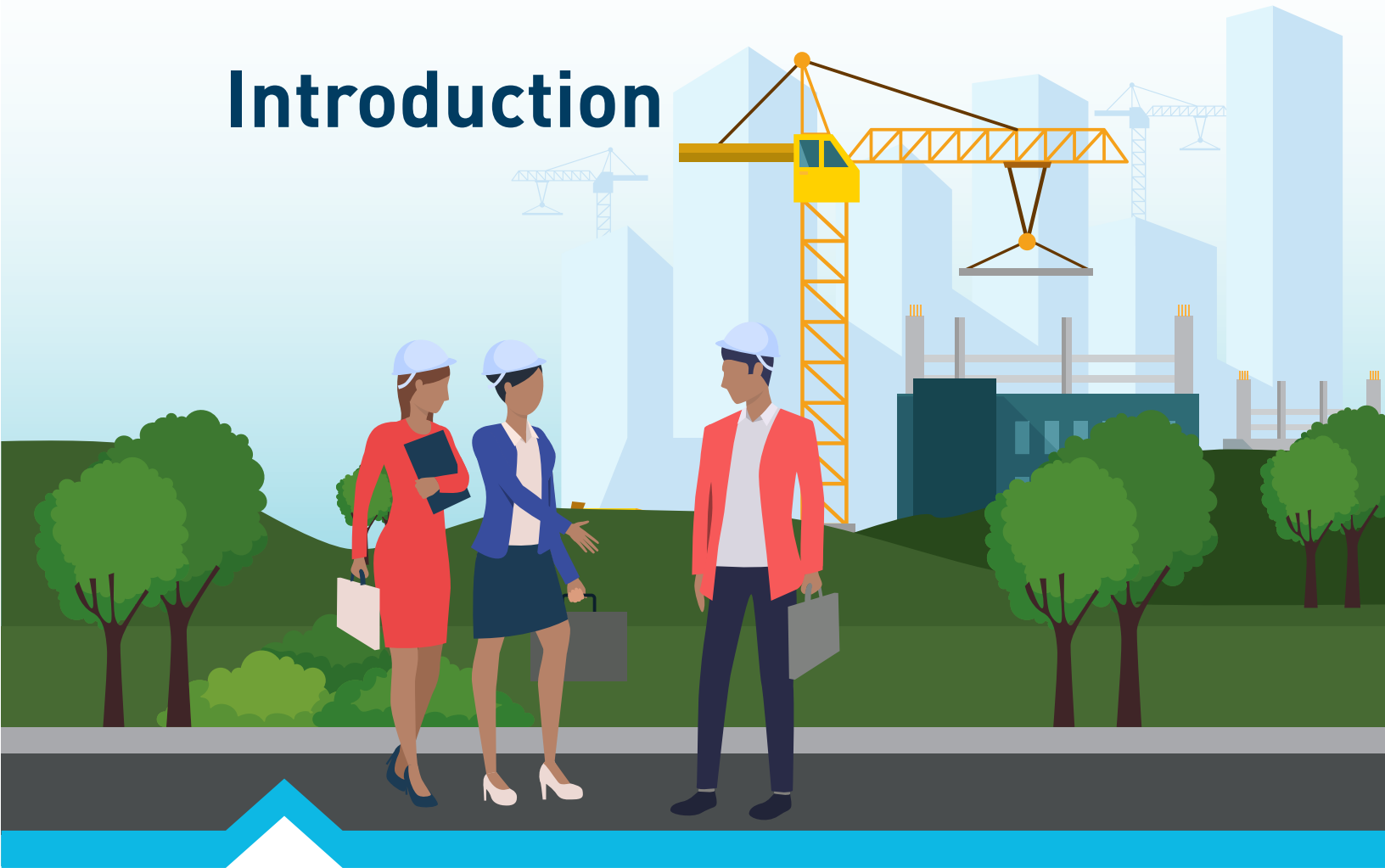
Timor-Leste is a young small nation that has successfully maintained peace despite a legacy of conflict and violence. Timor-Leste is located in Southeast Asia, sharing borders with Indonesia (land and sea) and Australia (sea), and currently has a population of about 1.3 million inhabitants.[1] Timor-Leste has been classified as a lower-middle-income country since 2007, mainly due to its offshore petroleum income. It is also categorised as a Fragility, Conflict and Violence (FCV) country. While its FCV status is predominantly due to weak institutional capacities, the country also has a legacy of conflict and violence.[2] At independence in 2002, Timor-Leste had little physical infrastructure – which was either dilapidated or destroyed – and very scare human capital, as most civil servants and professionals had left the country. In 2006, civil unrest led to the displacement of nearly 15 percent of the population. International military forces helped restore peace

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1   Southeast Asia comprises Brunei, Cambodia, Indonesia, Lao PDR, Myanmar, Malaysia, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam. These countries are often used as regional peers, with the exception of Brunei, Malaysia, Singapore and Thailand – owing to their much higher levels of development.

2   Timor-Leste was a Portuguese colony between 1702 and 1975. A few days after declaring independence in 1975, the country was invaded and annexed by Indonesia – an occupation that led to the death of several hundred thousand people. In 1999, the majority of the population voted for self-determination in a popular consultation organised by the United Nations, which was formalised in 2002.

and civil order, and since then the country has enjoyed a relatively long period of social stability and avoided a relapse into conflict.

Despite notable socio-economic achievements, several challenges remain – including very high stunting levels and low learning outcomes. Large investments in the energy sector have contributed to enhance access to electricity, while spending on road rehabilitation has led to improvements in transport connectivity. Moreover, child and maternal mortality rates have declined significantly, while youth literacy has increased. While there has been progress in improving many socio-economic outcomes and securing peace, Timor-Leste remains a fragile post-conflict nation with weak human and institutional capacities, large infrastructure gaps, and high dependence on petroleum revenues. Child stunting levels and learning outcomes are unacceptably poor (Box 1). The private sector is incipient, characterised by small firm size, informality and low productivity, and mostly reliant on public sector contracts. There is limited (formal) employment creation, with most of the population still engaged in subsistence agriculture. Its population is young – about 60 percent are under the age of 25 – while poverty levels are among the highest in the region.

Box 1: The Human Capital Project

Enhancing human capital is critical to accelerate economic growth, reduce poverty, and promote equity. Human capital consists of the knowledge, skills, and health that people accumulate in their lifetime, enabling them to realise their potential as productive members of society. Therefore, investing in people – through good quality education, training, health care, and nutrition – generates considerable long-term economic and social benefits. The different dimensions of human capital complement each other from an early age. Appropriate nutrition in utero and in early childhood improves children's physical and mental well-being. Sick and hungry children are less likely to be able to go to school, stay in school, and do well in school. Global evidence has also shown that health and nutrition status are highly correlated with educational attainment.

The Human Capital Project (HCP) seeks to raise awareness and increase demand for interventions to build human capital. The World Bank Group announced the HCP in 2017, a program of advocacy, measurement, and analytical work to raise public awareness and accelerate investments in people for greater equity and economic growth. The HCP has three components: (i) a cross-country metric – the Human Capital Index, (ii) a program to strengthen research and measurement to inform policy action, and (iii) a program of support for countries to accelerate investments to raise human capital outcomes. Ultimately, the project aims to mobilise additional resources, increase the efficiency of spending, improve governance structures, raise public awareness, and increase demand for better services.

The Human Capital Index (HCI) aims to measure the expected productivity of the next generation. The HCI captures the amount of human capital a child born today could expect to attain by age 18. It considers the risks of poor health and poor education in the country where that child lives. The HCI has three components: (i) the proportion of children that survive from birth to school age (age 5); (ii) the expected years of quality-adjusted education, which combines information on the quantity and quality of schooling; and (iii) two broad measures of health: child stunting rates and adult survival rates. The HCI provides countries with a mechanism for understanding the quantity and quality of their human capital. The HCI captures the impact of investments in children today on productivity and economic growth over the long term.

A child born in Timor-Leste today will only be 45 percent as productive when she grows up as she could be if she enjoyed complete (high-quality) education and full health. The HCI value for Timor-Leste is 0.45, which is below the averages for the EAP region (0.59) and the LMIC grouping (0.48). About 95 out of 100 children born in Timor-Leste survive to age 5, while 86 percent of 15-year olds will survive until age 60. About 46 percent of children are stunted, and therefore at risk of cognitive and physical limitations that can last a lifetime. In terms of education, a child who starts school at age 4 can expect to complete 10.6 years of school by her 18th birthday. However, learning outcomes are very low. According to harmonised test scores, students in Timor-Leste score 371 on a scale where 625 represents advanced attainment and 300 represents minimum attainment. When factoring in what children actually learn in school, expected (learning-adjusted) years of school is only 6.3 years.

> **Improved investments in early childhood are key to enhance human capital and thus raise expected productivity levels.** Early interventions in education, health, and nutrition are crucial to ensure that children can prosper as adults. In particular, it is important to ensure that children arrive in school well-nourished and ready to learn, can expect to attain real learning in the classroom, and are able to enter the job market as healthy, skilled, and productive adults. Improving the provision of early childhood care and education (both in terms of access and quality) would improve school readiness, enhance school performance, and thus reduce repetition and dropout rates. It would also improve women's participation in the labour market. Stronger leadership, better public spending, and improved managerial systems and capacities will be critical ingredients for success.

The fundamental challenge facing the country is to transform its petroleum wealth into prosperity for the entire population. Timor-Leste is a resource-rich nation, owing to relatively large offshore oil and gas reserves. Petroleum production commenced in 2004, and a sovereign wealth fund – known as the Petroleum Fund – was established in 2005 to receive and manage petroleum revenues. Public expenditure has grown considerably since 2006 – in part to secure peace and rebuild infrastructure – while the Petroleum Fund has accumulated significant resources.[3] However, fiscal sustainability and the quality of public spending are pressing concerns. The existing petroleum wealth needs to be invested in a portfolio of diversified assets (including human capital) to support inclusive and sustainable development.

This Public Expenditure Review is focused on the quality and sustainability of public spending. The key objective of this Public Expenditure Review (PER) is to assess the quality of public spending – by evaluating its efficiency and effectiveness – while also delving into sustainability considerations – by gauging domestic revenue mobilisation and the fiscal implications of current spending levels. This work aims to strengthen the evidence base for decision-making on public expenditure and revenue management. Its scope does not include a strong focus on equity, owing to the lack of a recent household survey – the last survey of livings standards was conducted in 2014. Nonetheless, equity dimensions are considered whenever possible and relevant evidence is mentioned. Overall, the analysis underscores the need for prioritising and improving the quality of public investments, rationalising undue recurrent spending, and enhancing revenue collection.

This PER covers education and health, which are key sectors to accelerate human development and foster prosperity. The Timor-Leste Strategic Development Plan (SDP) lays out a bold agenda to reach upper-middle-income country status and eradicate extreme poverty by 2030, largely relying on a frontloading of public expenditure. Therefore, it is pertinent to investigate the extent to which public spending has been contributing to the achievement of the ambitious SDP vision. One of the main SDP pillars is social capital, which includes education and health.[4] Moreover, one of the key focus areas of the World Bank Country Partnership Framework (CPF) for 2020-2024 is human capital and service delivery.[5] Hence, the sectors covered in this PER were selected through a combination of factors – such as relevance to the country's development agenda and World Bank engagement, as well as their centrality in fostering prosperity. Improving human development outcomes is crucial to stimulate productivity, accelerate economic growth, and raise living standards.

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3   Unlike many small states, Timor-Leste has a large fiscal buffer to withstand external shocks. However, internal shocks – in the form of political uncertainty – have taken a toll in the economy in recent times.

4   The SDP is structured around three main pillars: (i) social capital; (ii) infrastructure development; and (iii) economic development. These are complemented by a cross-cutting pillar on the institutional framework. The social capital pillar comprises education and training, health, social inclusion, environment, and culture and heritage. The infrastructure development pillar – which covers roads and bridges, water and sanitation, electricity, seaports, airports, and telecommunications – was largely covered by the 2015 PER on Infrastructure.

5   The CPF includes three focus areas: (i) strengthening the foundation for private sector-led growth and economic stability; (ii) investing in human capital and service delivery; (iii) raising productivity through investments in connective infrastructure. It also includes a cross-cutting theme related to strengthening institutional and implementation capacity in government.

This report is the result of a productive collaboration between the World Bank and the Government of Timor-Leste. The PER work was undertaken in close collaboration with the Ministry of Finance, and also benefited from an engagement with the Ministry of Health and the Ministry of Education – among other public institutions. It builds on the 2015 PER on Infrastructure – which covered electricity, irrigation, and roads – and aims to provide an updated overview of the macro-fiscal situation, as well as delve into human capital issues. This programmatic activity involved several missions with the objective of collecting information and better understanding the organisation and functioning of relevant sectors.[6] Beyond this report, a BOOST database was developed to facilitate the analytical work and a Geospatial Planning and Budgeting Platform (GPBP) was piloted to support decision-making in health and education (Figure 0.1). Finally, informal guidance was provided with a view to improve the budget preparation process, and training was delivered to ensure the sustainability of the PER process.

Figure 0.1: PER outputs
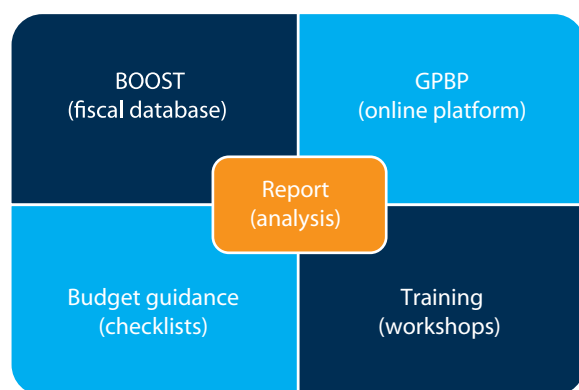
Source: World Bank staff.

Figure 0.2: PER structure
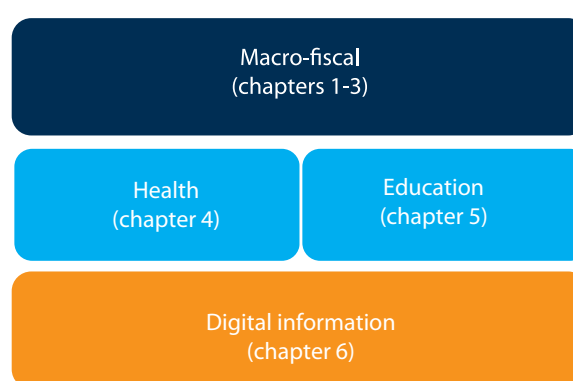
Source: World Bank staff.

This report comprises several chapters that are framed as interconnected building blocks. This report is organised as follows (Figure 0.2): Chapter 1 provides an overview of key macroeconomic trends since independence to offer a timely reflection on key achievements and challenges, while placing public expenditure in the broader macroeconomic context. Chapter 2 assesses the revenue framework and recent efforts to mobilise domestic revenues. It reviews trends, policies, and institutional developments to gauge revenue performance. Chapter 3 investigates public expenditure with a focus on the quality of spending – from an efficiency and effectiveness perspective. It evaluates the size and composition of expenditure since 2008 according to different classifications, as well as its impact on key outcomes. Chapter 4 focuses on the health sector, while Chapter 5 focuses on the education sector. These chapters offer an overview of the institutional landscape in their respective sectors, achievements and challenges, and evaluate sectoral public spending with a focus on service delivery. Chapter 6 provides insights on how digital information can be better used to strengthen decision making and thus improve the quality of public spending. In particular, it presents a practical application for the health sector that can be easily scaled up.

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6   In particular, three missions comprising education, health, and governance experts were undertaken at different stages of the 2020 budget preparation process.

01

Macroeconomic Performance

Economic growth has been decelerating steadily, and there are strong concerns about the sustainability of fiscal and trade deficits. Economic growth has been slowing since 2008, while recent recessions have jeopardised hard-won gains. Public expenditure has been the key driver of economic activity since independence, particularly in support of the construction sector (through public investment contracts) and public services (through public employment). However, the current growth model is showing limitations. Expenditure levels are among the highest in the world (74 percent of GDP in 2019) and tax revenue collection is one of the lowest (7 percent of GDP). Fiscal and trade deficits are very large – 31 and 55 percent of GDP, respectively – even if the Petroleum Fund currently holds assets that are about 11 times larger than GDP. Large excess withdrawals from the Petroleum Fund – to finance large budget deficits – cause the Estimated Sustainable Income to decline, which places further pressures on its balance. Large budget deficits threaten fiscal sustainability, while external imbalances can also jeopardise macroeconomic stability. Moderating these extremes will be crucial to move the economy to a more sustainable development

path. If current fiscal and external imbalances remain unaddressed, a painful adjustment will be required in about a decade.

Main recommendations: (i) gradually reducing the fiscal deficit through a binding commitment to the ESI, ideally in the context of a medium-term fiscal framework; (ii) developing a coherent medium-term economic strategy based on the country's endowments and emerging opportunities; and (iii) preparing a medium-term debt management strategy, upgrading software, and improving the monitoring and reporting of fiscal risks.

Chapter structure: The chapter starts with a brief overview of key policy objectives and the current macroeconomic framework. It then offers insights on economic performance and assesses the key drivers of economic growth. The subsequent section devotes its attention to fiscal policy – including revenue, expenditure, fiscal deficit, and public debt – as well as fiscal sustainability issues. It also briefly reviews price trends and the financial sector, before delving into external balances. The final section concludes by providing some policy recommendations.

1.1 Policy Objectives and Macroeconomic Framework

Policymakers have set an ambitious vision for the country, but progress has been disappointing. The Strategic Development Plan (SDP) articulates the country's vision and priorities for the period 2011-2030. The document lays out an ambitious agenda to reach upper-middle-income country status and eradicate extreme poverty by 2030, largely relying on a strong frontloading of public spending. There has been no formal evaluation or progress review undertaken to date, but many of the targets appear to be off-track. For instance, gross national income (GNI) per capita has declined considerably since 2012, owing to lower petroleum production and prices – which have affected offshore income (Figure 1.1). The gap between current income levels and the targeted income threshold has widened considerably, as the domestic economy failed to pick up pace. Moreover, although poverty declined between 2007 and 2014 – from 50 to 42 percent – it remains higher than at independence. Progress is likely to have stalled or even regressed in recent years, owing to the impacts of political uncertainty – experienced intermittently since 2017 – the COVID-19 pandemic, and seasonal flash floods.

Figure 1.1: GNI per capita (USD, Atlas method)
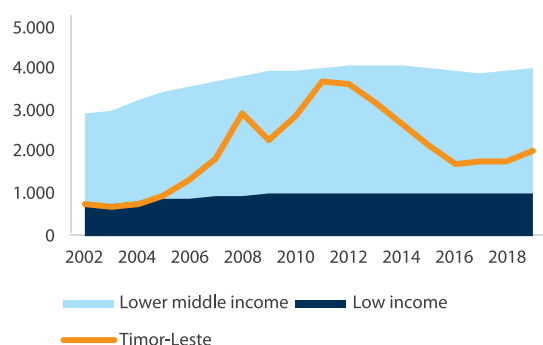
Source: World Development Indicators (WDI).

Figure 1.2: Macroeconomic framework
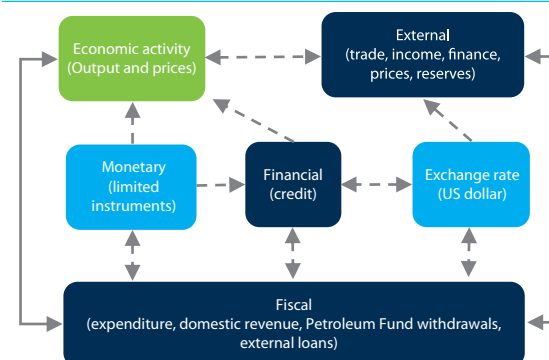
Notes: exogenous (orange), policy instruments (blue), endogenous (green). Dashed lines mean weak relationship. Source: World Bank staff.

The macroeconomic framework relies on a fixed exchange rate policy to support macroeconomic stability. The macroeconomic framework comprises a fixed exchange rate regime (full dollarisation) with no independent monetary policy, which makes fiscal policy one of the main tools at the discretion of policymakers (Figure 1.2). The United States dollar (USD) has been the legal tender since independence, and has delivered macroeconomic stability in the form of low inflation and a relatively steady (effective) exchange rate. Given the lack of an independent monetary policy, the instruments available to the Central Bank are limited to macroprudential regulations to secure financial sector stability – such as setting liquidity requirements for commercial banks.

Fiscal policy is a key instrument available to policymakers to achieve economic growth targets. Given the limited scope of monetary policy, fiscal policy is an important tool that can be deployed to stimulate economic activity. However, this does not imply that an expansionary fiscal stance is necessarily required to accelerate growth. While a stimulus to aggregate demand will likely result in higher economic activity in the short-term, only investments that address binding supply constraints will raise potential output and thus support medium-term economic growth.[7] Improvements in public financial management can also play a key role in enhancing the impact of fiscal policy on economic activity. Moreover, these need to be complemented by effective sectoral policies covering both the productive sectors (e.g. agriculture, manufacturing and tourism) and social sectors (e.g. education and health).[8]

1.2 Economic Activity

Economic growth has decelerated sharply over the past decade, calling for a renewed economic strategy backed by a strong political consensus. Timor-Leste faced a difficult set of circumstances at independence, owing to a legacy of conflict and destruction. The economy struggled with inadequate infrastructure, scarce human resources, and weak institutions. In 2006, civil unrest erupted and further compounded these challenges. GDP growth averaged -0.9 percent in 2003-2006 (Figure 1.3). Following the restoration of peace, strong economic growth ensued – reaching a peak of about 11 percent in 2008. However, economic growth has decelerated steadily since then, highlighting the limits of the current growth model. Recessions in 2017-2018 and the expected sharp contraction in 2020 have further aggravated this trend.[9] The gap between Timor-Leste and its regional peers has been widening considerably. Average economic growth rates have been considerably below the targets stated in both the SDP (11.3 percent for 2011-2020) and the VIII Constitutional Government programme (7 percent for 2018-2023).[10] Accelerating and sustaining economic growth ought to be a key priority for policymakers, with a view to meaningfully and sustainably raise living standards.

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7   In recent years, public expenditure volatility – caused by political uncertainty – has had a negative impact on economic performance. Hence, it will be crucial to decouple the political cycle (and future deadlocks in Parliament) from the implementation of an effective medium-term fiscal strategy that can deliver sustained economic growth.

8   Regulatory measures can influence growth by enhancing private sector development and competitiveness.

9   Political uncertainty affected economic performance in 2017-2018 and 2020, while the COVID-19 pandemic impacted 2020.

10   The SDP target was underpinned by higher public spending levels, which were broadly realised although economic growth did not ensue as expected.

Figure 1.3: GDP growth (annual, %)
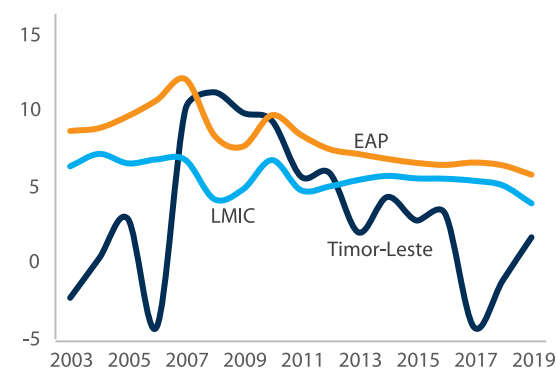
Source: Ministry of Finance and WDI.

Figure 1.4: GDP and consumption per capita (USD)
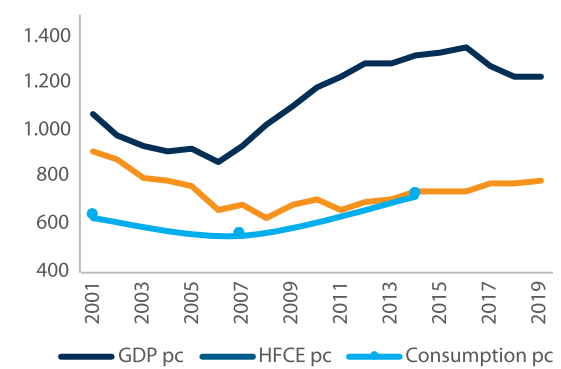
Source: Ministry of Finance.

Living standards improved since 2006, but economic growth has not benefited households proportionally. GDP per capita increased between 2007 and 2016, even if improvements had been slowing (Figure 1.4). This improvement in living standards is broadly supported by additional measures, including household final consumption expenditure and (survey-based) mean consumption. However, there is a widening gap between GDP per capita and household consumption per capita, suggesting that economic growth is not benefiting households proportionately. In fact, the level of (real) household consumption per capita remains lower than at independence.[11] Real GDP per capita in 2019 was similar to that in 2011, suggesting that the 2017-2018 political impasse erased seven years of progress. It is likely that COVID-19 will obliterate many more. A revamped economic strategy to promote sustainable and inclusive growth will be required to considerably improve living standards.

Economic activity has been supported by public expenditure, while the private sector remains incipient. Between 2007 and 2019, public consumption and public investment accounted for nearly 60 percent of total domestic expenditure.[12] While private consumption was also sizeable – at 37 percent – this partly relates to self-consumption and is supported by government payments, such as civil service wages and social transfers.[13] Private investment levels are small, at about 4 percent during this period. Moreover, much of the domestic demand is met by imports of goods and services. Imports covered nearly half of total domestic expenditure, while exports of goods and services were very small. GDP growth was mostly driven by public investment and public consumption in 2007-2011, while net exports were a drag on growth (Figure 1.5). Since 2012, private expenditure (and a reduction in imports) provided positive contributions to economic growth, while public expenditure acted in the opposite direction. The prolonged slowdown in economic activity suggests that improving the quality of public spending and spurring private investment are key to accelerate growth. Without a more dynamic private sector, the economy's medium-term growth potential will remain hampered by (binding) supply-side constraints.

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11   The poverty headcount ratio declined between 2007 and 2014, but progress likely stalled (or even regressed) in recent years, owing to economic recessions in 2017-2018 and 2020. The fourth Timor-Leste Survey of Living Standards (TL-SLS) is scheduled to take place in 2023.

12   Domestic expenditure is the sum of total consumption expenditure and total investment – both public and private.

13   According to the national accounts, subsistence agriculture accounted for over 50 percent of total income attributable to households.

Figure 1.5: Expenditure contributions to GDP growth (percentage points)
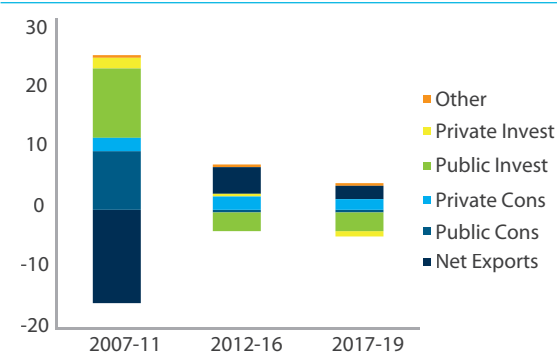
Source: Ministry of Finance.

Figure 1.6: Sectoral contributions to GDP growth (percentage points)
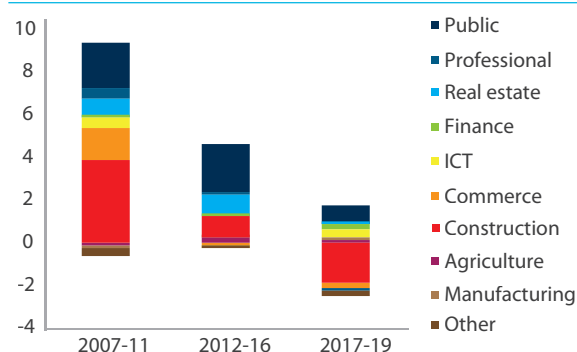
Source: Ministry of Finance.

Construction and public services have been the key sectoral drivers of output, but these engines are unlikely to be sustainable. Public services account for a growing share of gross value added (GVA), increasing from 13 percent in 2007 to nearly 30 percent in recent years.[14] Construction also grew significantly in importance over the past decade, from 3 percent in 2007 to 18 percent in 2016.[15] Both construction and public services – and even commerce – are highly dependent on government spending. Construction and public services were the key drivers of GVA growth in 2006-2011, and have remained important in 2012-2016 (Figure 1.6). However, the political uncertainty experienced in 2017-2018 led to lower public investment, which impacted construction negatively through delays in the implementation of infrastructure projects. Lower public recurrent spending also affected economic activities, such as commerce, through lower purchases of goods and services. Looking forward, it is unlikely that public services and construction will yield strong sustained growth in the medium-term – as the steady growth deceleration suggests – which calls for stronger support for strategic productive sectors, such as agriculture, manufacturing and tourism-related activities.[16]

1.3 Fiscal, Monetary, and External Sectors

1.3.1 Fiscal Policy

Public expenditure levels have been among the highest in the world over the past 10 years. Public expenditure grew considerably after 2006, averaging more than 80 percent of GDP since then (Figure 1.7). This large scaling up of public spending was largely enabled (and sustained) by petroleum revenues, which started to flow around that time. From a policy perspective, public spending has been used as the key instrument to drive economic activity and secure peace. However, high levels of spending have not

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14 'Public services' include public administration & defence, education, health, and social work activities – which are mostly (but not exclusively) provided by the public sector – while 'commerce' comprises wholesale & retail trade, transportation & storage, and accommodation & food services. Official data sources do not enable a disaggregation of these sectors.

15 The share of construction and public services in total output has grown through time, highlighting the country's efforts to rebuild its infrastructure, strengthen public institutions, and enhance service delivery.

16 Tourism is not a sector in the International Standard Industrial Classification of All Economic Activities (ISIC), but spans several activities (e.g. transport, accommodation, commerce, recreation, etc.)

translated into strong and sustained economic growth – as the latter has been decelerating since 2008. Regional comparisons suggest that other countries have been able to considerably improve average incomes with much lower levels of government spending (Figure 1.8). This raises concerns over the quality of public spending.

Figure 1.7: Public expenditure (% GDP)
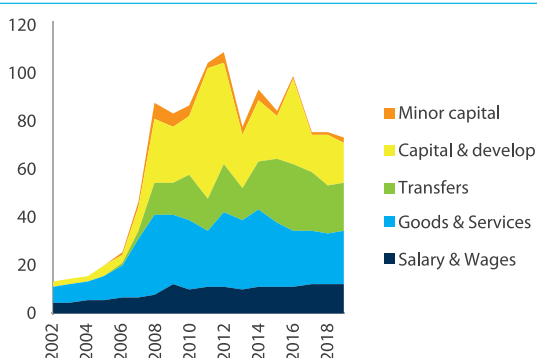
Source: Ministry of Finance.

Figure 1.8: Public expenditure (% GDP)
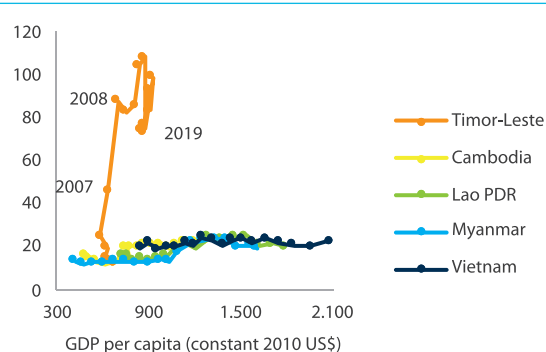
Source: Ministry of Finance and International Monetary Fund.

The Petroleum Fund finances most of the state budget, but its revenues have declined sharply since 2012. The Petroleum Fund was created in 2005 as Timor-Leste's sovereign wealth fund.[17] Since 2008, it has financed about 85 percent of government expenditures. Petroleum Fund withdrawals have been very high, averaging $1.1 billion per year in 2015-2019, while about $12 billion have been withdrawn to date (Figure 1.9). Its revenues mainly comprise income taxes, royalties, and profits related to offshore petroleum production, while investment returns are accrued from Petroleum Fund assets.[18] Revenues have declined steeply from the $3.6 billion peak in 2012, due to a combination of lower production and lower international prices – the latter was particularly noticeable in 2014-2015. Petroleum production in the last field in operation (Bayu-Undan) is expected to cease in a couple of years.[19] In terms of investment returns, interest income and dividend income tend to be quite stable through time, averaging about $180 and $160 million per year, respectively. Asset revaluations and foreign exchange gains/losses – which are unrealised returns – have been much more volatile and larger in magnitude. In particular, a strong performance of its international stock portfolio in 2017 and 2019 has averted a more sustained asset depletion. Nonetheless, large withdrawals coupled with diminishing revenues undermines the sustainability of the Petroleum Fund.

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17   The Petroleum Fund receives petroleum-related revenues, while transfers to the government budget (i.e. withdrawals) require parliamentary approval – usually through the yearly state budget proposal. Petroleum proceeds (i.e. income inflows) include both petroleum revenues and investment returns. For further information on the Petroleum Fund, see The World Bank's Timor-Leste Economic Report: April 2019 (Box 2).

18   The asset allocation is as follows: 60 percent to fixed-income products (mostly US bonds), 35 percent to international equities, and 5 percent to a private debt instrument for domestic petroleum operations. Regarding the latter, the Petroleum Fund transferred $650 million to TIMOR GAP in 2019 – the national oil company – for the acquisition of a 56.6 percent stake in the Greater Sunrise Joint Venture. This does not affect the Petroleum Fund balance sheet since it is accounted as 'other eligible investments' and thus reflected as an asset.

19   Production-sharing contracts (PSC) expire in 2022, although it would be possible to continue operating Bayu-Undan (with a reduced output) for a few additional years. However, it is unclear whether this would be economically viable.

Figure 1.9: Petroleum Fund (USD million)
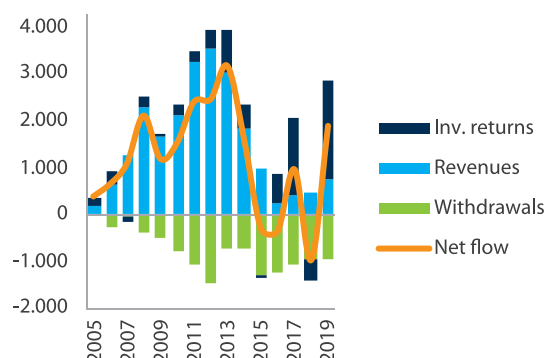
Source: Ministry of Finance.

Figure 1.10: Petroleum Fund (USD million)
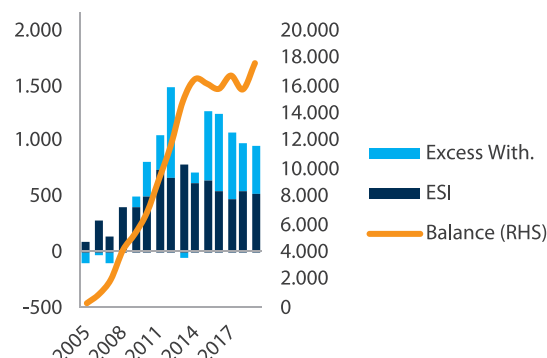
Source: Ministry of Finance.

The Estimated Sustainable Income is gradually declining, owing to lower petroleum wealth. Petroleum revenues are regulated by the Petroleum Fund law, which provides for an Estimated Sustainable Income (ESI). The ESI is set at 3 percent of total petroleum wealth, which is the Petroleum Fund balance plus the net present value of anticipated petroleum revenues. The ESI is a benchmark to maintain the real value of the Petroleum Fund indefinitely, since it reflects the annual amount that can be sustainably withdrawn for budget financing.[20] However, the ESI is often seen as indicative rather than a binding fiscal rule. Excess withdrawals are often justified by the need to frontload public investment, and have been very large over the past five years (Figure 1.10). The ESI has been gradually declining due to a depleting petroleum wealth. A falling ESI places stronger pressures on excess withdrawals – if spending is not reduced or other funding sources increased – which in turn further depletes the petroleum wealth.

Domestic revenue mobilisation has been weak, partly due to limited tax revenue collection. Domestic revenue, which includes both tax and non-tax revenue, accounts for less than 12 percent of GDP (Figure 1.11). This is considerably lower than the ESI and significantly below international benchmarks. Limited domestic revenue is partly due to low per capita incomes, but also due the structure of the tax system and weaknesses in administration. The tax-to-GDP ratio was 7.5 percent in 2019, which is very low when compared to regional and income averages.[21] Several regional peers have been able to collect more revenue, especially as their economies have expanded (Figure 1.12). Enhancing domestic resource mobilisation is vital to bridge the budget financing gap without compromising the viability of the Petroleum Fund.

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20 The ESI is reported under total revenues – because it is seen as a recurrent revenue – while excess withdrawals from the Petroleum Fund are reported under deficit financing. This ensures that the corresponding budget balance provides an adequate measure of medium-term fiscal sustainability. Undeveloped petroleum fields – such as Greater Sunrise, Chuditch and Buffalo – are not included in the calculations.

21 This measure does not include petroleum-related taxes, which are directly assigned to the Petroleum Fund. However, revenues are intrinsically linked to government spending (e.g. companies receiving government contracts and households receiving public transfers) and thus petroleum revenues.

Figure 1.11: Government revenue (% GDP)

Figure 1.12: Revenue (% GDP)
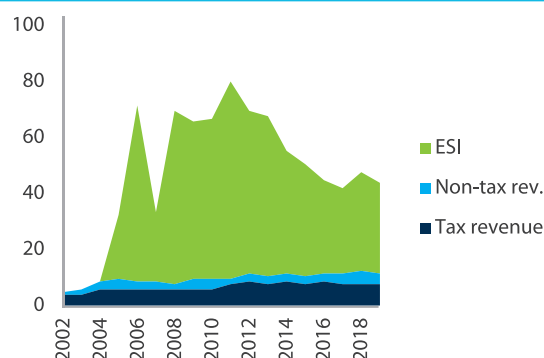
Note: The ESI for 2007 only covered a period of six months, due to the change in fiscal year.
Source: Ministry of Finance.
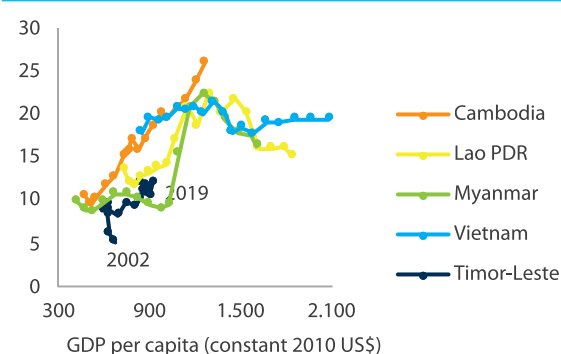
Note: Revenue does not include the ESI.
Source: Ministry of Finance and International Monetary Fund.

Foreign grant disbursements have been declining, but the donor landscape remains highly fragmented. Development partner grants have been falling steadily, from $276 million in 2012 to $145 million in 2019.[22] Moreover, the aid landscape remains considerably fragmented, with over 20 development partners disbursing funds in 2019. Several donors have engagements spread across many sectors, while government ministries and agencies often have to engage with multiple stakeholders. Fragmentation is often associated with high administrative costs, as well as inefficiencies arising from poor coordination. Greater donor alignment and coordination will be key to maximise the impact of increasingly-scarce grant funding.[23]

The fiscal deficit is very large and predominantly financed by excess withdrawals from the Petroleum Fund. The fiscal balance has been strongly negative since 2007, as public expenditure far exceeds revenues – including the ESI. Moreover, the fiscal deficit has widened through time, reaching a peak of 53 percent of GDP in 2016. Although the fiscal balance has recently improved, this was due to the 2017-2018 political stalemate that constrained spending – rather than a deliberate policy choice. The deficit has been predominantly financed through excess withdrawals from the Petroleum Fund, while external loans and use of cash balances have been limited (Figure 1.13). There are no other domestic financing sources, such as treasury bills or bond issuance. Excess withdrawals threaten the sustainability of the Petroleum Fund and have high implicit costs, such as foregone investment returns.

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22   Development grants are not included in the fiscal analysis because these cannot be easily mapped to specific expenditures in the budget – since they are 'off-treasury'. Including them as part of total revenues would require the inclusion of an offsetting amount under expenditures (development partner spending) to avoid distorting the fiscal deficit. Moreover, the amounts (self-)reported in the aid transparency portal may not be fully reliable.

23   In June 2019, the Council of Ministers approved a new policy on non-lending assistance, known as the Foreign Aid Policy. The policy urges development partners to improve their alignment to government programmes and priorities, as well as increasingly use country systems for project implementation.

Figure 1.13: Deficit financing (% GDP)
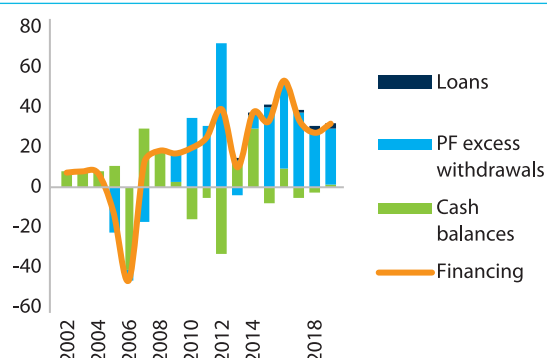
Source: Ministry of Finance.

Figure 1.14: Public debt (% GDP)
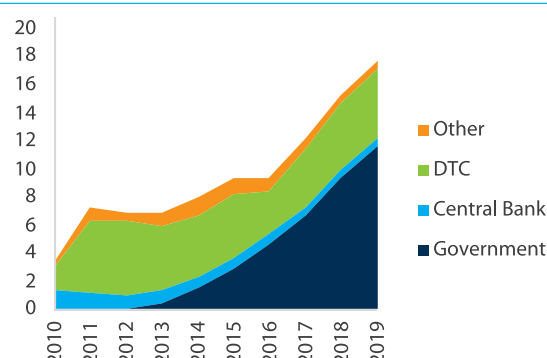
Note: DTC stands for deposit-taking corporations.
Source: Ministry of Finance.

The public debt stock is low – albeit growing – and mostly composed of external concessional lending. The government debt stock is relatively low, owing to the limited uptake of debt financing. As of December 2019, public debt amounted to about 12 percent of GDP (Figure 1.14). Most loans relate to road infrastructure projects – usually provided at concessional terms by the Asian Development Bank, the World Bank, and the Japan International Cooperation Agency (JICA). Debt servicing, which comprises both interest and principal repayments, is negligible but expected to grow moderately in the medium term as grace periods expire and liabilities increase.[24] Nonetheless, public debt management is an important area that needs to be strengthened. There are some gaps in capacity and coordination between units involved in debt management. Given the rising portfolio, it would be important to prepare a medium-term debt management strategy (MTDS), upgrade software, and set up a modern debt management function. Moreover, the monitoring and reporting of fiscal risks – such as contingent liabilities related to credit guarantees, pensions, public corporations, and public-private partnerships (PPP) – should also be improved.[25]

1.3.2 Fiscal Sustainability

Fiscal sustainability is a major medium-term concern, especially given the limited impact of public spending. Public expenditure levels are exceptionally high, even when considering that small states tend to have bigger governments – owing to diseconomies of scale (Figure 1.15). At the same time, domestic revenue collection is very low. The Petroleum Fund is thus used to bridge the large financing gap. The fact that the ESI, as a fiscal rule, has been consistently breached over the past 10 years is a matter of concern. Excess withdrawals from the Petroleum Fund have been justified by the need to frontload investments in infrastructure, but these have not had a lasting impact on economic activity. In fact, the scaling up of public investment has been associated with a steady deceleration in economic growth. It is increasingly difficult to justify the frontloading policy until public financial management weaknesses are addressed – especially with regard to capital spending.

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24 The total value of external loans signed as of December 2019 amounted to $411 million, much of which remains to be disbursed. Disbursements from existing loans and the signing of new loans will increase liabilities.

25 Contingent liabilities are obligations that may occur in the future, and are usually based on contracts or legislation.

Figure 1.15: Public expenditure (% GDP)
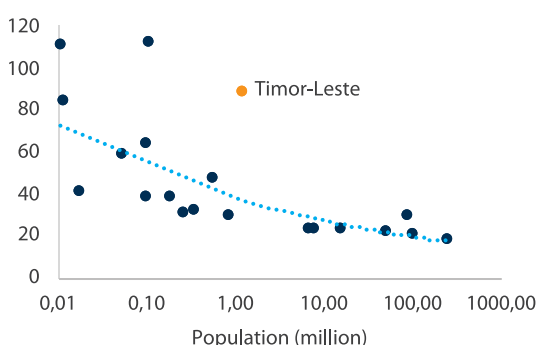
Note: Selection of EAP countries. Averages for 2011-2019.
Source: WDI and WEO.

Figure 1.16: Fiscal projections (USD million)
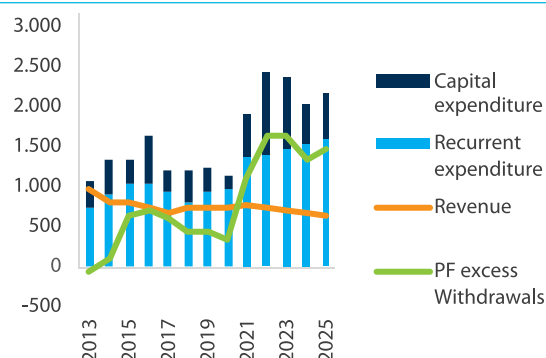
Source: Ministry of Finance.

The fiscal outlook raises several concerns from a sustainability perspective, which ought to be urgently addressed. Total revenue, which includes both domestic revenue and the ESI, has been insufficient to cover recurrent spending (Figure 1.16). Recurrent spending is typically associated with outlays necessary for the basic functioning of the government and public service provision, so it is crucial to cover these costs with (recurrent) revenues. Fiscal projections suggest that total revenue will only cover half of recurrent spending in the medium-term. Moreover, excess withdrawals from the Petroleum Fund are often justified by the need to frontload public investment. However, excess withdrawals have been larger than capital spending since 2016, implying that they are also financing the recurrent budget. Given the foregone investment returns associated with withdrawals, it is important to ensure that these funds generate high economic (and social) returns. This may not be the case if funds are mostly used for consumption purposes, rather than investment. Overall, the expected spending profile over the next five years appears to be untenable.

The Petroleum Fund could be exhausted in about 10 years, according to planned spending patterns. The Petroleum Fund balance grew rapidly to $16.5 billion by the end of 2014, after which it broadly stabilised (Figure 1.17). Exceptional investment returns in recent years pushed its balance to a record high of nearly $19 billion by the end of 2020. However, high withdrawals and declining petroleum-related revenues threaten its sustainability. Once existing petroleum reserves are depleted, increases in the Petroleum Fund will rely exclusively on investment returns from existing assets. The volatility in international equity markets has strongly influenced the value of the Petroleum Fund through (unrealised) asset revaluations. With the exhaustion of offshore petroleum reserves and uncertainty over future petroleum developments, the Petroleum Fund is projected to deteriorate rapidly in the medium-term. In fact, the Petroleum Fund is expected to be depleted by 2032.

Figure 1.17: Petroleum Fund projection (USD million)
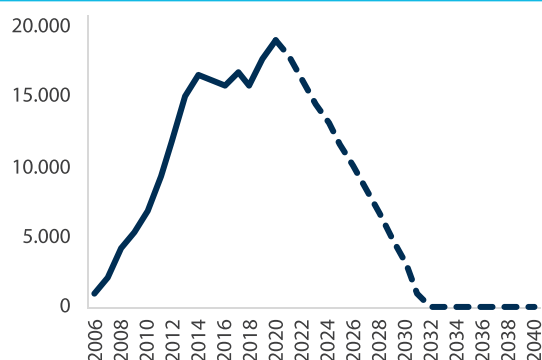
Source: Ministry of Finance and World Bank staff projections.

Figure 1.18: Spending projections (USD million)
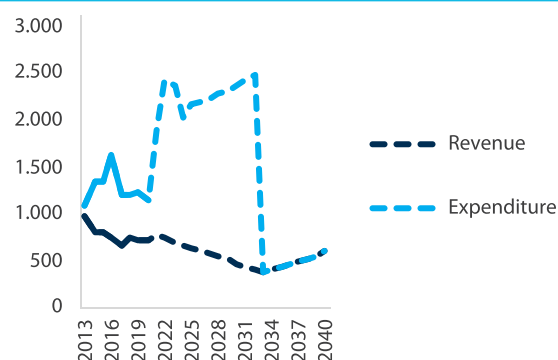
Source: Ministry of Finance and World Bank staff projections.

The collapse of the Petroleum Fund could lead to a sudden and agonising fiscal adjustment with significant consequences to human development. Planned spending levels suggest a large increase in public spending in the 2021-2025 period. This would contribute to a fast depletion of the Petroleum Fund – mainly through excess withdrawals – which in turn would reduce the ESI. A lower ESI would place further pressures on excess withdrawals in the absence of changes in the fiscal policy stance. Under such circumstances, an abrupt and painful fiscal adjustment would ensue in 2033, whereby public spending would need to be brought down to affordable levels (Figure 1.18). Expenditure would then be exclusively financed by domestic (tax and non-tax) revenues and borrowing, at about $400 million per year.[26] This could then entail cuts in the civil service, social protection schemes, and other key expenditure categories. The delivery of basic public services would be jeopardised and social cohesion would be at risk.

A prudent management of the Petroleum Fund is crucial to ensure that future generations can benefit from these savings. A judicious management of the Petroleum Fund – by gradually reducing withdrawals beyond the ESI – is crucial to secure fiscal sustainability and ensure that these resources remain available for future generations. For instance, excess withdrawals could be frozen in nominal terms, at 2020 levels – about $340 million (Figure 1.19). This would still enable public spending to increase, through higher domestic revenues, a slower decline in the ESI, and additional concessional lending.[27] A gradual reduction in excess withdrawals – of 10 percent year, for example – would further extend the life of the Petroleum Fund. Moreover, the criteria to approve excess withdrawals should be tightened. Since their main justification is to frontload growth-enhancing investments, independent cost-benefit analysis should be presented to Parliament.

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26   A significant proportion of domestic taxation is intrinsically linked to public spending (e.g. individual income tax of civil servants and withholding tax of public investments), which means that domestic revenues would also suffer from this adjustment – even if not considered here.

27   There is further scope for tapping into concessional lending opportunities, as long as borrowing costs are below the (average) rate of return on Petroleum Fund investments.

Figure 1.19: Petroleum Fund projection (USD million)
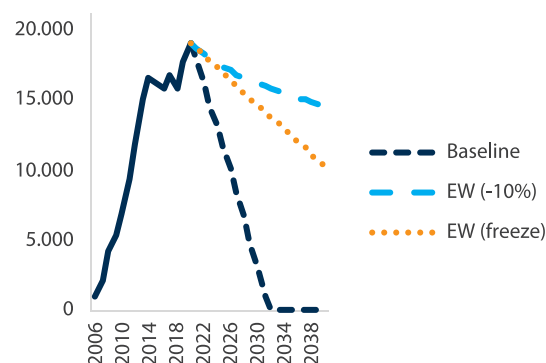
Note: Scenarios for excess withdrawals comprise a freeze (dotted line) and an annual 10 percent decline (dashed line).
Source: Ministry of Finance and World Bank staff projections.

Figure 1.20: Spending projections (USD million)
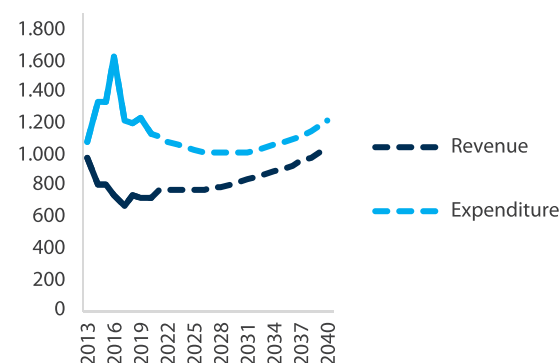
Source: Ministry of Finance and World Bank staff projections.

A medium-term commitment to the ESI fiscal rule would result in a sustainable fiscal stance. Fiscal rules encourage fiscal responsibility if they are set at prudent levels and are complied with. In the case of Timor-Leste, which has abundant fiscal resources but limited implementation capacity, fiscal rules would compel decision-makers to prioritise spending and focus (human, financial and political) resources to enhance efficiency (i.e. value for money) and effectiveness (i.e. impact). Overall, the ESI remains a strong benchmark with a clear rationale, methodology, and application. A gradual path should be established to secure convergence with the ESI fiscal rule in the medium-term. For instance, a transitional arrangement could be embedded in law whereby the maximum amount that can be withdrawn above the ESI is reduced by 10 percent every year. Ultimately, the ESI should become a binding – rather than an indicative – fiscal rule. This would ensure that future expenditure levels are better aligned with available revenues (Figure 1.20). In this context, the development of a medium-term fiscal framework would be critical to improve planning and budgeting processes, as well as reduce budget uncertainty. Timor-Leste requires better – rather than larger – budgets.

1.3.3 Consumer Prices and Exchange Rates

Consumer price inflation has been low in recent years, owing to subdued international commodity prices and a strong US dollar. There have been two periods of high inflation since independence, as measured by the consumer price index (CPI). Inflation averaged 9.7 percent in 2007-2008 and 12.1 percent in 2011-2013 (Figure 1.21). In both occasions, (international) food prices were the key drivers (Figure 1.22).[28] This highlights the importance of enhancing production capabilities, especially food production, to better insulate the economy from the volatility of international commodity markets – by reducing the dependence on imported food and enhancing food security. Since 2014, inflation has been stable and low – with a deflationary episode in 2016. Relatively low international food and oil prices, coupled with a strong US dollar, have helped keep inflation low in recent years – averaging 0.7 percent in 2014-2019. Large public spending does not seem to have translated into higher domestic (consumer) prices, likely because most of the additional demand has leaked to imports.[29]

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28   Food & non-alcoholic beverages continue to have a very large (albeit declining) weight in the representative consumption basket, meaning that changes in these prices can have a significant effect on headline inflation. Import prices contribute disproportionately to increases in domestic inflation, since much of the goods and services consumed in Timor-Leste are imported.

29   It is not possible to assess its impact on domestic production costs due to the absence of a producer price index (PPI) and unit labour costs (ULC).

Figure 1.21: Consumer price inflation (%)
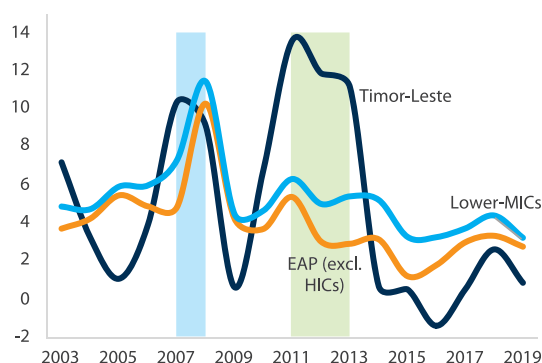
Source: Ministry of Finance and World Development Indicators.

Figure 1.22: Contributions to CPI inflation

Source: Ministry of Finance and World Bank staff calculations.

The real exchange rate appreciated significantly between 2011 and 2015, but stabilised in recent years. The real effective exchange rate (REER) provides a measure of external competitiveness.[30] Since Timor-Leste uses the US dollar as its legal tender, a strengthening of the US dollar against the currencies of Timor-Leste's main trading partners will reduce the price competitiveness of exports while improving the country's purchasing power abroad. The REER is also influenced by price inflation differentials. The REER appreciated between 2011 and 2015, mostly due to the strengthening of the US dollar (Figure 1.23). Nonetheless, inflation differentials across countries have also played an important role in 2011-2013 (Figure 1.24). Since then, the real exchange rate has been relatively stable, as neither inflation nor the US dollar created strong appreciation pressures.[31] The development of petroleum resources does not seem to have led to an appreciation of the REER – which in a fixed exchange rate regime would manifest itself through price differentials.[32]

Figure 1.23: Real effective exchange rate (index)
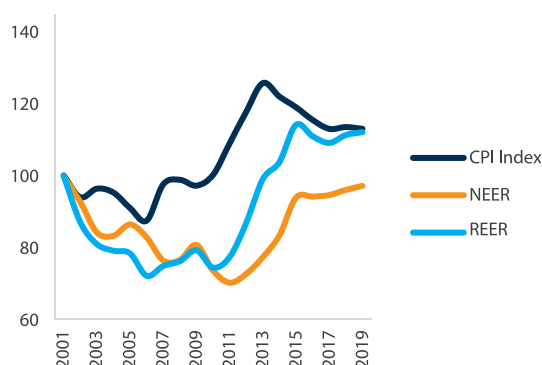
Source: Central Bank and World Bank staff calculations.

Figure 1.24: Contributions to REER growth
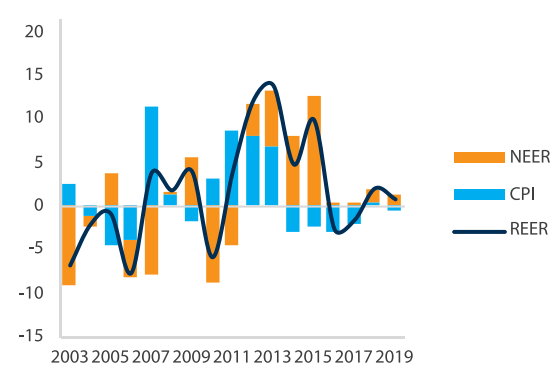
Source: Central Bank and World Bank staff calculations.

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30   The nominal effective exchange rate (NEER) is a trade-weighted average of bilateral exchange rates, while the real effective exchange rate (REER) also takes into account inflation differentials between Timor-Leste and its main trading partners.

31   Exchange rate movements can also influence import prices and thus inflation (known as exchange rate pass-through).

32   Once again, the evidence is limited to consumer prices – the use of producer prices would be more appropriate.

1.3.4 Financial Sector

Domestic credit to the private sector remains very low and is predominately given to individuals. Total lending to the private sector amounted to less than 15 percent of GDP at the end of 2019, with individuals accounting for more than half of this value (Figure 1.25). Construction and trade & finance followed considerably behind, while productive sectors with growth potential – such as agriculture, industry and tourism – accounted for a very small share of bank lending.[33] The composition of commercial bank credit is concerning, since credit to individuals tends to be channelled to consumption purposes, such as car purchases and house renovations, rather than support the accumulation of physical capital – a key driver of economic growth in the medium-term.[34] Despite recent improvements, the credit-to-GDP ratio remains low by international standards (Figure 1.26). Although the domestic financial sector is in its infancy, commercial banks are highly liquid. The loan-to-deposit ratio has declined from over 100 percent in 2005 to 22 percent in 2019, suggesting that financial intermediation is weak. A large proportion of banking sector assets are placed overseas. Commercial bank lending rates are relatively high – at about 11 percent – which stifle credit demand. The public sector is not 'crowding out' the private sector in credit markets because there is no domestic public borrowing.

Figure 1.25: Private sector credit (% GDP)
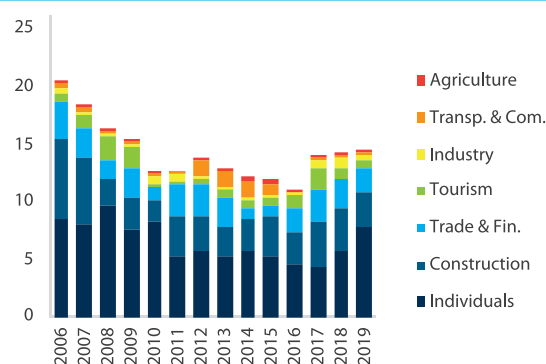
Source: Central Bank.

Figure 1.26: Private sector credit (% GDP)
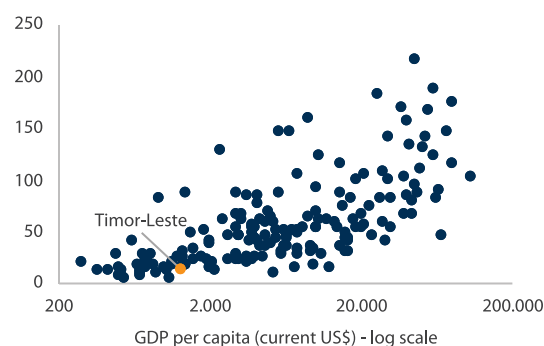
Note: Averages for 2015-2019.
Source: World Development Indicators.

1.3.5 External Accounts (Balance of Payments)

The current account has typically recorded large surpluses, but its balance has deteriorated sharply in recent years. The current account comprises the trade balance, primary income, and secondary income. The current account balance has been predominantly shaped by trends in primary income, which includes investment income and income from the Joint Petroleum Development Area (JPDA).[35] Primary income inflows were very large until 2012, generating sizeable current account surpluses (Figure 1.27).

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33   This reflects the fact that banks prefer to lend to individuals with secure jobs (e.g. civil servants) and companies with government contracts.

34   Credit extended to the private sector grew by 25 percent in 2017, possibly as a consequence of the political impasse that caused payment delays that affected economic sectors dependent on government contracts – such as construction and trade.

35   Investment income comprises interest and dividends accrued from Petroleum Fund investments abroad, while JPDA income are essentially taxes and royalties associated with offshore petroleum production.

However, primary income has fallen considerably since then, due to a combination of lower petroleum production and prices. Investment income has been relatively stable, but these inflows will be affected by a depletion of the Petroleum Fund. Secondary income – which includes both public and private transfers – was relatively large until 2012, but has subsequently declined in importance.[36] Large imports of goods and services coincided with the scaling up of public expenditure – owing to limited production capabilities. Despite some moderation in recent years, its value remains high. Exports of goods and services are very low – mainly comprising coffee and travel services – especially when contrasted to total imports.[37] The sharp deterioration of the current account balance – which was in deficit in 2016-2018 – raises concerns regarding the sustainability of large trade deficits. Recent improvements were driven by exceptional circumstances, as the 2017-2018 economic recession reduced imports and primary income increased.[38]

Figure 1.27: Current account (% GDP)
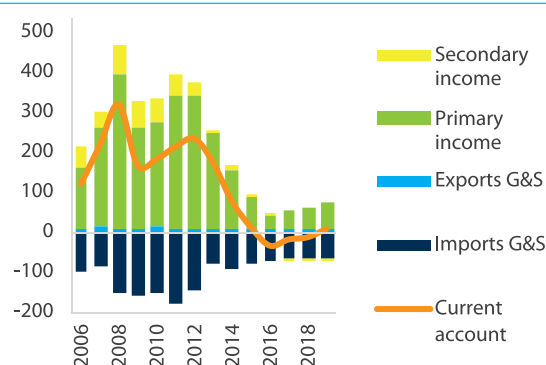
Source: Central Bank.

Figure 1.28: Financial account (% GDP)
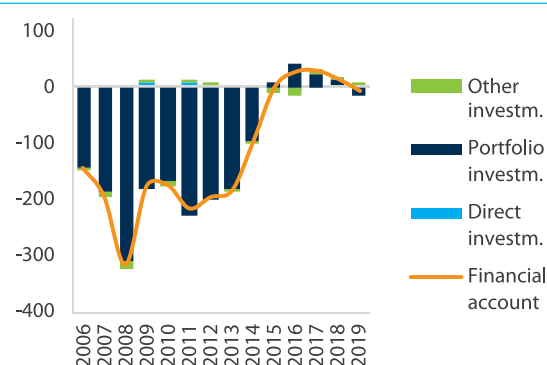
Source: Central Bank.

The financial account is usually driven by new Petroleum Fund investments, but there has been a (net) divestment in recent years. The financial account includes portfolio investments, (foreign) direct investment, and other investments. Portfolio investment flows, which comprise equities and debt securities, are by far the largest component. Portfolio investment outflows mainly relate to new investments by the Petroleum Fund and closely track trends in primary income – since petroleum-related incomes are invested in foreign assets.[39] However, there has been a net divestment (i.e. inflows) in recent years, as withdrawals from the Petroleum Fund have surpassed revenues. Divestments in foreign assets finance the large current account (and fiscal) deficits, but pose a threat to the sustainability of the Petroleum Fund – especially since withdrawals have regularly exceeded the ESI. Direct investment is small and mainly comprises retained earnings from the commercial banking sector, rather than new foreign investments. Other investments, which mainly include currency & deposits (from the commercial banking sector) and loan disbursements (to the public sector), have also played a marginal role.

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36   This is partly due to a gradual decrease in foreign official grants, while private remittance inflows have been more than offset by outflows.

37   Trade statistics may vary across national data sources. To ensure consistency, MoF data is used for the national accounts (real sector), while BCTL data is used for the balance of payments (external sector).

38   The recent rise in JPDA income – in a context of declining production levels – might be partly due to additional capital expenditures (capex) in 2017-2018 for drilling infill wells – lowering revenues in those years. Moreover, international oil prices were particularly low in 2016, while a $63 million tax refund (regarding the Kitan field) was processed in 2018.

39   In essence, foreign income is recorded in the current account (as an inflow), which is then invested abroad through the financial account (as an outflow).

1.4 Conclusions and Recommendations

Accelerating and sustaining economic growth is key to reduce poverty and raise living standards. Economic growth has decelerated sharply over the past decade – from 11 percent in 2008 to 3-4 percent in 2014-2016 – while recessions since 2017 have jeopardised hard-won gains. Living standards have broadly improved since 2006, but economic growth has not benefited households proportionally. In terms of its main drivers, economic activity has been strongly supported by public expenditure, while the private sector remains incipient. Construction and public services have been the key sectoral drivers of output, but these engines are unlikely to be sustainable. This calls for a revamped economic model – with broad political support – to promote sustainable and inclusive growth. A coherent medium-term economic strategy should be based on the country's endowments and emerging opportunities.

Public expenditure levels have been very high, which coupled with limited domestic revenues has contributed to large budget deficits. Public expenditure levels have been among the highest in the world – averaging over 80 percent of GDP since 2007. Nonetheless, high public spending has not translated into strong and sustained economic growth, as the latter has been decelerating since 2008. Public spending is perpetuating a vicious cycle of resource misallocation, which is fuelling large (fiscal and trade) deficits and weighing on economic growth, which is then offset with further unproductive public spending. Domestic revenues remain small (at less than 12 percent of GDP), while the Estimated Sustainable Income (ESI) is gradually declining – owing to a depleting petroleum wealth. Hence, the fiscal deficit is very large (at about 30 percent of GDP in 2017-2019) and predominantly financed by excess withdrawals from the Petroleum Fund. The public debt stock is low – albeit growing – and mostly composed of external concessional lending. Nonetheless, it would be advisable to prepare a medium-term debt management strategy, upgrade software, and improve the monitoring and reporting of fiscal risks.

Large budget deficits threaten fiscal sustainability and endanger macroeconomic stability. The Petroleum Fund is used to bridge the large financing gap created by high spending and low domestic revenues. The fact that the ESI, as a fiscal rule, has been consistently breached over the past 10 years is a matter of concern. The Petroleum Fund could be depleted in a decade, owing to the end of petroleum revenues and large asset withdrawals to finance large state budgets. Future petroleum developments – such as Greater Sunrise – could provide additional revenues, but they would also require large upfront costs. The exhaustion of the Petroleum Fund could lead to a sudden and agonising fiscal adjustment with significant consequences to service delivery and human development. A prudent management of the Petroleum Fund is thus crucial to ensure that future generations can benefit from these savings. A medium-term binding commitment to the ESI could contribute to a gradual reduction in the fiscal deficit – ideally in the context of a medium-term fiscal framework. Fiscal rules and a stronger medium-term perspective would improve decision-making by facilitating budget prioritisation and focusing scarce (human) resources – in terms of planning, coordination, and supervision – on those priorities.

External imbalances are equally worrying, since they can also jeopardise macroeconomic stability. The current account has typically recorded large surpluses, but its balance has deteriorated sharply in recent years – mainly due to declining primary incomes associated with petroleum revenues. The trade deficit remains very large (at 55 percent of GDP), owing to limited production capabilities and low exports. The financial account has typically recorded new investments by the Petroleum Fund, but there has been a (net) divestment in recent years. Divestments in foreign assets finance current account (and fiscal) deficits, but pose a threat to the sustainability of the Petroleum Fund – especially since withdrawals have regularly exceeded the ESI.

02

Domestic Revenue

Enhancing domestic revenue collection is indispensable to help secure fiscal sustainability. Given the finite nature of petroleum resources, it is critical to build a strong foundation for sustainable (long-term) revenue mobilisation. Domestic (tax) revenues can help bridge the very large budget financing gap, and thus enable the funding of critical public spending without depleting the Petroleum Fund.[40] Tax revenues have increased through time, partly supported by growing public spending. However, tax revenue collection remains considerably below regional and income benchmarks – averaging 8 percent of GDP since 2011. The tax framework – last revised in 2008 – comprises several types of taxes, although value-added and

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40   This chapter does not delve into non-tax revenue in great detail. Moreover it does not cover petroleum revenue, which mainly comprises taxes and royalties from offshore petroleum activities. These are regulated by specific laws and special regimes. These revenues are not immediately available to the government, since they accrue directly to the Petroleum Fund. These only become available for budget financing through a request – approved by Parliament – to withdraw funds.

property taxes are notably absent. Moreover, the income tax rate is among the lowest statutory rates in the world, while most excise tax rates have not changed since independence. Average effective tax rates are low, owing to a narrow tax base as well as low compliance and enforcement. Estimates on the tax potential suggest that, if existing gaps in tax policy and administration are addressed, tax revenue collection could (at least) double.

Main recommendations: (i) raising outdated excise tax rates (e.g. on alcohol and tobacco) and introducing a sugar tax to increase revenues and improve health outcomes (ii); introducing a value-added tax (VAT) to enhance domestic resource mobilisation, while adopting complementary measures to ensure equity; (iii) streamlining and raising income tax rates, with a view to promoting greater alignment with regional peers; (iv) improving revenue administration by modernising the tax system and investing in capacity; and (v) Evaluating the potential of a property tax, and reporting on tax expenditures (while planning a gradual phasing out).

Chapter structure: The chapter starts by providing an overview of the current revenue framework, including tax policy. Domestic revenues are then benchmarked against peer countries, with an assessment of their levels and composition. Measures of revenue potential are computed, while also evaluating the efficiency of the current tax policy and administration. Key recommendations are provided with a view to maximising revenue collection without deterring investment and consumption.[41]

2.1 Revenue Policy and Administration

2.1.1 Context

It is pertinent and opportune to revisit the current domestic revenue mobilisation strategy, especially tax policy. While public expenditure has grown considerably in the past decade, domestic revenues have failed to bridge the financing gap – thus contributing to a very large fiscal deficit. Hence, medium-term fiscal sustainability is partly contingent on the government's ability to increase domestic revenues. Meanwhile, the Petroleum Fund is being pressured by declining petroleum revenues and large withdrawals in excess of the ESI.[42] Strengthening domestic revenue collection would ease these pressures, which would in turn avert a fast decline of the ESI. In fact, increasing domestic revenues would facilitate compliance with the existing fiscal rule – the ESI – which has been repeatedly breached by a large margin. A depletion of the Petroleum Fund would have considerable fiscal and growth implications, given its role in financing large fiscal and current account deficits. Reducing the dependence on the Petroleum Fund to finance the state budget is key to protect its assets for future generations.

The stated policy objective is to achieve a domestic revenue level of 18 percent of GDP by 2023, significantly above the 11-12 percent collected since 2014. The programme of the VIII Constitutional Government asserts that revenue diversification is critical to reduce the reliance on the Petroleum Fund. For that purpose, the government aims to improve institutional capacities (especially human resources and systems) and approve new legislation (including a review of the current tax law and the introduction of a value-added tax). It also aims to promote efficiency and effectiveness in tax collection, while maintaining

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41   This chapter is informed by several documents produced by the Fiscal Reform Commission, as well as the recent Public Expenditure and Financial Accountability (PEFA) assessment.

42   Petroleum production has been gradually declining since its peak in 2012 and the last petroleum field in operation (Bayu-Undan) is scheduled to cease operations by 2022-2023.

a neutral and competitive tax burden. Domestic revenues (which include non-tax revenues) have been consistently around 11-12 percent of GDP since 2014. Hence, there remains a significant gap between the government targets (e.g. 15 percent of GDP by 2020 and 18 percent by 2023) and the actual amounts collected. Renewed efforts will be required to approach those targets. Recent research suggests that a minimum tax-to-GDP ratio of 13 percent is associated with significant accelerations in economic growth.[43] Below that threshold, economic growth is likely impacted by poor financing of basic public services that are crucial for growth – such as education and health. Tax collection averaged 8 percent of GDP since 2011. Greater diversification of revenue sources and efficiency in revenue collection will be key to enhance domestic revenue mobilisation – and thus support medium-term fiscal sustainability.

The legislation governing Timor-Leste's revenue framework was approved more than 10 years ago and needs to be updated. Tax policy is at the centre of revenue mobilisation efforts. The tax regime is based on the provisional legislation passed by the United Nations Transitional Administration in East Timor (UNTAET) – Regulation 2000/18 on a Taxation System for East Timor and related amendments.[44] Most of the current tax instruments were developed by then. These laws were subsequently amended by Parliament through the Revenue System Amendment Act (Law 5/2002), while a few petroleum-related laws were also approved in 2003 and 2005. In 2008, the Parliament passed the Taxes and Duties Act (Law 8/2008) – an overarching law governing direct and indirect taxes – to "relieve the fiscal burden that has been considered to be disproportionate and excessive in view of the reality of the country". Most of the modifications reduced the statutory tax rates applied, which was enabled by growing (offshore) petroleum revenues and a view to attracting foreign investment. The Taxes and Duties Act also introduced special provisions for the petroleum sector. This remains the main legislation governing the tax framework.[45]

The Taxes and Duties Act has some shortcomings, which undermine the efficiency and effectiveness of the tax system. There is often a trade-off between the complexity of a tax regime and its administrative costs. The more tax thresholds, exemptions and rules are created, the more challenging (and costly) it is to comply with and enforce the tax code. It may also encourage informality. The current legislation is arguably complex and thus difficult to be adequately implemented by an incipient tax administration system. Tax rates vary by sector and residency status, and include several exemptions. Rules and regulations are enforced by institutions that lack sufficient technical and operational capacity, which leads to inefficiencies and low revenue collection. Complexity makes it difficult to distinguish between (legitimate) tax avoidance and (illegal) tax evasion, and increases the potential for misinterpretation. Hence, streamlining and simplifying the tax framework could yield considerable benefits.

Recent fiscal reform efforts have not led to new legislation or a tangible impact on systems. The Fiscal Reform Commission (FRC) was formed in 2015 to lead a comprehensive fiscal reform aimed at increasing revenue, securing fiscal sustainability, and creating conditions for economic growth. The FRC drafted a General Tax law (revising the Taxes and Duties Act), a new VAT law, a new Customs Procedures Code decree law, and a decree to transform the Tax and Customs General Directorates in the Ministry of Finance into semi-autonomous authorities. In 2018, the Tax and Customs Authorities were established as semi-autonomous

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43   IMF (2016) 'Tax Capacity and Growth: Is there a Tipping Point?' The authors suggest that countries with low tax-to-GDP ratios should aim for 15 percent. It is also mentioned that other sources of revenue (e.g. natural resource rents) have not been found to be closely related to economic development.

44   For instance, regulations 2000/32, 2000/35, 2001/16, 2001/17, 2001/20. See the Ministry of Justice website.

45   Others include the Private Investment Law (Law 15/2017), which provides significant tax benefits for eligible investors. The benefits include income tax, sales tax, and service tax exemptions, as well as customs duty exemptions – from 5 to 10 years, depending on the location of the investment. These benefits apply to investment projects in certain economic sectors (ISIC Rev. 4 classification in backers): agriculture, forestry and fishing [A]; manufacturing [C]; accommodation [I.55]; and tour operator activities [N.7912].

agencies. However, many of the other reforms have not been approved and/or fully implemented, partly owing to the political uncertainty observed since 2017. Meanwhile, the FRC was dissolved in 2019. However, there is a renewed momentum to revise outdated legislation, modernise the revenue system, and introduce new legislation with the creation of a unit within the Ministry of Finance to advance comprehensive PFM and fiscal reform.

2.1.2 Tax Framework

The state budget is financed by multiple revenue sources, including withdrawals from the Petroleum Fund. Government revenues are typically classified by the nature of the revenue source (Figure 2.1). In Timor-Leste, this mainly includes domestic (tax and non-tax) revenue and the Estimate Sustainable Income (ESI). Direct taxes are levied on incomes, profits, and capital gains. There is no property tax – which typically levies on real estate. Indirect taxes are levied on the consumption of goods and services, as well as on international trade. There is currently no value-added tax, or export taxes. Non-tax revenue mainly relates to fees, user charges, property rentals, and interest – some of which collected by autonomous public agencies and municipalities. The ESI is the amount that can be withdrawn from the Petroleum Fund without depleting the value of its assets.[46] Development partner grants are mostly off-budget and off-treasury.[47] Finally, social security contributions are not part of the central government budget.[48]

Figure 2.1: Classification of government revenues
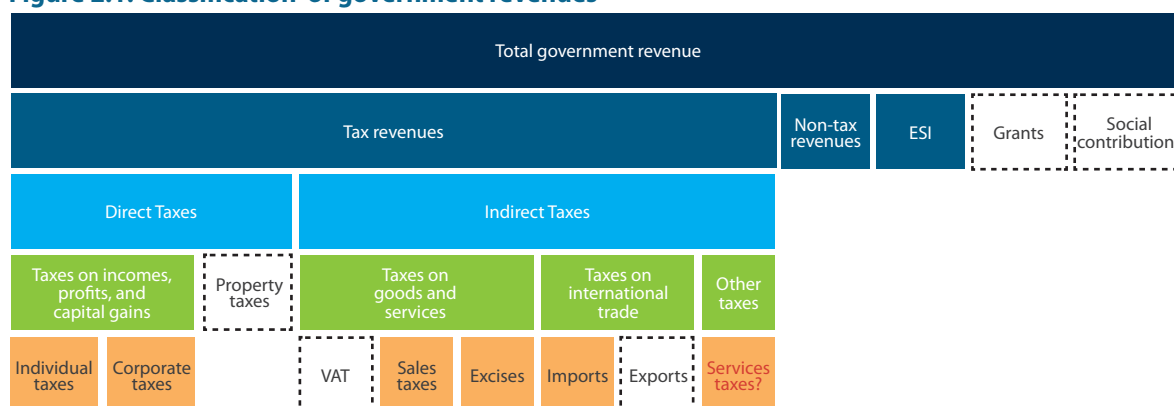
Source: World Bank staff.

The tax framework comprises several types of taxes, although value-added and property taxes are notably absent. There are currently seven types of tax instruments (Table 2). Taxes on income can be paid in the form of a (final) wage income tax, a final withholding tax on various types of income, or by periodic instalments and a final payment through an annual income tax return (for remaining types of income) – the

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46   The ESI is calculated as 3 percent of the total petroleum wealth, which comprises the Petroleum Fund balance and the net present value of future petroleum revenues. The ESI is classified as a revenue (rather than a financing) item because of its relatively permanent character. Withdrawals above the ESI (i.e. excess withdrawals) are accounted as budget financing, instead of revenue – and have been discussed in the context of fiscal (and Petroleum Fund) sustainability. Loans are also a financing item.

47   Budget support from the European Union has been on-budget since 2020.

48   Social security contributions were introduced in 2017 and are accrued by the National Institute of Social Security (INSS). However, they are not part of the Consolidated Fund for Timor-Leste (CFTL), which is the central government's Treasury Single Account (TSA) held at the Central Bank.

latter is known as (annual) 'income tax'.[49] Direct taxation comprises these three types of tax, which are levied on both individuals and corporations. Indirect taxes (on goods & service) include excise taxes, a sales tax, import duties, and a services tax. The import duty, the excise tax, and the sales tax are levied at the border – hence they are within the remit of the Customs Authority. There is currently no valued added tax, property tax, or local (municipal) taxes.

Table 2: Tax instruments, scope and rates

Tax type	Scope	Tax rate

Wage income tax	Resident natural person:
	   Monthly taxable wage up to $500
	   Monthly taxable wage above $500
	Non-resident natural person
		
		0%
		10%
		10%

Withholding tax	Non-residents without permanent establishment
	Residents and non-residents with permanent establishment:
	   Royalties
	   Rent from land and buildings
	   Income from prizes and lotteries
	   Income from construction and building activities
	   Income from construction consulting services
	   Income from the provision of air or sea transportation services
	   Income from mining or mining support services
		10%
		
		10%
		10%
		10%
		2%
		4%
		2.64%
		4.5%

Income tax	Resident natural person:
	   Annual taxable income up to $6,000
	   Annual taxable income in excess of $6,000
	Non-resident natural person
	Legal person
		
		0%
		10%
		10%
		10%

Services tax	Persons with a monthly turnover of designated services of less than $500 Persons with a monthly turnover of designated services of $500 or more	0% 5%
Import duties	Imported goods (with some exemptions)	2.5%
Sales tax	Imported goods (except goods exempted from import duties), as well as taxable goods sold and taxable services provided in Timor-Leste.	2.5%

Excise tax	Designated goods (except goods exempted from import duties):
	   Beer
	   Wine, vermouth and other fermented beverages
	   Ethyl alcohol and other alcoholic beverages
	   Tobacco and tobacco products
	   Small passenger vehicles with an excise value exceeding $70,000
	   Gasoline, diesel fuel and other petroleum products
	   Arms and ammunitions
	   Cigarette lighters, smoking pipes
	   Pleasure boats and private aircraft
		
		$1.90 per litre
		$2.50 per litre
		$8.90 per litre
		$19 per kg
		35%
		$0.06 per litre
		200%
		12%
		20%

Source: Taxes and Duties Act (2008).
Note: Excise ad valorem rate applies to the excise value, except for small passenger vehicles – where rate is levied only on excise value above $70,000. 'Designated service' refers to hotel, restaurant & bar, or telecommunications services. Wage income tax for resident natural persons is applied to the amount of wages above $500. Income tax for resident natural persons is applied to income above $6,000. There are special provisions for oil & gas taxation.

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49   Income refers to worldwide income for residents, and income sourced in Timor-Leste for non-residents.

The wage income tax is deducted from the wages paid to employees and paid monthly by the employer. If the taxable wage of a resident employee is more than $500 per month, then a 10 percent rate is applied to the amount above $500.[50] Wages paid to employees who are non-resident of Timor-Leste are taxed at a flat rate of 10 percent of the total monthly salary – hence, there is no tax-free threshold for non-residents. Between 2002 and 2008, a 10 percent tax rate was applied to wages up to $550, while any amounts earned above that threshold were taxed at 30 percent.

The withholding tax applies to certain types of income and depends on the residency. Certain income payments, and income relating to certain activities and services, are taxed (withheld) at the time the income is paid (or received). The withholding tax is levied on both natural and legal persons (i.e. individuals, companies, and other organisations).[51] The withholding tax rate for income paid to non-residents without a permanent establishment in Timor-Leste is 10 percent.[52] For residents and non-residents with a permanent establishment, tax rates depend on the type of income (Table 2). If a payment for royalties or rent is made to a legal person, the payment should be declared in the recipient's annual income tax form – and a credit may be claimed. Hence, it is not a final tax. In all other situations, no further tax is payable on income that has been subject to the withholding tax. Since 2008, interest and dividends are no longer subject to withholding tax. In fact, dividends became exempt income. Other changes included tax rate reductions. For example, the rate levied on income paid to a non-resident without permanent establishment was reduced from 20 to 10 percent, while the rate for royalties was reduced from 15 to 10 percent.

The income tax is levied on incomes other than wages and those subject to the withholding tax. The income tax is applied to the incomes of both natural and legal persons, except wages (which are taxed separately from other types of income accruing to individuals), exempt income (dividends), and amounts that have been subject to a final withholding tax. The tax is calculated on taxable (individual and corporate) incomes after the completion of the annual income tax form – which contains details of all assessable income and allowable deductions. A resident natural person with an annual taxable income above $6,000 is taxed at 10 percent, while incomes below that thresholds are not taxed. The threshold is equivalent to $500 per month, as in the wage income tax. For a non-resident natural person and a legal person, all taxable income is subject to a flat rate of 10 percent. Taxable income is the difference between assessable income (i.e. gross income, excluding employment wages in the case of individuals) and allowable deductions. The existing legislation includes provisions such as a 100 percent depreciation deduction (i.e. immediate expensing of all assets) and unlimited tax loss carry-forward – enabling taxpayers to carry over tax losses to future years to offset a profit. Tax subjects (i.e. both natural and legal persons) deriving income from conducting business activities that was not covered by a final withholding tax are required to lodge an annual income tax return. They are also required to pay income tax instalments – either monthly or quarterly, depending on their annual turnover – which are calculated as 0.5 percent of total turnover over the period.

The current income tax rate is among the lowest statutory tax rates in the world. Between 2002 and 2008, natural persons paid a progressive tax according to three income brackets: 10 percent (up to $3,368), 15 percent (between $3,369 and $6,737), and 30 percent (above $6,737). Legal persons paid a flat rate of

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50 A natural person is 'resident' if present in Timor-Leste for a period of (or periods amounting to) 183 days in any 12-month period, unless the person's permanent place of abode is not in Timor-Leste (or is a government employee posted abroad). A legal person is 'resident' if it is incorporated, formed, organised, or established in Timor-Leste.

51 A 'natural person' is an individual or an individual business enterprise (a business owned and operated by a single person). A 'legal person' can be a company, trust, government enterprise, unincorporated association, cooperative, and similar organisations.

52 A 'permanent establishment' means a fixed place where business is (wholly or partly) carried out – such as an office, factory, or workshop.

30 percent. With the Taxes and Duties Act of 2008, the maximum tax rate was cut to 10 percent.[53] This rate, which is levied on both private and corporate incomes, is among the lowest in the world (Figure 2.2). In the Asia region, the average corporate tax rate is 21 percent, while the average individual tax rate is 28 percent. The statutory corporate and individual tax rates are, respectively, 30 and 42 percent in Papua New Guinea, 30 and 35 percent in the Philippines, 20 and 35 percent in both Thailand and Vietnam, and 25 and 30 percent in Indonesia. In Cambodia, they are both 20 percent, while in Myanmar they are both 25 percent. In fact, the corporate tax burden in Timor-Leste is one of the lowest in the world – as measured by the total tax rate as a share of commercial profits (Figure 2.3).

Figure 2.2: Income tax rates (%)
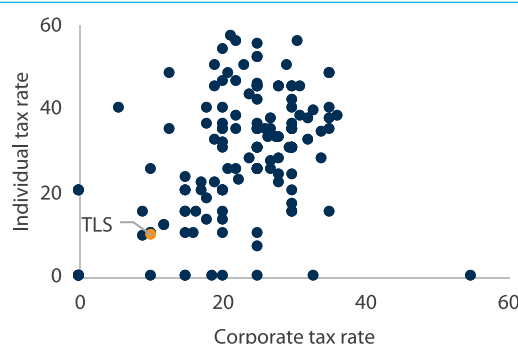
Source: KPMG.
Note: Sample is restricted to countries with values for both rates.

Figure 2.3: Tax rates (% commercial profits)
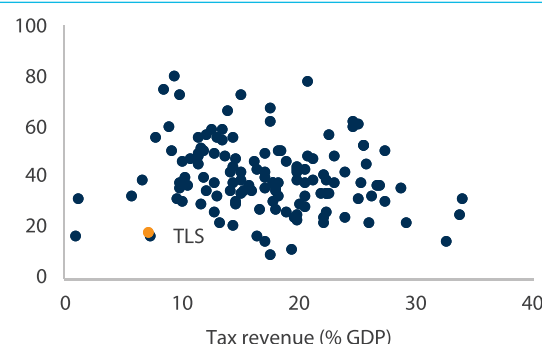
Source: Ministry of Finance and World Bank.
Note: The total tax rate includes profit tax, labour tax and contributions, and other taxes.

The services tax is imposed on designated services when receipts exceed a certain value. Designated services comprise hotel, restaurant & bar, and telecommunications services. Service providers with total receipts of less than $500 per month for the provision of these services do not have to pay the tax. Service providers that exceed the monthly threshold pay 5 percent of the total receipts received for that month – on a monthly basis. The amount of services tax paid is an allowable income tax deduction in cases where that amount has been included in total receipts subject to income tax. The services tax rate was 12 percent between 2002 and 2008, and was also levied on the rental services of: (i) cars, trucks and buses, (ii) helicopters and airplanes; and (iii) seagoing vessels.

The import duty and sales tax are both applied to imported goods. The import duty is imposed at a rate of 2.5 percent on the customs value of the goods imported (i.e. including cost, insurance and freight). The sales tax is set at 2.5 percent of the sum of the customs value, the import duty payable, and the excise tax payable. Some goods are exempted from import duty – such as goods accompanying a person arriving in Timor-Leste (under certain provisions), goods for temporary admission, and imports exempted under certain international conventions. According to the Taxes and Duties Act, the sales tax also applies to the sale of taxable goods and the provision of taxable services in Timor-Leste. Until 2008, both the import duty and the sales tax were set at 6 percent.

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53   The minimum income tax was removed in 2008, while interest expense is no longer an allowable deduction – except for financial institutions.

Excise taxes are applied at different rates to selected goods imported into and manufactured in Timor-Leste. Excise taxes are mainly levied on alcoholic beverages, tobacco products, small passenger vehicles, and fuel products. Excise tax rates are either based on units (value per unit of good) or on the percentage of the excise value (ad valorem). For alcoholic beverages, the rate rises from $1.9 per litre of beer, to $2.5 per litre of wine, and $8.9 per litre of distilled spirits. For tobacco products, the rate is set at $19 per kilo. Small passenger vehicles are levied 35 percent of the excise value above $70,000. Finally, fuel products (such as gasoline and diesel) are taxed at $0.06 per litre. Most rates have not changed since 2002 (Table 3).[54] However, some goods were removed from the excisable list, such as soft drinks ($0.65 per litre), fruit juices (12 percent), audio electronic goods (12 percent), mobile phones, TVs, and videos (12 percent), and perfumes (18 percent).

Table 3: Tax rates (%)

Tax type	Scope	Revenue System Amendment Act (Law 5/2002)	Taxes and Duties Act (Law 8/2008)	Change
Wage income tax		10-30	10	↘
Withholding Tax	Royalties	15	10	↘
	Rent	10	10	=
	Prizes and lotteries	15	10	↘
	Construction activities	2	2	=
	Construction services	4	4	=
	Transport services	2.64	2.64	=
	Mining services	4.5	4.5	=
Income tax	Businesses	30	10	↘
	Individuals	10-15-30	10	↘
Services Tax		12	5	↘
Import Duties		6	2.5	↘
Sales Tax		6	2.5	↘
Excise Tax	Alcohol	$1.9, $2.5 and $8.9 per liter	$1.9, $2.5 and $8.9 per liter	=
	Tobacco	$19 per kg	$19 per kg	=
	Fuel	$0.06 per liter	$0.06 per liter	=
	Motor cars	36	35 (above $70,000)	↘
	Arms and ammunitions	120	200	↗
	Cigarette lighters	12	12	=
	Smoking pipes	12	12	=
	Boats and aircraft	12-36	20	?

Source: IMF (2003) and Taxes and Duties Act (2008)
Note: Up until 2008, the excise tax for motor cars was the greater of 36 percent of the excise value or $500 plus 36 percent over $20,000. Private yachts and aircrafts were taxed at 12 percent, and 36 percent above $20,000. A presumptive income tax on coffee exports was levied at 5 percent of value of coffee beans.

Average effective tax rates are low, owing to a narrow tax base as well as low compliance and enforcement. Taxes can be grouped by the source of revenue: consumption, labour, capital, and imports. Consumption is subject to a statutory sales tax rate of 2.5 percent and a range of excise taxes on designated goods. Capital income is subject to a tax rate of 10 percent, except incomes already subject to a withholding tax. Labour income is also taxed at 10 percent. Imports of goods are levied an import duty of 2.5 percent.

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54   From 2021, the excise on alcohol will be increased.

However, effective tax rates can provide a better measure of the tax burden than statutory tax rates.[55] It also enhances comparability across countries. The average effective tax rate on consumption can be calculated as the ratio between consumption-related tax collection (namely, from excise and sales taxes) and final consumption expenditure (net of tax).[56] It is not possible to estimate an effective tax rate on labour since there is no data on payroll tax collection. The effective tax on capital can be computed as the sum of individual and corporate income tax collection (excluding wages) as a share of total gross operating surplus.[57] Finally, the measure for imports is reported as the value of import duties as a share of imports of goods. The calculations suggest that average effective rates for 2012-2019 have been around 3 percent for consumption and capital income, and slightly under 2.5 percent for imports of goods (Figure 2.4).[58] This suggest that the tax burden is even lower than what the statutory tax rates suggest – especially for capital – due to narrow tax bases as well as low compliance and enforcement.

Figure 2.4: Average effective tax rates (%)
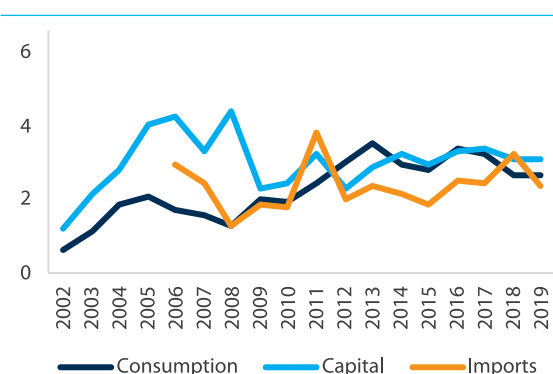
Source: Ministry of Finance and World Bank staff calculations.

Figure 2.5: Private consumption and investment (USD million)
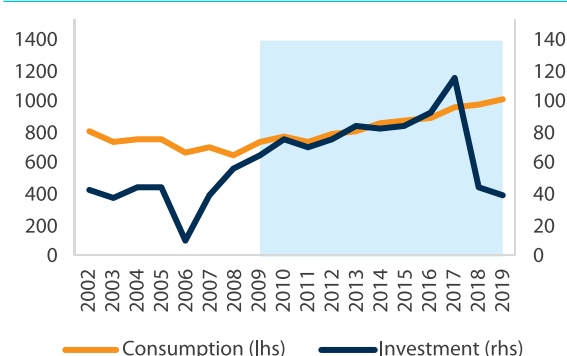
Source: Ministry of Finance.
Note: Values are in 2015 constant US dollars.

It is difficult to assess the impact of the 2008 tax rate cuts on economic activity. The destruction of infrastructure and exodus of human resources that preceded the country's independence in 2002 had a profound impact on economic activity in the post-independence period. In 2006, a civil crisis further impacted the economy. As a result, economic performance was disappointing during this period. Subsequent increases in public spending have stimulated economic activity – partly through public construction contracts, the purchase of goods & services, a growing civil service, and cash transfers to

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55 The tax base refers to taxable income or consumption. Narrow tax bases can result from exempted income (either a type of income, such as dividends, or incomes below a threshold) and exempted goods and services. Moreover, allowable deductions and other provisions (such as loss carry forward) also reduce taxable income.

56 Final consumption expenditure – from both the private and public sectors – is taken from the national accounts and is discounted by the value of related taxes.

57 Since there is a need to exclude wage income from individual income tax collection, an average tax rate is computed as the ratio of individual income tax receipts and total household income. Household income is taken from the national accounts, and comprises compensation of employees, gross operating surplus (GOS), and gross mixed income (GMI). This rate is then applied to the sum of households' GOS and GMI.

58 Although the AETR for consumption is above the sales tax rate, the excise tax rates are usually above 10 percent (including those set at a value per unit) and relate to a non-trivial proportion of consumption. If only computed for the sales tax, the AETR for consumption is less than 1 percent.

households.[59] Around the same time that petroleum revenues enabled a scaling up of public spending, the Taxes and Duties Act of 2008 reduced the statutory tax rates for several tax instruments – with effect from July 2008. The stated objectives were to relieve the fiscal burden on citizens and local business, as well as promoting foreign investment. Given the overlap between an expansionary fiscal policy stance and tax rate cuts, it is difficult to attribute the subsequent increases in private investment and private consumption to the reduction in tax rates (Figure 2.5).[60]

Non-tax revenue is an important complement to domestic taxation. In addition to domestic taxation, the government levies a range of fees and charges. The most notable are electricity fees & charges, port fees & charges, property rentals, and visa fees. Interest, dividends (e.g. from BNCTL), and other capital gains are also collected. Some autonomous public agencies and municipalities also collect revenues. However, revenues from state-owned enterprises are not included. Reforming fees and charges can also yield significant benefits, especially on electricity.

2.2 Trends and Composition

Government revenue is heavily dependent on the Estimated Sustainable Income. Government revenue comprises tax revenue, non-tax revenue, and the Estimated Sustainable Income (ESI). The ESI is computed every year based on existing data and a few assumptions.[61] The ESI accounts for most government revenue and exhibits significant volatility – more so than other sources of revenue (Figure 2.6). The ESI reached a peak value of $734 million in 2011 and has been declining gradually since then. This is partly because total withdrawals have been outpacing petroleum revenues. In recent years, however, the ESI has been largely driven by strong asset revaluations that have affected the balance of the Petroleum Fund. The strong performance of international equity markets in 2017 and 2019 have led to a higher ESI for 2018 and 2020, respectively. In 2018, asset revaluation was negative as global stock markets recorded considerable falls towards the end of the year. In terms of domestic revenue, Timor-Leste tends to rely more heavily on non-tax revenue than its peers – 32 percent in 2019 (Figure 2.7).

Figure 2.6: Government revenue (USD million)
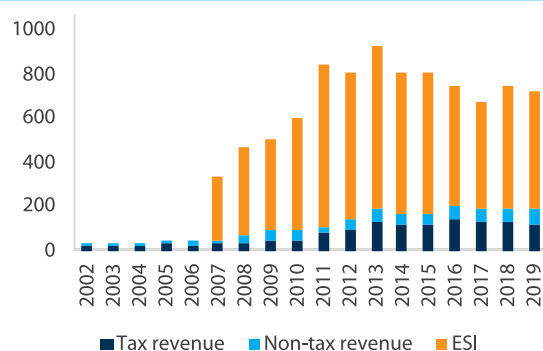
Source: Ministry of Finance.

Figure 2.7: Domestic revenue (2019, % GDP)
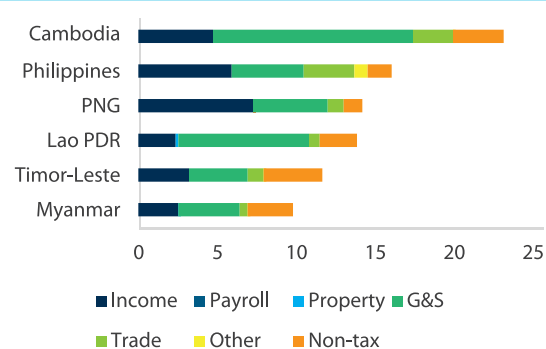
Note: Excludes grants and social contributions.
Source: IMF (GFS).

59   However, much of this public-generated demand leaks into imports due to low production capabilities.

60   The decline in private investment during 2017-2018 was largely driven by the political impasse.

61   Key assumptions include the discount rate for future petroleum revenue, as well as forecasts for production level, prices, and production costs. Since the ESI is calculated during the budget preparation process, some additional assumption (for the final months of the year) are required to estimate the final Petroleum Fund balance.

Tax revenues have increased, partly supported by growing public spending. Tax revenues averaged about 6 percent of GDP between 2004-2010, after which a notable step changed occurred (Figure 2.8). Since 2011, tax collections have averaged 8 percent of GDP. This increase could be partly explained by increased public spending (e.g. public construction projects subject to withholding tax) and higher disposable incomes (e.g. rising excise tax collections), as well as improvements in tax administration. The tax cuts introduced in 2008 do not appear to have had an immediate impact on revenue collection – especially in 2009 and 2010. Strong GDP growth in 2007-2010 – averaging 10 percent and a clear sign of expanding economic activity – may have partly compensated the impact of the tax cuts on revenue collection. The relationship between GDP and tax collection was relatively weak until 2008, but it has strengthened since then – illustrating its strong pro-cyclicality.

Figure 2.8: Tax revenue and GDP per capita
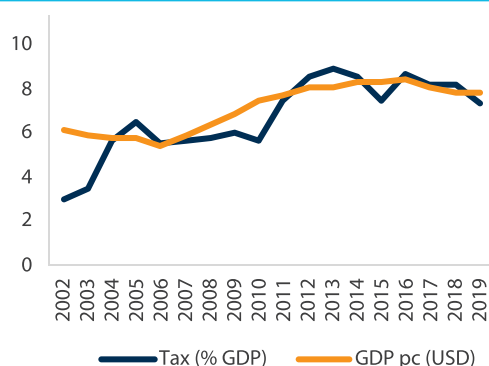
Source: Ministry of Finance.

Figure 2.9: Tax revenue (% GDP)
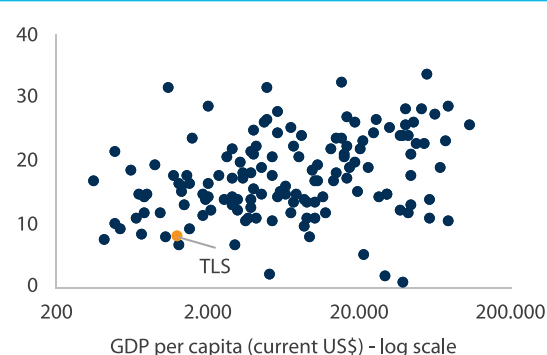
Notes: Averages for 2015-2019.
Source: Ministry of Finance and International Monetary Fund.

Despite improvements, tax revenue collection remains considerably below regional and income benchmarks. The tax-to-GDP ratio increased from about 3 percent in 2002 to a peak of 9 percent in 2013. However, tax collection stagnated since then and still lags significantly by international standards (Figure 2.9). It is considerably lower than averages for the East Asia & Pacific region and lower-middle-income countries. The tax base remains small, partly because the expansion of economic activity has been driven by the public sector, with limited (lasting) effects on the private sector. Moreover, low tax rates contribute to sub-optimal revenue collection, which limits the government's capacity to mobilise adequate resources to sustainably finance growth-enhancing public spending. In fact, the recent stagnation in tax revenue collection may suggest that the 2008 tax framework has become outdated and unable to raise adequate resources.[62]

The composition of tax revenues has changed somewhat since 2002, with income and excise taxes growing in importance. Income and excise taxes have grown considerably through time, increasing their weight in total tax collection (Figure 2.10). Excise taxes have experienced considerable growth, rising from 1.1 percent of GDP in 2008 to a peak of 2.9 percent of GDP in 2013 – although they have declined somewhat in recent years. The withholding tax increased from 0.9 percent of GDP in 2010 to a peak of 2 percent in 2012 and has averaged about 1.7 percent since then. The withholding and excise taxes account for about half of total tax revenue collections (Figure 2.11). Individual and corporate income taxes have remained broadly stable in recent years, accounting for about 20 percent of total tax receipts. Import duties and the sales tax are also a vital source of revenue, jointly comprising about one quarter of the total. However, the services

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62   This trend precedes that 2017-2018 economic recession.

tax provides very little revenue compared to other taxes. Overall, the step change increase in tax collection can be largely accounted by excise taxes and the withholding tax.[63] Tax collection has become less volatile in recent years – as measured by the coefficient of variation. Withholding taxes appear to be more volatile than other types of tax, which can be explained by its strong reliance on public investment – which is quite volatile itself.

Figure 2.10: Tax revenue (% GDP)
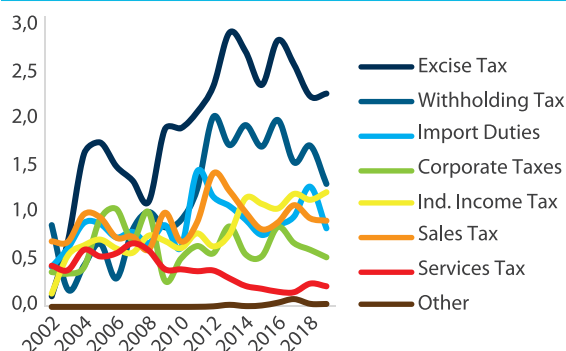
Source: Ministry of Finance.

Figure 2.11: Tax revenue (% total)
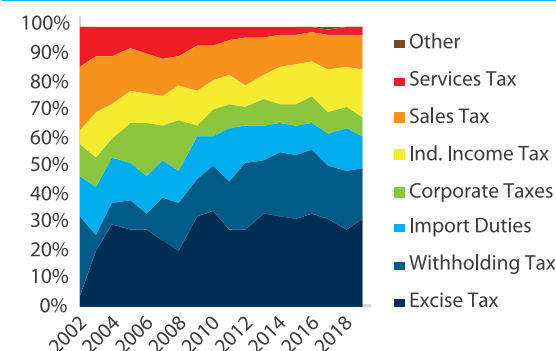
Source: Ministry of Finance.

Timor-Leste has not yet adopted a value-added tax, which accounts for much of the gap to its peers. Benchmarking against regional peers suggests that income tax collection is significantly below potential (Figure 2.12). Income taxes, comprising the withholding, individual, and corporate taxes – represented 3.4 percent of GDP in 2017, which was considerably below the regional average of 6.3 percent. Revenues from trade taxes are also comparatively low. In contrast to most country peers, Timor-Leste does not have a value-added tax (VAT). The VAT is a key instrument for tax collection in most countries, suggesting that its introduction in Timor-Leste could significantly enhance tax collection. Many countries also have a property tax, which complements other revenue sources. Looking beyond the EAP region also suggest that the tax revenue shortfall is mainly due to the absence of a VAT and low income taxes (Figure 2.13).

Figure 2.12: Tax revenue (2017, % GDP)
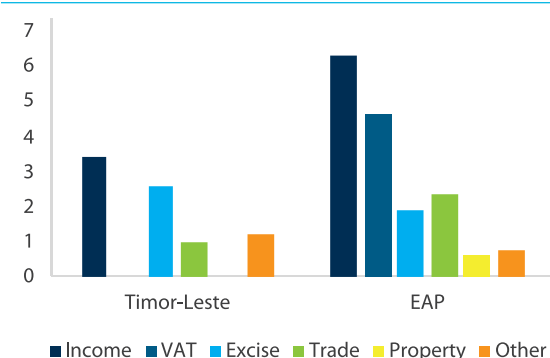
Source: World Bank.

Figure 2.13: Tax revenue (2017, % GDP)
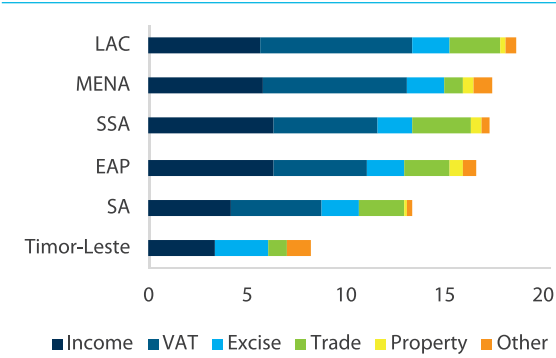
Source: World Bank.

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63   The increase in consumption tax revenues (e.g. excise) may have been supported by public spending (in the form of a growing wage bill and social protection payments), while the increase in income (withholding) taxes has been influenced by public infrastructure investments.

Revenue collection has broadly kept pace with economic activity, but it needs to go well beyond that benchmark. Tax buoyancy (or tax elasticity) assesses whether growth in tax collection has been keeping pace with economic growth over time. A buoyancy coefficient of 1 would suggest that a 1 percent increase in GDP leads to an average rise in revenue collection of 1 percent – implying that revenues grow at the same pace as economic activity. The estimated buoyancy coefficients were highly uncertain for different types of taxes, which precludes a clear conclusion.[64] Nonetheless, the relatively stable GDP ratios seem to suggest that revenue collection has kept pace with economic activity. However, raising the tax-to-GDP ratio to desired levels will require much stronger domestic revenue mobilisation efforts.

Tax productivity is relatively low and has stagnated in recent years. Tax productivity (or tax collection efficiency), which is calculated as the ratio of actual tax revenues (as a share of GDP) and the tax rate, measures efficiency in both tax policy and administration. The results suggest that efficiency for both corporate and individual income taxes has increased somewhat since 2008, but it has been relatively stagnant since about 2014. This highlights the need to undertake reforms to improve the efficiency and effectiveness of the tax system.

While non-tax revenues have also grown as a source of revenue, this has been mainly due to electricity fees & charges. In 2019, over half of non-tax revenues was accounted by electricity fees & charges. Revenues retained by autonomous public agencies (APAs) were also significant, mainly owing to the Port Authority of Timor-Leste (APORTIL) – which collects port fees & charges. Other relevant autonomous agencies include the National University of Timor-Leste (UNTL) and the National Communications Authority. In fact, there are 23 revenue-collecting APAs – although none of them is wholly self-funded and thus still rely on government funding. Property rentals and visa fees are also relatively important sources of revenue.

Figure 2.14: Non-tax revenues (USD million)
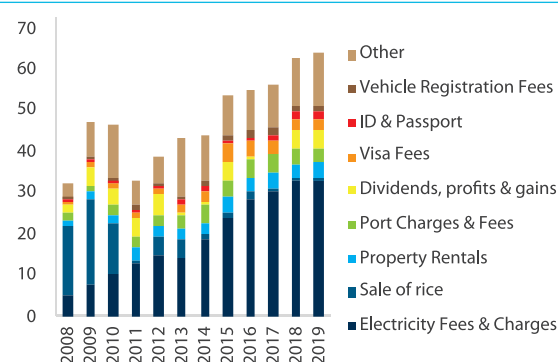
Source: Ministry of Finance.

Figure 2.15: Non-tax revenues (%)
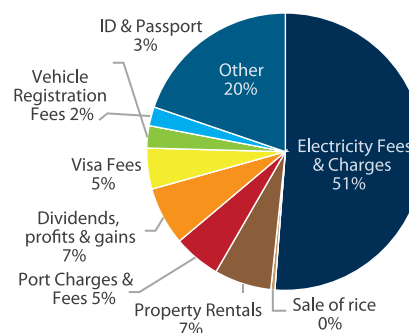
Source: Ministry of Finance.

2.3 Revenue Mobilisation Potential

It is imperative to mobilise additional domestic revenues to ease pressures on the Petroleum Fund. Despite some progress, domestic revenue mobilisation remains a key challenge. The state budget is highly dependent on petroleum revenues to finance public expenditure, including key public services and infrastructure projects. Recent political uncertainty has had a strong impact on public spending, as failure

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64   Annual elasticities were characterised by significant variation (with many large negative and positive values), while the results from regression analysis (to estimate a single coefficient for the period) had very large standard errors.

to approve state budgets – with a consequent lack of access to the Petroleum Fund – have highlighted the precariousness of the current fiscal position. Domestic revenue levels are insufficient to even cover the basic functions of government.[65] The current revenue-to-GDP ratio is low by regional and international standards, suggesting that revenue collection is considerably below its potential. These observations highlight the pressing need to mobilise domestic revenue.

There are various factors affecting actual revenue collection, pertaining to both tax policy and administration. Domestic revenue can be considerably below its potential due to several circumstances. These include sub-optimal tax rates and the proliferation of exemptions (which relate to tax policy), as well as low compliance and capacity to collect revenue (which relate to tax administration). It is therefore crucial to identify the most binding constraints in order to prioritise reforms.

Figure 2.16: Tax policy and administration
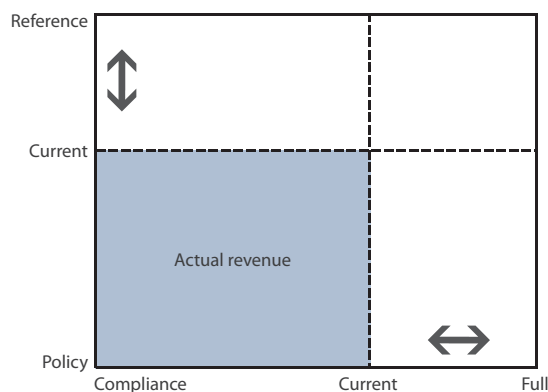
Source: World Bank staff.

Figure 2.17: Policy and compliance gaps

$$\text{Compliance gap} = \frac{\text{potential tax (current)-actual tax}}{\text{potential tax (current)}}$$

$$\textbf{Policy gap} = \frac{\text{potential tax (reference)-potential tax (current)}}{\text{potential tax (reference)}}$$

$$\textbf{Tax gap} = \frac{\text{potential tax (current)-actual tax}}{\text{potential tax (reference)}}$$

Note: Brackets denote policy (current or reference).
Source: World Bank staff.

There are several methods to estimate a country's revenue mobilisation potential. A simple method of estimating the amount of additional tax revenues that could be potentially collected is to compare a country's tax-to-GDP ratio with that of other countries with similar characteristics – such as the level of economic and institutional development. This can be undertaken through a simple benchmarking exercise (as performed above) or through an empirical exercise. Tax potential (or taxable capacity) provides a reference point for the maximum amount of revenue that could be collected through tax policy changes or improvements in the efficiency of collection given a country's socio-economic factors.[66] Tax effort is usually defined as an index of the ratio between actual tax collection and tax potential, and relates to both 'policy gap' and 'compliance gap' (Figure 2.17). The policy gap quantifies the extent to which tax collection is affected by policies that reduce the tax base and/or tax rates. Examples include tax exemptions and preferential tax rates, which constitute a tax expenditure by reducing tax liabilities (thus a revenue loss) rather than direct spending. The compliance gap conveys the extent to which poor tax administrative capacity and/or active tax avoidance may explain the gap between potential revenues and actual collection.

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65   Government revenue, which comprises domestic revenue and the ESI, is not sufficient to cover recurrent spending – which is concerning from a sustainability perspective.

66   As a measure of tax capacity, a structural approach may be applied, regressing actual tax revenues on several characteristics commonly found to be associated with tax revenue levels. These include GNI per capita, trade openness, share of agriculture in GDP, and other structural demographic and institutional variables.

Tax collection is significantly below its full potential, suggesting that there is ample scope for tax policy and administration reforms. There is considerable potential to mobilise additional domestic revenues. Estimates suggest that tax revenue could (at least) double when considering the structural factors that account for its underperformance (Table 4).[67] The structural gap analysis confirms the skewedness of the current tax composition, particularly the underutilisation of consumption taxes. When compared to the level of taxation and a series of structural and institutional determinants in peer countries, Timor-Leste has an average tax potential of 15 percent of GDP, with the corresponding tax policy and administration gap at 7.9 percent of GDP. While the gap is measured structurally, the underutilisation is undoubtedly partly explained by the fact that consumption taxes are significantly underused when compared to peer countries. Indeed, the average tax policy and administration gap with regard to goods & services is estimated at 4.1 percent, which can be further corroborated by the absence of a VAT and an insufficiently diversified tax base.[68] The tax gap for both income taxes and trade taxes is estimated at around 1 percent. The gap is estimated at 8.9 percent of GDP, considering all revenues sources, including non-tax revenues.

Table 4: Tax potential and tax gaps (% GDP)

	Domestic revenue	Tax revenue	Income taxes	Taxes on G&S	Trade taxes
Tax potential	20.7	15.0	3.8	7.4	2.0
Tax (policy and administration) gap	8.9	7.9	1.0	4.1	1.1

Note: Results are for 2006-2019.
Source: World Bank staff calculations.

Complementary methods of estimating the tax effort broadly corroborate these conclusions. Another method to estimate the tax potential is to proxy tax bases from the National Accounts.[69] The tax base for the corporate income tax can be proxied by the gross operating surplus (GOS) of corporations, while for individual income tax it can be approximated by the sum of compensation of employees (CE) and gross mixed income (GMI) of the informal business sector.[70] For the purpose of this exercise, the reference tax rate is set at 15 percent – with is 5 percentage points above the current income tax rate of 10 percent and broadly in line with regional averages. The results suggest that the compliance gap for corporate taxation has remained quite high, while for individual taxes it has declined.[71] The policy gap measure merely states that the current rate is one-third lower than the reference rate. Finally, the tax gap has broadly followed the trend of the compliance gap – since it measures both compliance and policy gaps (i.e. the difference between taxable capacity and tax collection). Overall, there is potential to improve income tax receipts

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67   The structural domestic revenue potential, tax revenue potential by instrument type, and related tax gaps were estimated in the context of a large group of peers using panel data. The predicted tax-to-GDP ratio is calculated using the estimated coefficients of the regression specification and Timor-Leste's specific characteristics. Consistent with other studies, greater trade openness, lesser reliance on agriculture, and lower corruption levels are associated with higher tax-to-GDP ratios. However, the results should be interpreted cautiously, as they can be sensitive to modelling assumptions and estimation techniques.

68   These include excise taxes, for which collection in Timor-Leste is relatively high.

69   In the system of national accounts, income is disaggregated into primary and secondary incomes. Primary incomes comprise factor incomes, property income and taxes on production and imports; while secondary incomes include social benefits, social contributions, taxes on income and wealth, and other current transfers. Disaggregated administrative data (i.e. data on individual taxpayers) would enable better estimates of compliance/policy gaps, but this is beyond the scope of this subsection.

70   GOS relates to (capital) income earned by incorporated enterprises, while GMI relates to unincorporated enterprises – such as small family businesses and self-employment. GMI arises from the difficulty in distinguishing between labour income and capital income, and thus includes both. In Timor-Leste, GMI mainly covers subsistence agriculture and the informal business sector, but only the latter in taking into account in our calculations (since self-consumption is not taxed).

71   The efficiency ratio is the inverse of the compliance gap.

through changes in tax policy and improvements in tax administration. Individual income taxes are unlikely to become a significant source of revenue, since low average per capita incomes and high levels of informality limit its potential. However, they may contribute to ensure tax progressivity and expand the tax base – as the economy grows, incomes rise, and economic activity becomes more formalised.

Figure 2.18: Corporate income tax
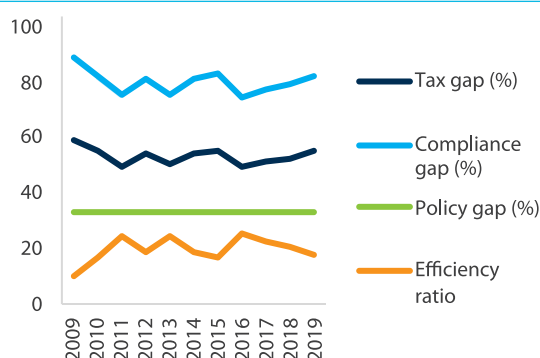
Source: World Bank staff calculations.

Figure 2.19: Individual income tax
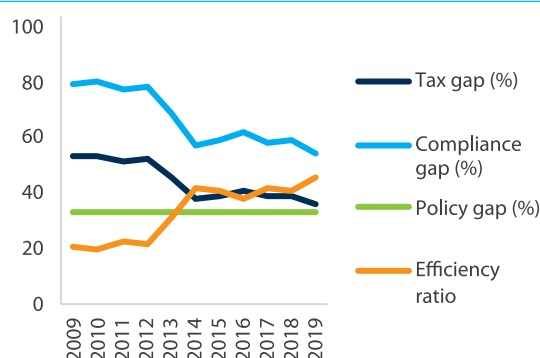
Source: World Bank staff calculations.

2.4 Main Reform Priorities

A well-functioning tax system should be able to fulfil certain attributes, such as efficiency and stability. Some of the desired features of a tax system include efficiency (in revenue collection), equity (through income redistribution), simplicity (of the tax system), revenue adequacy (to fund basic public services), and stability (to avoid economic instability). However, certain trade-offs may require careful attention. For example, some reforms may promote greater equity in income distribution, but can raise administrative costs (e.g. taxpayer segmentation through income thresholds). Other reforms could efficiently collect a significant amount of revenue (e.g. VAT), but could be regressive and thus require adjustments on the expenditure side – to maintain the overall progressivity of fiscal policy. Evaluating and balancing different priorities will be critical.

There has been some progress in improving tax administration and simplifying the tax structure, but further reforms are needed. It is important to recognise key achievements since independence, when institutional and human capacities where extremely low. Since 2002, there has been an effort to strengthen institutions and build capacity in the civil service. In 2008, key legislation was enacted reducing the number of wage income tax thresholds and the number of excisable goods – thus somewhat simplifying the tax system. More recently, IT systems have been (or are in the process of being) upgraded, and the Tax and Customs Authorities were created. Tax collection as a share of GDP increased, albeit partly driven (at least indirectly) by public spending. Nonetheless, the analysis suggests that domestic revenue performance has been lagging, and even stagnated in recent years. Hence, there is considerable scope to improve the level and efficiency of revenue collection.

Tax reforms are needed to ensure that revenue levels are adequate to sustainably finance public expenditures. A modern tax system can contribute to greater economic efficiency and equity. A prioritised and sequenced set of tax reforms (relating to both policy and administration) should be pursued in the coming years. Measures to diversify revenue sources, expand the tax base, and improve compliance are key

to generate sufficient domestic resources to bridge the large budget financing gap – especially by enabling the funding of key public services without threatening fiscal sustainability. In addition, taxation is known to promote transparency and accountability – between citizens and the state. However, strong political commitment and ownership is required, especially bearing in mind the presence of a large sovereign wealth fund that may reduce the incentive for reforms.

A focus on modernising systems, updating legislation, and building human capacity is crucial. An efficient tax system can enhance revenue performance without deterring private investment and household consumption. The adoption and full implementation of appropriate IT systems will reduce collection costs, enhance information sharing across relevant agencies, integrate and mainstream tax procedures, and minimise errors and arrears. In addition, efficient revenue generation would require a revision of existing legislation, as well as building institutional and human capacities within the Tax and Customs Administrations – including enhancing and clearly defining their powers.

Revising the Taxes and Duties Act of 2008 would help improve the legal framework. It is pertinent to revisit the current revenue framework to lay the foundation for a modern tax system. This will require addressing policy design shortcomings (e.g. unclear or omitted provisions), revising existing instruments, and adjusting tax rates. A new (general) tax law should comprise all tax measures, including new instruments, and incentives. Developing and approving a Tax Code that lays out clear operational procedures, rules and regulations would improve tax administration and complement the recent Customs Code (Decree-Law 14/2017) that codified the customs legal framework. Simplifying and streamlining existing tax laws and processes/procedures would support (voluntary) compliance and enforcement. An adequate national tax regime could comprise an (integrated) income tax, a broad-based consumption tax (VAT), an excise tax regime, an import duty compliant with international standards (including ASEAN), and could be supplemented by a property tax.

Streamlining and raising income tax rates could boost revenues without deterring business activity or undermining the purchasing power of individuals. There is significant scope to increase tax rates. At 15 percent, the corporate tax rate would remain low by international standards, and thus unlikely to affect (foreign) investment. In fact, evidence suggests that firms are more responsive to other factors (beyond tax) when deciding where to locate their operations.[72] Regarding individual incomes, the current differentiated treatment may create uneven tax burdens across types of income. The separate wage income tax – which is independent from the (broader) income tax applied to individuals – may lead to a higher burden on wages, thus promoting inequity. Merging the wage income tax and the (general) personal income tax could address this issue – thus creating a unified tax on all income. The application of extensive withholding (mostly as a final tax) would have the benefit of avoiding the need for filling annual returns. Introducing multiple (individual) income brackets could support tax progressivity, although that could come at the cost of complexity and create incentives for tax avoidance and evasion.[73] Moreover, a unified (corporate and individual) income tax rate would reduce the incentives and scope for tax avoidance schemes – by disguising personal income as corporate income. Finally, income coverage could be expanded, since dividends are not currently taxed – although they were up until 2008.

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72   These include market size, income levels, the availability of affordable and quality inputs (e.g. skilled workers and land tenure), adequate infrastructure, legal systems (e.g. contract enforcement), as well as macroeconomic and political stability. Hence, tax policy is a poor instrument to attract foreign companies.

73   Progressive tax rates increase administrative costs for both taxpayers and tax administrators, while a flat rate is generally regressive from an equity perspective. Hence, the benefits of introducing tax thresholds need to be weighed against these costs – especially when capacities are limited.

Raising (outdated) excise tax rates and introducing a sugar tax would increase revenues while tackling emerging health and environmental concerns. Taxing goods that present a threat to public health and safety could deter their consumption while supporting revenue mobilisation efforts. The introduction of a sugar tax could raise significant revenue while discouraging the consumption of sugary drinks. This could help tackle obesity and diabetes, which entail significant costs to society and the healthcare system.[74] The initial tax rate could be set at around 10 percent, which would be broadly in line with regional rates.[75] Moreover, existing excise tax rates were set in 2008 and have been gradually eroded by inflation – for those set on a per unit basis. It is therefore pertinent to reassess these rates in view of the twin objectives of raising adequate revenues and tackle public health and environmental concerns. For example, higher excise tax rates on tobacco products and alcoholic beverages could help address emerging health concerns (such as lung cancer and alcoholism) while raising revenue. Higher excises on gasoline and diesel, as well as on small passenger vehicles, could help promote alternative sources of energy (e.g. renewables and LNG) and modes of transport.[76] Only small passenger vehicles with a value above $70,000 currently pay excise tax – which means very few vehicles are taxable. The current threshold could be lowered, or even eliminated – although vehicles for public transportation could be tax exempted. In fact, thresholds could be introduced based on engine size (introducing progressivity), but this could raise administration costs. The collection of excise taxes requires physical control (e.g. at importation), therefore it is important to keep the number of excisable goods at manageable levels.

Introducing a value-added tax (VAT) would generate considerable revenue in an efficient manner. It is crucial to revise and approve the draft VAT law with a view to introducing the tax within 2-3 years. The VAT is a domestic (final) consumption tax that helps broaden the tax base and improve revenue diversification. A single rate could be levied at 10 percent – which is close to the ASEAN average – while eliminating the sales tax to simplify the tax system and avoid duplication. The VAT indirectly taxes individuals that would otherwise not comply with other taxes (such as income), thus increasing the efficiency of the tax system. Introducing a VAT could promote greater government accountability to citizens. Concerns over its regressive nature can be addressed through pro-poor public spending or through targeted exemptions (e.g. food predominately consumed by poor households). However, it is important to restrict exemptions, as some could disproportionately benefit wealthier households and erode the tax base. The introduction of a VAT could improve record keeping (by businesses), with potential spillover effects on bank credit. It could also encourage formalisation (i.e. tax registration) and generate information to identify income tax avoidance. The VAT could zero-rate exports with a view to support value addition, although there is currently limited transformation due to low production capabilities.[77]

A property tax could support the diversification of tax sources and raise further revenue in the medium term. Efforts to diversify revenue sources and increase tax collection would benefit from an assessment exploring the potential and viability of new taxes. A property tax (or municipal tax) could provide an additional source of finance and even support the ongoing decentralisation process. While it is vital not to overburden taxpayers and tax administrators, a focus on compliance and enforcement would ensure the

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74   Diabetes prevalence in adults is estimated to be 7 percent in 2019 (nearly double from that estimated in 2010), while overweight prevalence was estimated at 19 percent for adult males (WDI).

75   Since the per unit tax is easier to apply (upon physical inspection), an ad valorem rate could be calculated on sample market values and then transformed to a per unit rate. However, values should be periodically adjusted for inflation.

76   Taxing luxury goods would also improve the income distribution, since these are predominately purchased by wealthier households (e.g. passenger vehicles).

77   This could include merchandise exports and well as travel and transport services. However, zero-rating can increase the burden on the refund system, when compared to an exemption. Refunds and reverse charges should to be considered when implementing a VAT.

economy 'grows into' the tax system. Developing a good cadastre, using mass-valuation techniques (instead of market-base valuations), and adopting a uniform rate would help tackle some of the challenges typically associated with the adoption and implementation of a property tax. Satellite imagery could support the development of a comprehensive cadastre, as well as enable a regular and inexpensive monitoring of the tax base (Figure 2.20). Moreover, real-time satellite data can be cross-checked with administrative data to identify tax evasion (Figure 2.21). Developing (local) capacities for tax administration and enforcement would also be crucial.

Figure 2.20: Build-up area (Dili)

Source: World Bank

Figure 2.21: Built-up area (2000-18, % change)
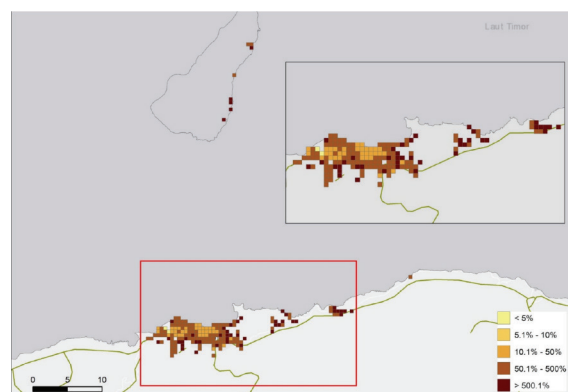
Source: World Bank

Minimising discretionary tax exemptions could yield significant benefits, while reporting tax expenditures would enhance transparency. Fiscal incentives include tax exemptions (or holidays), reduced/preferential rates, tax credits, investment allowances, among others. Eligibility may vary according to sector, location, investment volume, and firm characteristics such as size, ownership and export-orientation. However, fiscal incentives can generate considerable revenue losses (especially if investment would have taken place without them), distortions (different treatment), administrative costs, leakages, and even corruption.[78] To date, there is no measure of tax expenditures, but these are thought to be high. For example, the national accounts estimated import subsidies at $100 million in 2018, which is not far from total tax revenue collection in the same year – $128 million. The empirical evidence suggests that tax incentives are more effective in developed countries and that investments are not strongly influenced by low(er) tax rates in countries with a weak investment climate.[79] Hence, removing ineffective tax incentives would promote transparency and fairness, as well as minimise tax expenditures (i.e. foregone revenues) – without undermining investment.[80] Reporting on tax expenditures would help identify ineffective exemptions and provide a guide for their gradual phasing out.

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78 A simplified tax system reduces the potential for tax arbitrage and eases the technical burden on administration staff – which is important given existing capacities.

79 See "Foreign Direct Investment Determinants in OECD and Developing Countries".

80 Under the Private Investment Law, investors may be eligible to apply for a private investor certificate and have (generous) tax exemptions granted for a certain period. It is not clear if these are subject to a policy review to assess the impact of these exemptions on investment and employment levels.

Improving revenue administration is vital to increase (voluntary) compliance and enhance tax collection. The implementation of revenue policies depends critically on the quality of revenue administration. Key areas of improvement include taxpayer registration, access to information, risk management, and auditing. Some measures could include improvements to the taxpayer database – by addressing inconsistencies, errors and information gaps – and greater integration between the business registration process (in SERVE) and tax registration. Information sharing could help classify taxpayers as active and inactive, and thus improve non-compliance statistics. Tax identification number (TIN) assignment should be in accordance with international best practices, and should be consolidated – as some taxpayers have multiple TINs, which complicates assessment of tax liabilities and audits. The penalties and fines imposed are also thought to be insufficient to significantly deter non-compliance. There is also a need to improve tax auditing by enhancing human resources and adopting a risk-based model.[81] Improved monitoring of revenue arrears and stronger debt recovery measures are needed to avoid long backlogs that become irrecoverable. The dissemination of complete, accurate and clear tax information would help clarify tax obligations and steps to comply.[82] This could be complemented by tax education, public awareness programmes, and enhanced taxpayer services – such as call centres to provide advice and tax centres to support electronic filling.[83] The development of compliance improvement plans – by the Tax and Customs Authorities – could help address the most pressing constraints.

Modernising tax administration would improve efficiency by reducing non-compliance and collection costs. A modern revenue administration should comprise clear and simple regulations (to facilitate their application and compliance), efficient collection systems and procedures, risk-based analysis, service orientation, function-based organisational structures, and high level of automation. Some of these can be supported by information technology (IT) solutions. It is therefore important to fully implement the rollout of ASYCUDA World and SIGTAS v.3, and ensure greater interoperability with other relevant IT systems. Online systems for lodging tax statements save time, minimise errors, and facilitate the reconciliation of accounts. Affordable, fast and reliable internet is key for taxpayer accessibility, but bandwidth and server capacity are also important to deal with an expanded electronic filing system (paperless tax administration with returns, payments, invoices and other services done online). Therefore, it is crucial to improve service access and quality.

Box 2: ASYCUDA and SIGTAS

The recent implementation of ASYCUDA World is an important development that needs to be fully operationalised. The Customs Authority has recently implemented an upgrade to its information management system – the Automated System for Customs Data (ASYCUDA). The new system – called ASYCUDA World, which replaces ASYCUDA ++ – handles manifests, import declarations, accounting and transit procedures, among others. The new version removes manual clearance processes (that delay the release of goods and are vulnerable to exploitation), enhances the monitoring of revenue collection, improves data collection and performance monitoring, and enables data exchange with relevant institutions – such as the Tax Authority and other agencies involved in customs clearance. However, some manual processes continue to exist and the system is not yet fully operational. The Customs Authority is a key institution in revenue collection, since a significant proportion of total tax revenues are collected at the customs stage.

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81   The model should combine data sources (e.g. customs data and procurement contracts) to identify discrepancies and irregularities. Risk management can be significantly improved through data integration – since information sharing is currently undermined by the use of different systems (that are not interfaced) across agencies.

82   Laws and procedures are available in the MoF website and relevant offices, but are not always up to date and sometime are only in Portuguese – undermining access to information.

83   These measures would increase voluntary compliance by supporting self-assessment.

The forthcoming SIGTAS upgrade will address several shortcomings of the previous version. The Tax Authority operates its own information system – the Standard Integrated Government Tax Administration System (SIGTAS). The current system (version 1) is not able to retrieve disaggregated information (e.g. age of arrears) and does not interface with relevant third-party data – such as commercial banks, Customs Authority (ASYCUDA), and Ministry of Finance (FreeBalance). Hence, the system lacks the ability to support a comprehensive (automated) risk-management approach, while payment reconciliation needs to be performed manually. Moreover, the system does not allow electronic processing (i.e. registration, filing, payment, assessment). An upgrade to SIGTAS version 3 is currently under way, which will help overcome some of these challenges – by limiting manual time-consuming processes and improving taxpayer registration information. This upgrade is likely to improve tax compliance and collection, although it should be complemented by the recruitment of additional qualified staff to undertake audits.

Investing in capacity building, training, and recruitment is of vital importance. Human resources is a cross-cutting theme, since the effectiveness of policy, legislation, procedures, IT systems, customer service, and audit hinge on the availability of a sufficient number of qualified staff. Institutional capacity is limited, with the Tax and Customs Authorities being understaffed and lacking skills and required equipment (for inspection). Providing tailored training and capacity building can support the operational capabilities of the tax system. It will be important to work closely with educational institutions – such has the National University of Timor-Leste – to ensure that there is a stream of qualified resources that can be recruited into the civil service. Meanwhile, because it may not be possible to rapidly increase the number of skilled personnel, it is critical to find a balance between policy objectives and the administrative burden – through the simplification of tax instruments in line with existing capacities. Moreover, improving tax analysis would facilitate and improve decision-making. For instance, several countries have conducted tax-related assessments, such as the Tax Expenditure Assessment (TEA), Tax Policy Assessment Framework (TPAF), Tax Administration Diagnostic Assessment Tool (TADAT), and Revenue Administration Gap Analysis (RA-GAP). Accurate revenue forecasting, a more granular assessment of tax gaps (using administrative data), and a cost-benefit analysis on tax expenditures (using tax exemption data) would be useful to inform policy making.

2.5 Conclusions and Recommendations

Domestic revenues are very low by international standards, averaging less than 12 percent of GDP since 2008. The stated policy objective is to achieve a domestic revenue level of 18 percent of GDP by 2023, which is about 50 percent higher than the current levels. Tax revenue is particularly low, averaging 8 percent of GDP since 2011. Although tax revenues have increased through time, this has been indirectly supported by growing public spending. The composition of tax revenues has changed somewhat since 2002, with income and excise taxes growing in importance. Revenue collection has broadly kept pace with economic activity, but it needs to go well beyond that benchmark – as it remains considerably below regional and income peers. Improved domestic revenue mobilisation efforts can help bridge the very large budget financing gap, and thus enable the funding of critical public spending without depleting the Petroleum Fund.

The legislation governing Timor-Leste's revenue framework was approved more than 10 years ago and needs to be updated. The tax regime is based on the provisional legislation passed by the United Nations Transitional Administration in East Timor (UNTAET). In 2008, the Parliament passed the Taxes and Duties Act – an overarching law governing direct and indirect taxes. Most of the modifications reduced the statutory tax rates applied, which was enabled by growing (offshore) petroleum revenues and a view to attracting foreign investment. The Taxes and Duties Act has some shortcomings, which undermine the efficiency and effectiveness of the tax system.

Tax reforms are needed to ensure that revenue levels are adequate to sustainably finance public expenditures. A modern tax system can contribute to greater economic efficiency and equity. A prioritised and sequenced set of tax reforms (relating to both policy and administration) should be pursued in the coming years. Measures to diversify revenue sources, expand the tax base, and improve compliance are key to generate sufficient domestic resources to bridge the large budget financing gap – especially by enabling the funding of key public services without threatening fiscal sustainability. In addition, taxation is known to promote transparency and accountability – between citizens and the state. However, strong political commitment and ownership is required, especially bearing in mind the presence of a large sovereign wealth fund that may reduce the incentive for reforms.

The implementation of tax policy and administration reforms could (at least) double tax revenue collection. The tax framework comprises several types of taxes, although value-added and property taxes are notably absent. The lack of a value-added tax accounts for much of the gap to its peers. Moreover, the current income tax rate is among the lowest statutory tax rates in the world. Average effective tax rates are also low, owing to a narrow tax base as well as limited compliance and enforcement. Estimates on the tax potential suggest that, if existing gaps in tax policy and administration are addressed, tax revenue collection could (at least) double. It is imperative to mobilise additional domestic revenues to ease pressures on the Petroleum Fund.

In terms of tax policy reforms, revising the current tax instruments and increasing tax rates could yield significant benefits. Introducing a value-added tax (VAT) would generate considerable revenue in an efficient manner. Concerns over its regressive nature could be addressed through pro-poor public spending or through targeted exemptions. Raising (outdated) excise tax rates – especially on tobacco and alcohol – and introducing a sugar tax would increase revenues while tackling emerging health and environmental concerns. Streamlining and raising income tax rates could boost revenues without deterring business activity or undermining the purchasing power of individuals. Even at 15 percent, the corporate tax rate would remain low by international standards, and thus unlikely to affect (foreign) investment. A property tax could also support the diversification of tax sources and raise further revenue in the medium term. Hence, a new tax regime could comprise a broad-based consumption tax (VAT), an excise tax regime, an (integrated) income tax, and an import duty compliant with international standards (including ASEAN) – which could be supplemented by a property tax. This would implicitly lead to the elimination of the sales tax and the services tax to avoid duplication. Minimising discretionary tax exemptions could also yield significant benefits, while reporting tax expenditures would enhance transparency and support their gradual phasing out.

With regard to tax administration reforms, a focus on modernising systems and building human capacity is crucial. The implementation of revenue policies depends critically on the quality of revenue administration. Improving revenue administration is vital to increase (voluntary) tax compliance, enhance tax collection, and reduce costs. Key areas of improvement include taxpayer registration, access to information, risk management, and auditing. A modern revenue administration should comprise clear and simple regulations (to facilitate their application and compliance), efficient collection systems and procedures, risk-based analysis, service orientation, function-based organizational structures, and a high level of automation. Some of these can be supported by information technology (IT) solutions. The adoption and full implementation of appropriate IT systems (e.g. ASYCUDA and SIGTAS) will reduce collection costs, enhance information sharing across relevant agencies, integrate and mainstream tax procedures, and minimise errors and arrears. In addition, efficient revenue generation would require a revision of existing legislation, as well as building institutional and human capacities within the Tax and Customs Administrations – including enhancing and clearly defining their powers.

03

Public Expenditure

Improving the quality of public spending is key to accelerate economic and human development. Government expenditure levels have been among the highest in the world over the past decade. Large increases in public spending resulted from a broad-based surge in most appropriation categories, but public transfers have grown in importance. The share of rigid expenditures in total spending has been increasing, but there remains considerable scope for fiscal adjustments – particularly to consolidate and reallocate resources across categories. Moreover, estimates suggest that the impact of public expenditure on economic activity has been very limited. This suggests that the longstanding policy of frontloading capital investments is failing to address supply-side constraints and thus support medium-term economic growth. There are challenges along the entire budget cycle that undermine service delivery – especially in terms of planning and budgeting – which call for much-needed public financial management reforms. Growing institutional fragmentation is also a concern, and should be carefully considered. Overall, improving the quality of public spending is crucial to accelerate economic growth and build human capital, while greater fiscal discipline is vital to secure fiscal sustainability.

Main recommendations: (i) undertaking critical public investment management reforms – especially on project appraisal and selection – as outlined by the PIMA; (ii) enhancing the selectivity (and transparency) of public grants and reforming the social protection system; (iii) developing adequate pay and employment policies, and improving human resource planning; (iv) curbing the budget for goods & services and initiating a procurement reform (following the MAPS assessment); and (v) pursuing critical public financial management reforms – with a focus on service delivery – as informed by the recent PEFA assessment.

Chapter structure: This chapter starts by providing a brief overview of aggregate expenditure trends, followed by a detailed analysis on the composition of spending – with a focus on the economic, administrative, and functional classifications. Subsequently, it discusses issues related to the efficiency and effectiveness of public spending. The analysis benefited from the construction of a BOOST database for the period 2008-2019, which draws on data from the Government's financial management information system (Figure 3.1).[84] The chapter also discusses public financial management bottlenecks, with a focus on service delivery. Key recommendations are presented with a view to improving the impact of public spending and securing fiscal sustainability.

Figure 3.1: Public spending by type of institution, function and economic use (USD million, 2018)
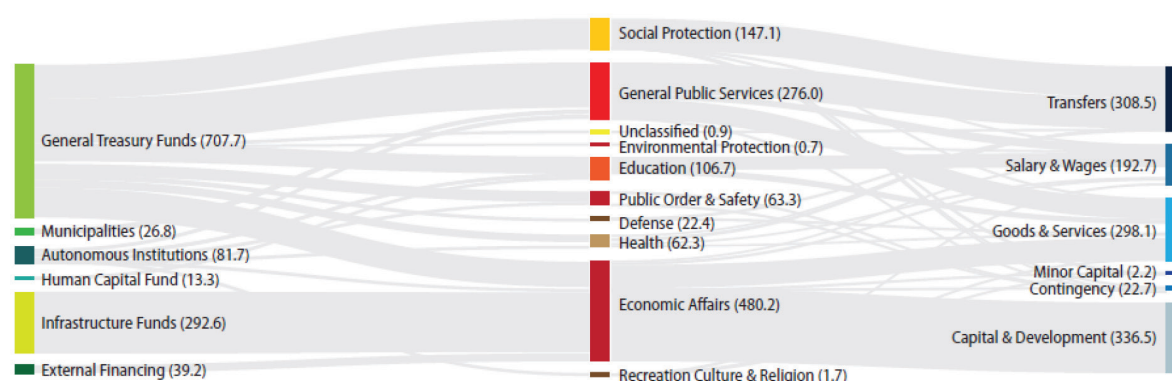
Source: Ministry of Finance (BOOST database).

3.1 Levels and Budget Execution

The level of government spending has been very high during the past decade and among the highest in the world. Total public spending has grown substantially since independence, particularly after petroleum revenues started to flow in the mid-2000s. In nominal terms, spending grew steadily and peaked at $1.6 billion in 2016 (Figure 3.2).[85] Public expenditure grew at an average (real) rate of 14 percent per year in 2008-2016, which was much faster than the real GDP growth rate of 6 percent for the same period. Since

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84   BOOST is a user-friendly platform that facilitates the analysis of large amounts of public spending data and enables a granular assessment of the underlying dynamics. Technical support has been provided to ensure internal consistency.

85   There is no adequate deflator for fiscal spending, since the CPI deflator captures household consumption spending, while the GDP implicit deflator is much broader than the public sector. Using an inconsistent deflator could lead to misleading conclusions. Nonetheless, an implicit government expenditure deflator is constructed from the National Accounts to compute (real) growth rates.

then, expenditure has moderated largely due to the political uncertainty that followed the 2017 elections.[86] Hence, recent fiscal trends have been driven by the political situation, rather than a significant change in the policy stance – which remains broadly expansionary. Overall, public spending averaged 86 percent of GDP between 2008 and 2019. Public expenditure increased strongly as a share of GDP until 2012, when it peaked at over 100 percent. Since then, it has fluctuated considerably – although it remains very high by international standards. Public spending levels have been among the highest in the world (Figure 3.3).

Figure 3.2: Public spending (USD and % GDP)
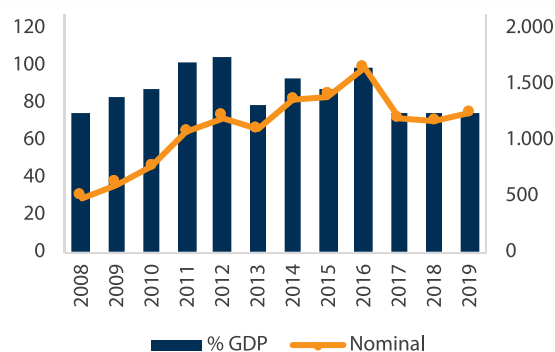
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.3: Public spending (% GDP, 2014-19)
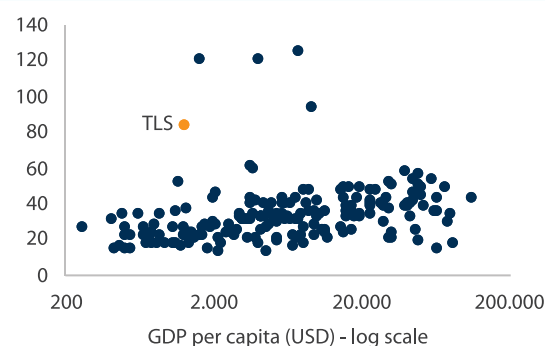
Source: Ministry of Finance (BOOST) and IMF

Regular budget revisions take place during the year, which undermines budget credibility. The initial budget approved by Parliament often suffers modifications, either through a budget rectification or virements (Figure 3.4). While this flexibility enables a response to changing circumstances, it can also undermine the credibility of the budget as a statement of government policy – if adjustments are due to poor planning and budgeting, or are politically motivated. Budget rectifications – which are amendments that require parliamentary approval – were made in 2008, 2010, 2015 (even if not affecting the overall fiscal envelop), and 2016. The 2016 mid-year rectification was particularly large, which was justified by the need to advance key infrastructure projects before the 2017 parliamentary and presidential elections. Moreover, virements – which entail a shift of appropriations – have occurred every year.[87] However, these have also led to a change in the total budget for 2012 and 2013.[88]

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86   In 2017, spending was lower due to a lower budget, deferral of (capital) spending in late 2017, and limited spending decisions in a climate of political uncertainty. In 2018, spending was severely constrained by the lack of an approved budget, despite a recovery towards the end of the year. The 2019 budget was prepared in a very short period of time.

87   Administrative budgets can be modified up to 20 percent of the (initial) budget appropriation from where funds are to be moved. Transfers can be made within and between appropriation categories, but no transfers are allowed out of wages & salaries and capital development. Virement requests must be supported by a justification and description of impact on related program and activities, and submitted for review (by the Prime Minister's Office) and authorisation (by the Ministry of Finance).

88   These are due to large carryovers relating to the Infrastructure Fund and the Human Capital Development Fund.

Figure 3.4: Budgeting (USD million)
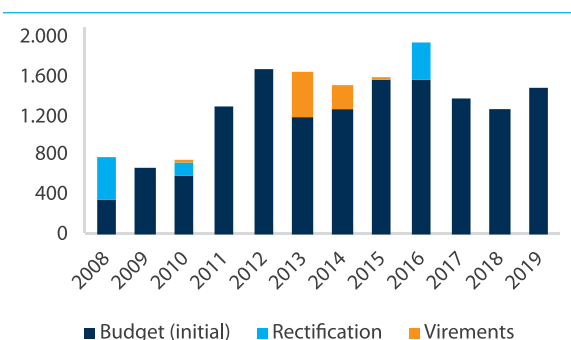
Source: Ministry of Finance (BOOST).

Figure 3.5: Budget execution (USD million and %)
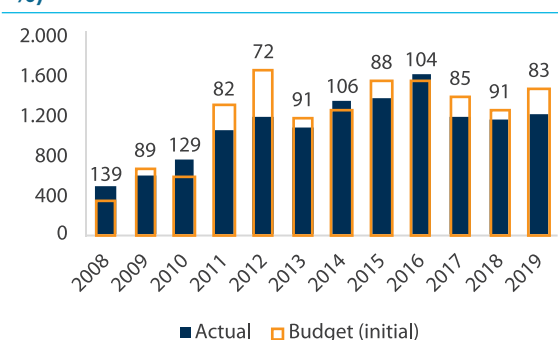
Source: Ministry of Finance (BOOST) and staff calculations.

Budget execution performance has been low, highlighting challenges in planning, budgeting, and implementation. To assess budget execution, a focus on the initial budget is warranted – rather than the final budget – since it is likely to provide better insights on the quality of the budget process and implementation capacity.[89] Budget execution averaged 97 percent since 2008, but this value masks significant variability across (and within) years.[90] Paradoxically, comparing actual spending with the final (revised) budget yields a large execution gap – averaging 83 percent since 2008. Significant deviations are noted, with large under-budgeting in 2008 and 2010, and considerable over-budgeting in most years – execution rates were below 90 percent in six years (Figure 3.5). Systematic over- or under-budgeting reflects poor planning, budgeting, and/or implementation. For instance, there might be a weak link between planned activities and the proposed budgets, or an inability to adjust initial budget requests to the approved allocation – since (ambitious) budget proposals submitted by line ministries are often cut at subsequent stages (e.g. in the budget review committee or in parliamentary discussions). Poor budget execution likely leads to sub-optimal outcomes in terms of the efficiency and effectiveness of public spending.

Budget execution has been partly undermined by delays in the approval and promulgation of the state budget. The Government should submit a draft budget law to the legislature by the 15 October of every year – as per the 2009 Budget and Financial Management (BFM) law – which should then be approved by the Parliament and promulgated by the President before the start of the new fiscal year.[91] In the past 11 years, only four state budgets were promulgated on time – i.e. before 31 December (Table 5). Most delays have been caused by political (rather than technical) reasons. The President vetoed the initial 2016 state budget proposal, which was reapproved unchanged by the Parliament and subsequently promulgated – since the President can only veto a budget proposal once. The President also vetoed the 2019 state budget, which was later promulgated with some changes – namely, the elimination of a provision to purchase stakes

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89   Budget execution is often used as a measure of absorptive capacity, although it may reflect a mixture of public financial management bottlenecks – in planning (e.g. anticipate needs), budgeting (e.g. estimate costs), and execution (e.g. procuring) – and political decisions (or uncertainty).

90   The budget execution rate reveals the proportion of the state budget that is actually spent. In cash-basis accounting, only processed payments are recorded as actual expenditure – thus excluding commitments (funds earmarked to a specific expenditure) and obligations (payments requiring final approval). Fiscal data often exhibits a strong seasonal pattern, whereby spending accelerates through the (fiscal) year. After a state budget is promulgated, it takes some time to make commitments/obligations, while cash payments are sometimes processed only after the goods and services have been provided.

91   The fiscal year coincides with the calendar year since 2007. If a budget is not promulgated before 31 December, each spending unit can spend up to one-twelfth of the previous budget per month (under the duodecimal regime).

in the Greater Sunrise Joint Venture. The 2018 budget was 9 months late, as a consequence of the political stalemate, while the 2020 budget also suffered similar delays. The timeliness of the budget process is key to enable a smooth execution of the budget.

Table 5: Budget Approval and Promulgation Dates

Budget	Submission (Government)	Approval (Parliament)	Promulgation (President)	Delay
2011	12 Jan 2011	28 Jan 2011	14 Feb 2011	> 1 month
2012	9 Nov 2011	25 Nov 2011	21 Dec 2011	-
2013	4 Feb 2013	20 Feb 2013	1 Mar 2013	> 2 months
2014	25 Oct 2013	24 Jan 2014	3 Feb 2014	> 1 month
2015	19 Sep 2014	18 Dec 2014	29 Dec 2014	-
2016	29 Oct 2015	18 Dec 2015 / 8 Jan 2016	14 Jan 2016	2 weeks
2017	13 Oct 2016	9 Dec 2016	28 Dec 2016	-
2018	7 Aug 2018	7 Sep 2018	27 Sep 2018	> 8 months
2019	22 Nov 2018	22 Dec 2018	7 Feb 2019	> 1 month
2020	15 Sep 2020	8 Oct 2020	19 Oct 2020	> 9 months
2021	15 Oct 2020	12 Dec 2020	28 Dec 2020	-

Source: Ministry of Finance and news articles.

3.2 Composition and Drivers

The chart of accounts enables a categorisation of different types of public expenditure, but it could be improved. Fiscal data can be analysed from different perspectives. Public spending is recorded with the support of a chart of accounts (CoA), which currently enables an assessment according to an economic classification (by appropriation category, item, and line item) and administrative classification (by ministry and division/department).[92] The CoA has evolved to keep pace with changes in government structures. For the purposes of this report, a bridge table was developed to provide a functional classification that would enable an analysis of spending by sector (such as education and health). This was done in the context of the construction of a BOOST database to enable a more granular assessment of fiscal trends. However, there remain significant challenges and thus scope for improvement. For instance, there are concerns that some expenditures would be better classified in a different appropriation category (e.g. transfers to RAEOA-ZEESM). There are also some data quality concerns, due to human error (data entry) and the lack of unique codes. Moreover, the organic structure of the Government has changed through time – with the creation, elimination, separation and merging of several public entities – which makes some comparisons across time very difficult. Finally, more work is required to build and validate a COFOG-compliant classification.

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92 The economic classification comprises six key categories, namely: salary & wages, goods & services, public transfers, capital & development, minor capital, and contingencies. The first three are considered to be recurrent spending, while the subsequent two are capital spending. Contingency expenditures can be mapped to the other appropriation categories. The administrative classification provides expenditure details by line ministry, autonomous public agency, and municipality.

3.2.1 Economic Classification

Large increases in public spending resulted from a broad-based surge in most appropriation categories. Public expenditure increased steadily until 2016, with the exception of 2013 (Figure 3.6).[93] This policy stance reflects a political decision to use government spending to secure peace and promote economic development, which has been supported by abundant petroleum revenues. Public expenditure was constrained in 2017-2018 due to a political stalemate, while the 2019 budget was prepared in a short period of time. Salary & wages have increased steadily through time. Spending on goods & services grew very strongly between 2011 and 2014 – nearly doubling in three years – but subsequently moderated. Public transfers have also increased considerably, especially between 2013 and 2015, when they more than doubled. Spending on capital & development has been very volatile, although it has mostly been above $300 million since 2011. In fact, 2011 and 2016 observed record-high spending levels of more than $500 million. Minor capital has a very small weight in total spending. Contingency expenditures are also small, averaging 1 percent of total spending – which is below the limit of 5 percent established by the BFM law.

Figure 3.6: Economic categories (USD million)
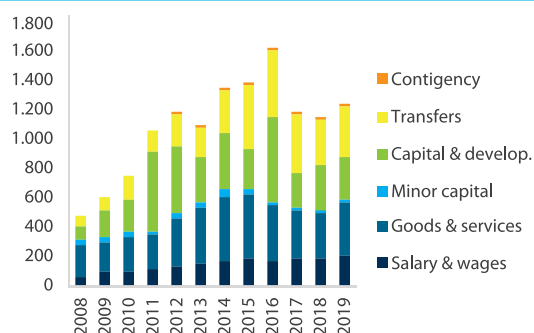
Source: Ministry of Finance (BOOST).

Figure 3.7: Economic categories (% total)
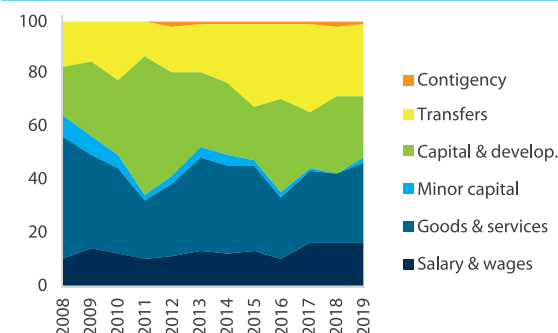
Source: Ministry of Finance (BOOST) and staff calculations.

There has been a moderate shift in the composition of public spending, with transfers increasing in importance. The relative weight of each appropriation category can provide an indication of the overall fiscal strategy. In recent years, goods & services, transfers, and capital & development have been the largest appropriation categories, with broadly similar shares – despite some volatility (Figure 3.7). Although the share of salary & wages remains relatively low – averaging 13 percent since 2008 – it is important to note that Timor-Leste has one of the highest expenditure-to-GDP ratios in the world. Hence, the size of the wage bill still deserves some scrutiny. Public transfers have risen considerably through time, in part due to the creation of a generous pension for war veterans to support social stability (following the 2006 civil crisis), as well as large transfers to the RAEOA-ZEESM (which were particularly high in 2015-2017). Their share in total spending has increased from 13 percent in 2011 to 34 percent in 2017. Capital expenditures have been quite volatile, with clear peaks in 2011-2012 and 2016. The former can be explained by large (one-off) investments in the electricity sector, while the latter was supported by a mid-year budget rectification that aimed to frontload spending on roads, ports, and the Tasi Mane project.[94]

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93   This was induced by the completion of the large investments in electricity infrastructure that occurred during 2011-2012.

94   In 2016, a $130 million payment was made to an escrow account in relation to the construction of the Tibar Bay Port – Viability Gap Funding for PPP concessionaire.

There has been a strong prioritisation of capital spending, although recurrent spending has also grown considerably. Recurrent spending – which comprises salary & wages, goods & services, and transfers – is typically associated with expenditures necessary for the basic functioning of the government and public service provision. Recurrent spending has been very high, averaging 60 percent of GDP in 2014-2019 (Figure 3.8). Moreover, capital spending has averaged one-third of total spending since 2008, which stands out from regional peers – since most allocate a (much) lower budget share to capital outlays. Capital spending levels are very high by international standards (Figure 3.9). This raises questions on the efficiency and effectiveness of public investment, since large capital investments have not led to an acceleration of economic growth. Moreover, some budget items might be not be adequately classified – such as transfers to RAEOA-ZEESM, which are known to be spent mostly on capital projects – thus heightening concerns over the lack of impact of capital spending on economic growth.[95]

Figure 3.8: Current spending (% GDP, 2014-19)

GDP per capita (USD) - log scale
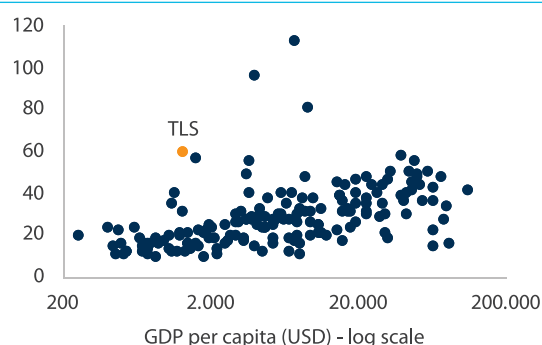
Source: Ministry of Finance (BOOST) and IMF.

Figure 3.9: Capital spending (% GDP, 2014-19)

GDP per capita (USD) - log scale
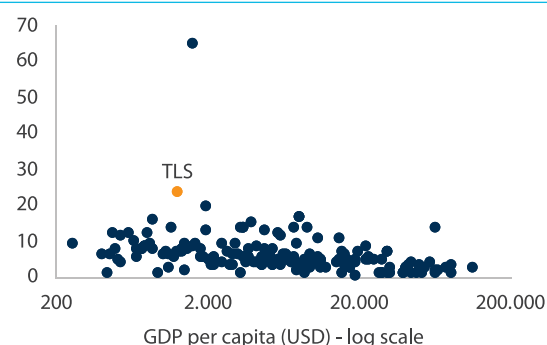
Source: Ministry of Finance (BOOST) and IMF.

Budget revisions have largely benefited the capital & development budget. Adjustments to the initial budget appropriations have been systematic, either through virements or budget rectifications. The difference between the initial budget approved by Parliament and the final budget – reflecting virements or a rectified budget – has been very large in some years. For instance, the initial budget increased by about $400 million in three years – 2008, 2013 and 2016 (Figure 3.10). Capital & development received large mid-year budget increases in 2013, 2014 and 2016, while goods & services accounted for most of the increase in 2008. Although budget revisions were low in both 2017 and 2018, the Parliament rejected a budget rectification proposal submitted after the mid-2017 election, and the 2018 budget was only approved in September 2018.

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95 On the other hand, the Tibar Bay Port VGF should have been classified as a public transfer.

Figure 3.10: Budget revisions (USD million)
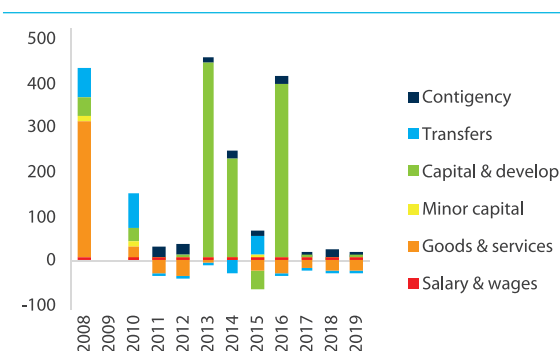
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.11: Contributions to execution (USD million)
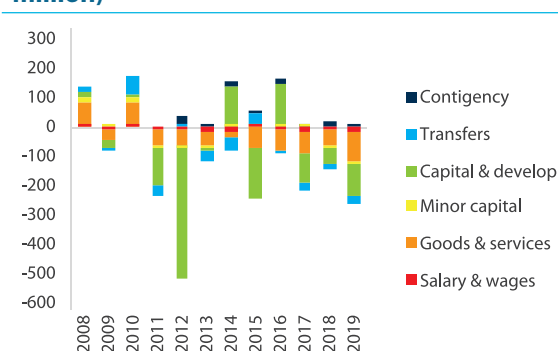
Note: A positive value means over-execution.
Source: Ministry of Finance (BOOST) and staff calculations.

Challenges in budget execution mainly originate from the capital & development category. Budget execution at the appropriation category can provide useful information on the key drivers of the overall performance in execution. Capital & development is the main category responsible for differences between the initial budget and actual expenditure, including the over-execution in 2014 and 2016, and under-execution in most other years (Figure 3.11).[96] The establishment of the Infrastructure Fund (IF) in 2011 was aimed at improving the capacity to execute the capital budget. However, this institutional development does not seem to have led to a commensurate improvement in the execution rate of the capital & development budget – partly because it has been accompanied by even larger allocations.

An analysis of fiscal force and momentum provides further insights on the drivers of public spending. Decomposing expenditure growth into its key drivers can improve the understanding of recent dynamics in public expenditure. The approach used here is based on the concepts of 'momentum' and 'force'.[97] Momentum relates to the contribution of a particular spending item to the percentage growth in total spending in a given time period, while force measures the percentage point change in spending between years (Table 6). Force and momentum convert expenditure shares and growth rates into units that can be added to equal total expenditure growth (momentum) or acceleration in growth (force), highlighting the most important items of expenditure. The force measure is additive, meaning that components add up to 'acceleration', and is also comparable across time and budget categories. Force can help identify relatively small budget items that are growing fast (i.e. small size but large acceleration), or items that are growing at a modest pace but are still driving trends owing to their large size (i.e. small acceleration but large size). Cases where both size and acceleration are large are of particular concern.[98]

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96   Spending on capital & development tends to be end-loaded – that is, it mostly occurs towards the end of the year.

97   See Merotto et al (2015).

98   The approach is similar to assessing drivers of economic growth, whereby it is not just the growth of a component that matters, but also its weight in output.

Table 6: Fiscal force and momentum

Concept	Physics	Economics	Example
Speed	Velocity (V)	Growth (rate)	2015= 15% 2014 = 10% 2013 = 9%
Acceleration	Change in Velocity $(V_1 - V_0)$	Change in Growth	2015 = 15% - 10% = 5 percentage points 2014 = 10% - 9% = 1 percentage points
Size	Mass (M)	Share	2014 = 10% of the budget 2013 = 10% of the budget
Momentum	Mass x Velocity (M * V)	Percentage point contribution (Share x Growth)	2015 = 10% * 15% = 1.5 pp contribution 2014 = 10% * 10% = 1 pp contribution
Force	Change in momentum (assuming fixed Mass, it is Mass x change in Velocity) $M * (V_1 - V_0)$	Change in contribution (Share x change in Growth)	Share x change in Growth = 10% * 5 pp = 0.5 pp or Change in pp contribution = 1.5 pp - 1 pp = 0.5 pp

Note: 'pp' stands for percentage points

Source: Adapted from Merotto et al (2015).

Spending growth has been mainly fuelled by a positive momentum in capital & development expenditures. During the 2008-2019 period, spending on capital & development accounted for most spending growth (momentum), followed at some distance by transfers (Figure 3.12). Capital & development also accounted for most of the overall force (Figure 3.13). A strong positive momentum in capital expenditure in one year has been usually followed by a large negative momentum, which suggests weaknesses in public investment management. For instance, the rapid acceleration of public investment in 2011 was followed by a strong deceleration, while the large fiscal momentum (and force) observed in 2016 were offset in 2017 – albeit due to the political stalemate. A rapid (and volatile) scaling up of public investment may fail to deliver strong economic growth if it creates significant inefficiencies.

Figure 3.12: Fiscal momentum (percentage points)
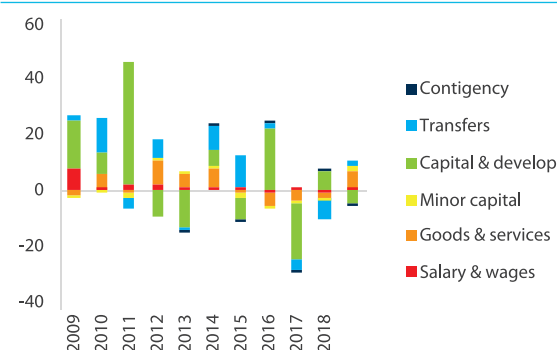
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.13: Fiscal force (percentage points)
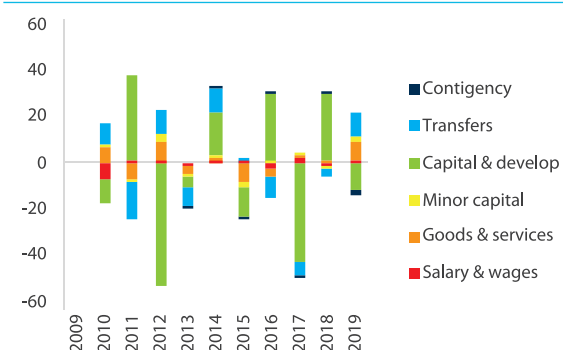
Source: Ministry of Finance (BOOST) and staff calculations.

An analysis of budget rigidities can help fiscal consolidation efforts by shedding light on discretionary spending items. Budget components vary within a spectrum of flexibility, since not all can be easily modified by the authorities in the short term. Having a clear understanding of the budget items driving expenditure growth and how rigid they are can support policymakers in anticipating fiscal pressures. Budget items that cannot be reassigned without entailing a high cost are generally said to be 'rigid'. Budget components classified as rigid (or inflexible) are thus not subject to the immediate discretion of the authorities. For the analysis, a typology of expenditure rigidity is applied to the economic classification (Table 7).[99] Civil servant salaries and public benefit transfers (which includes pensions) fall under the high rigidity category, since these cannot be easily reduced. In fact, these expenditures were ring-fenced in 2018, when treasury resources were scarce due to the lack of access to the Petroleum Fund. Payments for overtime, allowances, and professional services are classified as medium-high rigidity. Public grant transfers and contingency expenditures are considered to be medium rigidity. Lastly, all capital expenditures and spending on goods & services (excluding professional services) are categorised as low rigidity.

Table 7: Fiscal rigidity

Rigidity level	Appropriation category (budget item)
High	Salary & wages (salary), public transfers (personal benefit)
Medium-High	Salary & wages (overtime and allowances), goods & services (professional services)
Medium	Public transfers (grants), contingency
Low	Goods & services (except professional services), capital & development, minor capital

Note: Adapted from Cetrángolo et al (2010)

Discretionary spending is relatively high – albeit declining – suggesting that there is considerable scope for fiscal adjustments. Most public expenditure comprises items classified as having low rigidity (Figure 3.14). On the other end of the spectrum, high rigidity expenditures averaged 23 percent of total expenditure (Figure 3.15). The combined share of high and medium rigidity expenditures in total spending has risen through time, which is concerning since it solidifies the current high spending levels and constraints the scope of fiscal policy. Given concerns over medium-term fiscal sustainability, a potential fiscal adjustment to bring expenditure levels down to a more moderate share of GDP could be costly if the share of rigid expenditures continues to rise – especially if these are legally binding. It is thus important to curb key items (e.g. salary & wages and public transfers) before they build a strong momentum that is difficult to halt. At present, the relatively low degree of budget rigidity suggests that there is ample scope for changes in budgeting – particularly to consolidate and reallocate resources across categories to improve efficiency and effectiveness. However, there are some risks in salaries (set to grow with decentralisation), professional services (dependence on consultants), fuel for generators (exposed to volatile international oil prices), pensions (generous contributory and non-contributory schemes), among other categories.

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99   The definition of expenditure rigidity that is used in this analysis follows a conceptual framework from the literature – which lists the broad categories by rigidity level. Cetrángolo et al (2010) define fiscal rigidity as "the institutional constraints that limit the ability to change the level or structure of public budgets in a specified period of time".

Figure 3.14: Fiscal rigidity (USD million)
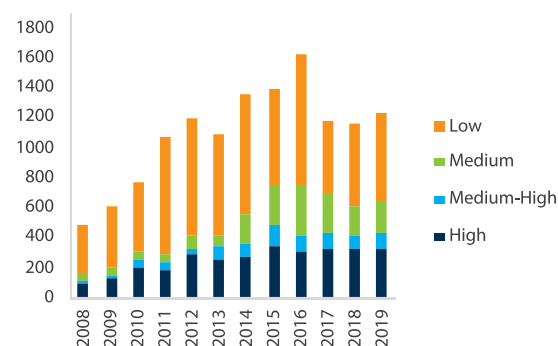
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.15: Fiscal rigidity (% total expenditure)
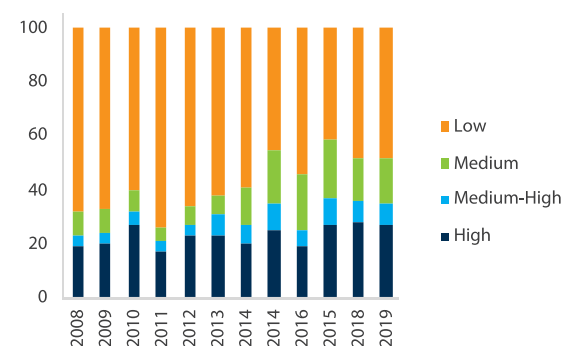
Source: Ministry of Finance (BOOST) and staff calculations.

Salary & Wages

Spending on salary & wages has grown steadily, while budget execution has been high. The appropriation category salary & wages has grown progressively through time, from about $50 million in 2008 to over $200 million in 2019 (Figure 3.16). Some of the large increases can be partly explained by the conversion of contracts – from temporary contractors to permanent civil servants. However, salaries relating to RAEOA-ZEESM have been recorded as public transfers since 2015, which has led to an artificial reduction in the amount spent on civil servants – salary & wages in RAEOA-ZEESM were around $9 million in 2019. In 2018, the decline in spending might be explained by the delay in hiring for vacant positions. The execution rate has been relatively high, as expected, averaging 96 percent. Budget revisions have been limited (in terms of value), thus the execution rate using the final budget is broadly similar. In 2019, three ministries accounted for over half of the total expenditure on salary & wages: Ministry of Education (30 percent), Ministry of Health (11 percent) and Ministry of Interior (11 percent). In fact, the education and health sectors account for over half of the total wage bill when including autonomous public agencies – such as the National Hospital Guido Valadares (HNGV) and the National University of Timor-Leste (UNTL) – and other related institutions.

Figure 3.16: Execution of salary & wages (USD million)
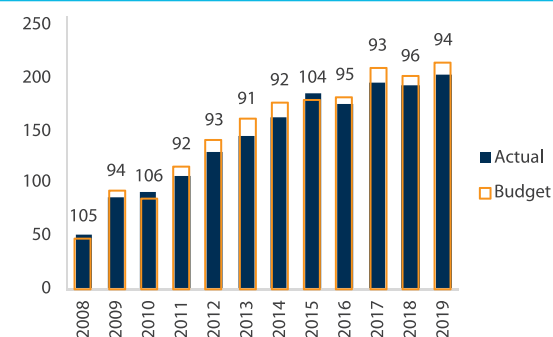
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.17: Composition of salary & wages (USD million)
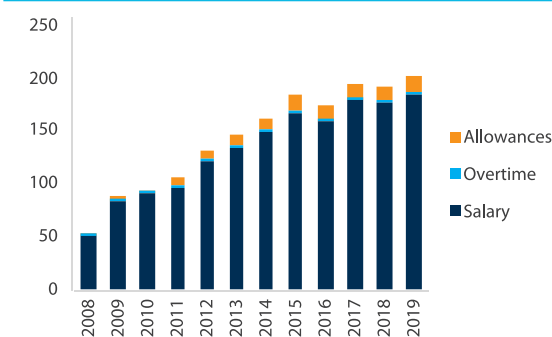
Source: Ministry of Finance (BOOST).

Salaries account for most of the salary & wages category, although allowances are not trivial. The salary & wages appropriation category is subdivided into three items: salary, allowances, and overtime. Salary accounted for an average of 93 percent of the total, while allowances (6 percent) and overtime (1 percent) lagged considerably behind (Figure 3.17). The execution rate of salary (98 percent) is also higher than the other items, especially allowances (74 percent). It is not possible further analyse the composition of salaries due to the lack of detailed data.

The wage bill is relatively large when compared to regional and income peers. Although spending on salary & wages does not account for a large share of total spending, it averaged 12 percent of GDP in recent years. This is quite high when compared to regional and income peers, even if other small (island) states have similarly high wage bills (Figure 3.18). Moreover, expenses related to temporary contracts, as well as payments to consultants and advisors, are recorded under professional services in the goods & services category. Hence, the wage bill is likely to be significantly underestimated (Figure 3.19). In 2017, the salary scale of the civil service general career regime was revised. Most civil servants are under the general career regime, but special regimes have grown over time. These have additional and more constraining eligibility criteria, but are associated with higher salaries and benefits. There are about 16,000 civil servants under the general regime, 10,000 under the teachers' regime, 3,600 health professional, and 1,900 in management positions.[100] Additional regimes include: anti-corruption specialists, scientific police and criminal investigation, labour inspection, auditors, UNTL teachers, justice officers, and parliament. The proliferation of regimes within the civil service makes compliance checks by relevant entities and payroll review more complex.

Figure 3.18: Wage bill (% GDP, 2014-19)
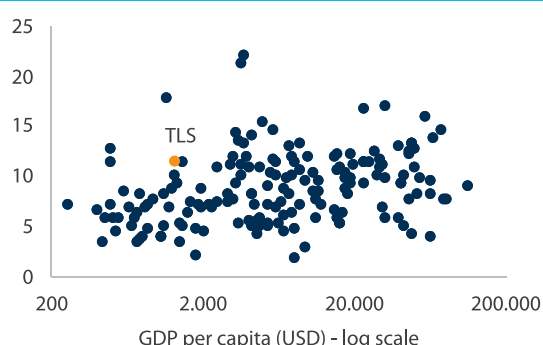
Source: Ministry of Finance (BOOST) and IMF.

Figure 3.19: Payroll and off-payroll spending (USD million)
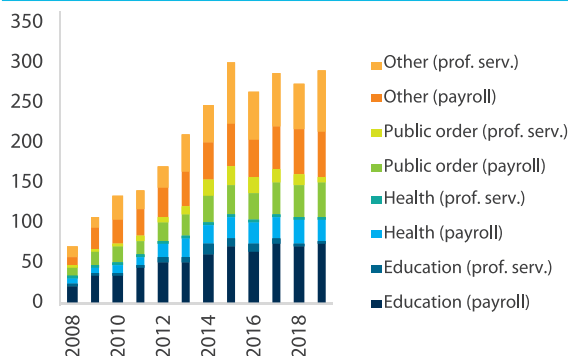
Source: Ministry of Finance (BOOST).

Information on the composition of the civil service needs to be better consolidated among relevant institutions. An independent Civil Service Commission (CSC) was established in 2009 to strengthen the efficiency and effectiveness of the civil service. The CSC is responsible for the overall civil service management and development framework, and for ensuring compliance with relevant regulations.[101] Any changes to individual records – such as recruitment and promotion – must be submitted to, and approved by, the CSC. To better track employee's history, the CSC manages individual records through a personnel information management system called SIGAP. However, there are discrepancies between SIGAP and both

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100   According to the 2019 CSC Annual Report, the public administration comprised 33,031 workers. However, the 2015 Housing and Population Census reported about 65,600 people employed in the government sector.

101   However, some contract categories are outside their scope (e.g. political appointments).

FMIS-GRP (Ministry of Finance) and human resource departments within line ministries and agencies – which probably arises from the different recording of contract modalities.[102] Hence, information on the public sector workforce – such as headcount and average pay – needs to be reconciled to provide an accurate representation of the civil service.

Goods & Services

Spending on goods & services grew rapidly until 2014, but has subsequently moderated. Public spending on goods & services increased from about $240 million in 2011 to more than $450 million in 2014, although it has gradually declined since then (Figure 3.20). The execution rate of this appropriation category has been modest, averaging 85 percent per year since 2011. The goods & services category comprises more than 20 items, but spending is largely concentrated in six items representing 80 percent of the total during 2008-2019: professional services (19 percent), fuel for generators (19 percent), operational material & supplies (14 percent), operational expenses (10 percent), other miscellaneous services (10 percent), and training & workshop (8 percent).[103] The Ministry of Public Works typically accounts for a large share of goods & services – usually around 20-30 percent of the total – as the institution responsible for paying fuel for generators.[104] The Ministry of Education and the Human Development Capital Fund (FDCH/HDCF) are also important spending units.

Figure 3.20: Execution of goods & services (USD million)
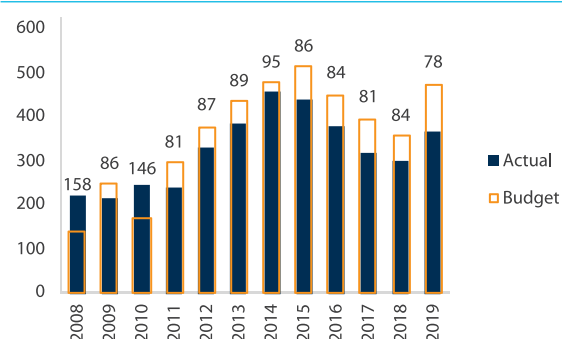
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.21: Composition of goods & services (USD million)
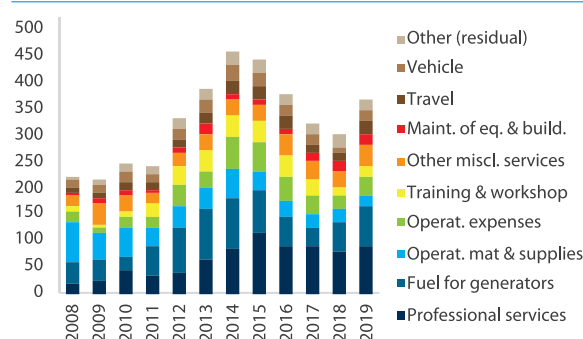
Source: Ministry of Finance (BOOST).

Spending on professional services increased substantially until 2015 and is the largest item under goods & services. Professional services comprises payments to contracted individuals (e.g. casual employees, consultants, and advisors) and firms providing specialised services – e.g. accountancy, legal,

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102 The classification consists of six different employee categories: (i) civil servants (permanent and casual employees), (ii) members of Government, (iii) members of Parliament, (iv) PNTL, (v) FDTL, and (vi) ex-members of Government. The CSC oversees all civil servants, including autonomous agencies and municipalities, while the MoF manages Government and ex-Government members – the latter receive payments (similar to a pension) through the payroll system. Non-administrative staff under PNTL and FDTL are under a different regime and manage their own records. Consultants and advisors are not paid through payroll, but rather through Commitment Payment Vouchers (CPVs).

103 Fuel for generators relates to the diesel fuel purchased to operate the Hera and Betano power stations, while professional services comprises both individual contractors and corporations. Training & workshops are mostly associated with FDCH (three-quarters of the total in 2013-2018), and to the Ministry of Education to a lesser extent (10 percent in 2013-2017).

104 However, EDTL recently became a state-owned enterprise. It now receives a public transfer and most expenses related to fuel for generators can no longer be tracked in the IFMIS.

and security. These services (also separately funded by development partners) have provided access to expertise since independence, although they may undermine human resource management in the civil service.[105] Spending on professional services increased from $20 million in 2008 to $114 million in 2015, and is currently around $86 million. Since 2013, legal services accounted for an average of (at least) 18 percent of total professional services.[106] In 2019, the top three institutions – the Ministry of Justice, Ministry of Education, and Ministry of Finance – accounted for nearly a quarter of total spending. These shares were somewhat higher during the peak in 2011.

Fuel for generators is a large item, although spending has varied noticeably due to volatile international oil prices. Expenses related to electricity production remain very high, although varying considerably due to fluctuations in international oil prices. The sharp drop in fuel import prices observed between 2014 and 2016 contributed to a strong decline in spending on fuel for generators, which in turn accounted for most of the recent spending decrease in goods & services. Spending on fuel for generators grew from $27 million in 2010 to $95 million in 2013, subsequently declining to $36 million in 2017. A combination of lower production costs (due to lower international oil prices) and revenue increases (through electricity fees & charges) has led to a decline in the implicit electricity subsidy.[107] Nonetheless, the implicit subsidy remains very large. While cost recovery is challenging due to low average household incomes, reducing production costs is imperative. Power plants currently operate with diesel fuel, but a switch to heavy fuel oil (HFO) or liquified natural gas (LNG) could generate large fiscal savings. In addition, hydropower and photovoltaic (PV) solar energy are thought to have significant potential.

Operational material & supplies and operational expenses are also relatively important items, even if they have declined in recent years. In 2019, the Ministry of Education (24 percent), the pharmaceutical supply agency SAMES (16 percent), and the Ministry of Defence (16 percent) accounted for most spending on operational material & supplies. There were large expenditures related to food security in 2008-2010 – averaging over $40 million per year and 71 percent of the total – owing to the global food price crisis.[108] With regard to operational expenses, the share of the Ministry of Education has been declining strongly through time, while the Ministry of Public Works has accounted for an average of about 30 percent since 2014 (mainly linked to electricity production).

Spending on maintenance of equipment & buildings has not kept up with the accumulation of capital assets. A large increase in capital expenditure – e.g. construction of public infrastructure – should lead to an increase in (related) recurrent costs. However, maintenance costs are often neglected, even if they are crucial to ensure that buildings and equipment remain functional and avoid a fast depreciation of the public capital stock. Although spending on maintenance has recently increased from $6 million in 2015 to about $20 million in 2018-2019, it remains a fraction of the accumulated capital stock. Hence, there has been a stronger emphasis on building (large-scale) infrastructure than on asset maintenance.[109] Looking forward, it is crucial to safeguard adequate spending levels on routine (preventive) maintenance to avert higher costs in the future and sustain service delivery standards – especially owing to vulnerability to extreme weather

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105 Contracts are managed through the procurement process rather than human resources, thus falling outside the scope of the Civil Service Commission (and the civil service regime). An excessive reliance on professional services can be detrimental if they do not help build local capacity within institutions. Some high-level officials are hired under these (temporary) contracts – acting as a substitute to the more restrictive civil service contracts – which means that their remuneration also falls under this budget item.

106 This is likely to be (at least partly) related to the petroleum sector.

107 In addition to fuel, there are other costs related to the provision of electricity – some of which are also under goods & services.

108 A large budget rectification (of over $250 million) took place in 2008, but this was largely under-executed.

109 Much of the spending on roads relates to rehabilitation. Nonetheless, there is often a need for emergency repair works – which are included in the capital budget.

events.[110] Spending has been increasingly undertaken by the Ministry of Public Works, with a significant proportion devoted to the maintenance of the electricity transmission system.

There is an overuse of miscellaneous categories, which undermines fiscal transparency. Miscellaneous categories are meant to be used for expenses that cannot be mapped to an existing category in the chart of accounts. Between 2008 and 2019, miscellaneous services averaged 10 percent of all spending on goods & services – which is rather high. In recent years, the Ministry of Interior has accounted for about one-quarter of this allocation. Although other miscellaneous categories exist, such as other supplies, it seems that goods are more consistently recorded than services and thus do not require this type of budget item. High spending recorded in miscellaneous categories may be due to a misuse of the classification, in which case training of financial management officers should be prioritised. However, if this is due to limitations in the chart of accounts, then a better mapping of government expenditure should be undertaken. These actions could support an improvement in the recording of public expenditures and thus enhance transparency and accountability.

Budget items under goods & services have been systematically over-budgeted. Other miscellaneous services are regularly and considerably under-executed (Figure 3.22). This item also suffers considerable revisions throughout the year, especially through virements into other categories (Figure 3.23).[111] This suggests that this budget item is used as a buffer for ad-hoc expenses. Operational expenses and even maintenance of equipment & buildings are also regularly over-budgeted. This may signal poor planning of these important categories, and uncovers considerable scope for consolidation.

Figure 3.22: Deviation in execution (USD million)
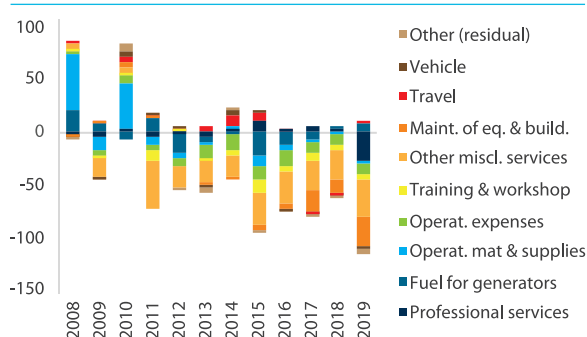
Note: Actual versus (initial) budget
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.23: Budget modifications (USD million)
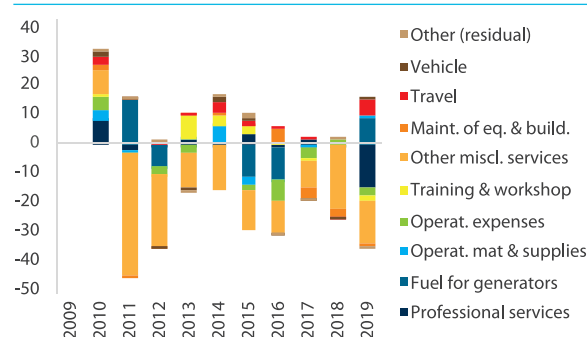
Note: Final budget versus initial budget.
Source: Ministry of Finance (BOOST) and staff calculations

Public Transfers

Public transfers have grown substantially and are now one of the largest appropriation categories. Spending on public transfers has increased considerably, especially in 2015-2017 owing to very large

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110 The 2015 Public Expenditure Review on Infrastructure recommended that the road asset database should be updated and fed into a performance management system – to better plan routine maintenance and limit the use of emergency procedures for road maintenance and rehabilitation. Developing a geospatial platform that also integrates data from other sectors (e.g. health and education) could yield significant benefits – see Chapter 6.

111 Data for 2008 is not presented due to a large outlier in operational materials & supplies ($251 million).

allocations to RAEOA-ZEESM (Figure 3.24). Public transfers includes personal benefit transfers and public grants (Figure 3.25). The former mainly relates to veteran pensions and the old-age and disability pension, while the latter are mostly used to support other public entities (e.g. TIMOR GAP), municipalities, civil society organisations, sub-national investment programmes (e.g. PNDS), and capitalise banks through public grants.[112] The execution rate has been relatively high, but since some transfers are made to public institutions they may not reflect actual spending.[113] The Ministry of Social Solidarity averaged one-third of the total expenditure in 2015-2017. In 2018, the Ministry of National Liberation Combatants Affairs was created – previously a Secretariat of State under the Ministry of Social Solidarity – and both ministries have accounted for 43 percent of the total spending since then. The appropriation 'whole of government' – which includes spending that cannot be allocated to a specific public institution (e.g. ministry) – is also large, averaging 45 percent in 2016-2019.

Figure 3.24: Execution of transfers (USD million)
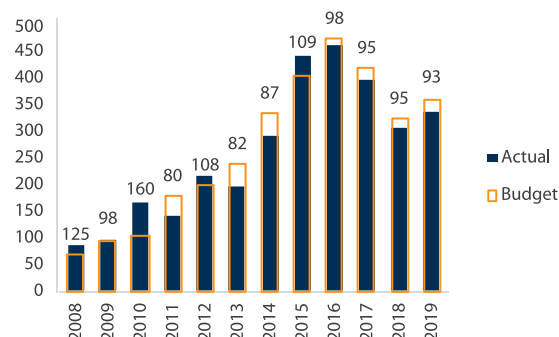
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.25: Composition of transfers (USD million)
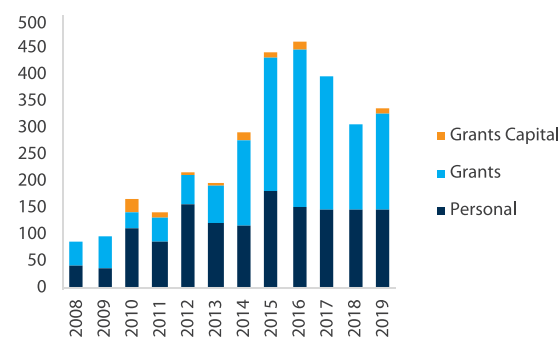
Source: Ministry of Finance (BOOST).

Spending on social protection partly reflects the country's political and socio-economic legacy. The 2006 civil crisis exposed underlying tensions and led to significant population displacement. This influenced the design of the social protection package – mainly consisting of social assistance programmes – with a view to promote social stability.[114] Current programmes target specific groups – categorical targeting of the elderly, persons with disabilities, war veterans, and households with children – rather than necessarily targeting the poorest or the most vulnerable. Non-contributory programmes account for most of the spending, especially veteran benefits and the old-age and disability pension, but benefit amounts vary widely across programmes (Table 8). A contributory social security scheme was established in 2017, and currently has over 72,000 workers registered – about two-thirds of which are from the public sector. The scheme provides a range of benefits, including old-age pension, disability pension, survival pension, death grant, as well as parental and adoption benefits. However, there are concerns over the long-term

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112 However, some transfers could be better classified under other appropriation categories – such as (de facto) capital spending undertaken by RAEOA-ZEESM, municipalities, and PNDS. In fact, transfers are being used for a wide variety of purposes, and sometimes substitute for accounting categories that would be more relevant but perhaps more constraining in terms of process – which may undermine transparency and accountability.

113 Hence, budget execution is likely to be overestimated.

114 Social protection can halt the intergenerational transmission of poverty, but current programmes are not delivering strong benefit on poverty and equity – due to poor targeting (see World Bank's Social Protection Review).

sustainability of the contributory regime.[115] Fine-tuning the design of existing social protection schemes (in terms of coverage, amount of benefit, and targeting) could considerably enhance their impact on welfare and help secure fiscal sustainability.

Table 8: Non-contributory social protection programmes

	Veterans	Elderly	Disabled	Bolsa da Mae
Budget (2019)	$95.5 million	$35.1 million		$6.1 million
Benefit (per month)	$345 - $750 (special retirement pension) $276 - $345 (special subsistence pension) $230 - $750 (survival pension) $1,380 - $3,450 (one-off payments) $300 - $2,000 (scholarships)	$30	$30	$5 (per child, up to $15)
Beneficiaries (approx.)	28,100	87,000	8,300	34,500
Average benefit	$284	$31		$15

Source: Based on the World Bank's Social Protection Review.

The veteran programme provides generous benefits and accounts for most spending on social protection. Veteran benefits aim to recognise and compensate the service of combatants during the national liberation struggle through three main types of benefits for veterans or surviving family: pensions, a cash lumpsum, and scholarships.[116] These payments are very generous, especially when bearing in mind that the national minimum wage is currently set at $115 per month. Although the process for identifying and registering veterans was launched in 2002, the first pension payments were only made in 2008. Spending averaged nearly $100 million per year in 2015-2019, corresponding to about 8 percent of total spending. However, there is often some volatility, partly explained by batches of application approvals – especially since the first payment also includes retroactive payments to beneficiaries. For instance, spending was about $125 million in 2015. Freezing entitlements (i.e. decoupling the size of the payment from the minimum wage) and limiting the intergenerational transmission of the benefit would help stem the growth of this category.

The old-age and disability pension accounts for a sizeable share of spending on social protection, but Bolsa da Mae benefits are small. The old-age and disability pension (known as SAII) is a non-contributory scheme targeted at the elderly (citizens aged 60 or over) and adult persons with disabilities. Those eligible are entitled to a benefit of $30 per month. The old-age pension is nearly universal – reaching about 87,000

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115 The contributory social security scheme pays generous benefits indexed to wages, contributions, and tenure. For instance, the pensions for old-age, disability, and survivors allows a replacement rate of 100 percent (of average earnings) for workers with a contributory career of 30 years. This is much higher than the replacement rate of ASEAN countries, which ranges from 45 to 75 percent. See the World Bank's Social Protection Review.

116 The pension scheme includes a special retirement pension for veterans with at least 15 years of (full-time) service, a special subsistence pension for veterans with at least 8 years of service, and a survival pension for inheritors (e.g. spouse, children, parents, and siblings). The cash lumpsum is a one-off payment for veterans with 4 to 7 years of full service – which started 2012 with the new statute of National Liberation Combatants. Finally, scholarships are provided for the children of veterans covering all levels of education – from primary school to university.

beneficiaries – but a significant proportion of eligible persons are not benefiting from the disability pension. Spending on SAII averaged $34 million in 2017-2018. 'Bolsa da Mãe' is a conditional cash transfer (CTT) programme launched in 2008 aiming to promote school attendance and the use of primary health care services. The programme provides a transfer of $5 per child per month up to a maximum of $15. The benefits are based on soft conditionality on education and health, meaning that the conditions are not necessarily enforced – focusing on monitoring and sensitisation. In 2019, spending was about $7 million.

Public grants comprise a wide range of institutional transfer payments, most notably to the RAEOA-ZEESM. The exclave of Oecusse is one of the poorest municipalities in the country. The Special Administrative Region of Oecusse Ambeno (RAEOA) and the Special Zone for Social Market Economy (ZEESM) were created by law in 2014 and formally established in 2015 with the purpose of promoting the region's socio-economic development.[117] The law granted a significant degree of administrative, financial, and patrimonial autonomy to RAEOA-ZEESM. However, RAEOA-ZEESM has also received considerable public funds, averaging about $125 million per year during 2015-2019. Although there is no data on how these funds are spent in the central FMIS, Budget Book 3 provides information on budget allocations. Most of the budget has been allocated to capital spending, including the airport upgrade ($120 million), several roads projects (totalling $83 million), and the construction of a power station ($32 million). In fact, RAEOA-ZEESM has very high capital spending per capita when compared to the rest of the country – but the lowest level for recurrent spending.[118]

Community-driven programmes have some history in Timor-Leste, but their impact is difficult to gauge. The Local Development Programme (PDL) was piloted in 2004 to test different models for decentralisation. The Referendum Package (PR) was introduced in 2009 and replaced by the Decentralised Development Program (PDD) in 2010, which aimed to promote rural infrastructure development through local businesses. In 2012, the Decree Law for Integrated District Development Planning (PDID) was enacted to manage sub-national spending. The National Village Development Programme (PNDS) was piloted in 2013, aiming to support local communities (by building local capacity and creating local jobs) through grants for small scale infrastructure projects. The PNDS averaged about $11 million in 2014-2016, but has not received a budget since then. Despite the proliferation of sub-national programmes, there has been a lack of impact evaluations.

Other public grants include the capitalisation of banks, support to state-owned enterprises, and payments to private institutions. The capitalisation of the Central Bank of Timor-Leste (BCTL) has amounted to $5 million every year since 2016 – although this represents a decline over the $20 million in 2014 and $10 million in 2015. In 2016, the National Commercial Bank of Timor-Leste (BNCTL) was also capitalised by $5 million. The Ministry of Mineral Resources and Oil received an average of $12 million in 2015-2018, which increased to $24 million in 2019. In 2019, the state-owned petroleum company TIMOR GAP received $16 million. The National Electoral Commission (CNE) has received $6 million per year since 2014. The Pension Fund contribution scheme is receiving an increasing amount of funds, averaging $10 million in 2016-2019. In 2018, $50 million were paid to a private company (TL Cement) in the context of a special investment agreement. The Catholic Church – through the Timorese Episcopal Conference – has received $6.5 million in both 2017 and 2018, and $10 million in 2019.[119] Greater scrutiny of allocation decisions, use of public funds, and impact of public grants would be required.

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117 RAEOA-ZEESM also includes the island of Atauro.

118 Public transfers to municipalities are difficult to assess, since some funds are recorded as public transfers, but municipalities also receive funding through service provision contracts agreed with line ministries. However, these are much lower than those allocated for RAEOA-ZEESM.

119 Public transfers also include loan interest payments and loan principal repayments, but these are relatively low due to limited indebtedness and long grace periods.

Capital & Development

There has been a clear policy of frontloading public investment, especially after key institutional changes in 2011. The capital & development appropriation category is associated with the creation of tangible capital assets.[120] Neglect and destruction left the country with an inadequate stock of infrastructure at independence, requiring significant rehabilitation and reconstruction of roads, bridges, public utilities – such as electricity, water, and sanitation – public buildings, among others. While much of capital spending in the first years after independence was financed by development partners, access to petroleum revenues has enabled a significant increase in public capital expenditures since 2006. In 2011, the Infrastructure Fund was created to centralise decision-making and facilitate large investments in physical assets. Timor-Leste has a dual budgeting system, whereby the recurrent budget is mostly under the responsibility of the Ministry of Finance (in coordination with line ministries and other public entities), while the elaboration of the capital & development budget is under the mandate of the Administrative Council of the Infrastructure Fund (known as CAFI). Other institutions also play a key role in the project-cycle of capital investments, including the Major Projects Secretariat (MPS), National Development Agency (known as ADN), and the National Procurement Commission (NPC). Much of the spending on capital & development is undertaken through the Infrastructure Fund. Foreign lending is also used to finance the construction and rehabilitation of physical assets, especially roads, although these amounts are comparatively small.

Budget execution has been a key challenge, highlighting weaknesses in the project cycle. Although the budget execution rate averaged 94 percent since 2008, this is partly due to the budget revisions that occurred in 2013-2014 (virements) and 2016 (rectification) (Figure 3.26). The execution rate drops to 72 percent when using the final budget. Moreover, execution rates have deteriorated since the establishment of the Infrastructure Fund in 2011, which coincided with a considerable increase in the budget allocation – suggesting that allocations outpaced the capacity to implement.[121] Most spending relates to infrastructure assets (Figure 3.27). The Infrastructure Fund averaged 94 percent of capital & development spending since 2015, while the Ministry of Planning and Strategic Investment was far behind.

Figure 3.26: Execution of capital & develop. (USD million)
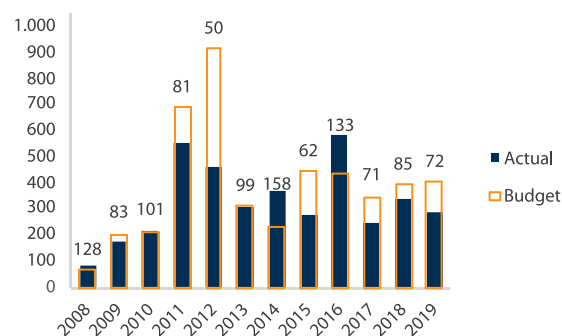
Figure 3.27: Composition of capital & develop. (USD million)

Source: Ministry of Finance (BOOST) and staff calculations.
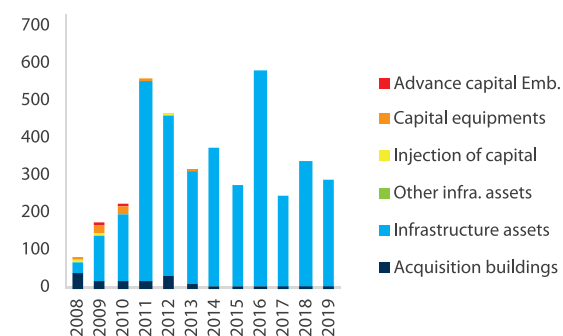
Source: Ministry of Finance (BOOST).

120 It should be recalled that a considerable proportion of the public transfers to RAEOA-ZEESM has funded the construction of physical assets, especially in 2015-2017. On the other hand, there are spending items in capital & development that should probably be recorded in other appropriation categories – such as costs related to FreeBalance (IFMIS) – although are relatively small values.

121 Regular budget revisions and weak execution signal weaknesses in the public investment management. The budgeting and implementation cycles are unsynchronised, in part due to uncertainty about multi-year budgets. This tends to encourage an over-estimation of the budget needed to implement a project.

Capital & development has mainly comprised investments in electricity and roads. The large spending increase observed in 2011 and 2012 is mostly associated with the large electricity programme – which included the construction of (large) power plants in Hera and Betano (Figure 3.28). The programme averaged $356 million in 2011-2012, and $70 million in 2013-2016 – the latter linked to the purchase of generators and rehabilitation of distribution lines. Spending on road construction and rehabilitation has become the largest programme since 2015, averaging $143 million in 2015-2019.[122] The ports programme had a large expenditure of $133 million in 2016 – essentially related to the Tibar Bay port – while the airports programme averaged $15 million per year in 2014-2017. Spending on the Tasi Mane programme averaged $77 million in 2016-2019 – especially on roads & bridges. The highway in the South Coast – which links Suai, Betano and Beaco – has accounted for an increasing share of the capital & development budget – from 4 percent in 2015 to nearly 30 percent in 2018 (Figure 3.29).[123] However, investments in several key sectors have lagged behind, such as: agriculture ($4 million), water & sanitation ($1 million), education ($1 million), and health ($1 million) – all averages for 2011-2019.

Figure 3.28: Infrastructure assets (USD million)
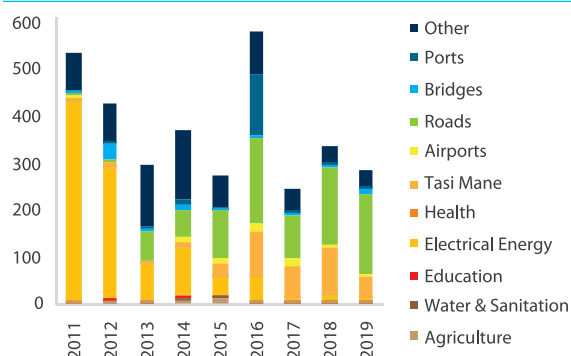
Source: Ministry of Finance (BOOST).

Figure 3.29: Infrastructure assets (%)
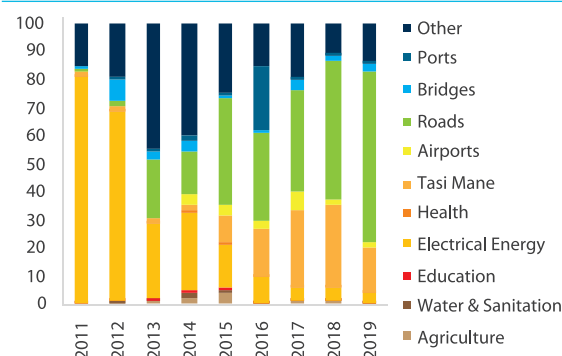
Source: Ministry of Finance (BOOST).

The capital & development budget has been subject to large in-year revisions. In 2013 and 2014, capital & development benefited from large virements. In 2016, a mid-year budget rectification aimed to frontload investments initially planned for 2017 – partly due to concerns that presidential and parliamentary elections could delay project implementation. The rectification included a one-off transfer of $130 million – Viability Gap Funding (VGF) – to an escrow account relating to the Tibar Bay Port Public-Private Partnership (PPP) project.[124] It also included $127 million for Tasi Mane, including an additional $58 million for the highway and $60 million for the supply base. While only projects over $5 million qualify to be in the Infrastructure Fund, projects have been packaged together – including 60 road projects for municipalities ($29 million) and emergency projects – potentially reducing transparency. The execution rates vary widely across programmes and through time – both under- and over-spending – suggesting that the initial budget is a poor predictor of the expenditures that will be incurred during the year.

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122 The 2015 Public Expenditure Review argued that the full rehabilitation of all existing roads (to international paved standard) would push paved road density far above the upper-middle-income country (UMIC) average. This would place an unsustainable burden on maintenance costs for current size of economy.

123 In 2018, about $37 million were disbursed in connection with a road rehabilitation package of 135 projects approved by CAFI in July 2017, while a further $75 million were spent in 2019. The Integrated District Development Program (PDID) – subsequently known as PDIM – averaged $43 million per year in 2013-2014, but declined to $13 million in 2017 and $4 million in 2018.

124 Although this was recorded as capital expenditure in the fiscal accounts, this could have been considered a public transfer.

Minor Capital

Spending on minor capital has been considerably reduced in recent years, attesting that fiscal savings can be achieved. Minor capital mainly comprises the purchase of vehicles, equipment (e.g. office, communications, security, electricity, and water), furniture, and other movable assets. Spending on minor capital declined substantially between 2014 and 2018, although it increased once again in 2019.[125] Budget execution has often been high, partly because of relatively high virements. However, the recent trend in minor capital suggests that significant savings can be made through improved budget prioritisation and controls. For instance, purchases of vehicles averaged $15 million per year between 2008 and 2015, which would be sufficient to purchase 500 vehicles annually at a (generous) average price of $30,000.[126] In 2019, the Ministry of State Administration (16 percent), the Ministry of Defence (11 percent), the National Parliament (11 percent), and the Ministry of Interior (10 percent) jointly accounted for nearly half of total spending on vehicles.[127]

Figure 3.30: Execution of minor capital (USD million)
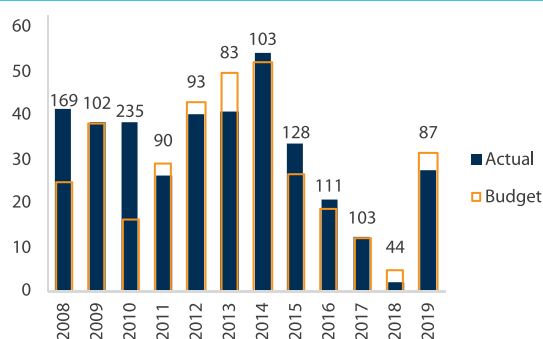
Source: Ministry of Finance (BOOST) and staff calculations.

Figure 3.31: Composition of minor capital (USD million)
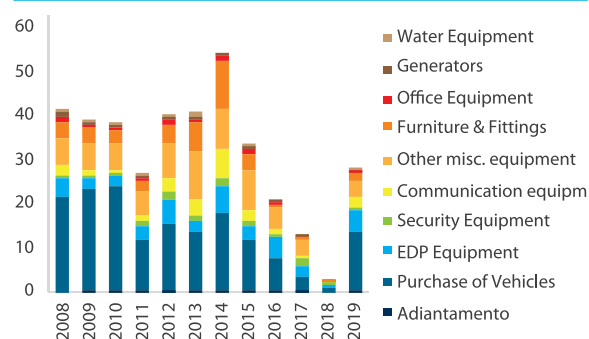
Source: Ministry of Finance (BOOST).

Contingencies

Contingency expenditures are not large, but they do not fully reflect in-year budget adjustments. A contingency fund was established in 2011 for unforeseeable and unpostponable expenses. The (initial) state budget allocates an amount for contingencies under the 'whole of government' appropriation. This fund (or reserve) is available in cases where there is an urgent need for additional funding due to unexpected circumstances. In terms of process, a spending unit makes a request (with a justification) to the Ministry of Finance, which then reallocates funds (through virements) if the request is approved. Contingency expenditures can thus be disaggregated by their primary costing items – such as salary & wages, goods & services, and transfers (Figure 3.32). However, these have not been combined with those appropriation categories – for the purposes of this analysis – due to their (unplanned) nature. Although ex-post it is known for which purposes they have been ultimately spent on, they do not represent ex-ante deliberate spending

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125 This category is severely affected by the duodecimal regime, which may explain the very low value in 2018.

126 In 2018, students protested against a proposal to purchase new Toyota Prado cars for Members of Parliament – many of whom had received new cars in 2017 – despite an existing policy to replace cars only when they are 10 years old.

127 The Ministry of Agriculture had large expenditures in 2008-2009, owing to the import and free distribution of thousands of (hand and four-wheeled) tractors.

decisions. The BFM law establishes a cap for the contingency appropriation at 5 percent of total spending, but contingency spending has only averaged about 1 percent of total spending since 2012. Most of the spending has been used for recurrent expenditures. In 2019, the Ministry of Public Works ($5 million) and SAMES ($2 million) accounted for most contingency spending. Nonetheless, contingency spending does not fully reflect the extent of budget revisions, owing to large budget rectifications and virements affecting other categories (Figure 3.33).[128]

Figure 3.32: Composition of contingency (USD million)
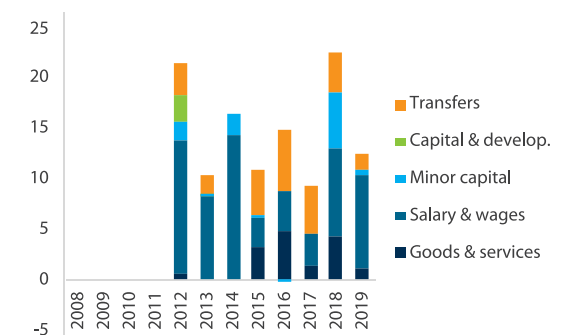
Source: Ministry of Finance (BOOST).

Figure 3.33: Virements (USD million)
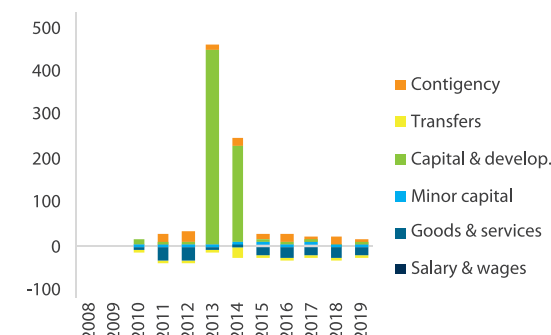
Source: Ministry of Finance (BOOST).

3.2.2 Administrative Classification

An assessment of institutional spending through time is made difficult by regular changes in the composition of administrative units. The administrative classification disaggregates spending by relevant public institutions, such as ministries, secretariats of state, funds, autonomous public agencies, and municipalities.[129] Changes in government organic structures have led to line ministries splitting or merging, while there has also been a proliferation of autonomous public agencies – which has contributed to institutional fragmentation. For the analysis, some adjustments were made to provide insights on key spending units.[130] The Administrative Council for the Infrastructure Fund (CAFI) is the largest institution, averaging 25 percent of total spending since its creation in 2011 (Figure 3.34). In 2012, the Ministry of Infrastructure was separated into two ministries – the Ministry of Public Works (MPW) and the Ministry of Transport and Communications (MTC). About 50 percent of the combined spending was accounted by the purchase of fuel for generators. The 'whole of government' appropriation has been quite large since 2016, and mostly reflects public transfers to RAEOA-ZEESM in 2015-2017.[131] The Ministry of Social Solidarity and the MNLCA (since 2018) averaged 11 percent of total expenditure since 2008, mainly accounting for the social protection programmes. The Ministry of Education and the Ministry of Health have accounted for an average of 7 and 4 percent, respectively.

128 Large virements were recorded in 2012 and 2013, mainly originating from carryovers relating to the Infrastructure Fund.

129 Municipalities include four municipal authorities (Baucau, Bobonaro, Dili, and Ermera) and eight municipal administrations (Aileu, Ainaro, Covalima, Lautem, Liquica, Manufahi, Manatuto, and Viqueque). The municipality of Oecussi has a special autonomous region status through RAEOA-ZEESM.

130 For instance, in 2012 the Ministry of Infrastructure was separated into two ministries, the Ministry of Public Works and the Ministry of Transport and Communications. Hence, ministries were aggregated to maximise consistency.

131 In 2015, the large allocation for RAEOA-ZEEMS was under the Minister of State for the Presidency of the Council of Ministers.

Figure 3.34: Administrative categories (USD million)
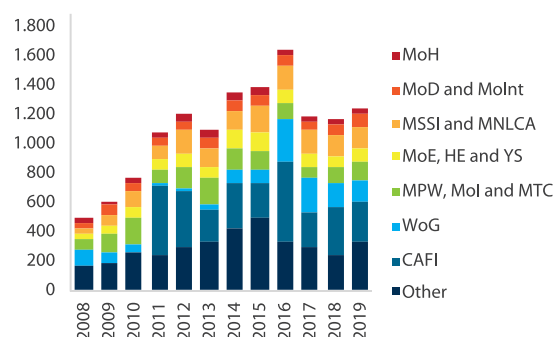
Source: Ministry of Finance (BOOST).

Figure 3.35: Type of institution (2019, % total)
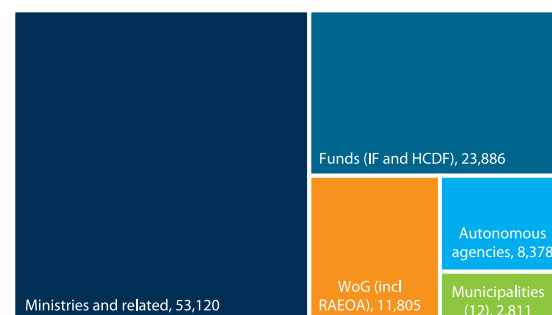
Source: Ministry of Finance (BOOST) and staff calculations.

There has been a proliferation of autonomous public agencies, while the ongoing decentralisation process may contribute to further institutional fragmentation. There were 35 autonomous public agencies (APAs) in 2019, 23 of which generate their own revenues and are meant to be self-financing.[132] Some of the largest revenue-generating APAs are the National University of Timor-Leste (UNTL), the National Hospital Guido Valadares (HNGV), the Autonomous Service of Medicines and Medical Equipment (SAMES), and the Port Authority of Timor-Leste (APORTIL). In addition, several APAs are supported exclusively through the budget, including Parliament, Presidency of the Republic, and National Elections Commission (CNE). Given limited capacities, it would be important to stem the increase in APAs and possibly consolidate them – following a careful review.[133] There are two funds – the Infrastructure Fund (IF) and the Human Capital Development Fund (FDCH) – although the IF has been considered as an APA in recent years. APAs (excluding the IF) accounted for 8 percent of total spending in 2019, while municipalities received about 3 percent (Figure 3.35). Public transfers to municipalities started in 2017, but municipalities also receive funds through some line ministries. However, it is crucial to ensure that the pace of decentralisation is set according to prevailing circumstance.

Infrastructure-related institutions had low execution rates in 2019, which underscores challenges in public investment management. Infrastructure projects are mostly implemented by the Infrastructure Fund (IF), the Ministry of Public Works (MPW), and the Ministry of Transport and Communications (MTC). In 2019, these institutions had execution rates of 75, 73 and 76 percent, respectively. This exposes difficulties in adequately planning, budgeting, and implementing public investment projects. Line ministries with a high proportion of salary & wages – such as the Ministry of Education and the Ministry of Health – had high execution rates. The Ministry for the Affairs of National Liberation Combatants (MNLCA) and the Ministry of Social Solidarity & Inclusion (MSSI) also had a good implementation performance, in part due to the high share of public transfers in their budgets. Some of the lowest execution rates were found in ministries tasked with economic development, such as the Ministry of Tourism, Commerce and Industry (68 percent) and the Ministry of Planning & Strategic Investment (72 percent) – in addition to the IF, MPW and MTC. Although

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132 Since then, new APAs have been created – such as the National Ambulance and Emergency Medical Service.

133 APAs do not have the same obligations to practice accountability and transparency as other public institutions (such as line ministries), which undermines public scrutiny. There has also been a strong focus on programme budgeting, which is complicated by growing institutional fragmentation. In a recent submission to Parliament, the NGO La'o Hamutuk voiced concerns that the information published according to programme structures does not facilitate dialogue and monitoring in Parliament, and makes it more difficult for the public to access information – thus damaging transparency and accountability.

these two ministries have relatively small budgets, low execution rates may suggests inefficiencies and thus some scope for performance improvements to fulfil their mandates.

Low execution rates were also found in some autonomous public agencies and municipalities. The National Centre for Employment and Professional Training, the National Hospital Guido Valadares, and the National Logistics Centre, were some of the autonomous public agencies with low execution rates in 2019 – 62, 74, and 77 percent, respectively. This is perhaps unexpected, since the main rationale for the recent proliferation of autonomous agencies is that they can be more agile in executing their budgets and therefore their mandates. Budget execution in municipalities averaged 84 percent in 2019, ranging from 91 percent in Dili to 78 percent in Liquiça. Municipalities had average execution rates of 73 and 78 percent in 2017-2018. However, municipal budgets remain relatively small and further implementation constraints may arise as responsibilities and budgets increase. Pursuing critical public financial management (PFM) reforms and building relevant skills can significantly improve planning, budgeting and execution across public institutions – with a view to improve the quality of public spending.

3.2.3 Functional Classification

Work has been undertaken to produce a COFOG-compatible classification to report spending by functional area. The lack of a consistent application of the COFOG classification makes it difficult to track spending on stated government priorities, such as education and health. A functional classification consolidates spending in key areas of interest, which is particularly pertinent since the administrative classification does not clearly map into these. For instance, the creation of several autonomous public agencies has led to some institutional fragmentation in the education and health sectors. Moreover, many other ministries may undertake expenditures that relate to education and health (e.g. training of staff). The COFOG classification was built bottom-up (by programme and activity) rather that top-down (by institution), which is likely to provide a more accurate depiction of spending. A simple aggregation of relevant line ministries and autonomous agencies would exclude relevant programmes implemented by other institutions (and perhaps include programmes that are not necessarily relevant), while municipalities and the Infrastructure Fund could also be misclassified.

Economic affairs is by far the largest spending category, while education and health accounted for about 15 percent of total spending. Economic affairs represented an average of 45 percent of total spending in 2008-2019, mainly owing to infrastructure projects (Figure 3.36 and Figure 3.37). General public services accounted for 16 percent. Social security represented 12 percent of total – mostly due to non-contributory pensions – while education and health accounted for 10 and 5 percent, respectively. Paradoxically, the strong focus on the economic function has not yielded strong economic growth. On the contrary, economic growth has gradually decelerated since 2008, suggesting that a rethink of the investment programme is warranted. Since human capital is critical to accelerate economic growth and promote economic diversification, assigning adequate budget allocations to education and health – while improving the quality of spending – can significantly contribute to achieve Timor-Leste's long-term development objectives.

Figure 3.36: Functional categories (USD million)
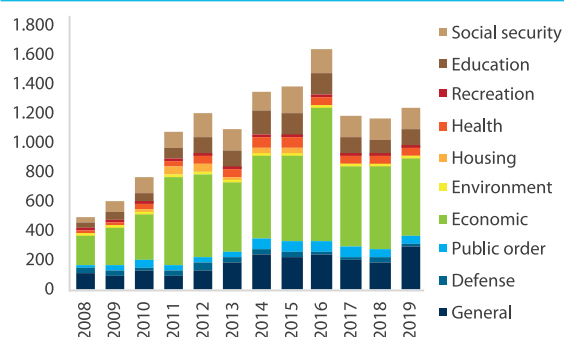
Source: Ministry of Finance (BOOST).

Figure 3.37: Functional categories (% total)
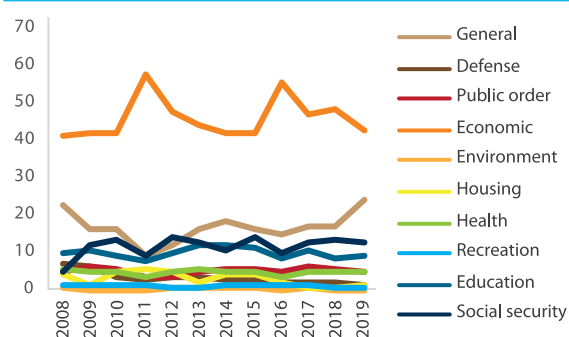
Source: Ministry of Finance (BOOST) and staff calculations.

Education and health account for most spending on salary & wages, while most capital & development expenditure relates to economic affairs. Education and health accounted for about half of the total expense on wages & salaries in 2008-2019 – 38 and 13 percent, respectively. Public order, general public services, and economic affairs also had sizeable shares – 16, 15 and 11 percent, respectively. Nearly two-thirds of spending on goods & services were related to economic affairs and general public services, while education and health accounted for 13 and 6 percent, respectively. Most public transfers are associated with social security (47 percent), while economic affairs and general public services also had large shares. About 83 percent of capital & development related to economic affairs, with education and health accounting for about 1 percent each. Improving social infrastructure could have a significant impact on education and health outcomes, and thus accelerate economic and social development.

Economic affairs has benefited from large in-year budget revisions, while social security also had a sizeable modification in 2013. There have been regular changes to the initial budget appropriations approved by Parliament, either through virements or budget rectifications (Figure 3.38). Most changes have favoured economic affairs, especially in 2008, 2013, 2014, and 2016. The 2008 budget rectification was related to food security, while the 2016 rectification increased the allocation for economic infrastructure. Revisions to the social security budget was also large in 2013. Deviations in execution have been mainly driven by economic affairs (Figure 3.39).

Figure 3.38: Budget revisions (USD million)
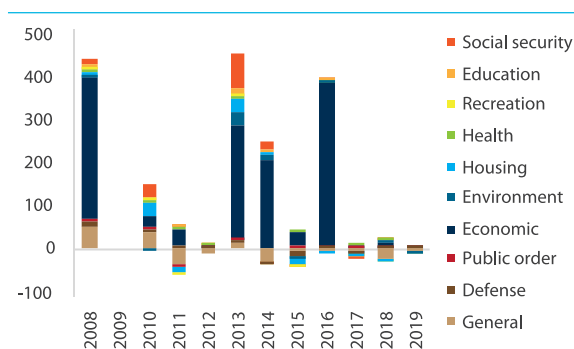
Source: Ministry of Finance (BOOST).

Figure 3.39: Contributions to execution (USD million)
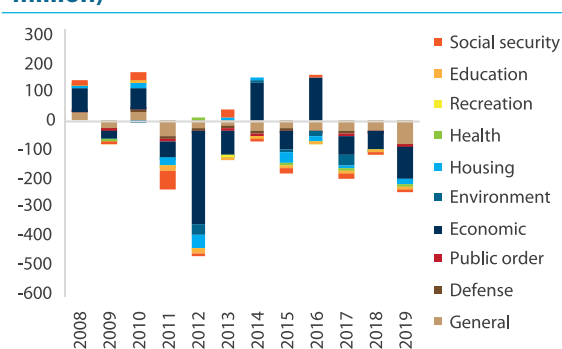
Note: Positive means over-execution.
Source: Ministry of Finance (BOOST) and staff calculations.

3.3 Quality of Spending

3.3.1 Efficiency of Spending

It is vital to evaluate the efficiency in public spending, particularly in view of the high levels of expenditure. The concept of 'efficiency' relates to how inputs translate into outputs, and often includes two sub-dimensions: (i) allocative efficiency, which evaluates whether the distribution of inputs (both across and within sectors) is conducive to achieving desired outputs; and (ii) technical efficiency, which assesses whether a certain output is achieved with the least possible amount of inputs.[134] Identifying sources of inefficiency is key to ensure that valuable public resources are not wasted. Given fiscal sustainability concerns, it is highly pertinent to uncover potential savings to create fiscal space for more productive spending. In fact, recent research suggests that governments can reduce income inequality by simply changing the composition of public spending while keeping total expenditure constant.[135]

Infrastructure development has been a key policy priority according to recent spending patterns. An important policy challenge is to ensure that the composition of spending is efficient – from an allocative point of view – to yield maximum economic and social benefits. Assessing the amount of public expenditure devoted to each SDP pillar can reveal if spending patterns are broadly aligned with policy priorities. Data for 2019 suggests that spending is skewed towards infrastructure development, which could be partly justified by its inherent high costs (Table 9). Spending on economic development is relatively low, although much of the infrastructure spending is devoted to build economic infrastructure – such as power stations, roads, bridges, airports, and seaports.[136] Spending on the institutional framework and social capital accounted for about one-quarter each. However, some expenditures do not clearly fall into a SDP pillar or cut across two. For instance, 'whole of government' includes a range of expenditures that could be better classified under other pillars.

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134 Efficiency entails consistency of aggregate spending allocations (across and within sectors) with policy priorities and cost minimisation.

135 See the IMF report "Reallocating Public Spending to Reduce Income Inequality: Can It Work?"

136 Moreover, the Government also has other policy tools – other than spending – to promote economic development, such as laws and regulations.

Table 9: Expenditure by SDP pillar

SDP pillar	Relevant ministries and funds	Expenditure (USD, 2019)	% total	
Economic development	Ministry of Agriculture and Fisheries	12,634,375	1.0	4
	Ministry of Mineral Resources and Oil	24,894,211	2.0	
	Ministry of State, Coordinator of Economic Affairs	714,945	0.1	
	Ministry of Tourism, Commerce and Industry	5,320,213	0.4	
	Secretariat of State for Vocational Training Policy and Employment	4,859,367	0.4	
	Secretariat of State for Development of Cooperative Sector	3,212,229	0.3	
Infrastructure development	Ministry of Planning and Strategic Investment	12,309,985	1.0	33
	Ministry of Public Works	116,138,294	9.4	
	Ministry of Transport and Communications	5,781,311	0.5	
	Administrative Council of the Infrastructure Fund (CAFI)	276,902,290	22.4	
Institutional framework	Whole of Government	145,617,505	11.8	26
	Minister of State for the Presidency of the Council of Ministers	5,206,750	0.4	
	Ministry of Defence (incl. FDTL)	30,528,190	2.5	
	Ministry of Finance	17,985,394	1.5	
	Ministry of Foreign Affairs and Cooperation	23,064,191	1.9	
	Ministry of Interior (incl. PNTL)	47,971,880	3.9	
	Ministry of Justice	18,175,943	1.5	
	Ministry of Legislative Reform and Parliamentary Affairs (incl. SECS)	6,423,137	0.5	
	Ministry of State Administration	22,607,225	1.8	
	Prime Minister	8,853,192	0.7	
Social capital	Ministry of Education, Youth and Sports (incl. SEJD)	86,289,973	7.0	25
	Ministry of Health	42,084,875	3.4	
	Ministry of Higher Education, Science and Culture (incl. SEAC)	5,803,587	0.5	
	Ministry of National Liberation Combatants Affairs	96,997,759	7.9	
	Ministry of Social Solidarity and Inclusion	54,791,466	4.4	
	Secretary of State for Equality and Inclusion	1,418,546	0.1	
	Secretariat of State for Environment	1,158,258	0.1	
	Human Capital Development Fund (HCDF)	17,731,600	1.4	
Unallocated	Municipalities, APAs, etc.	138,009,808	11.2	11

Note: The assignment of ministries is based on the Budget Books, with some additions (e.g. CAFI and HCDF).

The allocation of spending by SDP pillar masks imbalances within priorities, which will require a reprioritisation of resources. There are some notable imbalances within SDP pillars when assessing expenditures by administrative unit. For instance, spending on social capital is skewed towards social protection, which represents about 12 percent of total public spending. This is higher than spending on education and health combined. Much of the expenditure on infrastructure development has been devoted to economic infrastructure, while there is very limited spending on social infrastructure. Given the large

challenges facing Timor-Leste, such as poor learning outcomes and high stunting levels, there seems to be scope for an improved allocation of resources.[137] Improved economic infrastructure needs to be complemented by a healthy and educated workforce.[138] Moreover, the combined spending on agriculture, tourism, commerce, and industry – key economic sectors with growth potential – account for less than two percent of total expenditure.

3.3.2 Effectiveness

Assessing the effectiveness of public spending is key to ensure that the use of public resources achieves desired impacts. Measures of spending effectiveness evaluate how inputs translate into outcomes. At the aggregate level, fiscal multipliers can provide insights on the extent to which fiscal policy is effective in stimulating economic activity. In practice, fiscal multipliers estimate the change in GDP induced by a unit increase in public spending (Box 3). A multiplier larger than 1 suggests that public expenditure stimulates GDP by more than the initial increase in spending. This 'crowding in' effect implies that public spending complements and encourages private spending. However, a multiplier lower than 1 indicates that public spending is counteracted by effects that reduce its effectiveness – such as a 'crowding out' of private sector activity and/or import 'leakage'. There is a particular interest in evaluating the impact of public investment on GDP, since the economic literature posits a strong correlation with economic growth. Moreover, successive governments have adopted a policy of frontloading (large-scale) public investments with a view to stimulating domestic economic activity.

Box 3: Estimating Fiscal Multipliers

A fiscal multiplier investigates the dynamic effect of a public spending 'shock' on output. The fiscal multipliers estimated for Timor-Leste assess the change in real GDP that is induced by an exogenous shock in three key fiscal indicators: total expenditure, public consumption, and capital expenditure. The analysis uses quarterly data for the period 2010-2019. The data is log-transformed, de-seasonalised, and deflated – except for GDP, which was already de-seasonalised and deflated. The impulse responses of the output variable to the fiscal policy shocks are estimated using a Structural Vector Autoregressive Model (SVAR). The identification of expenditure shocks follows Blanchard & Perotti (2002), which assumes that there is no contemporaneous effect of output on fiscal policy (i.e. government expenditure is not affected by shocks to GDP within the same quarter). A priori, a shock in government spending is expected to generate a positive effect on output. Moreover, public investment is expected to have a larger effect on output than public consumption. This is because in addition to the its direct effect on aggregate demand, public investment should improve production capacities. Furthermore, given the underlying characteristics of Timor-Leste's economy – a small open economy, highly dependent on imports, and with an limited financial sector – a relatively low fiscal multiplier is expected. The analysis focuses on two multipliers: the impact multiplier and the multiplier at horizon 'h' – which is the cumulative multiplier over 10 quarters (thus the long-run multiplier).

Estimates suggest that the impact of public expenditure on economic activity has been very limited. Econometric analysis confirms that GDP responds positively to government expenditure, although confidence intervals are large. The impulse responses are significant at both impact (i.e. same quarter) and longer horizons – with the multiplier estimated at 0.17 and 0.08, respectively. These estimates are well below unity, implying that the increase in GDP is much lower than the initial increase in spending. The fiscal shocks are more effective in the short term – especially for public consumption (0.39), albeit still

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137 There are also concerns over the technical efficiency of public spending. Value for money is better assessed at the sector or project level – see chapters on health and education.

138 The proportion of public spending on health and education is low by international standards, while infrastructure spending is very high.

considerably below 1 – but the magnitude of the multipliers is lower in the long run (Figure 3.40).[139] The long-run multiplier for capital expenditure is only 0.10, raising strong concerns over the effectiveness of capital spending (Figure 3.41). The estimated fiscal multipliers are modest and lower than those estimated for other countries. Low impact multipliers indicate that much of the spending leaks into imports (such as capital goods and construction services), as there is limited domestic production capacity to satisfy this demand. Moreover, low long-run multipliers suggest that the (large) expansionary fiscal policy stance is not addressing supply-side constraints and is thus jeopardising fiscal sustainability. In sum, public spending partly drives economic growth in the short-term, but fails to have a lasting impact on the economy.

Figure 3.40: Fiscal multiplier (consumption)
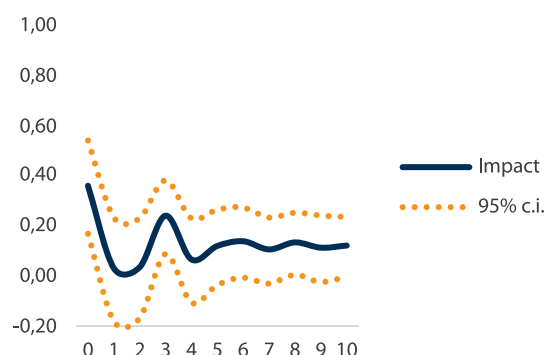
Source: World Bank staff estimates.

Figure 3.41: Fiscal multiplier (investment)
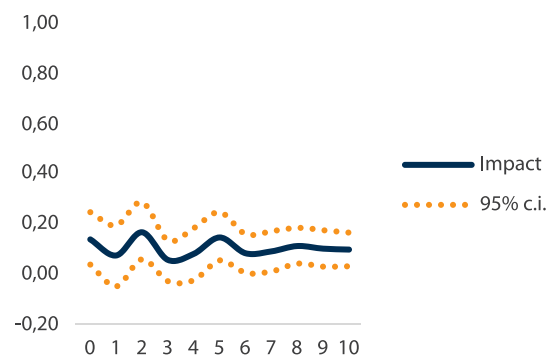
Source: World Bank staff estimates.

The rate of return on capital has been declining, implying that public investment management needs to be improved. The rate of return to capital (RoRK) measures the change in output brought about by a unit change in the capital stock. The return on public capital expenditures have been declining since 2008 (Figure 3.42).[140] This suggests inadequate public investment management, as very large investments appear to have been undertaken without a judicious assessment of needs. For instance, about $1 billion have been invested in the electricity sector since 2008.[141] Although access to electricity improved remarkably, service provision remains unreliable and there is significant overcapacity.[142] The new $120 million international airport in the exclave of Oecusse has capacity for over 1 million passengers per year, even though the region has less than 70,000 inhabitants and limited economic activity.[143] The Suai airport was also rehabilitated for $80 million. Finally, about $319 million have been spent on the Tasi Mane project since 2011, most of which on a highway linking Suai and Beaço. With a planned total investment of $1.1 billion – including $720 million for a supply base in Suai – returns on capital will be highly conditional on the successful development of the planned petrochemical industry. Overall, the selection of future investment projects should rely on robust

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139 Consumption only comprises spending on goods & services, since including wages & salaries and public transfers would render the results not statistically different from zero. This is likely because payments to individuals (e.g. wages and social transfers) are subsequently not fully spent. Investment equates to capital expenditure.

140 The capital stock is estimated through the perpetual inventory method, with initial capital calculated through two methods (1) initial-year gross fixed capital formation, and (2) 'rule of thumb' for capital output ratio. See the World Bank's Rate of Return to Capital (RoRK) tool for further information. Papua New Guinea, Lao PDR, Cambodia, and Myanmar have estimated rates ranging from 28 to 44 percent – compared to Timor-Leste's 20 percent.

141 This is likely to be related to poor cost-benefit analysis and low technical efficiency.

142 The current peak load (i.e. maximum demand) of about 70 MW is less than 25 percent of the total installed capacity (over 300 MW). This entails a large penalty associated with sunk costs and maintenance of idle capacity.

143 The Dili airport received 122,000 passengers in 2018 and 93,000 in 2019.

cost-benefit analysis and thus prioritise growth-enhancing cost-effective infrastructure – which should include improvements to education and health facilities, as well as digital infrastructure.[144]

Figure 3.42: RoRK public capital (percentage points)
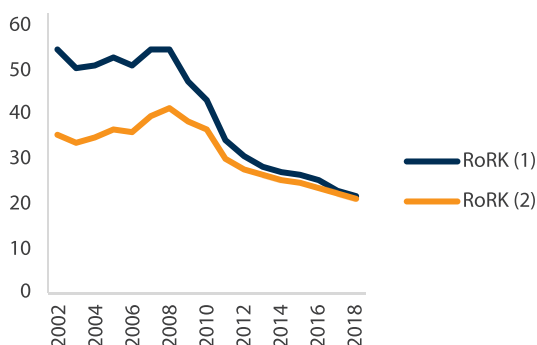
Figure 3.43: Public investment (% GDP, 2014-19)

Source: World Bank staff calculations.
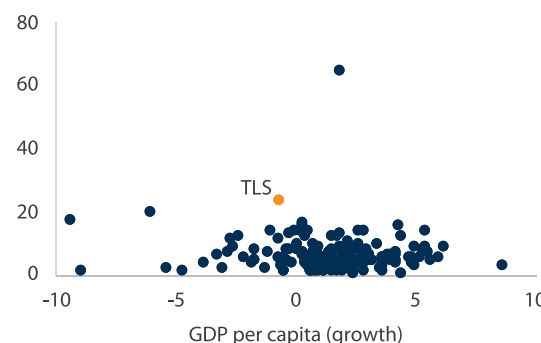
Source: IMF.

Public expenditure is failing to address supply-side constraints and support medium-term economic growth. In the absence of an independent monetary policy, fiscal policy is one of the main instruments available to influence economic activity. However, the estimated fiscal multipliers are modest and much lower than those estimated for other countries. Low impact multipliers suggest that much of the spending leaks into imports (such as capital goods and construction services), as there is limited domestic production capacity to satisfy this demand. Moreover, low long-run multipliers suggest that the (large) expansionary fiscal policy stance is not contributing to ease existing supply-side constraints and is thus jeopardising fiscal sustainability. Public spending is thus not engendering an endogenous process of (private) capital accumulation, entrepreneurship, productivity growth, and economic dynamism that is required to accelerate and sustain economic growth (Figure 3.43).[145] Moreover, these results implicitly suggest that the impact of a fiscal consolidation on (medium-term) growth would be limited, if carefully planned and executed. Fiscal consolidation efforts need not undermine economic activity. For instance, a moderation in goods & services and public transfers is unlikely to have a sizeable impact on (long-term) economic activity. Meanwhile, it is crucial to prioritise capital spending projects and make improvements along the entire project cycle to enhance its impact on economic growth.

3.4 Public Financial Management

3.4.1 PFM Law and Institutional Fragmentation

Improving the legal framework for public financial management is critical to address existing challenges. The Budget and Financial Management Law (13/2009) is the main legislation governing

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144 Low internet penetration, slow connection, and limited digital uptake have undermined the COVID-19 response, especially e-learning and the possibility of disbursing cash to households electronically.

145 The Commission on Growth and Development argued that strong economic growth requires an overall investment rate of at least 25 percent of GDP. Timor-Leste has met that benchmark since 2008 (averaging 41 percent in 2008-2019) but economic growth has been decelerating – raising questions about the quality of (public) investment.

the public financial management (PFM) system. The law establishes the main principles regarding the organisation, preparation, presentation, and execution of the budget – as well as the respective budget oversight and responsibility. It also covers rules and procedures to be applied to financial management. However, there are key weaknesses, such as limited emphasis on fiscal strategy and sustainability, medium-term fiscal and budget framework, subnational fiscal arrangements, financial reporting, and internal controls. Hence, the law should be revised in line with international best practices. A new PFM law is currently under preparation.

A process of administrative and fiscal decentralisation was formally initiated in 2016. Decentralisation was mentioned in the 2002 Constitution, but tangible efforts only started in 2014 with a decree law that provided the legal framework for administrative decentralisation. The Special Administrative Region of Oecusse-Ambeno (RAEOA) and the Special Economic Zones for Social Market Economy (ZEESM) were created by law in the same year.[146] In 2016, a decree law established eight municipal administrations and four municipal authorities (jointly known as 'municipalities') – specifically excluding RAEOA from its scope. Provisions were made for the transfer of powers to the municipalities via inter-organic contracts between sector ministries and the Ministry of State Administration.[147] These contracts operate as a delegation of power and effect a transfer of funds to the municipalities from the respective ministries. In addition to these funds, the general state budget has also provided a budget allocation to municipalities since 2017.

There are concerns regarding the scope and pace of decentralisation, especially owing to limited capacities and high coordination costs. The rationale for decentralisation includes greater economic efficiency (through an improved allocative efficiency of public spending), public accountability, and empowerment (giving greater voice to citizens). In particular, administrative decentralisation is expected to enhance public service delivery by delegating responsibility for front-line services to municipalities – which are likely to have a better understanding of local needs. However, several pre-requisites need to be in place to secure these benefits. For instance, decentralisation requires considerable human resources with strong management and decision-making skills, as well as significant institutional coordination. It also assumes that local administrations are accountable to their populations and that there is a conducive political economy. From a fiscal perspective, decentralisation entails additional costs (e.g. spending on additional administrative structures), particularly related to human resources and coordination. It is therefore crucial to assess if the expected benefits are likely to materialise, and if these would exceed the costs.[148]

The proliferation of autonomous public agencies has also contributed to greater institutional fragmentation. The number of autonomous public agencies (APAs) has increased considerably in recent years, reflecting a strategy to grant greater independence to institutions with a view to improving their efficiency. There are currently 45 APAs, which are meant to be self-financing but few generate their own revenues. Some of the largest revenue-generating APAs are the National University of Timor-Leste (UNTL), the National Hospital Guido Valadares (HNGV), the Autonomous Service of Medicines and Medical Equipment (SAMES), and the Port Authority of Timor-Leste (APORTIL). Several APAs are supported exclusively through

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146 The 2002 Constitution recognised the special nature of the Oecusse region and the need for a different administrative and economic regime. The special regime of the RAEOA-ZEESM is described as a legal entity with administrative and financial autonomy. The ZEESM also includes the island of Atauro.

147 Powers were granted to the municipalities in education, health, food safety, public works and transportation, water and sanitation, agriculture, tourism, social action, civil protection, management of natural disaster, civil and cadastral registration, and support to NGOs and local communities.

148 Indonesia has about 514 sub-national governments for a population of 271 million, which means that (on average) each sub-national government covers more than half a million people. In Timor-Leste, the ratio is less than one-fifth of that of Indonesia – thus implying considerably greater costs. A recent decision was taken to make the island of Atauro a new municipality, increasing the number of administrative sub-divisions to 14 (13 municipalities and RAEOA-ZEESM).

the budget. Given limited capacities, it would be important to stem the increase in APAs and possibly consolidate them – following a careful review.[149] There are two funds – the Infrastructure Fund (IF) and the Human Capital Development Fund (FDCH) – although the IF has been considered as an APA in recent years. APAs (excluding the IF) accounted for 8 percent of total spending in 2019.[150] The proliferation of APAs leads to increased institutional fragmentation, which complicates decision-making – especially within service delivery sectors. It is also unclear if greater independence has led to efficiency improvements.

The reallocation of ministry responsibilities further compounds existing decision-making challenges. Planning and budgeting processes have been reshaped by the establishment of the Infrastructure Fund (IF) in 2011 and the transfer of the strategic planning function from the Ministry of Finance (MoF) to the Office of the Prime Minister (OPM) in 2015.[151] Limited coordination between the MoF and the PMO contributes to discrepancies between the annual action plans and budgets – while also undermining a credible medium-term budget perspective. The creation of the IF aimed to centralise project planning and simplify project implementation, but has weakened the budget unity – as the budget preparation process is divided between the Ministry of Finance and the Ministry of Planning and Strategic Investment.[152] In fact there are challenges in several stage of the project management cycle. For instance, projects are not subject to a rigorous cost-benefit analysis, project selection is not transparent, project management is weak, and evaluations are usually only undertaken in projects financed by donors. (See Annex B for a summary of the 2016 Timor-Leste Public Investment Management Assessment).

3.4.2 Public Service Delivery

Concerns over the quality of public spending are symptomatic of challenges in public financial management. There are several PFM challenges along the budget cycle that undermine service delivery (Figure 3.44). For instance, few sectors have updated (and costed) medium-term sector plans, which undermines their ability to plan strategically. There is also limited use of evidence in the preparation and allocation of budgets, which contributes to allocative inefficiencies in spending. Hence, it will be important to adopt a more results-driven planning and budgeting framework (Figure 3.45). Moreover, budget execution is affected by delayed budget approvals and disbursements, as well as procurement bottlenecks. Fiscal monitoring is onerous, while there are very few evaluations of the impact of spending. (See Annex A for a summary of the 2018 Timor-Leste Public Expenditure and Financial Accountability.)

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149 APAs do not have the same obligations to practice accountability and transparency as other public institutions (such as line ministries), which undermines public scrutiny.

150 In addition to central government budgetary units, there are two extra-budgetary entities – the Petroleum and Geology Institute (IPG) and the National Petroleum and Minerals Authority (ANPM). Moreover, entities identified as financial and nonfinancial public corporations comprise: TIMOR GAP, Administration of Airports and Air Navigation of Timor-Leste (ANATL), Radio Television of Timor-Leste (RTTL), Central Bank of Timor-Leste (BCTL), National Commercial Bank of Timor-Leste (BNCTL). There is also a social security fund since the creation of the National Institute of Social Security (INSS).

151 Decree Law 22/2015 mandated the creation of a Planning, Monitoring and Evaluation Unit (UPMA) in the Office of the Prime Minister. UPMA has been driving a programme budgeting reform.

152 The MoF is responsible for the overall fiscal envelope and the recurrent budget, while MPSI prepares the capital budget. This separation leads to fragmentation and lack of consistency – such as scarce recurrent costs of capital projects. The MPSI has been recently replaced by the Ministry for Planning and Territory.

Figure 3.44: Main phases of the budget cycle
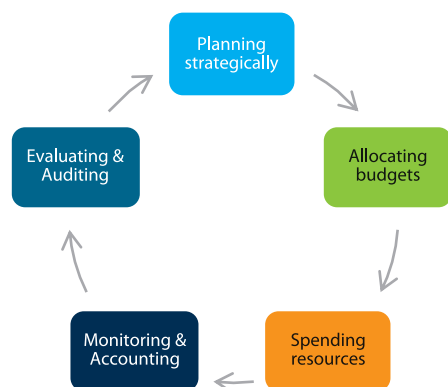
Source: World Bank staff.

Figure 3.45: Results-driven planning and budgeting
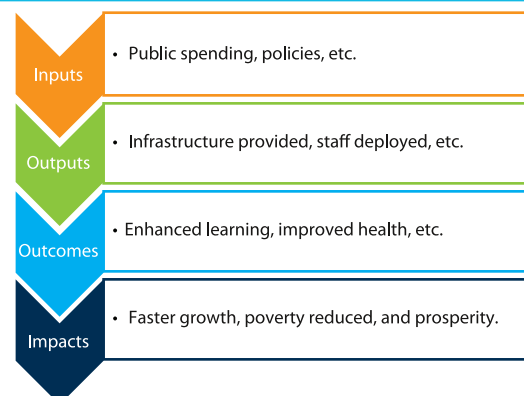
Source: World Bank staff.

Planning has been undermined by institutional fragmentation, lack of prioritisation, and the absence of costing exercises. The national long-term development strategic objectives are set out in the Strategic Development Plan (2011-2030). The SDP should be complemented by (medium-term) sectoral plans, although few sectors have updated documents prioritising objectives and actions. Existing sector plans are mostly aspirational, not based on realistic resource allocations, and are not adequately costed. Institutional fragmentation has made sectoral planning more complex – such as in education and health – owing to the proliferation of autonomous agencies and a growing emphasis on decentralisation. Moreover, the (central) planning function has been led by the Office of the Prime Minister in recent years, which was previously under the remit of the Ministry of Finance. This division of labour has created a discrepancy between strategic planning, sectoral prioritisation, and fiscal envelopes.

Budget preparation often relies on an incremental approach, perpetuating mismatches between budget allocations and spending needs. Sectoral budget submissions (to the MoF) do not always articulate the link between proposed budgets and anticipated results. Moreover, submissions often lack supporting evidence – such as baseline data and targets. The limited use of evidence in the preparation and allocation of budgets contributes to allocative inefficiencies in spending. There is no effective medium-term expenditure framework to link sector plans to the annual budget, and many budget items follow an annual incremental approach.[153] This practice impacts budget execution since available funds are either insufficient or excessive when compared to the actual needs of spending units – usually leading to virements. The linkages between planning and budgeting are therefore weak.

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153 The three-year rolling budgets are mostly projected through an incremental increase (e.g. 4 percent), except for the capital development budget. Activity-based annual action plans (AAPs) provide some programmatic perspective to the annual budget proposal, but not a medium-term strategic framework to project and prioritise budget allocations. Given the high variance in the composition of annual budget outturns, the AAPs are yet to prove valuable for the control over budget execution and service delivery outputs.

Budget execution is impacted by delayed budget approvals and disbursements, as well as procurement bottlenecks. The state budget has rarely been promulgated on time (i.e. before 31 December) in the past decade, which has delayed disbursements and thus impacted budget execution.[154] Late disbursements to line ministries, municipalities, and autonomous agencies affects their ability to deliver services effectively – as funding is not available for essential supplies, transport, training, maintenance, and other expenses. For example, SAMES is often severely affected by late disbursements due to their long lead time for procurement – and it often resorts to emergency procurement, which is inefficient. Procurement delays also impact budget execution, while there are also concerns of the frequent use of non-competitive procurement methods – such as 'emergency' single sourcing.[155]

Financial reporting is onerous, as spending units have multiple reporting lines and use different reporting formats. Financial information about autonomous agencies and municipalities are provided in in-year budget report, as these use the IFMIS for all financial transactions. However, transfers made to other budgetary central government entities – especially by line ministries (e.g. school transfer program) – are not disaggregated. In terms of decentralised spending units, municipal administrators report to line ministries, municipal authorities, and the Office of the Prime Minister separately. Reporting formats combine paper-based and electronic versions, which increase the likelihood of error. This leads to inefficient processes and higher costs. Furthermore, the introduction of programme budgeting has resulted in the production of very detailed budgets and reports that may hinder rather than incentivise management autonomy.[156]

There are few evaluations on the impact of government spending on public service delivery. Information on the activities to be performed is published annually, but few institutions present key performance indicators. Although (quarterly) implementation progress against the annual action plans is reported internally, the information is not published. Despite various reports and technical sector studies – often produced by development partners – there is no comprehensive information available on the resources received by service delivery units, or sector evaluations on the efficiency or effectiveness of service delivery. Moreover, internal audit services within line ministries have limited capacity for performance auditing.

Municipal authorities and line ministries have developed coping mechanisms to tackle these long-standing PFM bottlenecks. MoH departments, for example, have been able to mitigate the effects of delayed transfers by frontloading donor-funded activities to the first and second quarters, and then using government funds later in the year. Both municipal authorities and line ministries routinely request virements from one budget line item to another to manage shortfalls. Although virements are a legitimate procedure in the PFM process, they are time consuming and requests are not guaranteed to be approved. This creates additional workload for municipalities and ministries, and raises the level of uncertainty on budget execution.

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154 The budget is usually available to spending units within two weeks of its promulgation – after it is entered into the financial management information system (FMIS). The Ministry of Finance authorises spending on a quarterly basis, upon approval of financial reports (for the previous quarter) submitted by the spending units. Once authorised, spending units can approve new contracts and initiate purchases by issuing a Commitment and Payment Voucher (CPV).

155 An assessment of public procurement systems is currently under way through the use of the Methodology for Assessing Procurement Systems (MAPS) tool.

156 In a recent submission to Parliament, the NGO La'o Hamutuk voiced concerns that the information published according to programme structures does not facilitate dialogue and monitoring in Parliament, and makes it more difficult for the public to access information – thus damaging transparency and accountability.

Improving the quality of spending will depend at least in part on a more general concerted effort to improve fiscal discipline. Fiscal discipline is currently weak. The lack of credibility of the budget process and reliability of initial allocations result in significant adjustments made throughout execution. There is weak control over spending during the budget execution phase, and many line ministries and spending units face substantial pressure to spend resources without the necessary safeguards on the quality of spending decisions. Changing this situation will require the development of a comprehensive medium-term budget planning framework, including: in-built feedback mechanisms between sectoral needs and budget allocation considerations; improvements in the predictability and timeliness of the budget process; and the introduction and enforcement of accountability mechanisms for spending decisions which are linked to sectoral objectives and outcomes.

Sectors would benefit from a review of their objectives, priorities, and implementation plans, which should then be linked to resource needs. The lack of updated sector plans impede a review of progress and prevent the strategic prioritisation of sector spending. To ensure that national-level plans translate into effective implementation on the ground, it would also be important to understand the impact of PFM systems on service delivery and generate an action plan for improvement on specific work processes. Recent assessments have found that efficient service delivery is hampered by fragmentation in the management of public investments and lack of monitoring and oversight on decentralised procurement and contract management systems. This leads to a lack of accountability in the use of available resources to achieve value for money and optimal levels of public services. Detailed analysis on bottlenecks to service delivery arising from PFM arrangements – especially at the municipal level and at autonomous agencies – could help to diagnose key problems and work towards solutions to improve fund flow and efficiency of spending.

3.4.3 The Role of Digital Information

Existing PFM challenges require a prioritisation and sequencing of reforms, in addition to strong political commitment. Several PFM weaknesses undermine service delivery and threaten medium-term fiscal sustainability. However, top-down efforts to enhance performance at the sectoral level may be exceeding the bottom-up capabilities of ministries, autonomous public agencies, and municipalities. PFM reforms require selectivity – by carefully considering the constraints undermining public service delivery performance – in a context of limited capacities and other prevailing constraints. Advancing human development requires concerted PFM reforms to enhance the quality of public spending while supporting fiscal sustainability. However, the social sectors cannot individually drive fundamental (cross-cutting) PFM reforms. This will require high-level political commitment and a better alignment of the political economy conditions to enable tangible reforms.

Improving PFM processes is fundamental to enhance the delivery of education and health services. Poor planning and budgeting processes contribute to inefficient and unsustainable spending patterns. A lack of budget prioritisation – given financial and implementation constraints – undermines the achievement of important human development outcomes. The sectoral chapters of this PER highlight some of these issues. Structural PFM challenges arising from (rigid and centralised) top-down resource allocation processes can be partly remedied by empowering local actors to address frontline challenges. If funds to repair a broken window in a hospital or school cannot be secured in a timely manner, no amount of ambitious PFM innovations on paper (such as programme budgeting) will address the issue. Nonetheless, simply transferring resources to the local level would not necessarily lead to better results. Hence, there is a need to balance a desire for greater administrative and financial decentralisation with the need to strengthen mechanisms that ensure that resources are used effectively.

Digital technologies can provide practical solutions to address critical service delivery challenges. In highlighting the need for more fundamental (and practical) PFM reforms, this PER has sought to identify targeted approaches to improving prioritisation for health and education spending. Owing to significant spatial disparities on access to public services and human development outcomes, coupled a growing emphasis on decentralisation, the focus was on improving the transparency and accountability of medium-term budget allocations. Given the highly fragmented institutional landscape, efforts to better integrate basic (spatial) data can support a constructive dialogue on development needs, capacity, and resource allocation across different public institutions – such as those responsible for finance, health, education, and even transport. (See Chapter 6 for a geospatial tool that brings together data on health facilities, beneficiaries, and roads to support the planning, budgeting, and execution of public funds.)

3.5 Conclusions and Recommendations

Government expenditure has been very high during the past decade and among the highest in the world. Public spending has grown substantially since the mid-2000s, averaging 86 percent of GDP between 2008 and 2019. Large increases in public spending resulted from a broad-based surge in most appropriation categories. There has been a moderate shift in the composition of public spending, with transfers increasing in importance. Capital expenditures have been quite volatile. Moreover, budget credibility has been undermined by regular mid-year revisions – either through budget rectifications or virements. Systematic over- and under-budgeting reflects poor planning, budgeting, and/or implementation – as well as delays in the approval of the state budget. Poor budget execution likely leads to sub-optimal outcomes in terms of the efficiency and effectiveness of public spending.

The allocative efficiency of public spending should be improved to better reflect stated priorities and existing challenges. Public expenditure has been skewed towards economic infrastructure – mainly electricity and roads – which could be partly justified by its inherent high costs. However, the country faces large human development challenges, such as high stunting levels and poor learning outcomes. Given this, there is scope for an improved allocation of resources, particularly due to limited spending on social infrastructure relating to health, education, and water & sanitation. Moreover, key economic sectors with growth potential – agriculture, tourism, commerce, and industry –– only account for one percent of total expenditure.

The effectiveness of public capital spending has been low, calling for improvements in public investment management. Estimates suggest that the impact of public (capital) expenditure on economic activity has been very limited. Much of the spending leaks into imports, as there is limited domestic production capacity to satisfy this demand. Moreover, the large expansionary fiscal policy stance is not contributing to ease supply-side constraints and is thus jeopardising fiscal sustainability. Public expenditure is therefore failing to support medium-term economic growth. Moreover, the rate of return on capital has been declining, suggesting that public investment management has been deteriorating. It is therefore crucial to make improvements along the entire project cycle to enhance the impact of public spending on economic growth. It will be crucial to undertake critical public investment management reforms, with a particular focus on project appraisal (e.g. robust cost-benefit analysis) and project selection – as set out by the Public Investment Management Assessment (PIMA) – see Annex B.

Rigid expenditures have been increasing, but there is still ample scope for fiscal adjustments. The share of rigid expenditures in total spending has risen through time, which is concerning because it constraints

the scope for discretionary policy. Given concerns over medium-term fiscal sustainability, a potential fiscal adjustment could be costly if rigid expenditures continue to rise – especially if these are legally binding. It is thus important to curb key items before they build a strong momentum that is difficult to halt. At present, there is still significant scope for changes in budgeting – particularly to consolidate and reallocate resources across categories to improve efficiency and effectiveness. However, there are some risks in salaries (set to grow with decentralisation), professional services (dependence on consultants), fuel for generators (exposed to volatile international oil prices), and pensions (generous contributory and non-contributory schemes) – among other categories.

Spending on salary & wages warrants further scrutiny and improvements in human resource planning. Expenditure on salary & wages has grown progressively through time. The wage bill is relatively large when compared to regional and income peers – at about 12 percent of GDP. Expenses related to temporary contracts, as well as payments to consultants and advisors, are recorded under professional services in the goods & services category – which leads to a significant underestimation of costs. Information on the composition of the civil service needs to be better consolidated among relevant institutions to provide an accurate representation of the civil service – and should include information on headcounts, remuneration levels, and competencies. Developing adequate pay and employment policies and improving human resource planning will be key to improve the efficiency and sustainability of the civil service.

There is scope for consolidating spending on goods & services, while a procurement reform can improve competitiveness and transparency. Spending on goods & services grew rapidly until 2014, although it has moderated since then. Spending on professional services remains the largest item, while spending on fuel for generators has varied noticeably due to volatile international oil prices. However, spending on maintenance of equipment & buildings has not kept up with the accumulation of capital assets. Items under goods & services have been systematically over-budgeted, which may signal poor planning and uncovers considerable scope for consolidation. Items that need to be contained include professional services, fuel for generators, and other miscellaneous services. Curbing the overall budget for goods & services will support fiscal sustainability, while a reform of procurement systems would increase competitiveness and transparency.

Spending on public grants merits greater selectivity, while reforms are needed to secure the sustainability of the social protection system. Spending on public transfers, which mainly comprise personal benefit transfers and public grants, has increased considerably. Spending on social protection partly reflects the country's political and socio-economic legacy, but it does not necessarily target the poorest or the most vulnerable. The veteran programme provides generous benefits and accounts for most spending, while Bolsa da Mae benefits are small. The new contributory social security scheme system is also generous and raises sustainability concerns. Public grants comprise a wide range of institutional transfer payments, most notably to the RAEOA-ZEESM. Other public grants include the capitalisation of banks, support to state-owned enterprises, and payments to private institutions. Enhancing selectivity (and transparency) of public grants and reforming the social protection system would improve the impact of public spending while securing fiscal sustainability.

Growing institutional fragmentation is a concern that should be carefully considered, since it affects decision-making. Public transfers to municipalities started in 2017, although municipalities also receive funds through some line ministries. There are concerns regarding the scope and pace of decentralisation, especially owing to limited capacities and high coordination costs. For example, an allocation formula could be developed based on needs (e.g. poverty levels and human development outcomes) and capacity

to implement. The proliferation of autonomous public agencies (APAs) has also contributed to greater institutional fragmentation. Given limited (managerial) capacities and inability to generate revenue, it would be important to stem the increase in APAs and possibly consolidate them – following a careful review.

Persistent challenges in the public financial management system will need to be addressed. There are several PFM challenges along the budget cycle that undermine service delivery. For instance, few sectors have updated (and costed) medium-term sector plans, which undermines their ability to plan strategically. There is limited use of evidence in the preparation and allocation of budgets, which contributes to allocative inefficiencies in spending. Budget execution is affected by delayed budget approvals and disbursements, as well as procurement bottlenecks. Fiscal monitoring is onerous, while there are very few evaluations of the impact of spending. The recent Public Expenditure and Financial Management (PEFA) assessment evaluated the strengths and weaknesses of Timor-Leste's PFM system. It is now crucial to develop a prioritised and sequenced PFM reform action plan that identify the key measures that will lead to the highest performance payoffs.

04

Health

Enhancing the quality of public spending on health will be key to improve health and nutrition outcomes. Timor-Leste has made significant progress in rebuilding its health system and improving health outcomes since independence. However, many challenges remain – including a high rate of childhood stunting, low and uneven access to health and nutrition services, and poor quality of care. Meanwhile, the COVID-19 pandemic and natural disasters have revealed inadequacies in the country's preparedness for responding to health emergencies. Public spending on health has been high by regional and income standards, even if it does not account for a high share of the overall budget. Increases in public spending have enabled critical investments in the sector, but this has not translated into markedly better service availability and quality. Increasing the efficiency and effectiveness of public expenditure will be crucial to improve the provision of health and nutrition services and create fiscal space for more productive spending. Addressing stunting will require government-wide multi-sectoral action, as well as improvements

in nutrition-specific interventions. Investing in preparedness will build resilience of the health system and enable a more effective response to future emergencies. Finally, institutional arrangements will need to be reviewed, particularly given the ongoing decentralisation process and the proliferation of autonomous agencies.

Main recommendations: (i) making the reduction of childhood stunting a national priority via government-wide multisectoral action; (ii) providing health sector entities with greater flexibility over spending decisions coupled with increased accountability mechanisms; (iii) increasing investments to support effective delivery of routine health services, as well as building resilience to respond to health emergencies; (iv) rationalising human resources for health, while ensuring an appropriate skills-mix, equitable distribution, and improved competencies; and (v) enhancing the health information system by consolidating data sources, improving usability, and encouraging the use of data in decision making.

Chapter structure: The chapter starts by providing an overview of the health sector, including its strategic plans and the organisation of the health system. It then evaluates the performance of key health indicators and how health services are delivered – including the quantity, quality, and distribution of key resources (e.g. facilities and health workers). The analysis of the level and composition of health expenditure is focused on public spending, while sustainability, efficiency, and equity considerations are also discussed. The chapter ends with conclusions and recommendations.

4.1 Sector Overview

4.1.1 Strategic Plans

The NHSSP 2011-2030 provides the overarching policy framework for priorities and developments in the health sector. The National Health Sector Strategic Plan (NHSSP) aims to ensure available, accessible, and affordable healthcare services for all Timorese. The NHSSP is fully aligned with the Strategic Development Plan (SDP) for 2011-2030, which aims to make comprehensive high-quality health services accessible to all citizens. The objectives and timeline of the NHSSP are also in line with the Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC). To make progress on the NHSSP, the Ministry of Health (MoH) aims to develop the key building blocks of the health system, including human resources for health, health infrastructure, and institutional capacity to manage the health system – such as regulatory functions, administration and management, planning and budgeting, and monitoring & evaluation.[157]

Progress on NHSSP targets has been variable, with some indicators recording limited improvements. As a 20-year plan, the NHSSP is meant to be revised regularly to reflect progressive achievements, changes in plans and priorities, and feedback from stakeholders. Targets for key performance indicators are set at 5-year intervals and progress is tracked using a combination of survey and administrative data. Selected indicators for health outputs show variable progress (Table 10). For instance, antenatal visits and birth deliveries in health facilities increased considerably between 2009 and 2016, while progress on modern contraceptive use and immunisation coverage has lagged. The 2017 Joint Annual Health Sector Review found similar results across different components of the plan.[158]

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157 MoH 2011
158 MoH 2018b

Table 10: Selected NHSSP target indicators

Indicator	Baseline (2009)	Target (2015)	Target (2020)	Actual (2016)
Modern contraceptive use	21	40	70*	24
Antenatal visits for pregnancy: 4+ visits	55	70	80	77
Assistance during delivery from a skilled provider	32	65	75	58
Place of delivery: Health facility	24	40	65	50
Completed immunisation (% under 12-23 months)	53	90	90	49

Source: NHSSP 2011-2030 and DHS 2016, * is target for 2030.

In support of the reforms envisioned under the NHSSP, the MoH developed a Health Financing Strategy for 2019-2023. The Health Financing Strategy (HFS) aims to ensure financial protection to the population, increase health funding to cover unmet healthcare needs, reduce inequities in resource distribution and service coverage across the country, and improve health system efficiency.[159] Key findings of the HFS include the need for increased resource mobilisation for health and ensuring sustainable public financing, improvements in pooling and allocation of the health budget, and opportunities for enhancing service delivery through financing reforms.

4.1.2 System Organisation

The health system has three main tiers, with services provided by different types of facilities. Primary health care (PHC) is provided through Health Posts (HPs) located in most villages ('sucos') and Community Health Centres (CHCs) at the sub-municipality level (Figure 4.1).[160] Outreach services are run monthly through the Integrated Community Health Services (SISCa) program. The Family Health ('Saúde na Família') initiative, which was launched in 2015, complements these services by bringing PHC to the home setting by doing outreach services and taking a person-centred approach to health and well-being. Secondary care is provided through five referral hospitals located in Ainaro, Baucau, Bobonaro, Covalima, and Oecusse. Tertiary care is only available at the National Hospital Guido Valadares (HNGV) in Dili. Ancillary services, such as laboratory functions and supply chain for medicines, are managed by autonomous entities at the central level.

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159 MoH 2018a

160 Timor-Leste has three levels of administrative divisions: 13 municipalities (previously called districts), 65 sub-municipalities (previously called sub-districts or administrative posts), and 452 villages (called 'suco' in Tetum).

Figure 4.1: Health system tiers
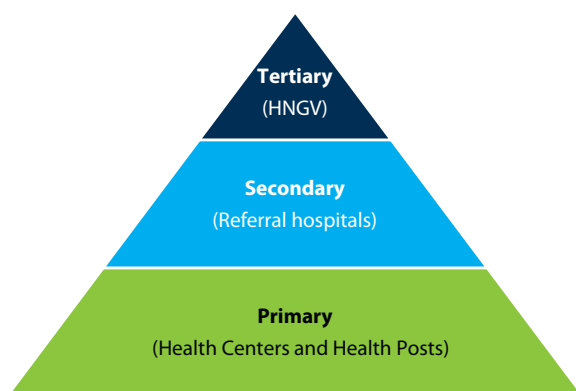
Source: World Bank staff

Figure 4.2: Public institutions
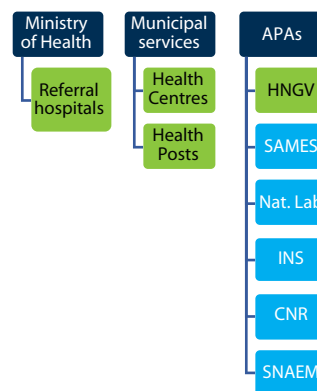
Note: Green denotes service delivery units.
Source: World Bank staff

The MoH is the main institution for governance and stewardship of the health sector. The roles and responsibilities of the MoH broadly include policy development, resource mobilisation, regulation and standard setting, licensing of health practitioners and providers, human resources (including registration, recruitment and placement of health professionals), and monitoring and evaluation. Private providers predominantly operate in Dili, while non-governmental organisations (NGOs) support service delivery in some municipalities, typically financed by external sources of funds. From the financing perspective, the MoH is the primary financier of public sector health services, except for large capital projects. New capital investments above $5 million ($1 million until 2019) are financed through the Infrastructure Fund, which was established in 2011 to facilitate the implementation of large-scale capital projects.

Over the years, policies on decentralisation and greater autonomy have altered the governance and management structures in the sector. Decentralisation has been a policy priority from very early on, with the 2004 Health System Law describing health prevention, promotion, and care activities taking place under the direction of the MoH, but with supervision by District Health Management Teams. In 2016, an administrative contract laid out a joint agreement between the Ministry of State Administration and the MoH on the delegation of powers in the health sector. This agreement lists the responsibilities that are transferred to municipal administrations: management of human resources, assets, and organisation and delivery of PHC services.

There are several autonomous public agencies in the health sector, mostly on ancillary services. Autonomous public agencies (APAs) in the health sector include: (i) National Hospital Guido Valadares (HNGV) in Dili, which is the only tertiary hospital in the country; (ii) Autonomous Drug and Medical Equipment Service (SAMES), whose key functions include procurement, storage, and distribution of medicines and medical commodities; (iii) National Laboratory, which is responsible for quality and diagnostic testing on samples of various medical examinations sent from hospitals; (iv) National Health Institute (INS), which provides in-service training and continuing professional development for health professionals; (v) National Rehabilitation Centre (CNR), which provides services to and works with individuals with disabilities; and (vi) National Ambulance and Emergency Medical Service (Figure 4.2). Although not strictly a health sector institution, the National University of Timor-Leste (UNTL) provides pre-service training for health workers (e.g. doctors, nurses, and midwives).

The financing of health sector entities has also changed, partly as a consequence of recent reforms. Up to 2014, there was a single budget allocation from the MoF to the MoH, which would then distribute resources to all health sector entities. Each entity had an allocation for salaries, goods & services and minor capital that they could manage on their own, while funds for medicines and transfers to pay for overseas treatment remained centralised at the MoH. With decentralisation and the establishment of autonomous agencies, the financial relationship between the MoH and health sector entities changed. In 2017, the MoH only distributed 55 percent of the government budget for health, with direct budget transfers from the MoF serving as another key source of funds to municipalities and autonomous agencies.[161] It should also be noted that external financing is considerable, albeit declining.

Institutional reforms were aimed to provide greater independence and flexibility, but there have been challenges. Decentralisation and greater autonomy intended to grant operational and financial independence to municipalities and public agencies, but in practice this has been challenging. To some extent, this is because the reform process has been quite recent. Revenues only cover a small proportion of expenditures of the main autonomous agencies (Table 11). In practice, these agencies continue to depend on budget transfers from the MoF and MoH to cover most costs. For health services at the municipality level and below, health administrators receive funds from MoH for program costs and from MoF for other operating costs. In theory, budget absorption and spending efficiency can be improved if there is integrated planning at the municipal level to make use of funds from both sources in a way that leaves no gaps or overlaps.[162] In practice, implementation has been variable, with management capacity as a key constraint. Anecdotal evidence from municipalities suggests that there is typically only one person managing a range of responsibilities including planning, accounting, reporting, and monitoring, with little or no supervision or training from the central government. Furthermore, key inputs such as large infrastructure, human resource, and medical supplies continue to be managed centrally, thus limiting the extent to which municipal authorities can affect service delivery.

Table 11: Revenue and expenditure of the main autonomous entities

	HNGV			SAMES		
	Revenues (USD '000)	Expenses (USD '000)	Coverage (%)	Revenues (USD '000)	Expenses (USD '000)	Coverage (%)
2016	273	6,481	4.2	169	5,534	3.1
2017	250	8,962	2.8	252	7,909	3.2
2018	544	6,682	8.1	294	11,356	2.6
2019	250	7,663	3.3	124	7,325	1.7

Note: HNGV revenue for 2019 taken from the 2021 BB1.
Source: Ministry of Finance (BOOST).

Institutional fragmentation has affected the planning, allocation, and execution of budgets. For instance, SAMES continues to rely on MoH's quantification process to determine the volume of orders for their annual procurement. The delegation of these roles and responsibilities aims to limit potential conflict of interest if procurement and quantification functions were under the same agency. In practice, this has posed challenges in coordination between SAMES and the MoH across the procurement and supply chain cycle. The process of gathering information on stock levels from each municipality, via MoH, is often delayed. Inadequate and late quantification and costing processes in turn leads to a mismatch between

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161 Mòdol 2017

162 DFAT Australia 2019

initial budget estimates submitted by SAMES to MoF and the eventual budget they receive. In turn, this affects service delivery on the ground, delaying the annual procurement process at SAMES and impacting stock levels at health facilities.

Effective coordination across health sector entities is particularly important given the growing organisational complexity. While the NHSSP lays out a long-term vision, developing shorter term operational plans would help to improve cohesiveness across functions and activities. Currently, each organisation draws up its budget proposal and annual implementation plan independently of one another, which contributes to poor coordination and allocative inefficiency. The creation of a Health Sector Working Group, already planned as part of the Health Financing Strategy, can play a key role in coordination and the development of joint budget and implementation plans.

Upcoming government plans may further increase complexity in the sector. The ambulance service is expected to become an autonomous service in 2021, and SAMES is anticipated to become a state-owned enterprise through a capital injection. Moreover, the government is currently exploring the possibility of a Public Private Partnership (PPP) for medical diagnostics. The success of these reforms will depend on the development of strong governance and financing models, robust business plans, and a clear transition and implementation plan on how public sector institutions engage with other (private) entities. Additionally, there are plans to decentralise quantification and purchasing functions away from MoH towards municipalities. Substantial capacity development and skills building would be required to ensure successful decentralisation of these functions.

4.2 Performance Indicators

4.2.1 Key Outcomes

The health system was very weak at independence, having endured years of destruction. Most of the country's physical infrastructure was in poor condition or damaged by the late 1990s, affecting nearly 80 percent of health centres. Most Indonesian citizens had departed, resulting in a severe shortage of qualified and experienced professionals, leaving Timor-Leste with very thin human resource and institutional capacity, including in the health sector. The early years of independence thus focused on re-establishing basic infrastructure and services. The MoH continued to operate through the 2006 civil unrest, ensuring that health services remained functional. Timor-Leste has had to come a long way in rebuilding its capacity to manage the health sector and deliver improved health services.

There has been progress on key health outcomes, especially on life expectancy, healthy life expectancy (HALE), and mortality. Life expectancy at birth has steadily increased from 61 years in 2002 to 69 years in 2018. The healthy life expectancy at birth was estimated at 61 years in 2019, an increase from the 56 years in 2002.[163] The maternal mortality ratio (MMR) has declined from 668 per 100,000 live births in 2002 to 195 per 100,000 live births in 2016 (Figure 4.3).[164] Infant mortality has halved since 2002, down to 38 per 1,000 live births in 2019 (Figure 4.4). The under-five mortality rate has declined from 97 per 1,000 live births in 2002 to 44 per 1,000 births in 2019. These improvements may be attributed to investments in antenatal care and an increase in the proportion of births attended by skilled health personnel, as well as investments

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163 Institute for Health Metrics and Evaluation (IHME) database 2021.

164 DHS 2016.

in the health workforce and strengthening of the health system.[165] The reduction of malaria incidence has also been impressive, as the country is on track to eliminate malaria by 2021. Prevalence of HIV is also low, at less than 1 percent of the population.

Figure 4.3: Maternal mortality (per 100,000 live births)

GDP per capita (USD) - log scale
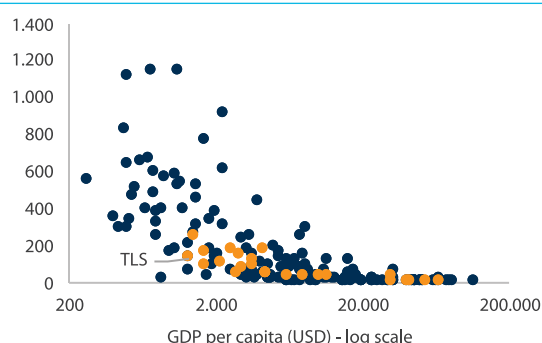
Source: World Bank

Figure 4.4: Infant mortality (per 1,000 live births)

GDP per capita (USD) - log scale
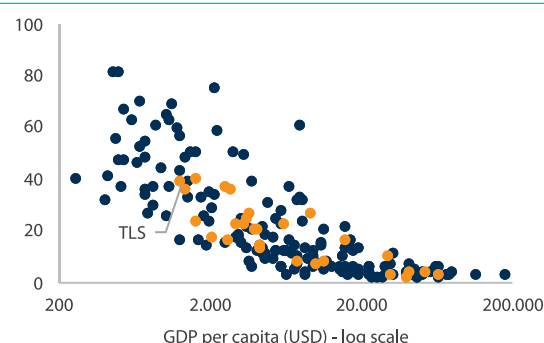
Source: World Bank

Despite good progress on many health indicators, there remain significant health challenges. While Timor-Leste successfully attained its health-related Millennium Development Goals (MDGs), concerted actions will be required for the country to be on track to achieve the Sustainable Development Goals (SDGs) by 2030. For example, both maternal and infant mortality rates are broadly in line with what one would expect for the country's level of income, but there is a significant way to go to meet the 2030 MMR target under the SDG framework (Figure 4.5).[166] Neonatal disorders continue to account for the largest share of the overall disease burden in Timor-Leste, causing 12.3 percent of all disability-adjusted life years (DALYs) lost due to morbidity and premature mortality in 2019. The share of communicable diseases remains high by regional and income standards. The incidence of tuberculosis is very high – at 498 per 100,000 population – and is one of the main causes of hospital deaths in the country.[167]

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165 Government of Timor-Leste 2019.

166 SDG Target 3.1 calls for a reduction in the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births by 2030, and for no country to have an MMR greater than 140 per 100,000.

167 Government of Timor-Leste 2019.

Figure 4.5: MDGs to SDGs for maternal mortality
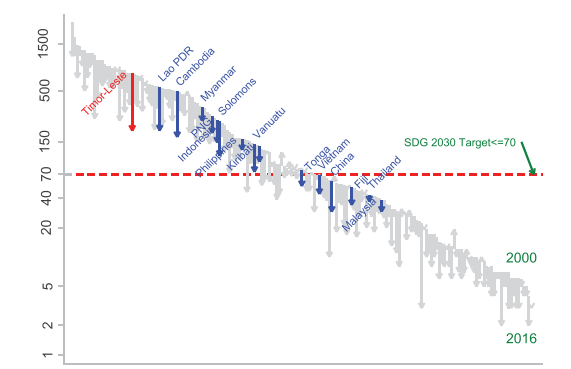
Source: World Bank

Figure 4.6: Burden of disease by cause
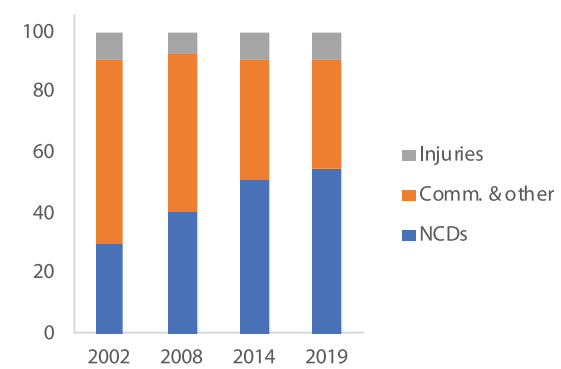
Source: Institute of Health Metrics and Evaluation (IHME)

The share of non-communicable diseases (NCDs) in the overall burden of disease has increased significantly. NCDs now account for 55 percent of the burden of disease, up from 29 percent in 2002 (Figure 4.6). Stroke, heart and lung diseases, and diabetes are now among the top 10 diseases and have been contributing increasingly to death, illness, and disability. The rise in NCDs is a result of changes in several sociodemographic and lifestyle factors. Several of these risk factors – including low birt weight and short gestation, particulate matter pollution, high systolic blood pressure, high fasting plasma glucose, smoking, and child growth failure – are prominent among the top ten risk factors contributing to the overall disease burden (Table 13). Prevalence of tobacco use – a key risk factor for many of these NCDs – is high at 56 percent, and constitutes one of the most significant public health threats.[168]

Table 12: Causes of morbidity and premature mortality

Rank in 2019	Risk Factors	DALYs lost share			
		2002	2008	2014	2019
1	Low birth weight and short gestation	14%	14%	12%	11%
2	Particulate matter pollution	13%	11%	11%	11%
3	High systolic blood pressure	4%	6%	9%	10%
4	High fasting plasma glucose	2%	3%	5%	6%
5	Smoking	3%	4%	6%	6%
6	Child growth failure	21%	12%	8%	6%
7	Kidney dysfunction	1%	2%	3%	3%
8	High LDL cholesterol	1%	2%	2%	3%
9	Alcohol use	1%	1%	2%	2%
10	Unsafe water source	5%	4%	3%	2%

Source: Institute of Health Metrics and Evaluation (IHME)

168 National Survey for Non-Communicable Disease Risk Factors and Injuries: Using WHO STEPS approach in Timor-Leste. World Health Organization, 2014.

Table 13: Risk factors for death and disability

Rank in 2019	Diseases/Condition	DALYs lost share			
		2002	**2008**	**2014**	**2019**
1	Neonatal disorders	14.7%	14.7%	13.3%	12.3%
2	Stroke	2.9%	4.5%	6.3%	7.0%
3	Lower respiratory infections	12.8%	9.5%	8.0%	7.0%
4	Ischemic heart disease	2.0%	3.2%	4.9%	5.6%
5	Congenital birth defects	4.2%	4.3%	4.1%	3.7%
6	HIV/AIDS	3.2%	3.6%	3.9%	3.3%
7	Diarrheal diseases	6.2%	4.4%	3.5%	3.0%
8	Tuberculosis	3.4%	2.6%	2.8%	2.7%
9	Road injuries	1.5%	1.6%	2.2%	2.4%
10	Chronic obstructive pulmonary disease	1.0%	1.5%	2.0%	2.3%
	DALYs per 100,000	**51,298**	**36,341**	**31,487**	**30,353**

Source: Institute of Health Metrics and Evaluation (IHME)

Chronic malnutrition is a severe problem that affects children's cognitive and physical development. Almost half of children under five are stunted – a very high value when compared to other countries (Figure 4.7). Stunting affects cognitive and physical development, which in turn adversely impacts educational outcomes and employment prospects. Poor nutritional outcomes are a result of a variety of factors including lack of access to adequate health and nutrition-related services, food unavailability or insecurity, and behavioural aspects and childcare practices. Micronutrient deficiencies are also widespread among the population. Only 85 percent of pregnant mothers received micronutrient supplementation (iron and folic acid), which impacts both maternal and child health.[169] Environmental factors such as access to improved water and sanitation also play a critical role. In 2016, only 80 percent of households had access to safe drinking water and 54 percent had access to improved sanitation, which has a severe impact on child health and growth.[170] While the average rate of child stunting has improved over the past decade – from 58 percent in 2009-2010 to 46 percent in 2016 – there are significant differences across municipalities and income groups. Child stunting is as high as 60 percent in Ainaro, but only 29 percent in Ermera. The prevalence of severe stunting is lowest among the wealthiest households (15 percent), but it is notable that the prevalence of moderate stunting is similar across all income levels (Figure 4.8). Widespread stunting among children reflects a persistent gender gap and the relatively low access to health and nutrition-related information and services for women and girls – particularly on reproductive health and nutrition, as well as counselling for gender-based violence.[171]

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169 Demographic Health Survey, 2016

170 DHS, 2016

171 Timor-Leste ranks 128 out of 144 countries in the 2017 Global Gender Gap Index – the lowest of all the countries in the East Asia and Pacific region. This reflects inequalities that result in high rates of maternal mortality and gender-based violence.

Figure 4.7: Child stunting prevalence (%)
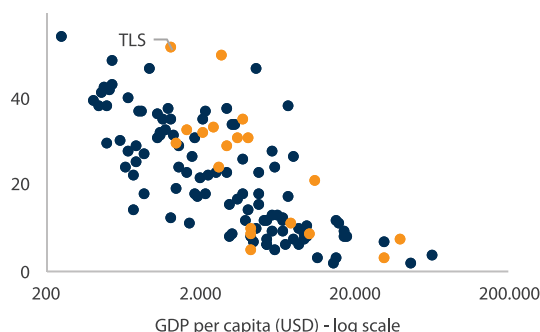
Source: World Bank

Figure 4.8: Child stunting by household income level
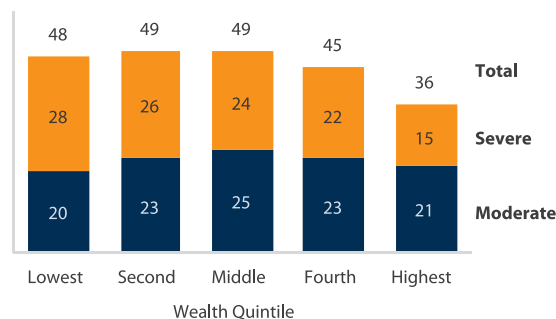
Source: DHS 2016

The Human Capital Index highlights that significant improvements in health outcomes are required. The World Bank's Human Capital Index (HCI) includes several health indicators, including child and adult survival and healthy growth (i.e. not stunted rate). Timor-Leste's score and rank in some health-related indicators suggest that there is considerable room for improvement. For instance, only 54 percent of children are not stunted, compared to 76 percent in the East Asia & Pacific (EAP) region and 75 percent in lower-middle income countries (LMICs). The country performs better on child and adult survival. About 95 out of 100 children born survive to age five, while 86 percent of 15-year-olds live to age 60.[172]

There are large disparities in health outcomes observed across geographies and socioeconomic strata. For example, the under-five mortality rate is 2-3 times higher in the remote exclave of Oecusse, when compared to other municipalities (Figure 4.9). Moreover, under-five mortality is double the rate among households in the poorest quintile compared to those in the richest quintile (Figure 4.10).[173] Similar disparities are found for nutritional outcomes, such as child stunting – as mentioned earlier. For both health and nutrition, bringing lagging regions up to (at least) the average will require significant effort.

Figure 4.9: Under-five mortality by municipality
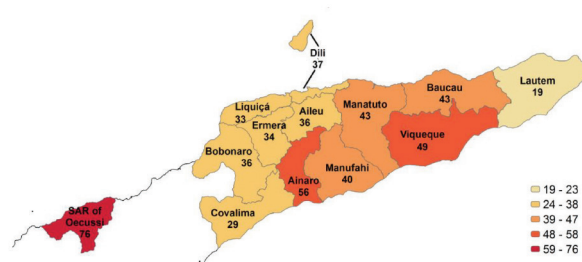
Source: DHS 2016

Figure 4.10: Under-five mortality by income
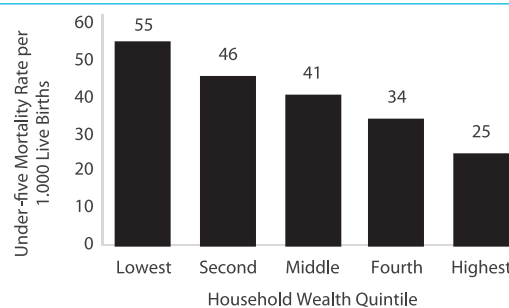
Source: DHS 2016

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172 Some complementary indicators are worrying: 43 percent of the population age 15 and older are current smokers (78 percent among men), which is considerably higher than the average for its region (25 percent) and the average for its income group (19 percent). However, the probability of dying from cardiovascular disease, cancer, diabetes, or chronic respiratory diseases is estimated at 20 percent (ages 30-70), which is marginally lower from the averages for the region and income group (by 1 percentage point). The proportion of the population that has type-1 or type-2 diabetes (ages 20-79) is also lower than the benchmarks.

173 TLDHS, 2016

Looking ahead, the challenge will be to tackle multiple agendas simultaneously. The country faces the task of making progress towards the SDG agenda (including on maternal and child health, and communicable diseases), a growing burden of NCDs, and emerging public health challenges. The COVID-19 global pandemic has presented a significant public health challenge that countries need to manage in coming years (see Box 4). The challenge going forward will be to tackle multiple agendas simultaneously. Key questions from the financing perspective are how to prioritise public spending on health, as well as how to find ways to improve efficiency of spending such that investments in one set of interventions (e.g. for infectious diseases and maternal and child health) can be leveraged to help address other needs (e.g. NCDs and public health emergencies).

Box 4: COVID-19 in Timor-Leste

An outbreak of the coronavirus disease (COVID-19) caused by the 2019 novel coronavirus (SARS-CoV-2) has been spreading rapidly across the world since December 2019, following the diagnosis of the initial cases in Wuhan, Hubei Province, China. Since the beginning of March 2020, the number of cases outside China has increased considerably and most countries have been affected. On 11 March 2020, the World Health Organization (WHO) declared a global pandemic as the coronavirus rapidly spreads across the world.

While Timor-Leste had not seen many COVID-19 cases up to the end of 2020, there was a surge of cases in the first quarter of 2021 and there are concerns that the virus will continue to spread. At the beginning of June 2021, the country had over 8,000 confirmed COVID-19 cases and 18 COVID-19 related deaths.

The Government of Timor-Leste responded swiftly to the situation. A whole-of-government approach was adopted to coordinate the response to COVID-19: an Inter-ministerial Coordination Committee for COVID-19 response, established in March 2020, has led the effort. On 20 April 2020, the Parliament approved a special withdrawal of $150 million from the Petroleum Fund to establish a COVID-19 Fund to respond to the effects of COVID-19 in Timor-Leste. The MoH, through the Health Executive Commission for the COVID-19 Outbreak, developed the National Contingency Plan for Public Health Emergencies on June 16, 2020. Other significant efforts to ramp up capacity to respond to the pandemic include strengthening of the national laboratory to perform COVID-19 tests independently; expanding its monitoring system to the municipalities through a 'Sentinel Surveillance' system; establishing the Vera Cruz public clinic in Dili as an isolation facility, while designating hotels and residential compounds as quarantine facilities. There have also been public campaigns to educate people on hygiene and social distancing measures.

The COVID-19 outbreak has strained Timor-Leste's public service delivery systems that already struggle to deliver basic health and nutrition services. The surge in COVID-19 cases, compounded by severe flooding in April 2021, has created a complex challenge that has overwhelmed capacity. Testing capacity has been stretched and new locations with makeshift facilities have been designated as quarantine and isolation facilities – and even these have filled up rapidly, requiring some confirmed COVID-19 cases to self-isolate at home. Throughout 2020, routine health services such as immunisation, maternal and child health services, and treatment for other health needs were disrupted due to the increased attention on COVID-19. In addition, fear of COVID-19 has also led to reduced care seeking behaviour and thus decreased access to and utilization of health services.

The COVID-19 vaccination program was launched on April 7, 2021. Vaccines for Phase 1 have been obtained through the COVAX facility for 20 percent of the eligible population – all persons above 18 years of age are eligible to receive the COVID-19 vaccine. Phase 1 of the vaccination campaign will aim to vaccinate all health workers and frontline personnel, those above 60, and those with comorbidities. Vaccinations are being administered at health posts and immunisation posts set up by the MoH. The country aims to cover the remainder of the eligible population through donor support.

4.2.2 Service Delivery

There has been variable progress in the coverage of essential health services over the past decade. There has been significant improvement in selected maternal and child health services between 2009 and 2016, such as antenatal care coverage rates (4+ visits), institutional deliveries, and the use of skilled birth attendants. However, coverage of other critical services such as immunisation (DPT3 and measles) have declined (Table 14).

Table 14: Maternal and Child Health Service Indicators

Indicator	Year	
	2009	**2016**
Modern contraceptive use	21.1	24.1
Antenatal care from a skilled provider	86.0	84.5
Antenatal visits for pregnancy: 4+ visits	55.1	76.8
Assistance during delivery from a skilled provider	31.8	58.4
Place of delivery: Health facility	23.8	49.8
Delivery by caesarean section	2.1	3.7
DPT3 vaccination received	66.4	61.7
Measles vaccination received	67.8	69.3

Source: Demographic Health Surveys

While health service coverage has improved overall, there is still significant progress to be made. The Universal Health Coverage (UHC) service coverage index is used to monitor progress on the coverage of essential health services (SDG 3.8.1). The index measures coverage based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases and service capacity and access. Timor-Leste's performance on these indicators has improved over time (Figure 4.11). However, the country's score on the UHC index is 52 out of 100, below the average of 65 for East Asia & Pacific and the average of 57 among lower-middle income countries (Figure 4.12).

Figure 4.11: UHC Service Coverage

Figure 4.12: Universal Health Coverage Index
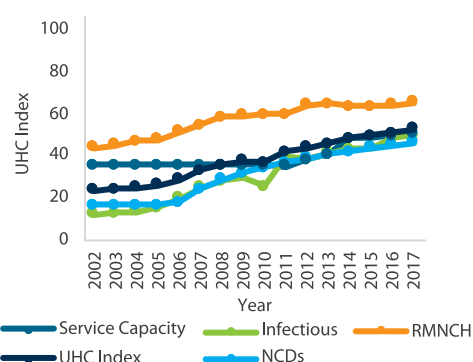
Source: Universal Coverage Monitoring Database, WHO.
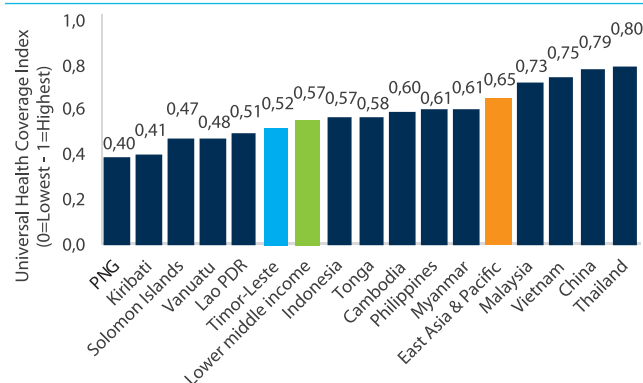
Note: Data is for 2017.
Source: World Bank.

Health service utilisation remains relatively low. The outpatient utilisation rate in 2017 was approximately 2.5 visits per person per year – lower than the NHSSP's target of a minimum of 3 visits per person per year, and significantly lower than most countries in the East Asia & Pacific region (Figure 4.13). The factors affecting access to care include lack of medicine, lack of health care worker, distance to the health facilities, as well as cost for transportation – especially for referral cases.[174] Hospital beds are heavily utilised, but this seems to respond more to low availability that cannot even cover low utilisation (2 hospital admissions per 100 people) than to highly efficient utilisation.[175]

Figure 4.13: Outpatient contact rate
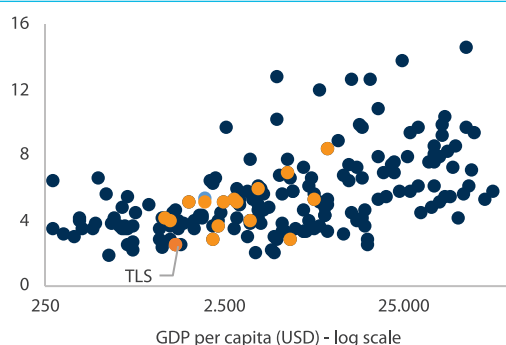
Note: Excludes countries with outpatient visits above 15 per capita.
Source: IHME (2020) and MoH (2018).

Figure 4.14: Equity of access to inpatient care
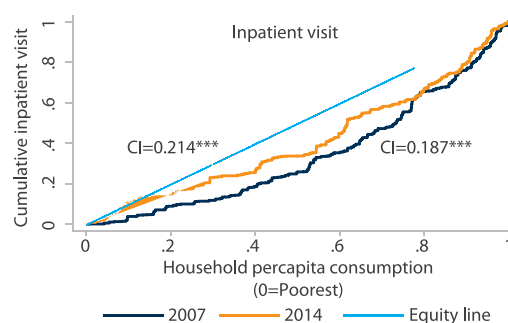
Note: Concentration index.
Source: TL-SLS 2007 and 2014.

There have been some improvements in equity of access to inpatient care. Equity of access to care can be estimated by a concentration index, which measures the share of inpatient (hospital) visits by households in different socioeconomic groups (Figure 4.14). A positive concentration index suggests that wealthier households utilise inpatient services more than poorer households, while a negative concentration index indicates that health service utilisation is pro-poor. In Timor-Leste, wealthier households use hospital services more than poor households (the concentration index is positive), but the degree of inequity has reduced over time – the concentration index in 2014 is closer to the straight diagonal line, which represents equity in utilisation.

Nonetheless, rural and poor households are likely to receive lower quality care, and there is still progress to be made towards greater equity in access to care. While there is significant variation across municipalities in the share of the population that has ever sought care (either outpatient or inpatient), remote, rural, or less densely populated municipalities do not necessarily correlate with a lower share of the population seeking care (Figure 4.15, Figure 4.16). However, compared to urban residents, rural residents are more likely to seek care in a PHC facility than in a hospital. On average, wealthier households access health facilities (especially inpatient care) more frequently than less well-off households, and those with a hospital within their municipality are more likely to use hospital services than those without.[176] This is unsurprising, as people are more likely to seek care at facilities close to home. Coupled with evidence of poor service readiness and inadequate quality of care at community health centres and health posts, it is likely that rural and poor households receive poorer quality care. Inequitable access to care reinforces a vicious cycle of ill-health and poverty.

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174 L. Guinness et al, 2018. Determinants of health care utilisation: the case of Timor-Leste. Int Health 2018; 10: 412-420.

175 MOH 2018a

176 Guinness et al, 2018

Figure 4.15: Access to Outpatient Care
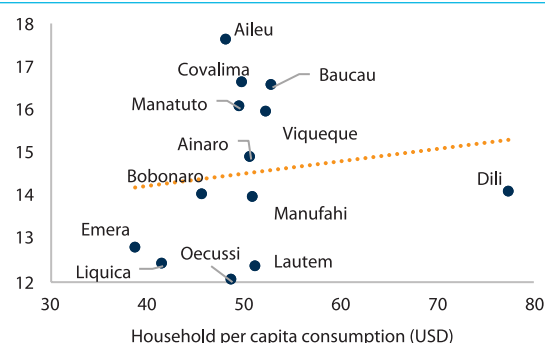
Note: Population ever inpatient in past 12 months (%).
Source: TL-SLS 2014.

Figure 4.16: Access to Inpatient Care
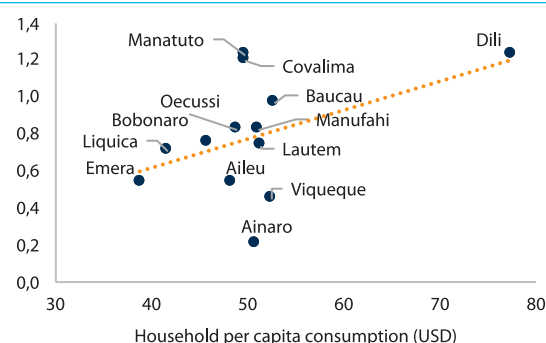
Note: Population ever inpatient in past 12 months (%).
Source: TL-SLS 2014.

COVID-19 has highlighted and exacerbated gaps in the health system. Limited facilities, supplies, and protocols for infection prevention and control (IPC) have hindered adequate response at municipal and community-level facilities. Dissemination of information has also been difficult due to challenges with transportation to reach communities in remote areas. While additional budget has been allocated to the health sector for COVID-19, bottlenecks in public financial management, procurement, and supply chain have hindered a faster response.

There are also concerns that disruptions to health and nutrition services arising from COVID-19 will impact access to care for routine and essential care. Disruptions have been reported to seven key services: antenatal care, emergency obstetric care, regular obstetric care, post-natal care, essential newborn care, immunisation, and wellness checks for children and adults (growth monitoring, routine visits). In most of these cases, there has been a 10 to 25 percent decline in utilisation rates, from already low levels. There are also potential costs to nutrition outcomes due to heightened food insecurity arising from reduced access to markets. The economic impact from COVID-19 will lead to a further reduction in the diversity of diet and lower food intake. As attention is turned towards coping with COVID-19, it will be important to ensure that non-COVID-19 health needs are not neglected – before they cause increases to morbidity and become costlier to treat.

4.2.3 Physical Resources (Infrastructure and Workforce)

The quantity of healthcare infrastructure has increased over the past decade. The number of hospitals (which provide inpatient care) has not changed over the past decade, with a national hospital in Dili and five referral hospitals. There are about 0.37 hospital beds per 1,000 population, which is lower than the averages for East Asia & Pacific (3.2) and low-middle income countries (1.9).[177] More outpatient facilities – CHCs and health posts – have been built in recent years, with a significant increase in the number of health posts in 2015 (Figure 4.17).[178] There are 69 (public) community health centres – at least one in each of the 65 sub-municipalities – and an additional 20-30 community health centres established and operated by the private sector. Finally, there are about 306 health posts compared to 209 in 2015. Outreach activities account for a large share of the population's contact with health services. Nonetheless, there remains concerns regarding

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177 Global Health Observatory Database, WHO

178 Timor-Leste Health Facility Readiness Report, Jan 2021"

the quality of infrastructure, such as their condition (requiring maintenance and repair), as well as lack of electricity and water & sanitation in some facilities.

Figure 4.17: Number of health facilities
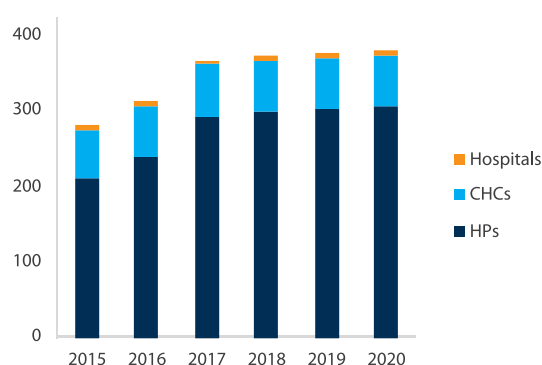
Source: Ministry of Health (2021)

Figure 4.18: Geographical distribution of health facilities
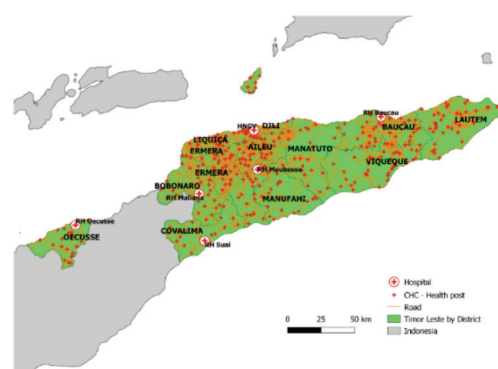
Source: WHO 2011

The distribution of health facilities is uneven, with significant variations across municipalities. There are significant differences in the facility-to-population ratio across municipalities (Figure 4.18). For instance, the ratio ranges from one health post per 1,700 residents in Viqueque, to one health post for approximately 4,400 to 4,900 residents in Baucau, Bobonaro, Covalima, Ermera, and Oecusse.[179] The proportion of women reporting challenges in accessing a health facility declined from 53 percent in 2009 to 46 percent in 2016.[180] This value was 20 percent in Dili, but much higher in other municipalities. Rural households report greater challenges in access, as do household in the poorest wealth quintiles. Improving access to health facilities is a key medium-term goal of the health sector – see Chapter 6.

Effective coverage of health services depends on infrastructure, other inputs, and care processes. There is limited information on health-related infrastructure and service availability, which constrains evidence-based decision-making. Administrative systems are not able to provide up-to-date information on the quality of infrastructure, as well as the availability and readiness of services. The most recent facility survey shows that hospitals are mostly equipped with a set of basic supply items, but community health centres and health posts often lack basic items (Table 15). This affects the ability of health workers to provide adequate services to those who seek care at their facilities. The relationship between health facility density and health outcomes is not clear. For instance, there is a weak correlation between the number of health facilities per 10,000 population and the under-five mortality rate in municipalities. This suggests that effective coverage of essential health services depends not just on the availability of infrastructure (i.e. a health facility), but also on the availability and quality of other inputs (such as supplies, health workers, etc.), as well as care processes (e.g. treatment protocols, competencies of health workers, etc.). Looking ahead, a concerted effort to improve these factors will be required to improve health outputs and outcomes.

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179 Timor-Leste MOH 2018b

180 "Percentage of women who reported they have big problems in the distance to health facility for treatment for themselves when they are sick" (DHS)

Table 15: Availability of supply items

	Hospital	CHC	HP	All
Adult scale	100%	98%	97%	97%
Child scale	100%	92%	79%	81%
Infant scale	100%	94%	56%	64%
Stadiometer	100%	93%	88%	89%
Thermometer	100%	98%	82%	85%
Stethoscope	100%	99%	79%	83%
Bool pressure meter	100%	93%	74%	78%
Nebulizer machine	100%	61%	7%	18%
Peak-flow meter	60%	62%	5%	17%
Pulse oximeter	100%	48%	6%	15%
Oxygen cylinder	100%	62%	10%	21%
Disposable syringes	100%	100%	93%	95%
Infusion set	100%	94%	70%	75%
Cannula	100%	88%	66%	71%
Latex gloves	100%	98%	71%	77%

Source: World Bank and OPM 2015.

The number of health workers has increased considerably, especially doctors. Between 2010 and 2015, the number of medical doctors grew more than ten-fold (Figure 4.19). A large portion of this increase is explained by the return of Cuban-trained doctors.[181] Currently, about 30 Timorese students receive specialised training in Cuba per year. The number of nurses, allied health professionals, and midwives has also risen significantly. The training of health workers in Timor-Leste is mainly the responsibility of UNTL. UNTL produces about 120 new doctors annually, of which only 30 are absorbed into the public sector. These trends need to be placed in a context of very limited human resources at independence, when many health workers left the country. However, there are some concerns that there has been a strong focus on quantity to the detriment of quality. On average, salaries for health workers are higher than that for other civil servants – such as teachers, police, and core civil service functions.[182] Relatively high salaries, combined with the expansion of the number of health workers, has led to a rapid increase in the share of the wage bill in health spending in recent years.

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181 In 2005, there was a mass enrolment for medical education by the Cuban Medical Brigade (about 500 general medicine students).

182 Blum et al 2013

Figure 4.19: Health workers (special grades)

- ■ Medical Specialist
- ■ Medical Doctors
- ■ Midwife
- ■ Nurse
- ■ Assistant Nurse
- ■ AHP
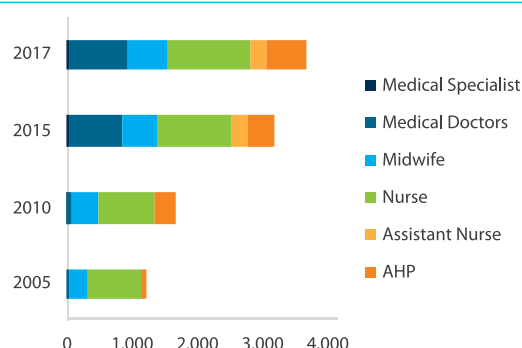
Note: AHP stands for allied health professional
Source: Bertone et al (2018).

Figure 4.20: Physicians (per 1,000 people)

GDP per capita (USD) - log scale
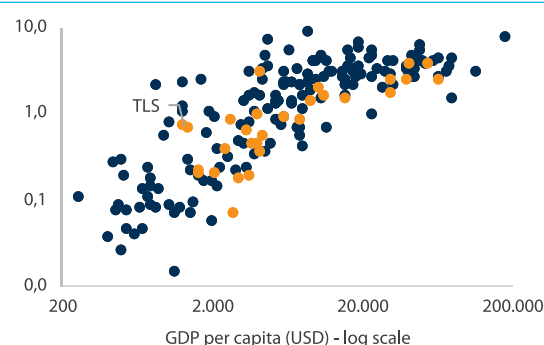
Source: World Bank

The proportion of health workers is relatively high, although still below the regional average. The number of physicians (i.e. generalist and specialist medical practitioners) increased from 0.08 per 1,000 population in 2010 to 0.72 per 1,000 in 2018. This ratio is higher than many countries with similar income levels, although it is still below the East Asia & Pacific average (1.57) and somewhat lower than the lower-middle-income country average (0.80). The number of nurses and midwives also increased significantly to 1.67 per 1,000 in 2018. Overall, Timor-Leste has a ratio of 2.4 medical staff (physicians, nurses and midwives) per 1,000 population, which is marginally below the WHO recommended level of 2.5 per 1,000 population.

The distribution of health workers across the country remains a challenge, with significant variation across municipalities. The distribution of health workers across municipalities is highly unequal, with urban areas attracting a substantially higher number of workers than rural areas, and with significant disparities across municipalities. For example, the ratio of health workers to population in Ermera (9) is significantly lower than in Baucau, Covalima, Manututo, and Viqueque – all above 20 (Figure 4.21). However, there appears to be no discernible correlation between health worker ratios and remoteness – based on distance from Dili. Ensuring an adequate staff mix is important to deliver services effectively. This is a possible application extension of the geospatial platform introduced in Chapter 6.

Figure 4.21: Distribution of health workers (per 10,000 population)

Source: MOH 2018b.

Figure 4.22: Clinical performance scores (%)
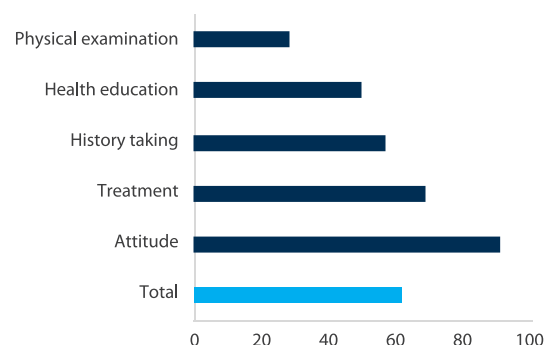
Note: Scores measured by the combined score of direct clinical observation and vignette.
Source: Hou et al (2016).

The quality of health workers can be improved substantially. A 2016 study found that the performance of general practitioners was very good in terms of attitude (91 percent), but only moderate in health education, history taking, and treatment accuracy – with values ranging from 50 to 69 percent. More importantly, the average physical examination performance score was low, at 28 percent (Figure 4.22). In terms of the determinants of clinical performance, the same study found that lack of knowledge was significantly associated with lack of performance. Hence, the quality of both pre- and in-service training for health workers can also be improved. Pre-service training, mainly at UNTL, lacks resources such as adequate library facilities, laboratories, and practice sites. Core competency frameworks and competency-based curricula have also not been introduced, which leaves many graduates without suitable skills and competencies when they enter the workforce.[183] In-service training at National Health Institute (INS) is highly dependent on donor resources, and training programs are poorly coordinated with MoH service delivery priorities. This leads to a disconnect between INS' training plans and staffing needs on the ground.[184]

Increases in the quantity of physical resources have not translated into greater availability and quality of services. Some health care facilities do not have any examination beds, blood pressure monitors (sphygmomanometer) or thermometers, making it difficult to perform complete physical examinations. Hence, investments in one part of the health system (e.g. health workers) have not been sufficiently complemented by investments in other areas (e.g. medical equipment, supplies, and commodities). The maldistribution of health workers also suggests that the reverse could be true – that is, some facilities may have supplies but few health workers or poor skills to effectively use those supplies. This is potentially inefficient, as existing resources are insufficiently utilised due to shortages of other necessary inputs.

Improving the availability of resources and the quality of health services will require a system-wide approach. Greater investments in the health sector are warranted given the health needs, but additional financial resources alone will not be sufficient to improve health outcomes. Tackling existing challenges will involve all parts of the health system, including but not limited to human resource planning and competency-based training, health facility and service planning, procurement and supply chain, effective management, and monitoring and evaluation.

COVID-19 and recent flooding have further revealed underlying weaknesses in the health system. Underlying inadequacies in the country's preparedness for responding to health emergencies made it difficult to respond to these crises effectively and led to significant disruptions in the delivery of essential health and nutrition services, internal displacement, and deaths. There are serious supply side constraints at frontline facilities to better prepare for future emergencies. An assessment of health facilities found gaps and weakness in the current level of preparedness to respond to COVID-19 and other health emergencies. Only 31 percent of the community health centres visited were prepared for isolation, of which half were not adequately equipped. There is a need to equip front line facilities with adequate human resources and supplies to manage surge capacity, including rapid procurement and supply chain mobilisation in emergencies. While there have been efforts to promote preventive measures such as handwashing, use of masks and social distancing, implementation gaps remain – such as communication and coordination between communities and local governments, and guidance on utilisation of health facilities during a pandemic.

There will thus need to be concerted efforts to invest in and improve the country's capabilities to prepare for and respond to health emergencies. Timor-Leste has been assessed to have relatively weak systems for pandemic preparedness and response readiness. The 2018 Joint External Evaluation (JEE) of International Health Regulation Core Capacities highlighted the need to develop comprehensive

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183   DFAT Australia, 2019
184   WHO 2016a

multisectoral emergency response plans for all public health hazards, and to identify and document options for accessing surge capacity. It also recommended conducting a public risk assessment and resource mapping for all public health hazards. On response capacities, needs were highlighted to strengthen emergency response coordination mechanisms, to develop a program of exercises and after-action reviews across all hazards, and to strengthen laboratory capacity. These capabilities were tested during COVID-19 and were found to have come up short, constraining the effectiveness of the COVID-19 response. In addition, key components of the health system that are vital for the delivery of routine health services were found to be wanting in times of crisis as well. For example, challenges with public financial management and procurement have delayed plans to rehabilitate and fit out existing infrastructure to serve as quarantine and isolation facilities. Shortages in medical equipment, supplies (e.g. Personal Protective Equipment), and medicines are a perennial challenge in Timor-Leste and even more so in a pandemic. Recent flooding has exacerbated these challenges, with increasing concerns of increased transmission of infectious diseases (e.g. dengue, water-borne diseases) and higher incidence of respiratory infections, among others.

Health information is vital to understand health service coverage and facilitate better planning to improve access and utilisation. The Health Management Information System (HMIS) is jointly managed by the Monitoring & Evaluation and HMIS departments under the National Directorate of Policy Planning and Cooperation, and the Surveillance Department under the Directorate of Public Health. The District Health Information System-2 (DHIS-2) platform was launched in 2016 and has been rolled out to five municipalities, with the primary aim of consolidating health data from all health facilities and transmitting it to the central level. There are also geographic information system (GIS) coordinates for each health facility. Timely and accurate info is important to enable better decision-making, as well as improve planning and budgeting of resources – see Chapter 6 for more information.

Despite the amount of data that is collected, there seems to be limited usage for policy making and service planning. Data are often collected without being analysed critically or turned into information that can be used for daily management or longer-term planning. HMIS and GIS data for real-time planning, monitoring, and decision-making by local-level managers are also relatively weak: there are no up-to-date data on the infrastructure conditions and status of service readiness at each health facility, making it difficult for policymakers and managers to understand where key resource gaps are and plan accordingly. Meanwhile, health workers are overburdened by excessive data and reporting demands from multiple and poorly coordinated sub-systems.

4.3 Expenditure Analysis

4.3.1 Total Expenditure

Total health spending is broadly comparable with regional and income peer countries. The health sector is typically financed by a combination of three primary sources: public, household out-of-pocket (OOP), and external. Health financing is a critical input to the health system. Hence, it is important to assess whether the level of spending is adequate to support improvements on key health outcomes, as well as examine the outlook for health financing. Total health spending was about $94 per capita in 2018, equivalent to 7.6 percent of GDP.[185] The level of spending has grown substantially, increasing considerably over the past decade (Figure 4.23). This level of health spending is comparable to other countries at a similar level of income (Figure 4.24).

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185 Global Health Expenditure Database, WHO 2019

Figure 4.23: Total health expenditure per capita
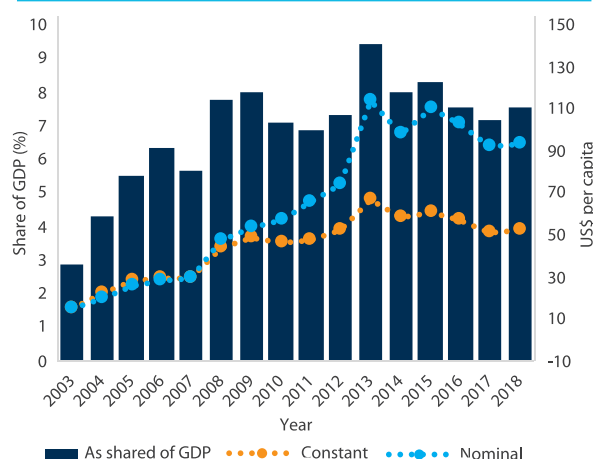
Source: WHO

Figure 4.24: Health expenditure (2018)
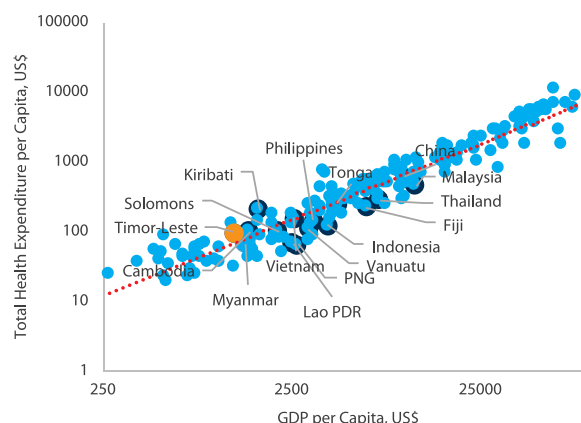
Source: World Bank

In terms of the composition of total health expenditure, most spending comes from public sources. In 2018, 77 percent of current health expenditures were financed through government budget. Public spending on health accounts for a high proportion of current health expenditure, especially when compared to other countries with a similar level of income (Table 16). Since there is no health insurance system, all public spending on health comes from budgetary sources.

Table 16: Health financing indicators (2018)

Country	Total health expenditure (THE)		Current health expenditure (CHE)		Government health expenditure (GHE)		Out of pocket expenditure (OOP)		External (EXT)	
	% of GDP	Per capita (US$)	% of GDP	Per capita (US$)	% of CHE	Per capita (US$)	% of CHE	Per capita (US$)	% of CHE	Per capita (US$)
Cambodia	6.6	99.3	6.0	90.6	25.8	23.3	57.5	52.1	20.5	18.6
China	5.8	576.4	5.4	501.1	56.4	282.7	35.8	179.1	0.0	0.0
Fiji	3.4	214.6	3.4	214.6	69.3	148.7	14.2	30.4	2.2	4.7
Indonesia	3.1	120.6	2.9	111.7	49.5	55.3	34.9	38.9	0.4	0.4
Kiribati	11.8	199.8	12.1	196.8	86.7	170.6	0.1	0.2	23.5	46.3
Lao PDR	2.6	67.3	2.2	57.1	48.9	27.9	48.5	27.7	12.5	7.1
Malaysia	3.9	444.2	3.8	427.2	51.2	218.7	35.1	150.1	0.0	0.1
Myanmar	4.4	62.7	4.8	59.2	17.4	10.3	76.4	45.3	8.7	5.2
Papua New Guinea	2.3	63.8	2.4	63.8	76.4	48.7	9.7	6.2	20.2	12.9
Philippines	4.4	142.3	4.4	136.5	33.4	45.6	53.9	73.5	0.8	1.0
Solomon Islands	4.6	98.8	4.5	95.0	94.1	89.3	2.1	2.0	18.8	17.9
Thailand	3.8	275.9	3.8	275.9	76.4	210.8	11.0	30.4	0.3	0.9

Country	Total health expenditure (THE)		Current health expenditure (CHE)		Government health expenditure (GHE)		Out of pocket expenditure (OOP)		External (EXT)	
	% of GDP	Per capita (US$)	% of GDP	Per capita (US$)	% of CHE	Per capita (US$)	% of CHE	Per capita (US$)	% of CHE	Per capita (US$)
Timor-Leste	7.6	93.7	4.3	93.7	77.0	72.1	7.1	6.6	28.0	26.2
Tonga	5.6	242.8	5.1	236.9	80.1	189.7	10.2	24.2	22.7	53.9
Vanuatu	3.4	106.7	3.4	105.4	79.3	83.5	9.0	9.5	23.4	24.6
Vietnam	5.9	151.7	5.9	151.7	47.1	71.4	44.9	68.1	1.8	2.8
Lower middle income	**5.3**	**127.7**	**5.1**	**125.4**	**49.1**	**69.6**	**39.0**	**41.6**	**12.7**	**19.1**
East Asia & Pacific	**6.3**	**248.8**	**6.5**	**268.9**	**67.0**	**203.3**	**23.2**	**41.6**	**15.7**	**48.3**

Source: WHO (Global Health Expenditure Database)

The low proportion of private out-of-pocket spending suggests that households are less exposed to health costs. Health services provided by the public sector are free-of-charge at the point of care to all Timorese citizens. As a result, private out-of-pocket (OOP) spending on health is relatively low, both as a share of health spending (7 percent) and in absolute terms (about $7 per capita in 2018). It is estimated that about 10 percent of households spend 10 percent or more of non-food consumption on OOP payments for health – which is lower than the average for the region.[186] Furthermore, health spending has a small effect on poverty: less than 1 percent of households fell under the $1.25-a-day poverty line because of health spending.[187]

The level and composition of spending must be assessed relative to access and coverage of health services, and through the lens of equity. Although most health spending is financed through the government budget, the range of public services is limited and there are scarce alternatives in the private sector.[188] Moreover, of the services that are currently provided, utilisation is concentrated among the better-off, and government spending on health disproportionately benefits higher-income households.[189] As national income rises, it is also possible that private sector investments will be made in the health sector. This could be in the form of foreign direct investment or public-private partnerships – the latter already in discussion by the government.[190] With these developments, it will be critical to safeguard against medical inflation through appropriate market controls and pricing policies, to continue ensuring affordability of care and financial protection for citizens.

4.3.2 Government Spending

Public spending on health increased considerably until 2015, but has been subdued since then. In nominal terms, government health spending has increased substantially from approximately $28 million in 2008 to $65 million in 2015. However, spending during 2016-2019 was lower than in the previous period (Figure 4.25). This has led to a significant decrease in spending per capita – from $55 in 2014 to $43 in 2019.

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186   World Bank 2014, WHO and World Bank 2017

187   World Bank 2014

188   Mòdol 2017

189   World Bank 2014

190   Timor-Leste MOF, 2019

Government expenditure on health was equivalent to 3.7 percent of GDP in 2018, which is relatively high when compared to regional and income peers (Figure 4.26).

Figure 4.25: Public spending on health (USD million and %)
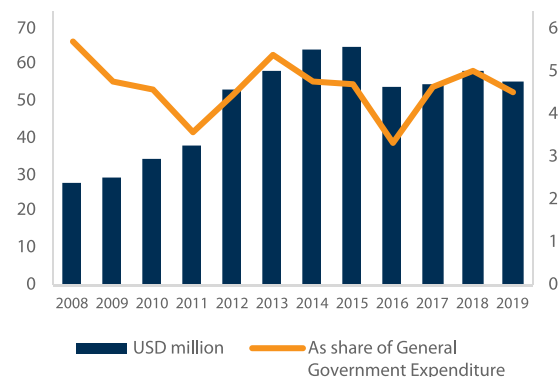
Source: Ministry of Finance (BOOST).

Figure 4.26: Public spending on health (% GDP)
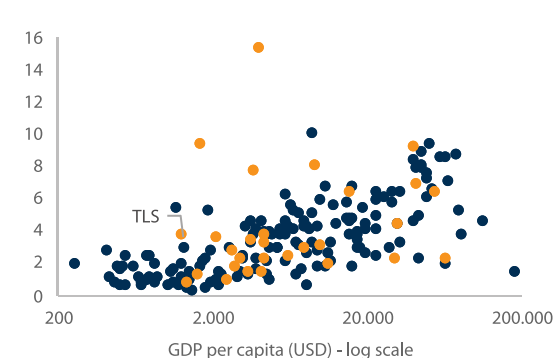
Source: WHO (2018).

Health spending has not been significantly prioritised within the government budget. The share of health in total public expenditure has fluctuated through time, ranging from 3 to 6 percent (Figure 4.25). This variability is in part due to the volatility and unpredictability in aggregate public spending – e.g. high total spending in 2016. Two expenditure components observed sharp declines in 2016: capital spending (from $5.2 million to $0.3 million) and transfers (from $10 million to $7.8 million). Declines in MoH spending were not compensated by increases elsewhere, such as municipal health services or autonomous agencies. Compared to regional and income peers, the share of public spending on health suggest a low level of prioritisation of the sector within the government budget.

The policy response to the global COVID-19 pandemic may lead to a temporary spike in health spending. In April 2020, an autonomous COVID-19 Fund was established to finance both health and economic measures. The Fund was endowed with $220 million from the Petroleum Fund. The public health sector response to COVID-19 was costed at approximately $50 million. About $19 million of this allocation was spent in 2020. This has been complemented by support from development partners.

The composition of public spending on health has changed significantly, with wages & salaries growing in importance. The most significant change in the composition of public spending on health over the past decade has been the sharp increase in wages & salaries (Figure 4.27). Its share increased from about 20 percent in 2008 to 49 percent in 2019, and can be mainly attributed to the increase in health staff – such as doctors and nurses (Figure 4.28). This is concerning, since it limits the ability to make adjustments to the health budget in the future – due to the intrinsic rigidity of this category – while there is limited evidence of increases in service utilisation. Conversely, the share of goods & services declined from 60 percent in 2008 to 23 percent in 2019. In absolute terms, spending on wages & salaries increased from $6 million in 2008 to $27 million in 2019, while spending on goods & services grew strongly between 2011 and 2014 – although it has been gradually declining since then. Total capital spending – which comprises capital & development and minor capital – has also declined significantly, from 20 percent in 2008 to about 4 percent in 2019. However, public transfers have been significant since 2011.

Figure 4.27: Composition of public spending on health (USD million)
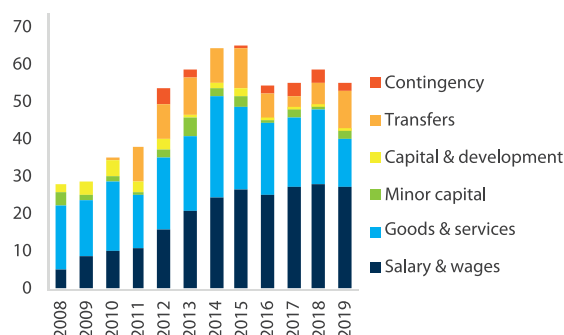
Source: Ministry of Finance (BOOST).

Figure 4.28: Composition of public spending on health (%)
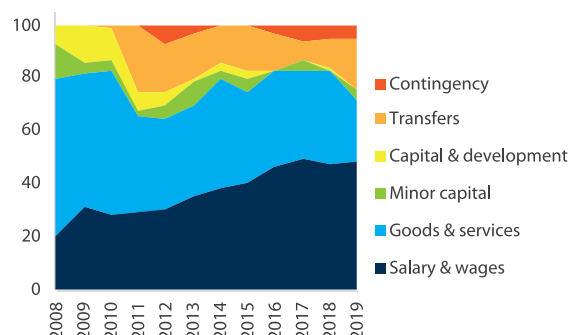
Source: Ministry of Finance (BOOST).

The absolute decline in spending on goods & services may have an impact on supply-side readiness. Spending on goods & services has been declining since 2014, largely due to a fall in operational materials & supplies – which had increased up until then (Figure 4.29). This category seems to be significantly shaped by variations in the purchase of medicines, medical equipment, and other supplies – although further insights are not possible due to data constraints. The trends for 2016-2019 are broadly aligned with those for SAMES. This decline in spending contrasts with reports of limited availability of medicines and other supplies. The share of operational materials & supplies in total spending on goods & services has been volatile, while professional services and other miscellaneous services have increased in importance in recent years (Figure 4.30). Professional services can be seen as an extension of salary & wages, since it includes contracted individuals – such as casual employees, consultants, and advisors. The relative and absolute size of other miscellaneous services is also concerning, since these expenditures should probably be allocated to a better-defined category – which undermines transparency. The overuse of miscellaneous categories is often due to limitations in the chart of accounts or poor accounting.

Figure 4.29: Spending on goods & services (USD million)
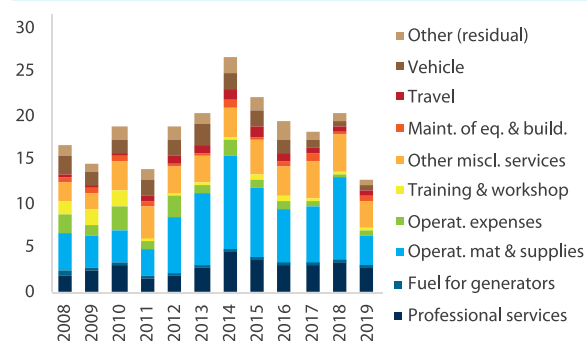
Source: Ministry of Finance (BOOST).

Figure 4.30: Spending on goods & services (%)
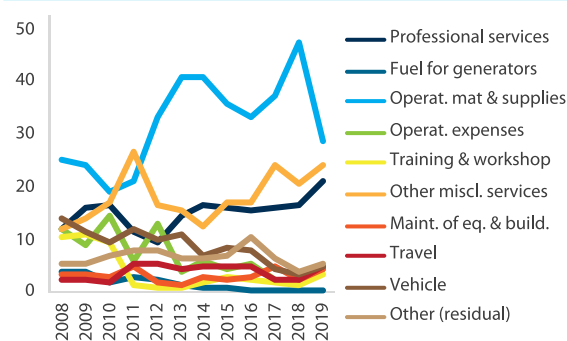
Source: Ministry of Finance (BOOST).

The composition of health spending has also changed with the establishment of autonomous agencies and the decentralisation process. Until 2015, the vast majority of the government health budget was channelled through the MoH (Figure 4.31). However, autonomous agencies have had their own budget since 2016, and municipalities since 2017. In 2019, the MoH accounted for about two-thirds of

public spending on health, while SAMES and the National Hospital (HNGV) accounted for 12 percent each, other public entities (e.g. National Laboratory, INS, and CNR) were collectively responsible for 3 percent, and municipalities 6 percent. Municipal health authorities are meant to manage minor equipment and construction, maintenance, repair and management of CHCs, and operating costs for health posts and outreach (SISCa) activities.

Figure 4.31: Health spending by agency (USD)
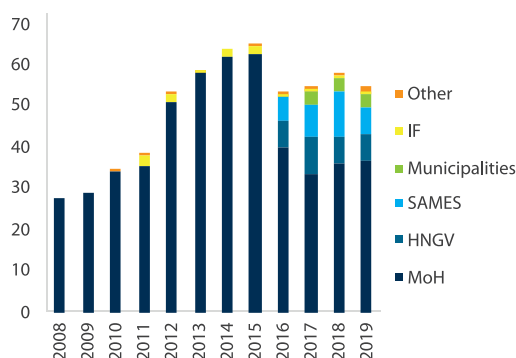
Source: Ministry of Finance (BOOST).

Figure 4.32: Health spending by agency (%)
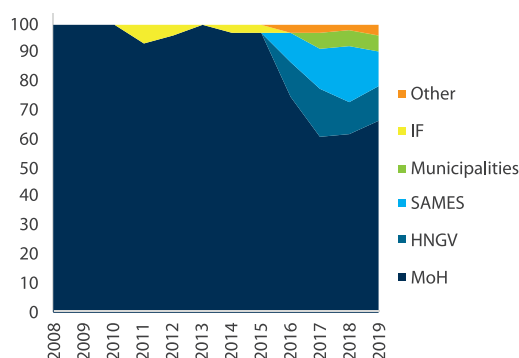
Source: Ministry of Finance (BOOST).

The execution rate of the health budget has been steady over the years. The budget execution rate is an indicator of whether a sector can effectively transform allocated funds into inputs and activities.[191] When compared to the initial health budget – before mid-year rectifications and virements – the execution rate has been consistently above 90 percent (Figure 4.33). This can be partly explained by the large weight of wages & salaries, which typically have high execution rates. Goods & services have exhibited higher variability, with the execution rate ranging between 80 and 89 percent in 4 out of the past 5 years. This may be result of public financial management constraints and uncertainty for service delivery units. Consistent under-spending suggests that funds allocated to the health sector were not spent on necessary inputs – e.g. medicines and supplies, other operating costs – which may negatively affect the ability of health facilities to effectively deliver services and contribute to improve health outcomes.

Figure 4.33: Budget execution (USD million and %)
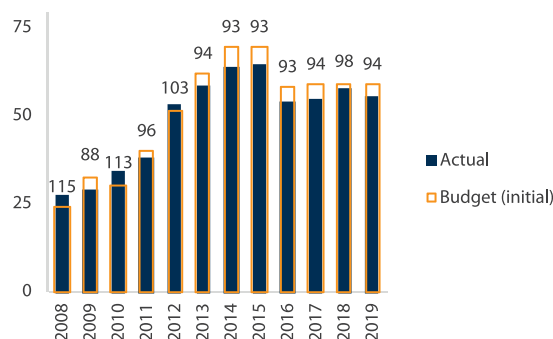
Source: Ministry of Finance (BOOST).

Figure 4.34: Contributions to execution (USD million)
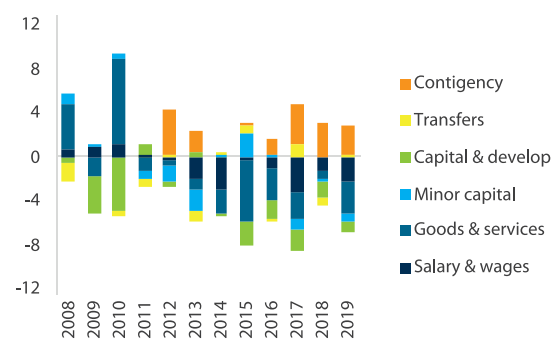
Source: Ministry of Finance (BOOST).

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191 Robust budget execution depends in part on workflow processes (e.g. payment systems, purchasing, and procurement) but is also affected by the overall public financial management (PFM) system and budget cycle, which includes budget formulation (prior to execution), and budget monitoring (after execution).

Poor budget execution has been a challenge across many budget line items and spending units. In 2019, there was significant under-spending in some municipalities, especially in wages & salaries – possibly due to the difficulty in recruiting (Table 17). Low execution rates for goods & services and minor capital were observed in the MoH, HNGV, and National Laboratory – either due to poor planning and budgeting, or difficulties in procurement. Only 12 percent of the capital & development budget, which is under the responsibility of the Infrastructure Fund, was executed. This may suggest inefficiencies in public investment management.

Table 17: Budget execution (2019)

Organization	Wage & Salary	Goods & Service	Minor Capital	Capital & Development	Trasfer	Contingenc
Ministry of Health	94.6	75.9	71.2	0.0	102.2	n.a
National Hospital Guido Valadares	83.1	63.6	59.7	n.a	n.a	n.a
SAMES	87.3	96.0	97.4	n.a	n.a	n.a
National Laboratory	92.9	82.4	65.9	n.a	n.a	n.a
National Center for Rehabilitation	92.2	97.1	96.8	n.a	n.a	n.a
Institute of Health Sciences	107.0	111.2	89.8	n.a	n.a	n.a
Municipal de Baucau	102.3	96.8	n.a	n.a	n.a	n.a
Municipal de Bobonaro	82.4	87.2	n.a	n.a	n.a	n.a
Municipal de Dili	82.7	141.9	n.a	n.a	n.a	n.a
Municipal de Ermera	92.3	90.2	n.a	n.a	n.a	n.a
Municipal de Aileu	93.9	92.6	n.a	n.a	n.a	n.a
Municipal de Ainaro	73.1	95.8	n.a	n.a	n.a	n.a
Municipal de Covalima	94.0	99.3	n.a	n.a	n.a	n.a
Municipal de Lautem	69.8	99.6	n.a	n.a	n.a	n.a
Municipal de Liguica	78.0	91.8	n.a	n.a	n.a	n.a
Municipal de Manufahi	82.7	93.3	n.a	n.a	n.a	n.a
Municipal de Manatuto	95.4	102.0	n.a	n.a	n.a	n.a
Municipal de Viqueque	74.4	67.3	n.a	n.a	n.a	n.a
Commision for Administration of Infrastructure Fund (FI)	n.a	n.a	n.a	8.3	n.a	n.a

Source: Ministry of Finance (BOOST).

Recent institutional changes have fragmented the planning and budgeting functions across the sector. Funding and decision making on health services has been devolved to Oecussi's autonomous administration – the Special Administrative Region of Oecussi-Ambeno (RAEOA). Municipal health services in the other municipalities have partial autonomy. Municipal health authorities are expected to manage minor equipment and the construction, maintenance, repair and management of community health centres – as well as operating costs for health posts and outreach (SISCa) activities. Wages & salaries continue to be paid by the central government, major capital investments are financed from the Infrastructure Fund, and supplies are procured and distributed by SAMES.

Despite recent reforms, autonomous agencies have limited flexibility in practice. Autonomous agencies prepare their own budgets and submit them to the MoF directly, independently from the MoH. In practice, however, their budget allocations are determined through a top-down process and are subject to a soft budget ceiling that does not necessarily take into consideration their annual spending needs. Autonomous agencies are also limited in the degree of information they have and the decision-making power they hold.

Budgetary uncertainty hinders effective planning and raises costs overall. For example, the budget for SAMES was halved in 2019, despite strong execution in previous years. This subsequently led to virements that enabled spending to get closer to the 2018 values. With budget uncertainty and (continuous) demand for medicines, there is little ability to follow a strategic budgeting approach. Better quantification and a resulting demand-led budget forecast across multiple years would improve efficiency of spending. This will become more urgent with the tentative plan to make SAMES a public corporation by 2021. Overall, a medium-term perspective across the entire health sector is required to improve budget predictability and enhance spending efficiency.

Reforms intended to address challenges in public financial management do not seem to have achieved their intended effects. The public financial management (PFM) system is prone to poor linkages between plans and budgets, delayed disbursement of funds (which trickles down to service delivery units), and low accountability in the use of funds. Administrative reforms of establishing autonomous agencies and decentralising responsibility for health services to municipalities have not been able to support an approach to planning and budgeting that is more flexible and responsive to service delivery needs on the ground. Overall, fragmentation of functions in the context of a relatively weak PFM system has led to inefficiencies in planning, budgeting, and execution.

4.3.3 External Financing

Development assistance is the second largest source of funds for health, although it has been declining over time. In 2018, $33 million were disbursed by development partners for health-related activities, comprising 27 percent of current health spending.[192] This share of external financing is high when compared to other lower-middle-income countries such as Vanuatu, Tonga, and the Solomon Islands, as well as Cambodia and Lao PDR (Figure 4.35). External financing has been declining as a share of total health spending over the years, but it remains relatively high (Figure 4.36).

Figure 4.35: External financing for health (2018)
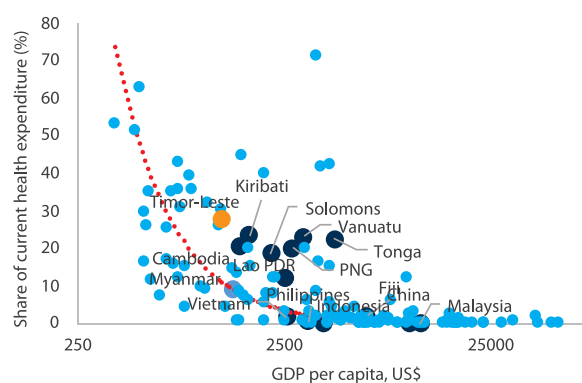
Source: WHO (Global Health Expenditure Database)

Figure 4.36: External financing for health as a share of current health expenditure (%)
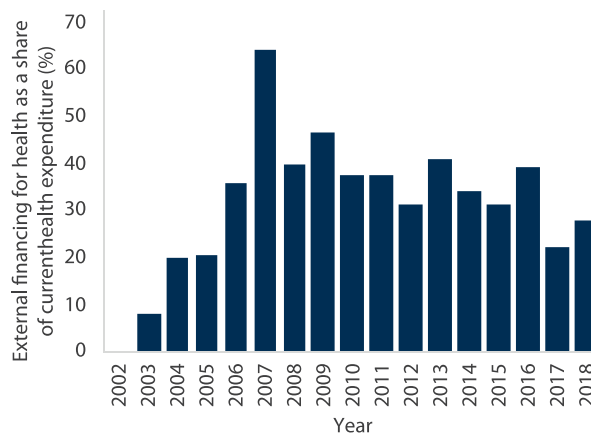
Source: WHO (Global Health Expenditure Database)

192 Global health expenditure data, WHO 2020.

Development assistance for health is likely to continue declining. The sustainability of donor-financed programs and activities is a key issue on the horizon. In 2018, the Global Fund accounted for about 33 percent of total development assistance to the sector, followed by GAVI with around 20 percent and Australia with 16 percent. The European Union's assistance has been mainly channelled through budget support and has primarily focused on nutrition. The GAVI Alliance's support to immunisation is phasing out, with small and final disbursements tranches in 2019 for inactivated polio vaccine (IPV) and injection safety devices. The Global Fund has set aside funding for malaria elimination within a regional Pacific initiative, which should be used alongside the country's 2020-2022 funding allocation. The World Health Organization (WHO) has been a long-standing partner, providing thought leadership and technical support on a range of topics in the health sector – including the COVID-19 pandemic.

Development assistance continues to be the dominant source of funding for selected activities. Dependence on donor funding raises concerns over the sustainability of programs and activities that have been predominantly or solely financed by external sources – especially as donor financing declines. For example, government financing accounts for just over 1 percent of all resources for nutrition.[193] The disproportionate reliance upon donor financing for essential nutrition services raises questions related to the ability of government to meet its priorities and sustainability of nutrition financing. Likewise, in-service training at INS and local training of national specialists is predominantly financed through external sources, as are several disease-specific programs.[194] Sustaining these programs and activities will require more than just additional domestic financing. It will be important to integrate the delivery of these services into the overall health system. Key elements of this transition include ensuring overall preparedness to provide services (including functions such as procurement and supply chain, health workforce competencies), sensitivity to and inclusion of at-risk groups and specific target populations, and developing financing mechanisms to incentivise effective and wide reach of services.

4.4 Sustainability, Efficiency, and Equity

4.4.1 Sustainability

The health system will have to adapt to meet changing needs arising from demographic and epidemiological trends. The total fertility rate has been reduced, but is still one of the highest in the region. While the population growth rate has declined over the past few decades, it is still growing at more than 2 percent per year (Figure 4.37). By 2030, the population is expected to reach 1.57 million – a 21 percent increase from today – which will increase demand for health services.[195] Furthermore, the population is still relatively young. The share of population aged 65 and above is relatively low and will not increase significantly in the near future (Figure 4.38). There is a window of opportunity to reap a 'demographic dividend' – up to 2050, as the dependency ratio continues to decline – but only if the population is healthy and educated.[196] Improving the quality of care will be critical to make progress on key maternal and child health indicators, which in turn will lead to a more productive workforce and thus support economic growth. At the same time, a rising burden of NCDs means that the health sector will need to adjust and

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193   Provo et al (2017).

194   MOH 2018a.

195   United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, custom data acquired via website.

196   Demographic dividend refers to the growth in an economy that is the result of a change in the age structure of a country's population. Demographic dividends are occurrences in a country that enjoys accelerated economic growth that stems from the decline in fertility and mortality rates.

offer NCD prevention and treatment. This will require new competencies and services – all of which require significant investments and robust implementation plans. COVID-19 and recent flooding have also revealed the importance of enhancing preparedness of the health system to respond to emergencies, and building health system resilience to improve access to and quality of essential health services during such situations.

Figure 4.37: Total fertility rate and population growth (%)
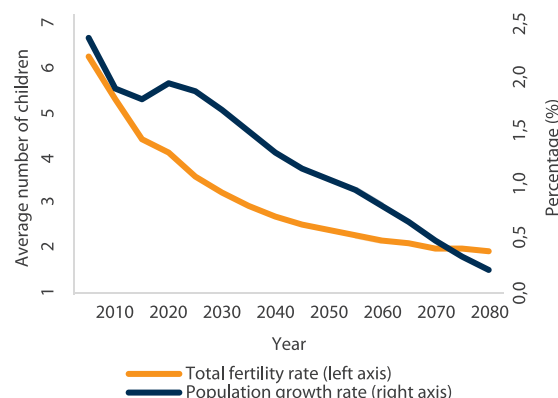
Source: UN World Population Prospects

Figure 4.38: Population aged 65 and over (% total)
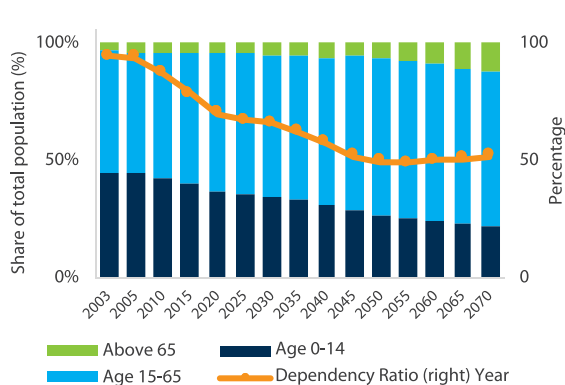
Source: UN World Population Prospects

The availability of domestic and external resources for health is uncertain. Health spending in 2021 may be higher than in preceding years due to domestic and external resources for COVID-19 emergency response. The 2021 budget allocated $121.5 million to the health sector, equivalent to 6.2 percent of the total budget – a significant increase from the $43 million of the 2020 budget.[197] However, future resource availability is uncertain. A 'health financing transition' is currently underway, as development assistance to the sector has been dwindling and will need to be compensated by domestic sources of finance. Increasing public resources to the health sector would ensure that spending per capita does not decline, which would otherwise jeopardise recent gains in several areas. However, efficiency considerations are also crucial, especially given the gradual depletion of the Petroleum Fund. A re-prioritisation of the overall state budget could yield larger resources for the health sector without impacting fiscal sustainability.

One viable source of revenue is taxes on products that are harmful to health. Raising taxes on such products is primarily an initiative to improve population health, and secondarily a revenue collection measure. These products include alcohol and tobacco, and in more recent experience, sugar-sweetened beverages. Even if there are no statutory provisions to dedicate these tax revenues to the health sector, additional taxes on these products are good from both health and revenue perspectives. From the public health perspective, higher taxes on these products can discourage consumption and reduce illness and accidents (in the case of alcohol), and possibly reduce demand for health services, which benefits all of society.[198] Studies have shown that increasing tobacco tax is the single most effective policy to reduce tobacco use. Evidence from high-income countries generally finds that a 10 percent price increase will

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197 The initial budget allocated $86 million to the health sector. On 23 April 2021, the National Parliament approved a revised budget to further prevent and combat the pandemic with an additional $34.5 million for the MoH for testing, vaccines, and personal protective equipment.

198 Cashin and Tandon, 2010. Assessing Public Expenditure on Health from a Fiscal Space Perspective. Health, Nutrition, and Population Discussion Paper. Washington, DC. World Bank.

reduce overall tobacco use by between 2.5 and 5 percent (4 percent on average), while estimates from low and middle-income countries show that a 10 percent price increase will reduce tobacco use by between 2 and 8 percent (5 percent on average).[199]

Some degree of rationalisation of health spending will be needed to ensure sustainability. While there has been an overall increase in health spending over the past decade, this has plateaued in recent years. There are also ongoing challenges of low service utilisation and inadequacies in supply-side readiness and quality of care, particularly at the primary care level. This brings into question whether 'business as usual' will be enough to bring about continued improvements in health outcomes. A rising wage bill for health workers has place an upward pressure on health spending, while persistent coordination challenges in budgeting and planning – as well as complexities arising from growing autonomy and decentralisation – have undermined effective service delivery.

4.4.2 Efficiency and Effectiveness

Regardless of how much can be spent on health, it is important to improve the efficiency and effectiveness of public spending. Broadly defined, efficiency implies allocating and utilising resources in a way that maximises possible outputs for a given level of inputs – or attaining a given level of output with the least possible amount or cost of inputs. The objective is to improve how a health system translates its budget into physical inputs, then into outputs, and finally health outcomes (i.e. effectiveness). Physical inputs include human resources (e.g. number of health workers) and infrastructure (e.g. health facilities, hospital beds, and medical equipment), while outputs can be measured in terms of service utilisation (e.g. outpatient and inpatient visits, or number of tests and treatments). Outcomes can include life expectancy, mortality rates, equity, or financial protection. Inefficiency can occur at any link along this chain.[200]

The performance of the health system can be improved by tackling existing sources of inefficiency. There is scope for efficiency improvements in all health systems, with an estimated 20 to 40 percent of health expenditure spent inefficiently at the global level.[201] Moreover, identifying sources of inefficiency is also important to ensure that additional resources are not wasted. Increasing the budget envelope without addressing underlying efficiency issues may mean that additional funds will not necessarily yield correspondingly higher outputs or better health outcomes. Identifying key sources of inefficiency and scope for improvement would enable the government to get better value for money. In particular, there are potential allocative inefficiencies with regard to PHC and human resources.

Analysis suggests that there are both input and output inefficiencies that should be addressed. A well-functioning health system should translate inputs into outputs in an efficient manner – thus ensuring good value-for-money. It should also be effective in achieving the desired outcomes. Inputs may include financial and human resources, while outcomes often consist of life expectancy and survival. The analysis suggests that the level of public spending per capita and the number of doctors per 1,000 people could be better employed to achieve improved outcomes. For instance, public spending per capita is similar to the levels observed in Indonesia, Philippines and Vietnam, but the child survival is lower (Figure 4.39). Conversely, Myanmar has a similar health outcome even if it is spending significantly less than Timor-Leste. Using the number of doctors per 1,000 people – instead of public spending – leads to similar conclusions (Figure 4.40). The results for life expectancy also highlight existing technical inefficiencies, albeit weaker.

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199   WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco. Geneva, World Health Organization, 2015.
200   Smith et al 2016
201   Chisholm and Evans, 2010

Figure 4.39: Spending and child survival
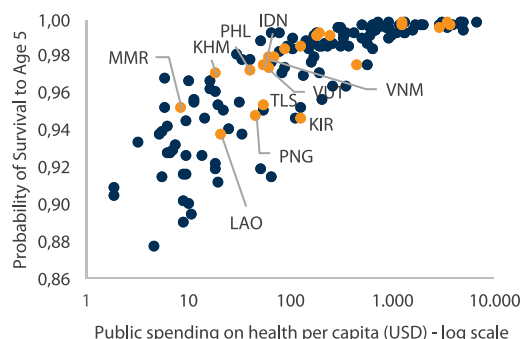
Source: World Bank

Figure 4.40: Physicians and child survival
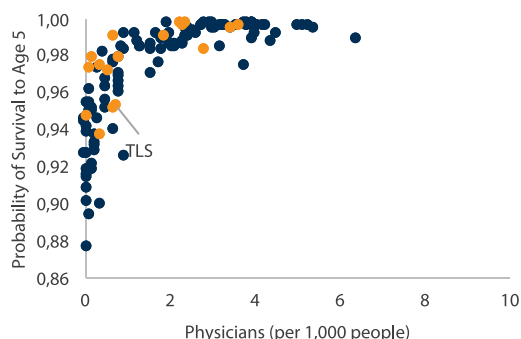
Source: World Bank

Underinvestment in PHC has been found to be a key source of inefficiency in health systems. In many countries, health expenditure is concentrated in high-cost low-value interventions, as well as tertiary care in hospital settings. Conversely, many countries underinvest in the delivery of essential health services in the PHC setting – even though investments in PHC are known to be allocatively efficient and contribute significantly to improving health outcomes. Indeed, a common trait among countries that have been relatively efficient producers of health is that they provide a broad and comprehensive set of services to their populations, often with an explicit focus on primary care.[202]

There is scope for reprioritising public spending on health towards PHC. The latest data from the WHO's National Health Accounts estimates government expenditure per capita on PHC at $26.[203] A recent costing study calculated that the cost to effectively deliver Timor-Leste's revised comprehensive Essential Service Package (ESP) ranges from $48 to $57 per capita.[204] This estimate implies that the implementation of the ESP would require that additional public resources are allocated to PHC. However, the allocation of funds within PHC and the way services are delivered is equally (if not more) important – since it could lead to more effective improvements in health outcomes.

Greater emphasis is required on the prevention, early detection, and treatment of non-communicable diseases. Care for non-communicable diseases (NCD) is relatively underdeveloped. For example, only 1 percent of women aged 30-49 years have ever had a screening test for cervical cancer, while 97 percent of people found to have high blood pressure were not on medication.[205] Investing in systems and capabilities for NCD care at the PHC level is efficient as it reduces the need for more expensive urgent care when patient conditions become more complex and difficult to treat. Investing in NCD care domestically is also expected to reduce the need for referrals abroad, which currently accounts significant health sector resources.[206]

Improving NCD care will require additional resources, the most critical of which would be to train health workers to detect, diagnose, and manage NCDs. The Essential Service Package (ESP), which includes basic NCD prevention and treatment activities at the PHC level and referral hospitals, is a good

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202 Chisholm and Evans, 2010

203 Different costing methods and data sources have yielded varying amounts of how much Timor-Leste currently spends on PHC, ranging from $10 to $47 per capita.

204 WHO 2019

205 WHO 2016b

206 WHO 2019

start towards increasing the availability of these much-needed services. However, in addition to financing and physical inputs (e.g. medicines), health worker competencies to detect, diagnose, and manage NCDs will need to be improved substantially. A survey of health workers found that the proportion of doctors that received training on hypertension and diabetes was only 11 and 7 percent, respectively – far lower than the share who had been trained in communicable diseases and maternal and child health.[207] Investing in improving the competencies of health workers to provide NCD care will need to start now, given the long lead time required to re-skill the existing workforce and train new cohorts.

There is significant scope to improve service readiness and quality of care in the PHC setting, thereby improving technical efficiency. CHCs and health posts have lower availability of essential items when compared to hospitals, and generally low levels of competencies among health workers for basic tasks such as conducting physical examinations. A useful first step towards improving service readiness and quality of care is to introduce standards for how health services should be delivered, and gradually work towards 'raising the bar' towards these standards. At PHC facilities – CHCs and health posts – this could include both clinical standards and standards for non-clinical operations (e.g. checklists for essential commodities, infection control standards, administrative and management guidelines). On the clinical side, the ESP serves as an explicitly defined benefit package which can be referenced to national clinical guidelines, with care protocols modified to be appropriate for the PHC setting as needed. This could help to standardise care practices, reducing variations in standards of practice and case management which currently contribute to inefficiency of service delivery.[208]

The agenda of reducing childhood stunting will require multisectoral efforts, as well as improvements in service availability and readiness in the health sector. Reducing chronic malnutrition requires the convergence of interventions in households with pregnant women and young children so that the prevention of stunting is a priority across the whole of government. As recently approved by the Council of Ministers, the Consolidated National Action Plan for Nutrition and Food Security (CNAP-NFS) is intended to be the way forward for multi-sector nutrition programming in Timor-Leste. Reducing fragmentation in the efforts on nutrition can improve both efficiency and effectiveness of interventions therein. In addition to this coordinated effort, health sector interventions that directly impact stunting will also need to be improved. These include childcare and feeding practices, women's reproductive health, paediatric and neonatal health care, appropriate immunization and nutrition counselling, and growth monitoring and growth promotion.

Another key source of inefficiency in health systems pertains to human resources for health. Health workers constitute a major cost category, with wages & salaries comprising about half of the health budget. There are various potential issues that could impact efficiency of the health workforce. These could include planning of the pipeline of health workers (numbers and skills mix), quality of training and the type of competencies that are taught in both pre- and in-service courses, supervision and compensation in the workplace, distribution of the workforce across facilities, and attrition. These factors affect productivity and performance, which in turn impact overall health system objectives.[209]

The rising number of health workers and the growing wage bill raise key efficiency and sustainability questions. The health workforce has increased significantly in recent years, owing in large part to the influx of Cuban-trained doctors. This has led to a rapid increase in the wage bill. Wages & salaries accounted for 49 percent of public spending on health in 2018, up from 31 percent in 2009. In order to be deemed efficient, the increase in headcount should lead to a concomitant increase in health service utilisation. However, this

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207 World Bank and OPM 2015

208 WHO 2019

209 Chisholm and Evans 2010

does not seem to be the case when using the outpatient utilisation rate as a proxy indicator. The number of outpatient visits per capita per year only increased from 1.9 in 2008 to 2.5 in 2017, while the health workforce increased dramatically.[210] Nonetheless, there are other factors that may affect utilisation rates. Inefficiencies also arise from shortages of materials and supplies, which impede health workers from administering adequate and comprehensive care, and limited competencies in certain types of care (e.g. NCDs, as discussed in the section above on PHC). Notwithstanding these factors, based on a simple measure of efficiency (inputs to outputs), it is difficult to justify higher staffing levels given the current workload.

Building the health workforce in a sustainable way will require shifting away from a focus on increasing headcount. Scenario analysis on the costs associated with growing the health workforce has shown that it would be unaffordable in the short term and unsustainable in the medium term. For example, costing and affordability analysis for the ESP estimates that personnel costs would rise substantially as a share of total PHC costs (from the 40 percent range today, to above 55 percent) if the MoH were to further increase its staffing norms from the level it is at today.[211] Based on the broadly stagnant government spending levels on health over the past few years, as well as uncertainty regarding future health financing, the aggregate costs associated with these scenarios would be unrealistic.

A more efficient route is to focus on appropriate skills-mix, equitable distribution, and improving competencies. Scenario analysis shows that the most efficient approach to meet the health needs of the population would be to change the composition of staff, thereby altering the skills-mix across the health workforce. Specifically, in Timor-Leste this would mean increasing the number of midwives and nurses while holding constant the number of doctors, given the rapid increase in doctors that has already occurred. This would have little impact on the incremental budget for personnel as compared to a 'business as usual' approach of maintaining current population-to-staff ratios.[212] Other sources of inefficiency that would need to be addressed include the distribution of health workers – which is currently skewed towards urban areas and contributing to inequities in access to care – and improving health worker competencies to meet emerging health needs (such as NCDs) and to raise overall quality of care.

4.4.3 Equity

A concerted effort to invest in PHC in lagging regions will support improvements in equity of access to care. Rural and poor households face greater challenges in accessing health facilities due to distance, and they receive poorer quality care, especially in the PHC setting. Improving access to care in remote areas will require significant investments. In the short term, this may not improve efficiency of spending in the health sector as the payoffs to these investments may take many years to realise. However, it is important to note that efficiency is not the sole objective of a health system, and some degree of trade-off between efficiency and other national objectives (such as equity) may be needed.

Health in-kind benefits are spread evenly across the population and have a relatively large effect on poverty reduction. An analysis has been recently conducted following the CEQ methodology.[213] Publicly-funded healthcare has a concentration effect close to zero, which indicates that the health in-kind benefits are received evenly across the population. Overall, publicly-funded health care has a positive impact on poverty reduction, with in-patient care and out-patient care at municipal health facilities able to reduce

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210 Timor-Leste MOH 2018b

211 WHO 2019

212 Hou and Asante 2016

213 ADB 2020

poverty by 1.2 and 1.5 percentage points, respectively. However, the marginal effect on inequality is relatively small.

4.5 Conclusions and Recommendations

Timor-Leste has come a long way in rebuilding its health system and improving health outcomes. From focusing on reconstructing basic health service infrastructure to more recent developments in increasing the size of its health workforce, significant strides have been made in equipping the public health service delivery network. The country's achievement of health-related Millennium Development Goals is particularly laudable. Emerging challenges include a shifting burden of disease towards non-communicable diseases (NCDs) and ensuring preparedness against public health threats such as COVID-19, while continuing to make progress on infectious diseases, maternal and child health, and nutritional outcomes.

An increase in health spending over the years has enabled critical investments in the health sector. In 2018, total health spending was $94 per capita, equivalent to 7.6 percent of GDP. Public health expenditure comprised most of this spending, which has helped to protect the population against large and impoverishing health expenditures. The country has begun to experience a 'health financing transition', in which health spending increases as national income rises and development assistance declines. The sustainability of health programs that have been predominantly financed by external sources may be at risk. Furthermore, a large share of the increase in health spending has gone towards a higher wage bill for doctors, which is neither efficient nor sustainable in the long term.

Higher spending on health has not translated into markedly better service availability and quality. Health service utilisation remains relatively low, with just 2.5 outpatient visits per person per year – lower than in many other countries. There is uneven access to care across geographic areas and by socioeconomic strata, with rural and poor households generally receiving poorer quality care. COVID-19 is likely to exacerbate these inequities through various channels: disruptions to essential health and nutrition services, including critical outreach services to hard-to-reach communities; and disproportionate impact on the livelihoods of poor households due to movement restrictions and a slowdown in economic activity.

Changes in the institutional and policy context have also led to shifts in health spending patterns. With the establishment of autonomous agencies and the decentralisation of selected health functions to municipalities, planning and budgeting have become fragmented, and there is even greater budget uncertainty than under the previous centralised model. In practice, autonomous agencies have limited control over their budgets, while municipalities have found it challenging to spend effectively while having to juggle different funding sources and reporting requirements. While these reforms were intended to improve the responsiveness of budgetary allocations to needs on the ground, the overall PFM system remains sluggish and continues to hinder budget execution – with impacts on service delivery.

Looking ahead, a key priority will be to address the high rate of childhood stunting. At 46 percent, childhood stunting is currently an impediment to human capital development which, if reduced, will positively contribute to economic growth. Key interventions include multi-sector coordination and policy reforms, improvements to nutrition-specific services in the health sector, and behaviour change communication.

Improving the efficiency of spending is key to raising the effectiveness of health service delivery. An important agenda is to review both the level and quality of expenditure. The key issues identified and

discussed in this chapter suggest that strengthening the quality of spending will require reforms not just within the sector or at the level of program implementation, but also in government-wide processes, such as public financial management, that impact the health sector. Institutional arrangements also need to be reviewed to improve responsiveness and accountability. Establishing financial rules and regulations that strike a balance between control and flexibility over spending decisions would help to increase both autonomy and accountability of spending units. Municipal authorities could also be empowered to reallocate funds as needs change without having to request approval for small virements and be allowed to carry over and re-invest efficiency gains. This will have to be backed by robust accountability mechanisms, such as linking performance indicators to decisions on inter-fiscal transfers.

A cohesive operational plan for the health sector would help to improve coordination among health sector entities. The increased complexity of the organisation of the health sector has not been coupled with mechanisms to ensure effective collaboration and coordination among its various entities. Autonomous agencies have limited flexibility in practice and remain financially dependent on fiscal transfers. Better communication and integrated planning with MoH would help improve the timely flow of information and enhance planning processes.

Within the health sector, there will be a need to significantly rethink investment and spending decisions. Two areas which would benefit from a review of key policy directions are PHC and human resources. In PHC, prevention, early detection, and treatment of NCDs is an emerging and growing need. Here, adequate funding for NCD care and competency-based training for health workers will be needed. There is much work to be done to improve the availability and quality of essential health services at the PHC level. One option for which a lot of groundwork has already been done is to introduce an Essential Service Package. Enforcing standardised guidelines and care protocols for essential services would help to assure a minimum service standard and raise quality of care. The development of the health workforce would benefit from shifting away from a focus on increasing headcount, toward ensuring an appropriate skills-mix, equitable distribution, and improving competencies. This would include revisiting staffing levels and skills-mix, especially in hard-to-reach areas that are currently underserved.

COVID-19 and recent natural disasters have also highlighted emergency preparedness and response as a critical area for improvement. The country's ability to prepare for and respond to emergencies will need to be strengthened through investments in surveillance and surge capacity, comprehensive risk assessments, and effective coordination mechanisms, among others. Key components of the health system that are vital for the delivery of routine health services – such as procurement and supply chain systems – will need to be reviewed and strengthened to ensure that they are ready during both peacetime and crisis situations.

Finally, investing in the health information system and encouraging the use of data for decision making will be a critical underlying element to all the reforms mentioned above. Multiple administrative systems and reporting requirements run in parallel to one another and are not able to provide up-to-date and reliable information on critical inputs and outputs. Consolidating health information systems will be a useful step towards acquiring a better perspective on the performance of the health sector. This would enable policymakers to collect, review, and use data effectively to inform both day-to-day management and longer-term planning, thereby becoming more responsive and effective in delivering health services to the population.

05
Education

I **mproving the quality of public expenditure on education is crucial to boost learning outcomes.** Since independence, considerable efforts have been made to rehabilitate infrastructure, recruit teachers, and expand education coverage. Nonetheless, learning outcomes remain low and demographic trends will place further pressures on the education system. Continuing to improve infrastructure and human resources will require further investments, but it is crucial to enhance the efficiency and effectiveness of spending. A stronger qualitative focus is needed for all levels of education. Public expenditure on education is relatively high by regional and income standards, even if it is not a high priority within the (large) aggregate budget. Eliminating inefficiencies will create fiscal space for additional productive spending, which is particularly important given the depletion of the Petroleum Fund, declining donor support, and growing demand for education services. The ongoing decentralisation process will require building capacities in municipalities, strengthening institutional coordination, and creating better accountability mechanisms.

Main recommendations: (i) improving pre-school coverage and quality to ensure that all children are school ready when they enter grade 1, (ii) attracting and producing teachers with the right competences and skills in sufficient quantity to address teacher shortages; (iii) improving school infrastructure (construction and rehabilitation) to significantly reduce overcrowded classes and multiple shifts; (iv) boosting school attendance through appropriate monetary and non-monetary incentives; and (v) improving school management through better data and processes (e.g. upgrading EMIS to enhance performance monitoring and decision making).

Chapter structure: The chapter starts by providing an overview of the education sector, including its strategic plan and the organisation of the education system. It then assesses the performance of key education outcomes and how education services are delivered – including the quantity, quality, and distribution of key resources (e.g. facilities and teachers). Education expenditure trends and composition are scrutinised, followed by some insights on the sustainability, efficiency, and equity of public spending. The chapter ends with a brief summary of conclusions and recommendations.

5.1 Sector Overview

5.1.1 Strategic Plans

The NESP 2011-2030 lays out a strategy to achieve ambitious progress in the education sector. The National Education Strategic Plan (NESP) aims to ensure that all Timorese have access to quality education that will allow them to participate in the economic, social and political development process. The vision for pre-school is that children aged 3-5 have access to early education to develop skills and knowledge in preparation for basic education. For basic education (grades 1-9), the vision is to provide universal, compulsory, and free education to develop sound literacy and numeracy skills, as well as other basic competencies. For secondary education (grades 10-12), students pursuing the general track will acquire core competencies to pursue further studies at a higher level, while graduates from the vocational track will develop specialised technical skills to enter the labour market or pursue further studies in polytechnics. Higher education graduates will have advanced skills and knowledge in specific fields.[214]

There has been progress on some NESP targets, but performance has been broadly disappointing. Targets for key performance indicators are set at five-year intervals and progress is tracked over time (Table 18). Although the pre-school gross enrolment rate increased to 22 percent in 2018, it is still far from the ambitious targets set for 2015 and 2020 – 50 and 67 percent, respectively. The basic education net enrolment rate is on track to achieving the 2020 target, while the secondary gross enrolment rate has already surpassed its target. The grade 1 repetition rate has declined but remain high. The grade 8 and grade 11 dropout rates are also significantly higher than their targets.

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214 Ambitious targets are also stated, including: (i) pre-school gross enrolment rate of 67 percent by 2020; (ii) basic education net enrolment rate of 91 percent by 2020; and (iii) secondary gross enrolment rate of 63 percent by 2020 (with 30 percent enrollment in the technical track).

Table 18: Selected NESP target indicators

Indicator	Baseline (2011)	Target (2015)	Target (2020)	Actual (2018)
Pre-school gross enrolment rate	18	50	67	22
Basic education net enrolment rate	97	93	91	89
Secondary gross enrolment rate	60	62	64	73
Grade 1 repetition rate	33	25	18	24
Grade 8 dropout rate	1.9	1.6	1.0	5.3*
Grade 11 dropout rate	2.3	1.5	1.0	7.3*

Source: NESP 2011-2030 and EMIS, * is data for 2017.

A new five-year implementation plan has been recently approved. The implementation of the NESP was initially guided by the 2013-2017 action plan of the then Ministry of Education. More recently, the Ministry of Education, Youth and Sports (MEYS) led the elaboration of the Education Sector Plan (ESP) 2020-2024, which updates the NESP and includes a costed action plan. The ESP covers several areas – including all levels of education, school management, teaching quality, and infrastructure.

5.1.2 System Organisation

Basic education is compulsory (9 years), after which students may choose one of two possible tracks. Before 2010, primary education comprised grades 1-6 and pre-secondary grades 7-9. Since then, three cycles have been created and grouped under basic education (Table 19). The pre-school programme aims to prepare children for basic education by providing the required skills and knowledge. Basic education is compulsory and where children should develop solid literacy and numeracy skills. Secondary education is split between two tracks. The general track favours the acquisition of knowledge to prepare students for continuing their studies in higher education, while the technical track supports the development of specialised technical skills to prepare students for the labour market or continue their studies in higher education institutes (e.g. polytechnics). Higher education is thus structured into: (i) university education, which allows students who have completed the general track to continue their studies in the sciences and arts; (ii) technical education, the pathway for students who have completed the vocational track.

Table 19: Education levels and appropriate age

Age	Level			General track	Technical track
21	Higher education			'Licenciatura'	
20					
19				'Bachalerato'	Diploma
18					
17	Secondary education			Grade 12	Vocational
16				Grade 11	
15				Grade 10	
14	Basic education	Cycle 3		Grade 9	
13				Grade 8	
12				Grade 7	
11		Cycle 2		Grade 6	
10				Grade 5	
9		Cycle 1		Grade 4	
8				Grade 3	
7				Grade 2	
6				Grade 1	
5	Pre-school			Group B	
4				Group A	
3					

Note: Cycles 1 and 2 are sometimes referred to as 'primary education', and cycle 3 as 'pre-secondary education'. Licenciatura (degree) and Bacharelato (baccalaureate) are degrees conferred by universities, while polytechnics award technical diplomas.

Education services are provided by (general and technical) schools, polytechnics, and universities. Pre-school is mainly provided in community centres (Figure 5.1). Basic education is provided through 'basic schools' that offer the three cycles of education (221 schools), primary schools that only offer the first two cycles (787 schools), and filial schools that only provide the first cycle (155 schools). The latter are often located in remote areas and are directly associated with the closest primary or basic school. The remaining 119 schools offer only the third cycle. Secondary education is provided through either secondary general schools (102 in the general track) or secondary technical professional schools (53 offering technical-vocational certificates). Higher education is provided by universities (conferring the degrees of 'Bachalerato' or 'Licenciatura') and polytechnics (technical and vocational diploma).[215]

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215 The education system has grown considerably between 2006 and 2018, especially in secondary education: the number of schools increased from 69 to 155, the number of students expanded from 25,730 to 66,234, and the number of teachers rose from 1,197 to 2,545. The increases for basic education were also significant in relative terms: from 1,075 to 1,282 schools, from 231,184 to 302,447 students, and from 7,257 to 11,223 teachers.

Figure 5.1: Education system levels

Higher
(Univ. and Poly.)

Secondary
(Secondary schools)

Basic
(Basic, primary and filial schools)

Pre-school
(Community centres)
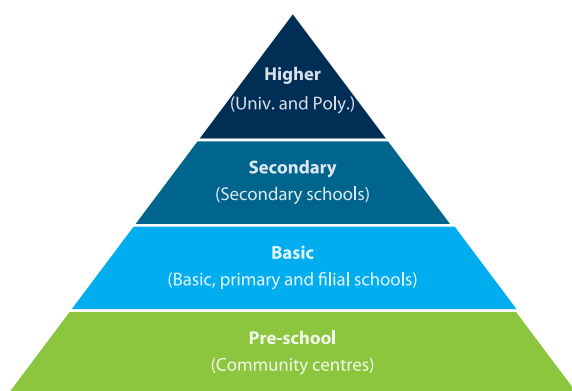
Source: World Bank staff

Figure 5.2: Public institutions

Ministries	Municipal services	APAs
MEYS	Primary schools	UNTL
MHESC	Secondary schools	ANAAA
		CNEFP - TIbar
		CNFP SENAI
		INDMO
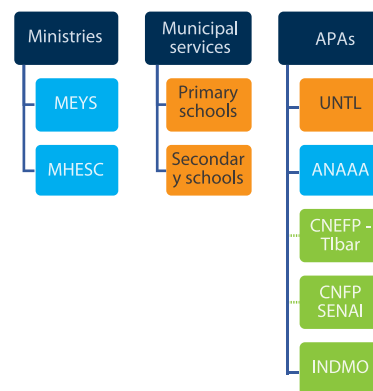
Note: Orange denotes service delivery unit, while dotted-grey provides training.
Source: World Bank staff

The public sector is the main service provider, but the private sector also plays an important role. The public sector dominates basic education, accounting for about 85 percent of schools and a similar proportion of students and teachers. However, the private sector accounts for 36 percent of pre-schools (with similar values for teachers and students), and 39 percent of schools and 22 percent of teachers in secondary education (both general and technical). Catholic schools and NGOs account for a significant share of private schools, which also receive public funds.[216] Primary schools are spread through the country, generally close to populations – which translates into relatively short travel (walking) times – albeit with some variation across municipalities. However, they are remote from other services – such as banks, police, secondary schools and even health posts. Secondary schools are more centrally located (in the largest cities), but average travel time is longer.

The institutional landscape of the education sector includes two ministries and autonomous agencies. In 2018, the Ministry of Education was split to create the Ministry of Education, Youth, and Sports (MEYS) and the Ministry of Higher Education, Science and Culture (MHESC). The MEYS is responsible for pre-school, basic education, and secondary education, while the MHESC covers higher education and pre-service training of teachers.[217] The MHESC has the responsibility of preparing a plan for tertiary education, a complement to the MEYS's Education Sector Plan. Although the Secretariat of State for Youth and Sports (SEJD) is technically part of the MEYS, it has a different budget and planning process. The National Institute for the Training of Teachers and Educational Professionals (INFORDEPE), which is indirectly managed by MEYS, provides in-service teacher training and professional development, and also certifies teachers' competences. The education sector also comprises the following public autonomous agencies: (i) National University of Timor-Leste (UNTL), the only public higher education institution; and (ii) National Agency for Evaluation and Academic Accreditation (ANAAA), which is responsible for quality assurance and accreditation

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216 The 2012 education survey found that public schools tended to be better equipped than private schools (e.g. toilets, electricity, kitchens, textbooks, etc.), while the latter were more likely to recruit voluntary (unpaid) teachers.

217 The MEYS has a National Curriculum Unit responsible for curriculum development and student assessment. Students sit national exams at the end of the third cycle (Grade 9) and at the end of secondary education (Grade 12). The collection of data relating to pre-school, basic education, and secondary education is done by an Education Management Information System (EMIS) department.

of higher education institutions. Both UNTL and ANAAA are under the responsibility of MHESC.[218] Other autonomous agencies play an important role in training, namely: (i) National Centre for Employment and Vocational Training (CNEFP) in Tibar; (ii) Training Centre (SENAI) in Becora; and (iii) National Institute for the Development of Manpower (INDMO). The Secretariat of State for Vocational Training and Employment (SEPFOPE) is under the Coordinating Ministry of Economic Affairs.

Municipalities are playing an increasing role in the management and delivery of public education services. Since 2017, municipal education services are responsible for pre-school education, the school feeding program, and recurrent (non-formal) education.[219] The ongoing decentralisation process has conferred some powers to municipalities, although mainly relating to logistics – such as distributing school materials, overseeing EMIS data collection and verification, and conducting maintenance work. The size of the budget is limited, but there are also capacity concerns at the municipal level.[220] The school feeding program is one of the main programs implemented by municipalities. The program was designed to promote school enrolment and attendance, decrease dropout rates, as well as improve nutrition among children. There is limited information about its coverage, although a lack of meals is occasionally reported.[221] Each of the 13 municipalities has its own municipal education director. The municipal education directors report to the Ministry of State and Administration (MSA) and MEYS, depending on the subject matter.

The education system has undergone important changes in the past 10 years. There have been a series of institutional changes and reforms that have shaped the sector over the past decade. In 2011, two special funds were created. The Infrastructure Fund (IF) was established to facilitate the implementation of large-scale infrastructure projects, including school buildings. The Human Development Capital Fund (FDCH) was created to develop human capital through provision of scholarships (abroad) and professional training. Greater autonomy has been granted to some public agencies in the sector – UNTL and ANAA – while management responsibilities in the sector were reorganised in 2018 with the split of the Ministry of Education into two separate ministries. The ongoing process of decentralisation also assigns a growing role in the management of the education system to municipalities. Key transitions in the sector relate to a much-needed shift towards quality (beyond enrolment), the ongoing decentralisation process, and the gradual decline of donor funding.

The flow of funds in the education sector is relatively fragmented. Public schools have different funding needs that are managed by different directorates. For example, school grants are managed by three directorates. MEYS has quality control of budget execution (by directorate) at the national and municipality level. MEYS manages expenditure at the central level. There are many focal points in the Directorate of Finance for quality control who work with the other associated directorates within the Ministry. Since 2012, only central schools receive funds directly from MEYS, which are then responsible for distributing resources

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218 In 2017, UNTL signed an agreement with the Ministry of Education (now MEYS) to train about 2,600 teachers (pre-school to secondary) to obtain the minimum qualification requirement before entering the new career regime. There is a need for the two ministries to coordinate closely to ensure the quality of teachers as needed.

219 The school feeding program provides a meal or snack to all students in pre-schools and basic education (Grades 1-9) throughout the country. International evidence suggests that the daily provision of nutritious school meals in countries with low attendance and high dropout rates provides a significant incentive for parents to keep their children in school, especially the most vulnerable ones.

220 See PEFA 2018.

221 Budget delays, particularly at the start of the year, may affect the availability and quality of food, while the lack of kitchens in some schools may also undermine their ability to prepare (nutritious) meals. A recent study on four municipalities (Ainaro, Ermena, Liquica, and Manatuto) during 2019 found that all schools implemented the program for fewer days than planned (over the school year), and that meals were provided generally between 30-60 percent of the planned school days (CARE International and Julie Imron, 2019).

to their filial schools. The former account for about 20 percent of all schools. Filial schools report to their respective central schools, which in turn report to the municipality. The municipality executes the MEYS program, but in practice reports to MSA.

Planning and budgeting processes have been complicated by recent institutional developments. The budget preparation process is weak from a results-based perspective. Information on strategic priorities and budget requests are provided as part of the budget process, but without much supporting documentation – such as consistent costings and expected outcomes. In-year budget execution is subject to several bottlenecks, in part reflected through virements. The linkages between planning and budgeting have been weak. Sector agencies are asked to identify and report against a range of results – such as NESP targets – but resources have been disconnected from these objectives. The sector has also experienced added institutional and vertical complexity, especially through the creation of a new ministry, greater autonomy of public agencies, and the decentralisation process. Responsibility and attribution of delivering on key results spans different ministries, autonomous agencies, and municipalities.

There is some level of coordination among the different institutions, although it can be improved. The municipal recurrent education budget is discussed between MSA and MEYS, which includes the school feeding program, operational work, pre-school, recurrent education (i.e. alphabetisation), printing, and salaries. In practice, MEYS plans for major programs executed at the municipality level (such as school feeding), even if it does not have financial oversight over the services provided. While the municipalities are not directly accountable to MEYS, MEYS (through the Directorate of Municipal Services) coordinates with the MSA throughout the year. The MEYS also coordinates with HCDF, as the latter is responsible for training activities directed towards the education sector. There is a need to strengthen accountability between the central government and municipal authorities – e.g. on logistics, finance, human resources, and operations & maintenance.

The capital budget is defined in discussions between the MEYS and the Administrative Council of the Infrastructure Fund. MEYS coordinates with the Administrative Council of the Infrastructure Fund (CAFI) at the planning stage, before the budget is presented to the Budget Review Committee. The IF is currently responsible for (school) infrastructure above $5 million – as the threshold was recently raised from $1 million. MEYS's responsibilities include identifying capital needs (such as construction and rehabilitation) and minor capital needs (such as chairs and desks). The IF's responsibilities include planning, designing, and building the relevant infrastructure. However, the government seems likely to channel an increasing amount of the capital budget (below $5 million) through sub-national investment programmes – PNDS and PDID.

5.2 Performance Indicators

5.2.1 Key Outcomes

There has been progress on some educational outcomes in the past two decades. At independence, much of the education system was destroyed, with school infrastructure either damaged or in poor condition, and few teachers remained in the country. Since then, there have been considerable efforts to rehabilitate and build new schools, train and recruit teachers, and improve service delivery. New curriculums have been introduced (for grades 1-6), while enrolment levels have been increasing and learning outcomes improving – as measured by literacy rates. The adult literacy rate increased from about 38 percent in 2001 to 68 percent in 2018. The youth literacy rate (ages 15-24 years) reached 84 percent in 2018 (Figure 5.3). Moreover, mean

years of schooling improved from 2.9 years in 2002 to 4.5 years in 2018, while expected years of schooling increased from 9.8 years to 12.4 in 2018.[222]

Figure 5.3: Youth literacy rate (ages 15-24 years)

GDP per capita (USD) - log scale
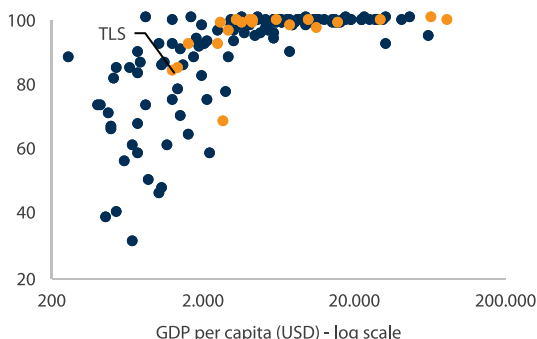
Source: World Bank

Figure 5.4: Mean years of schooling

GDP per capita (USD) - log scale
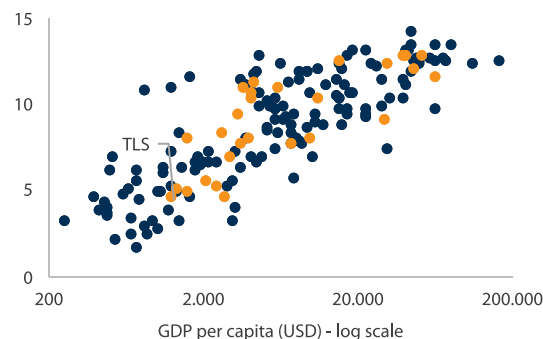
Source: UNDP

Despite progress in several areas, many pertinent challenges remain. Although several key indicators have shown improvement, many remain inadequate. Enrolment rates in pre-school – a key foundation for later skills – are low, while repetition rates in the early grades are very high. Enrolment in the first cycle of basic education (grades 1 to 4) is high, but learning outcomes are poor. Overall, access to education has improved, but the quality of education is lagging. There is a need to implement a new curriculum for grades 7-9, while teacher competencies are a concern.

Comprehensive assessments in the early grades show low levels of student learning. In 2009, an Early Grade Reading Assessment (EGRA) was carried out for grades 1 and 2. The results revealed poor reading skills in the early years of basic education, despite a high repetition rate in cycle 1. An EGRA was carried out again in 2017, albeit only in four municipalities. Even though some improvements were observed in the reading comprehension scores, the test showed that 31 percent of the students were not able to identify a single word at the end of the second grade. In Dili, average results were below the national average, likely because of overcrowded classrooms – despite better teacher qualifications. The curriculum-based assessment (CBA) showed that 50 percent of students had a very low command of the curriculum. Results from the 2011 Early Grade Mathematics Assessment (EGMA) were equally concerning. The results showed that students had a good concept of quantity (counting), but a relatively weaker grasp of patterns in numbers or conceptual understanding of addition and subtraction processes – only about one-third of students in grade 1 were able to solve simple additions. There are national exams in grades 9 and 12 – although data are not public. Classroom assessments depend on schools or municipality policy.

National exams do not seem to produce adequate differentiation between the different levels of achievement. A recent study analysed student test scores between 2013 and 2016 – from exams taken at the end of grades 9 and 12.[223] The study found that there was very little variation in test scores and that most students obtained scores around passing grade. Since exams are an important assessment instrument that validates student's effective learning, they should have a built-in differentiating capacity. Exams where most

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222 There is limited data on learning outcomes (e.g. PISA scores are not available), which undermines international comparisons.

223 World Bank Education Sector Analysis (2018).

student scores are the same are not informative about student learning and do not provide sufficient and clear evidence to support policymaking on curriculum, teaching, and school organisation. Furthermore, the assessment data does not link individual test scores to schools. As a result, average test scores can only be calculated at the national and municipal levels, while an assessment of the relationships between student learning outcomes and educational inputs, student family background, teacher quality, or the learning environment cannot be performed.

Poor student learning has its roots in the early years of life, when many young children are ill-prepared to enter formal education. The very high repetition and dropout rates observed at the primary and secondary levels, the poor EGRA and EGMA results, as well as the relatively low youth literacy rate (despite high enrolment rates), suggest that there may be deep-rooted problems. One important reason why children are inadequately prepared from an early age could be seen from the low pre-school net attendance rate (20 percent), especially when compared to its regional peers.

The Human Capital Index emphasises the need to improve learning outcomes. The World Bank's Human Capital Index (HCI) includes several indicators on education, including expected years of school, harmonised test scores, and learning-adjusted years of school. Timor-Leste's score and rank in education-related indicators suggest that improvements can be achieved: a child who starts school at age 4 can expect to complete 10.6 years of school by her 18th birthday (compared to the 11.9 in the EAP region and 10.4 in LMICs), while students achieved an average score of 371 – on a scale where 625 represents advanced attainment and 300 represents minimum attainment – compared to 432 in the EAP region and 392 in LMICs (Figure 5.5). Factoring in what children actually learn, expected years of school is only 6.3 years (Figure 5.6). Poor learning outcomes are also rooted in another key component of the HCI, since child stunting contributes to diminished cognitive development. On this front, Timor-Leste is doing poorly as the child stunting rate is as high as 46 percent.

Figure 5.5: Harmonised test scores

GDP per capita (USD) - log scale
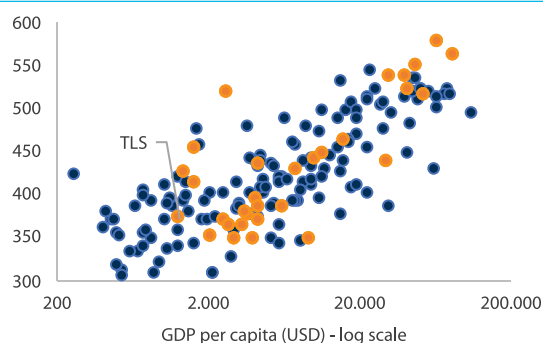
Source: World Bank

Figure 5.6: Learning-adjusted years of school

Years of schooling
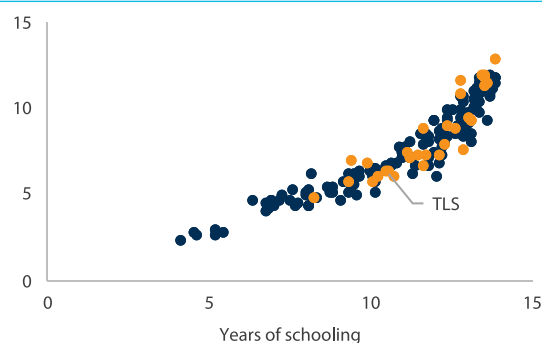
Source: World Bank

Box 5: The Impact of COVID-19 on Education

All schools were closed in late-March 2020 as part of broader efforts to prevent the spread of COVID-19. About 400,000 children were affected by school closures. This placed considerable pressures on MEYS to provide continuous learning opportunities to minimise learning loss – especially for the most vulnerable – and ensure that schools are safe and adequately prepared for re-opening. The country has so far managed to prevent local transmission of COVID-19 and almost all schools have reopened by the end of August 2020.

The 'Eskola Ba Uma' initiative – which translates into 'school goes home' – aimed to ensure continuing access to educational opportunities through an open, distance, and flexible learning approach. It comprised a series of school lessons based on the national curriculum and broadcast on television, radio, and on an online platform. In preparation for school re-openings, students were encouraged to go back to school by ensuring access to hygiene and sanitation facilities, tools were developed to assess children's learning and wellbeing, and remedial classes were promoted for children with learning gaps. Teachers have to manage accelerated or catch-up classes, as well as set up classes according to new criteria – e.g. to adhering to social distancing guidelines. The development of online learning opportunities presents a new way to reach children historically out of school.

Despite these efforts, school closures may have translated into significant learning losses. Learning time has been lost due to the need to close schools for several months. Global estimates suggest that COVID-19 could result in a loss of 0.6 years of schooling (adjusted for quality), bringing down the effective years of basic schooling that children achieve during their schooling life from 7.9 years to 7.3 years. Without effective policy responses, significant (future) earnings could be lost for this cohort of learners – due to lower learning levels, lost months in school closures, or potential for dropping out from school.

Moreover, the loss of learning time is unlikely to be uniformly distributed across socioeconomic groups, as students with lower access to remote learning resources were more adversely affected. With inequities in access to remote learning resources, students from disadvantaged backgrounds and rural communities may have fallen even further behind their more affluent peers. The combination of being out of school and the loss of family livelihoods caused by the pandemic may leave girls especially vulnerable, and exacerbate exclusion and inequality — particularly for persons with disabilities and other marginalised groups. The pandemic may have also worsened the already weak system of preparing pre-school age children for formal schooling.

5.2.2 Service Delivery

There has been some progress in increasing pre-school enrolment, but the enrolment rate remains low.[224] Pre-school plays a key role in ensuring that children are prepared for basic education. The pre-school net enrolment rate nearly doubled from 11 percent in 2013 to 20 percent in 2018 (Figure 5.7). However, the enrolment rate remains low by international standards (Figure 5.8). This can be partly attributed to the lack of physical and human resources in many municipalities – such as infrastructure and trained teachers.[225] Lack of access to pre-schools in rural areas means that some children enter basic education too early (i.e. before the recommended age). A new national curriculum has been implemented, although a pre-school teacher training course is yet to be established.

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224 Like in the previous (health) chapter, this sub-section provides a focus on service coverage/utilisation and access. These are essentially outputs, which intermediate the relationship between outcomes (previous sub-section) and inputs (next sub-section).

225 NESP pre-school net enrolment targets – 50 percent in 2015 and 66.7 percent in 2020 – were probably overambitious.

Figure 5.7: Net enrolment rates (%)
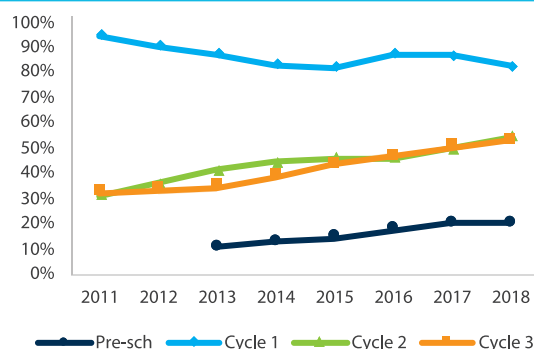
Source: EMIS

Figure 5.8: Net enrolment (pre-primary, %)
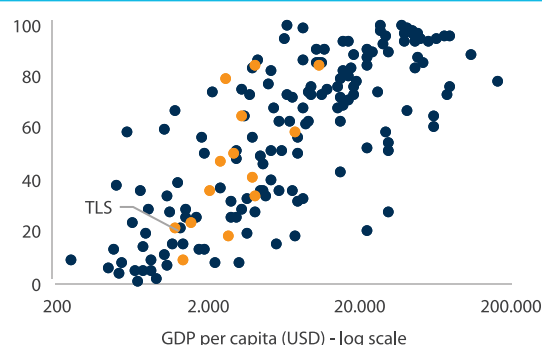
Source: World Bank

Net enrolment rates in basic education have broadly improved, although that for cycle 1 has experienced some volatility. The net enrolment rates for cycles 2 (grades 5-6) and cycle 3 (grades 7-9) have improved steadily, but the enrolment rate for cycle 1 (grades 1-4) has declined over the 2011-2018 period (Figure 5.7). The fall between 2011 and 2015 was driven by a significant decline in the net intake rate (NIR) of grade 1. This was caused by a sharp increase in underage attendance (below age 6) in basic education, likely due to the lack of pre-school access (Figure 5.9).[226] Large differentials between gross and net enrolment rates (across all levels) corroborate that many students are of an incorrect age (both overage and underage). The presence of a large overaged student population is mainly due to high grade repetition rates, as well as late school entry (in some cases).[227]

Figure 5.9: Net enrolment (basic education)
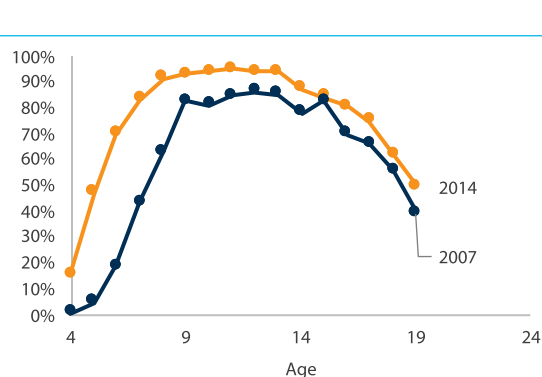
Source: EMIS

Figure 5.10: Net enrolment (lower-secondary, %)
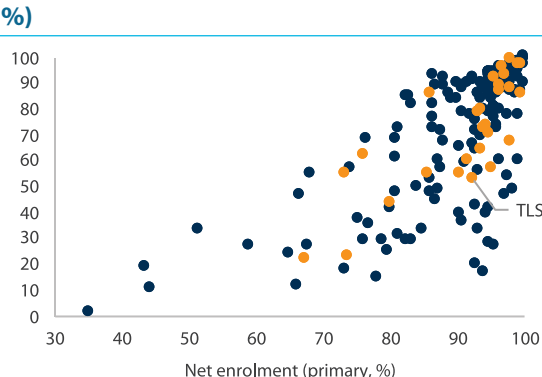
Source: World Bank

Enrolment rates are relatively high by international standards, especially in primary education. For international comparisons, primary education is defined as grades 1-6, while lower-secondary education comprises grades 7-9. The primary net enrolment rate is above some regional comparators – such as

226 The net intake rate is the percentage of new entrants in grade 1 who are at the official primary school entrance age. Between 2007 and 2014, enrolment by age 4 increased from 1 to 16 percent, while enrolment by age 5 increased from 6 to 48 percent.

227 In 2014, only 70 percent of children were enrolled in basic education by age 6 (TL-SLS 2014).

Solomon Islands, PNG, Tonga, and Vanuatu – and higher than the LMIC average (Figure 5.10). However, the net enrolment rate in lower-secondary education (53 percent) is below the average for regional (EAP) and income (LMIC) peers.

Repetition rates have been declining, but remain very high in the early grades. The repetition rate in grade 1 dropped from 33 percent in 2010 to 24 percent in 2017. Despite this improvement, repetition rates are still very high by international standards. High repetition rates, especially during the early grades, largely explain the big gaps between gross and net enrolment rates. Grade repetition is both a cause and an effect of low-quality education. Repetition is typically related to low learning outcomes, which is partly affected by malnutrition. A large age range in classes makes teaching methods less effective and class management difficult – which is aggravated by some children (albeit fewer) starting too young (underage). Repetition is a symptom of inefficiency and poses a high cost to the education system. It requires further resources – such a teachers and school places – but also results in a diluted learning process.

Figure 5.11: Repetition rate (grade 1, %)
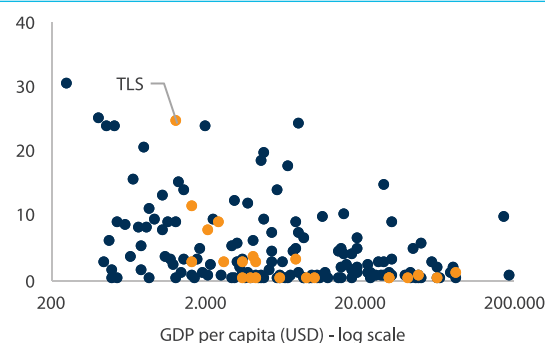
Source: World Bank

Figure 5.12: Cumulative dropout rate (%)
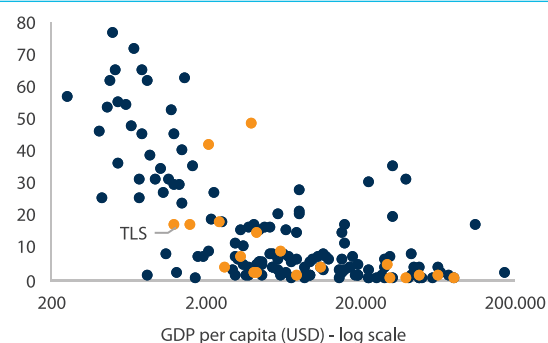
Note: Cumulative drop-out rate to the last grade of primary education.
Source: World Bank

One of the key reasons for high repetition rates seems to be student absenteeism. Despite limited data, there is evidence that student absenteeism is a key determinant of repetition.[228] Absenteeism might be due to economic and family reasons, long travel times, or illness. Other reasons for early-grade repetition rates are lack of interest and the language of instruction, since many students are not proficient in either Tetum or Portuguese – Timor-Leste's official languages. To address these issues, a stronger focus on pre-school is vital so that students do not fall behind and lose interest in their studies as a result.[229] On the other hand, if student absenteeism is indeed large, then concerns regarding overcrowded classrooms – measured through enrolment data – might be overstated.

Dropout rates are also relatively high, although not too dissimilar from its income peers. The cumulative drop-out rate to the last grade of primary education (grades 1-6) was 17 percent in 2017 – an improvement

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228 According to an education survey conducted in 2012, more than one-third of grade 1 students were absent from school (World Bank, 2013). In fact, it was a census that included interviews with school directors, teachers, and students in all basic and secondary schools in the country.

229 Analysis of students in the early grades (G1-3) using TL-SLS 2014 data offers some insight into why some of the students (around 11 percent) were absent from school for at least one day during the last three months of the last academic year. The top five reasons were: i) Illness (51 percent); ii) No interest (18 percent); iii) School too far (8.8 percent); iv) No teacher, lack of supplies, or dysfunctional school (6.6 percent); and Work (5.6 percent).

over the 22 percent recorded in 2011 – which is close to the average for LMICs (16 percent). Poverty is likely to have an impact on dropout, since school-related expenses – especially uniforms, but also school supplies – can amount to a significant proportion of income for the poorest households. Demotivation (being overage or having no interest), illness, and opportunity costs (work) are other potential determinants.

Access to secondary education has been increasing considerably in recent years. The net enrolment rate in secondary education (grades 10-12) has been rising strongly (Figure 5.13). Net enrolment is rising faster than gross enrolment, which suggests that the proportion of 'incorrect age' students (those over or under the official secondary school age of 15-17 years) has been falling steadily. Nevertheless, gross enrolment (73 percent) was still substantially higher than net enrolment (38 percent) in 2018. The fall is driven by the rise in cycle 2 and 3 net enrolments and the declines in repetition rates during the early grades. While a considerable proportion of students attend private schools – about one-third in 2018 – most of the increase has been in the public system, with likely impacts on quality. International evidence suggests that upper-secondary enrolment rates are relatively high.

Figure 5.13: Enrolment rate (secondary, %)
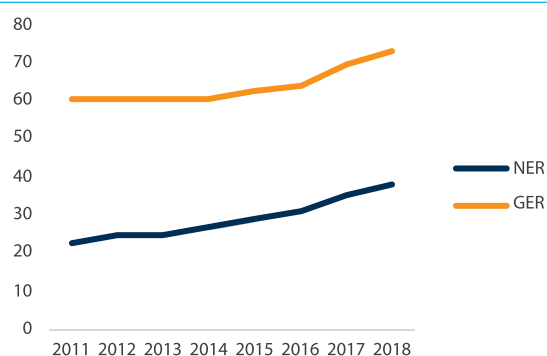
Source: EMIS

Figure 5.14: Net enrolment (secondary, %)
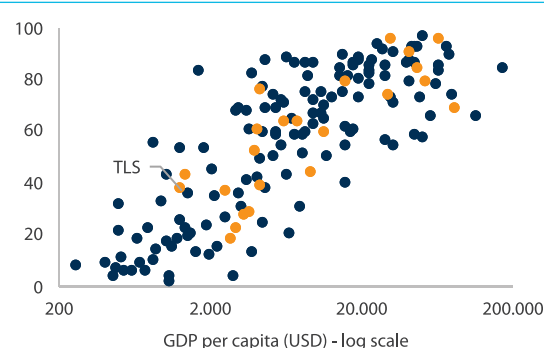
Note: Data for 'upper-secondary' (grades 9-12).
Source: World Bank

Student enrolment in secondary technical-vocational education has also expanded considerably. As of 2018 there were 66,234 secondary students, 14,120 of which in technical-vocational education (ESTV) schools – about 21 percent. The number of ESTV schools almost tripled between 2001/2002 and 2016, while the number of teachers increased from 117 to 447 over the same period. This reflects the Government's expectations for ESTV to serve as a tool for social and economic development. As of 2018, there are 783 technical-vocational teachers in 53 ESTV schools, of which 40 are in public schools. There is a new curriculum for secondary (general and technical-vocational) education, which needs to be fully implemented.

Enrolment in higher education institutions has increased considerably, and is above expected peer levels. In 2019, there were about 68,600 students enrolled in 14 accredited higher education institutions, and about 1,990 teachers. The main short-term priority of the NESP was not to rapidly expand tertiary enrolment, but rather to ensure that higher education institutions are adequately regulated and can provide high quality and relevant technical and university education. Given the rapid growth of tertiary enrolment, there are mounting concerns over the quality of education – especially in private institutions.[230] The gross enrolment rate in tertiary education (35 percent) is considerably above the LMIC average of 25 percent.

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230   About 80 percent of higher education students are enrolled in private universities or institutions.

Figure 5.15: Enrolment and students (tertiary)
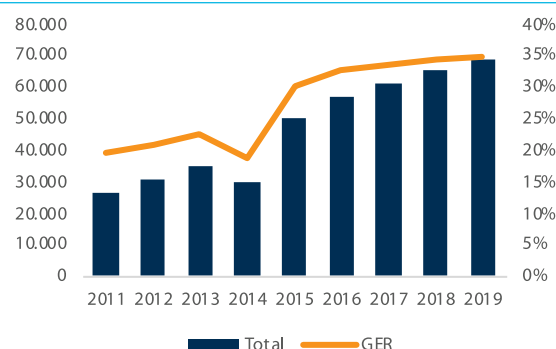
Source: ESA (2016) and NESP (2020-2024)

Figure 5.16: Gross enrolment (tertiary, %)
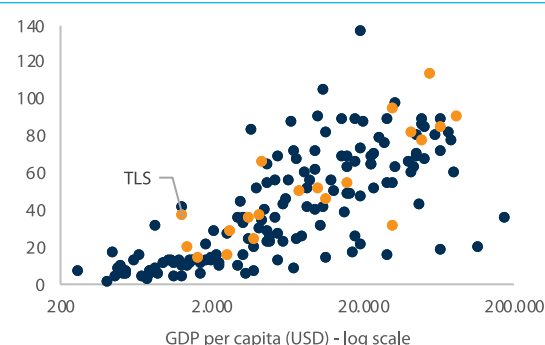
Source: World Bank

Improving the quality of higher education is paramount to enhancing public service delivery. Many of the teachers, doctors and nurses are trained in national universities. It is therefore crucial to ensure that a sufficient number of qualified personnel are trained. The National Agency for Evaluation and Academic Accreditation (ANAAA) is responsible for quality assurance and accreditation of higher-education institutions. The first cycle of evaluation and institutional accreditation began in 2008/2009, which led to a reduction in the number of institutions. There are currently 14 higher education institutions, only one of which is public – the National University of Timor-Leste. There are three private universities and 10 private institutes. ANAAA requires adequate human and financial resources to fulfil its mandate on institutional and course accreditation, as well as provide training and mentoring on existing standards.

5.2.3 Physical Resources (Infrastructure and Workforce)

The number of basic education schools has stagnated in recent years, despite growing school-aged population and net enrolment rate. There has been limited change in the number of basic education schools since 2011. The number of school-aged population at the basic level (cycles 1-3) increased significantly between 2011 and 2018 and the net enrolment rate has improved from 61 percent to 67 percent, but the number of students has remained virtually unchanged over the period. This was mainly due to a large fall in the 'incorrect age' student population. As a result, the ratio of students to basic education schools has remained roughly constant. However, the number of secondary schools has increased significantly from 92 in 2011 to 155 in 2018. The growth rate (70 percent) is higher than the 47 percent increase in the number of secondary students.

Although the number of secondary schools has increased at a faster pace than the number of students, the average class size has been trending upward. The average class sizes for pre-school, cycle 1, and cycle 3 have declined from their respective baselines. However, the average classroom in cycle 2 has become slightly larger (from 25.2 in 2011 to 26.7 in 2018). The biggest increase in class size is observed in secondary schools, where the average classroom had 46 students in 2011 and 57 students in 2018 – which is very large by any standard.

Many existing classrooms are in poor condition and require rehabilitation. Information on the school infrastructure is not complete or comprehensive, but existing data suggests that about 10 percent

of classrooms are in poor condition – 1,181 out of 11,368 (Figure 5.17).[231] Building standards and a lack of maintenance are a concern, which in some cases are compounded by the lack of electricity, water & sanitation, and a kitchen for school meals.[232] It is unclear how many school have complementary resources, such as computers and laboratories. Regular and reliable data would enable a more accurate assessment of the condition of school facilities and an effective prioritisation of infrastructure upgrading programs.

Figure 5.17: Classrooms in poor condition
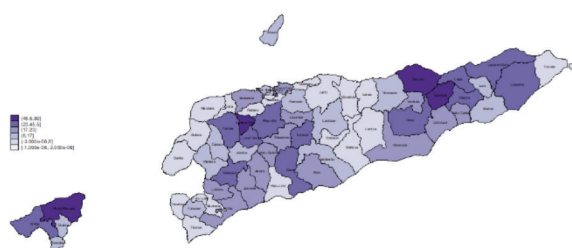
Source: EMIS

Figure 5.18: Overcrowded classes (%)
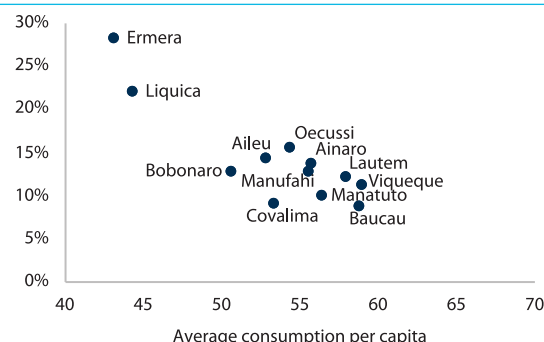
Note: Excluded Dili (which is an outlier).
Source: EMIS

Many classrooms in basic education schools are overcrowded, especially in cycle 3. There is no consensus on the optimal size of classrooms and international research evidence of the benefits of class size reduction are mixed. Here, an overcrowded classroom is defined as a classroom with more than 40 students. According to this threshold, nearly 18 percent of classes in basic education nationwide are overcrowded (Table 20). These classes have an average class size of 52 students, and nearly a third of all students (98,602).[233] Hence, there is a shortage of classrooms in basic education schools.[234] This problem seems more pronounced in poorer municipalities, with the exception of Dili (Figure 5.18). Schools operating a single shift are typically open for four hours (from 8-12am), six days per week.[235] About 30 percent of primary schools have a double shift, which are then open in the afternoon (usually from 1-5pm) – meaning that they provide the same amount of instruction as schools with single shifts.[236] Hence, learning time is not reduced due to multiple shifts. Nevertheless, a school operating multiple shifts would have more classes and thus require a greater number of teachers to staff all classes adequately. Moreover, few schools provide special programs from children with special needs.

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231 The classification (good, reasonable and poor condition) is provided by EMIS. However, more detail would be required to fully evaluate the quality of infrastructure and the learning environment. Regular and reliable data would enable a more accurate assessment of the condition of school facilities and an effective prioritisation of infrastructure upgrading programs. In 2012, 33 percent of public schools did not have a toilet and 21 percent did not have electricity (World Bank, 2013).

232 In 2012, over 30 percent of (primary) schools did not have a toilet, while about 40 percent had a squat toilet.

233   The EMIS database reports the actual total number of 'classes' and the total number of students in each grade in every school. This allows us to calculate the actual average class size by grade.

234 Using an analytical framework where classrooms cannot exceed 40 students (and allowing for double shifts) suggests that about 116 basic education schools (out of 1,282) need additional classrooms to adequately accommodate the currently enrolled students – about 533 new classrooms would be needed. Dili is the municipality with the greatest classroom shortage, and it is thus not surprising that a large proportion of schools in Dili run multiple shifts per day.

235   A four-hour school day is among the shortest in the world. The best education systems require students to be in school between 5 to 8.5 hours per day, with a median of 6.5.

236 WB 2013

Table 20: Class size and overcrowded classrooms (basic education)

	Students	Classes	Average class size	Classes > 40	Classes > 40 (%)
Cycle 1	142,440	5,758	24.7	692	12
Cycle 2	70,409	2,634	26.7	353	13
Cycle 3	89,598	2,404	37.3	864	36
Basic education	302,447	10,796	28.0	1,909	18

Source: EMIS

There is a need to recruit new teachers and improve their distribution, but this cannot be achieved overnight. There are teacher shortages, especially in schools that only cover cycles 1 and 2 – where the national average teacher-to-class ratio is 0.87 (Table 21).[237] There is also a shortage of pre-school teachers. Understaffed classrooms have negative implications on the quality of teaching and student learning. Hence, there is a need to train, recruit, and deploy new teachers to adequately accommodate the current student population. Teacher redeployment can also help ease high student-teacher ratios (though highest in Dili) and improving the match between teacher skills and student needs. However, it is important to ensure that new teachers have adequate competencies and that recruitment drives do not jeopardise fiscal sustainability.

Table 21: Teacher allocation ratios

District	Pre-schools	Cycle 1 & 2 Only		Cycle 1, 2 & 3		Cycle 3 Only	
	Student-Teacher Ratio	Student-Teacher Ratio	Teacher-Class Ratio	Student-Teacher Ratio	Teacher-Class Ratio	Student-Teacher Ratio	Teacher-Class Ratio
Aileu	36	29	0.78	36	1.13	26	1.35
Ainaro	22	27	1.00	26	1.27	23	1.61
Baucau	40	27	0.96	31	1.02	30	1.30
Bobonaro	37	30	0.85	31	1.15	30	1.37
Cova Lima	24	24	0.90	24	1.29	20	1.86
Dili	33	42	0.90	49	0.96	47	1.04
Ermera	45	35	0.84	41	0.90	35	1.08
Lautem	37	28	0.89	38	0.94	26	1.39
Liquica	31	34	0.82	30	1.04	29	1.32
Manatuto	41	29	0.79	42	0.84	25	1.44
Manufahi	16	24	0.90	27	1.14	17	2.11
Oecusse	43	39	0.79	41	1.16	25	1.43
Viqueque	37	36	0.77	28	1.07	19	1.86
National	32	33	0.87	35	1.07	33	1.30

Note: Ten basic education schools have missing data on number of teachers.
Source: EMIS

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237 Based on the estimated optimal number of classes, the teacher-to-class ratio is computed for each school and the results are aggregated at the municipal and national levels.

The student-teacher ratios are high for all educational levels, despite recent increases in the teacher workforce. The student-teacher ratio is around 27 for both primary (grades 1-6) and secondary (grades 7 to 12) levels (Figure 5.19). For primary education, this is low for its income level but high for regional standards – when compared to Philippines, Fiji, Cambodia, and PNG. The student-teacher ratio in tertiary education increased from 14 in 2009 to nearly 35 in 2019. This is one of the highest ratios in the world – similar to Myanmar (Figure 5.16).

Figure 5.19: Pupil-teacher ratio (primary and secondary)

Source: World Bank

Figure 5.20: Pupil-teacher ratio (tertiary)
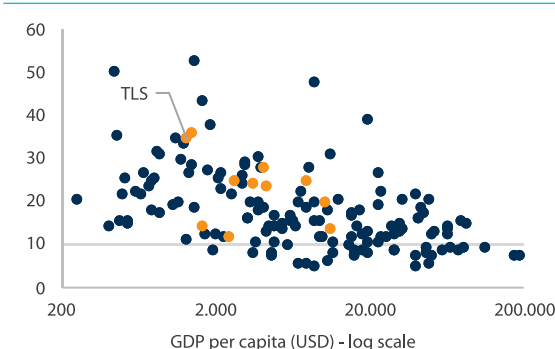
Source: World Bank

Teacher competencies are low, which affects learning outcomes. Despite the need to recruit new teachers, it is important to ensure that they have adequate competencies, especially if they will remain in the system for many years to come. Teachers are required to hold a 'Bacharelato' to teach in basic education schools and a 'Licenciatura' to teach in secondary schools. Most basic education teachers (56 percent) only had secondary education or lower in 2011 – although with significant regional disparities – and had limited teaching experience. Although teachers receive a significant amount of training during the year, this does not seem effective or sufficient – given learning outcomes. Attracting the best students for relevant teaching degrees and producing good quality teachers remain a significant challenge.

An equivalence program enabled a significant increase in (official) teacher numbers. The national equivalence program, jointly implemented by UNTL and INFORDEPE, provided a 'Bacharelato' qualification to thousands of teachers. Many of these were volunteer teachers, who had lower levels of education and experience than existing contract teachers. In 2015 alone, more than 3,300 were converted to permanent teachers. In 2018, only 23 percent of primary and secondary teachers did not have 'Bacharelato', although less than 30 percent had obtained the degree from a university – as most teachers obtained it through the equivalency program, which provided limited pedagogic training (e.g. science subjects). In-service training will be important to meet the needs of these teachers.

Teacher absenteeism presents a challenge to improving learning outcomes. Data on teacher attendance records is not readily available, although it is likely regularly collected by MEYS. In 2012, about 13 percent of primary school teachers and 25 percent of secondary school teachers were absent on the day of the school census. This could be an underestimate, since the census had been previously announced. Illness and working another job were cited as the main reasons for being absent.

Challenges in curriculum implementation and lack of learning materials are also a concern. A new curriculum for cycles 1 and 2 has been developed to reflect good pedagogical practice. There has been a considerable effort in revising the school curriculum, providing students with textbooks and workbooks reflecting the latest curriculum, and ensuring their effective use in the classroom. However, random visits to schools have revealed that there are some remaining implementation challenges. Moreover, it is important to revise the curriculum for the third cycle. Textbook shortages have been cited by school directors as the biggest obstacle to effective learning.[238] This shortage appears to be higher in secondary schools. Textbooks and other learning resources are key elements of a conducive learning environment. While there have been efforts to produce and distribute them to schools, there is limited information to track their existence or usage. Even in schools where textbooks and workbooks are available in adequate quantities, teaching and learning materials are not being used by students and/or teachers either because teachers are unwilling to teach the revised curriculum or because they do not want students to damage the books. While many schools have book corners or libraries, there is limited availability of age and grade-appropriate children's literature for self-reading, and in many schools there is still little time set aside during the school day for children to read these books on their own.[239]

The current management information system is operational, but it is not integrated with other sources of information. The education management information system (EMIS) was established in 2003 with the purpose of being the primary tool for collecting relevant data to monitor performance and facilitate decision making. It has benefited from the significant donor support through the years, but its quality can still be improved (e.g. many data gaps exist) as well as its use for planning and budgeting decisions. In fact, the lack of integration with other sources of data limits its potential as a decision-making tool. Ensuring that a core set of statistics are updated (and integrated with other relevant data) for the purposes of the yearly budget process can significantly improve the planning and budgeting process. The platform presented in Chapter 6 demonstrates that this can be achieved with limited levels of effort. Simple costings (rough estimates) can then be derived from policy simulation to inform budget submissions.

The EMIS is well managed, but there are concerns regarding data quality and lack of capacity to utilise the data. A recent review concluded that the EMIS is well managed in terms of its annual data collection cycle.[240] In each collection cycle, central EMIS staff visit municipalities to give refresher training to municipality EMIS officials and all school leaders (school directors and coordinators). In practice, however, much of the collection is delegated to teachers, many of whom have not attended training and do not have access to supporting guidelines. School directors often check the forms for completeness, rather than accuracy. Data entry occurs only at the central level, resulting in delays and affecting the efficiency and accuracy of the paper-based verification process. Moreover, there seems to be no data specialist tasked with conducting in-depth data analysis. This undermines the ability of using the data for evidence-based policymaking. Finally, data is not shared with national entities, municipal offices, or schools – which restricts the utilisation of data at all levels.

A key shortcoming of the EMIS is that it does not collect data on learning achievements. While the EMIS Department regularly publishes key statistics – such as student enrolment, number of teachers, class size, classroom condition, out-of-school children, dropout rate, repetition rate, and transition rate – it does not include statistics on student learning outcomes. Data on student learning assessments are vitally important as they allow teachers, schools, policymakers, and other stakeholders to obtain important information about

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238 World Bank, 2013
239 World Bank, 2019
240 UNICEF (2020). Review of EMIS that track individual student data: Timor-Leste

student learning, curriculum effectiveness, school performance, as well as the performance of the entire education system. Such information is also crucial for early identification of children at risk of dropping out and is important for establishing accountability at all levels throughout the system.

5.3 Expenditure Analysis

5.3.1 Total Expenditure

The composition of total expenditure on education suggests that most spending comes from public sources. In 2014, 91 percent of current public expenditures were financed through government budget. Public education expenditure totalled $164 million, while household expenditure amounted to 17 million.[241] Data on private household expenditure on education indicates that the larger shares are allocated to uniforms (and other clothing), tuition fees, educational materials, and meals, transportation & lodging (Table 22).

Table 22: Household spending on education

	USD (million)	Share (%)
Tuition	3.6	18
Parents association	1.1	6
Uniforms	6.0	35
Textbooks	0.6	3
Materials	2.8	16
Meals, transport & lodging	2.6	15
Tutoring	0.9	5
Others	0.2	1
Total	17.1	100

Source: TL-SLS 2014

5.3.2 Government Spending

Public spending on education increased significantly up until 2014, after which it declined. Public expenditure on education observed a strong increased from $46 million in 2008 to $164 million in 2014. However, spending has gradually decreased since then – even if it recovered partially in 2019. In 2019, public spending on education represented about 7 percent of GDP. However, this level of spending does not necessarily suggest that education is being prioritised, since total public spending is very high – supported by the country's ample resources. Education expenditure as a share of total government expenditure has declined from a peak of 12 percent in 2014 to 9 percent in 2019.

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241 TL-SLS 2014.

Figure 5.21: Spending on education (USD and %)
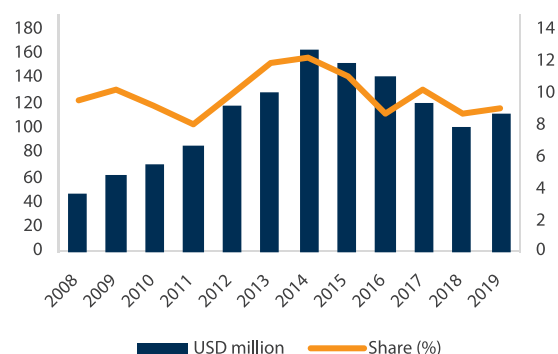
Source: World Bank

Figure 5.22: Spending on education (% GDP)
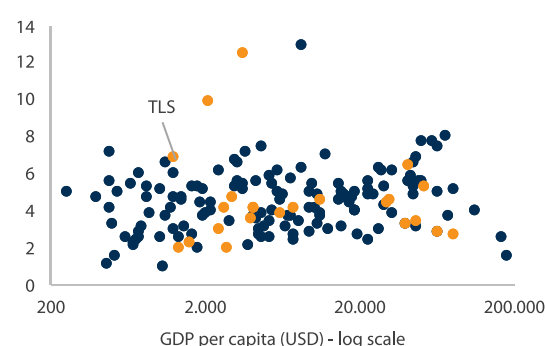
Source: World Bank

Education spending is relatively high by international standards, despite not being a high priority. Spending on education as a share of GDP is significantly higher than most (regional and income) peer countries (Figure 5.22). While this metric varies considerably countries, spending per student is more strongly correlated with a country's level of economic development. Spending per student is also high, especially when taking into consideration the country's income level (Figure 5.23). This is true for both primary and secondary level.[242] However, the proportion of government spending allocated to education (9 percent) is lower than most peer countries – which reflects low prioritisation of the sector among competing budget demands (Figure 5.24).[243] Overall, government expenditure on the education sector is comparatively high by international standards, even though it does not account for a high proportion of the overall spending.

Figure 5.23: Spending on primary education (per student)
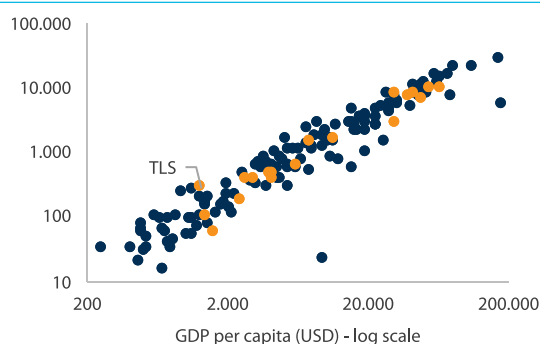
Source: World Bank

Figure 5.24: Spending on education (% total)
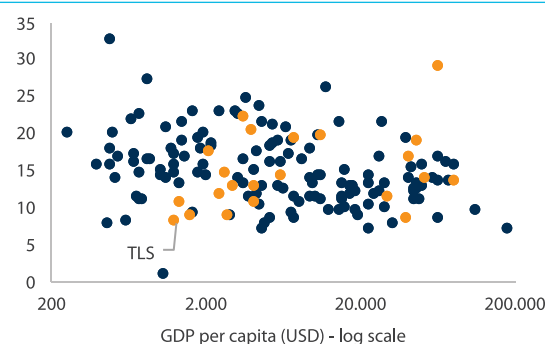
Source: World Bank

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242 Spending per tertiary student is not particularly high, but this is due to the large number of students – rather than limited overall funding.

243 In the 2018 ministerial-level meeting of the GPE in Dhaka, the government of Timor-Leste announced its commitment to gradually increase the share of expenditure in education toward 20 percent, starting with 15 percent in 2019 and 2020. However, this intermediate target has not been achieved.

The composition of spending on education has changed considerably, with a rising wage bill. Salary & wages account for a large (and growing) proportion of education spending. Expenditure on salary & wages increased from $20 million in 2008 to $73 million in 2019 (Figure 5.25). This was mainly driven by the growing number of teachers. In 2019, salary & wages accounted for about two-thirds of the total expense of education. A fast-growing wage bill is a concern, particularly if it is not accompanied by improvements in service delivery and learning outcomes. Spending on goods & services has declined considerably, while spending on other categories – such as capital & development, minor capital, and transfers – has been relatively marginal. Investments in infrastructure have been very limited in the recent past.

Figure 5.25: Spending on education (USD million)
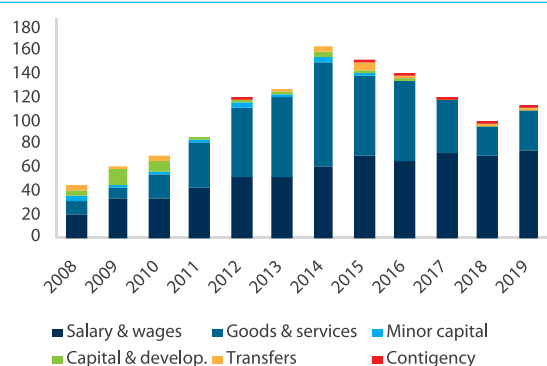
Source: Ministry of Finance (BOOST).

Figure 5.26: Spending on education (share)
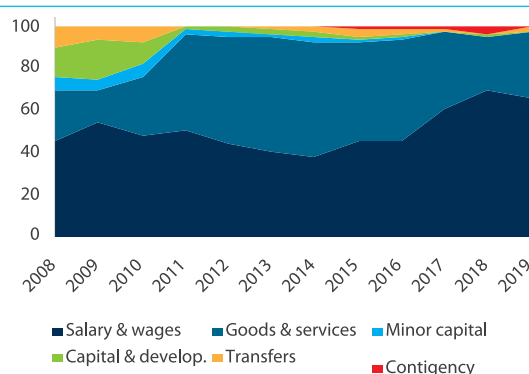
Source: Ministry of Finance (BOOST).

Spending on goods & services has been mainly affected by trends in scholarships. Expenditure on goods & services grew considerably until 2014, although it has declined since then (Figure 5.27). These trends were largely driven by spending on training & workshops and, to a lesser extent, operational expenses. Moreover, the category training & workshops are intrinsically associated with the HDCF. In 2014, scholarships accounted for over half of the spending on training & workshops, while professional training accounted for 20 percent. Scholarships have been granted to the benefit of several sectors over time – including finance, justice, health, and petroleum. Spending on training & workshops typically accounts for about 50 percent of total spending on goods & services (Figure 5.28). The weight of other miscellaneous services has increased considerably, but this may be related to the decline in operational expenses. This potential misclassification highlights the importance of maintaining good accounting practices to enhance transparency and accountability.

Figure 5.27: Education spending (USD million)
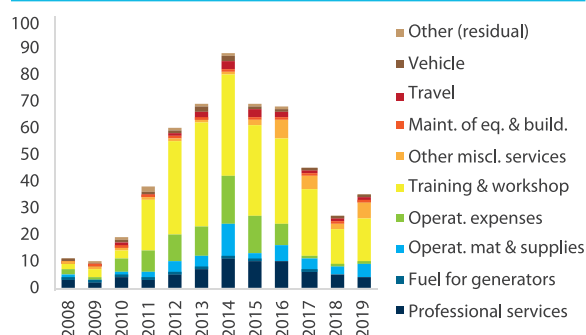
Source: Ministry of Finance (BOOST).

Figure 5.28: Education spending (%)
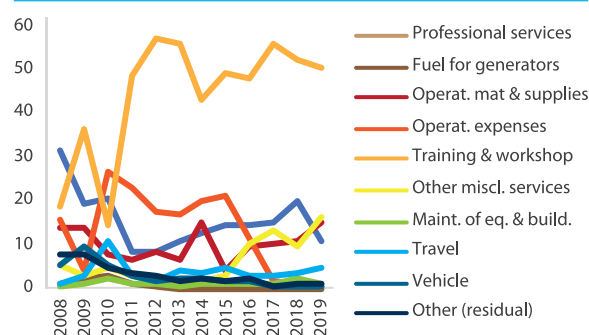
Source: Ministry of Finance (BOOST).

The recent declines in spending have been observed in the Ministries and the Human Capital Development Fund. Data for MEYS and MHEC has been combined to improve comparisons across time. Spending by these ministries declined significantly between 2014 and 2017, and has broadly remained at that level in 2018 and 2019. Their share in total sector spending has also declined strongly, owing to the creation of the creation of the Human Capital Development Fund (HCDF) in 2011. Spending by the Human Capital Development Fund (HCDF) declined by one-third between 2014 and 2018, although it has somewhat recovered in 2019. The National University of Timor-Leste (UNTL) has typically accounted for about 8-10 percent of overall education spending.

Figure 5.29: Education spending by agency (USD million)
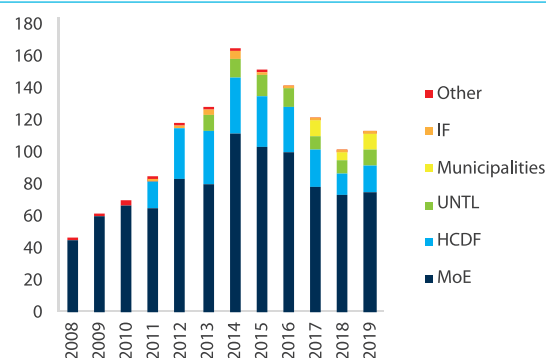
Source: Ministry of Finance (BOOST).

Figure 5.30: Education spending by agency (%)
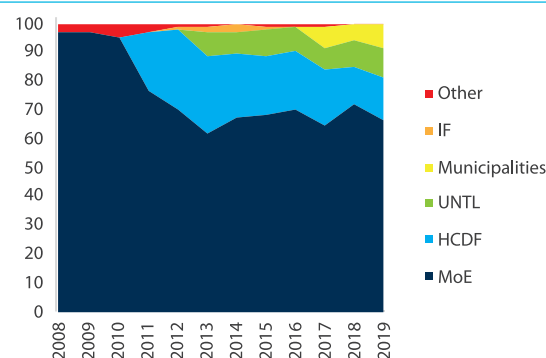
Source: Ministry of Finance (BOOST).

Municipalities are playing an increasing role in education spending. Municipalities started receiving their own education budget in 2017. Until then, funding for municipal education services were channelled through the (then) Ministry of Education. This change may have contributed to the decline observed in 'education services'. Furthermore, the political situation in 2017-2018 caused a drop in overall public spending, which may have contributed to some of these recent trends. Municipalities account for about 8 percent of total spending on education.

The budget execution rate has been relatively high, but there is still room for improvement. The budget execution rate in the education sector has ranged between 85 and 95 percent since 2011. This compares favourably with other ministries and public agencies. However, this is partly due to the high proportion of wages & salaries, which typically have very high execution rates. Even then, about 5-15 percent of the education budget goes unspent every year – despite virements and other flexible measures – which could be usefully utilised.

Figure 5.31: Budget execution (USD million and %)
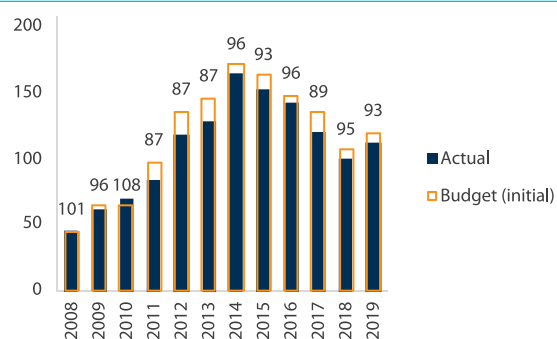
Source: Ministry of Finance (BOOST).

Figure 5.32: Contributions to execution (USD million)
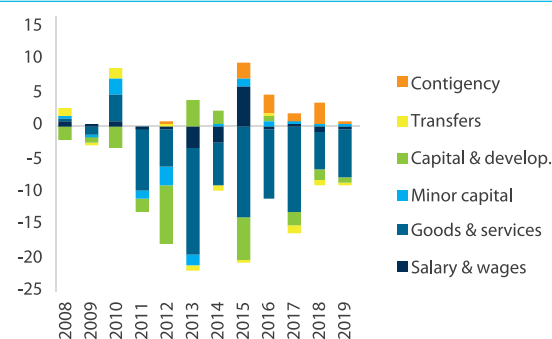
Source: Ministry of Finance (BOOST).

Capital & development exhibits the lowest execution rate, while municipalities also appear to have difficulty utilising their budgets. The execution rate for wages & salaries has averaged nearly 100 percent in the past four years, which means that it is non-salary spending that warrants some investigation. The capital & development budget allocation, mostly under the Infrastructure Fund, has been poorly executed in recent years – averaging 11 percent in 2017-2019. Although spending in this category has been low, this bottleneck is a concern – given that the education sector needs additional school infrastructure. The execution rate for goods & services has mostly varied between 80 and 90 percent since 2011. From an administrative perspective, municipalities seem to struggle to execute their budgets – with an average execution rate of 72 percent since 2017, when they started receiving their own education budget. This is likely due to both public financial management bottlenecks (late allocation and disbursement of funds from the central level) and capacity constraints, which affect service delivery. There are large variations in execution performance across municipalities, which could be due to differences in local capacities.

The execution of the budget faces significant constraints. During the year, delays in the release of funds affect service delivery, especially for programs such as school feeding. This is in part due to the (often) late approval of the state budget. Low capacities to meet pre-requisites from the requestor and slow processing (by receiver) also lead to delays. Sometimes there is a need to respond to a changing context or unexpected events (e.g. need for maintenance or repairs). However, municipalities cannot move funds across purposes (e.g. through virements), which constrains their ability to tackle the most pressing needs. Municipalities provide receipts every quarter before the next funding tranche is released.

The government has developed program structures, although it is unclear if its implementation can lead to improvements in service delivery. The current chart of accounts lacks a functional classification – such as the classification of the functions of government (COFOG) – which makes it difficult to assess how much is being spent in the education sector. The figures in this report have been compiled through

a technical assistance effort that produced the BOOST database. Nonetheless, the government has been pursuing programme budgeting for several years, and program structures have been developed for all line ministries. For education, the key programs are: (i) good governance and institutional management; (ii) pre-school education; (ii) basic education; (iii) secondary education; (iv) recurrent education; (v) cross-cutting activities; (vi) implementation of gender policy; and (vi) salary and wages. Each program has sub-programs and then activities. International evidence suggest that the implementation of programme budgeting is challenging – demanding considerable resources – while it does not necessarily improve the budgeting process, especially in the absence of a medium-term expenditure framework.

The procurement process is lengthy, which slows down spending and thus the delivery of services. Although funds are mobilised from MoF in the first quarter of the fiscal year, the procurement process entails several steps and iterations to ensure that all documents are completed correctly. Document preparation usually takes one month, and the process involves commitment payment vouchers (CPV), advertising, public bidding, and publication. Due to the length of this process, contracts can only start later in the year, which can affect their ability to execute the full budget allocation and complete all planned projects. Payments to contractors are sometimes delayed. At the end of the year, unspent balances cannot be re-appropriated for the next year (carry-over) and must be transferred back to the MoF – with no certainty of continuation in the next year. Revisions to the procurement law and process could facilitate spending.

The budget process lacks a medium-term perspective. Budgets are developed on an annual basis, by taking the previous year as the baseline and additional funds requested for priorities identified during the year. Projections for additional years are often ad-hoc or follow a 4-percent rule for many spending items. Improving the alignment of government-wide strategic priorities, top-down financing envelopes, and bottom-up resource requests (with a medium-term perspective), will require repeated budget rounds of 'learning by doing' and support change management, as well as requisite capacity at national and local levels.

Enhancing service delivery requires greater coordination across agencies, especially regarding planning and budgeting. The education sector has become more fragmented with the creation of autonomous agencies (such as UNTL and ANAAA), the separation of responsibilities between MEYS and MHESC, and the increasing role of municipalities. Given this, it is crucial to promote effective coordination among education sector agencies – as well as with MoF – to deliver the vision provided in the NESP. Taking steps to develop a medium-term expenditure framework can improve resource predictability and provide a basis for a constructive dialogue. In practice, this will require the adoption of a medium-term budgeting approach that is aligned with (costed) medium-term plans. The geospatial platform developed for this report would facilitate decision-making by providing valuable insights (on resource needs) at the facility level – see Chapter 6. At the same time, it is important to increase the ability of budget to 'respond' to changing needs – especially at the school or municipal level.

5.4 Sustainability, Efficiency, and Equity

5.4.1 Sustainability

The education system will face higher demand for services due to demographic trends. The demand for public education services will grow considerably in the near future. The ongoing demographic transition presents an opportunity to seize a demographic dividend, although the pre- condition is that new entrants in the labour marker have the required education and skills. Improving the quality of education and training

is vital to support a more productive workforce and thus enhance economic growth. Hence, there is a need to focus simultaneously on service coverage (e.g. enrolment) and quality.

Figure 5.33: School-age population projections
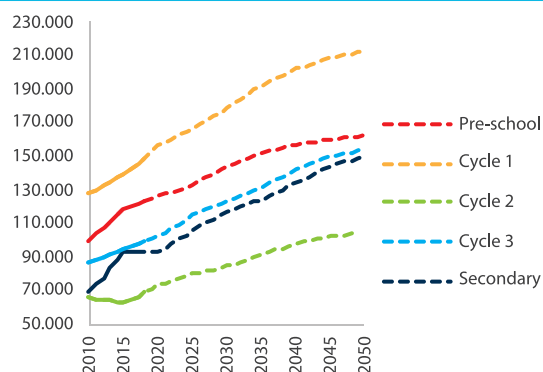
Figure 5.34: Student projections

Source: UN World Population Prospects
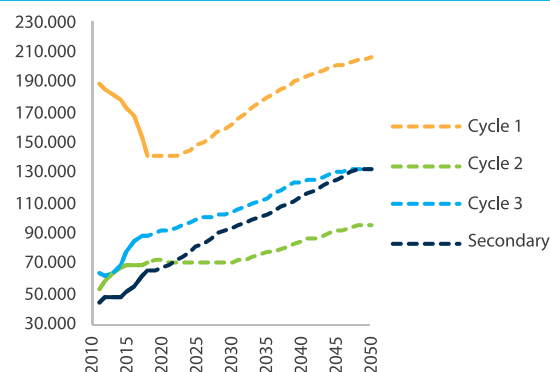
Source: EMIS and UN World Population Prospects

The future availability of domestic and external resources for education is uncertain. Education spending in 2020 may be reduced due to COVID-19 pandemic, although it is likely to pick up in 2021. However, future trends may be uncertain given the broader fiscal sustainability situation – particularly given the expected depletion of the Petroleum Fund. Moreover, future resource availability is highly doubtful, especially bearing in mind the economic impact that COVID-19 has had on many traditional development partners. Development assistance to Timor-Leste is likely to continue declining – at least in relative terms – which will need to be offset by domestic sources of finance to maintain the same level of spending. Nonetheless, it is equally important to improve the efficiency and effectiveness of public spending. A re-prioritisation of the overall state budget could yield more resources for the sector without impacting fiscal sustainability.

Increasing public education spending can help improve learning outcomes in a context of growing demand. The current infrastructure and workforce levels in pre-school are inadequate, while the number of 3-5 year-olds is expected to increase by about 17 percent between 2018 and 2030.[244] Stronger and better investments in pre-school – especially in classrooms and pre-school staff – would be required to help prepare increasing numbers of children for compulsory schooling. Moreover, basic education also requires more classrooms and adequately-trained teachers to meet a growing demand while ensuring good quality services. The student population is projected to increase by 23 percent between 2018 and 2035. Nonetheless, these resource increases would need to be undertaken gradually – since the education system is not able to produce teachers with the required skills and competencies (nor build new facilities) at such a fast pace. The demand for physical infrastructure is particular acute in the municipality of Dili, where there are greater classroom shortages.

Streamlining some categories of education spending is needed to ensure sustainability. Government spending on education increased considerably until 2014, although it has been mostly declining since then.

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244   UN World Population Prospects (2017 revision).

Nonetheless, spending levels remain high by international standards.[245] Despite the many challenges that need to be tackled, a 'business as usual' approach – simply relying on further spending – will be insufficient to generate sustained improvements in leaning outcomes. The size of the wage bill is particularly large and rising, which should be scrutinised further. Decisions to recruit teachers ought to carefully balance its benefits against its medium-term fiscal implications. Uncovering savings within the sector will be crucial to create fiscal space for productive investments.

5.4.2 Efficiency and Effectiveness

Although more resources will be required, it is crucial to enhance the efficiency and effectiveness of public spending. Improving the efficiency and effectiveness of government spending is the key to ensure that public resources have a strong impact on service delivery and learning outcomes. Efficiency analysis evaluates how inputs translate into outputs, while effectiveness relates to how inputs translate into outcomes. In terms of measurement, inputs often include public spending, staff levels (e.g. teachers) and infrastructure (e.g. education facilities), while outputs usually comprise enrolment rates, years of schooling (or attainment), among others. Learning outcomes can be measured through literacy rates and test scores.

Given expenditure levels per student, better student learning outcomes could be achieved. Efficiency and effectiveness analysis suggests that the use of both financial and human resources could be improved to achieve better outcomes. For instance, literacy levels are lower than most countries with similar levels of public spending per student (in primary education) – especially in the EAP region (Figure 4.39). A similar conclusion is observed for the harmonised test scores, albeit less unambiguous (Figure 4.40). Using the pupil-teacher ratio – instead of public spending – leads to similar conclusions for both literacy and test scores. The results suggests that better learning outcomes would have been expected for the current level of public spending. Conversely, many countries have achieved similar learning outcomes with less resources. Overall, improvements could be made to tackle inefficiencies in the education system.

Figure 5.35: Youth literacy rate (%)
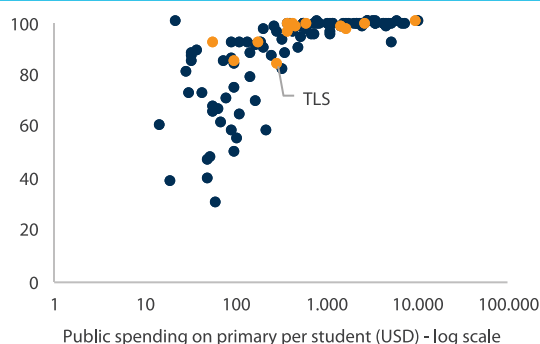
Source: World Bank

Figure 5.36: Test scores
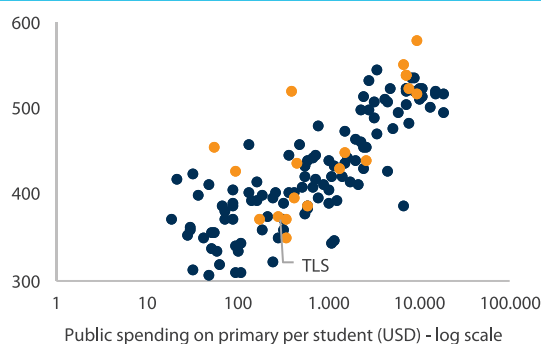
Source: World Bank

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245 The 'Education 2030 Framework for Action' proposed two benchmarks: allocate at least 4 to 6 percent of GDP to education, and/or allocate at least 15 to 20 percent of public expenditure to education. In Timor-Leste, the relatively low spending share devoted to education (9 percent in 2019) mainly reflects large allocations for other sectors – since aggregate public spending accounts for about 75 percent of GDP.

The allocation of spending across education levels is uncharacteristic given the country's level of development. Wealthier countries tend to spend a higher proportion of their public education budget on higher levels of education.[246] In their early stages of development, countries predominantly invest in primary education to build strong foundational skills – such as basic literacy and numeracy – for most of the population. They then gradually move to higher levels of education over time, as demand for higher skills increases.[247] However, Timor-Leste appears to be an outlier, since a relatively high share of public funds is devoted to tertiary education. This suggests that tertiary education is a higher priority than in many peer countries. Enrolment in higher education increased considerably (from 27,009 in 2011 to 57,436 in 2016), surpassing enrolment in upper-secondary education (grades 10 to 12). This raises some concerns regarding the quality of the graduates produced by the higher education system, as well as the allocative efficiency of education spending.

Figure 5.37: Public spending on education (by level)
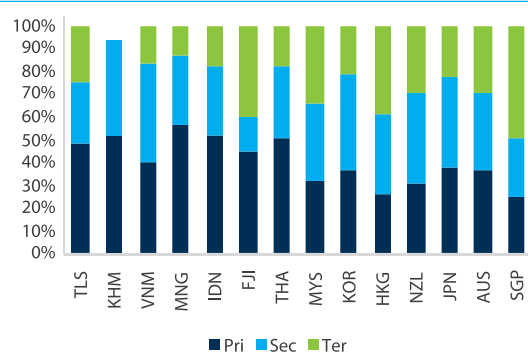
Note: Primary includes pre-school.
Source: World Development Indicators (2014); Timor-Leste (MOE 2016)

Figure 5.38: Secondary and tertiary enrolment (2011-2018)
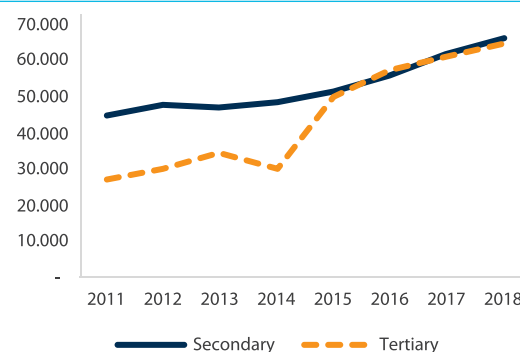
Source: EMIS, ESA (2016) and NESP (2020-2024)

The internal efficiency of education spending could be improved in basic education schools. There are internal inefficiencies (e.g. high repetition and dropout rates) and concerns regarding the quality of teaching. Empirical analysis suggests that the average class size has an impact on the youth literacy rate (Box 6). Overcrowded classes seem to be detrimental to student learning. Moreover, increases in the teacher-to-class ratio and improvements in classroom condition seem to be associated with a strong increase in youth literacy. Moreover, the relative shift in focus from the primary level of education to higher levels has been too fast, which has impacted on the quality of service delivery. A stronger focus on basic education is warranted – especially its qualitative aspects – since it is crucial to provide strong foundational skills for all students.

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246   World Bank EAP Regional Education Report (2018).

247   Korea allocated 69-80 percent of the education budget to primary education between 1948 and 1959.

Box 6: Educational inputs and learning outcomes

Regression analysis can shed light on the relationship between educational inputs and key learning outcomes. The analysis used the TL-SLS 2014 and EMIS 2018 school level datasets to construct sub-municipal level variables for all 65 administrative posts in Timor-Leste. The sub-municipal level variations in the variables of interest are then used to identify the school input factors that are important determinants of educational outcomes of children and youths (aged 15-24). Two educational outcome variables are evaluated, namely: 'share of youths who can read a letter without difficulty' and 'share of 6-17 year-olds attending formal schooling.' The explanatory variables in the regression models are the sub-municipal average school inputs, including: (i) average class size (in standard deviation), (ii) teacher-to-class ratio, and (iii) share of classrooms in good condition; and sub-district level control variables: (i) a quadratic term in average monthly per capita consumption expenditure, and (ii) average years of schooling for adults aged 26-60 years. The regression models are estimated using both ordinary Least Squares (OLS).

Empirical evidence suggest that the large classes observed across basic education schools is detrimental to student learning. Per capita consumption expenditure and adults' average years of schooling positively affect sub-municipal average youth literacy rate and the estimated coefficients are statistically significant. This finding is not surprising given the well-known positive association between socioeconomic conditions and educational outcomes. The more interesting finding is that average class size is inversely associated with lower educational outcome. Specifically, it is estimated that a one standard deviation reduction in average class size (a reduction in class size of 6.5 students) is associated with a large increase of 3.8 percentage points in youth literacy rate.[248]

Similarly, a unit increase in the teacher-to-class ratio is associated with a 10 percentage point increase in the youth literacy rate. The average teacher-to-class ratio for basic education schools is a very low. According to the model, raising the teacher-to-class ratio from 0.98 to 1.38 is expected to increase the youth literacy rate by 4.2 percentage points, other factors remaining constant. Nevertheless, it should be noted that the estimated coefficient on this key input variable is not statistically significant at conventional levels.[249]

There is also evidence of the effect of improving physical classroom condition.[250] Increasing the share of good classrooms by one percentage point is associated with a 0.33 percentage point increase in youth literacy rate. Around 53 percent of classrooms in basic education schools are in good condition. Eliminating classrooms and school infrastructure that are in poor state could therefore have a significant impact on student learning. The regression results for the model where the dependent variable is the 'share of 6-17 year-olds attending formal schooling' can be analysed analogously and the conclusions are similar across both model specifications.

Investments in infrastructure and teacher recruitment are needed, but curriculum development and teaching materials should not be neglected. Improving infrastructure can have a significant impact on learning outcomes – especially the rehabilitation and construction of school buildings. Classrooms are overcrowded and a significant number are in poor conditions, which affect students' ability to learn. Moreover, producing and attracting teachers with the right competences and skills set is critical to improve the quality of service delivery. Continuous in-service training and improved management systems can also play an important role. While investments in infrastructure and human resources are vital, curriculum development and teaching materials are also important. Curriculum reform for cycle 3 (grades 7-9) of basic education and secondary education are outstanding. Moreover, teaching materials have been identified

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248 Here, the youth literacy rate is defined as the 'share of youth who can read without difficulty.' The national average share of youth who can read without difficulty in 2014 is 85.7 percent (estimated from TL-SLS 2014).

249 Nevertheless, it is almost statistically significant at the 10 percent level if a one-tail hypothesis test is employed.

250 It is very likely that schools with better physical classroom condition would also have better quality infrastructure, school facilities, and teaching materials. Since we do not have access to data on the quality of other school infrastructure, facilities, and teaching materials, it is not unreasonable to assume that these factors are also captured in the classroom condition variable in our regression models.

as a key constraint to learning.[251] They are currently insufficient to ensure good quality education in many schools. The production and delivery of teaching and learning materials for public pre-schools, pre-secondary (cycle 3 of basic education), and secondary schools would be particularly important. School furniture – such as chairs and desks – are also important.

Adequate management skills are vital to enhance service delivery. Strengthening the managerial skills of school staff (such as directors and administrators), municipal officers (e.g. focal points for education), and even staff in central agencies (e.g. MEYS) is key to improve the education system performance – especially in view of the ongoing decentralisation process. Although the education system is still fairly centralised, some decisions at the school level are being made despite lack of legal authority and training. Strengthening national standards and quality assurance at central level is key. Leadership and service delivery capacity would need to be gradually strengthened.

Designing tighter assessment standards and stricter accreditation of higher education institutions would help enhance quality. Improved standards need to the developed, monitored, and implemented uniformly across municipalities regarding teacher competencies and student performance at all education levels. In fact, a more regular and systematic assessment of learning outcomes is key to improve the quality of education. Teacher and student standards should also be consistently applied and monitored in private service providers, especially if they receive public funds. Enrolment in higher education has grown at a very fast pace, especially in private institutions. It is important to ensure that much-needed quality improvements are not compromised by demand pressures – through the development of a solid accreditation framework that is regularly monitored (for quality assurance). ANAAA may require additional resources to fulfil this task. Higher academic standards should also apply to the recruitment of teachers, which coupled with in-service training, would be key to improve the quality of teaching.

It is important to improve national exams and ensure that they are valid assessment instruments of students' learning. Standardised exams should have a built-in differentiating capacity and be informative about student learning – so that they provide sufficient and clear evidence to support the policymaking process concerning the curriculum, teaching and school organisation. Furthermore, the individuals' assessment data must be linked to their school data in the EMIS so that the associations between student learning outcomes and educational inputs, student family background characteristics, teacher quality, or the learning environment can be analysed.

Raising learning outcomes would lead to a substantial increase in labour productivity and economic growth. External efficiency in the education sector is typically measured by the benefits of schooling accrued to individuals and society. Economic returns to education – in the form of higher labour market earnings – are important indicators of external efficiency. In that context, baseline and reform scenarios have been developed to assess the potential benefits of improving learning outcomes. First, it is assumed that reforms increase the average cognitive skills of all cohorts of children born in 2014 or later by 61 points in the harmonised test score – from 371 to a theoretical maximum of 432.[252] Then, this scenario is compared

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251 An analysis of students in the early grades (using TL-SLS 2014 data) revealed that "No teacher, lack of supplies, or dysfunctional school" is one of the most important reasons why students were absent from school for at least one day during the last three months of the last academic year.

252 Stochastic frontier analysis (SFA) of the relationship between the HCI's harmonised test score and average per-student spending per annum – computed over grades 1 to 9 for 93 countries – suggests that given Timor-Leste's level of spending of $281.19 per student, the country's theoretical maximum student achievement is 432 (measured using the PISA scale), which is substantially higher than the 371 the country managed. Other countries which spent less, such as Sri Lanka ($180.14) and Guatemala ($278.17) did much better and achieved scores of 400 and 405 respectively.

to a baseline, representing the 'business as usual' scenario. Under the reform scenario, aggregate labour productivity would be 0.4 percentage points higher than the baseline (of 3.4 percent), while GDP growth would also be higher than the baseline (of 6.6 percent) by the same amount. This serves to illustrate the large gains that could be generated through higher learning outcomes.[253]

5.4.3 Equity

Children from poorer households are less likely to be enrolled, especially at higher levels of education. For the primary level (cycles 1 and 2), both net and gross enrolment rates are quite high across all wealth groups.[254] At the pre-secondary level (cycle 3), there is a stronger pattern of progressively higher enrolment rates for children from higher income quartiles. The pattern becomes very prominent at the upper secondary (grades 10 to 12) and the tertiary education levels (Figure 5.39).

Figure 5.39: Enrolment rates by income (%)
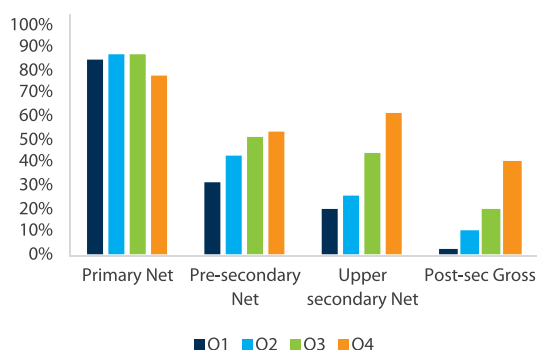
Note: Household expenditure per capita quartiles.
Source: Calculated from TL-SLS 2014

Figure 5.40: Primary net enrolment (%)
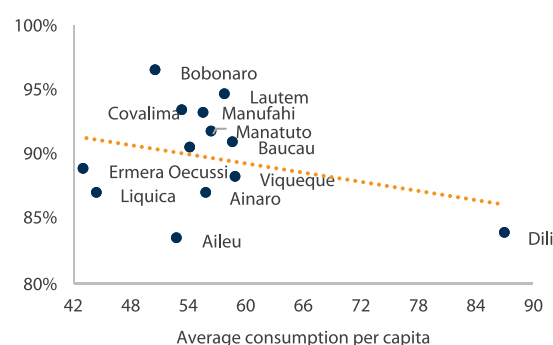
Source: EMIS and TL-SLS 2014

There are also disparities in net enrolment rates across municipalities. Without access to student-level information (e.g. on learning performance) that is linked to key educational inputs (school level data), it is difficult to assess equity in the education system. Nonetheless, data at the municipal level can provide interesting insights. For primary education, net enrolment rates (NER) range from 83 percent in Aileu to 96 percent in Bononaro – with Dili recording the second lowest level (Figure 5.40). Nonetheless, Dili has significantly higher rates than other municipalities for all other levels of education. For instance, the pre-secondary NER for Dili is 73 percent, compared to 59 percent in Baucau – the second highest rate. The upper-secondary NER for Dili is 70 percent, compared to 44 percent in Manatuto. Finally, the tertiary NER for Dili is 33 percent, while that for Baucau is 11 percent. At the municipal level, the correlation between average consumption per capita (a proxy for wealth) and net enrolment – for pre-secondary and above – is positive and appears to be progressively stronger with higher education levels.

Stronger investments in basic education in lagging regions would support greater equity in access to education and learning outcomes. There is a strong positive relationship between average consumption

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253 Private returns on household investments in education can be considerably high – in terms of higher (future) earnings.

254 Net and gross enrolment rates for all four household wealth quartiles are estimated using household per capita consumption expenditure (TL-SLS 2014).

and learning outcomes at the sub-municipal level.[255] For instance, the share of 6-17 year-olds attending formal schooling increases with the levels of consumption (Figure 5.41). Moreover, the proportion of young people that can read without difficulty also increases with average consumption (Figure 5.42). Empirical evidence suggests that investments in school infrastructure (such as improving classroom physical condition and eliminating overcrowded classes) and adequately staffing classrooms with quality teachers would substantially raise educational achievements. Furthermore, given the observation that poorer children are more disproportionately represented in regions with greater teacher shortage, inferior teacher quality, more overcrowded classes, and poorer school infrastructure conditions, it can be inferred that prioritising educational investments in lagging regions would also likely lead to more equitable educational outcomes.[256]

Figure 5.41: Formal school attendance (%)
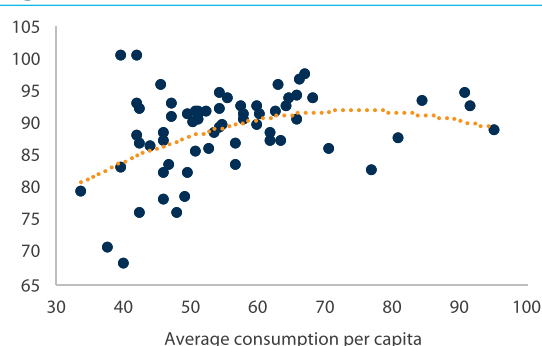
Note: Data for 6-17 year-olds.
Source: EMIS and TL-SLS 2014

Figure 5.42: Youth literacy (%)
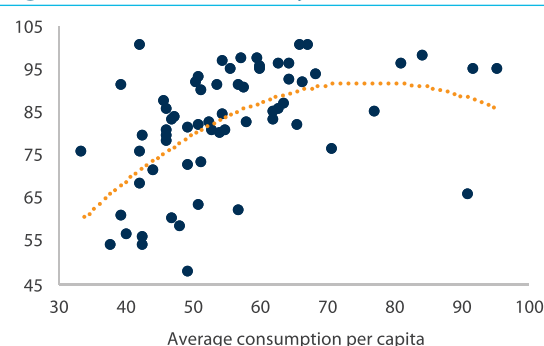
Note: Youth who can read without difficulty.
Source: EMIS and TL-SLS 2014

Basic education in-kind benefits have significant effects on poverty and inequality, but others tend to benefit wealthier households. An analysis has been recently conducted following the CEQ methodology.[257] Basic education in-kind benefits to public schools comprise on average about 5.5 percent of market income. This is larger than other in-kind benefits or direct transfers. Even though these benefits are spread quite evenly across the population, they have a relatively large impact on poverty reduction and inequality, reducing them by 6 and 2 percentage points, respectively. At the secondary level of education, especially through private schools, the benefits are more concentrated among wealthier households. At the tertiary level, government support through both public and private schools tends to disproportionately benefit wealthier households.

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255 Specifically, variation in per capita consumption explains as much as 17 and 30 percent of the variation in school attendance and youth literacy, respectively.

256 Delivering education services in remote areas is challenging. Rural and poor households tend to face greater difficulty in reaching school facilities due to longer distances, and often receive poorer services – e.g. infrastructure in poor conditions, limited textbooks, and less qualified teachers. Improving access to education in remote areas would require significant investments.

257 This is the cost of delivering free-education – see Table 14 in ADB 2020. The government supports both public and private schools – the latter also includes religious and community schools. Government pays teachers in public schools, but also some teachers seconded to private schools – which estimates suggest account for about 30 percent of the private school teachers.

5.5 Conclusions and Recommendations

Significant efforts have been made to rebuild the education system and improve access to education. At independence, much of the school infrastructure was either damaged or in poor condition, while the departure of Indonesian teachers left a large gap in the workforce. Since then, there have been considerable efforts to rehabilitate and build new schools, train and recruit teachers, and improve service delivery. Enrolment levels have increased and learning outcomes have improved – especially with regard to youth literacy. Despite progress in several areas, many pertinent challenges still remain. Enrolment rates in pre-school – a key foundation for later skills – are low, while repetition rates in the early grades are very high. Enrolment in the first cycle of basic education is high, but learning outcomes remain low. Overall, access to education has improved, but the quality of education is lagging.

Increases in education spending have supported an expansion of services, but there are concerns about its composition and sustainability. Public spending on education has increased significantly through time, signalling an intention to expand and improve education services. Although spending has declined in recent years, it remains relatively high by international standards – at about 7 percent of GDP in 2019. Nonetheless, this does not necessarily suggest that education is being prioritised, since the sector only accounts for 9 percent of total public expenditure. Moreover, the composition of spending has changed considerably. The wage bill has risen substantially, while spending on capital & development has been very limited. Streamlining some categories of education spending is needed to ensure sustainability – especially since demographic trends will place further pressures on the education system.

Spending on education has not translated into commensurate improvements in learning outcomes. Comprehensive assessments in the early grades show low levels of student learning. Efficiency analysis suggests that the use of both financial and human resources could be improved to achieve better outcomes. For instance, literacy levels are lower than most countries with similar levels of public spending per student (in primary education) – especially in the EAP region. Using the pupil-teacher ratio – instead of public spending – leads to similar conclusions for both literacy and test scores. Hence, better learning outcomes would have been expected for the current level of public spending. Conversely, many countries have achieved similar learning outcomes with less resources. Overall, improvements could be made to tackle inefficiencies in the education system.

Improving the allocative and technical efficiency of public spending on education would help boost learning outcomes. While higher budget allocations can facilitate school construction and teacher hiring, improving the quality of public spending is equally important – to secure good value for money. In particular, improving the efficiency of the basic education system is key to ensure that investments in subsequent education levels have a strong impact. While secondary education requires further investments – as overcrowded classrooms suggest – these will only yield strong results if basic education is able to provide the expected knowledge and skills to students. A small cohort of students is currently pursuing technical training, which will maintain the dependence on foreign labour despite the large number of university graduates. Finally, new investments in school rehabilitation need to be counterbalanced with adequate spending in goods & services (e.g. textbooks) and personnel salaries and incentives.

High repetition rates in the early grades of formal schooling require immediate attention. Several measures can be undertaken with a view to reduce student repetition. These include improving pre-school coverage and quality – especially in remote areas – to ensure that all children are school ready when they enter grade 1. This would be more effective and less costly than grade retention. Moreover, enhancing the school feeding program would support the physical and cognitive development of young children.

Additional measures could include reducing class sizes and providing individualised support to those with difficulties – through remedial classes, peer instructing, involving assistant teachers, and tutoring. Using classroom testing to assess which students require more attention, coupled with more effective teaching methods, would be key for improving the quality of education. The language challenge can be tackled either through further language training for teachers and materials provided, or advice on transition from (de facto) mother tongue usage.

Producing and attracting sufficient numbers of good teachers is of paramount importance. Current data – such as on student-teacher or teacher-to-class ratios – and demographic projections suggest that there is a need to recruit teachers. However, it is important that the education system attracts and produces teachers with the right competences and set of skills. This ought to be the priority for human resources. Continuous in-service training and professional development, as well as better teacher management can also play an important role. Although teachers receive some level of feedback (written or oral evaluation assessment) there are limited incentives for good performance. Hence, providing monetary and non-monetary incentives could improve teacher performance (e.g. reduce absenteeism), as well as providing adequate training (e.g. for mixed-age classrooms). Better monitoring is needed, while inspection reports should be made public – e.g. to reveal the true extent of teacher absenteeism. A formula should be developed for adequately staffing classrooms (including redeployment) and ensure that teacher skills are suited to student needs.

Improving infrastructure can have a significant impact on learning outcomes. The rehabilitation and construction of school buildings are important, since this seems to be a binding constraint. Classrooms are overcrowded and a significant number are in poor conditions, which affect students' ability to learn. School infrastructure standards should be developed, together with a rating scorecard to allow an accurate assessment and effective prioritisation of infrastructure upgrading. Moreover, it is also crucial to improve connective infrastructure, water & sanitation, electricity, and ensure that facilities are regularly maintained – especially since these also impact the learning environment and student absenteeism.[258] In particular, lack of access to pre-schooling and secondary education should be addressed by improving connective infrastructure (or even by providing bicycles), since students in rural areas walk to school – or the expansion of schools in remote areas to improve accessibility. For pre-school education, either one year can be added to primary schools (for 5 year-olds), or community facilities can be used (for 3-5 year-olds) – depending on the specific context and location.

Appropriate monetary and non-monetary incentives could boost school attendance. Student absenteeism is one of the key reasons for school repetition. A national campaign highlighting the benefits of schooling, scholarships, and enhancing Bolsa da Mae – a cash-transfer program conditional on school attendance – could reduce the opportunity cost (of working) and improve school attendance. The school feeding program alone does not seem sufficient to tackle absenteeism, partly because of some challenges in its implementation. Affordability of education can be a considerable constraint even in countries that provide free education – i.e. no school fees. Moreover, shortening travel distances (through improvements in connective infrastructure) could also facilitate access.

School management can also be improved through better data and processes. Improving the Education Management Information System (EMIS) is key to enable an adequate monitoring of performance and better decision making. The implementation of a fit-for-purpose ICT policy in education could support both school management and teaching methods. School inspectors currently collect data on pre-school

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258 In 2012, over 30 percent of (primary) schools did not have a toilet, while about 40 percent had a squat toilet.

and basic education schools, although these are not publicly available. These inspectors could collect a (wider) range of information through innovative mechanisms, such as GPS-enabled tablets that confirm school location and visually capture the quality of infrastructure – with pictures sent to a central repository that automatically processes the information. Improved data access, analytics and visualisation for baseline and recurrent public finance and service delivery results could be enhanced through the creation of 'digital dashboards' for budget and execution data. Decentralisation and digitisation of data collection will also enhance timely submission of data and result in improved accuracy.

06

Digital Information

Data can be better harnessed to improve the allocation of public resources, particularly within health and education. Systems for recording public sector transactions and assets are yielding increasing amounts of digital information. However, available data is not being effectively used to support planning and budgeting processes – partly due to their poor quality or relevance, lack of integration, and limited analytical capacity. An improved budget preparation process will require empowering key stakeholders with relevant evidence to make better decisions. The geospatial planning and budgeting platform (GPBP) created for this PER demonstrates how simple, low-cost, user-friendly technologies can support decision making. The GBPB provides spatial visualisations and optimisation scenarios that illustrate the implications of different policies. A specific application is presented, which evaluates access to healthcare facilities and

suggests where additional investments can be more impactful.[259] This exemplifies how digital data could be better leveraged to enhance the quality of public spending.

Main recommendations: (i) enhancing the quality and availability of digital data for a realistic set of areas where evidence-based planning and budgeting can be improved, (ii) improving data integration and model extensions for selected applications with budgetary relevance, (iii) progressively empowering and building capacity of decision-makers at different levels to use digital technologies.

Chapter structure: This chapter describes a newly-developed geospatial platform and its application for a specific purpose: improving access to basic healthcare. The chapter sets out the rationale for this approach (the 'why'), the data and technology required for realising this approach (the 'what'), and its implementation (the 'how'). The chapter also proposes some next steps. The final section concludes with a set of recommendations that aim to support evidence-based budget preparation for improved service delivery.

6.1 Context and Rationale

Improving health and education outcomes will require addressing allocative and operational constraints. An improved allocation of public resources is key for strengthening human capital outcomes. Enhancing access to public services is a good starting point. Existing health and education facilities provide the population uneven access to these public services. Moreover, there are significant spatial variations in terms of service readiness – namely, staffing and equipment – and capacity utilisation. Improving public service delivery requires a prioritisation and sequencing of public spending. However, it is also important to consider implementation constraints.

Access to health and education services also depends on complementary services, such as transport infrastructure. Timor-Leste is characterised by a challenging topography, especially outside core urban areas. The road network is thus key to ensuring that patients have access to health facilities and children have access to schools. Even if facilities are significantly upgraded, barriers to access imposed by poor transport networks threaten human development outcomes. The impact of the recent floods highlights the vulnerability of the country's infrastructure to climatic shocks. Hence, building inclusiveness and resilience in human capital goes beyond health and education, as it also relies on complementary transport infrastructure.

Several information systems co-exist for different purposes, but their intrinsic value depends on how data is used. The establishment of several information systems since independence has increased the amount of digital data available to decision makers. For example, the Integrated Financial Management Information System (IFMIS) of the Ministry of Finance records transactional data that can provide insights for the budget preparation process. An additional system ('Dalan Ba Futuru Timor-Leste') has been recently developed by the Office of the Prime Minister (OPM) to support planning and monitoring & evaluation. The health management information systems (HMIS) of the Ministry of Health mainly includes administrative and performance data, since data on health outcomes is mainly collected through household surveys. The education management information system (EMIS) is housed in the Ministry of Education, Youth and

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259 The GPBP is an open-source web-based platform, which has been developed as a collaboration between the World Bank and Analytics for a Better World (ABW) initiative – which includes the University of Amsterdam and MIT.

Sports (MEYS), and includes information on physical infrastructure, human resources, and students (e.g. demographics and learning assessments) – from pre-school to secondary education. Other relevant statistical data – such as the Population and Housing Census, the Demographic and Health Surveys, and Surveys of Living Standards – are only conducted every 5-10 years. However, the value of this data is inherently related to how it is used to deliver better services. Budgets that are based on fragmented, outdated, and inaccurate data are unlikely to support efficient and effective public spending. It is therefore crucial to better utilise digital data to improve budget design, implementation, and evaluation.

Leveraging available digital data for budget preparation is key to enhance the quality of public spending. The HMIS and EMIS are important data sources to support budget prioritisation in health and education, even if they have some gaps and insufficiencies.[260] In fact, sectoral budget submissions often lack timely relevant data, which undermines evidence-based policymaking and thus the quality of public spending. Improved planning and budgeting processes necessitate a better use of available (digital) data, ideally through a geospatial lens – especially given the ongoing decentralisation process and the need to reduce inequality (of access and outcomes).[261] Geospatial platforms enable a link between facility-level indicators (such as access, readiness, and utilisation of services) to location-based budgets and outcomes, thus supporting a strong results-based framework. Leveraging timely and suitable digital information can enhance the allocative and operational quality of budgets. Moreover, the COVID-19 pandemic has created a further impetus for governments to apply digital innovations for a variety of purposes (Box 7). Hence, it is crucial to invest in (recurrent) digital data assets.

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260 Moreover, information produced through considerable advisory work on these sectors is usually not disseminated or even used internally, with data lacking validation (and sufficient metadata) and quickly becoming outdated. Relevant data is often fragmented across different systems or maintained in different formats. Manually integrating this data every year as part of the budget process is inefficient and does not allow for progressive improvements. It is therefore crucial to develop platforms that enable data to be updated, exchanged, and used to improve government effectiveness.

261 The key rationale for the ongoing decentralisation process is that transferring budgets and responsibilities to the sub-national level will improve decision making and public service delivery. This suggests that a spatial perspective of budgeting will gain prominence, particularly with regard to the allocation of public resources (which are mostly accrued by a central revenue source) and the monitoring of their impact on service delivery. A more transparent mapping of physical infrastructure, human resources, and outcomes can encourage better resource allocation.

Box 7: Digital opportunities for COVID-19 response, recovery and resilience

The COVID-19 pandemic has amplified global interest in digital applications to strengthen decision making and public service delivery. Initial digital efforts have focused on being able to track and respond to the COVID-19 pandemic. Governments have also established online resources to provide their populations with authoritative data about the pandemic.[262] Leading digital governments have demonstrated the ability to leverage digital capability for COVID-19 contact tracing with smartphone innovations, as well as responsive and sustained 'contact-free' services for citizens and businesses. Moreover, the ability of public servants to rely on digital workflows, together with virtual communications tools and access, have been important elements of sustaining business continuity.

COVID-19 generated a greater impetus for public and private sector digital innovations, but the momentum needed to be maintained for sustained impact. COVID-19 tracking and practical means to deliver support to affected populations is an obvious area of attention. Recent financial technology extensions – such as mobile money – have served to enhance the ways in which support can be provided more effectively to populations. However, solutions should not be only relevant in times of crisis, they must also represent pragmatic choices for regular business processes. Showing how digital technologies can have tangible impacts on specific areas of the planning, budgeting, and implementation process can be an important entry point across different sectors and localities.

Enhancing foundational factors will be crucial for any solution aiming to cover most of the population. Key foundational factors include internet connectivity, digital identification, and digital data systems (including with geo-referencing). The most traction may be gained from identifying and implementing a set of digital innovations that can be deepened and sustained. It is timely to carefully assess how digital innovations can help strengthen the healthcare system and gaps in access. The COVID-19 pandemic has forced governments to rapidly tap into relevant data and address existing gaps – including data access and sharing across government and with the private sector. From the perspective of planning, finance, and statistics authorities, COVID-19 suggests three major entry points for considerations in setting resourcing priorities going forward:

- **Consolidate and strengthen a platform of near real-time socio-economic monitoring.** The COVID-19 pandemic has increased the demand for data that provides high frequency and more spatially-targeted insights for policy making. Digital innovations have included the use of mobility data from mobile phones and the processing of data from satellite sources. The use of these innovations can be reviewed from the current COVID-19 perspective, but also through other lenses. Many countries are using this impetus to consider the role of new technologies for key strategic agendas, such as green recovery or climate change resilience.

- **Review options for enhancing digital services delivery.** The COVID-19 pandemic highlighted opportunities for contactless services. Face-to-face interactions will remain important – e.g. a doctor seeing a patient or a teacher working with students – but digital technologies can supplement regular service delivery processes and make them more resilient. This can start with providing timely and accurate information to users, such as the availability and types of services offered by service providers in their vicinity. By promoting comprehensive, complete and accurate databases (e.g. on facilities), additional services and quality can be progressively built up. Other entry points may include the gradual delivery of cash transfer programmes through mobile phones. In taking a fresh look at all services, especially those that the poorest and most remote populations depend on, this can open opportunities for regulatory streamlining.

- **Strengthen the use of digital data in annual and medium-term budgeting prioritisation processes.** The budget preparation and implementation process can serve as a powerful catalytic for progressive digital transformation. Having central, sectoral, and municipal authorities gain an appreciation for digital innovations will be vital to advance the digital government agenda. These include strengthening the use of spatial data, the use of shared digital data to promote dialogue across sectors (e.g. build a new health facility or a new road to improve access to health), and practical forms to remotely supervise and monitor service delivery. This includes feedback loops (e.g. through mobile phone reporting or surveys) and satellite imagery.

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262 See the OECD's Observatory of Public Sector Innovation (OPSI) Innovative Response Tracker, which illustrates a wide range of impactful steps governments have taken that leverage digital platforms and data.

This chapter presents a geospatial application for the health sector that highlights the value of evidence-based budget prioritisation analysis. Digital data have limited value if it is not applied with a specific objective in mind. The objectives are realised in the context of real-world applications. The GPBP is an interactive web-based platform that was developed as a proof-of-concept for informing a key medium-term planning objective of the health sector. The platform can be easily extended for other applications, including other sectors – such as education, water & sanitation, and other socio-economic infrastructure.

6.2 Digital Data and Technology

The GPBP architecture brings together available data and relevant technology to inform budget decisions on key public services. Data that is geographically tagged (i.e. referenced by location) provides one of the most practical and tangible ways of supporting decision making. Geospatial data layers can be overlaid and cross-validated. The key decision relates to what policy choices have to be optimised and against which constraints – e.g. allocate doctors across health posts or teachers across schools within a budget ceiling.[263] The GPBP generates policy scenarios to support budget prioritisation decisions for achieving stated objectives – such as enhancing access to service delivery facilities. The required data includes facility locations and other attributes (e.g. condition and staffing), beneficiary locations, and the road network (Figure 6.1). Additional data layers may include information on hazards. Moreover, this approach can help to progressively address data gaps in a more integrated manner.

Figure 6.1: Basic data architecture
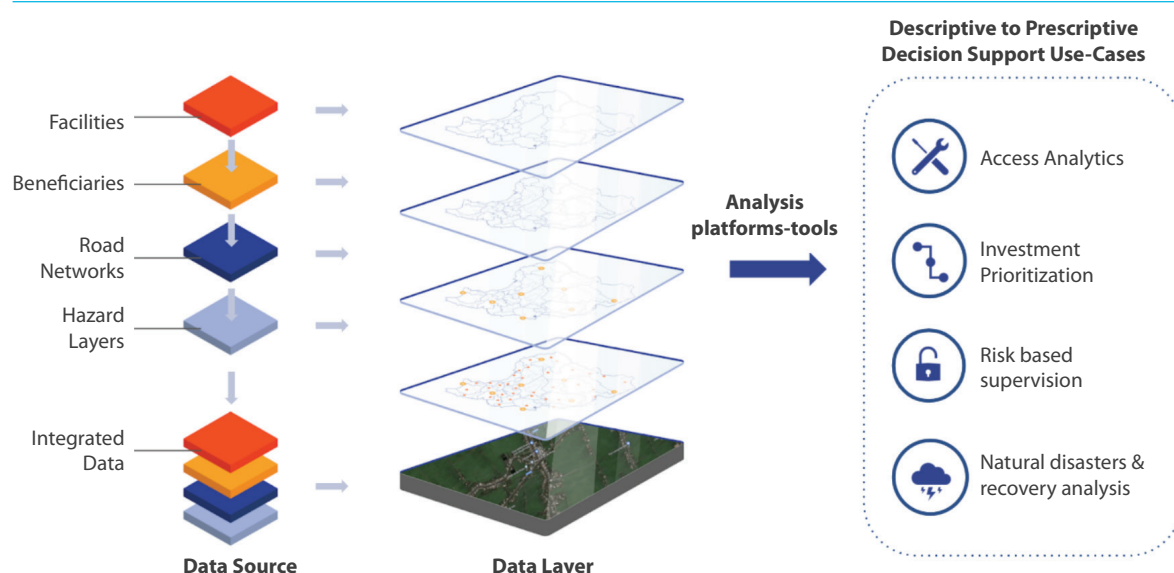
Source: World Bank staff.

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263 It is also vital to assess if the underlying data is credible and up-to-date. For instance, while the population will not change much on an annual basis, the condition of public infrastructure – which is crucial to assess maintenance or rehabilitation needs – may change significantly from one year to another.

The GPBP focuses on integrating the best available datasets to evaluate access to public services. Relevant data is gathered and subsequently integrated to determine current access levels – i.e. travel distances between beneficiaries and facilities – and provide a set of policy scenarios. Although the application is used to evaluate access to health facilities, it can be easily extended to investigate access to education facilities. Mapping and prioritising access to public facilities underscores the need to validate and integrate data from different sources (Table 23). In addition to data on facilities, beneficiaries, and the road network, data on planning targets and unit costs are also important. Data can be drawn from both official and unofficial sources, but official data has the benefit of being the reference data for policymakers. Validation is crucial to ensure that data is complete and accurate. Moreover, illustrative (unit) cost estimates associated with meeting a planning target can be used to provide insights on the budget implications of different optimisation scenarios.

Table 23: Key data assets for improved budgeting in health and education

Area	Function	Key Systems
Planning	Measurable targets (for health and education)	Dalan Ba Futuru Timor-Leste (DBFTL)
Budgeting and Execution	Budgeted and executed spending	Integrated Financial Management Information System (IFMIS)
Population	Location of dwellings (and some attributes)	Population and Housing Census (PHC)
Health	Location of public health facilities (e.g. hospitals, community health centres, health posts) and some attributes	Health Management Information System (HMIS)
Education	Location of public education facilities (e.g. basic and secondary schools) and some attributes	Education Management Information System (EMIS)
Roads	Location of (all-weather) roads	Estrada Road Asset Management System (RAMS)

Source: World Bank staff.

The platform performs optimisations through complex algorithms, but provides results in a user-friendly interface. The GPBP was developed as an online platform that incorporates replicable open-source scripts in the back-end (Python scripts), while providing a front-end interface that non-technical users can engage with (JavaScript and Flask). The objective was to make end-user engagement with the data more tangible. The GPBP user-interface was designed to build engagement across different stakeholders – including the Ministry of Finance and line ministries.[264] The platform allows stakeholders to discuss the budgetary implications of different policy scenarios. It also enables them to review available data and provide feedback on existing gaps and errors (e.g. facilities incorrectly mapped or key road links missing).

6.3 An Application to Health Facilities

This section presents preliminary results from a geospatial platform aiming to support budgeting processes. A digital platform has been specifically developed to integrate, validate, and analyse data to support planning and budgeting. This platform offers data visualisations and optimisation scenarios to equip decision makers with the evidence to solve pertinent policy questions. Its potential is illustrated for the specific case of increasing access to health facilities. The key question related to where health

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264 While the Ministry of Finance should not delve deeply into sectoral budget prioritisation, it should have a sense of the credibility and feasibility of the sectoral budget proposals.

facilities should be built to improve access to basic public health services – as measured by the proportion of dwellings that are within 5 kilometres (by road) of a health facility, which roughly translates into one-hour walking distance. A geospatial approach is particularly relevant given the ongoing decentralisation process, which emphasises the need to better measure service delivery performance – including its equity dimensions.[265] Moreover, fast demographic change requires an anticipation of needs (i.e. future demand for public services), since it has strong budgetary implications. This section introduces the key data layers required, discusses metrics for measuring health facility access, and presents optimisation scenarios for new facility placement. While further refinements will be required – particularly in terms of improving the robustness of the underlying data – the exercise highlights the considerable potential of such an integrated approach.

6.3.1 Data Layers

A baseline analysis of accessibility requires several types of data, which can be thought of as data layers. To estimate physical access to health facilities, information is needed on the geographical distribution of beneficiaries, the location of service delivery units, and travel distances between beneficiaries and service delivery units.[266] For a granular geospatial analysis, beneficiaries should be mapped to the location of their dwelling, and road network geometries should be used.[267] An integrated analysis of this baseline data is the foundation for measuring and monitoring accessibility, which can also be used to determine where further investments have to be made. Basic geospatial data can be further augmented with a range of quantitative and qualitative attributes about the service delivery units (e.g. staffing), beneficiaries (e.g. age), and the road network (e.g. condition). The model can also be enhanced to consider different spatial risks (e.g. floods) or health challenges (e.g. dengue hotspots).

Multiple sources of data have been used for the analysis, including official and crowd-sourced. The 2015 Population and Housing Census captures the location of dwellings, which is used to generate a map of the population distribution (Table 24). The location of health facilities is drawn from a dataset supported by the World Health Organization (WHO), in collaboration with the Ministry of Health. Data on the road network was provided by the Ministry of Public Works' road asset management system (RAMS). However, publicly-available data from Open Street Maps (OSM) is also used – mainly as a benchmark. Its content relies on voluntary updates by the public, which often proves to be relatively comprehensive – especially for roads. The criteria for selecting data layers for a given topic lie in whether the data comprehensively and accurately reflects the relevant reality on the ground (e.g. number of health facilities). Another criterion is whether the information is officially recognised for decision making – since crowd-sourced data may not be used.

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265 The decentralisation process has granted municipalities increased responsibilities for health services. While the modelling could be done within an administrative boundary (e.g. 'suco'), the analysis has been undertaken at the national level – thus assuming that beneficiaries can access their nearest facility, even if it lies in another administrative area.

266 Access depends on several factors, such as physical, financial, and socio-psychological aspects. A calculation of (walking) travelling times is required to estimate how long a beneficiary takes to reach the nearest health facility.

267 A routable network standard refers to road data that can be used to model travel. For example, it would include additional information such as whether roads are one way, or intersections allow turn-offs.

Table 24: Data sources

	Dimensions	Official data	Crowd-sourced data
Beneficiaries	Location of dwellings (with key attributes of interest)	Population and Housing Census (2015)	OSM (building footprints)
Facilities	Location of health facilities (with key attributes of interest)	WHO (2012)	OSM
Road network	Access routes between beneficiaries and health facilities	Estrada RAMS (ongoing)	OSM

Source: World Bank staff.

There is a need to improve data to enable its effective use on a recurring basis for planning and budgeting purposes. The analysis highlights the importance of data quality for decision support. Data gaps and inaccuracies have been identified for several data layers, which may undermine decision making. Overall, official data was found to be more comprehensive and feature-rich, and is therefore the focus of the analysis – although other sources are used for sensitivity analysis. Nonetheless, some OSM road geometries were not included in RAMS, suggesting that there is scope to improve official data.[268] The initial validation exercise also used publicly-available satellite images from Google and commercial high-resolution images (for parts of Timor-Leste) from Planet.

Figure 6.2: Geospatial platform (interface)

Source: Geospatial Planning and Budgeting Platform

Figure 6.3: Geospatial platform (interface)
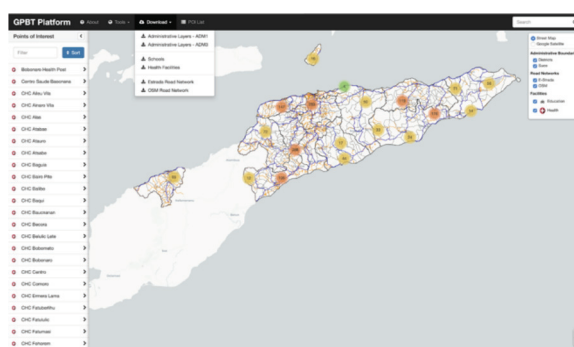
Source: Geospatial Planning and Budgeting Platform

The facility-level data contains information on some attributes, but could be more feature-rich. The three tiers of the public health system vary by the type of infrastructure, staffing, and equipment available. Health posts are located in most villages ('sucos'), are usually staffed by one nurse and one midwife, and provide curative and preventive care. Community health centres (CHC) provide a higher level of service than health posts, have a wider range of staff (e.g. one doctor), and provide technical and managerial support to health posts. Finally, there are six hospitals – the National Hospital in Dili (the only tertiary care facility in Timor-Leste), and referral hospitals in Baucau, Maliana, Maubisse, Oecussi, and Suai. Referral hospitals have emergency and in-patient departments, are staffed with general practitioners, and have specialists in some clinical areas. In addition to the public health facilities, there are also some privately-run community health

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268   It seems clear that neither the RAMS nor the OSM data provide a comprehensive view of the actual road network. From a spatial point of view, it is unclear how omissions and errors could bias the results. This could pertain to both missing roads, but also roads that are classified as functional, but may currently be not or are disrupted in the year (i.e. not meeting an all-weather standard). The construction of the RAMS-OSM integrated network geometry is still on-going.

centres – which are beyond the scope of this analysis. The data used contains limited information beyond the type of facility, such as on infrastructure conditions, staffing levels, and services provided.

6.3.2 Baseline Data Analysis

The baseline analysis provides estimates on the level of access to health facilities, which is a key objective of the health sector. The key variable of interest for this exercise is the proportion of dwellings that have access to a health facility within 5 kilometres – which roughly equates to one hour walking distance. This is one of the three key medium-term (planning) objectives of the Ministry of Health. To estimate access levels, the different data layers are combined to trace dwellings' closest walking access to a (routable) road, and then travelling along that road network to access a health facility. The model then computes the percentage of households (proxied by dwellings) that have access to a health facility within 5 kilometres distance. This is the starting point to investigating the optimal placement of new health facilities to increase access levels with the highest marginal rate possible.

Data analytics and visualisations provide clear insights on health facility access, given available data. The platform enables a visualisation of access at the beneficiary (dwelling) level for a given distance threshold. Dwellings within 5 kilometres of a specific health post can be identified, given the reference road network (Figure 6.5). The results using all official data suggest that about 24 percent of households cannot access a health facility within 5 kilometres, while this value rises to 54 percent if the threshold is lowered to 2 kilometres.[269] This creates a baseline for developing optimisation scenarios, which can be combined with (unit) costing data to provide insights on their budget implications.

Figure 6.4: Access to a health facility (%, 5 km)	Figure 6.5: Access to Remexio facility (5 km)
Source: Geospatial Planning and Budgeting Platform	Source: Geospatial Planning and Budgeting Platform
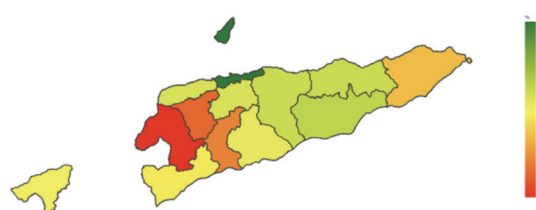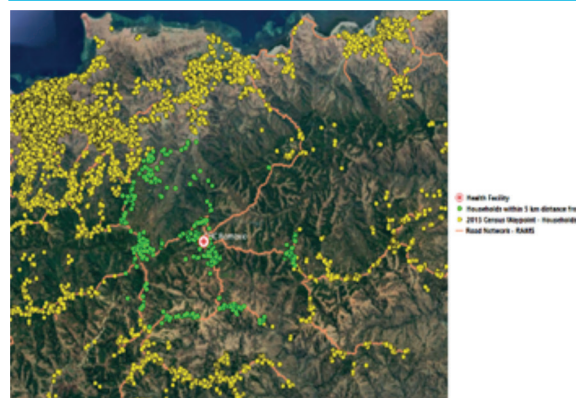
A sensitivity analysis was conducted with available data layers to evaluate the robustness of the results. The ability to test different data combinations provides insights on data differences – including possible gaps and biases – and how they may affect the analysis (Table 25).[270] For instance, using OSM for the three layers suggests much lower access levels, partly because the number of mapped health facilities

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269   The latter is an ambitious threshold that is used merely for illustrative purposes.

270   The first combination of data exclusively uses official sources, the second replaces the Estrada RAMS with the OSM road layer, and the third fully relies on OSM data.

is low. On average, a beneficiary must travel 8 kilometres to reach a community health centre (CHC) and 6 kilometres to reach a health post.

Table 25: Sensitivity analysis (% of households with access to a health facility)

Beneficiaries-Facilities-Roads	Sensitivity Analysis		
	(i) Census-WHO-RAMS	(ii) Census-WHO-OSM	(iii) OSM-OSM-OSM
2 km	46	47	32
5 km	76	74	48

Source: World Bank staff calculations.

Satellite imagery provides a powerful means to investigate the catchment area of existing facilities, as well as prospective locations. Satellite images are provided by different entities with varying degrees of spatial, spectral, and temporal resolution. For illustrative purposes, this exercise benefited from a collaboration with Planet for satellite imagery and processing. These images enabled the identification of buildings and the road network in selected areas, and some level of qualitative attributes. Nonetheless, stakeholder engagement remains important for (visual) validation purposes. In fact, the GPBP is not limited to providing online decision support. For instance, maps can be printed (as large banners) to focus on catchment areas, thus facilitating data validation (of beneficiaries and infrastructure) and eliciting feedback. The GPBP also maps the proposed placement of the new facilities, which can be overlaid with satellite imagery to provide a better perspective of the prospective locations. This can support a constructive dialogue between relevant stakeholders, such as central ministries and local authorities.[271]

6.3.3 Optimisation Model

The optimisation model aims to maximise access to facilities within a given travel distance. The baseline analysis provides insights based on different data layers. To augment such visual inspections and exploratory analysis, algorithms are employed to support decision making. The optimisation model starts with a framework linking beneficiary locations, facility locations, and road network. The model then seeks to understand where new facilities could be best placed to improve accessibility.[272] Universal access is defined as all population having access to at least one facility within a certain travel distance.[273] The objective of this model is to maximise the number of inhabitants that can reach a facility within the pre-set maximum desired travel distance. The optimisation model sequentially places new health facilities (at the margin) to produce the highest increase in access levels. It therefore shows how many additional facilities would be required to reach a certain level of access.

Adding new facilities in optimal locations can considerably improve access to health services. More than 70 percent of households already have access to a health facility within 5 kilometres – regardless of the source of road network data. The optimisation results suggest that adding 7 new facilities in the best possible locations would increase access by 4 percentage points to 80 percent – using official data. However,

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271 For instance, the model may propose a location that is not unrealistic due to difficult terrain. Hence, this type of exercises should be an input for discussion between relevant authorities

272 The model was implemented through Python scripts based on Antonissen (2020). Gurobi Optimiser was used, which is one of the most powerful optimisation solvers available.

273 Given that access to a certain facility may be disrupted, or that a facility may not be able to provide a certain level of service standards at a given point in time, further analysis could refine this standard to having access to more than one facility by these standards.

the results are contingent on the quality of data (e.g. completeness and accuracy). Moreover, these locations should not be determined mechanistically. The optimisations may suggest building a facility in a place that is unsuitable for several reasons, such as topography. A detailed inspection should be conducted to review the proposed placement of these facilities, which could involve satellite imagery and local stakeholder consultation.

Figure 6.6: Optimisation results (official data)
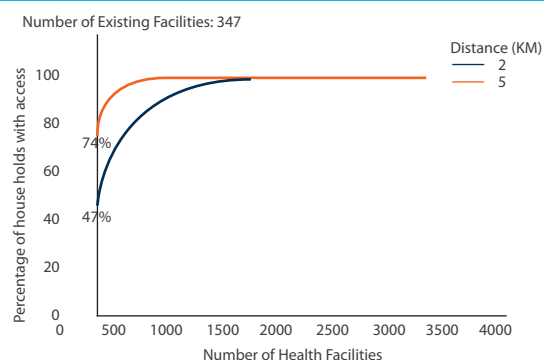
Source: Geospatial Planning and Budgeting Platform

Figure 6.7: Optimisation results (OSM roads)
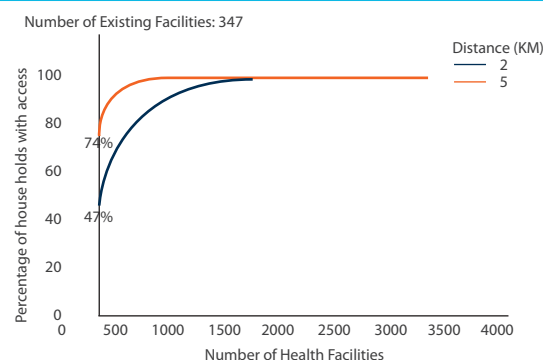
Source: Geospatial Planning and Budgeting Platform

The number of new facilities needed to reach a given level of coverage depends on the underlying data and the distance threshold. Complete and accurate data is crucial to ensure that the results are robust. Using the Estrada RAMS, 155 new health facilities would be required to reach near-universal coverage (95 percent) at the 5 kilometre travel distance. However, 198 new health facilities would be needed to reach this threshold when using the OSM road data. This difference is significant, and can be attributed to the lack of completeness of the OSM road network. For universal coverage (100 percent), there would be a need to build a very large number of facilities. Moreover, adopting a stricter threshold (2 kilometres instead of 5 kilometres) would significantly raise the infrastructure gap. It should be noted that the model takes the existing road network as a given – while in some cases it might be more efficient to build a rural road to improve accessibility.

Table 26: Number of new facilities needed

Distance	5 km			2 km		
Coverage	80%	95%	100%	80%	95%	100%
Estrada RAMS	7	155	349	311	763	1,302
OSM	19	198	453	300	767	1,317

Source: World Bank staff calculations.

The cost implications of each optimisation scenario can be easily estimated and become part of budget discussions. Comprehensive and credible costings are essential to any annual and medium-term budgeting process. The optimisation results can draw on adequate costing estimates (e.g. average unit costs) to estimate the budget implications of any specific scenario.[274] These costs should include those related to the construction of facilities, staffing (including incentives to attract staff to more remote areas), medical

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274 Conversely, the assessment could also start with a budget constraint and then evaluate where to place the new facilities than can be afforded.

equipment, supplies, and operations & maintenance.[275] This could be done for new facilities, as well as the upgrading of existing facilities (e.g. rehabilitation or staffing). Adequate costings are important for budgeting, but inputs do not necessarily guarantee outputs, outcomes, and impacts. While it is straightforward to cost the salary of a health professional, it is much more challenging to ensure that the position can be filled with qualified personnel – especially in more remote areas. This will require an interactive dialogue between the different stakeholders.

While physical access is important, accessibility can also be filtered by facility attributes. The key metric used was access to a health facility within a certain travel distance. However, the data comprises different types of facilities with varying availability of health staff, equipment, and supply items.[276] Referrals from health posts to community health centres (and even hospitals) often present a greater challenge to access – as road transport (rather than walking) would likely be required. Optimisations have also been performed for a subset of health facilities – the 69 community health centres.[277] The filtering function allows queries to be deployed with versatility, depending on decision-maker interests. Moreover, there are different levels of choice within a certain travel distance. For instance, urban populations likely have access to two or more facilities within a 5 kilometre travel distance. If a household can access multiple facilities, it will be less vulnerable to either a facility or road segment being (temporarily) unavailable – e.g. due to flooding.

6.4 Potential Extensions

The key objective of this exercise was to demonstrate the considerable potential of digital platforms for improved decision making. The value of combining fragmented data in a coherent platform and using appropriate analytical tools to answer practical policy questions cannot be overstated. The GPBP aimed to provide tangible insights on access to health facilities. Further efforts can be undertaken to develop more sophisticated scenarios and tackle a broader range of questions. Several additional optimisation scenarios can be pursued, depending on data considerations and modelling frameworks. For instance, the analysis could be expanded to focus on the distribution of health staff across facilities – which would require facility-level data on human resources (Table 27).[278] Moreover, budget data at the facility-level would enable an assessment of spending efficiency.

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275 It may also be important to consider the costs of complementary investments, such as the upgrading of road access (to the new facilities).

276 Reliable and up-to-date information on staffing (e.g. doctors, nurses, and midwives), equipment, and supplies (e.g. medicines) is important for decision making, but would not necessarily guarantee that services are available (e.g. staff absenteeism).

277 The results are not presented due to the lack of a reference distance threshold.

278 Ideally, policy scenarios should be able to draw on a set of annually updated facility-level indicators to evaluate access, facility readiness, and service utilisation.

Table 27: Model extensions (examples for health)

Topic	Key question	Visualisation	Requirements
Demand pressures on facilities (longer planning horizon)	Which facilities will be facing high demand for their services in the next 10-20 years? The decision to build (or upgrade) a facility should take into consideration future demand for public services. Given demographic trends (and other relevant factors), the model would show the facilities that will be under most pressure – thus needing to be upgraded (e.g. staffing) or supported by a new facility.	Traffic light system showing different levels of demand for each facility (e.g. < 1,000 / 1,000-5,000 / > 5,000 people).	Population projections (suco level)
Human resource distribution	Where should staff be placed to improve outcomes and reduce disparities? The deployment of human resources should be prioritised to maximise its impact on outcomes and reduce geographical disparities. Given a set of outcome indicators (e.g. stunting) and constraints (e.g. overall staffing levels), the model would determine where (specialised) human resources should be deployed.	Allocation (and reallocation) of staff across facilities.	Outcome indicators at the facility or 'suco' level.
Complementary investments	Where should road linkages be prioritised to enhance access to facilities? In some cases, building (or rehabilitating) a rural road may be more cost-efficient than constructing a new facility. The model would flag road investments that could significantly improve accessibility.	New road links that yield greater impact.	Trade-offs between new facility versus road linkages.
Private providers	Which private sector facilities improve (equitable) access? It would be important to understand the extent to which private facilities play an important role in serving underserved populations.	Private facilities providing largest marginal impact in equity access.	Data on private facilities

Source: World Bank staff.

The scope of the analysis can be feasibly extended through the inclusion of additional data layers. The current application followed a modular approach by using different data layers – on health facilities, dwellings, and the road network. Further data layers could be added, especially if pertinent for a specific application. For instance, the analysis could be replicated for the education sector, attempting to answer an array of pertinent policy questions – such as the number and location of classrooms that need to be built to ensure that class sizes do not exceed a given standard (e.g. 40 students). Moreover, a risk layer could be used to identify areas that are most susceptible to floods. Analysis could then be conducted to assess which facilities and roads would require particular attention, including routine maintenance. This can contribute to improved public infrastructure governance, ensuring continued service delivery and efficient use of public resources.

This exercise emphasised the importance of integrated and credible digital data for evidence-based policy. Digital data is a critical asset for improved decision making. Despite significant investments in information systems, data is often fragmented (i.e. scattered across, and even within, public institutions) and sometimes unaccounted for. Moreover, standards and comprehensiveness are often unclear, while the analysis and modelling is often done in an ad-hoc manner – which makes it difficult to replicate, scale up, or use insights for timely decision making. This also undermines multi-sectoral analysis. Timely applications

require greater on-demand data sharing, suggesting that greater use of digital platforms and web services is vital. The GPBP combines previously-fragmented data to improve decision making, but data credibility is also important. While the data validation and optimisation tools already provide tangible insights, targeted improvements in data will enhance its value for decision making – particularly through efforts to augment data on facility readiness and utilisation. Better road network data is also critical to improving health and education access analytics. While the optimisations focussed on upgrades to health infrastructure, the model can be extended to identify road segments that could be targeted for upgrades with a high impact on access to health and education facilities. For that purpose, as a more accurate and complete road asset management database would be vital.

Tapping into big data sources can enhance feedback loops on the availability and quality of public services. Additional ground-generated (geo-tagged) data can provide supplementary information that is relevant for the delivery of public services. For instance, smartphone surveys can provide valuable insights on the availability and quality of service provision. These can target both users and service providers, with the aim of increasing transparency and accountability.[279] Emerging technologies such as unmanned aerial vehicles (UAV) mapping can provide a rapid assessment of the state of health and education facilities. A pilot conducted for this PER showed the ability to rapidly generate 3D mappings of facility sites at a low cost.[280] However, data sources should be integrated into a decision-support platform to ensure that they are effectively used. Clear data standards should be set to ensure that newly-collected data is both fit-for-purpose and inter-operable.

6.5 Conclusions and Recommendation

Insights from the geospatial platform created for this PER illustrate the opportunities for strengthening budget decisions. This chapter demonstrated the value of integrating digital data in a web-based platform for analytical purposes. The geospatial planning and budgeting platform (GPBP) drew on both official and crowd-sourced spatial data to produce policy scenarios to support decision making. The GPBP highlighted gaps in access to public services (health facilities) and how resource allocations can be improved to enhance the impact of public spending.

The platform underscores the power that geospatial data and modelling can bring to public resource prioritisation. The development of a platform that can be used on a continual basis emphasises the value of adopting a transformative digital agenda to improve (programmatic) planning and budgeting processes. It also underscores the importance of allowing users to provide feedback on data quality, as well as the use of complementary technologies – such as using smartphones to record data on access and service quality. The PER has provided a dynamic tool that can be scaled up to address other pressing questions (e.g. education access or medical staffing distribution).

Digital innovations do not automatically improve decision making, but they provide a critical input for consideration by policymakers. The results emerging from the digital platform need to be subject to further examination – such as a cost-benefit analysis. Digital innovations alone will not yield greater efficiency and equity in public expenditure, but they can be an important input to decision making processes.

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279 In Pakistan, a smartphone application equipped health inspectors with real-time data on rural public health clinics. This led to a 74 percent increase in clinic inspections, while doctor attendance rose by 18 percentage points (World Bank, 2021).

280 This could be used for more proactive public infrastructure asset management, as well as avoid the tendency to engage in 'one-off' infrastructure surveys that quickly become outdated in the absence of adequately capable digital platforms to ensure scalability and sustainability.

Stakeholder engagement and stewardship are crucial to secure uptake and impact. Strong commitment and facilitation will be required to bring together stakeholders from across sectors for policy dialogue. Digital platforms can also promote transparency and accountability through a greater use of evidence. Elements of the political economy need to be considered – as decisions on the location of new facilities are often driven by local political pressures rather than evidence. Digital platforms can therefore strengthen multi-stakeholder engagement – across different administrative levels and sectors – which will likely to improve transparency and accountability of decisions affecting the use of public resources.

The use of credible and timely data is crucial to strengthen the evidence base for budget preparation. Developing basic data standards will be particularly important to improve the data quality and timeliness. Stronger data collection efforts – relating to both administrative and survey data – are required for ensuring that relevant and comprehensive data is available to inform policy making. The forthcoming Population and Housing Census – scheduled for 2022 – presents a major opportunity to strengthen the country's ability to use geospatial data for public service delivery. While the 2015 Census already incorporated a strong element of geospatial referencing, the quality of this data can be further improved. The GPBP provides a way to elicit feedback on existing data and can promote transparency, accountability, and ownership of data sources.

Enabling data integration and developing problem-driven applications is essential for improved planning and budgeting. Making budget decisions based on fragmented and outdated data will result in a misallocation of resources. Evidence-based planning and budgeting typically requires a systematic integration of relevant data from a broad set of sources – including key public information systems. Secure web-based data sharing platforms can improve data management, which can help strengthen sectoral budget submissions. Open-source resources increasingly provide a readily-available set of tools that can be deployed to produce relevant policy scenarios. Basic geospatial mapping of key data also provides the opportunity to introduce relevant smartphone, satellite, and even Unmanned Arial Vehicle (UAV) imagery. Once these approaches have been tested and validated, they can be mainstreamed into decision making. The GPBP application served to illustrate the potential of better data integration. Further improvements in data integration for selected applications with budgetary relevance would improve evidence-based policy making.

Building in-house awareness and enhancing capacities are vital to enable a stronger use of evidence in budget preparations. The GPBP integrates multi-sectoral data and can be expanded for continuous and increasingly-refined exercises. The platform also highlights how existing information systems could be more effectively integrated and strengthened to better support planning and budgeting processes. However, this innovative approach requires investments in building in-house awareness and technical capacities. It also requires a combination of user-friendly technologies and support to stakeholders to strengthen budget preparations. It is therefore crucial to progressively empower and build the capacity of decision-makers at different levels (e.g. central ministries and municipalities) to use digital technologies.

Annex

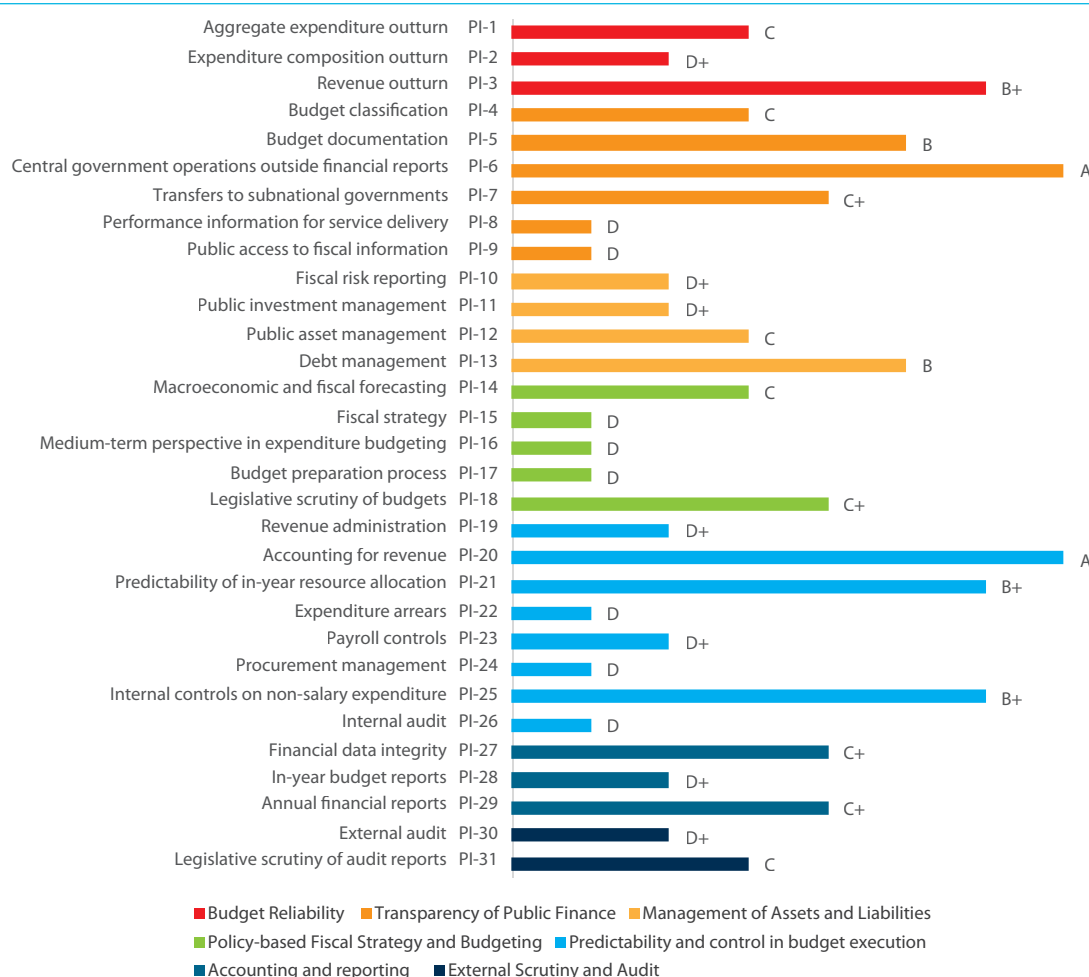## A. Annex 1: Public Expenditure and Financial Accountability (PEFA)

The PEFA framework enables a comprehensive diagnostic of public financial management systems.[281] Public Expenditure and Financial Accountability (PEFA) assessments follow an established methodology to measure performance across different areas relating to public financial management (PFM): budget reliability, transparency, asset management, budget preparation, execution controls, accounting, and audit. The PEFA framework is based on the stages of the annual budget cycle and evaluates the strengths and weaknesses of PFM systems using a letter-grade scoring system.[282] Quantitative indicators are used to measure 94 characteristics (known as 'dimensions') across 31 key components ('indicators') in 7 broad areas of activity ('pillars').

The latest PEFA assessment for Timor-Leste shows that many dimensions have a basic alignment with international standards, but there is considerable scope for improvement. The 2018 Timor-Leste PEFA assessment was conducted by a team of experts between 2018 and 2019 under the oversight of the World Bank with technical coordination and inputs provided by the Ministry of Finance (MoF). The assessment reveals that 16 out of the 31 indicators showed a basic alignment (or better) with good international practices – represented by a score of C or above (Figure A.1: Timor-Leste PEFA Assessment Scores). However, 15 indicators scored below C, suggesting weak performance. Out of the 94 dimensions, 55 dimensions were scored at C or above, 38 were scored D (or D+), and one was not scored. Nonetheless, these results need to be contextualised, since some reforms that would lead to higher scores in the short-term may not be pertinent for the country. It is therefore crucial to develop a prioritised and sequenced reform plan that aims to maximise the impact of PFM reforms on public finance outcomes.

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281 This Annex is based on the Timor-Leste PEFA Assessment 2018.

282 The scoring system is as follows: (A) high level of performance that meets good international practices, (B) Sound performance in line with many elements of good international practices, (C) basic level of performance, and (D) less than the basic level of performance.

Figure A.1: Timor-Leste PEFA Assessment Scores

		Score
Aggregate expenditure outturn	PI-1	C
Expenditure composition outturn	PI-2	D+
Revenue outturn	PI-3	B+
Budget classification	PI-4	C
Budget documentation	PI-5	B
Central government operations outside financial reports	PI-6	A
Transfers to subnational governments	PI-7	C+
Performance information for service delivery	PI-8	D
Public access to fiscal information	PI-9	D
Fiscal risk reporting	PI-10	D+
Public investment management	PI-11	D+
Public asset management	PI-12	C
Debt management	PI-13	B
Macroeconomic and fiscal forecasting	PI-14	C
Fiscal strategy	PI-15	D
Medium-term perspective in expenditure budgeting	PI-16	D
Budget preparation process	PI-17	D
Legislative scrutiny of budgets	PI-18	C+
Revenue administration	PI-19	D+
Accounting for revenue	PI-20	A
Predictability of in-year resource allocation	PI-21	B+
Expenditure arrears	PI-22	D
Payroll controls	PI-23	D+
Procurement management	PI-24	D
Internal controls on non-salary expenditure	PI-25	B+
Internal audit	PI-26	D
Financial data integrity	PI-27	C+
In-year budget reports	PI-28	D+
Annual financial reports	PI-29	C+
External audit	PI-30	D+
Legislative scrutiny of audit reports	PI-31	C

■ Budget Reliability ■ Transparency of Public Finance ■ Management of Assets and Liabilities
■ Policy-based Fiscal Strategy and Budgeting ■ Predictability and control in budget execution
■ Accounting and reporting ■ External Scrutiny and Audit

Source: World Bank (2020).

PEFA assessments also evaluate the impact of PFM performance on the three main fiscal and budgetary outcomes. Good public financial management is crucial to link available resources, delivery of services, and achievement of government policy objectives. Strong PFM systems ensure that revenue is collected efficiently and used appropriately and sustainably. Hence, a good PFM system is an enabling elements of the following three desirable fiscal and budgetary outcomes: (i) 'aggregate fiscal discipline', which requires effective control of the total budget and management of fiscal risks; (ii) 'strategic allocation of resources', which involves planning and executing the budget in line with government priorities aimed at achieving policy objectives; and (iii) 'efficient service delivery', which requires using budgeted revenues to achieve the best levels of public services within available resources.

'Aggregate fiscal discipline' is undermined by the lack of a fiscal strategy and regular budget revisions. The government has not yet established a consistent and consolidated fiscal strategy with qualitative and quantitative objectives for fiscal policy. Revenue accounting and reporting is supported by a robust (and integrated) treasury management function – underpinned by a treasury single account (TSA).

However, (domestic) revenue forecasts are still unreliable, signalling the need for a more efficient revenue mobilisation strategy. The original budget envelopes have been systematically circumvented by budget rectifications and virements, which affect the credibility of the budget process.[283] The comprehensiveness of the budget is improving, although there is limited reporting of fiscal risks – such as contingent liabilities. Payroll and procurement functions – and related internal controls – are decentralised to line ministries and municipalities, but suffer from a fragmented control function and a lack of integration and consolidation of information systems.

'Strategic allocation of resources' is hindered by the lack of a comprehensive medium-term budget planning framework. Parliamentary scrutiny over budget formulation and execution is based on comprehensive information. Budget ceilings are defined and necessary information is provided for line ministries to set their priorities. The programmatic mapping structure of the annual action plans proposes a tentative framework for line ministries to advocate for funding outputs and outcomes for service delivery. However, the lack of a comprehensive medium-term budget planning framework and updated strategic sector plans prevent the strategic prioritisation of sector spending. The budget allocation mechanism is annual and largely incremental – hence, there is no multi-year perspective. The situation is aggravated by the impact of budget adjustments, which are driven by weak planning and budgeting processes. The budget documentation and public access to budget information remains high, but reporting on performance remains weak. More predictable and effective investment management would ensure that recurrent costs implications are factored in the budget in the longer term.

'Efficient service delivery' is hampered by the fragmentation in the management of public investments and lack of monitoring and oversight on the decentralized procurement system. This leads to a lack of accountability in the use of available resources to achieve value for money and optimal levels of public services. The public investment management (PIM) framework shows inadequacies in the entire cycle – project preparation, appraisal, execution, monitoring, and evaluation. The weaknesses identified in the procurement system and the lack of independence of the external audit function are significant constraints on the accountability mechanisms in place, and do not support efficient service delivery. The lack of consistent and adequate performance information does not provide clear incentives to service delivery units. Weaknesses in payroll management and capacity constraints limit the effectiveness of public sector services. Insufficient qualifications and skills limit the capacity of government institutions. The lack of effective internal control and internal audit function permits further sub-optimal use of resources. The role of Chamber of Accounts in the oversight of government spending is essential, but poor follow-up on external audit recommendations weakens the overall budgeting process. Externally funded projects are monitored separately and there are no systems to track allocations received by service delivery units.

Despite a strong commitment to PFM reform, development partners' support has generally been fragmented with a low level of coordination. There appears to be broad support among the main development partners for a more coordinated approach to PFM reform, and to support a unified reform program under the MoF's leadership. A refreshed and fully coordinated donor engagement on PFM reform would be timely and support the ambitions of the Government.

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283 This also puts pressure on line ministries and other public entities to spend the additional resources without the necessary safeguards on the quality of spending decisions. The lack of timeliness of the budget preparation, with the late release of budget circulars and decision on ceilings, affects the orderliness and transparency of the budget process.

B. Annex 2: Public Investment Management Assessment (PIMA)

The Timor-Leste PIMA recommended a prioritised action plan to strengthen public investment management institutions and processes.[284] In 2016, a Public Investment Management Assessment (PIMA) was jointly conducted by the IMF and the World Bank with the aim of improving capital spending efficiency. It argued that public investment should focus on high-return projects and efforts should be focused on more rigorous appraisal processes, cost-benefit analysis, risks assessments, and more competitive procurement processes. In order to address the weaknesses identified in the assessment, the PIMA recommended a prioritised action plan to be implemented before scaling up infrastructure investment.

Near-term measures

- **Budget unity:** Consolidate capital and recurrent budget preparation (including project selection) in the Ministry of Finance, while retaining project appraisal in the Ministry of Planning and Strategic Investment (MPSI).
- **Medium-term capital budget ceilings:** Based on a binding resource envelope, ministerial ceilings for capital budget need to be determined at the start of the budget process.
- **Project appraisal:** MPSI should strengthen the project appraisal process by developing a standard methodology for project appraisal, publishing this methodology, and verifying that it is consistently applied by the line ministries.
- **Project selection:** Strengthen the capital project selection process for the annual budget (and, in future years, for the multi-year investment plan and budget) by developing better targeted selection and prioritization criteria and by improving the information provided to decision makers.

Medium-term measures

- **Full cost disclosure:** Ensure that budget documents provide comprehensive information on full capital project costs and eventually lifecycle costs of projects.
- **National and sectoral planning:** Prepare a Strategic Development Plan update and sectoral strategies with indicative costing.
- **Protection of investment:** Create a mechanism to enable Parliament to review and authorise commitments beyond the budget year in the annual budget law; and establish the legal authority to enable automatic carry-over of unspent appropriations within strict limits.

Project management: Task an appropriate agency to develop government project management standards and promote a comprehensive approach to project management across ministries that have ownership of capital projects.

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284 This Annex is based on the 2017 IMF Article IV (Box 3).