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PAPUA NEW GUINEA ECONOMIC UPDATE JANUARY 2020

Facing Economic Headwinds

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January 2020

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Preface and Acknowledgments

Abbreviations and Acronyms

APEC	Asia-Pacific Economic Cooperation		MTFS	Medium-Term Fiscal Strategy
BPNG	Bank of Papua New Guinea		MTRS	Medium-Term Revenue Strategy
DHS	Demographic and Health Survey		Mtpa	Million tons per annum
EAP	East Asia and Pacific region		NDoH	National Department of Health
ECE	Early childhood education		NEP	National Education Policy
EGMA	Early Grade Mathematics Assessment		NHP	National Health Policy
EGRA	Early Grade Reading Assessment		NNP	National Nutrition Policy
EITI	Extractive Industries Transparency Initiative		NRPB	Non-resource primary balance
EMDEs	Emerging Markets and Developing Economies		PILNA	Pacific Islands Numeracy and Literacy Assessment
FBO	Final Budget Outcome		PNG	Papua New Guinea
FX	Foreign currency		PNG EU	Papua New Guinea Economic Update
GAVI	Vaccine Alliance		PNG LNG	Papua New Guinea Liquefied Natural Gas Project
GBV	Gender-based violence		RSE	New Zealand's Recognised Seasonal Employer Scheme
GPI	Gender Parity Index			
GTFS	Government Tuition Fee Subsidy		SBC	Standards-Based Curriculum
HCI	Human Capital Index		SDG	Sustainable Development Goal
HCP	Human Capital Project		SWP	Australia's Seasonal Worker Program
HELP	Higher Education Loan Program			
HIES	Household Income and Expenditure Survey		TFF	Tuition Fee Free policy
			TFR	Total fertility rate
IMF	International Monetary Fund		TVET	Technical and Vocational Education and Training
K or PGK	Kina		UNDP	United Nations Development Programme
KFR	Kina facility rate			
LNG	Liquefied natural gas		UNESCO	United Nations Educational, Scientific and Cultural Organization
MMBtu	Million Metric British thermal units			
MTDP	Medium-Term Development Plan		US$	United States Dollars
			WHO	World Health Organization

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A. Economic Update: *Facing Economic Headwinds*

While Papua New Guinea's economic growth rebounded in 2019, global and domestic economic uncertainties loom, affecting economic prospects. Real GDP growth estimated to have recovered to 5.6 percent in 2019 (from -0.8 percent in 2018) driven by a rebound in the resource sector (mainly in its extractive segment, earlier affected by an earthquake) masking slower growth of the non-resource economy (Table 1). The latter was due to sluggish domestic demand as confirmed by a shortfall in non-resource tax revenue and lower inflation, while formal employment improved during the first nine months of 2019. The growth outlook remains positive, but projected GDP growth rates are lower than our previous forecasts, mainly due to delays in finalizing agreements and launching implementation of large new resource projects. The other major factor that impacted the downgrade in the growth outlook include heightened global uncertainty due to (i) a partial nature of the recent trade deal between the United States and China and (ii) a fresh emergence of new risks to Chinese and global growth, including a novel coronavirus. A growing oversupply in the global liquefied natural gas (LNG) market may also influence revenues in the extractive sector, with some negative implications for the non-resource economy. As a result, real GDP growth is projected to hover around 3 percent on average in 2020–22, with downside risks—including unexpected external shocks or potential domestic political and economic turbulence—prevailing.

Table 1. Real GDP Growth and Its Key Components
(Percentage change)

	2015	2016	2017	2018 Est.	2019 Est.	2020	2021	2022
						Projections		
Gross domestic product	9.5	4.1	3.5	-0.8	5.6	2.9	2.9	3.0
Resource economy	28.2	7.9	4.4	-5.4	9.2	2.5	2.7	1.8
Agriculture, forestry, and fishing	-2.6	2.7	2.4	2.9	2.5	2.5	2.5	2.5
Extractive sector (primary)	61.2	9.8	7.9	-11.9	14.9	3.2	1.9	-1.0
Extractive sector (secondary)*	-18.0	23.5	-8.7	3.8	-1.1	-4.8	12.2	23.9
Non-resource economy	-3.4	2.1	1.6	3.3	2.5	3.1	3.4	4.4

Sources: National Statistical Office; World Bank staff estimates and projections.
Note: *Extractive sector (secondary) comprises construction activity in the ongoing and new resource projects. These are World Bank estimates.

The authorities have responded to the adverse economic environment through expansionary macroeconomic policy, which could complicate macro-fiscal sustainability. The government introduced a fiscal stimulus program in 2020, aimed at supporting domestic demand by investing in physical infrastructure for better connectivity by roads, ports, and telecommunications. The government will also continue addressing budget arrears accumulated by the previous administration. These policies will lead to higher budget financing needs, to be covered from domestic and external sources. External borrowing should help to address a legacy of outstanding and incoming orders for foreign currency (a so-called FX backlog) while limiting a required adjustment in the exchange rate. However, in the absence of fiscal buffers—since the sovereign wealth fund remains nonoperational—the anticipated fiscal expansion and increased net borrowing may undermine fiscal and debt sustainability. Keeping the Kina overvalued may maintain or increase the FX backlog, or lead to a drawdown of international reserves. To ensure macro-fiscal sustainability, it is important for the authorities to begin addressing the overvaluation of the Kina more decisively and resume fiscal consolidation in the medium term.

The authorities are emphasizing the development of physical and human capital to improve the quality and inclusiveness of economic growth. A recent referendum in the Autonomous Region of Bougainville—where the overwhelming majority of the population voted for independence—underscores the need to improve the inclusiveness of economic development. According to the latest World Bank report *The Changing Wealth of Nations*, Papua New Guinea is lagging its major trading partners in accumulating physical and human capital. To address this, apart from the recent initiative to improve infrastructure connectivity, the government also aims to raise productive human capital by making education more accessible, the healthcare

system more affordable, and labor mobility more flexible. The government's commitment to becoming an early adopter of the World Bank's Human Capital Project (HCP) is an important milestone toward better and more efficient investment in the people of Papua New Guinea.[1] The special focus section of this report analyzes the constraints and challenges to accumulating more human capital and provides preliminary recommendations for improving human capital outcomes.

B. Special Focus: *Human Capital Development as a Prerequisite to Inclusive Growth*

Investing in human capital—the health, knowledge, skills, and resilience that people accumulate over time—is critical for Papua New Guinea's future growth and development. With the country at an early stage in the demographic transition, investing in people now would allow the country to reap demographic dividends in the future. Without adequate investment in the health, knowledge, and skills of the young, the growing youth bulge will put pressure on service delivery, contribute to higher rates of unemployment and, potentially, undermine social stability.

A child born in Papua New Guinea will be only 38 percent as productive when she grows up as she could be if she enjoyed a complete education and full health based on the Human Capital Index (HCI) score. Papua New Guinea's HCI of 0.38 is not only below the regional average for East Asia and the Pacific (0.61) but also below that for the Sub-Saharan Africa's average (0.40). Improvements in human capital have also been slower than expected for Papua New Guinea's level of income.

The quality of a country's human capital stock is determined by the health, knowledge, and skills of its population. Papua New Guinea has made only modest progress in improving key health outcomes and has the fourth-highest rate of stunting in the world, with nearly half (48.2 percent) of children under age five suffering from stunting. With respect to knowledge and skills development, the country faces an acute learning crisis. The results of the Early Grade Reading Assessment (EGRA), implemented in ten of the country's 22 provinces, indicate that students' literacy skills did not meet the requirements of the PNG Grade 1 Standards-Based Curriculum. Students in Papua New Guinea also performed worse than their peers in the Pacific region on the Pacific Islands Numeracy and Literacy Assessment (PILNA) in 2018. Many Papua New Guineans that do graduate from school fail to achieve satisfactory standards due to the poor quality of education that they are offered. As a consequence, PNG's labor force is primarily low-skilled, with the majority of Papua New Guineans not educated beyond Grade 10. The majority of working-age Papua New Guineans, the youth especially are employed in the informal sector. Moreover, there is a gender gap in access to work in the formal sector, with twice as many men as women employed in the formal sector.

Understanding the myriad of challenges undermining human development in PNG is key to identifying and prioritizing interventions to accelerate progress in this area. PNG continues to face macroeconomic challenges to scaling up public spending on human development. Yet, public spending on health and education are among the lowest in the world relative to PNG's per capita income and relative to comparator countries with deleterious effects on service delivery and outcomes. Underlying PNG's poor health outcomes are declining coverage and stagnating quality of health services. These deficiencies in service delivery are directly related to: (i) low and declining public spending on health; (ii) volatile and unpredictable public sector allocations; and (iii) waste and inefficiencies in public spending. Similarly, the three key factors underlying the poor schooling outcomes are: (i) lack of access to early childhood education; (ii) insufficient learning materials; and (iii) shortcomings in pedagogy. All three are related to low levels of public spending in education. With regard to skills development and employment, PNG suffers from skills gaps and from mismatches between the demand and supply of skilled labor. The failure of the domestic labor market to fill low- and semi-

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[1] https://www.worldbank.org/en/news/feature/2019/11/07/human-capital-in-the-pacific-islands-and-papua-new-guinea

skilled jobs created by opportunities such as the PNG LNG project and its associated economic boom points to critical challenges related to: (i) lack of basic soft skills; (ii) underfunding and fragmentation of the Technical and Vocational Education and Training (TVET) sector; (iii) skills mismatch between investments in education and labor market needs; (iv) supply-side issues related to the *wantok* system;[2] and (v) gender-related issues. Meanwhile, nutrition remains a multidimensional challenge with drivers in health, education, poverty, and the status of women.

Advances in human capital have driven economic growth and lifted millions of people out of poverty around the world. Simulations carried out for this report show that if PNG's HCI gap is closed by roughly 5 percent every 5 years, the HCI would increase to 0.49 by 2050, which would imply a 13.5 percent increase in PNG's future GDP relative to the baseline estimate for 2050. If on the other hand, PNG's HCI gap is closed at a much faster rate—at the same rate as the 75th percentile of best performers—PNG's HCI would increase to 0.58 by 2050, leading to a 31.2 percent increase in GDP relative to the baseline.

PNG's performance on the HCI and the challenges described in this report point to seven areas where critical action is needed to accelerate progress on human development:

1. Fostering strong leadership and mobilizing a multi-sectoral response
2. Financing the human capital agenda
3. Accelerating the demographic transition
4. Combatting stunting
5. Bolstering the frontlines of health service delivery
6. Arresting the crisis in learning
7. Taking urgent action to address skill gaps

The future growth and productivity of PNG will be determined by the investments the country makes in its children. Papua New Guineans born today will usher in the 22nd century and deal with new opportunities brought about by technology and globalization as well as new challenges wrought by climate change. Good health, knowledge, skills and resilience will be vital for facing up to these opportunities and challenges. The government of PNG has in place a solid foundation in terms of policies and initiatives to strengthen human capital. Going forward, the goal is to ensure that these policies are implemented effectively and adequately resourced. This will make it possible for PNG and all Papua New Guineans to achieve their full potential.

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[2] The wantok system is a social system where people who are related to each other by a common language, ethnicity, district or by provincial boundaries (defined here as 'wantoks') jointly participate in socio-political, economic, traditional, and cultural activities.
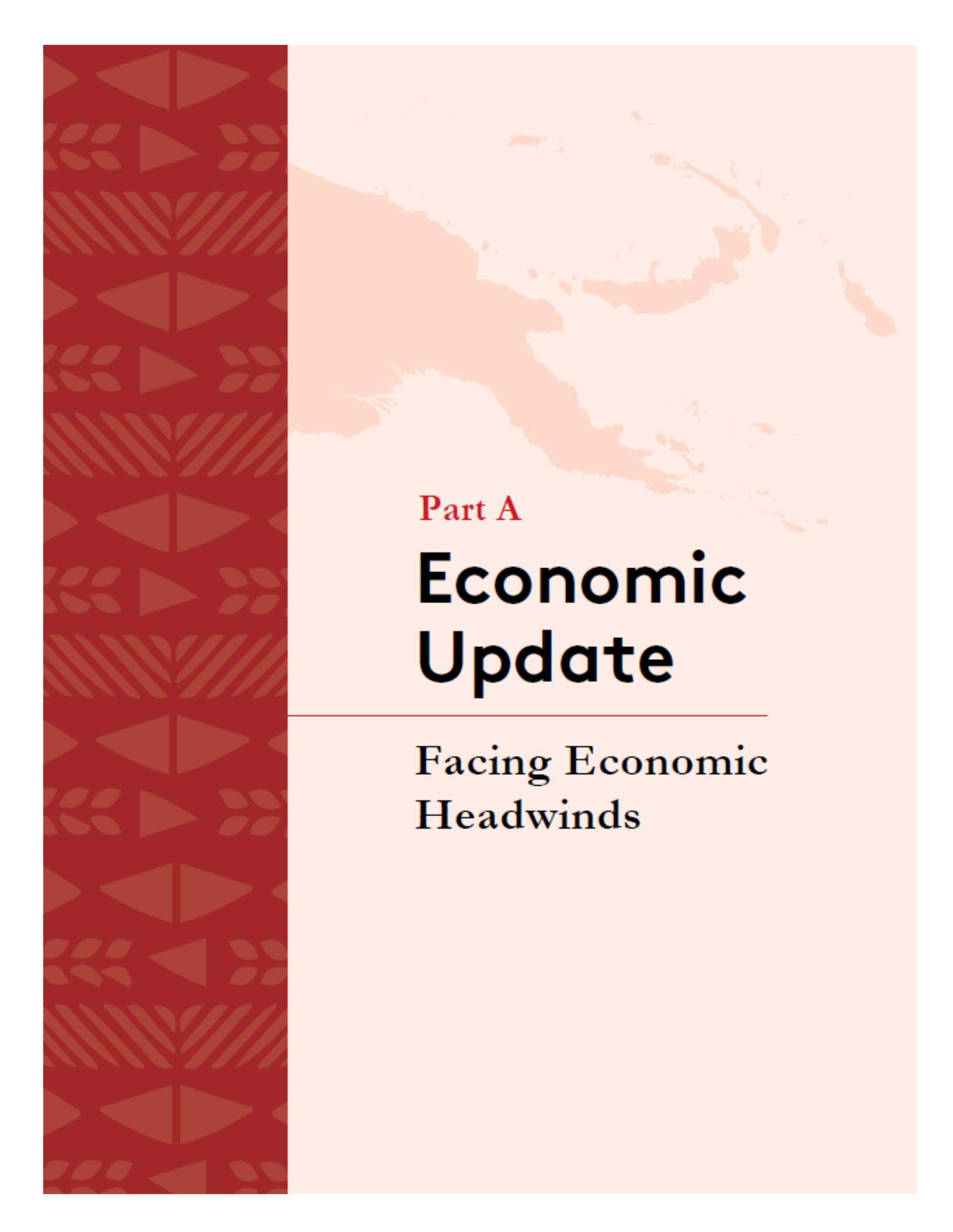
Economic Update

Facing Economic Headwinds

Papua New Guinea's economic growth performance bounced back in 2019, mainly due to a recovery in gold and LNG production. Photo: Shutterstock/Angela N Perryman.

1. Recent economic developments

1.1. Economic growth

1.   **Global economic growth has continued to weaken, and growth momentum remains fragile.** Global growth in 2019 was downgraded to 2.4 percent, 0.2 percentage points below previous forecasts, reflecting a sharp deceleration in trade, investment, and manufacturing.[3] Weakening global demand, including from China, have driven a decline in exports and investment growth, testing the resilience of the East Asian and Pacific (EAP) region. Growth in developing EAP economies is estimated to have slowed from 6.3 percent in 2018 to 5.8 percent in 2019, reflecting a broad-based decline in export growth and manufacturing activity.[4] Excluding China, consumption growth in the EAP region remained steady, though slightly lower than the same period of 2018, supported by monetary and fiscal policies. Growth in the smaller EAP economies, including Papua New Guinea, remained robust, reflecting country-specific circumstances, including steady growth in the tourism, real estate, and extractive sectors. A recent "pause" in the escalation of trade tensions between the United States and China has led to a positive response in business sentiment. Despite a welcome easing of trade tensions, downside risks to short-term growth predominate, including new risks to Chinese and global growth from the novel coronavirus (named 2019-nCoV) and deeper-than-expected slowdowns in several major economies (in the Euro Area and the BRICS,[5] in particular).

2.   **In Papua New Guinea, economic growth bounced back in 2019 after a substantial contraction in 2018, mainly due to a recovery in extractive sector production.** Recent growth volatility was driven primarily by extractive sector performance, which was negatively affected by an earthquake in the Highlands

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[3] World Bank 2020.
[4] World Bank 2019e.
[5] BRICS comprises Brazil, Russia, India, China, and South Africa.

region of the country in February 2018. The earthquake led to a temporary shutdown of gold and LNG production, reducing the extractive sector's output by nearly 12 percent in 2018.[6] A recovery in gold and LNG production is expected to have supported a bounce-back in GDP growth in 2019. The World Bank's latest estimates suggest that real GDP growth expanded by 5.6 percent in 2019, compared to a contraction of 0.8 percent in 2018.[7] These estimates also indicate that real GDP growth decelerated from an average of 11.5 percent in 2014–15, when LNG production commenced, to an average of 3.8 percent in 2016–17, following the commodity-price shock and a negative impact of the El Niño weather pattern. Real GDP growth averaged just 2.4 percent in 2018–19, with the resource sector contributing 0.9 percentage points on average and the non-resource economy contributing 1.5 percentage points (Figure 1).

3.   **Whereas the resource sector recovered in 2019, growth in the non-resource economy slowed due to unfavorable terms of trade and other domestic factors.** In 2018, Papua New Guinea's terms of trade improved due to a recovery in commodity prices,[8] offsetting the negative output effect in the extractive sector and supporting domestic demand of the non-resource economy. The Asia-Pacific Economic Cooperation (APEC) meetings hosted by Papua New Guinea during 2017–18 also provided a temporary boost to non-resource economic activity. However, with the APEC meetings complete and less favorable terms of trade, non-resource economic growth decelerated to 2.5 percent in 2019, from 3.3 percent in 2018 (Figure 2). Lower tax collections by the revenue authority and a slower pace of inflation support this estimate, indicating weaker domestic demand. Meanwhile, data on formal employment in the non-mining economy show an increase of 0.9 percent over the first nine months of 2019, with employment declining in construction, transportation, and wholesale trade. However, these declines have been more than offset by rising manufacturing, financial sector, and retail trade employment.[9]

Figure 1. Real GDP growth rebounded in 2019 but remains below recent averages
(Percentage point contribution to growth)
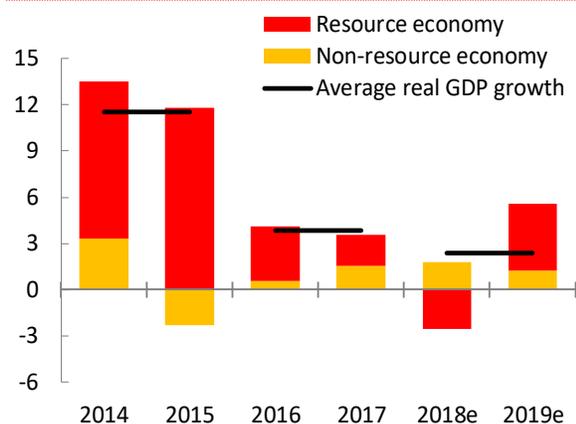
Source: World Bank staff estimates.

Figure 2. Less favorable terms of trade led to lower growth in the non-resource economy in 2019
(Percent change)
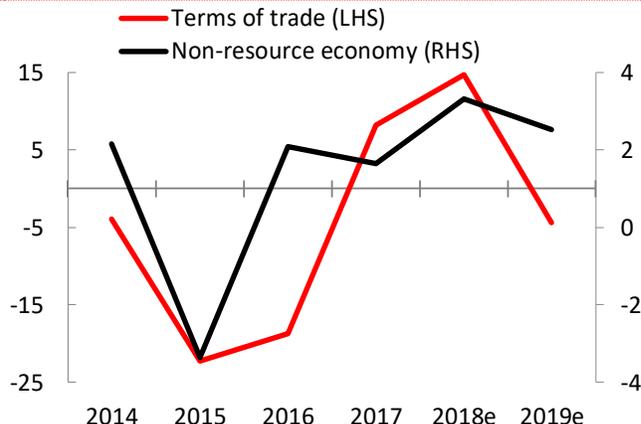
Source: World Bank staff estimates.

4.   **While GDP growth is an important economic parameter, its quality and contribution to wealth creation is more important for sustainable and inclusive development.** Papua New Guinea is blessed with natural resource abundance on the ground (agriculture and forestry), in the ground (mining and LNG production), and in the surrounding seas (coastal fishing). However, the wide dispersion of the population,

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[6] This new estimate, based on the most recent export volume data published by the authorities, is a downgrade from the previous one.
[7] The World Bank's previous estimate for 2018 was a contraction of 0.5 percent (World Bank 2019b).
[8] World Bank 2019c.
[9] PNG Central Bank 2020.

together with low connectivity, creates immense challenges for efficient and effective service provision across the country. Challenges in service delivery have led to significant shortfalls in human and physical capital (Box 1). Papua New Guinea ranks 155 of 189 economies globally in latest Human Development Report.[10] To improve development outcomes and wealth creation, Papua New Guinea could convert its natural resource abundance into productive human and physical capital. Doing so would require enhanced government policies for adequate government regulation of (and revenue from) the petroleum and gas sector, and improved public service delivery focused on better connectivity and skills development of the population. See Part B for a more detailed discussion of the latter.

Box 1.	**Which type of capital must Papua New Guinea develop more?** *Measuring Wealth of Nations*

The World Bank report *The Changing Wealth of Nations* introduced the concept of wealth as a complementary indicator to GDP for monitoring sustainable development at the country level. The latest report[a] comprehensively measures four types of assets as of 2014: (i) natural capital—energy and minerals, agricultural land, forests, and protected areas (excluding marine protected areas) from which an economy derives a range of services; (ii) produced/physical capital—machinery, buildings, bridges, infrastructure, and urban land, measured at market prices; (iii) human capital—the cumulative experience, knowledge, and skills, measured as a discounted value of earnings over a person's lifetime; and (iv) foreign capital—external assets and liabilities.

A comparison with Papua New Guinea's major trading partners suggests that even though Australia's wealth per capita is ten times larger than that of China, its distribution of wealth is similar to China's, with a comparable set of natural endowments used to generate physical capital and develop human capital (Figure 3). By any measure, Papua New Guinea is lagging its major trading partners in terms of its ability to create productive physical and human capital.

Figure 3. Estimates of Wealth Accumulated in Australia, China, and Papua New Guinea, 2014
(Share of total wealth)
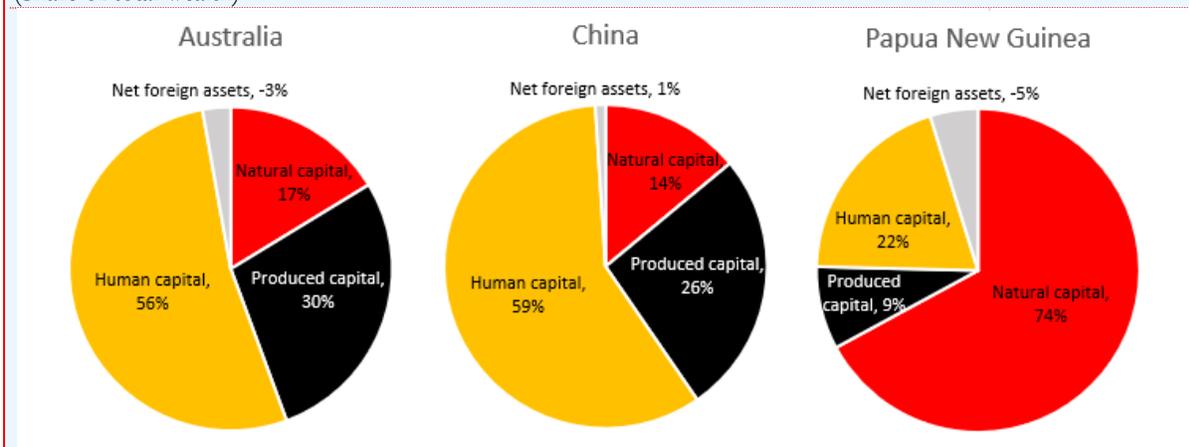
Source: World Bank 2018a.

This analysis highlights the importance of the recently-adopted Medium-Term Development Plan for 2018–23 (MTDP III)[b] as it proposes the upgrading of outdated physical infrastructure for better connectivity (both roads and telecommunications) and investment in the health and education of Papua New Guineans. To meet the country's development needs, the government recently announced a five-year 'Connect PNG' program to improve domestic and external connectivity and will work on improving the quality of education at the primary, secondary, and tertiary levels.

a. World Bank 2018a.
b. PNG DNPM 2018.

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[10] UNDP 2019.

The 2020 Budget considers fiscal stimulus through higher public investment and delays fiscal consolidation by another year. Photo: Liliya Sarsenova.

1.2.   *Fiscal developments*

5.   **The fiscal policy landscape changed dramatically in the second half of 2019, leading to new policy priorities and new fiscal and debt targets.** First, there was a change in the policy makers in charge of economic and fiscal priorities. The current Minister for Treasury initiated a review of key economic and fiscal parameters by an external due diligence team. This work was conducted in August-September 2019 and led to a 2019 Supplementary Budget, which was approved by Parliament in October 2019.[11] The Supplementary Budget identified substantial revenue shortfalls and revealed budget arrears accumulated by the previous administration. Second, the new government developed a new Medium-Term Budget Strategy using the findings of the due diligence team that revised key fiscal and debt parameters.[12] Among these is a revised trajectory for the non-resource primary balance (NRPB) adopted as a fiscal anchor in 2017 and a new expenditure rule that considers cuts in operating expenses to allocate more resources to capital spending. Other key revisions include an increase to the threshold for the debt-to-GDP ratio (raised to 45 percent from 35 percent previously, with a sunset clause that every five years the upper limit will fall by 5 percentage points). Third, the authorities developed and approved a 2020 National Budget that is in line with the Medium-Term Budget Strategy and sets the following new policy priority areas for the government to undertake in 2020:[13]

- *Infrastructure connectivity*: Adopting a "Connect PNG" program focused on improving the national infrastructure network through better coverage by roads, information and communication technology, and electricity.
- *Affordable (tertiary) education*: Introducing a Higher Education Loan Program (HELP). This initiative will come at the expense of the Tuition Fee Free (TFF) Education Policy, which will be downsized by one-

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[11] PNG Treasury 2019c.
[12] PNG Treasury 2019d.
[13] PNG Treasury 2019e.

third.[14] The new government indicated that the TFF has led to a deterioration in the quality of primary and secondary education and therefore requires reformatting. This policy will require a careful assessment and recalibration to ensure social progressivity and financial sustainability.

- *Health of the nation*: Addressing anti-social drinking by increasing excises on social drinks and alcohol. Cigarette excises will also increase.
- *Labor mobility*: Increasing opportunity and revenue from remittance inflows from abroad.
- *Development of small and medium enterprises (SMEs)*: Introducing a special SME taxation regime that would simplify filing and reduce the tax rate to 2 percent on annual sales of less than K 250,000 (approximately US$73,000).
- *Reforms in the state-owned enterprise (SOE) sector*: Improving the efficiency, profitability, and accountability of the SOEs.[15]

6.   **Changes to the fiscal policy landscape have led to adjustments in the fiscal consolidation strategy, making it less ambitious.** The previous Medium-Term Fiscal Strategy (MTFS) targeted a zero NRPB by 2022, while the latest modifications (adopted in the Medium-Term Budget Strategy) suggest a significantly less aggressive push for fiscal consolidation (Figure 4). Surprisingly, the 2020 National Budget (approved by Parliament in November 2019) considers a more ambitious fiscal consolidation than the Budget strategy (Figure 5). This divergence might be the result of different revenue assumptions used to calculate the NRPB. In any case, both budget documents envision that fiscal consolidation will resume from 2021. As stated above, containing operating expenses (mainly the wage bill)—while redirecting some savings toward higher public investment—will be the main drivers of this consolidation.

Figure 4. New NRPB targets suggest a less ambitious fiscal consolidation path
(Percent of non-extractive GDP)
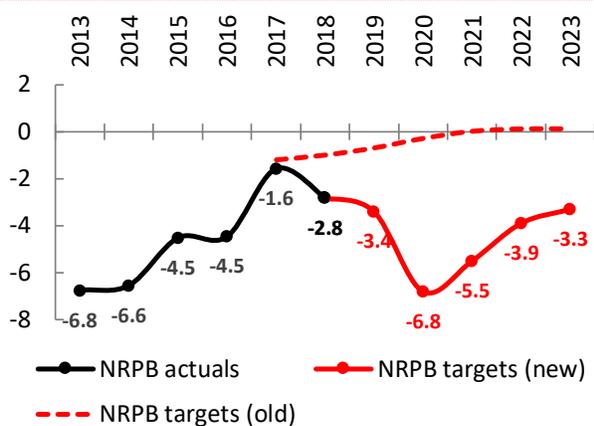
Figure 5. 2020 Budget suggests fiscal consolidation from 2021
(Percent of non-extractive GDP)

Source: PNG Treasury.
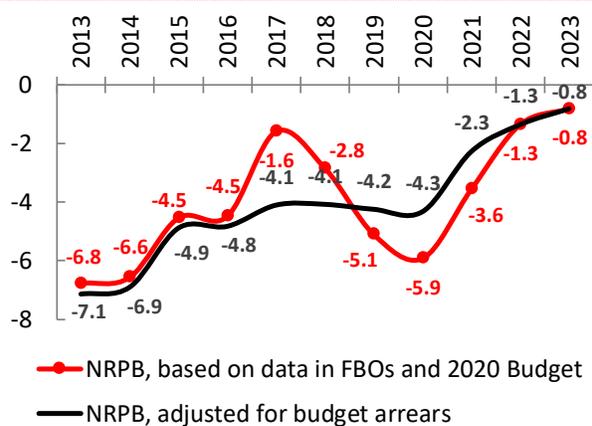
Sources: PNG Treasury; World Bank staff estimates.

7.   **Government efforts to improve budgeting realism revealed several shortcomings in the 2019 budget, leading to a wider deficit.** On the revenue side, the due diligence team uncovered shortfalls of over K 1 billion in 2019, reversing the progress made in 2018 to stop the slide of the revenue-to-GDP ratio. A reduction in non-resource tax revenues (mainly in income taxes), development partner grants, dividends from the resource sector, and revenue transfers from statutory authorities all resulted in lower revenue. On the expenditure side, the due diligence team found outstanding budget arrears to public servants totaling K 120

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[14] PNG The National 2019; PNG Post-Courier 2020c.
[15] PNG Post-Courier 2020e.

million (for a promised 3 percent nominal pay increase) and other service providers for K 521 million (for office rent, utilities, and other accounts payable). The authorities have also uncovered public service exit payment arrears in the amount of approximately K 2 billion that have to be addressed in the coming years.[16] The payment of budget arrears in 2019 and 2020 is to result in wider fiscal deficits and higher debt-to-GDP ratios (Table 2). Figure 5 shows that, even if the government budget is adjusted for budget arrears, fiscal consolidation has been stalled since 2017.

Table 2. Medium-Term Budget Strategy: New Benchmarks and Projected Outcomes in 2020

		2016 actual	2017 actual	2018 actual	2019 plan	2020 plan
1.	Increase **tax revenue** as share of GDP	12.8	12.4	12.6	12.3	12.2
2.	Reduce **wages and goods and services expenditure** as share of non-extractive GDP	17.3	15.8	17.6	16.4	14.4
3.	Raise **public investment** as share of GDP	4.1	2.9	3.4	3.7	4.5
4.	Reduce **net borrowing** as share of GDP	4.7	2.5	2.7	4.1	5.0
5.	Reduce deficit of **non-resource primary balance** as share of non-extractive GDP	4.5	1.6	2.7	3.4	6.8
6.	Reduce government **debt-to-GDP** ratio	34.6	35.9	36.7	38.0	40.3

Sources: World Bank staff calculations based on the official data reported by the PNG Treasury.
Note: Public investment includes Net acquisition of non-financial assets and items identified as 'out of scope for GFS coding purposes.'

8.   **To improve Papua New Guinea's unfavorable fiscal and debt performance, the government is introducing budget-enhancing measures in 2020.** To lift domestic revenue, the 2020 National Budget proposes several reforms, including higher excises on alcohol and cigarettes and higher levies in the telecommunication and banking sectors (pending further discussions with the affected sectors). The government has also increased export tax on logs, from 32.5 to 59 percent.[17] However, the recent introduction of new tax holidays[18] may lead to a deterioration in the revenue-to-GDP ratio due to potential loopholes that may emerge and start eroding the taxable base. Nevertheless, the government has set a new target for its Medium-Term Revenue Strategy (MTRS), to increase total revenue collection from K 14 billion (15.2 percent of GDP) in 2020 to K 20 billion (15.6 percent of GDP) by 2025.[19] The introduction of the new expenditure rule is expected to complement the fiscal adjustment process with the release of additional funds for public investment. Its success will rely on the government's ability to contain the wage bill after 2021 when exit payment arrears (budgeted at K 860 million in 2020 and 2021) are addressed, and the current cohort of retirees (currently estimated at 4 million) are off the payroll.

9.   **If these measures prove unsuccessful, public debt may exceed 40 percent of GDP and remain there for the foreseeable future, putting pressure on fiscal and debt sustainability.** To improve debt transparency, the authorities—in line with IMF and World Bank recommendations—have already revalued external debt at current exchange rate and have indicated that they will include SOE debt in public debt reporting. Doing so raised the public debt-to-GDP ratio to 38 percent in 2019. With higher net borrowing projected for 2020, the ratio will exceed 40 percent. Moreover, a shift in the composition of debt toward short-

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[16] PNG Post-Courier 2020a.
[17] PNG Post-Courier 2020b.
[18] PNG Post-Courier 2020f.
[19] PNG Post-Courier 2020d.

term (and expensive) sources represents a risk, as the share of non-concessional borrowing in total debt is increasing rapidly. Limited fiscal space, risks associated with weak revenue collection, and rollover risks also represent challenges for government debt. Recognizing these heightened risks, the authorities have refocused the Medium-Term Debt Strategy (MTDS) on finding cheaper and longer-term sources of finance. This refocus has been reflected in the 2020 Budget Strategy adopted by the government in November 2019.

Box 2.	**Papua New Guinea's public debt in regional perspective**
	The public debt level is not enormous, but risks are getting high

Papua New Guinea's public and publicly guaranteed debt is not at an alarming level, but debt dynamics are cause for concern. In 2019, the public sector debt-to-GDP ratio stood at 38 percent, slightly above the average in ten Pacific economies (Figure 6). However, the debt's trajectory raises concerns; the debt-to-GDP ratio more than doubled between 2012 and 2019. Despite the government's commitment to reducing public debt, cost overruns and weak revenue collection resulted in a deviation from the path of fiscal consolidation. As such, public debt is forecast to exceed 40 percent of GDP in 2020. In 2019, as a response to a debt-to-GDP threshold breach, Parliament raised the debt limit under the Fiscal Responsibility Act from 35 percent to 45 percent of GDP.

The latest Debt Sustainability Analysis indicates that Papua New Guinea is still faces a moderate risk of debt distress with limited space to absorb shocks. Structural factors such as weak long-term economic growth perspectives, an inability to reign in government expenditure, vulnerability to natural disasters, and high resource dependency heighten risks associated with debt sustainability. The IMF's latest World Economic Outlook projects a 3.1 percent growth rate in Papua New Guinea over the medium term, below the average of the past ten years (5.6 percent). With a relatively weak non-resource sector, the country's economic performance has been underpinned by external demand for resources and is, therefore, vulnerable to external shocks. Moreover, high interest payments coupled with poor revenue collection result in a high debt service-to-revenue ratio, posing a threat to debt sustainability.

Vulnerability to natural disasters and climate change are other sources of risk for Papua New Guinea. In recent years, the economy experienced a severe drought and a 7.5 magnitude earthquake, which not only hampered economic growth prospects but also resulted in post-disaster rehabilitation and reconstruction efforts triggering rapid debt accumulation as highlighted in pink bars in Figure 7.

Figure 6. Public and Publicly Guaranteed Debt, 2018/19
(Percent of GDP)

Figure 7. Papua New Guinea: Public Debt Dynamics and Natural Disasters
(Percent of GDP)
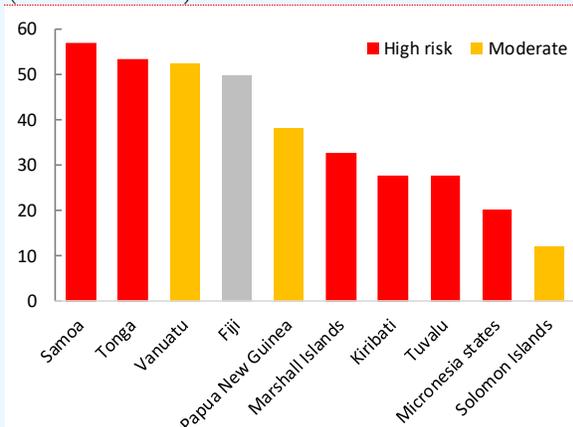
Source: IMF-World Bank Debt Sustainability Analysis reports.
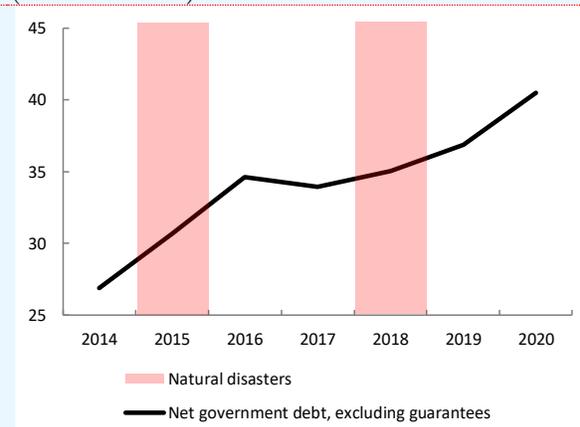
Sources: PNG Treasury; World Bank staff estimates.

Consumers have benefited from falling prices for some imported goods. Photo: Mirzohaydar Isoev.

1.3. Monetary policy and price developments

10.　　**Softening domestic demand, a strengthening of the Kina, and an easing of telecommunications costs have supported a deceleration of annual consumer price inflation since September 2018.** Consumer price inflation fell from 4.9 percent in the third quarter of 2018 to 3.3 percent in the same period of 2019. The main drivers of this deceleration were weakening domestic demand, the strengthening of the Kina against the Australian dollar, and a lowering of telecommunication costs (in anticipation of high-speed Internet availability in 2020). At 1.3 percent, underlying inflation—which excludes seasonal and price-controlled goods—was even lower in the third quarter. Moderate price increases for food (rice, in particular) have underpinned the low rate of inflation. Table 3 details the main drivers of inflation over the first nine months of 2019. Domestic goods and services have contributed the most to inflation over the past year, while lower prices for telecommunications and imported goods have helped to contain inflationary pressures.

Table 3. Largest Positive and Negative Contributors to Inflation

Item	Price change over past 12 months, %	Percentage point contribution to inflation	Item	Price change over past 12 months, %	Percentage point contribution to inflation
Vegetables	+10.2	0.56	Prepaid cellphone credit	-9.1	-0.14
Betelnut and mustard	+7.2	0.56	Kerosene	-8.2	-0.10
Airfares	+41.3	0.49	Petrol	-14.1	-0.09
Property rentals	+4.8	0.39	Motor vehicles	-1.6	-0.06
Vehicle registration and insurance	+35.0	0.29	Internet	-40.0	-1.6
Public motor vehicle fares	+21.8	0.26	Hardware goods	-3.6	-0.08

Source: PNG National Statistical Office.

11.   **The Bank of Papua New Guinea (BPNG, the central bank), supposedly, has resumed financing government debt, driving an increase in the money supply.** Faced with a 4.6 percent of GDP budget deficit in 2014, the BPNG's net holdings of government debt turned positive, indicating that the central bank was holding government debt rather than selling it on to domestic banks. These holdings peaked in early 2017 at K 3 billion (4 percent of GDP) but subsequently fell back to K 1.5 billion (Figure 8). However, 2019 saw an increase in net holdings of government debt, suggesting a return to the practice of the BPNG financing the government budget. The stock of broad money (M3)[20] peaked in the first quarter of 2018 but began to fall as the BPNG unwound its holdings of government debt by selling it to the private sector (hence a withdrawal of money in circulation). Broad money again increased—although modestly—in 2019, coinciding with the increased financing need of the government.

12.   **Given the almost fixed exchange rate, BPNG's practice of financing government debt may put further pressure on foreign exchange reserves.** Typically, during a boom in the business cycle, an increasing money supply is associated with rising inflation and a fall in the value of the currency. However, this has been only partially true in Papua New Guinea; the increase in M3 in 2017 coincided with a modest *fall* in inflation and the beginning of foreign exchange shortages. This was due to a commodity price shock that hit many resource-rich economies, including Papua New Guinea. Since the Kina was not allowed to depreciate sufficiently after a commodity price shock; the BPNG started drawing down foreign exchange reserves to support the currency and rationed access to foreign exchange. There is a risk of history repeating itself with a potential new wave of plunging commodity prices in the near term, which risks putting further pressure on foreign exchange reserves, and potentially inflation. As Figure 9 shows, the increase in M3 is only modest at present, but this could accelerate quickly if the government deficit remains high, as discussed in section 1.2.

Figure 8. The central bank is financing government debt again
(Central bank net holdings of government debt in Kina, millions)
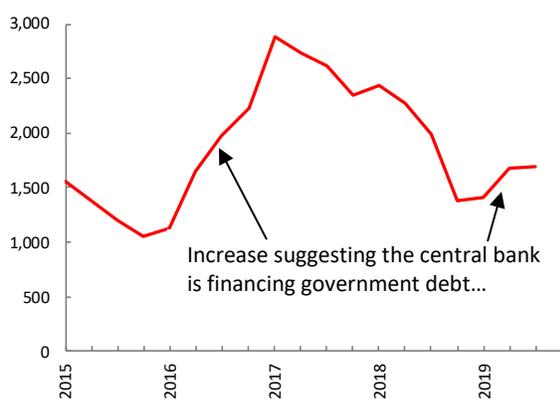
Figure 9. Increasing money supply may put pressure on the Kina
(M3 money supply in Kina, millions)
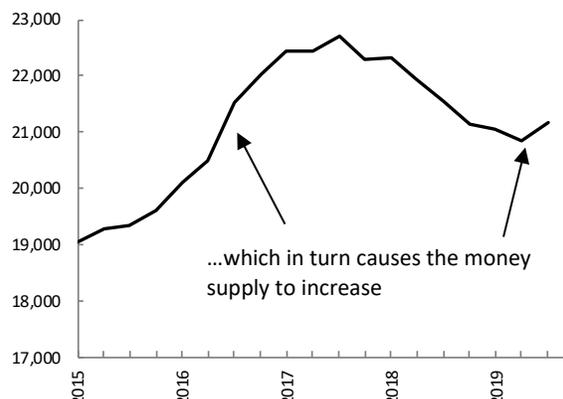
Source: Bank of Papua New Guinea.   *Source:* Bank of Papua New Guinea.

13.   **The central bank adjusted the Kina Facility Rate (KFR) for the first time since 2013.** The KFR, introduced in 2001 as a reference rate for interbank lending, was designed to be the principal interest rate through which monetary policy should operate in Papua New Guinea. However, due to commercial banks holding significant excess liquidity, commercial banks did not need to lend to one another, and the KFR proved ineffective. There was no clear link between changes in the KFR and commercial bank interest rates. After remaining unchanged for six years at 6.25 percent, the BPNG lowered the KFR to 5 percent between June and

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[20] M3 is a definition of the money supply that includes notes and coins, checking deposits, and time deposits in banks.

December 2019, suggesting its ambitions to revive the use of the monetary tool. However, it is not clear that the underlying fundamentals have changed sufficiently for changes in the KFR to have an impact. Commercial banks still have cash holdings far above the legal reserve requirement, with the latest depository corporations survey showing banks holding cash equivalent to 21 percent of their deposits, well above the BPNG's requirement of ten percent. Nevertheless, short-term interest rates for government borrowing fell in 2019, with rates on 365-day Treasury bills falling from 8 percent in 2018 to 7 percent in 2019 (Box 3).

Box 3.	Foreign borrowing and interest rates
	Borrowing from abroad has reduced pressure on government borrowing rates

Given large and persistent fiscal deficits, government borrowing—domestic debt, in particular—has been rising. Interest rates on 365-day Treasury bills climbed as high as 11 percent as domestic lenders became more reluctant to lend to the government. The government successfully issued its first sovereign bond, for US$500 million, in September 2018. In addition to temporarily relieving foreign exchange shortages, the sovereign bond issue had a secondary effect—it took the pressure off domestic interest rates.

The 10-year, US$500 million sovereign bond attracted an annual interest rate of 8.375 percent, signaling an upper bound for interest rates. Since the bond issue, rates on 365-day Treasury bills have declined by around 100 basis points, even though the fiscal situation has not improved markedly. With nearly K 2,000 million spent on interest payments in 2018, the reduction of interest rates could save the government around K 200-300 million annually in interest costs.

It is unclear, however, whether this fall in domestic interest rates on public debt has affected commercial lending rates. Commercial rates fell by only 40 basis points in 2019; this may or may not be related to the sovereign bond issuance.

Figure 10. Domestic Interest Rates, 2015–19
(Percentage points)
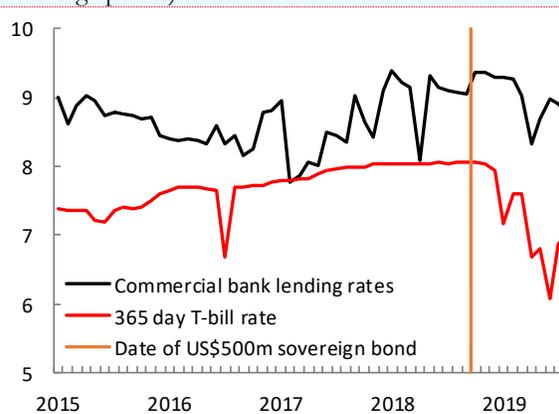
Source: Bank of Papua New Guinea.

The strengthening of the Kina against the Australian dollar has driven an increase in Australian imports in 2019. Photo: Conor Ashleigh.

1.4.   External sector

14.   **Papua New Guinea's current account surplus reached new highs in 2019 as extractive sector exports recovered.** Exports of goods and services exceeded imports by US$4.9 billion between January and September 2019, US$900 million higher than in the same period of 2018. Goods exports, specifically LNG and gold, drove this strong performance (from a low base in 2018, following the earthquake), with US$3.0 billion and US$2.3 billion, respectively, exported in the first nine months of 2019, a 22-percent increase over the same period of 2018. The large current account surplus was helped by a fall in imports of services, down 27 percent in the first nine months of 2019 to around US$1.0 billion.

15.   **Outflows on the financial account were at record levels.** A net US$5.2 billion flowed out of Papua New Guinea between January and September 2019 in the form of repatriated profits and dividend payments and debt servicing costs (in particular on PNG LNG). This trend represents a continuation of past patterns where a large current account surplus mirrors a large financial account deficit. Indeed, the situation is worsening from Papua New Guinea's perspective, with the overall balance registering a deficit of US$300 million in the first nine months of 2019, suggesting that total outflows were greater than total inflows.

16.   **The country is losing foreign exchange steadily.** Gross international reserves fell by US$35 million a month in the first nine months of 2019, to US$1.9 billion at end-September. This trend is even more concerning when the nearly US$1 billion borrowed externally in 2018 is taken into account; removing these liabilities from the total shows a worrying trend for foreign exchange outflows (Figure 11). Papua New Guinea agreed to additional external borrowing in 2019, including a US$100 million disbursement from the Asian Development Bank and a US$300 million loan from Export Finance Australia. The latter, a one-year bridge

loan, represents a rollover risk for the authorities. While most of the country's external debt is not due for repayment until the late 2020s, there is a risk that these funds will have been spent with little to show for the debt, given the low levels of both public and private investment so far.

17.   **Borrowing can only prop up foreign exchange reserves for so long.** All borrowing eventually needs to be repaid, with interest. Both the PNG government and its creditors are betting on there being some future resource boom that will allow the repayment of these debts. However, this is a risky strategy. Many country governments borrow to finance investment, investment that will create additional economic activity that can be taxed and used to repay the debt. This is not the case in PNG, where foreign borrowing is largely covering consumption spending, not investing for the future.

18.   **Imports recovered in recent months.** Imports of both goods and services recovered between the third quarter of 2018 and the first quarter of 2019 (Figure 12), coinciding with the inflow of foreign borrowing and the partial clearing of the backlog of foreign exchange orders, which fell from K 1.9 billion in August 2018 to K 1.2 billion in August 2019. However, 2019 saw a sharp fall in import spending to 2017 levels as reports of foreign exchange shortages again emerged.

Figure 11. Net international reserves declined sharply in 2019
(US$, millions)
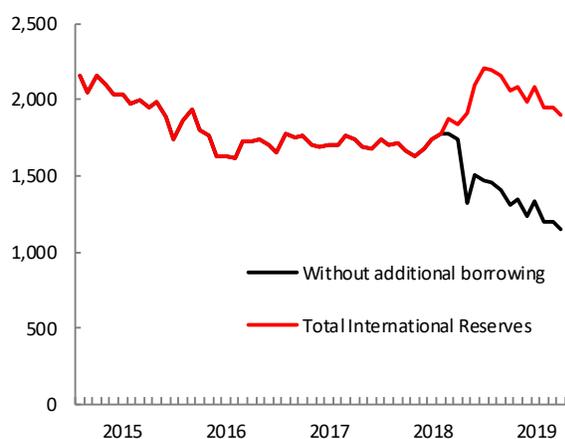
Figure 12. Imports recovered after the sovereign bond disbursement
(Imports of goods, US$ millions per quarter)
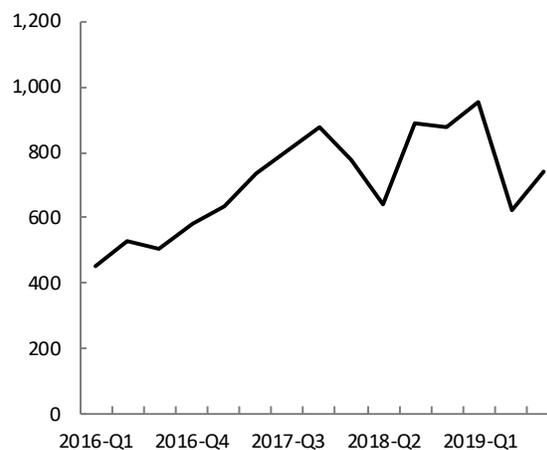
Source: World Bank staff estimates.   *Source:* World Bank staff estimates.

19.   **Exchange rate overvaluation is not helping the FX shortage.** In September 2018 the IMF suggested that the real exchange rate was overvalued by around 10 percent, with depreciation of 12-15 percent in nominal terms required to eliminate the overvaluation. Since that assessment, the Kina has depreciated by just 1.7 percent against the U.S. dollar and has *appreciated* by 2.8 percent against the Australian dollar (Australia is the principal source of Papua New Guinea's imports). Analysis by the BPNG suggests that the Trade-Weighted Index for the Kina appreciated by 0.6 percent in the second quarter of 2019; the real effective exchange rate had increased by 2.7 percent over the previous 12 months.[21] To support this artificially-high exchange rate, the BPNG drew down US$316 million from its foreign exchange reserves in 2019, more than half the US$500 million sovereign bond issued in October 2018.

20.   **A sharp rise in payments of dividends abroad is adding to the FX shortage.** While traditionally a small item in the balance of payments, the most recent BPNG data show that outflows of dividend payments have increased sharply since 2017, with over K 1,150 million (US$340 million) leaving Papua New Guinea in the first nine months of 2019, a 40 percent increase over the same period of 2018.

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[21] PNG Central Bank 2019a.

21.   **The shortage of foreign exchange is occurring against a backdrop of *rising* prices for Papua New Guinea's exports.** Average trade-weighted prices in the past 12 months (up to September 2019) have increased by 4.9 percent in U.S. dollar terms. This increase was driven by a 3.8 percent rise in gold prices and a 9.7 percent increase in the prices received by Papua New Guinea for its LNG exports. The only major commodity to see a decline in prices has been palm oil, the price of which fell by 18.1 percent in the past 12 months (up to September 2019). The increase in Papua New Guinea's LNG prices compares to a general fall in international LNG prices. Global prices, measured by the spot price for Indonesian LNG delivered to Japan, fell below US$5 per million British thermal units (MMBtu) in 2019. However, prices received by Oil Search in the first half of 2019 averaged US$9.13 per MMBtu. These variations reflect the difference between spot LNG prices, which are market-determined, and long-term contract prices, linked to international oil prices; the latter fell by less than 5 percent over the past 12 months (up to September 2019).

22.   **Mining continues to be the largest source of foreign exchange, while LNG contributes little**. Between January and September 2019, the mining sector generated US$1.2 billion in foreign exchange, principally from Ok Tedi, Lihir Gold, and Barrick Niugini. LNG exports, however, generated just US$168 million (Figure 13). Because PNG LNG is exempt from the Central Bank Act 2000, revenues from LNG sales abroad are not required to be brought 'on-shore'—the only foreign exchange that returns to Papua New Guinea is to cover local payments.[22] Oil Search sales data for the period January–September 2019 shows that from sales of approximately US$3.1 billion, only US$168 million, or 5 percent, returned to Papua New Guinea. By contrast, revenues in the mining sector were roughly US$3,650 million, of which US$1,214 million, or 33 percent, returned to Papua New Guinea (Figure 14) as foreign exchange.

Figure 13. Mining generates the largest foreign exchange inflows
(Share of total foreign exchange inflows, Jan-Sep 2019)
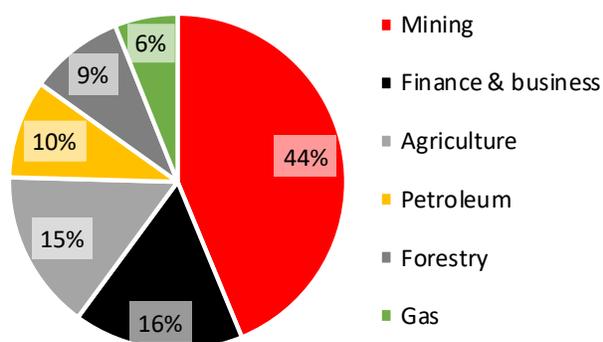
Figure 14. Foreign exchange inflows are considerably higher for mining than LNG
(US$, millions, Jan-Sep 2019)
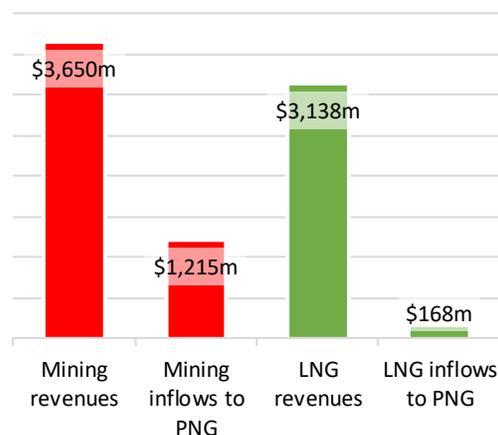
Source: World Bank staff estimates using Oil Search and other data.   *Source:* World Bank staff estimates using Oil Search and other data.

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[22] Local payments include salaries, royalty and development levy payments, dividend payments to Kumul Petroleum Holding Limited (the SOE that manages the government share in the PNG LNG project), and funds for income tax payments.

Box 4.	**A tale of two exchange rates**
	Now looks like a good time for an exchange rate adjustment

Two main exchange rates influence Papua New Guinea's economy. The country's exports are priced mainly in U.S. dollars, whereas its imports are priced primarily in Australian dollars. Over the past two years, the U.S. dollar has strengthened against most major currencies while the Australian dollar has weakened.

The Kina, which is pegged to the U.S. dollar by the monetary authorities, depreciated steadily between 2014 and 2016, then by a much slower rate since 2017, averaging around K1: US$0.30 (Figure 15). As discussed above, observers believe the Kina is overvalued, requiring a nominal depreciation of 12- to 15-percent to eliminate this overvaluation.

The risk from depreciation is principally in terms of inflationary pressures. A weaker Kina means higher import prices, and—given the historical ineffectiveness of the Kina Facility Rate—the exchange rate has long been used as the chief policy tool with which to control inflation.

However, as Figure 16 shows, the Kina has *appreciated* against the Australian dollar since the beginning of 2018, reaching K1: A$0.43 in September 2019. As discussed in section 1.3, this dynamic has helped bring inflation down to 3.3 percent, with prices of some imported goods actually falling when priced in Kina.

Perhaps now is a good time to adjust the Kina—inflation is low, foreign exchange reserves are under pressure, and Papua New Guinea is working hard to boost investment. The Indonesian Rupiah has depreciated by 2.8 percent against the U.S. dollar since the beginning of 2018, the Fijian Dollar by 4 percent, and the Malaysian Ringgit by 5.8 percent. Maybe now is the time for Papua New Guinea to follow suit?

Figure 15. Kina-U.S. dollar exchange rate
(US$ per Kina, Jan 2013 - Sep 2019)

Figure 16. Kina-Australian dollar exchange rate
(A$ per Kina, Jan 2013 - Sep 2019)
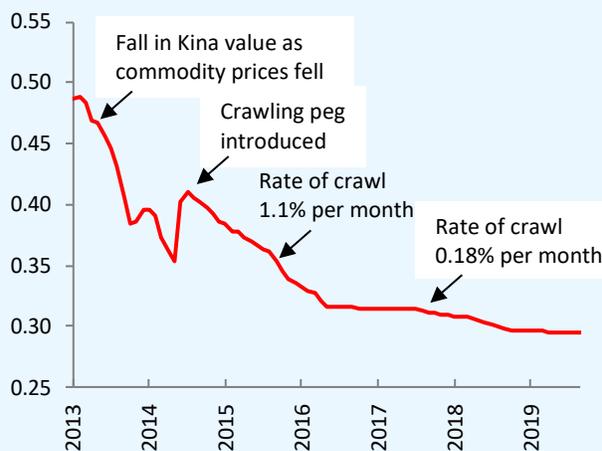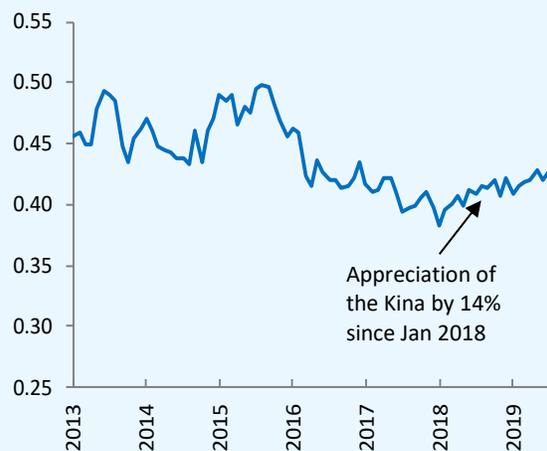
Source: www.ofx.com and Bank of Papua New Guinea.   *Source:* Bank of Papua New Guinea.

Despite economic headwinds, Papua New Guinea's economy is set to continue its recovery.
Photo: Allan Tobalbal Oliver.

2. Outlook and risks

2.1. Global outlook and risks

23. **Global growth will remain subdued over the forecast horizon, with a growing downside risks due to a global health shock of the ongoing coronavirus outbreak** (see paragraph 26). According to the latest Global Economic Prospects by the World Bank,[23] global growth is projected to stabilize and reach 2.5 percent in 2020 before strengthening modestly to 2.6 percent in 2021 (Figure 17). Growth in advanced economies is projected to moderate from 2.2 percent in 2018 to 1.5 percent on average in 2019–21, reflecting sharp decelerations in trade, investment, and manufacturing. Growth in emerging markets and developing economies (EMDEs) is estimated to have slowed to 3.7 percent in 2019; growth will recover to 4.2 percent in 2020 and 4.4 percent in 2021 as headwinds in some countries ease. Growth in the EAP region is projected to slow from 6.3 percent in 2018 to 5.8 percent on average in 2019–20, and to ease further to 5.6 percent by 2021. This outlook assumes no further escalation of trade tensions between China and the United States, slightly lower commodity prices, and supportive global financing conditions, especially in the near term. The baseline also assumes that fiscal and monetary policy support in China and the other major regional economies would partly mitigate the impact of heightened policy uncertainty and weak global demand on regional growth. The baseline did not consider the current coronavirus spread and its impact on the Chinese economy and global growth. The Papua New Guinea's economy will be affected by these recent developments as well, both through trade and investment channels.

24. **Global economic conditions will remain challenging in the near term.** Tariff increases by China and the United States announced in 2019 will have more severe effects than the tariff hikes implemented in 2018. A recently signed 'phase one' of trade deal between China and the United States is welcome but market

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[23] World Bank 2020.

reaction has been positive but cautious, due to a partial nature of the trade deal and, therefore, a potential risk of reescalation of trade tensions.[24] Barring a renewed escalation of trade tensions, global trade growth is estimated to have weakened from 4.1 percent in 2018 to 1.5 percent in 2019; it will recover modestly to 2.2 percent in 2020. This forecast is predicated on policy support measures implemented in major economies and a firming of domestic demand in some EMDEs. A modest rebound notwithstanding, global trade will remain weaker than previously envisaged over the forecast horizon, reflecting a softer outlook for global investment and evidence of a lower income elasticity of trade.

25.   **Global financing conditions will remain volatile, with potentially higher interest rates affecting capital flows to EMDEs, including Papua New Guinea.** This view reflects the expectation that the major central banks will adopt more-accommodative monetary policy stances in view of deteriorating global growth prospects. Despite the recent recovery of EMDE markets from the 2018 correction episode, there is still a considerable risk of "monetary shocks" associated with global policy uncertainty. Financial market volatility will continue to have the strongest impact on countries with high vulnerabilities, weak growth prospects, and elevated policy uncertainty. The eventual rise of advanced-economy yields will have a negative impact on capital flows to EMDEs, including Papua New Guinea. Policy uncertainty, geopolitical risks, and security concerns could also continue to impact EMDE capital inflows adversely. Modest declines are forecast for global commodity prices. Oil prices are expected to decline to an average of US$59 per barrel in 2020 and 2021, with high uncertainty surrounding the outlook.[25] Overall, metals prices are forecast to decline slightly in 2020, reflecting a weaker demand outlook. Agricultural prices will remain broadly flat in 2020 (Figure 18).

Figure 17. Global and regional GDP growth will remain subdued
(Percent; percent)
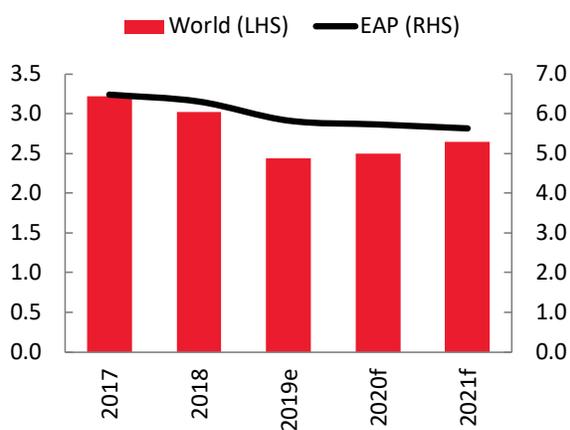
Figure 18. Global commodity prices will decline modestly
(Index=nominal U.S. dollars; 2010=100)

Source: World Bank staff estimates.
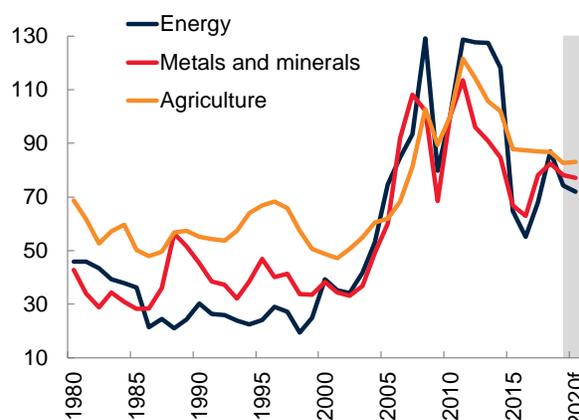
Source: World Bank staff estimates.

26.   **Risks remain firmly to the downside, with a potential negative effect on global growth and negative implications for external demand for Papua New Guinea's key export items.** Although there is considerable uncertainty surrounding the outlook for the global economy, the balance of risks remains firmly to the downside. The simultaneous occurrence of a sharper-than-expected slowdown in China, the Euro Area, and the United States could trigger a significant downturn in global activity. The reescalation of trade tensions could be highly disruptive to global activity amid the presence of complex value chains. The risk of severe and broad-based financial stress adversely affecting the outlook for EMDEs remains high amid elevated debt levels in many countries, including Papua New Guinea. Policy uncertainty and geopolitical risks remain high and

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[24] Peterson Institute for International Economics 2020.
[25] World Bank 2019c.

could negatively impact confidence and investment in both affected countries and globally. Policy uncertainty is particularly elevated in some European countries, including the United Kingdom (as it finalizes the ongoing exit from the European Union). A recent spread of the novel coronavirus also represents a high-risk factor for the global outlook. Risk sentiment has started deteriorating due to this deadly virus, impacting stock markets to tumble as investors worry about the impact on global growth.[26] These recent developments may lead to weaker external demand for key commodity items exported by Papua New Guinea.

2.2.   *Papua New Guinea's economic outlook*

27.   **Delays to new resource projects have prompted downward revisions to the medium-term economic outlook.** A renegotiation of terms for the Papua LNG project (the Elk-Antelope gas fields in Gulf province) in August 2019,[27] a delay getting an agreement on the PNG LNG expansion (the P'nyang gas field),[28] and prolonged legal proceedings over the Wafi-Golpu gold project[29] have led to downward adjustments in our economic growth projections. Our baseline forecast now suggests that real GDP growth will moderate to about 3 percent annually in 2020–22 from an estimated 5.6 percent in 2019 (Figure 19). This projected growth level is still higher than the average real GDP growth rate of 2.4 percent in 2018–19. Growth will be driven by fiscal stimulus adopted in the 2020 National Budget and a launch of a Papua LNG construction phase (delayed by at least 12 months, from mid-2019 to mid-2020) that will have positive spillovers on the rest of the economy (Figure 20). The services sector, in particular, is expected to recover, with the information and communication sector benefiting from the Coral Sea Cable System[30] in 2020 and an entry of a third mobile network operator into the market,[31] and professional, administrative, and support services contributing to the Papua LNG project from late-2020 onward.

Figure 19. Delays in resource projects led to a downgraded GDP growth forecast
(Percent)
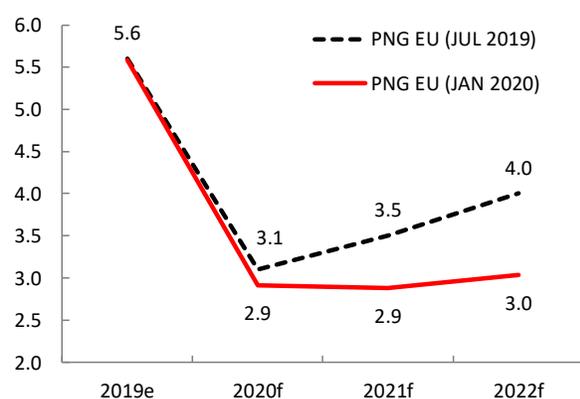
Figure 20. Private and public infrastructure projects will drive GDP growth
(Percentage point contribution to growth)

Source: World Bank staff estimates.
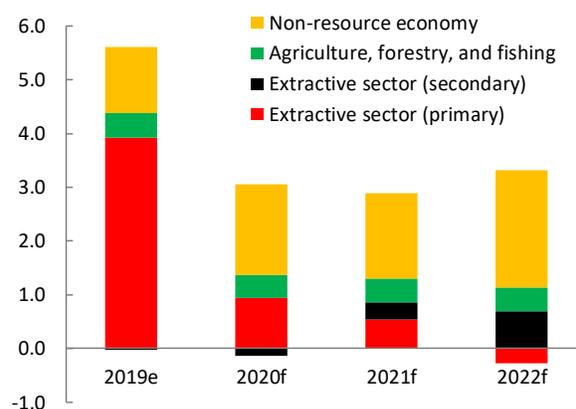
Source: World Bank staff estimates.

28.   **The looming construction boom represents a positive driver to the economy and the external accounts.** In addition to growth spillovers to the services sector, the implementation of new resource projects (Papua LNG and Wafi-Golpu) will have a positive impact on the external balance of payments. Additional

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[26] New York Times 2020.
[27] PNG Post-Courier 2019.
[28] Reuters 2019; Petroleum Economist 2020.
[29] PNG The National 2020a.
[30] https://www.coralseacablesystem.com.au/about/
[31] PNG The National 2020b.

foreign exchange inflows in the form of foreign direct investment and external borrowing will be used to import the goods and services required for these projects (thus narrowing the current account surplus). At the same time, a significant share of foreign exchange inflows will also be used to purchase domestic goods and services (thus keeping foreign exchange in the economy). The latter should help the central bank to replenish international reserves, as the current pressure on the exchange rate is expected to ease and reverse. The economy may start seeing a change in the foreign exchange position from 2022 onward. The next two years will be critical for the authorities to continue adjusting the exchange rate toward its equilibrium while clearing the FX backlog.

29.   **The government should consider the terms of new resource extraction agreements carefully, in order to increase benefits for the economy and the population.** While short-lived construction booms are likely regardless of the terms agreed with international investors, long-term prosperity depends on the share of project benefits that stay in Papua New Guinea. Encouragingly, the government has recognized that the country has a mature extractive sector and that the terms of the PNG LNG agreement were not as generous as initially assumed,[32] and today is learning from the experiences of past negotiations. While the current delay with the implementation of new resource projects impacts the growth outlook, it should not discourage the authorities from reaping most of the benefits of these projects for its people, especially the vulnerable. With 40 percent of its population living below the poverty line,[33] Papua New Guinea ought to negotiate the most beneficial terms from project developers.[34] The government will need to raise its revenue base by mobilizing domestic revenue sources and securing better fiscal terms from the existing and upcoming resource projects to deliver quality public services.[35] A higher revenue base will allow the government to finance its Medium-Term Development Plan for 2018–22 with an emphasis on investing in physical and human capital.[36]

2.3.   *Risks and challenges*

30.   **Old and emerging risks may undermine economic performance over the medium term.** Our baseline assumptions already include the previously-identified risks. They cover ongoing delays in the implementation of new resource projects (affecting resource GDP growth projections), less favorable terms of trade (affecting performance of the non-resource economy and buildup of the FX backlog), and the inability to resume fiscal consolidation (leading to a potential downgrade to the public debt risk profile). However, new risks—both external and domestic—have begun to emerge. External risks include (i) an outbreak of the coronavirus that will impact the Chinese and global growth to slow sharper than expected, with negative spillovers for the EAP region, including Papua New Guinea (Box 5), and (ii) a glut in the LNG market that may drive a softening of LNG prices with negative implications for resource revenue flowing to the external and fiscal accounts. Although external risks are out of government control, the authorities should continue working on improving economic and fiscal resilience of Papua New Guinea. Domestic risks include the recent referendum in the Autonomous Region of Bougainville, where the overwhelming majority of the population (98.31 percent) voted for independence.[37] To avoid the risks of social unrest in any region of Papua New Guinea and improve the inclusiveness of economic development, the authorities have to focus on the human development agenda, including better public service delivery in health, education, and social protection. Part B of this report discusses these issues in depth.

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[32] Business Advantage PNG 2020; EITI 2019.
[33] PNG NSO 2011.
[34] PNG The National 2020c.
[35] Business Advantage PNG 2019.
[36] PNG DNPM 2018.
[37] http://bougainville-referendum.org/statement-from-the-commission/

Box 5.	**A potential impact of the coronavirus on Papua New Guinea**
	The coronavirus outbreak is a new near-term risk to already challenging economic outlook

The novel coronavirus (named 2019-nCoV) is a new highly-contagious illness that is spreading rapidly in China (where it originated) and has started spreading globally as well. The World Health Organization (WHO) has already declared the novel coronavirus as a Public Health Emergency of International Concern (PHEIC). Since December 31, 2019 when China informed the WHO of the new virus, confirmed cases of the novel coronavirus have increased rapidly, spreading faster than the SARS coronavirus in 2003 (Figure 21). The spread of the coronavirus outside China represents less than 1 percent of confirmed cases, with at least 24 countries affected by the spread. During the last week of January 2020, the number of confirmed cases increased by about 2 thousand a day on average, with lethal cases on the rise. So far, most of lethal cases have been reported by China and only one case was reported outside of China (a Chinese national who was killed by the virus in the Philippines). Although the growth rate of confirmed cases has started slowing (Figure 22), nevertheless, many governments are taking measures to avoid the coronavirus spreading to their territories.

Figure 21. Coronavirus confirmed cases continue to rise
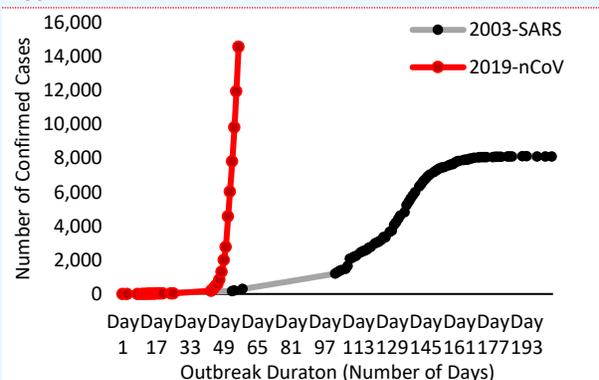
Figure 22. Growth rate of confirmed cases of the coronavirus is falling

Sources: World Bank; CEIC.
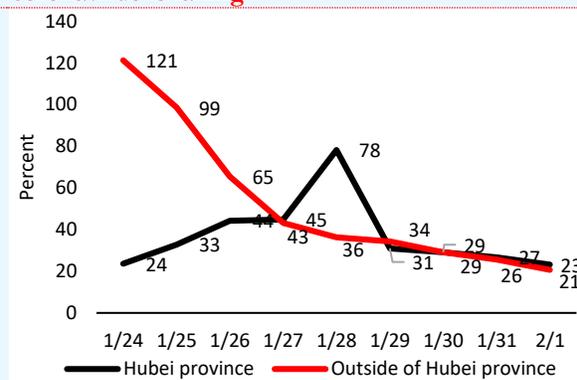
Sources: World Bank; WHO; China Health Commission.

Papua New Guinea has reacted to a potential spread of the coronavirus by setting up a special Ministerial Committee for coordinating government response to the coronavirus, in partnership with the donor community, including the WHO office in the country. When this box was prepared, there were no suspected or confirmed cases of the coronavirus in Papua New Guinea. The health authority has taken the following actions against the coronavirus spread: (i) declared the coronavirus as a quarantinable disease under the Quarantine Act 1953 and an infectious disease under the Public Health Act 1973; (ii) introduced a mandatory health declaration form for incoming travelers; (iii) appointed new temporary quarantine stations to handle quarantine requirements, as well as temporary quarantine officers to address any increase in workload; (iv) established a hotline (7196 0813) to address an immediate need for information and reporting; (v) launched a formal communication with the development partners for coordination and support.

A potential economic impact of the coronavirus is still unknown and difficult to predict. The severity and duration of the outbreak remains uncertain, making it impossible to provide precise estimates of the economic impact of the coronavirus. Nevertheless, it is clear that the impact will be substantial, with slower growth of the Chinese and global economies than earlier anticipated. The lower economic activity in China, following weaker demand and supply side disruptions, has already affected negatively consumer and business confidence and financial markets globally. The EAP region, including Papua New Guinea, will be impacted through trade, investment, and remittances channels. The coronavirus has already affected tourism in the region and started pushing commodity prices down. Foreign direct investment and remittances from China are also expected to be affected by the outbreak. For Papua New Guinea, the commodity trade channel is paramount. An anticipated drop in commodity prices and export volumes will lead to lower export revenue, putting pressure on GDP growth, FX situation, and fiscal accounts due to lower resource revenue and higher spending for disease-mitigation measures, leading to a higher fiscal deficit and an additional debt distress.
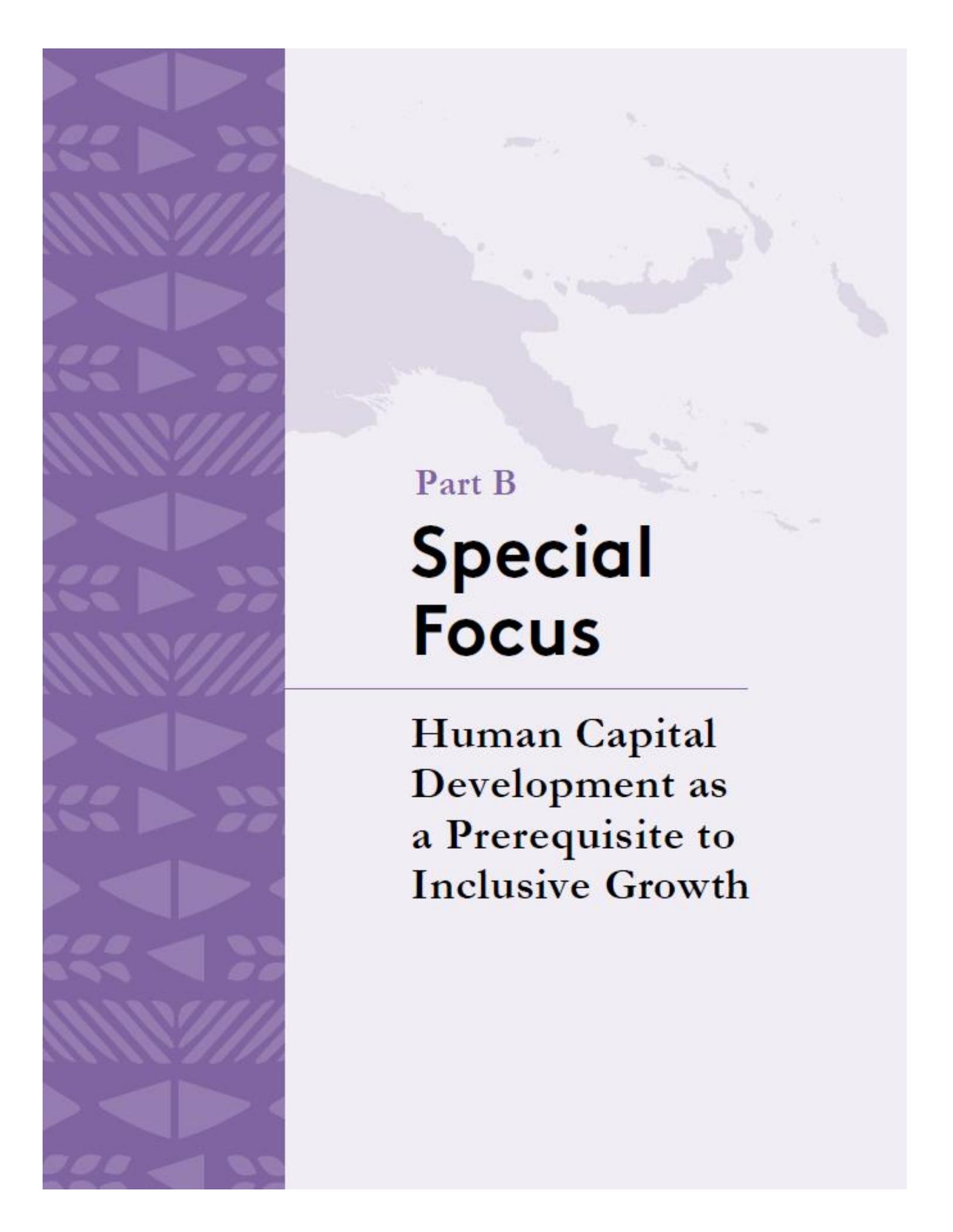
Part B

Special Focus

Human Capital
Development as
a Prerequisite to
Inclusive Growth

A child born in Papua New Guinea today is only thirty-eight percent as productive as she would have been if she had complete education and full health. Photo: Aparnaa Somanathan.

1. Papua New Guinea human capital stock

31.   **Investing in human capital—the health, knowledge, skills, and resilience that people accumulate over time—is critical for Papua New Guinea's future growth and development.** Through these investments, people can become more productive, flexible, and innovative. Human capital is a central driver of sustainable growth and poverty reduction. Empirical evidence suggests that higher levels of human capital directly affect productivity: individuals who benefit from proper nutrition and healthy lives can more effectively benefit from education and develop greater cognitive, technical, and life skills, making them more productive participants in the economy. Not surprisingly, economic growth is positively correlated with increases in life expectancy and quality of life.[38]

32.   **With the country at an early stage in the demographic transition, investing in people now would allow Papua New Guinea to reap demographic dividends in the future.** Papua New Guinea's population is growing at a high rate of 2.3 percent per annum. Almost 50 percent of the country was born during the last two decades, with 38 percent of the population below the age of 15 years. To absorb the growing population into the labor market and reap the demographic dividend, Papua New Guinea should slow the pace of population growth, and invest in the health, education, and skills. Absent adequate investments in the health, knowledge, and skills of the young, the growing youth bulge will put pressure on service delivery, contribute to higher rates of unemployment, and potentially undermine social stability. Alternatively, by slowing the pace of

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[38] Acemoglu and Johnson 2007.

population growth and investing in health, education, and skills development to absorb the growing population into the labor market, Papua New Guinea can reap the benefits of a demographic dividend.

1.1.   The Human Capital Index

33.   **The Human Capital Index (HCI) measures the human capital that a child born today can expect to attain by the age of 18.** It conveys the productivity of the next generation of workers compared to a benchmark of complete education and full health. It is constructed for 157 countries and allows for performance to be compared across similar countries as well as with a scenario of a complete education and full health. The three components that comprise the index are closely linked to the Sustainable Development Goal (SDG) targets for health, education, and nutrition. They are:

- Survival: Will children born today survive to school age?
- Schooling: How much schooling will children complete, and how much will they learn?
- Health: Are kids receiving adequate nutrients and healthy enough to arrive to school ready to learn? Will children leave school in good health, ready for further learning and work?

Globally, 56 percent of children born today will grow up to be, at best, one-half as productive as they could be, and 92 percent will grow up to be, at best, 75 percent as productive as they could be.

34.   **Papua New Guinea's HCI score is 0.38.** This score means that a child born today in Papua New Guinea will be 38 percent as productive when she grows up as she could be if she enjoyed complete education and full health. The state of human capital in the country reveals the following:

> ➢   Ninety-five percent of children born in Papua New Guinea will survive to age 5
> ➢   A child who begins school at age four can expect to complete 8.2 years of schooling by the age of 18
> ➢   Factoring in what children actually learn, the expected years of schooling is just 4.7 years.
> ➢   Students in Papua New Guinea score 358 on a scale of 625 representing advanced attainment, and 300 represents minimum attainment in harmonized test scores
> ➢   Nationwide, 78 percent of 15-year-olds will live to age 60
> ➢   Half of the country's children are stunted or chronically undernourished, and therefore at risk of lifelong cognitive and physical limitations
> ➢   Papua New Guinea's HCI value deteriorated between 2012 and 2017, from 0.39 to 0.38

Source: World Bank 2018b.

35.   **Papua New Guinea scores in the bottom quartile for every component of the HCI.** The red vertical lines on the figure below indicate the quartiles of each variable. The black marker shows where Papua New Guinea scores in the distribution of the data for all countries (Figure 23).

Figure 23. Human Capital Index and Components

Note: Vertical lines indicate quartiles of each variable.

Source: World Bank 2018b.

36.   **Papua New Guinea's score is below the EAP regional average (0.61) and the Sub-Saharan Africa's average (0.40).** Table 4 shows the average of the five components of the HCI and the average by region. The averages are calculated using the latest data available for each country. Comparing Papua New Guinea to other countries in the EAP region, all of the component indicators are below the regional average scores, with a particularly high variance in the score for the proportion of children under age five that are not stunted (0.505) versus the regional average (0.776).

37.   **Improvements in human capital have also been slower than expected for Papua New Guinea's income level.** When comparing its HCI score (0.38) by income group (Table 5), Papua New Guinea's score is on par to the low-income economy average (0.38). This similarity is concerning given that Papua New Guinea is a lower-middle-income country.[39]

Table 4. Human Capital Index by Region

Indicator	Papua New Guinea	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	North America	South Asia	Sub-Saharan Africa
HCI Component 1: Survival								
Probability of Survival to Age 5	0.947	0.978	0.993	0.980	0.984	0.994	0.957	0.934
HCI Component 2: School								
Expected Years of School	8.2	11.9	13.0	11.9	11.5	13.5	10.5	8.1
Harmonized Test Scores	358	451	495	404	408	530	364	374
HCI Component 3: Health								
Survival Rate from Age 15-60	0.778	0.873	0.900	0.861	0.906	0.921	0.841	0.732
Fraction of Children Under 5 Not Stunted	0.505	0.776	0.881	0.859	0.847	0.979	0.645	0.684
Human Capital Index	**0.38**	**0.61**	**0.70**	**0.55**	**0.57**	**0.78**	**0.46**	**0.40**

Source: World Bank.

Table 5. Human Capital Index by Income Level

Indicator	Papua New Guinea	Low Income	Lower Middle Income	Upper Middle Income	High Income
HCI Component 1: Survival					
Probability of Survival to Age 5	0.947	0.929	0.961	0.983	0.995
HCI Component 2: School					
Expected Years of School	8.2	7.8	10.4	11.7	13.3
Harmonized Test Scores	358	363	391	428	506
HCI Component 3: Health					
Survival Rate from Age 15-60	0.778	0.745	0.807	0.863	0.923
Fraction of Children Under 5 Not Stunted	0.505	0.658	0.730	0.869	0.935
Human Capital Index (HCI)	**0.38**	**0.38**	**0.48**	**0.58**	**0.74**

Source: World Bank.

38.   **The next three sections examine key aspects of human capital accumulation in detail—health and nutrition, education, and skills development and employment (especially for youth).**

1.2. Health and Nutrition

39.   **Papua New Guinea has made modest progress in improving key health outcomes.** Recent data from the Demographic and Health Survey (DHS) for 2016–18 indicates that momentum is continuing, albeit at a slow pace. The maternal mortality ratio declined from 470 to 215 per 100,000 live births between 1990 and

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[39] Lower-middle-income economies have a gross national income (GNI) per capita of between US$996 and US$3,895. Papua New Guinea's GNI per capita was US$2,570 in 2018.

2015 and was estimated to be 171 per 100,000 live births during 2016–18. The under-five mortality rate declined from 89 to 57 per 1,000 live births from 1990 to 2015 and was estimated at 49 per 1,000 live births in 2016–18. Infant mortality is estimated to have declined from 65 to 45 per 1,000 live births from 1990 to 2015.

40.   **Health outcomes lag behind comparators.** While life expectancy in Papua New Guinea has risen considerably since independence, at 65.9 years in 2018, it remains below the average for lower-middle-income (67.7 years) and EAP economies (75.3 years). At the same time, maternal and infant mortality rates are higher than the average for lower-middle-income economies and above what is expected for a country with Papua New Guinea's per capita income (Figure 24).

Figure 24. Under-five Mortality Rates in PNG and Comparator Economies
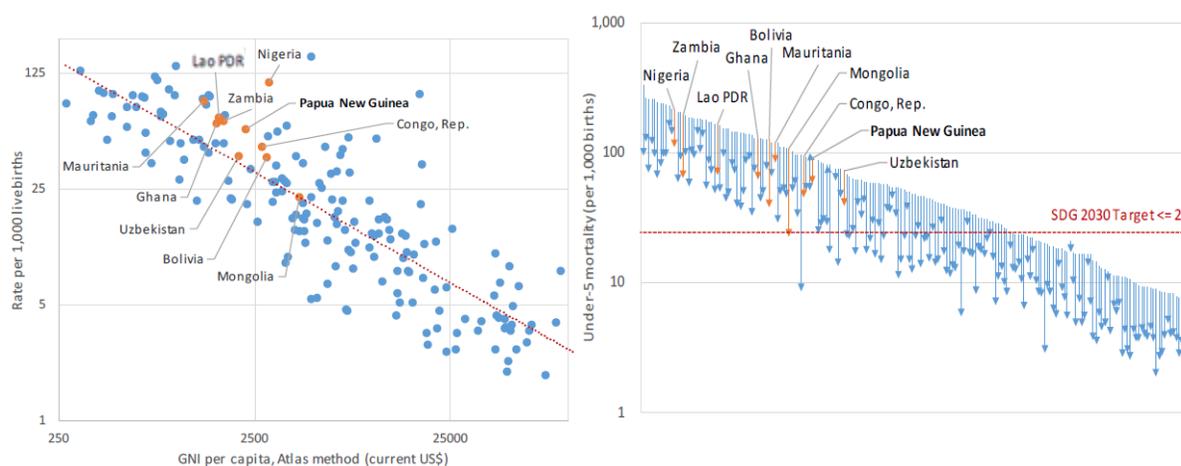
Source: World Development Indicators.

41.   **Fertility rates are high and falling at a relatively slow pace.** Between 2006 and 2016, the Total Fertility Rate (TFR)—the average number of children a woman would have in her lifetime at current fertility rates—fell only slightly from 4.4 (DHS 2006) to 4.2 (DHS 2016–18). Despite the recent deceleration in the pace of decline in child and under-five mortality rates, more rapid declines in the 1970s mean that the population is growing at a rapid rate of 2.3 percent per annum (National Population Policy 2015–24).[40] DHS results on wanted levels of fertility—3.0, versus an actual TFR of 4.2—suggest that there is substantial underlying momentum for a decline in fertility in PNG.

42.   **Papua New Guinea has the fourth-highest rate of stunting (i.e. low height-for-age representing chronic undernutrition) in the world.** Nearly half (48.2 percent) of children under age five suffer from stunting,[41] the second-highest rate in the EAP region and double that of countries with a comparable GDP per capita. Papua New Guinea also has a considerable burden of 'hidden hunger' or micronutrient deficiencies.

43.   **The most impoverished children are most likely to be stunted but stunting and child undernutrition are a significant concern throughout the country.** The burden of stunting is highest (55 percent) in the poorest fifth of households (Figure 25). However, stunting rates for children in the wealthiest fifth of households are also high (36 percent). Undernutrition also varies regionally, with the Highlands region having the greatest prevalence of stunting (58 percent). At 38.1 percent, the Islands Region has the lowest rate of stunting, but this is still elevated in absolute terms. Despite its relatively low rate of stunting, the Islands

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[40] PNG DNPM 2015.
[41] PNG NSO 2011b.

region has the highest rates of wasting (19.3 percent), a measure of acute undernutrition, and underweight children (31.2 percent).

44.   **Papua New Guinea faces a high burden of non-communicable disease.** According to data from the National Department of Health, 23.2 percent of women of reproductive age (15–49 years) in urban areas are overweight, and 13.6 percent are obese. The high rates of overweight people (38.9 percent), smoking (44 percent), and raised blood cholesterol (36.8 percent) are key risk factors contributing to the high incidence of non-communicable diseases and the considerable burden of morbidity and mortality in the country. The burden of disease per capita is the highest in the EAP region, and significantly higher than the average for low- and middle-income countries. Communicable diseases, including vaccine-preventable diseases and tuberculosis, present a threat to public health and regional health security.

Figure 25. Stunting by Wealth Quintile
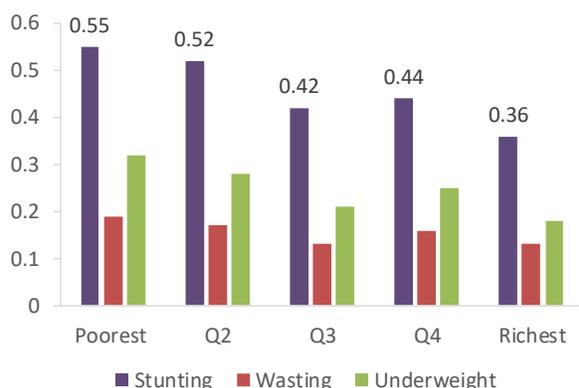
The three key indices of physical growth used as measures of child undernutrition are:
Stunting or low height-for-age representing chronic undernutrition;
Underweight or low-weight-for age representing a combination of long-term and immediate-term undernutrition; and
Wasting or low weight-for-height, representing acute under-nutrition.
Each of the indicators is expressed in standard deviation units (Z-scores) from the median of the reference population (below two standard deviations of the mean for each respective measure)

Source: Papua New Guinea National Statistical Office (2011b).

1.3. Education

45.   **PNG faces an acute learning crisis.** The results of the Early Grade Reading Assessment (EGRA)[42] indicate that students' literacy skills did not meet the requirement of the PNG Grade 1 Standards-Based Curriculum (SBC).[43] Overall, less than one-third of students could correctly identify all the letters of the alphabet. On average, more than one-quarter of students could not read a frequently-used word, with a much higher proportion (more than 60 percent) unable to answer a single reading comprehension question correctly. The proportion of children who could not answer reading comprehension questions correctly in Tok Piksin was higher than in English. Performance varied significantly across provinces (Table 6). In Central Province, which includes the National Capital District, less than one-fifth of all students could correctly identify all of letters of the alphabet and almost three-fourths of children could not answer reading comprehension questions correctly.

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[42] The EGRA was conducted in the following ten of Papua New Guinea's 22 provinces: Central, Madang, Morobe, East Sepik, Eastern Highlands, the Autonomous Region of Bougainville (ARoB), Jiwaka, Simbu, Western Highlands, and West New Britain Province.
[43] The SBC was implemented in elementary education in 2015 and primary education in 2017. This new curriculum outlines specific national standards for each level of education. The new SBC for secondary school is still in process. Compared with the old curriculum, the SBC provides more scaffolding support for teachers, such as scripted lessons and more time location on core subjects.

Table 6. Students' Performance on EGRA by Subtasks[44]

Province	Letter Identification		Frequently Used Words (ENG)		Frequently Used Words (Tok Pisin)		Reading Comprehension (ENG)		Reading Comprehension (Tok Pisin)	
	All[45] (%)	None[46] (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)
Central	19	4	5	48	2	65	1	72	0.2	87
Madang	36	1	2	25	4	35	2	61	2	82
Morobe	19	0.5	4	40	10	52	1	73	3	83
East Sepik, Eastern Highlands & Autonomous Region of Bougainville (ARoB)	24	5	2	47	3	59	3	74	2	89
Jiwaka, Simbu, Western Highlands & West New Britain	25	-	0.2	-	0.9	-	1	-	2	-

Source: Inamuka and others (2019); Johnston and others (2018); Smith and Simoncini (2018).

46.   **Students perform better in numeracy than in literacy.** More than one-third of children could correctly identify all numbers shown. Most students (more than 50 percent) could count by two up to 20 and count by fives up to 45. Compared to addition questions, students found subtraction tasks more difficult. As with literacy, there were large variations across provinces (Table 7).

Table 7. Students' Performance on EGMA by Subtasks

Province	Number Identification		Skip Counting				Addition		Subtraction		Word Problems		Shape Identification		Telling Time	
			by 2		by 5											
	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)	All (%)	None (%)
Central	51	1	51	7	59	7	33	8	16	34	25	19	11	7	38	38
Madang	59	0.4	76	4	81	3	34	5	11	28	34	7	25	3	46	25
Morobe	48	0.5	51	6	53	9	26	5	14	35	27	20	13	6	47	29
East Sepik, Eastern Highlands & ARoB	49	2	57	9	61	13	32	9	16	28	32	17	25	6	50	26
Jiwaka, Simbu, Western Highlands & West New Britain	39	2	67	-	77	-	31	7	15	23	39	10	18	11	-	-

Source: Inamuka and others (2019); Johnston and others (2018); Smith and Simoncini (2018).

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[44] The subtask, Reading Fluency, is omitted here due to inconsistent measure across three baseline survey reports.
[45] Percentage of students who could answer all questions correctly.
[46] Percentage of students who could not answer a single question.

47.   **Students in Papua New Guinea performed worse than their regional peers on the Pacific Islands Numeracy and Literacy Assessment (PILNA) in 2018.**[47] On average, Grade Three students in PNG scored 16 points lower than the regional average for literacy, and 38 points lower for numeracy. Grade Five students lagged further behind with a mean score that is 1633 points lower than the regional average in literacy and 476 points lower in numeracy. A larger gap in literacy was revealed when compared to other Melanesian countries (i.e., Solomon Islands and Vanuatu) (Table 8). Despite the overall low performance, grade five students in PNG made great progress in PILNA 2018 relative to 2015. The proportion of students that reached the minimum proficiency level in literacy increased from 23 percent in 2015 to 51 percent in 2018 and went from 51 percent to 74 percent in numeracy. Students in PNG still performed better in numeracy than literacy (Figure 26). Girls outperformed boys in literacy. Students from government schools outperformed their peers from non-government schools in literacy, while their counterparts scored higher in numeracy at Grade Five. Students from urban schools performed better in literacy but poorer in numeracy compared to their non-urban counterparts (Figure 27).

Table 8. Mean Score in Literacy and Numeracy, PILNA 2018

		Papua New Guinea	Regional Avg.	Solomon Islands	Vanuatu
Year 4	Literacy	446	462	464	427
	Numeracy	466	504	507	480
Year 6	Literacy	488	504	513	507
	Numeracy	508	555	545	539

Source: PILNA 2018 dataset.

Figure 26. Proportion of Students that Achieved Minimum Proficiency Level in Literacy and Numeracy
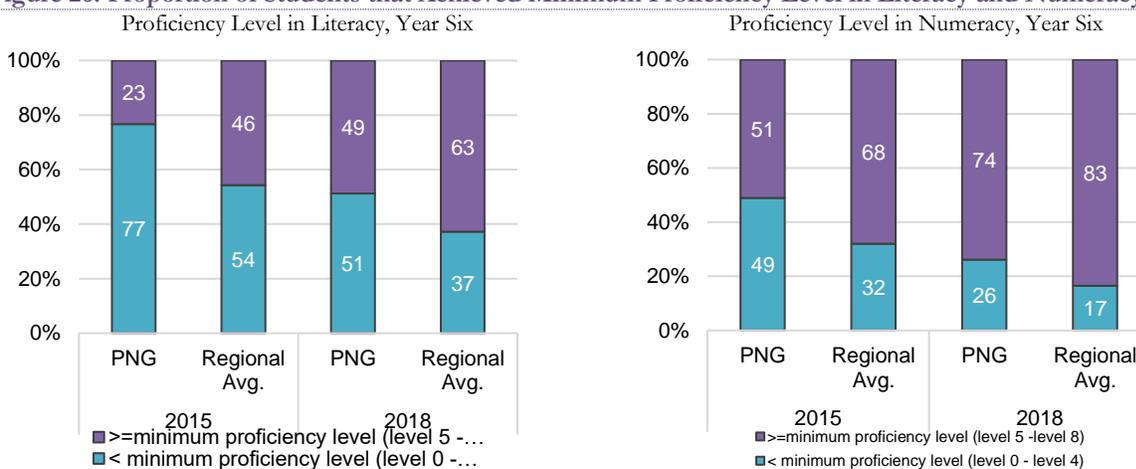
Sources: Global Partnership for Education; PILNA 2018 dataset.

Sources: Global Partnership for Education; PILNA 2018 dataset.

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[47] PILNA is a regional benchmarking tool for assessing literacy and numeracy among students in Pacific Islands countries who completed Year Four and Year Six (equivalent of Grade Three and Grade Five in Papua New Guinea). This tool was developed through a joint effort between UNESCO and the Secretariat for the Pacific Board of Educational Assessment—now the Educational Quality and Assessment Programme of the Pacific Community. Launched in 2012, PILNA is conducted every three years. Papua New Guinea has participated in all three rounds of PILNA since 2012.

Proficiency Level in Literacy & Numeracy, Year Four, PILNA 2018

	Literacy		
PNG	63	37	
Regional Avg.	47	53	

■ < minimum proficiency level (level 0 - level 3)

■ >=minimum proficiency level (level 4 -level 8)

0% 20% 40% 60% 80% 100%

	Numeracy		
PNG	26	74	
Regional Avg.	17	83	

■ < minimum proficiency level (level 0 - level 2)

■ >=minimum proficiency level (level 3 -level 8)
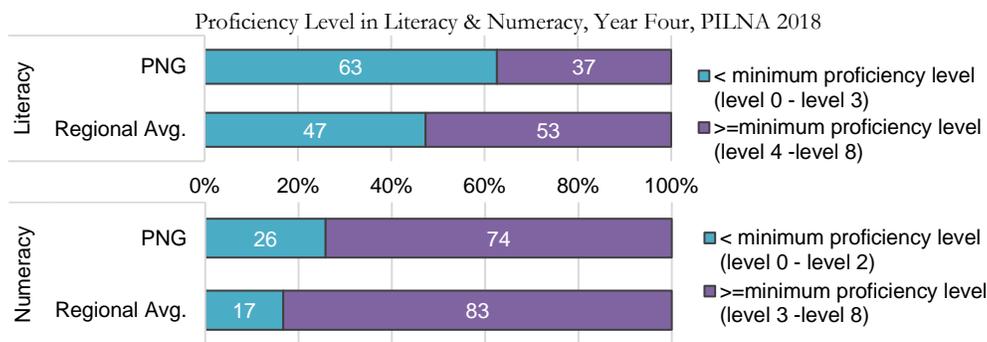
Source: PILNA 2018 dataset.

Figure 27. Heterogeneity Analysis: Performance Disaggregated by Gender, School Type and Locality

PNG Grade Three Students' Performance in Literacy and Numeracy

PNG Grade Five Students' Performance in Literacy and Numeracy
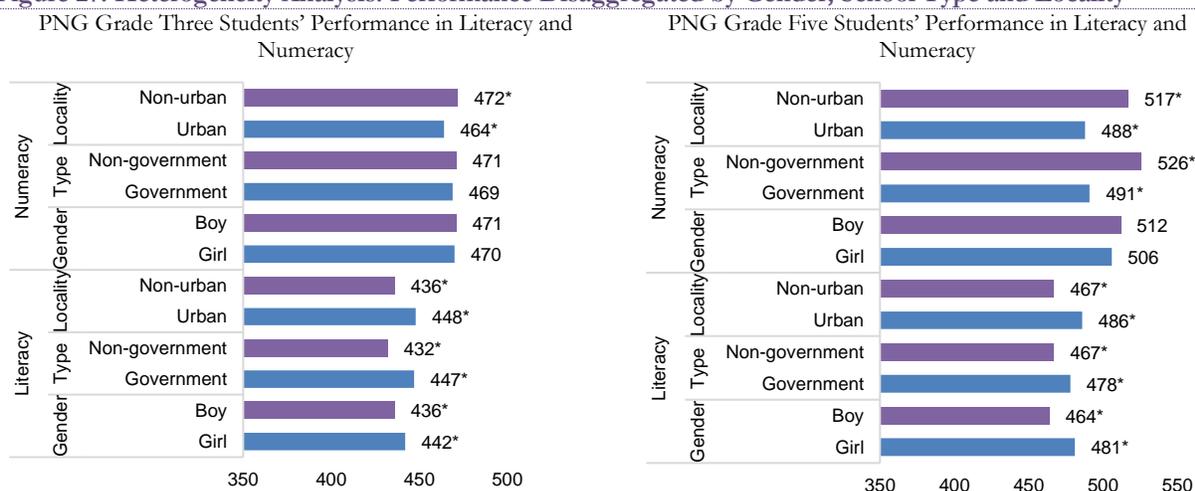
Source: PILNA 2018 dataset.
Note: "*" indicates statistical significance (p=.05)

Source: PILNA 2018 dataset.
Note: "*" indicates statistical significance (p=.05)

1.4. Skills and Employment

48. **Papua New Guinea's labor force is mainly low-skilled, with the majority of the population not educated beyond Grade Ten** (Figure 28). Many Papua New Guineans that do graduate from school fail to meet satisfactory standards due to the poor quality of their education. Poor standards are also prevalent in post-secondary education. The 2010 PNG Universities Review, commissioned jointly by the governments of Papua New Guinea and Australia, concluded that there is a "critical shortage of virtually all of the skills that are generated in institutions of higher education." In addition to the low number of post-secondary graduates, the Review also identified the quality of education as an issue, indicating that "a high proportion of the courses in Papua New Guinea State universities are not taught at an adequate standard."

49. **The informal sector employs a majority of the working-age population.** An estimated 2.5 million (of a total of 3 million) workers in Papua New Guinea engage in activities in the informal economy, with most of these associated with low-productivity subsistence agriculture. Wages and productivity levels in the formal economy are higher. Unfortunately, growth to date in formal sector employment has stagnated (Figure 29), lagging both rapid population growth and the expansion of cities and towns. The government estimates that just 10,000 formal sector jobs are created annually—predominantly in the mining sector in recent years—while

80,000 school leavers enter the labor force.[48] Slow growth in the non-mining sector has exacerbated this challenge, with central bank data recording a ten percent decline in formal sector employment between 2013 and 2018.

50.   **Informal sector employment is particularly widespread in the youth population.** The population of Papua New Guinea is young and growing rapidly. Approximately 40 percent of Papua New Guineans are under the age of 15. Young people are under-represented in the formal sector, with survey data suggesting a formal sector employment rate of just 2 percent (1.5 percent in rural areas) among those aged 15-24.[49] While disproportionately low rates of formal employment among young people is consistent with experience in other countries, there is reason to believe the situation is especially dire in Papua New Guinea. Due to education system shortcomings, many young people leave school without basic cognitive and social skills. Without work experience, the employability of such youth is low, while those that are employed work in the informal sector in low paying (and low productivity) jobs.

51.   **A gender gap exists in access to formal sector employment, with twice as many men as women employed in the formal sector.**[50] The higher wages, greater security, and better conditions that are typically offered in formal sector employment make expanding female access to it a priority. Low rates of female labor market participation have adverse economic consequences, as they reflect a failure of the economy to utilize the country's human capital. Moreover, there is strong evidence that greater female labor force participation is linked to better schooling outcomes for their children.[51] Prioritizing female labor force participation subsequently has the potential to generate considerable economic benefits for Papua New Guinea.

Figure 28. The workforce tends to be low-skilled

Figure 29. Employment in the formal sector started to recover in 2019
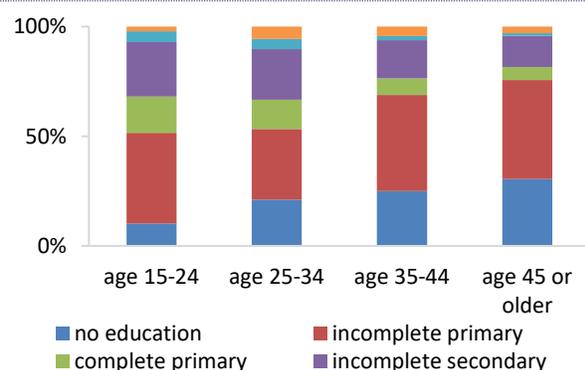
Source: Papua New Guinea NSO and ICF (2019).
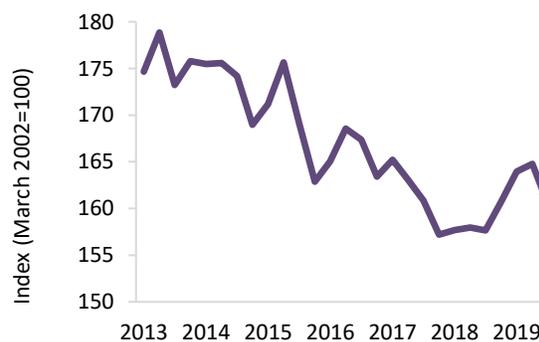
Source: Bank of Papua New Guinea.

52.   **In an environment where formal sector employment opportunities are limited, working overseas offers an alternative source of cash income for Papua New Guineans.** Despite this, Papua New Guineans do not take up jobs abroad to the same extent as other Pacific Islanders. The country has one of the lowest emigration rates in the world, with just 0.2 percent of Papua New Guineans estimated to reside overseas. This low level of out-migration—lower even when compared to other Melanesian countries—is, in large part, a product of restricted access to external labor markets, which favors the highly skilled.[52] Papua New Guineans that are overseas are, on average, highly skilled, despite this not reflecting the domestic labor market.[53] However,

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[48] World Bank 2018.
[49] Jones and McGavin 2015.
[50] World Bank 2018.
[51] Afridi and others 2016.
[52] World Bank 2017.
[53] World Bank 2017; Pryke and Howes 2014.

there are opportunities for low- and semi-skilled workers that could be exploited, especially in Australia and New Zealand, where temporary guest-worker schemes exist which target Pacific Islanders (including Papua New Guineans). To date, Papua New Guinea has not utilized its access to schemes like Australia's Seasonal Worker Program (SWP), New Zealand's Recognized Seasonal Employer (RSE) Scheme, or the newly-established Australian Pacific Labour Scheme. In 2018–19, just 128 of a total of 12,200 SWP workers were from PNG, with the remainder sourced from other Pacific island economies (including 3,737 from Tonga, whose population is only 108,000). Just 172 workers (of a total of 12,581) from Papua New Guinea participated in the RSE Scheme.

A walk to the nearest school or health facility can take several hours in many parts of PNG, making limited access to quality and effective services the biggest constraint to improving human capital outcomes. Photo: Tom Perry.

2. Constraints to accelerating progress in building human capital

53.   **Understanding the myriad challenges undermining human development in Papua New Guinea is key to identifying and prioritizing interventions to accelerate progress in this area.** This section first outlines three key contextual obstacles to the country's efforts to scale-up human capital: ethnographic diversity and high population dispersion, relatively weak governance and institutions, and macroeconomic challenges. Next, it analyses sector-specific constraints—health and nutrition, education, and skills development and employment creation for youth

54.   **The country's vast and dispersed highland, coastal, and island geography creates an unparalleled range of ethnographic diversity and physical challenges for service delivery.** Papua New Guinea is estimated to have 850 distinct cultural-linguistic groups.[54] Its population of 7.9 million people is dispersed and scattered[55] over a landmass of 452,860 km². Such a diverse, segmented society is similar to that in other Melanesian countries. The country's varied terrain—coupled with insufficient transport infrastructure to serve a predominately rural population—makes service delivery difficult and costly. Environmental risks, such as earthquakes, floods, and droughts, have severe social and economic impacts.

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[54] See Anere (2004) and Ketan (2007).
[55] The population density is just 15 people per km².

55.   **Governance and institutional weaknesses undermine effective investments in human capital.** While there are several areas of institutional strength in Papua New Guinea, the country ranks poorly on key indicators of institutions and governance.[56] Assessments typically point to the presence of weak and fractious political party structures, shallow policy commitments, public financial management and public investment management shortcomings, misaligned personal and public incentives, clientelism and rent-seeking, and weaknesses in the governance structures of PNG's public sector. These factors impede the government's capacity for effective policymaking and service delivery. They also constrain private sector development through higher costs, elevated uncertainty, and the discouragement of investment.

56.   **Papua New Guinea continues to face macroeconomic challenges to scaling up public spending on human development.** These challenges are analyzed in Part A of this report. Addressing the most pressing structural weaknesses in macroeconomic policy will go a long way to ensure that public services are adequately funded and that the economy is appropriately insulated from commodity-price-induced volatility.

2.1.   Health: critical gaps in services underpinned by low and volatile public spending

57.   **Underlying Papua New Guinea's poor health outcomes are declining coverage and stagnating quality of health services.** The country ranked 172 of 195 countries in 2016 on the health care access and quality index,[57] the second-lowest in the EAP region and on par with Sub-Saharan Africa. Most strikingly, the pace of improvement in Papua New Guinea has slowed over time, to a fraction of the average for EAP and Sub-Saharan Africa. The DHS 2016–18 reported that 74 percent of women face at least one problem in accessing health care, including affordability (63 percent) and distance to a health facility (56 percent).

58.   **Immunization coverage, a key indicator of health system performance, provides clear evidence of these trends.** The DHS 2016–18 indicated that only 35 percent of children aged 12–23 months received all eight basic vaccinations, while nearly one-quarter (24 percent) received no vaccinations at all. The percentage of children receiving no vaccinations increased from 7 percent in 2006 to 24 percent in 2016–18. This is very far from the 93 to 95 percent vaccination coverage needed to achieve population immunity.

59.   **Frontline facilities, which the poor and vulnerable are more likely to use, have relatively low levels of service delivery readiness.** A health facility survey carried out by the World Bank in 2015–16 found low readiness to deliver basic health services at the frontline, with lower readiness at lower levels of care (Figure 30). Furthermore, the availability of basic medical equipment was low and drug stock-outs were widespread.[58] Outreach to remote populations has declined from 42 clinics per 1,000 children in 2010 under-five to 31 in 2018, according to data from the National Health Information System. This national average mask wide variations: East Sepik province, for example, only held eight outreach clinics per 1,000 children in 2018.

60.   **The severe shortage of health workers in Papua New Guinea is compounded by a rapidly aging health workforce, poor regional distribution, and knowledge and skill gaps.** The country has the lowest health worker-to-population ratio in the EAP region. In 2016, 44 percent of all positions were vacant. There are fewer than 500 registered medical officers in Papua New Guinea, with almost one-fifth based in Port Moresby. The average doctor surveyed was able to correctly answer only 52 percent and 59 percent of questions on tests of basic child and maternal health services, respectively.[59]

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[56] See, for example, the Country Policy and Institutional Assessments and the World Governance Indicators.
[57] Lancet, 2018; Volume 391: Issues 2,236-71.
[58] Hou and others 2018.
[59] Hou and others 2018.

61.   **These deficiencies in service delivery are directly related to: (i) low and declining public spending on health; (ii) volatile and unpredictable public sector allocations; and (iii) waste and inefficiencies in public spending.**

62.   **Total and public expenditures as a share of GDP are exceptionally low** compared to the average for Pacific Small States as well as EAP overall, excluding high-income countries (Figure 31). Public health spending has declined in recent years, falling by 6.6 percent in 2015–16 and 5.7 percent in 2016–17. Except for medical supplies, budget cuts have been experienced across all programs. Central transfers for health service delivery to the provincial level have, however, increased significantly in recent years. Two main funding sources—Health Function Grants and the Free Healthcare Policy funding—now provide significant funding for service delivery at the provincial level. The share of health in general government health expenditures has, however, remained above the average for lower-middle-income countries.[60]

Figure 30. Service Availability and Readiness Indices by Facility Level*

Figure 31. Total and Public Health Spending as a share of GDP
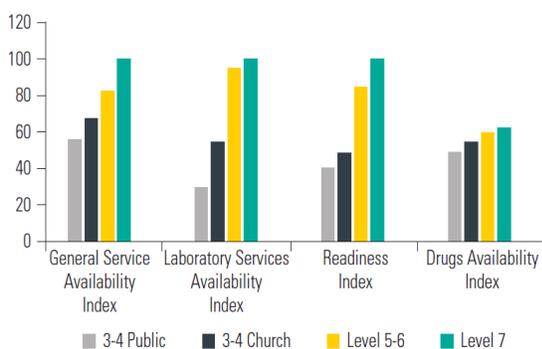
Sources: Hou et al. 2018.
Notes: *The Service Availability and Readiness Index reflects percent of all aspects satisfied by health facilities in a category. To illustrate a score of 80 would mean that 80 percent of the readiness indicators were satisfied.
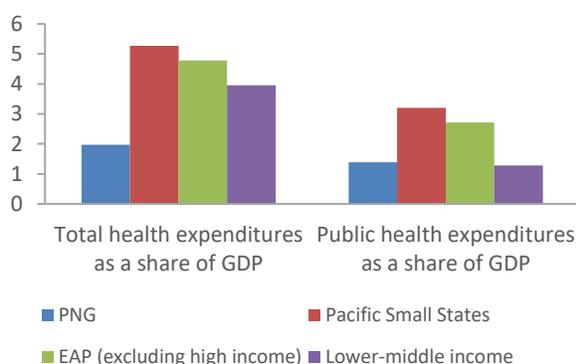
Source: World Development Indicators 2019.

63.   **With the government accounting for 62 percent of total health expenditure, volatility in budget allocations for health—as well as delayed and unpredictable flow of funds—have a direct impact on health service delivery.** From 2012 to 2017, year-on-year changes in the health budget varied by between 20 and 60 percent (Figure 32).[61] The volatility has mirrored the macro-fiscal environment; spending on health has been mostly procyclical. In 2012, 29 percent of health centers and 54 percent of aid posts did not receive any support (in kind or cash) and had to rely solely on out-of-pocket payments.[62] Figure 33 shows the variability in the cash release from the Health Function Grants during 2008–12. In 2017, no funds appropriated under the Health Function Grant were disbursed.

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[60] GHED; Hou and others 2017; ADB 2019.
[61] Papua New Guinea 2018.
[62] Howes and others 2014.

Figure 32. Government Health Sector Operational Budgets, Warrants and Expenditures (2010–17, Kina millions)

Figure 33. Cash Release for Health Function Grant by Province and Region (2008–12)
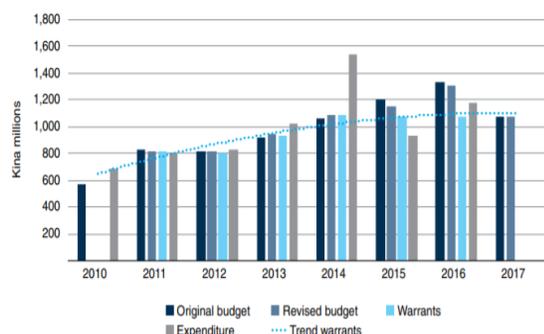
Source: Department of Treasury from IFMS 2017 data.
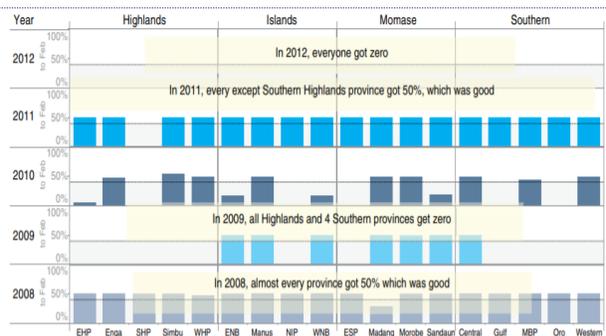
64.   **While public health spending is low, inefficiencies in how public funds are allocated and used further undermine effective service delivery.** The architecture of health financing in Papua New Guinea is decentralized and fragmented. Budget allocation and spending decisions are made by different actors with limited coordination, particularly between operational and capital investment components of the budget, particularly the Provincial and District Service Improvement Programs. Weak information flows further compound the inefficiencies this creates. Visibility into the resources channeled to health is limited. Different agencies across the government receive siloed, incomplete, and untimely reporting data. Moreover, audits are not carried out in a complete and timely manner, and there are significant deficiencies in the quality and timeliness of financial data.

65.   **The country is entering a period of transition in external assistance for health**. Development partner funding accounts for roughly 25 percent of total health expenditure in Papua New Guinea.[63] The country entered the accelerated transition phase for the Vaccine Alliance (GAVI) in 2016, which requires the government to increase its share of co-financing for vaccines while GAVI's contribution gradually decreases. Over the short-to-medium term, the amount of funding available from development partners is likely to either fall or remain constant overall. Planning for potential reductions in external assistance is further complicated by the fact that only 16 percent of this support was on budget as of 2016, according to the National Department of Health.

2.2.   *Nutrition: a multidimensional challenge*

66.   **Constraints to reducing malnutrition in Papua New Guinea are multidimensional.** There are two immediate causes of child undernutrition: (i) nutrient intake—not having enough or the right kinds of food to eat; and (ii) illness, which influences the body's energy needs and ability to absorb and store nutrients. These, in turn, are influenced by broader social and institutional factors. Recent data highlight the following drivers of malnutrition, specifically stunting, in Papua New Guinea:

➢ **Young maternal age.** Twelve percent of women begin childbearing between ages 15 and 19. Moreover, younger women also tend to have birth intervals that are lower than the recommended 24 months. Fifty-five percent of mothers aged 15–19 had a birth interval of 7–23 months. Shorter birth intervals harm maternal nutritional status with consequent adverse implications for mothers' health and babies' health and nutritional status.

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[63] Papua New Guinea 2018.

➢ **Poor maternal nutrition.** Poor nutrition during pregnancy impacts the development of the baby in utero and leads to delivering a low birthweight baby. Low birthweight babies are at greater risk of stunting. While overall incidence of low birth weight in Papua New Guinea is 7.9 percent, the rates are higher in the Southern Region (22.8 percent).

➢ **Poor infant and young child feeding practices.** The introduction of appropriate complementary foods for infants and young children after six months is a second critical concern. Only 18 percent of children age 6–23 months have a minimum acceptable diet.[64]

➢ **Inadequate use of and access to health services.** The health system is responsible for the delivery of services that address the immediate causes of undernutrition. Increasing the coverage of a core set of cost-effective interventions to 90 percent can reduce stunting by 20 percent. However, coverage levels for these interventions in Papua New Guinea are currently well below 90 percent.

➢ **Illness—malaria and diarrhea, in particular—are associated with a higher risk of stunting.** The country's entire population is at risk of malaria, and 94 percent of the population live in potentially high transmission areas (>1 case per 1,000 people).[65] Yet, only 52 percent of children under five and 49 percent of pregnant women sleep under an Insecticide Treated Net, and only 24 percent of women received the full course of intermittent preventive treatment for malaria when pregnant.[66] The prevalence of diarrhea is high, with 14 percent of children under age five reported to have diarrhea in the previous two weeks.[67] Diarrhea is among the top reasons for hospitalization of children and is one of the most common causes of child death.

➢ **Limited access to improved water and sanitation facilities and poor hygiene practices increases susceptibility to diarrhea.** Less than half (46.9 percent) of households have an improved source of drinking water. Only 11 percent of households treat their drinking water appropriately. Seventeen percent of households practice open defecation while only 30 percent of households (predominantly urban) have improved sanitation facilities.

➢ **Women's empowerment and education.** Papua New Guinea ranked 143 of 159 countries on the UNDP's 2015 Gender Inequality Index, which reflects gender-based inequalities across the three dimensions of reproductive health, empowerment, and economic activity. It is estimated that 70 percent of women in Papua New Guinea have experienced some degree of physical or sexual assault in their lifetime.[68] High levels of Gender-Based Violence (GBV) have a direct impact on women's ability to participate in economic activity and also on their access to health, family planning, and nutrition services given large distances to health facilities and limited outreach and community-based service delivery.

67.   **Rapid economic growth during 2005–15 did not translate into reductions in stunting.** Indeed, the stunting rate for children *increased* from 43.5 percent to 49.5 percent during the period.[69] While economic growth and poverty reduction are critical to reducing the incidence of stunting, a multi-sectoral response that includes health, water and sanitation, education, and women's empowerment are all important for addressing stunting.

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[64] DHS 2016–18.
[65] WHO, World Malaria Report 2015.
[66] DHS 2016–18.
[67] DHS 2016–18.
[68] Medecins San Frontieres 2016.
[69] IFPRI 2016- Global Nutrition Monitoring Report.

2.3. Education: a crisis in school completion and quality of learning underpinned by low public spending

68.   **Although access to basic education increased rapidly in Papua New Guinea over the last two decades, primary and secondary school completion rates remain stubbornly low.** Enrollment in primary education is on par with comparator countries, while participation in secondary education lags far behind. The gap between the net and the gross enrolment rate in pre-tertiary education indicates an over-age issue (Figure 34). On average, children enroll in elementary school at an age that is at least 1.5 years older than the official age of school entry (six years old). Around one in five children will drop out of primary school, and one in three children will not complete lower secondary education.

Figure 34. The Net and Gross Enrollment Rate of Pre-tertiary Education, 2016
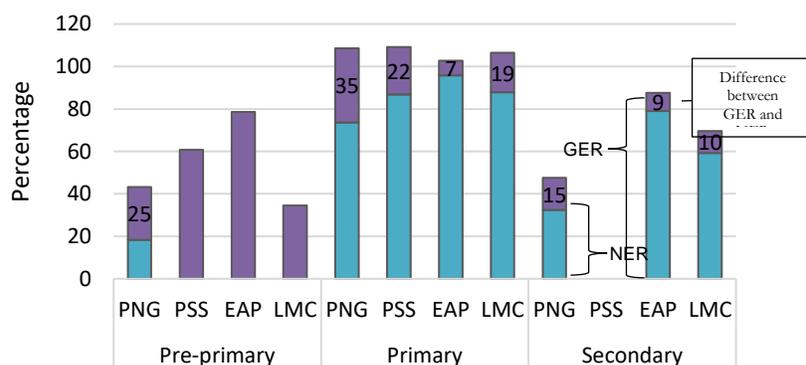
Source: Department of Education; World Bank staff calculations.
Note: NER of pre-primary education for Pacific Island Small States (PSS), East Asia & Pacific (EAP), and lower-middle-income countries (LMC) is not available. NER and GER of secondary education for Pacific Island Small States are not available.

69.   **Geographic, socioeconomic, and gender inequalities characterize access to education.[70]** Students in remote areas performed worse in EGRA and EGMA compared with their urban counterparts, and PILNA 2015 revealed large variations in literacy achievements across provinces as discussed in the previous section (Table 6 and Table 7) and shown below (Figure 35). Data from the Global Program in Education show that gender parity is achieved in elementary and primary school. The Gender Parity Index (GPI)[71] remains low (less than 0.85) in secondary education, although girls perform as well as boys once they enroll. Girls have higher dropout rates at key transition points (Figure 36) and are more likely to miss school due to domestic duties.

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[70] Engele, Dienier, and Lokes 2013; Howes and others 2014.
[71] The GPI, compiled by UNESCO, is a socioeconomic index usually designed to measure the relative access to education of males and females. In its simplest form, it is calculated as the quotient of the number of females by the number of males enrolled in a given stage of education (primary, secondary, and so on). A GPI equal to 1 signifies equality between males and females. A GPI of less than 1 is an indication that gender parity favors males while a GPI greater than 1 is an indication that gender parity favors females.

Figure 35. Percent of Grade Five Student at or above Level Five in Literacy by Province, PILNA 2015
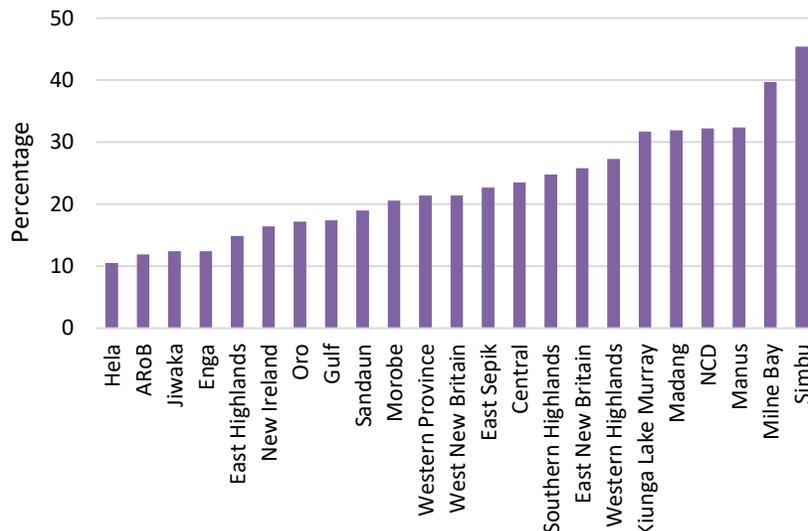
Source: Global Partnership for Education.

Figure 36. Grade Progression Rate and Gender Parity Index by Grade (2016)
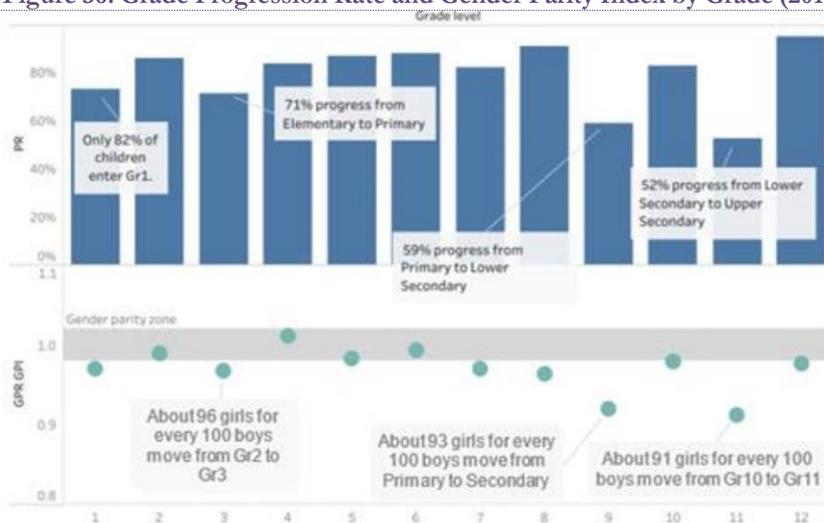
Source: Global Partnership for Education.

70.   **Three key factors underlying poor schooling outcomes are (i) lack of access to early childhood education (ECE); (ii) insufficient learning materials; and (iii) shortcomings in pedagogy.** All three are related to low levels of public spending on education. In addition, lack of adequate connective infrastructure—roads, bridges and ferries—is an overarching constraint. The focus in this chapter is on investments specific to the human development sectors.

71.   **Attendance of ECE programs is positively related to higher literacy and numeracy skills but is not available to everyone.[72]** A study conducted in the Central, Madang, and Morobe provinces found a

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[72] In a significant policy change in January 2020, the Education Minister announced that there would no longer be elementary schools and that instead they would be converted to early childhood education facilities. The responsibility of the early childhood education system will be given to the local government and the district development authority.

significant positive impact of ECE attendance on identifying letters and numbers, words in English and Tok Pisin, skip counting, and simple calculation (addition and subtraction). Another study conducted in the East Sepik, Eastern Highlands, and Autonomous Region of Bougainville provinces suggests that students with ECE experience are more likely to identify almost two additional letters compared with their peers without ECE experience. The positive effects vary considerably across locations and provinces, with the lowest beneficial effects in schools furthest from urban centers.

72.   **The lack of curriculum materials such as textbooks and quality age-appropriate reading materials in many schools is a severe barrier to early grade literacy, especially in remote communities**. The classroom learning environment in Papua New Guinea is generally print-poor. Despite the rollout of a new standards-based curriculum in elementary and primary schools, most classrooms do not have enough SBC readers or storybooks. Shortages in Tok Pisin and Tok Ples reading materials are more acute.

73.   **Shortcomings in the quality of teachers and teaching methods are a crucial constraint to improving education outcomes.** Most teachers in Papua New Guinea did not complete upper secondary education and have average schooling of eight years.[73] Although students are allowed to ask questions, role play, and work individually or in small groups, teachers primarily use the traditional "chalk and talk" method of teaching. As such, students may not spend sufficient time practicing, applying, and consolidating new knowledge during class. In addition, students rarely receive individualized support from the teacher. Formative and summative classroom assessments are rarely used to monitor students' learning progress. The different languages spoken by students and teachers could also complicate the situation.

74.   **The poor quality of education services is directly associated with underspending in education.** Public spending on education as a share of total government expenditure declined from 20 to 16 percent between 2012 and 2018 (Figure 37). In 2018, public spending on education constituted 3 percent of GDP. Grants and transfers to provincial governments absorbed the bulk of education spending (70 percent), while only one-third of spending was managed at the central level. Payroll for teachers accounted for 78 percent of total education expenditure. Donors fund an average of around ten percent of education spending. Weak execution of allocated budgets further undermines effectiveness of available public sector resources.

75.   **The 2020 budget introduced major changes that may further undermine service delivery and access.** School fees were reintroduced through the end of secondary school. Tertiary education will be subsidized through an interest-free student loans program known as the Higher Education Loan Program (HELP). The Tuition Fee Free (TFF) Education Policy, now called the Government Tuition Fee Subsidy (GTFS),[74] will have two components—a School Operations and Functional Grant of K 388,351,600 (80 percent) and a Commodity component of K 98,000,000 (20 percent). The TFF Program introduced in 2012 was associated with a rapid increase in enrolment. TFF was successful in reducing financial costs to families, with most schools receiving the subsidy. The new policy will likely impact the poorest in society by minimizing the funding of schools and directing that towards universities;[75] this may have flow-on effects over time into the economy, with a smaller pool of school leavers potentially ready for tertiary education.

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[73] Inamuka and others 2019; Johnston and others 2018; Smith and Simoncini 2018.
[74] PNG Post-Courier 2020c.
[75] Deloitte 2019.

Figure 37. Total Government Expenditures and Government Expenditures on Education, 2012–18
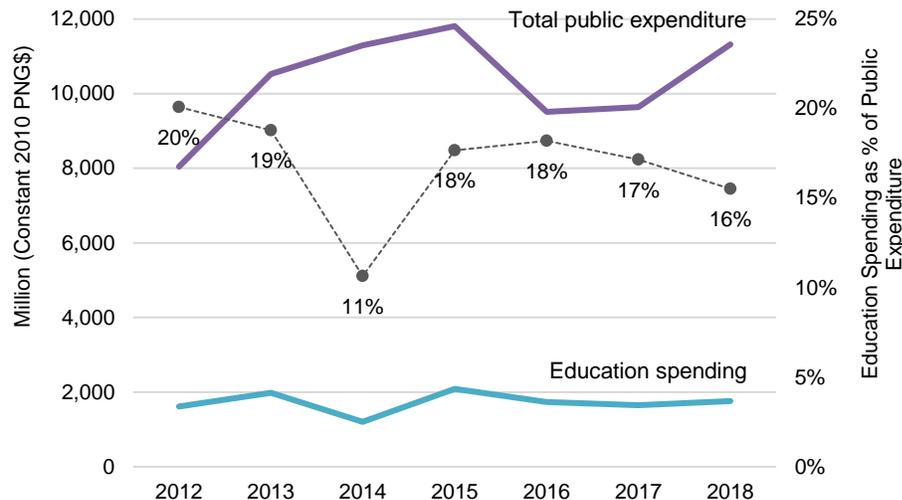
76.   **High rates of student absenteeism have a negative impact on schooling outcomes**. One study conducted in the Jiwaka, Simbu, Western Highlands, and West New Britain provinces shows that a significantly higher proportion of students who did not miss school could read compared to those who missed school (74 versus 55 percent).[76] Many students are missing half or more of the school week. The high student absenteeism rate is mostly due to sickness, followed by domestic duties. The high teacher absenteeism rate may also have a negative impact on student attendance.

77.   **Students with literate parents—literate mothers, in particular—perform better in numeracy; this effect is particularly profound on girls**.[77] Parents also play an important role in creating a positive reading culture outside of school that will help children form healthy reading habits, leading to later success in reading at school.[78]

2.4.   *Skills development and employment: skills gaps and mismatches between demand and supply*

78.   **Papua New Guinea suffers from skills gaps and mismatches between the demand and supply of skilled labor.** The large number of foreign workers that are employed in the economy reflects the inadequate domestic supply of skilled labor. Work permit data provides an insight into the extent that firms are relying on foreign workers and can be used to identify skills gaps or mismatches between labor demand and supply in the economy. The government issued 15,994 work permits for foreign workers in 2012 at the height of the construction phase of the LNG project.

79.   **Many work permits were issued for semi- and low-skilled workers during the LNG construction period in 2012, with the number of permits declining significantly afterward** (Figure 38). Work permits issued for low-skilled workers were primarily for those working in construction and mining; for semi-skilled workers, work permits were granted to skilled forestry and fisheries, engineering, technicians and

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[76] Inamuka and others 2019.
[77] Inamuka and others 2019.
[78] Johnston and others 2018.

trades workers. For high-skilled occupations, the number of work permits issued peaked in 2014, which could be associated with the commencement of the LNG production phase.

Figure 38. Work Permits by Skill Level, 2012–18
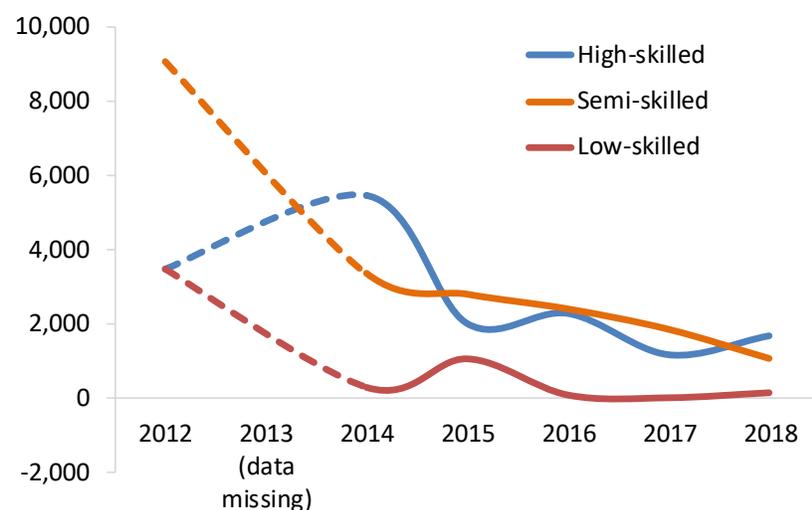
Source: World Bank staff calculations based on official data by Papua New Guinea Department of Labor and Industrial Relations.
Notes: Skill levels are based on the ILO 2008 International Standard Classification of Occupations (ISCO-08) skill level classification framework, which groups occupations based on the level of formal education, on-the-job training, previous experience and the nature of the work performed.

80.   **It is reasonable to assume that PNG will continue to rely on foreign labor for high-skilled occupations,** given the significant investments in education required to fill these positions domestically and the employment opportunities overseas that are enjoyed by high-skilled Papua New Guineans. Yet the reliance on foreign workers for semi-skilled and, to a lesser extent, low-skilled jobs presents an important economic loss that should be addressed in the short and medium terms, given the country's large and growing pool of young labor.

81.   **The failure of the domestic labor market to fill low- and semi-skilled jobs created by the LNG project and its associated economic boom points to critical challenges.** These challenges include: (i) lack of basic soft skills; (ii) underfunding and fragmentation of the TVET sector; (iii) skills mismatch between investments in education and labor market needs; (iv) supply-side issues related to the *wantok* system; and (v) gender-related challenges on both the supply-side (responsibilities at home) and demand-side (gender discrimination at work).

82.   **The acute lack of basic soft skills among unemployed Papua New Guineans discourages demand for local workers and hinders their movement between jobs, occupations, and sectors.** Employers consistently point to a lack of soft skills among job seekers as a barrier to recruitment.[79] In a survey undertaken in 2017, 71 percent of employers surveyed confirmed that 'human factors'—including poor staff productivity and poor attendance—affected their willingness to hire staff.[80] Data from the Urban Youth Employment Project also show that a disconcerting 46 percent of the project participants reported having been involved in criminal activity.[81]

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[79] Deloitte and UNDP 2017; Jones and McGavin 2015.
[80] Deloitte and UNDP 2017.
[81] Ivaschenko and others 2017.

83.   **Underfunding and fragmentation of the TVET system have also played a role.** Government oversight of the TVET sector takes place across a number of departments and agencies, coordination among which is a challenge. Key government stakeholders in TVET include: the Department of Higher Education, Research, Science and Technology (DHERST), which oversees higher education institutions (some of which offer TVET courses); the Department of Education, which manages Technical and Business Colleges and administers the TVET scholarship program; the Department of Labour and Industrial Relations, which is responsible for establishing a labor market information system[82] and which houses the National Training Council (NTC); the National Apprenticeship and Trade Testing Board; and provincial-level governments which manage most Vocational Training Centres (the VTC in the National Capital District is an exception, as it is managed by the Department of Education). The government's National Higher and Technical Education Plan 2015–24 acknowledges fragmentation as an issue, and flags reforms which would consolidate many of the above roles. But implementation has been slow.

84.   **Another challenge relates to the supply of labor, which in PNG is adversely influenced by incentives that arise from the *wantok* support system and the social acceptance of so-called "subsistence affluence."** As income earners are required to support *wantoks* without or with little income, there is a disincentive for dependents to seek their own income, or for individuals who earn an income to maintain employment or seek positions with a higher income. *Wantokism* can thereby discourage labor force participation. At the same time, subsistence agriculture, coupled with gift exchange relationships under the *wantok* system, provides minimum, accepted levels of material satisfaction (such as food and shelter) in much of Papua New Guinea, despite underutilization of available labor and land resources.[83]

85.   **The gender gap in access to formal jobs results from a combination of factors, including educational disadvantages and issues related to the transition from school to work.** Women have considerably lower enrolment and completion rates in all post-primary education levels (as discussed in the previous section). This disparity manifests in other disadvantages, including lower financial literacy and the ability to understand government regulations related to operating businesses as well as a lack of female role models. Social expectations also contribute to limiting women's opportunities in the formal sector. An unpublished analysis by Vogt-Graf (2018) suggests that Papua New Guinean women shoulder an unequal share of household chores and face resistance from unsupportive partners/husbands when seeking jobs. They are also under excessive pressure to provide support to *wantoks*. Female Papua New Guineans face additional obstacles when seeking employment or starting their own business. These include the high rate of teen pregnancy, lack of access to safe transportation, and inheritance and ownership laws that make it difficult for women to use land as loan collateral.

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[82] Papua New Guinea presently has no labor market information system (LMIS) in place, although the government has recognized the establishment of one is a priority. This is a key constraint to adequate human resource planning.
[83] Jones and McGavin 2015.

The future growth and productivity of PNG will be determined by the investments the country makes in its children. Photo: World Bank

3. Recommendations and priorities for improving human capital outcomes

86.   **Advances in human capital— health, knowledge, skills, and resilience —have driven economic growth and lifted millions of people out of poverty around the world.** The extraordinarily rapid economic development of the East Asian miracle economies was due, in large part, to their efforts to improve human capital. Simulations carried out for this report show that if Papua New Guinea's HCI gap is closed by roughly five percent every five years, the HCI will increase to 0.49 by 2050, implying a 13.5-percent increase in Papua New Guinea's future GDP relative to the baseline estimate for 2050 (Figure 39). If, on the other hand, the country's HCI gap is closed at a much faster rate—the same rate as the 75th percentile of top performers—its HCI will increase to 0.58 by 2050, leading to a 31.2-percent increase in GDP relative to the baseline. Annex 2 includes details on the methods and assumptions to make this calculation, as well as the impacts on poverty.

Figure 39. GDP per Capita Projections
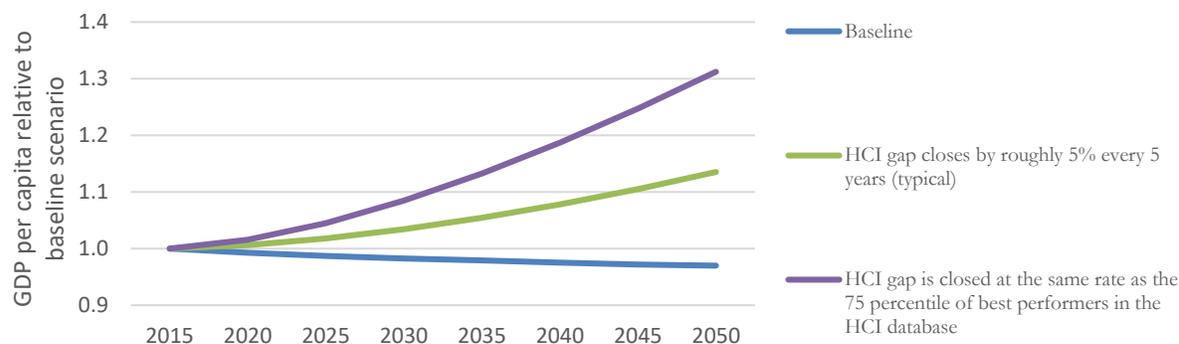
Source: World Bank staff estimates following Collin and Weil (2018).

87.   **Papua New Guinea's performance on the HCI and the challenges described in this report point to seven areas where critical action is needed to accelerate progress on human development**. These are (i) fostering strong leadership and mobilizing a multi-sectoral response; (ii) financing the human capital agenda; (iii) accelerating the demographic transition; (iv) combatting stunting; (v) bolstering the frontlines of health service delivery; (vi) arresting the crisis in learning; (vii) addressing skill gaps.

3.1.   *Fostering strong leadership and mobilizing a multi-sectoral response*

88.   **Papua New Guinea is a World Bank Human Capital Project Early Adopter, a sign of the government's high level of commitment to the human capital agenda.** It is part of a small group of countries that have expressed a commitment to accelerating human capital development. Moreover, over the past five years, the government has made high-level commitments, including the introduction of Tuition Fee Free education, a National Nutrition Policy, National Water and Sanitation Policy, and a "back-to-basics" approach for health. The Medium-Term Development Plan (MTDP III) also consistently highlights the need to invest more and better in human capital. In April 2016, Papua New Guinea joined the global Scaling Up Nutrition movement and adopted a multisectoral nutrition policy.

89.   **What is needed now are the effective implementation and coordination of these initiatives.** Strong managerial and leadership capacity of public servants across all levels and institutions of government is essential. Moreover, a whole-of-government approach lead by Treasury and the Department of National Planning and Monitoring would ensure effective coordination of a multi-sectoral approach. Improvements are also needed in ensuring that policy-makers and service providers have access to timely and accurate data to improve planning, implementation, and monitoring processes.

3.2.   *Financing the human capital agenda*

90.   **A necessary, but not sufficient, condition for improving human capital will be to increase the level and quality of public investments in human capital.** Current levels of public spending on health, education, and skills development are exceptionally low relative to GDP and the region. With the medium-term economic outlook revised downwards and associated challenges to domestic revenue generation, attention is needed to prioritize the health and education sectors in the government budget. Ensuring that funds are allocated in line with service delivery responsibilities and priority sectors, improving the timeliness and predictability of fund disbursement to support improvements in budget execution, and addressing accountability and transparency weaknesses in the public finance system will also be critical. Finally, there is scope for improving efficiency and quality of spending across sectors.[84]

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[84] World Bank Public Expenditure Review, 2006.

3.3. Accelerating the demographic transition

91.   **Fertility and GDP per capita are negatively correlated.** Reducing fertility will increase per capita growth by increasing the number of working-age people relative to dependents. An increase in growth should lead to improvements in Papua New Guinea's HCI (Figure 40). As such, concentrating efforts on supporting the human capital accumulation and ensuring sustainable population growth will help to improve human capital. Papua New Guinea has already drafted a National Population Policy; support will be required to implement this policy.

Figure 40. Fertility, GDP and HCI
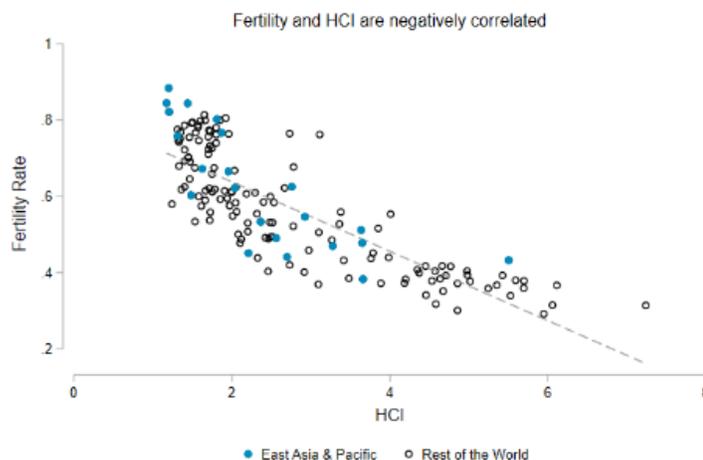
Source: World Bank.

92.   **Action is needed to reduce fertility and promote sustainable population growth,** including by improving effective access to reproductive health and family planning through the health system; social and behavior change to create awareness of the value of postponing first births and extending birth intervals; and, investing in girls' education. Data from the DHS indicates that Papua New Guinea's total fertility rate declines with increasing education, from 4.6 among women with no education or primary education to 3.1 among women with higher education. In short, more years of education and more learning during those years, could help lower fertility rates further and faster. Improving access to and the quality of education not only has a direct impact on accumulating human capital but can also have indirect effects on human capital by reducing the fertility rate.

3.4. Combatting stunting

93.   **Supporting the implementation of the National Nutrition Policy is key.** Addressing stunting requires actions across sectors and across the lifecycle (Figure 41), starting at conception, well before children are born. The National Nutrition Policy presents an evidence-based framework for multisectoral action on nutrition at the national, subnational, and community levels under the leadership of the Department of National Planning and Monitoring. Implementing this policy will require effective coordination. In the decentralized Papua New Guinea context, establishing a national and provincial multisectoral coordination mechanism to provide leadership, oversight, and accountability will be an essential first step to implementing the policy.

Figure 41. Interventions to Reduce Stunting
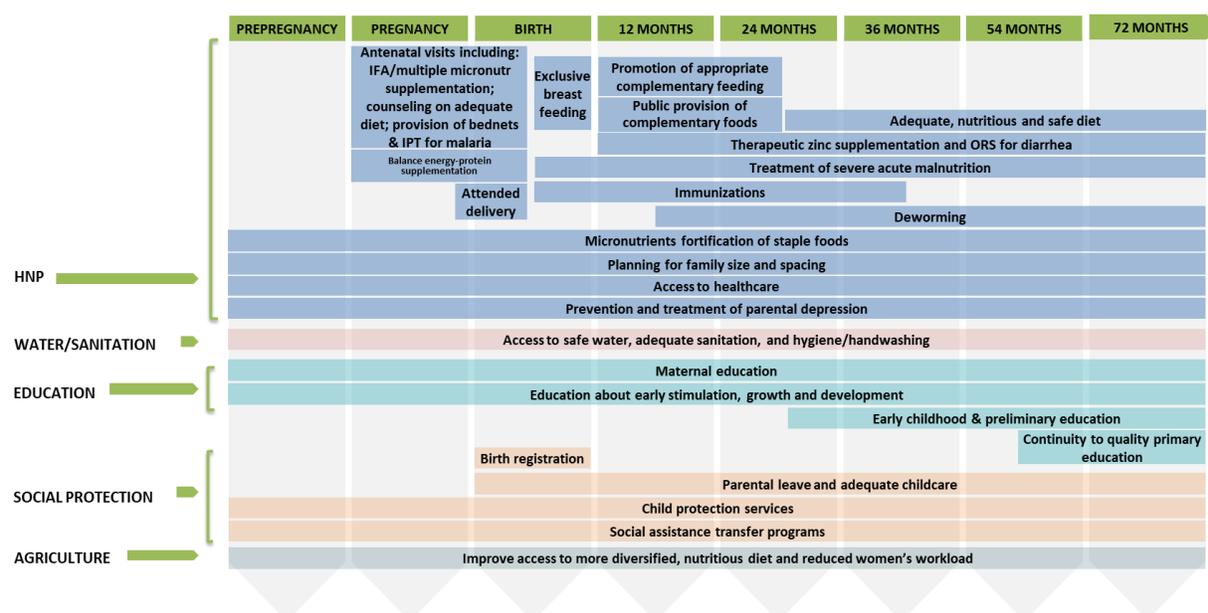
Source: Denboba and others 2014.

3.5.   *Bolstering the frontlines of health service delivery*

94.   **Supporting the implementation of the 'back-to-basics' approach adopted by the National Health Plan (NHP) is vital**. PNG must strengthen the quality and coverage of basic health nutrition and population services delivered at the frontlines. The NHP 2011–20 sets the goal of strengthening primary health care for all and improving service delivery with a specific focus on the rural majority and urban disadvantaged. The emphasis on going back-to-basics is expected to continue in the next NHP 2021–30, which is currently under preparation.

95.   **Strengthening frontline service delivery through implementing the back-to-basics approach implies the following.** *First,* frontline health services would need to be resourced appropriately, and the accountability and predictability of public funds enhanced. *Second,* the roll-out of the Provincial Health Authority reforms provides an opportunity to consolidate health financing and service delivery with a focus on enhancing frontline service delivery. *Third*, aside from resourcing and allocation issues, the government also needs to strengthen the distribution and quality of the health workforce as well as health management information systems. *Fourth,* connective infrastructure, such as roads, water transportation and information and communication infrastructure, needs to be improved to enable health workers to get to facilities and villages, facilities to be well stocked with drugs and supplies and patients to get to facilities.

3.6.   *Arresting the crisis in learning*

96.   **Prioritizing within the National Education Plan (NEP) 2020–29 will be necessary given the medium-term fiscal and economic outlook.** The NEP includes nine areas covering all levels of education. Priority should be given to the following. *First,* focusing on learning with an emphasis on literacy. The recent initiatives of BEST PNG, Pikini Kisim, BOOST, and RISE are introducing effective methods for teaching literacy and provide models for the development of a more comprehensive government program. The scale-up of these programs would need to be complemented by adequate investments in inputs and teacher quality.

Second, continuing the extraordinary progress made by the Tuition Fee Free Education policy in providing children access to education, particularly the most disadvantaged. *Third,* addressing inequities by increasing girls' retention rate in school and transition rate to secondary education, reducing urban-rural gaps, and building an inclusive environment for students with disabilities. The World Bank's recent initiative of ending Learning Poverty has a target of halving global illiteracy from its current level of 50 percent to 24 percent.[85] Papua New Guinea could also set its own literacy targets. *Fourth,* connective infrastructure, such as roads, water transportation and information and communication infrastructure, needs to be improved to enable students and teachers to attend school regularly.

3.7. Taking urgent action to address skill gaps

97.   **Papua New Guinea's growing youth bulge and large numbers of unskilled youth already in the labor market due to deficiencies in the education sector mean that skills development is a priority.** The decline in recent years of formal sector employment (and the use of foreign workers where jobs are available) and the expectation of future economic growth linked to the development of a second LNG project make skills development all the more important. The government has prioritized skills development in Vision 2050 as well as the National Higher and Technical Education Plan 2015–24. The challenge for the government is to ensure that the necessary reforms are undertaken in a timely manner. Some options to consider are upskilling through job placements and apprenticeships, on-the-job training and investments in TVET. To benefit fully from the Papua LNG Project, which is expected to generate up to 10,000 jobs during its construction phase, the government will need to address skills gaps urgently.

98.   **Skills development in Papua New Guinea should prioritize the following.** *First,* prioritize the development of skills required in low- and semi-skilled occupations, as these can more readily be undertaken by Papua New Guineans with modest investments in quality education and training such as unskilled youth already in the labor market. *Second,* ensure that policies associated with the employment of foreign workers are such that they meet the dual objectives of (i) enabling employers to recruit overseas where skills are not available locally to expand the skill base, while (ii) providing them with incentives to recruit and train local staff where possible, including over the long term. *Third,* develop feedback loops by which investments in scholarships, job placements, TVET and active labor market policies are informed by labor market needs. *Fourth,* promote women's access to formal sector employment. *Finally,* temporary guest worker programs offer potential employment. For Papua New Guinean to maximize the take-up of such opportunities, sending arrangements need to be improved, including greater transparency in the job-matching and deployment process.

4. Conclusions

99.   **The investments Papua New Guinea makes in its children will determine the future growth and productivity of the country.** Papua New Guineans born today will usher in the 22nd century and deal with new opportunities brought about by technology and globalization, as well as new challenges wrought by climate change. Good health, knowledge, skills, and resilience will be vital for facing up to these opportunities and challenges. The government has a solid foundation in place in terms of policies and initiatives to strengthen human capital. The goal is to ensure that these policies are implemented effectively and adequately resourced. Doing so will make it possible for all Papua New Guineans to achieve their full potential.

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[85] World Bank 2019.

Annexes

Annex 1. Selected Economic and Social Indicators

	2015	2016	2017	2018 Est.	2019 Est.	2020	2021	2022
						Projections		
National income and prices	*(In percent, unless otherwise indicated)*							
Nominal GDP (US$ billions)	21.7	20.8	22.7	23.4	25.0	25.5	26.0	27.8
Real GDP growth, *of which:*	9.5	4.1	3.5	-0.8	5.6	2.9	2.9	3.0
Extractive sector (percentage point contribution)	12.8	2.4	1.9	-3.2	3.9	0.9	0.5	-0.3
Non-extractive (percentage point contribution)	-3.3	1.7	1.7	2.4	1.6	2.0	2.3	3.3
Consumer price inflation, period average	6.0	6.7	5.4	4.7	3.9	4.5	5.5	5.7
GDP deflator	-3.9	3.9	7.7	7.1	4.1	3.8	5.4	3.9
Real exchange rate change, US$/PGK*	-5.9	-6.9	1.4	-1.0	-1.0	-2.1	-2.9	3.6
Fiscal accounts	*(In percent of GDP, unless otherwise indicated)*							
Revenue and grants	18.3	16.1	15.9	18.3	14.8	15.4	15.4	15.6
Non-resource tax revenue	14.9	12.8	12.4	12.6	11.4	11.8	12.0	12.2
Resource revenue	1.1	0.6	0.9	1.9	1.4	1.5	1.5	1.5
Grants and other revenue	2.3	2.7	2.5	3.8	2.0	2.1	1.9	1.9
Expenditure and net lending	22.4	20.9	18.4	20.9	19.5	21.2	19.4	18.1
Primary expenditure	20.6	18.9	16.1	18.4	17.0	18.8	17.1	15.9
Interest payments	1.8	1.9	2.3	2.5	2.5	2.4	2.2	2.2
Overall fiscal balance	-4.1	-4.7	-2.5	-2.7	-4.7	-5.8	-4.0	-2.6
Non-resource primary balance (% non-extractive GDP)	-4.5	-4.5	-1.6	-2.7	-5.1	-6.9	-4.5	-2.5
Net public debt	30.7	34.6	35.9	36.7	38.0	42.0	44.0	43.7
Gross government debt and guarantees	30.7	34.6	35.9	38.3	38.0	42.0	44.0	43.7
Gross government savings	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
External accounts	*(In millions of U.S. dollars, unless otherwise indicated)*							
Exports, f.o.b., *of which:*	8,425	8,202	9,958	10,181	11,507	11,690	11,850	11,759
Extractive sector	7,199	6,730	8,335	8,805	10,191	10,373	10,486	10,313
Imports, c.i.f.	-2,559	-2,077	-3,066	-3,203	-3,139	-3,207	-4,304	-4,931
Current account	4,643	5,371	5,718	5,938	6,925	6,664	4,647	2,335
(in percent of GDP)	21.4	25.9	25.1	25.4	27.7	26.1	17.9	8.4
Overall balance of payments	-440	-184	36	517	101	345	-97	1,074
Gross official reserves	1,865	1,681	1,717	2,235	2,335	2,680	2,583	3,657
(in months of goods and services imports)	7.1	4.3	4.3	5.7	5.5	4.4	3.3	3.8
(in months of non-extractive imports)	24.4	12.0	9.9	13.7	14.0	11.5	10.0	12.6
Money and credit	*(In percent, unless otherwise indicated)*							
Broad money growth	8.0	10.9	-0.9	-3.8	2.5	7.3	6.3	5.9
Domestic credit growth	15.8	24.6	-0.1	-7.9	5.4	5.6	4.0	3.8
Growth of credit to the private sector	3.4	7.2	-3.8	7.4	9.4	6.9	6.9	8.4
Interest rate of 182-day T-bills, period average	7.1	7.4	7.1	7.0	6.8	7.1	8.6	8.2
Social indicators								
Population, total (millions)	8.1	8.3	8.4	8.6	8.8	8.9	9.1	9.3
Population growth (percent)	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9
Life expectancy at birth (years)	65.4	65.5	65.7	65.9	..	..	..	..

Sources: Official data; World Bank staff estimates and projections.
Note: * An increase represents appreciation and a decrease is depreciation.

Annex 2: Response Simulations of Income and Poverty to Improvements in Human Capital

Methodology and Data Sources

This analysis estimates the effect of increasing human capital investments on economic growth and poverty in PNG. This analysis follows the methodology outlined in Collin and Weil (2018), where world-level and country-level projections of the effect of increasing human capital investments on economic growth and poverty between 2015 and 2050 are calculated. Papua New Guinea is not included in this global simulation due to a lack of key macroeconomic data required for the simulations. Namely, estimates of Papua New Guinea's capital stock and gross capital formation are missing in the data used in Collin and Weil's analysis. For capital stock, a country's 2014 value of capital stock is used (from the Penn World Tables 9.0). For the investment rate, Collin and Weil rely on the World Bank's measure of gross capital formation as a percentage of GDP. It is assumed that the investment rate remains constant and takes on the value of the country's average over the 2006–15 period.

To make up for this data gap, we use available estimates of the capital stock and gross capital formation of Papua New Guinea. Gross fixed capital formation as a share of GDP is calculated over the period of interest (from 2006 to 2015) using data from the United Nations Statistics Division[86] by dividing the yearly Gross Fixed Capital Formation (including acquisitions less disposals of valuables) by the corresponding GDP. Papua New Guinea's capital stock is instead derived from the United Nations Office for Disaster Risk Reduction's *Global Assessment Report on Disaster Risk Reduction 2015,*[87] in which the country's capital stock is estimated at US$ 47,018 million in 2014. This amount is then converted into PPP (constant 2011 international $) terms for conformity with the Collin and Weil 2019 global dataset as follows:

Capital Stock, PPP (constant 2011 international US$) = Capital Stock (current US$) * (GDP deflator 2011 / GDP deflator 2014)[88]
Which yields an estimate of US$ 44,496 million PPP (constant 2011 international $) for PNG's 2014 capital stock.

Based on this model, Papua New Guinea's human capital per worker, GDP per capita, and poverty rates are simulated for this report under different scenarios: one in which the current status quo continues, and others in which a child gets better (or full) education and health. Specifically, there are two scenarios in additional to the baseline/constant scenarios: (i) the typical scenario: under which PNG's HCI gap closes by about 5 percent every 5 years; and (ii) the optimistic scenario: under which the HCI gap is closed as fast as the 75 percentile of the top-performing countries.

As illustrated in Figure 42, if human capital investments remain constant in Papua New Guinea, human capital per worker is projected to only increase from 0.40 to 0.42 between 2015 and 2050. However, under the typical and the optimistic scenarios (the HCI gap is closed by five percent every five years and the HCI gap is closed at the same rate as the 75 percentile of best performers) human capital per worker would increase to 0.49 and 0.58 by 2050, respectively.

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[86] Data is available from 2005 to 2017. Retrieved at:
http://data.un.org/Data.aspx?q=Papua+New+Guinea&d=SNAAMA&f=grID%3A101%3BcurrID%3ANCU%3BpcFlag%3A0%3BcrID%3A598
Prior to 2005, World Bank estimates are available. Retrieved at:
https://data.worldbank.org/indicator/NE.GDI.FTOT.ZS?locations=PG
[87] Desai and others 2015. Making development sustainable: the future of disaster risk management, global assessment report on disaster risk reduction. A background paper detailing the methodology and data underpinning the capital stock estimates is available at:
https://www.preventionweb.net/english/hyogo/gar/2015/en/gar-pdf/Annex1-GAR_Global_Risk_Assessment_Data_methodology_and_usage.pdf
[88] The World Bank is the source of the GDP deflator. Retrieved at: https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS

**Investing in human capital would have dramatic impacts in terms of boosting GDP per capita and reducing poverty.** Under the typical and optimistic scenarios, PNG's GDP per capita would be approximately 13.5 percent and 31.2 percent higher than the baseline by 2050 (Figure 39; see in the main text above). Projected impacts on poverty rates are shown in Figure 43, for different poverty rates (US$1.90, US$3.20, and US$5.50 per day, all at PPP) under each scenario. Under the typical scenario, the US$1.90 poverty rate in Papua New Guinea would decline to 2.2 percent by 2050, down from 28.4 percent in 2015; the US$3.20 poverty rate would decline to 9.0 percent from 53.9 percent; the US$5.50 poverty rate to 27.1 percent from 79.7 percent. Under the optimistic scenario, the poverty rates would go down even faster: 1.4 percent, 6.3 percent, and 21.3 percent by 2050, respectively.

Figure 42. Projections of Human Capital per Worker
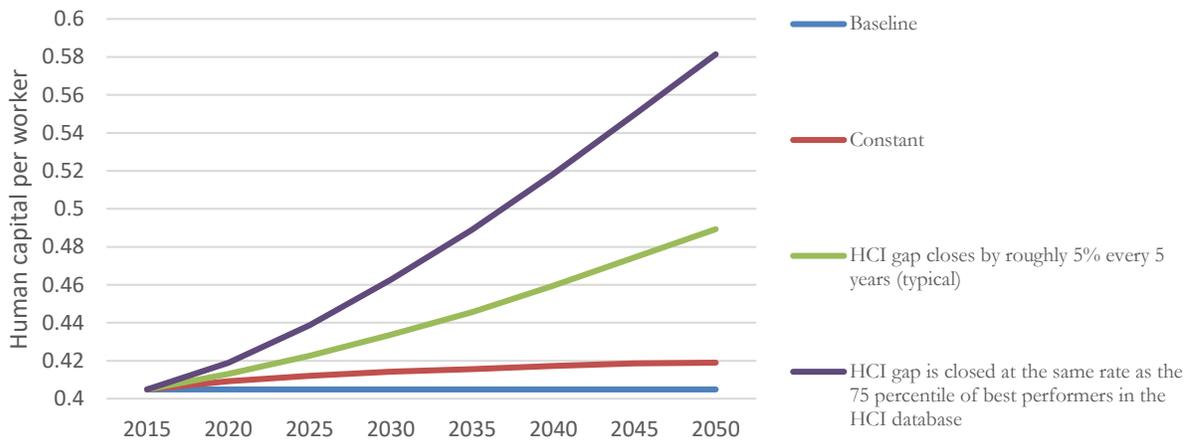
Source: Authors' estimates following Collin and Weil (2019).

Figure 43. Poverty Rate Projections
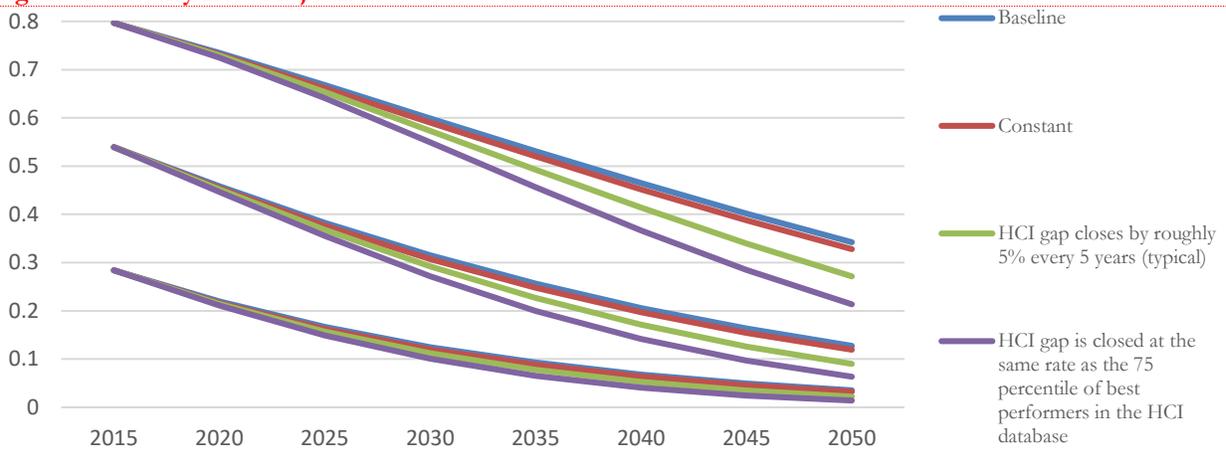
Source: Authors' estimates following Collin and Weil (2019).

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