

**Papua
New Guinea
Critical
Development
Constraints**

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Country Diagnostics Studies

Papua New Guinea

Critical
Development
Constraints

Asian Development Bank

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ISBN 978-92-9092-582-8

Publication Stock No. RPT124457

Cataloguing-In-Publication Data

Asian Development Bank

Papua New Guinea: Critical development constraints.

Mandaluyong City, Philippines: Asian Development Bank 2012.

1. Economic development. 2. Papua New Guinea. I. Asian Development Bank.

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Foreword

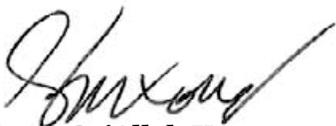
The Government of Papua New Guinea (PNG) is committed to achieving high and sustained economic growth and improving the social well-being of the country's population. This vision is highlighted and outlined in the long-term strategic development framework, *Papua New Guinea Vision 2050*, which notes: "We will be ranked in the top 50 in the United Nations Human Development Index by 2050, creating opportunities for personal and national advancement through economic growth, smart innovative ideas, quality service and ensuring fair and equitable distribution of benefits in a safe and secure environment for all citizens." This vision may be ambitious, but is achievable if the constraints to economic development are carefully diagnosed and appropriate policies and thrusts can be implemented in the medium and long run.

Therefore, the Government welcomes this report on the critical development constraints that our economy faces in the medium term. Diagnostic frameworks underpinning the study attempt to identify the most binding constraints to high and sustained levels of economic growth and to reduction of poverty of opportunity. The analysis supporting the diagnostics is rigorous, and the recommendations will be very helpful to the policymakers as they attempt to set the conditions right in the medium term for achieving the vision set in Vision 2050.

We have, as the report notes, undertaken a number of key initiatives in the recent past, which resulted in gross domestic product (GDP) growth rates of nearly 7% during 2007–2010, when other major economies in Southeast Asia and the Pacific were badly hit by the global economic crisis. This performance is expected to improve further in 2011 with anticipated growth rates of about 9% in GDP. With continued sound macroeconomic management and the onset of large-scale projects, such as the PNG LNG Project, we hope to improve the economic performance even further.

The Government, however, is aware that much more needs to be done. We may be able to sustain high rates of economic growth, but the growth remains narrowly based. Growth in productive employment opportunities needs to be substantially boosted, as it has a key role in improving social welfare. We are also concerned that the provision of key public services, especially in the remote and rural areas, remains weak. Thus, the report is a very timely and valuable input for enhancing our development focus.

The report also provides insights that can help enrich cooperation between the PNG Government and our development partners. In particular, we are highly appreciative of the consultative process that the study adopted to ensure that views of all the key stakeholders were taken into account in diagnosing the constraints. The Government appreciates ADB's efforts in conducting this helpful and timely study.



Peter Ga'Allah Kora

Secretary

Department of National Planning
and Monitoring

Preface

The gross domestic product (GDP) of Papua New Guinea (PNG) grew at an annual average rate of nearly 7% between 2007 and 2010, and is expected to perform even better in 2011. Moreover, the economy remained unaffected even at the peak of the global economic crisis, when most other major Southeast Asian and Pacific economies recorded low or negative GDP growth rates. Sound macroeconomic management in the recent past and planned initiatives such as the PNG LNG Project indicate that the economy will continue to perform well in the medium to long run. Nevertheless, the country faces a number of development challenges. Per capita GDP and its growth rate remain low. The economy is heavily dependent on the mining and resource sectors, and hence remains vulnerable to fluctuations in the global markets. A majority of the people in the labor force work in the informal sector, and opportunities for productive employment in the formal sector continue to grow very slowly. Provision of public services, including education, health, and safe drinking water and sanitation, remains inadequate, especially in the rural areas.

In moving forward, the question is: How can PNG make its economic growth inclusive, broad based, and pro-employment, and improve its population's welfare? This report attempts to identify the most critical constraints that PNG faces in attempting to achieve these goals—the constraints that, if removed, could result in PNG securing the greatest welfare gains. The report also attempts to identify the options that policymakers could adopt when converting the constraints into opportunities over the medium term and setting the country on a path of higher and sustainable economic growth and poverty reduction.

Papua New Guinea: Critical Development Constraints presents a diagnosis of PNG's economy. The study followed a consultative process. Inception and consultation workshops provided the medium for exchange of information and views among the key stakeholders, including the government, development partners, think tanks, and civil society. Feedback received during the workshops greatly assisted the report's preparation. The report aims to provide valuable inputs to the formulation and enrichment of development policies and reform programs aimed at bringing about high and sustained inclusive green growth.

The work was led by Muhammad Ehsan Khan, principal economist in the Economics and Research Department of the Asian Development Bank; deputy chief economist Juzhong Zhuang, Economics and Research Department, provided the oversight and overall direction. The report was prepared by Muhammad Ehsan Khan, Yoko Niimi, and Maria Rowena M. Cham. The work benefited from background papers prepared by a team of experts comprising Paul Barker, Nicola Blackford, and Graham Hassall. Erik Aelbers, Charles Andrews, Stephen Banta, Aaron Batten, Christopher Edmonds, Douglas Lucius, Anthony Maxwell, and Dominic Mellor provided valuable guidance during the study and comments for finalizing the report. The preparation of the report was assisted by Marife Lou L. Bacate, Amador Foronda, Lawrence Nelson C. Guevara, Paulo Rodelio Halili, and Juliet Vanta. The report was edited by Jill Gale de Villa; layout and typesetting were by Mike Cortes.

The report team is grateful for the support provided by the Government of PNG. Particular thanks are due too First Assistant Secretaries Joe Taia Kapa and Joseph Turia, Department of National Planning, for their keen interest in the study and guidance in completing this work. Support and feedback were also gratefully received from Joseph Aka, Laura Bailey, Elizabeth Gini, Dennis Gonnisso, Gaona Gwaibo, Patrick Hettinger, Gae Kauzi, Daniel Kereka, Elizabeth Kup, Jacob Maranbini, Serrah Nao, Williamina Nimdin, Sanja Pepae, Matthew Rabui, Patrick Safran, Koney Samuel, William Sent, Peter Siopun, Francesca Tinabar, Jeffrey Yambon, and others whose names may have been inadvertently omitted here; and from numerous agencies, including the Bank of Papua New Guinea, Department of Foreign Affairs and Tourism, Department of Treasury, Institute of National Affairs, Investment Promotion Agency, National Department of Health, National Economic and Fiscal Commission, National Research Institute, and National Statistics Office. Thanks are also due to representatives of the think tanks, civil society organizations, and development partner representatives who participated in the workshops, for their support and interest in the study. We at the Asian Development Bank look forward to continued and productive dialogue with the Government in pursuing an agenda of inclusive growth and sustained development in PNG.



Changyong Rhee

Chief Economist

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Abbreviations and Acronyms

ADB	—	Asian Development Bank
AusAID	—	Australian Agency for International Development
CIMC	—	Consultative Implementation & Monitoring Council
DNPM	—	Department of National Planning and Monitoring
DOE	—	Department of Education
EIU	—	Economist Intelligence Unit
ERI	—	Enterprise Research Institute
ESCAP	—	United Nations Economic and Social Commission for Asia and the Pacific
FDI	—	foreign direct investment
GDP	—	gross domestic product
HDI	—	human development Index
IBE	—	International Bureau of Education (UNESCO)
IMF	—	International Monetary Fund
INA	—	Papua New Guinea Institute of National Affairs
IPBC	—	Independent Public Business Corporation
K	—	kina
Lao PDR	—	Lao People's Democratic Republic
LNG	—	liquefied natural gas
MDG	—	Millennium Development Goal
MIGA	—	Multilateral Investment Guarantee Agency
NDOH	—	National Department of Health
NEFC	—	National Economic and Fiscal Commission
NGO	—	nongovernment organization
NHP	—	National Health Plan
NSO	—	National Statistical Office of Papua New Guinea
PESD	—	Public Expenditure and Service Delivery
PNG	—	Papua New Guinea
PPL	—	PNG Power Limited
PPP	—	public–private partnership
PRC	—	People's Republic of China
SABL	—	special agricultural and business lease
SOE	—	state-owned enterprise
SPI	—	social protection index
TEU	—	twenty-foot equivalent unit
TFP	—	total factor productivity
TVET	—	technical and vocational education and training
UNCTAD	—	United Nations Conference on Trade and Development

UNDP	—	United Nations Development Programme
UNESCO	—	United Nations Educational, Social, and Cultural Commission
UNICEF	—	United Nations Children’s Fund
WDI	—	World Development Indicators
WGI	—	Worldwide Governance Indicators
WHO	—	World Health Organization

Measures

km	—	kilometer
kWh	—	kilowatt hour
MW	—	megawatt

Highlights

Papua New Guinea (PNG) has enjoyed several years of strong economic growth, driven largely by high commodity prices and supported by structural reforms and sound macroeconomic policies. Growing opportunities and wealth, however, have been skewed increasingly in favor of a small and largely urban-based segment of the population. Many communities and parts of the country, particularly in remote areas, have been marginalized from the development process. The limited, though growing, formal sector is inadequate to absorb the unemployed urban population, and most of them are not prepared for the vacancies in the formal sector, which entail predominantly skilled and semiskilled work. In addition, the informal urban sector, too, is unable to absorb most of the unemployed population.

Challenges that PNG faces include (1) ensuring that the recent higher economic growth rates are sustainable in the medium to long term, and (2) translating high economic growth into much more inclusive development than has prevailed to date. This study employed a diagnostic approach in an attempt to identify the most critical constraints to inclusive economic growth in PNG. The critical constraints identified, which require the government's focus are

- weaknesses in governance and institutions, particularly those relating to delivery of public services, maintaining law and order, controlling corruption, and managing land and land titles;
- poor infrastructure and infrastructure services, particularly in the case of transport, electricity, and water supply;
- shortages of skilled human capital, and poor and unequal access to affordable and quality education; and
- lack of and unequal access to affordable and quality health services.

Overcoming these impediments will help PNG achieve more inclusive economic growth that will provide the country's citizens with more equitably shared opportunities to contribute to and benefit from economic growth.

Critical Development Constraints

Weaknesses in Governance and Institutions

Weak governance and institutions undermine all economic activity, delivery of public services, credibility of the state, and efforts to improve the population's well-being. Although PNG has comprehensive laws and institutions, their functioning and outcomes are seen to be weak in comparison with other major economies in Southeast Asia and the Pacific (the region). Of particular concern are the low levels of government effectiveness, poor law and order situation, and weak control of corruption. In addition, the land administration and difficult access to formal land titles also constrain private investment and infrastructure development.

Weak Government Effectiveness in Delivery of Public Services

- World Governance Indicators (WGI) ranks PNG higher than Fiji, but well below Indonesia, Malaysia, Philippines, Thailand and Viet Nam. Moreover, PNG's current rank is reported to be well below its rank in 2002 (World Bank, WGI, accessed in April 2011).
- A survey of firms undertaken by the Institute of National Affairs found that 22% of the respondents ranked provision of government services as "very poor," 19% ranked them as "poor," and 42% ranked them as "fairly poor" (ADB 2008a).
- A number of studies have concluded that the underlying reasons for poor public service delivery include inadequacies in capacities, investments, and operation and maintenance, which were exacerbated by decentralization of the responsibilities for delivering services.

Poor Law and Order

- WGI ranks PNG below other major economies in the region. Moreover, PNG's current rank is reported to be well below its rank in 1996 (World Bank, WGI, accessed in April 2011). The country's Medium Term Development Plan 2011-2015 also recognizes law and order, and social unrest or conflict as areas that pose risks, especially for delivering services to the rural populace (DNPM 2010).
- Studies indicate that the crime rate is high, and the public perceives enforcement of law and order as weak (Government of PNG 2008, Manning 2005, and National Research Institute 2008).
- Port Moresby has some of the best infrastructure in the country; however, the perception that it is one of the most dangerous cities in the world may be hampering its ability to attract investment (Foreign Policy 2008, and Economic Intelligence Unit 2010).
- Studies and surveys indicate that the businesses consider the poor law and order situation as the topmost constraint to doing business, and they incur a significant level of expenses in ensuring security (INA 2008a, and Australian Government).

Weak Control of Corruption

- WGI ranks PNG well below other major economies in the region (World Bank, WGI, accessed in April 2011). Moreover, WGI and the Corruption Perception Index indicate that PNG's rank has declined in the recent year (World Bank, WGI, accessed in April 2011 and Transparency International 2010).
- Though the number of corruption-related cases has declined in recent years, the community and businesses perceive that corruption is rising (Government of PNG 2008b, and INA 2008a).

Land and Land Titling

- Inadequate access to land and formal land titles has been widely reported as a major constraint to the development of infrastructure, commercial projects, and urban real estate.
- Though the new law will help bring transparency to the processes and procedures of acquiring and determining compensation of land, it is anticipated that land acquisition will remain a constraint in the short to medium term due to lack of registration of land ownership and social mapping.

Poor Infrastructure and Infrastructure Services

PNG lags far behind most other major economies in the region in key infrastructure, including transport, electricity, and water supply. Moreover, the state of most of the infrastructure is very poor and in need of major restoration or upgrade.

Transport

- PNG's infrastructure was ranked 135 out of 155 countries by a recent World Bank study, a rank that was lowest among the major economies in the region (World Bank 2010).
- The latest available statistics on road infrastructure indicate that PNG compares unfavorably with most other major economies in the region in terms of road density and proportion of road length that is paved (ADB 2010b).
- Though the quality of road infrastructure has gradually been improving in recent years, only 33% of the national roads were considered to be in good condition in 2009. It is believed that the proportion of provincial, feeder, and rural roads in good condition may be even lower (Government of PNG 2008d and 2009c). Moreover, a World Bank study reports that 85% of the national roads and most feeder roads become impassable during at least part of the year.
- Public expenditure on maintenance of infrastructure is insufficient (NEFC 2009a and Department of Treasury 2009, 2010b).
- PNG's ports are generally inefficient and compare unfavorably with major ports in the region (Containerisation International 2009).
- PNG's ranking of 96 in trading across borders compares unfavorably with those of Indonesia, Malaysia, Philippines, Thailand, and Viet Nam (World Bank 2011b).
- Annual cargo volumes are anticipated to rise quickly on account of steady growth in the economy and mega initiatives such as the PNG LNG Project, and major ports in the country do not have spare capacities to handle growth in volume.

Electricity

- PNG lags behind most other economies in the region in terms of access to and consumption of electricity. Moreover, improvements in access to electricity have been at a very slow pace (NSO 1996, 2006, and World Bank WDI, accessed April 2011).
- Coverage is largely concentrated in the national capital district and urban areas (ADB 2009b).
- The installed generation, transmission, and distribution capacities remain low due to insufficient investment in the electricity sector (PNG Power Ltd., ESCAP 2003).

Water Supply

- The proportion of the population in PNG with access to safe drinking water is well below that in the other major economies in the region. Moreover, the evidence suggests that the level of access may not

have kept up with the population growth (ADB 2010b).

- There are wide disparities between the urban and rural population in terms of access to piped water supply—70% of households with access in urban areas compared with only about 10% in rural areas (NSO 2009).
- Lack of access to clean water and sanitation may be some of the key reasons behind PNG's high infant and child morbidity and mortality rates (Government of PNG 2010).

Shortages of Skilled Human Capital, and Poor Access to Education

Shortage of skilled human capital is a key constraint faced by both the public and the private sectors, as it severely constrains the government in delivery of public services and the private sector in expanding economic activity. The shortage of skilled human capital is further exacerbated by the poor access of the population to affordable and quality education, especially in the remote and rural areas. With the onset of mega initiatives such as the PNG LNG Project, it is anticipated that the inadequacies in skilled human capital will become even more acute.

Human Capital

- Private sector feedback suggests that lack of adequate human capital is a major hindrance to doing business in PNG (INA 2008a). In formal sectors, shortages are reported to be most severe in engineering, mining, and construction (ADB 2008b). In the informal sectors, shortage of skilled human capital is reportedly a constraint to improving agricultural productivity and developing basic livelihoods (ADB 2007d).
- The shortage of skilled human capital is evident from the sharp rise in the in-migration of foreign workers. In 2009, the government issued about 30,000 work permits to foreign workers, which represented an increase of 336% from the 6,880 work permits issued in 2001 (Government of PNG 2001 and 2009).
- Businesses' feedback suggests that the top reasons for employment of foreign workers were to bridge the skill gaps and to acquire workers that were more diligent and had good work ethics (INA 2009).

Education

- Adult and youth literacy rates in PNG are one of the lowest in the region, with literacy levels among women lower than those of men (ADB 2010b).
- Though adult and youth literacy rates improved for women between 2000 and 2008, the rates for men have either remained unchanged or declined (ADB 2010b).
- Disparities in literacy levels among population aged older than 10 and the highest level of education attained by the population aged 15-49 are large between the urban and rural populations, and across various regions (NSO 2009).
- Disparities between rural and urban areas in terms of gross enrollment rates for primary and secondary education are wide (DOE 2010).
- On the demand side, root causes of poor and unequal access to education include households' inability to afford the school fees, though this has been addressed by the government's recent introduction of fee-free basic education, and the limited employment opportunities in the formal sector. On the supply side, root causes include weak governance, limited allocation of resources, limited availability of and poor condition of schools, and lack of teachers.

Poor Access to Health Services

Poor and unequal access to healthcare is a critical constraint to reducing poverty and inequality, as the resulting poor health can prevent people from accessing economic opportunities and can adversely affect productivity and earnings.

- Although PNG's life expectancy has improved during the last few decades, it is still one of the lowest in the region (ADB 2010b).
- Poor maternal health is PNG's major concern—the maternal mortality ratio in PNG is one of the highest in the Asia and Pacific region. The improvement in access to antenatal care and assistance in delivery have remained marginal over the last few decades.
- In addition to the relatively poor health status compared with other countries, PNG faces a significant variation in health outcomes within the country. Disparities between urban and rural areas remain significant, and the Highlands and Momase regions tend to report poorer health outcomes than other regions.
- Communicable diseases remain the major cause (about 50%) of morbidity and mortality in PNG. Malaria is the leading cause of outpatient visits and the second highest cause of death, while HIV/ADIS is the leading cause of death of adult inpatients in Port Moresby Hospital (Cammack 2007). Such preventable and treatable diseases are also the most frequent causes of childhood deaths (Government of PNG 2010).
- The demand-side root causes of poor and unequal access to healthcare services include economic disparity and relatively low level of education. On the supply side, root causes include an insufficient level and inefficient use of resources, unequal distribution of healthcare facilities, inadequate equipment and medical supplies, inefficient use of staff, and poor governance.

The Way Forward

The PNG government's Vision 2050 focuses on achieving a wealthy, healthy, and educated society by 2050. To achieve this vision, however, PNG needs to overcome the critical constraints discussed and to sustain an economic growth that is high, more broad-based, and inclusive. In this regard, the study proposes process-driven policy options below, some of which are already central to the government's medium- and long-term development planning and agenda:

Governance and Institutions

Public Service Delivery

- Pursue the review of the public sector to minimize duplication, remove inconsistencies, and clarify the roles of government agencies across branches and various levels.
- Strengthen government processes and capabilities for financial planning, budgeting, procurement, implementation, monitoring, and audit at the national and subnational levels.
- Improve the procurement processes, internal control, and audit mechanisms of the government, particularly in some state-owned enterprises.
- Strengthen legal and regulatory frameworks to encourage private sector participation in certain public services.

Law and Order

- Recognize the incessant need for safety and access to utilities, healthcare, and education.
- Adopt programs and policies that provide opportunities for employment generation and training and improved access to finance.
- Strengthen the police force, courts, magisterial service and the justice system through adequate funding, training, and operations support.
- Address issues related to alcohol, drug abuse, and gambling through education and awareness campaigns and adoption of preventive measures.
- Minimize opportunities for crime by supporting noncash or electronic transactions over traditional cash banking and financial transactions.
- Empower women to participate and benefit more from the economy

Corruption

- Implement and continuously strengthen the legal and regulatory framework for anticorruption and ensure adequate funding, authority, and autonomy for independent oversight agencies.
- Minimize opportunities for corruption by introducing electronic and automated processes for payment of taxes, fees, etc. and by promoting transparency in public tenders, auctions, public inquiries, and other similar activities.
- Promote an effective interagency national anticorruption alliance and anticorruption awareness campaign together with the private sector and civil society.

Land and Land Titles

- Continuously strengthen the legal and regulatory framework for an effective land reform and development program, giving due consideration to administration of alienated land, land dispute resolution, customary ownership empowerment, and security of tenure.
- Improve land administration capability and accountability to enable quick access to cleaned up land titles and other documents through electronic or other automated means.
- Rationalize the process and clarify the roles of various agencies involved in land administration, planning, as well as resolution of land disputes at the national and local levels.

Infrastructure and Infrastructure Services

- Undertake immediate rehabilitation, restoration, maintenance, and upgrading of existing infrastructure facilities.
- Review current capacities (transport, electricity, and water supply), and improve the policies and capabilities of concerned agencies to be able to meet basic infrastructure needs .
- Strengthen legal and regulatory frameworks to encourage private sector investment and ownership in infrastructure and services that are commercially viable such as seaports, airports, power generation, urban water supply, and sewerage services.
- For transport, clarify existing regulations for land acquisition and compensation.
- For the electricity sector, focus on locally available renewable sources while exploring clean development mechanism opportunities, and improve delivery mechanisms for grid and off-grid areas.
- For water supply, rationalize the administration of water supply services for main centers, and enhance support to local water supply systems while addressing periodic water shortfalls and climate change.

Human Capital and Access to Education

- Ensure that basic education is equitable and, in due course, compulsory through innovative public-private partnerships.
- Ensure that the budget is allocated in a transparent and equitable manner at the national, provincial, and local levels.
- Review and improve teachers' incentives and working conditions in both high-cost urban centers and remote rural areas to stimulate effective performance.
- Promote technical and vocational education and training programs that are constantly relevant to evolving employment needs, and encourage companies to adopt apprenticeship and on-the-job-training programs.
- Advance a campaign on literacy and numeracy among adults through collaborative partnerships with the private sector and civil society.
- Incorporate work ethics and skills development in the education curriculum in the long term.

Health Services

- Maintain the relevance of the medium-term national strategy for health and expenditure vis-à-vis the evolving social, environmental, and economic conditions of PNG.
- Ensure adequate and equitable distribution of the budget to meet basic health care services, and establish accessible primary health care facilities equitably across the country.
- Promote preventive health care through public awareness campaigns.
- Improve coordination among various public and private health care providers, and increase consultation among policymakers and the wider public and private sectors.

Chapter 1

Introduction

1.1. Objectives

The Papua New Guinea (PNG) economy has performed well in the last few years. Its gross domestic product (GDP) grew at nearly 7% in 2007–2010, which compares with the performance of other major economies in Southeast Asia and the Pacific. PNG proved resilient to the impacts of the global economic crisis, as its economy continued to grow at about 5.5% in 2009, while most comparator economies were reporting negative growth rates.

However, the recent economic performance masks the PNG economy's underperformance since independence in 1975. The country has not been able to maintain stable economic growth, partly because of its vulnerability to external shocks. The economy has been heavily dependent on mineral and resource extraction, and the international markets for these commodities tend to fluctuate greatly.

A major challenge for PNG is to sustain its recent economic performance in coming years. The recent stable macroeconomic management and some of the planned initiatives, particularly the PNG Liquefied Natural Gas (LNG) Project, provide hope that the improved economic performance may be sustainable. Another major challenge the country faces is to ensure that the growth will be broad-based and benefit the population across the country.

This report has two interrelated objectives. The first is to identify the critical constraints to long-term economic growth and equitable regional development in PNG. The second is to provide some recommendations that policymakers may wish to

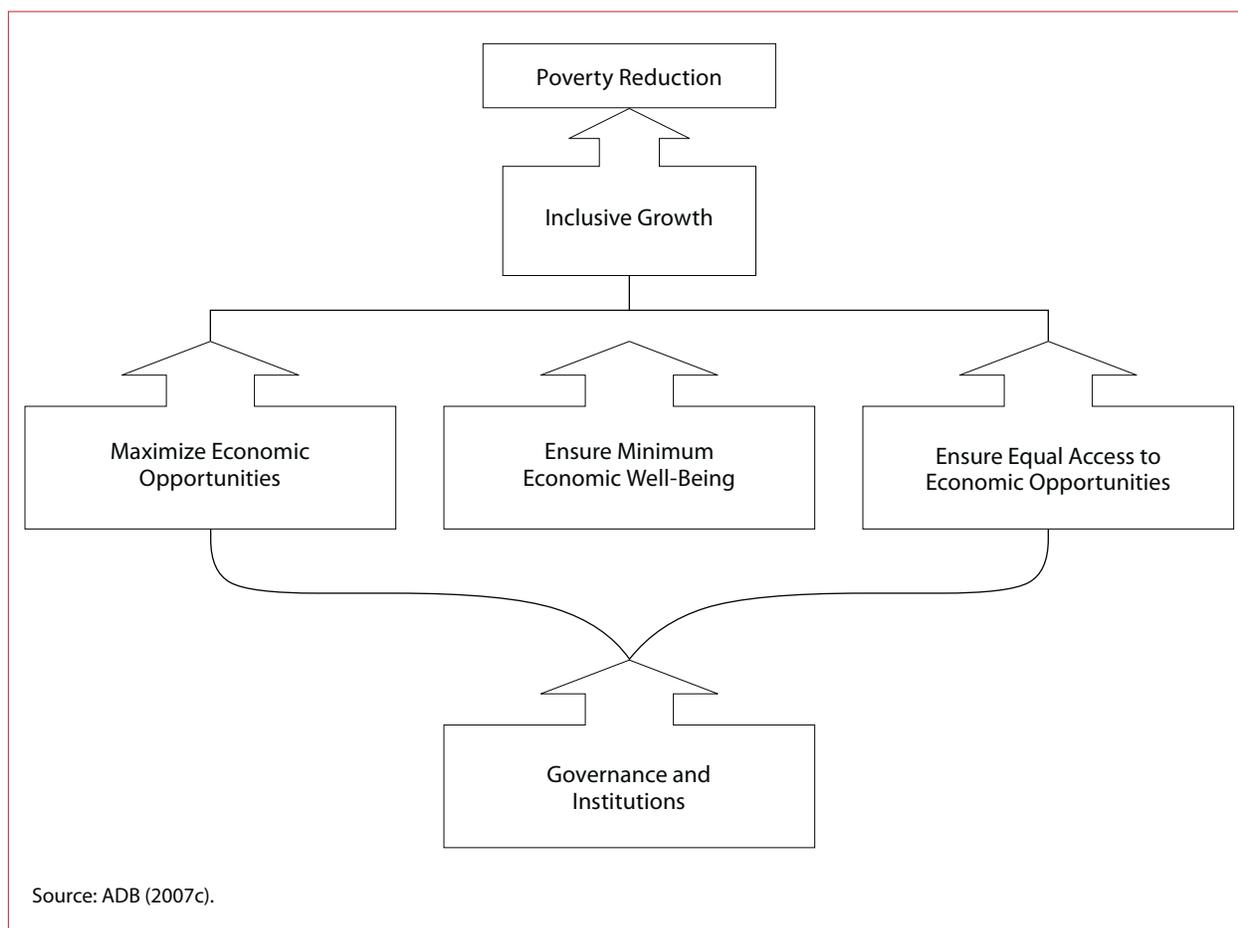
consider for addressing the constraints in order to assist the country's efforts to achieve broad-based growth and plan targets.

1.2. Methodology

The study's framework is based on the inclusive growth concept presented in Figure 1.1. Inclusive growth is growth that not only generates economic opportunities, but also ensures equal access to them by all members of a society. Growth is considered to be inclusive only when it allows all members of a society to participate in and benefit from the growth process on an equal basis regardless of their individual circumstances (Ali and Zhuang 2007). Hence, a development strategy based on the inclusive growth concept is anchored on three policy pillars: (1) create and expand economic opportunities through high and sustained growth; (2) ensure equal access to opportunities for all members of a society; and (3) provide adequate social safety nets to ensure minimum economic well-being (Zhuang 2008).

Several requirements need to be met in order to satisfy each of the three pillars of the inclusive growth strategy. Hence, the study attempts to diagnose the constraints that may be curtailing efforts to generate high and sustained growth to create jobs and opportunities, and to make the growth inclusive. The study employs the growth diagnostics framework to diagnose constraints to high and sustained growth, and the poverty and inequality reduction diagnostics framework to

Figure 1.1. Inclusive Growth Concept



diagnose constraints that may be limiting the pace of poverty reduction and the inclusiveness of the economic growth.

1.2.1. Growth Diagnostic Framework

The study uses a diagnostics approach, and broadly follows growth diagnostics developed by Hausmann, Rodrik, and Velasco (2005). The growth diagnostics approach provides a consistent framework for identifying the most critical or binding constraints to growth and for discerning the priorities and sequence of policies required to ignite and sustain growth. The growth diagnostics approach differs from the laundry list approach, as implied by the Washington consensus. Instead, it recognizes that the economic and political environment differs a great deal among developing countries; there is no “one-size-fits-all” solution to development problems and, therefore, the ordering of policy priorities contingent on country-specific circumstances is critically important. Further,

countries at an early stage of development may not have adequate capacity to implement a wide array of policy reforms at the same time. With the diagnostic approach, reforms can start with easing a few critical areas that truly constrain growth. The approach thus offers a practical tool for policymakers and development planners to use in formulating country-specific growth strategies. The application of growth diagnostics is one of the efforts in the search for new approaches to growth strategy after the Washington consensus was questioned in recent years.

The growth diagnostics approach starts with a set of proximate determinants of growth, investigates which of these pose the greatest impediments or are the most critical constraints to higher growth, and figures out specific distortions behind the impediments. The point of departure of the inquiry is a standard endogenous growth model in which growth depends on the social return to accumulation, private appropriability of this social return, and the cost of financing. Each of these three

broad determinants of growth is in turn a function of many other factors, which can be presented in a problem tree (Figure 1.2).

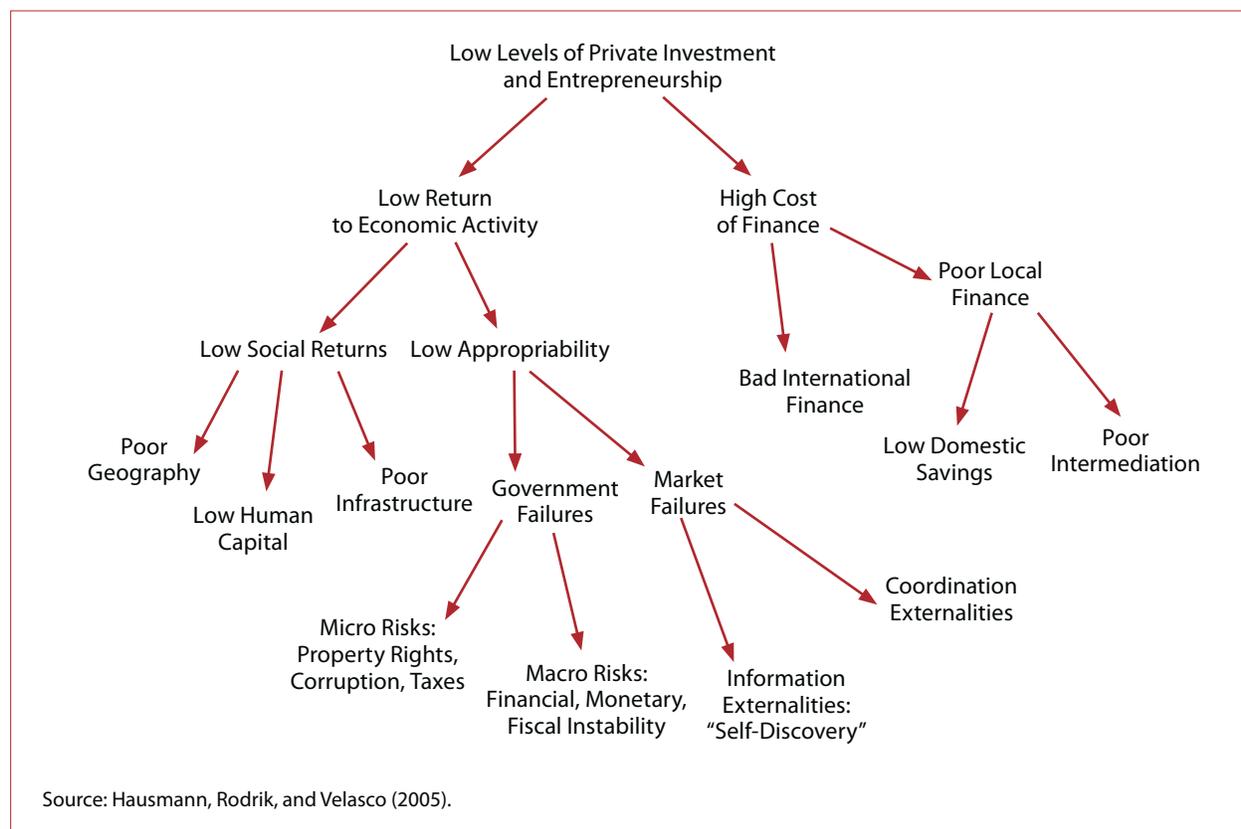
The problem tree provides a framework for diagnosing critical constraints to growth. The diagnosis starts by asking what keeps the level of private investment and entrepreneurship low. Is it low social return to investment, inadequate private appropriability of the social return, or high cost of financing? If it is low social return, is that due to insufficient levels of complementary factors of production—in particular, human capital, technical know-how, and/or infrastructure? If the impediment is poor private appropriability, is it due to macro vulnerability, high taxation, poor property rights and contract enforcement, labor–capital conflicts, information and learning externalities, and/or coordination failures? If high cost of finance is the problem, is it due to low domestic savings, poor intermediation in the domestic financial markets, or poor integration with external financial markets?

At each node of the problem tree, the diagnosis looks for signals that would help answer the

question. The two types of diagnostic signals that one can look for are price signals and nonprice signals. Examples of price signals are returns to education, interest rates, and cost of transport. For example, if education is undersupplied, returns to skills/education would be high and unemployment of skilled people would be low. If investment is constrained by savings, interest rates would be high and growth would respond to changes in available savings (for example, inflows of foreign resources). If poor transport links are a serious constraint, bottlenecks and high private costs of transport would be evident.

The use of nonprice signals is based on the idea that when a constraint binds, the result is activities designed to get around it. For example, high taxation could lead to “high informality” (e.g., underreporting of income, resulting in lower tax revenues); poor legal institutions could result in high demand for informal mechanisms of conflict resolution and contract enforcement; and poor financial intermediation could lead to internalization of finance through business groups. Cross-country and cross-period benchmarking and

Figure 1.2. Growth Diagnostics Framework



results of business surveys are useful means to gauge whether particular diagnostic evidence signals a binding constraint for the country concerned.

1.2.2. Poverty and Inequality Diagnostic Framework

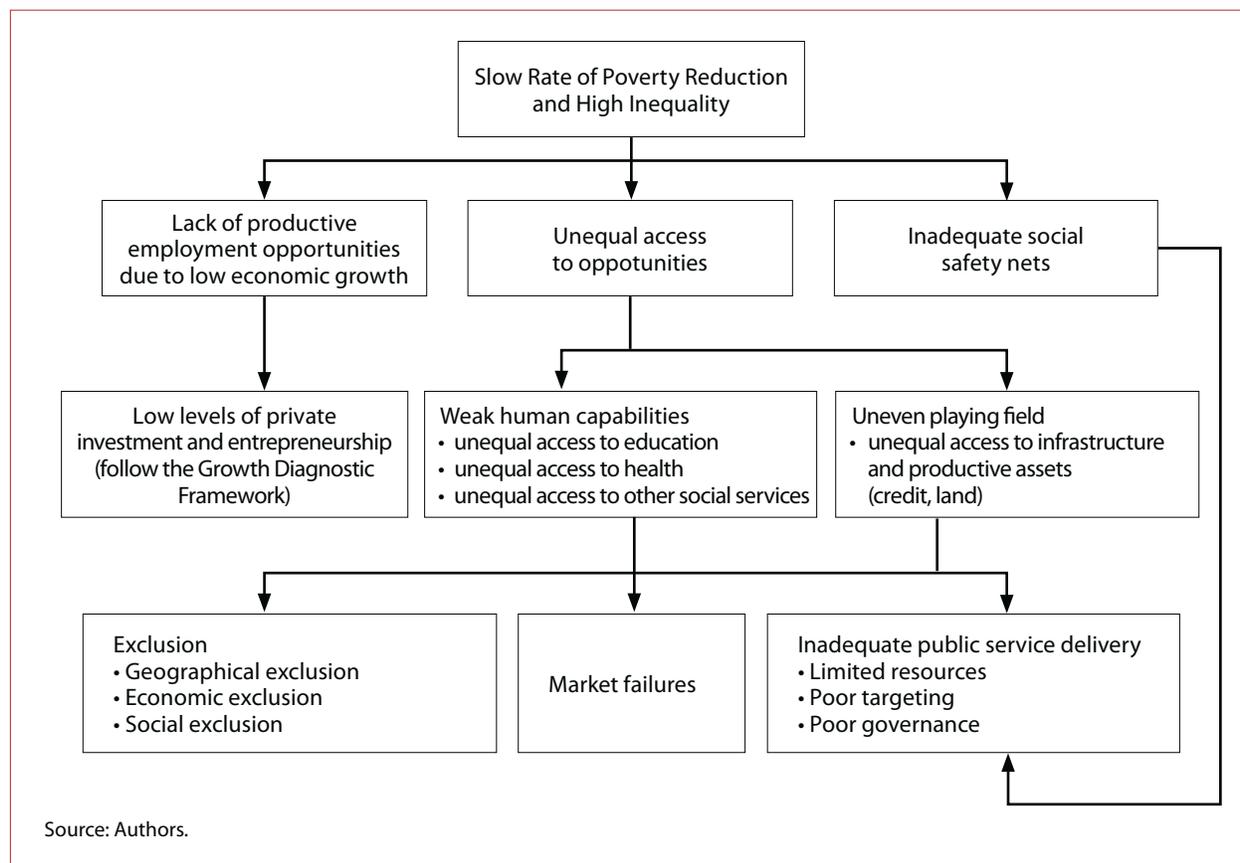
Although the growth diagnostics approach was developed to identify the binding constraints to growth and associated policy priorities, the approach can also be applied to other areas of policy analysis, such as identifying critical constraints to the inclusiveness of growth. Inclusive growth not only addresses the inequality issue, but also enhances the poverty reduction agenda (Figure 1.3). The limited reduction in poverty and persistent inequality can be caused by the lack of economic opportunities due to poor growth, unequal access to opportunities, and/or the absence of effective and adequate social safety nets.

Within the inclusive growth concept presented in Figure 1.1, the availability of productive

employment opportunities is a key to a household’s ability to improve its livelihood. However, even if the economy succeeds in creating productive and decent employment, this would not automatically lead to poverty reduction unless there is equal access to the opportunities. Inequitable access to economic opportunities can be attributable to weak human capabilities and/or an uneven playing field, both of which can prevent people from participating in and contributing to the growth process on an equal basis regardless of their individual circumstances.

Certain groups of people may have weaker human capabilities than others, partly due to unequal access to education, health, and/or other social services, including clean water and sanitation systems. Inequity in accessing opportunities may also be caused by unequal access to infrastructure and productive assets, such as land and credit. For example, in geographically challenged countries like PNG, infrastructure plays a key role in promoting inclusiveness.

Figure 1.3. Diagnostic Framework for Constraints to Reducing Poverty and Inequality



Promoting equal access to opportunities also requires the government to provide social safety nets to mitigate the effects of external and transitory livelihood shocks as well as to meet the minimum needs of the chronically poor (Zhuang 2008). The inadequate provision of social safety nets can be a constraint to reducing poverty and inequality.

The framework also suggests that each of the above issues (weak human capabilities, uneven playing field, and inadequate social safety nets) can, in turn, be due to a number of factors, including market failures, government failures to deliver adequate public services, and/or exclusion. The government's key role in promoting inclusiveness is to address these market, institutional, and policy failures.

1.3. Organization of the Study

The rest of the report is organized as follows. Chapter 2 provides an overview of PNG's development performance and the development challenges it faces. The chapter describes the episodes of growth, discusses key growth drivers, reviews progress in poverty reduction, and examines the trends in the state of the environment and natural resources. Chapter 3 elaborates on growth diagnostics, focusing on the three broad determinants of growth that could act as constraints: social return to investment, private appropriability, and cost of finance. Chapter 4 looks at critical constraints to reducing poverty and inequality. Chapter 5 summarizes the findings and discusses policy implications and the way forward.

Chapter 2

Development Performance

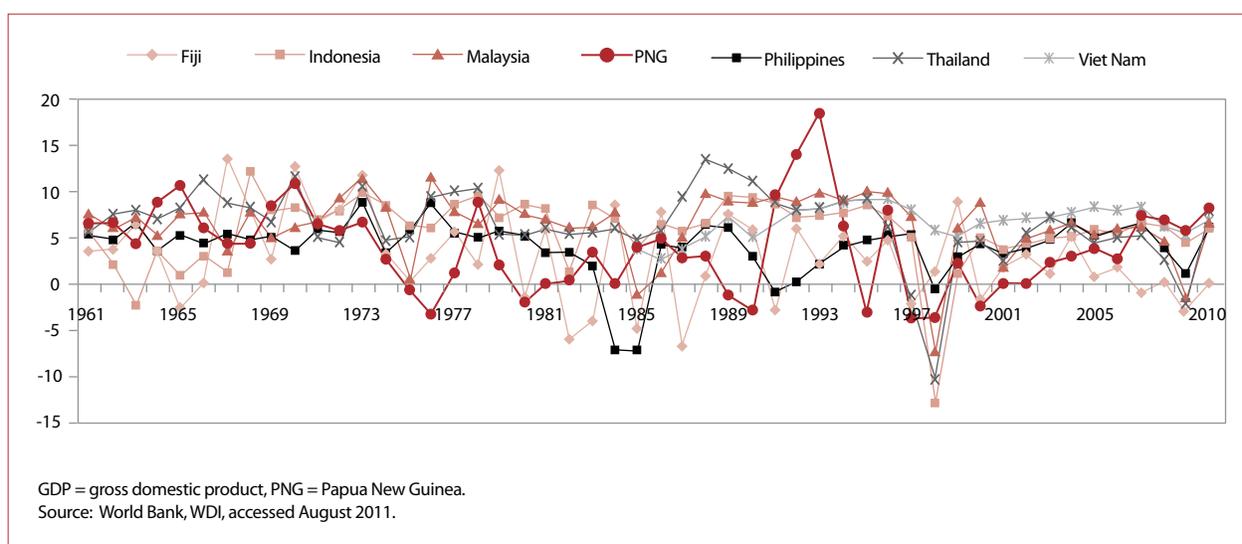
During 2007–2010, the economic performance of Papua New Guinea (PNG) was comparable to or better than that of other major economies in Southeast Asia and the Pacific. Over this period, PNG's gross domestic product (GDP) grew at an average annual rate of about 6.8%. In addition, the economy was able to weather impacts of the global economic crisis well, posting a healthy growth rate of about 5.5% in 2009, when most other major economies in Southeast Asia and the Pacific were reporting negative growth rates.

Healthy growth in the recent past, however, tends to mask the fact that PNG's economic growth has been below potential since the country's independence in 1975, given that GDP had been

growing at an annual average rate of about 6.0% during 1961–1974. If the economy had sustained that growth rate until 2009, GDP in 2010 could have been nearly 3 times its actual size. In addition, GDP growth was particularly volatile between 1975 and 2002, as the economy went through several boom and bust cycles in the growth rates, fluctuating from –3.9% to 18.2% (Figure 2.1). Further, the economy is projected to grow by about 8.5%–9% in 2011 (ADB 2011, PNG Advantage Conference).

Although external shocks (two global oil crises, fluctuations in global agricultural commodity markets, and natural disasters including adverse weather conditions) and internal shocks (poor fiscal management and political upheaval) have contributed to the volatility of the economic growth,

Figure 2.1. Comparison of GDP Growth Rates



one contributing factor is the economy's heavy dependence on mineral and resource extraction and fluctuations in international markets for these commodities. During 2001–2010, mineral-related exports accounted for about 76% of exports on average (Bank of PNG QEB Statistical Tables). Thus, high commodity prices in the international markets have been largely responsible for PNG's improved economic performance in recent years.

Looking ahead, one question is whether the recent improvement in PNG's economic performance can be sustained or is it, too, a boom that will be followed by a bust. In terms of sustaining performance, stable macroeconomic management in recent years and some of the planned initiatives give hope that the improved economic performance will be sustained in future. The \$15 billion PNG LNG¹ Project in partnership with Exxon-Mobil, with its first phase due for completion in 2014, promises to generate substantial growth in GDP and government revenues. A challenge the country faces is how to ensure that the benefits from the PNG LNG Project and other similar project, are not limited to direct beneficiaries, but help spur growth in other sectors and benefit the population in general.

2.1. Overview of the Economy

PNG society is heterogeneous, with more than 800 distinct linguistic and ethnic groups. Due to this diversity, chronic but low-level civil conflicts or tribal wars are common but largely concentrated in the highlands. While tribal conflicts are caused mainly by traditional animosities that predate PNG's current state system, the weak presence of the government in the rural highlands has failed to ameliorate the continued occurrence of such conflicts. Continuing high levels of conflict tend to undermine trust and successful maturation of potential infrastructure investments in these otherwise critical areas.

From an economic perspective, PNG is a dual economy with a small formal industrialized sector and a much larger but widely diffused informal sector. The formal economy provides a narrow employment base in mineral production; manufacturing, the public sector; and service industries such as finance, construction, transport,

and utilities. Traditional subsistence farming accounts for the bulk of economic activity in the informal economy.

Following several years of surpluses, the fiscal balance shifted to a large deficit in 2009 due to increased spending from trust funds. PNG has made progress in reducing the public debt burden; however, in the event of a combination of negative shocks it remains at moderate risk of debt distress.² Infrastructure and quality of service delivery remain inadequate despite the inflow of revenues from exploitation of the country's abundant natural resources. Per capita income is currently lower than at the time of independence, and recent human development indicators point to a growing "poverty of opportunity," i.e., lack of access to basic services, jobs, and education (Wooster 2011).

PNG has also yet to erase the perception of high investment and political risk, which is evident in the relatively low investment and investment potential—only 2% of the 194 executives surveyed from multinational enterprises investing in developing countries indicated that they had current investments in PNG, and their plans to invest within the next 5 years were at the same 2% level (MIGA 2011). The relatively low investment is attributed partly to the perceptions of political instability, violence (tribal conflicts, civil disturbance, and terrorism), and poor governance.

2.1.1. Synopsis

PNG's economic performance in terms of per capita income paints a gloomy picture. During 1975–2010, the aggregate growth in GDP per capita in real terms was only about 7.5%, which compares unfavorably with 32% for Fiji, 286% for Indonesia, 268% for Malaysia, 50% for the Philippines, and 358% for Thailand (Figure 2.2). Major economies in Southeast Asia and the Pacific (such as Indonesia and Thailand) raised their per capita GDP levels far above those of PNG. Similarly, Viet Nam is expected to increase its per capita GDP income above that of PNG in the next couple of years, if current trends continue.

PNG's poor performance in per capita GDP is due both to weak GDP growth and a high population growth rate. In particular, the performance during

¹ LNG = liquified natural gas.

² The debt-to-GDP ratio declined from 34.1% in 2007 to an estimated 28.6% in 2010.

Figure 2.2. Per Capita GDP (in 2000 \$)

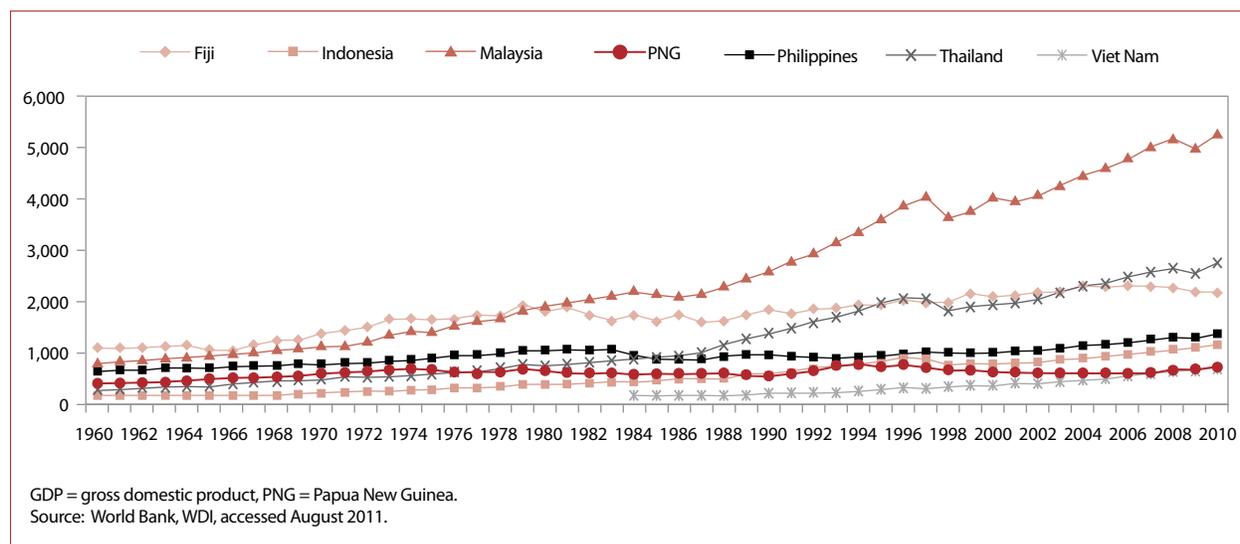


Table 2.1. Average Annual Growth Rate of Real Per Capita GDP (%)

Country	1979–1984	1985–1990	1991–1996	1997–2002	2003–2010	1979–2010
Fiji	...	...	...	5.65	6.79	5.90
Indonesia	4.57	4.63	6.21	-0.46	4.23	3.86
Malaysia	4.64	2.60	6.78	1.13	3.22	3.64
PNG	-2.03	-0.91	5.84	-4.02	2.30	0.37
Philippines	-0.65	0.16	0.50	1.03	3.24	1.00
Thailand	3.24	7.69	6.96	-0.04	3.65	4.26
Viet Nam	...	2.26	6.34	5.33	5.96	5.05

... = data not available, GDP = gross domestic product, PNG = Papua New Guinea.
Data for Viet Nam are from 1985–2010.
Source: World Bank, WDI, accessed August 2011.

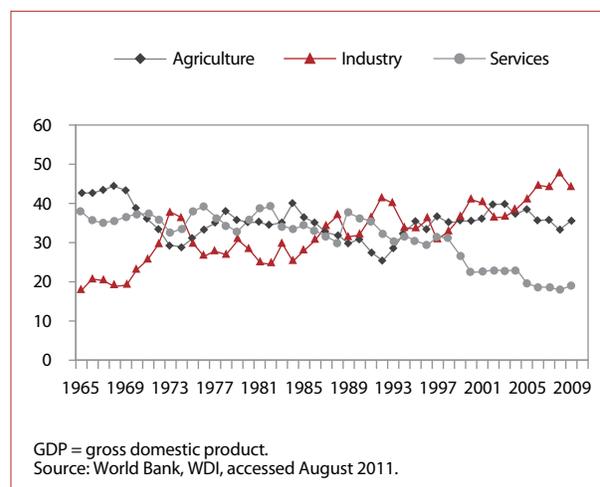
the 1979–1990 and 1997–2002 periods was very poor, with negative rates of average annual per capita GDP growth (Table 2.1). Poor performance during these periods all but wiped out the gains achieved in 1991–1996 and 2003–2010, resulting in the annual growth rate of per capita GDP averaging only 0.37% from 1979 to 2010. Box 2.1 summarizes the factors that affected the economic performance following PNG’s independence in 1975.

2.1.2. Accounting for Sources of Economic Growth

Growth by Sources of Production

Since the mid-1960s, the economy has witnessed a rather unique transformation. While

Figure 2.3. Sector Shares in GDP, 1965–2009



Box 2.1. Chronology of PNG's Economic Growth

Period	Growth Experience
1. Second half of 1970s—high commodity prices in international markets	Agricultural commodity prices rose in 1977 and copper and gold prices in 1979, translating into positive real GDP growth.
2. 1980s—downturn in commodity prices and internal shocks	Declining agricultural and metal prices combined with high oil prices were a major setback for the economy. The resulting fall in the revenues could not be accompanied by scaling down the expenditures, especially those related to administrative costs associated with decentralization, high salary and wage bills, and high costs of foreign public debt service. These factors, combined with the closure of the Bougainville Copper Mine, led to negative real GDP growth in 1989 and 1990.
3. 1990s—high growth in mining and logging subsectors but overall economic growth was poor because of internal and external shocks and constraints	<p>Real GDP expanded significantly in 1992 due to developments in the mineral subsector (Misima and Pogera gold mines and Kutubu oil fields started production in mid-1992) and increased activity in logging. These, coupled with higher mineral and petroleum prices and contained inflation, boosted government revenues and led to expansionary fiscal policies in 1993 and 1994. A key feature of the expansionary fiscal policies was heavy public sector borrowing from the private sector. Unfortunately, the gains could not translate into improved service delivery or a meaningful and desirable structural change in the economy.</p> <p>With the decline in oil prices in 1994, the expansionary policies fueled by heavy domestic borrowing led to depletion of foreign exchange reserves, and in turn to a balance-of-payments crisis. Devaluation and floating of the kina and expenditure controls helped the economy recover.</p> <p>The recovery, however, was short lived, with a number of internal shocks and constraints in 1997, including a severe drought, the Aitape cyclone, and the economic and political effects of the Sandline affair, which included a change of government. In addition, the government's weak control of its spending, a drought, and the Asian financial crisis led to large budget deficits and inflationary pressures in 1998 and 1999.</p>
4. 2000s—high commodity prices, and economic reforms and stability	The first half of the decade witnessed low commodity prices and poor economic performance. A rebound in the commodity prices and strong performance by the nonmining activities, however, led to high levels of growth in the economy. During this period, for the first time, growth in non-mining sectors exceed not only the population growth rate, but also that of the mineral sector for more than 2 consecutive years.

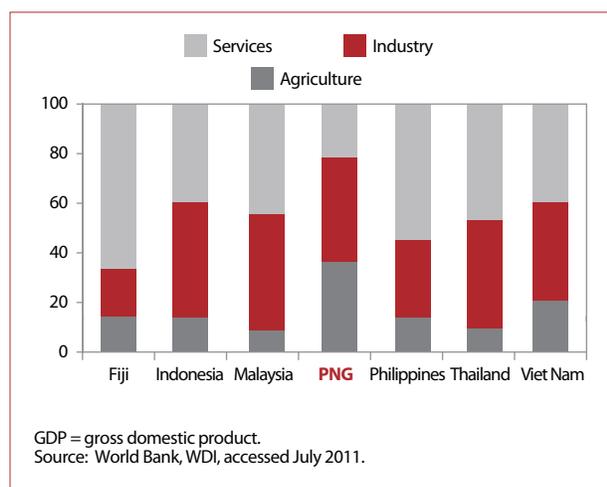
GDP = gross domestic product.
Source: Authors.

most other economies in Southeast Asia and the Pacific started out with dominant agriculture sectors that gradually gave way to the industry and services sectors, the PNG economy was largely transformed by the services sector contracting in favor of the industry sector (Figure 2.3). Between 1965 and 2009, the share of the industry sector (dominated by minerals) in GDP increased from 18.5% to 42%, while the share of services declined from 38.5% to 21%. In contrast, the agriculture sector's share declined slightly, by 6 percentage points, from 43% in 1965 to 37% in 2009. While

the transformation has been from the informal (agriculture and services) to the formal (industry) sectors, the informal sectors continue to employ the large majority of the workers.

Compared with other major economies in Southeast Asia and the Pacific, between 2001 and 2009, the share of PNG's agriculture sector in GDP was much larger, while that of the services sector was much smaller (Figure 2.4). The share of PNG's industry sector in GDP, however, was comparable to that of other economies. Unlike in

Figure 2.4. Average Share of Major Production Sectors in GDP (2001–2009, %)



the other economies, PNG's industry is dominated by the mining and construction subsectors, and its manufacturing subsector remains small.

Agriculture. During 1981–2008, PNG's agriculture sector grew at an average annual rate of about 2.6%, with positive growth throughout the period. During this period, the agriculture sector's share of GDP remained fairly constant, averaging 35.8% during 2006–2008 compared with 37.2% during 1981–1985. However, the contribution to overall GDP growth varied widely, fluctuating between a high of 536.8% in 2001–2005 and a low of -303.2% in 1981–1985 (Table 2.2).

Industry. During 1981–2008, industry grew at an average annual rate of about 3.7%, with strong performance in 1991–1995 and 2006–2008. Growth in the sector, however, was volatile, with two of the 5-year periods recording negative growth and one recording a growth rate of about 15.9%. Despite this volatility, the sector was able to expand its average share in GDP from 23.8% during 1981–1985 to 33.1% during 2006–2008. The sector also made a substantial contribution to GDP growth between 1981 and 2008, with contributions ranging from 24.6% in 1996–2000 to 331.3% in 1981–1985. In terms of subsectors, between 2001 and 2009, the mining subsector (including quarrying and petroleum) and the construction subsector were the largest, with average shares of 37.6% and 34.8%, respectively. In comparison, manufacturing accounted for 22.9% of the industry sector's GDP. Moreover, trends in manufacturing suggest it declined slightly in relative importance, with its share in industry's GDP moving down to 22.9% in 2009 from 24.5% in 2001.

Services. During 1981–2008, the services sector, with an average annual growth rate of 1.2%, was the poorest performer among the three major sectors of production. The poor performance was largely because of slow growth in 1981–1990 and negative growth in 1996–2000. A bright spot was the uptrend in the services sector with a growth of about 6.5% during 2006–2008. Strong growth in recent years, however, has not been sufficient to reverse the shrinking trend of the services sector's share in GDP. In 2008, services accounted for about 26.0% of GDP, versus 38.9% in 1981. In

Table 2.2. Average Annual Real GDP Growth and the Contribution of Major Production Sectors to GDP Growth (%)

Period	GDP Growth Rate	Agriculture		Industry		Services	
		Growth Rate	Contribution to GDP Growth	Growth Rate	Contribution to GDP Growth	Growth Rate	Contribution to GDP Growth
1981–1985	1.4	1.4	-303.2	0.9	331.3	1.7	-20.6
1986–1990	1.1	2.8	12.1	-0.7	72.5	1.1	5.1
1991–1995	8.6	5.9	16.1	15.9	56.2	5.1	20.8
1996–2000	-0.2	2.5	77.7	-0.1	24.6	-7.1	14.0
2001–2005	1.6	0.4	536.8	2.3	59.6	2.5	-454.1
2006–2008	4.8	3.1	20.7	5.8	39.6	6.5	36.0

GDP = gross domestic product. Contribution to GDP Growth refers to the percentage of GDP growth generated by the sector.
Source: Estimates based on World Bank, WDI, accessed August 2011.

addition, although the sector's contribution to GDP growth was a healthy 36.0% in 2006–2008, it was negative in 1981–1985 and 2001–2005. Also, the majority of the sector's share of GDP comprises low-value services. During 2006–2009, on average, 45.1% of the sector's output was from community, social, and personal services and another 25.3% was from wholesale and retail trade. High value-added subsectors, such as financing, insurance, real estate, and business services, accounted for only 14.2%.

Growth by Expenditure Component

On the demand side, as in most other major economies in Southeast Asia and the Pacific, consumption in PNG accounts for the largest share of GDP. Consumption's share, however, has been fluctuating widely for the last three decades due to the volatile performance of trade. In contrast, levels

of government expenditures and investment have been relatively steady.

Consumption. During 1981–2008, household consumption as a percentage of GDP grew at an average annual rate of about 3.3%, with negative growth recorded in 1986–1990 and 1996–2000 (Table 2.3). Although household consumption's share in GDP during 2006–2008 was similar to that during 1981–1985, this masks the fact that the share had declined to the lows of 48.2% in 1991–1995 and 42.5% in 2001–2005. Due to the fluctuations in household consumption, its contribution to the GDP growth rate was also volatile. Starting with –35.1% in 1981–1985, the contribution of consumption to GDP growth fluctuated between a low of –492.1% in 2001–2005 to a high of 350.7% in 2006–2008 (Table 2.4).

Table 2.3. Shares of Expenditure Components in GDP (%)

Period	Consumption		Government		Investment		Exports		Imports	
	Growth Rate	Share of GDP								
1981–1985	1.6	70.8	–1.9	22.6	–5.7	28.3	4.1	46.8	–1.1	–77.06
1986–1990	–2.9	65.3	0.6	20.6	4.5	23.8	0.7	50.8	–3.7	–65.3
1991–1995	3.2	48.2	0.7	17.7	5.7	21.7	14.9	60.5	2.8	–46.6
1996–2000	–1.7	53.7	5.0	18.0	3.3	20.3	0.6	57.8	4.5	–49.4
2001–2005	4.8	42.5	0.8	19.3	0.4	24.6	4.1	77.9	6.3	–64.3
2006–2008	25.1	71.6	–1.1	16.1	4.8	23.3	–18.4	51.5	0.2	–62.5

GDP = gross domestic product.

Source: World Bank, WDI, accessed February 2010.

Table 2.4. Contribution to GDP Growth by Expenditure Component (%)

Period	GDP Growth Rate	Contribution of Consumption	Contribution of Government	Contribution of Investment	Contribution of Net Exports
1981–1985	1.37	–35.1	–36.6	419.5	–266.4
1986–1990	1.15	79.5	–11.7	179.8	–188.5
1991–1995	8.59	12.0	1.56	26.7	76.2
1996–2000	–0.21	132.4	10.9	–20.7	–18.4
2001–2005	1.63	–492.1	–222.7	–218.0	1,032.8
2006–2008	5.48	350.7	–5.4	23.4	–268.6

GDP = gross domestic product. Contribution to GDP growth refers to the percentage of GDP growth accounted for by the expenditure component.

Source: World Bank, WDI, accessed February 2010.

Government. During 1981–2008, government expenditure as a percentage of GDP grew at an average annual rate of only about 0.8%, with negative growth recorded in 1981–1985 and 2006–2008 (Table 2.3). Despite the overall positive growth since 1981, government expenditures as a percentage of GDP declined steadily, with the share contracting from about 22.6% of GDP in 1981–1985 to about 16.1% in 2006–2008. On account of slow growth and the declining share in GDP, government expenditures have contributed negatively to GDP growth. In terms of share in GDP and contribution to GDP growth, government expenditures are expected to decline further when the construction activities of the PNG LNG Project peak. On the other hand, government expenditures stand to grow once the revenues from the PNG LNG Project start to flow in and the government expands and deepens public service delivery in remote regions.

Investment. During 1981–2008, investment grew at an average annual rate of about 1.9%, with negative growth recorded only in 1981–1985 (Table 2.3). However, investment's share in GDP fell from 28.3% to about 20.3% during 1996–2000 and then steadied in the 2000s. In terms of its contribution to GDP growth, investment lost importance and its contribution was relatively modest, at 23.4% in 2006–2008, after accounting for about 419.5% of GDP growth in 1981–1985 (Table 2.4). The sharp decline was reportedly due to the completion of mining projects that were initiated during the late 1970s and early 1980s. The trend, however, is expected to reverse with the onset of massive investment inflows expected for the PNG LNG Project and their multiplier effects.

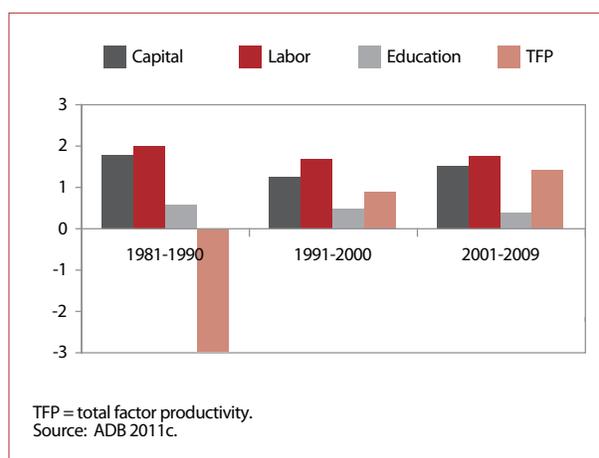
Trade. After running trade deficits during 1981–1991, exports exceeded imports from 1992 to 2005. The trend reversed once again in 2006–2008, when imports dominated exports. The contribution of trade to GDP growth followed a similar trend, with a substantial and positive contribution in 2001–2005 becoming negative in 2006–2008. The decline was mainly due to the decrease in world prices for the main export commodities, such as gold, copper, palm oil, coffee, cocoa, and copra. Although data for 2009–2010 were not available at the time this report was prepared, the recent rises in the prices of oil, gold, and other minerals should have had a positive impact on trade.

Growth by Factors of Production

A number of empirical studies have attempted to estimate the contributions of labor, capital, and total factor productivity (TFP) to PNG's GDP growth. Faal (2006) found that the strong GDP growth during 1965–1975 was driven both by the accumulation of physical and human capital, and by growth in TFP, which was a trend that could not be maintained in 1976–2004. Compared with 1965–1975, when the contributions of physical capital accumulation, human capital accumulation, and TFP growth accounted for 41.1%, 23.2%, and 35.7%, respectively, of GDP growth, contributions of physical capital accumulation, human capital accumulation, and TFP growth accounted for 22.7%, 72.7%, and 4.5%, respectively, in 1976–2004. Faal further noted that the decline in TFP growth during 1976–2004 was due largely to negative TFP growth in 1996–2004. However, Faal found that the decline in the contribution to economic growth made by the accumulation of physical capital may have been a trend since 1976. In contrast to physical capital accumulation and TFP, human capital accumulation maintained and improved its level of contribution to GDP in 1976–2004.

More recent estimates by an ADB study suggest that TFP growth was in the negative territory during 1981–1990, but it has since then recovered (ADB 2011c). The study estimated that the modest economic growth in 1981–1990 was driven by the accumulation of physical and human capital, which contributed 141.7% and 166.7%, respectively, of the GDP growth (Figure 2.5). In comparison, the

Figure 2.5. Decomposition of Economic Growth by Factors of Production (percentage points)



contribution of TFP growth to GDP growth during the period was estimated at -25% . The study estimated the contribution of improvements in the education level of the workforce to GDP growth during the period at 41.7% . The study found that for 1991–2000 and 2001–2009, the trends changed, with TFP growth making positive and comparable contributions to GDP growth.

2.2. Recent Trends in Poverty and Inequality

2.2.1. Poverty

Many countries in the South Pacific Region, including PNG, regard the concept of income-based (and to a less extent consumption-based) poverty as having limited applicability, because informal agriculture has traditionally been able to provide adequate subsistence for the majority of the population. As a consequence, PNG has adopted a broader concept of poverty, or “poverty of opportunity,” which refers to vulnerability and lack of opportunities, choices, and access to services. For this broader concept of poverty, the framework for analyzing the inclusiveness of growth described in Chapter 1 is useful, as it specifically investigates whether access to economic opportunities, basic social services, infrastructure, and productive assets are equal across geographical regions and among socioeconomic groups.

A good starting point, however, is investigating the monetary-based poverty situation as one of the many dimensions of poverty. Unfortunately, the PNG 2009 Household Income and Expenditure Survey data (which would have allowed an examination of PNG’s progress in poverty reduction since 1996, when the last household expenditure data were collected) were not available for analysis at the time of writing this report. Thus, Figure 2.6, provides instead the estimates of poverty incidence based on the PNG 1996 National Household Survey data. The figure clearly shows a deteriorating poverty situation. The estimates indicate that more than half of the population was below the national poverty line in 2005.

This is in stark contrast to the declining incidence of poverty in comparator countries (Figure 2.7): in Cambodia, the poverty incidence

Figure 2.6. Poverty Incidence (1990–2005, %)

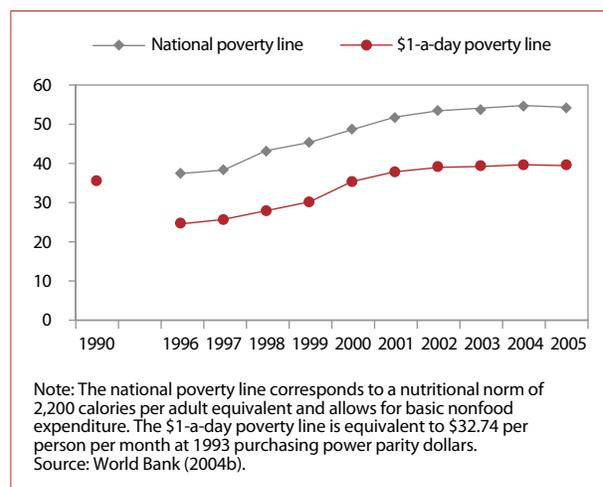
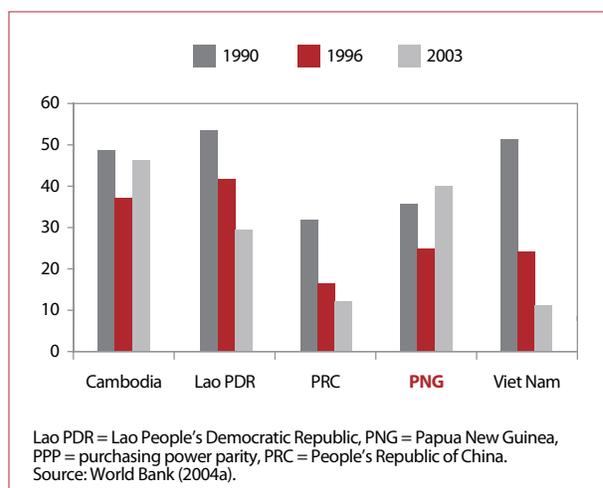
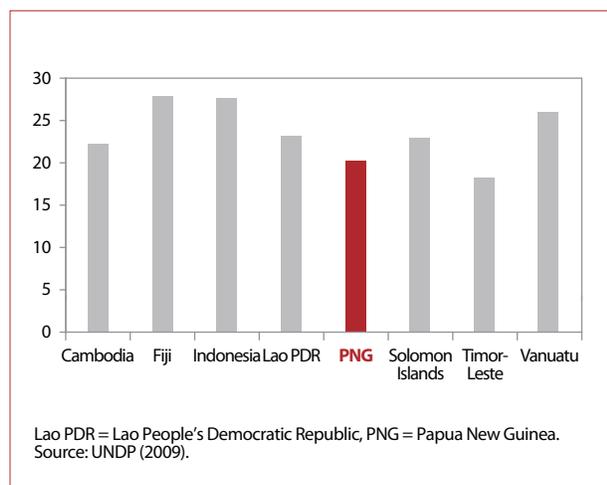


Figure 2.7. Poverty Incidence (\$1 a day poverty line at 1993 PPP, %)



also increased during 1990–2003, but poverty fell in the Lao Peoples’ Democratic Republic (Lao PDR), People’s Republic of China, and Viet Nam. In the Lao PDR and Viet Nam, while the poverty headcount rate was more than 50% in 1990, it was brought down below that of PNG by 2003. In terms of the human development index (HDI), which provides a broader measure of well-being, despite PNG’s steady progress since 1990 (the HDI increased from 0.432 to 0.541), the country ranks 148th (of 182 countries), and still lags behind most of the comparators (Figure 2.8). In fact, PNG was ranked as the third worst in the Asia and Pacific region, after Timor-Leste and Afghanistan.

Figure 2.8. Human Development Index (2007)

In recent years, however, PNG has been enjoying relatively strong economic growth, and an assessment of its impact on poverty would be useful. Datt and Walker (2006) provide the growth elasticity of poverty separately for growth in the mining and non-mining sectors, based on the \$1-a-day poverty line. Their calculations indicate that a 1% change in per capita consumption in the mining sector would

lead to a 0.1% decline in poverty, while a 1% increase in per capita consumption in the non-mining sector would reduce poverty by 0.9%. The lower elasticity of poverty for mining illustrates the limited poverty-reducing effect of growth in that sector. Using these elasticities, Chandy (2009) estimates that the \$1-a-day poverty measure is likely to have fallen by 8.8 percentage points in PNG between 2003 and 2008, with the major contribution coming from the nonmining sector. Nevertheless, he argues that this would not be sufficient to compensate for the increased incidence of poverty that is estimated to have occurred during the late 1990s and early 2000s.

In PNG, one of the main features of poverty is that it is largely a rural phenomenon. Urbanization is limited in PNG, and the majority of the people still live in rural areas (Table 2.5). Taking into account the greater poverty incidence in rural than in urban areas, it is not surprising to find that 94% of the poor reside in the rural areas. Given that the poverty in rural areas is more severe than in urban areas and that economic growth rates are lower in rural than in urban areas, reducing rural poverty is likely to be particularly challenging for PNG (Gibson and Olivia 2002). Though poverty levels are low in

Table 2.5. Poverty Measures (1996)

	Headcount		Poverty Gap		Poverty Severity ^a		Share of Total Population
	Index	Contribution to Total (%)	Index	Contribution to Total (%)	Index	Contribution to Total (%)	
PNG	30.2 ^b	100.0	9.1	100.0	3.9	100.0	100.0
Urban	11.4	5.7	2.2	3.7	0.7	2.6	15.1
Rural	33.5	94.3	10.3	96.3	4.5	97.4	84.9
National Capital District	16.3	3.0	3.8	2.3	1.4	1.9	5.5
Papua	30.0	14.8	9.8	16.1	4.3	16.4	14.9
Highlands	26.0	34.6	8.0	35.1	3.4	34.7	40.1
Momase	38.8	37.5	11.2	35.9	5.0	36.9	29.2
Islands	29.8	10.2	9.3	10.5	3.8	10.1	10.3

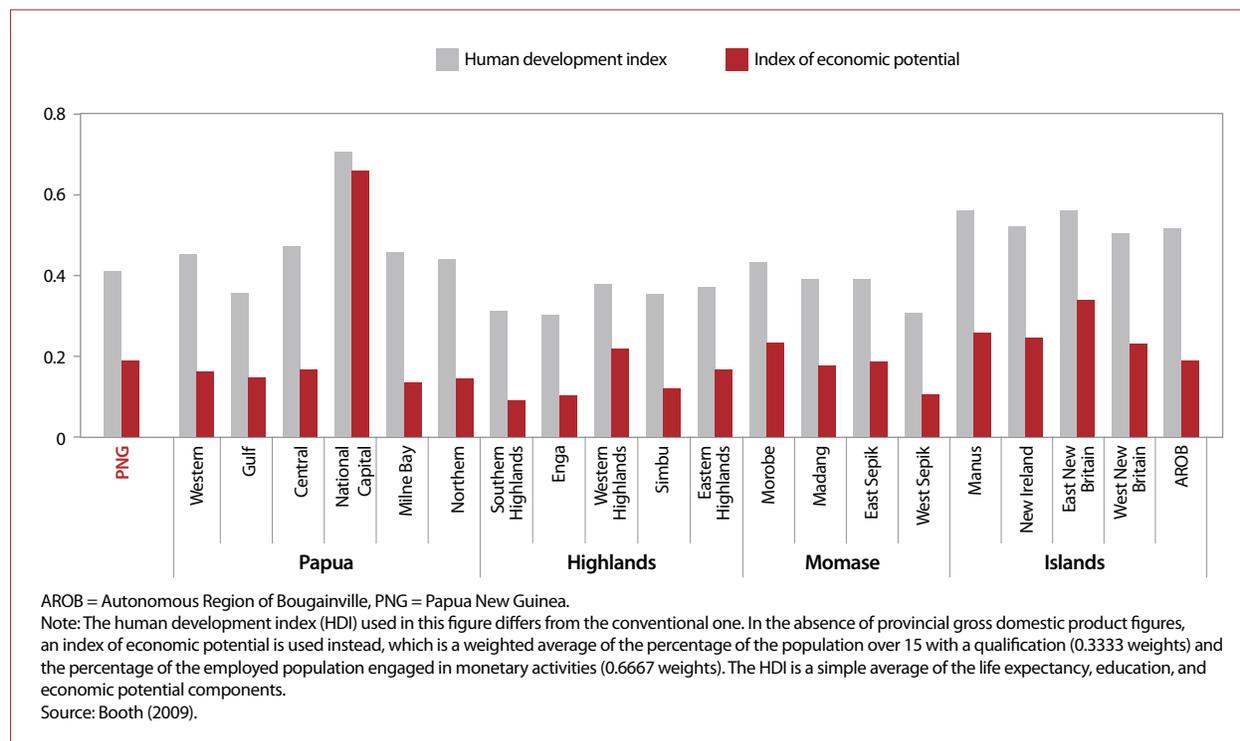
PNG = Papua New Guinea.

^a Poverty severity is the average value of the square of the depth of poverty for each individual.

^b 30.2% is lower than the World Bank's estimate of 37.5% due to the difference in nonfood allowance in the poverty line used for each estimation.

Source: Gibson and Rozelle (2003).

Figure 2.9. Index of Human Development and Economic Potential (2000)

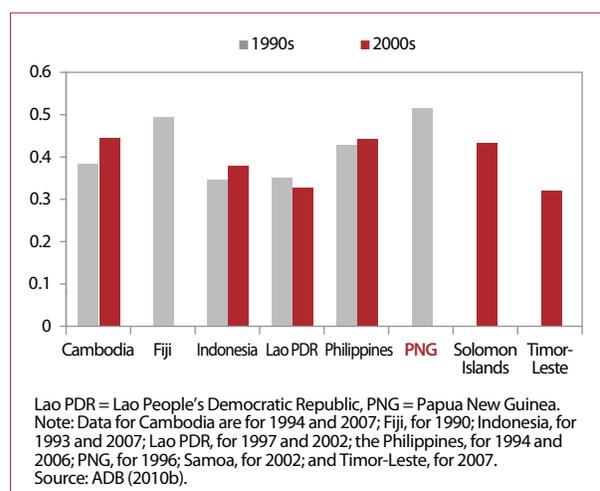


urban areas, the urban poor typically are away from their wantoks (see p. 90) and hence do not benefit from the traditional social safety nets that the poor in rural areas may have access to, which makes conditions much harsher for the urban poor.

In addition to the rural-urban variation in poverty, poverty incidence varies greatly across geographical regions. According to the PNG 1996 National Household Survey data, while the poverty headcount rate was about 16% in the National Capital District, it was nearly 40% in Momase Region (Table 2.5). There is also a disparity in the HDI across the country (Figure 2.9). The National Capital District has the highest HDI, followed by the provinces in the Island region. While the overall index and the index of economic potential are broadly correlated, there are some exceptions. For example, Milne Bay and Northern provinces have a low index of economic potential relative to the overall index, whereas the opposite is the case in provinces such as Western Highlands and Morobe (Booth 2009).

Geographical variations in poverty are due partly to PNG's extreme landscape. It consists of

Figure 2.10. Gini Coefficient

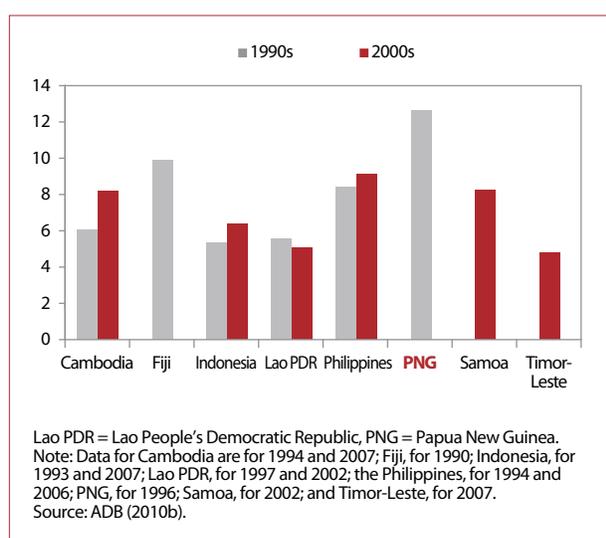


more than 600 islands, and its altitude ranges from sea level to 4,500 meters above it. Furthermore, the population of about 6.3 million is divided into more than 850 language groups (Cammack 2007). Such geographical and social fragmentation poses a serious challenge to increasing the inclusiveness of economic growth in PNG.

Table 2.6. Inequality Decomposition by Province, District, and Local Government (1996)

	GE(0)	GE(1)
Total	0.399	0.468
Of which		
Within provinces	0.379	0.414
(as a share of total)	(95.0%)	(88.4%)
Between provinces	0.020	0.054
(as a share of total)	(5.0%)	(11.6%)
Of which		
Within districts	0.357	0.362
(as a share of total)	(89.6%)	(77.3%)
Between districts	0.041	0.106
(as a share of total)	(10.4%)	(22.7%)
Of which		
Within local governments	0.301	0.298
(as a share of total)	(75.5%)	(63.7%)
Between local governments	0.098	0.170
(as a share of total)	(24.5%)	(36.3%)

GE = generalized entropy.
Source: Gibson et al. (2005).

Figure 2.11. Income Ratio of the Richest 20 Percent to the Poorest 20 Percent

2.2.2. Inequality

PNG also faces one of the highest levels of inequality, if not the highest, in the Asia and Pacific region. PNG's Gini coefficient was a high 0.51 in 1996, compared with 0.49 in Fiji in 1990, 0.34 in Indonesia in 1993, and 0.43 in the Philippines in 1994 (Figure 2.10). In the income of the richest 20% to the poorest 20%, PNG also recorded a significantly high ratio, at about 12.6, in comparison with other countries in the region (Figure 2.11). Unfortunately, the unavailability of data prevents calculating more recent inequality measures for PNG.

In PNG, inequality is largely evident within geographical areas. Gibson et al. (2005) decomposed inequality into within- and between-area components based on the generalized entropy

class of inequality measures.³ Their results showed that about 95% and 88% of consumption inequality is due to the within-province source at the low and middle range of the expenditure distribution (i.e., GE[0] and GE[1]), with a greater share for the within-province component at the lower end of the distribution (Table 2.6). Even at the district and local government levels, inequality is due mainly to within-area inequality. The relative insignificance of between-area variation suggests that geographical targeting of public spending interventions is likely to cause exclusion and inclusion errors.

An important implication of high inequality is that it can have an adverse effect on poverty reduction efforts. For example, a decomposition analysis using data from urban household surveys conducted in 1986 and 1996 suggests that a rise in both the depth and severity of poverty in the 1990s was due largely to increased income inequality, rather than slow growth in average incomes (Gibson 2000a). As analyzed in detail in Chapter 4, conscious efforts to enhance the inclusiveness of economic growth will, therefore, be a key to further reducing poverty in PNG.

³ GE(α) refers to generalized entropy indexes, which are commonly used as an inequality measurement. These inequality indexes differ in their sensitivity to income differences in different parts of the income distribution depending on the parameter used (i.e., α). Lower values of the parameter make the index more sensitive to differences in the lower tail of the distribution, while the higher values make it more sensitive to differences at the upper end.

Chapter 3

Critical Constraints to Growth

In Papua New Guinea (PNG), the investment rate as a percentage of gross domestic product (GDP) hovered between 16% and 23% in the 2000s, and compared unfavorably with the major economies in Southeast Asia (Figure 3.1). PNG's investment rate, at 18% of GDP in 2010, is higher than that in Malaysia (14%) but lower than the rate in Indonesia (32%), Philippines (21%), Thailand (26%), and Viet Nam (38%).

In addition to being low, the investment rate has also been volatile (Figure 3.2). While a breakdown of recent investment data is not readily available, if the trend observed between 1989 and 1998 continued in the 2000s, private sector (other than

in the mining subsector, which in this chapter includes oil) and public sector investments are the more stable components of the overall investments, and the volatility is due to large and lumpy investments in mining (Figure 3.3). This has particularly been the case for foreign direct investment (FDI), which was dominated by the mining subsector, with a share of 77.4% during 1977–2004 (Aipi and Lloyd 2009). Similar to the investment rate, the FDI flows experienced large fluctuations, ranging from 0.4% to 12.7% of GDP between 1984 and 2008 (Figure 3.4). While breakdowns of the FDI flow data were not readily available for recent years, proposals received by the Investment Promotion Authority indicate that, during 1993–2008, mining and petroleum accounted for 39% of the value of

Figure 3.1. Investment Rate in Selected Countries (% of GDP)

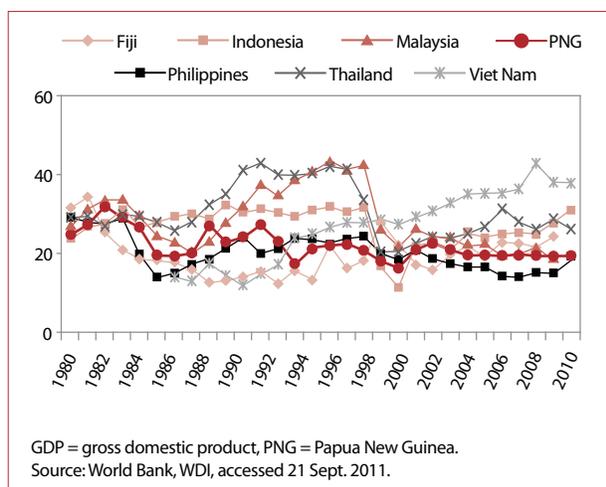


Figure 3.2. Trends in Investment Level and GDP Growth

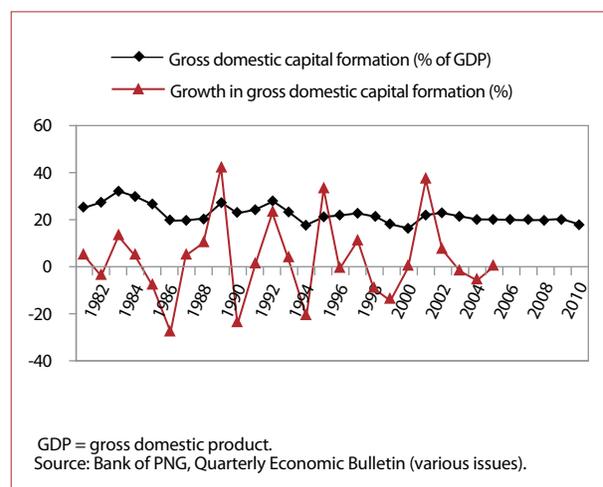


Figure 3.3. Breakdown of the Investment Rate during 1989–1998 (% of GDP)

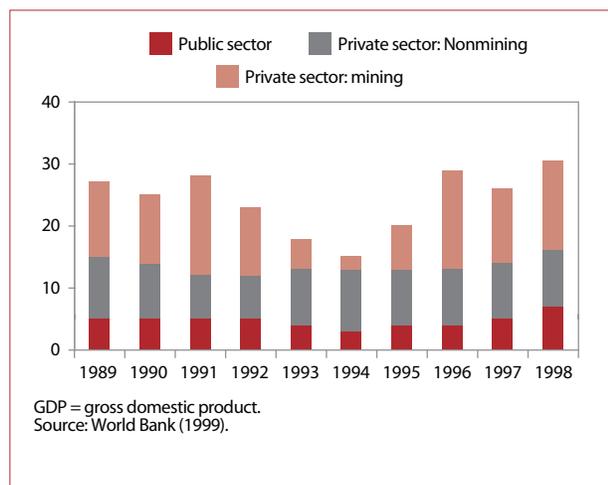
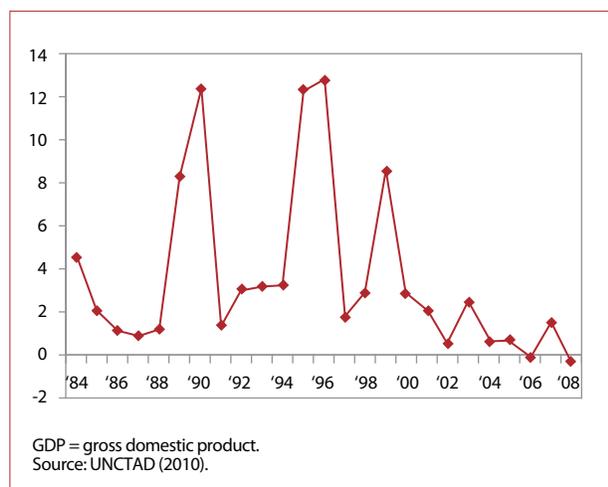


Figure 3.4. Foreign Direct Investment Flows (1984–2008, % of GDP)



FDI proposals; forestry and agriculture, 22%; and communications, 10%.¹

Recent and planned initiatives in the mining sector, including the PNG LNG Project, promise sustained levels of private investment in the medium run. Attaining sustained broad-based economic growth, however, will also require boosting private sector investment in the non-

mining sector. Private sector investments will have to be the engine of growth in the medium to long run. Higher levels of public sector investments will also be crucial, especially to address constraints that the private sector faces to boosting and diversifying its investments. This chapter presents a diagnosis of PNG's economy and aims to identify constraints on the efforts to boost and diversify investment levels. The chapter specifically asks if the investments are constrained by a high cost of finance, low social return to investment, and/or low appropriability of private returns.

3.1. Cost of Finance

The real domestic interest rate in PNG, while comparable with that of other countries in Southeast Asia and the Pacific, fluctuated widely between 1980 and 2010 (Figure 3.5). The extent of volatility is demonstrated from the fact that the average rate shot up from about 1.3% in 2008 to nearly 15% in 2009 and then fell sharply to less than 1.1% in 2010. The reason behind the spike was a sharp drop in the inflation rate in 2009. Though the real interest rate has been low, there may still be inefficiencies and hindrances in access to finance for locally based investors. Moreover, the available financial instruments may not match the needs of investors due to a mismatch between the typical loan period and/or the loan terms and the investment requirements. The subsequent discussions in this section will analyze the financial sector and try to ascertain if access to finance is a constraint for investors, especially home-based investors who will be relying solely on the domestic financial sector.

PNG's level of aggregate domestic savings has fallen sharply in recent years, and may constrain home-grown investment in future. PNG's gross domestic savings as a percentage of GDP rose sharply from a little over 11% in 1989 to about 39% in 1995, but then plummeted to about 20% with the onset of the 1997 Asian financial crisis (Figure 3.6). The savings rate, however, recovered to the pre-crisis levels by 2000, and averaged at about 33% between 2000 and 2008 before falling sharply in 2009. In 2009, PNG's savings rate at 22%, compared unfavorably with the Philippines (25%), Malaysia (31%), Indonesia (31%), Thailand (30%), and Viet Nam (29%).

The significance of the sharp drop in the domestic savings rate between 2008 and 2009

¹ Information conveyed through Nicola Blackford from the PNG Investment Promotion Authority Certification Database, which keeps records of all foreign investment proposals lodged with the authority.

Figure 3.5. Real Domestic Interest Rates (%)

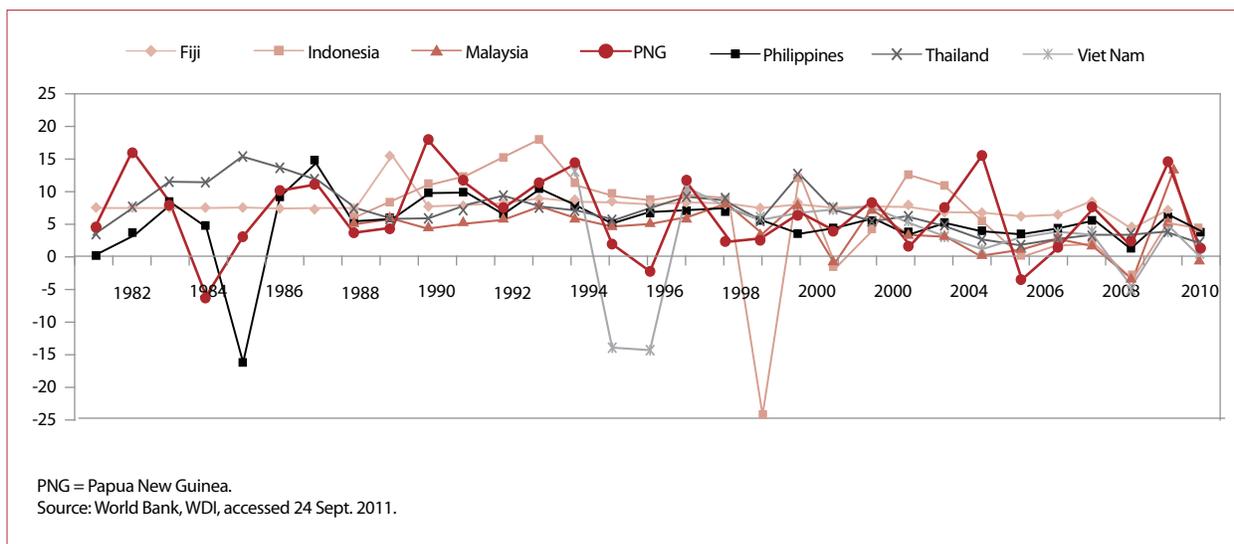


Figure 3.6. Gross Domestic Savings (% of GDP)

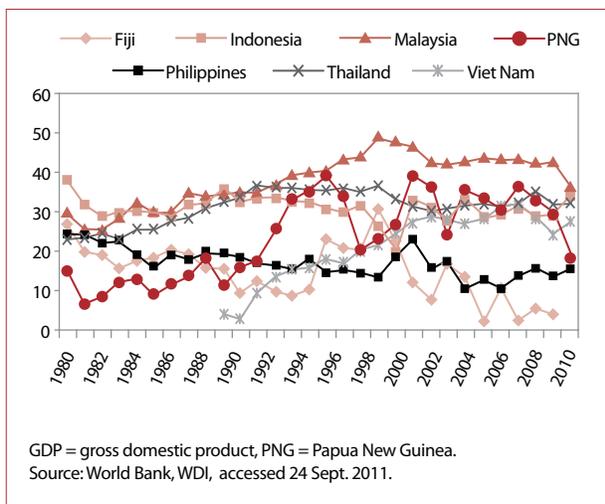
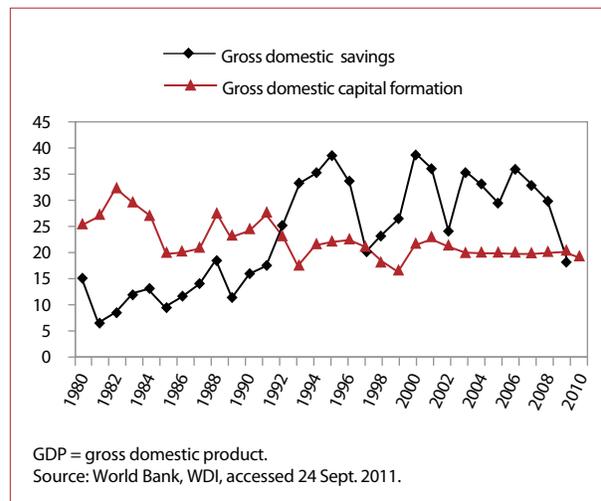


Figure 3.7. Domestic Savings and Investment Rates (% of GDP)



becomes even more apparent when it is compared with the investment rate. As is evident from Figure 3.7, the domestic savings rate is only marginally above the investment rate. Between 2008 and 2009, the savings rate fell from about 29.8% of GDP to 22%, while the investment rate stayed steady at about 20% of GDP. The trend, if not quickly reversed, could mean a return to the pre-1992 situation, when the savings level was persistently below the investment level. Low levels of savings may be a particular concern for home-grown investors who may find it difficult to boost their investment levels to keep up with the opportunities that may open up within the economy.

The efficiency of PNG’s domestic financial intermediation compares unfavorably with that of major economies in Southeast Asia and the Pacific. Inefficiencies in financial intermediation can translate into a high cost of financing for the investors. The literature notes that substantial improvements have been achieved in PNG’s financial sector since 2000. Some of the salient reforms include empowering the central bank, the bank reconstruction following the privatization of the PNG Banking Corporation, superannuation legislation reform, and establishment of the stock exchange in 1999. As a result, the financial markets have evolved, with

a domestic bank dominating domestic savings (in most Pacific island countries, Australian commercial banks dominate domestic savings) and nonbanking institutions providing financial services.

Despite these reforms, financial intermediation remains poor. Given that the banking sector is still the largest provider of corporate credit in the economy, the spread between deposit and lending rates is a key indicator for measuring the efficiency of financial intermediation. A higher spread indicates inefficiencies in the system, while a lower spread implies the reverse. As Figure 3.8 shows, the spread has been decreasing since 2004, mainly on account of decreasing lending rates and stable deposit rates. However, the spread remains higher than that in the 1990s, reflecting the scope to improve competition in financial products. Inefficiencies in intermediation in the banking sector are also apparent when PNG's spread is compared with the spreads of the other major economies in Southeast Asia and the Pacific. In 2009, PNG's spread was reported at 7.8 percentage points, against 7.1 percentage points for Fiji, 3.0 for Malaysia, 5.2 for Indonesia, and 4.9 for the Philippines.

Despite impressive growth in the recent past, the level of credit provided to the private sector remains low. Credit to the private sector has more than doubled since 2005, and stood at 32.1% of GDP in 2009 from 14.0% in 2005 (Figure 3.9). Despite this high growth, the ratio of private sector credit to GDP remains one of the lowest among the major Southeast Asian and

Figure 3.8. Spreads between Deposit and Lending Rates (percentage points)

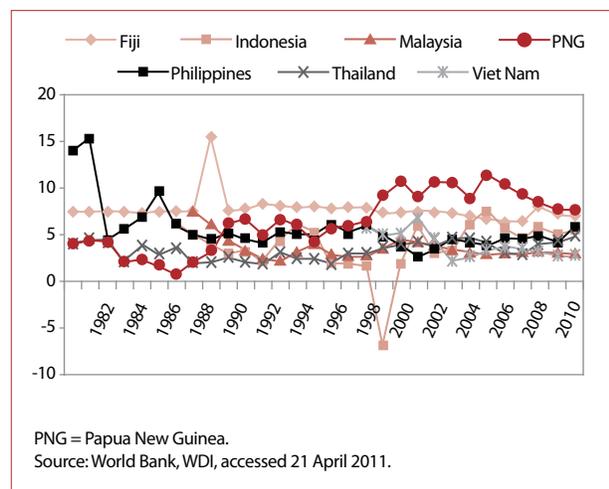
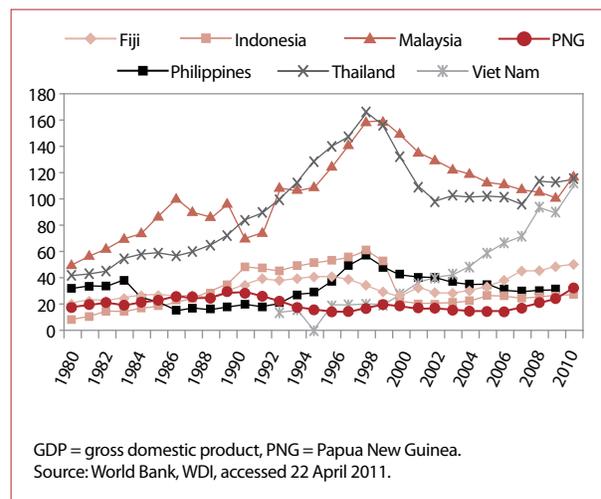


Figure 3.9. Domestic Credit to the Private Sector (% of GDP)



Pacific economies—just above Indonesia (27.6%) and below Fiji (49.9%), Malaysia (117.1%), Thailand (116.3%), and Viet Nam (112.7%).

One reason for the low level of private sector credit could be a lack of funds or liquidity in the banking sector. Data from the Bank of PNG's *Quarterly Economic Bulletin* (various issues), however, indicate that this may not be the case. A review of the liquidity position suggests that the liquid assets being held by the commercial banks have been far exceeding the levels required by the central bank. In July 2010, the ratio of liquid assets to total deposits and other prescribed liabilities was reported at 50.5% versus the 25.0% required by the central bank (Figure 3.10).

While two other reasons for a low level of private sector credit could be a cautious approach to lending in light of concerns about the health of the banking sector and/or a poor rate of returns on assets, this does not seem to be the case, as the banking sector has been growing and its performance has been improving. Nonperforming loans averaged about 2.3% of total loans between 2005 and 2009, which is an impressive improvement from 16.9% in 2000 (Figure 3.11 and IMF 2009). Nonperforming loans rose slightly from 1.7% to 3.0% in the second quarter of 2009 on account of the global economic crisis, but the ratio has been declining since then and was reported at 2.3% by end of fourth quarter of 2009. In comparison, the percentages of nonperforming loans in 2009 for Indonesia, Malaysia, Philippines, and Thailand were 3.3%, 3.7%, 4.1%, and 5.3%,

Figure 3.10. Excess Local Currency Reserves with Commercial Banks
(% of total deposits and other prescribed liabilities)

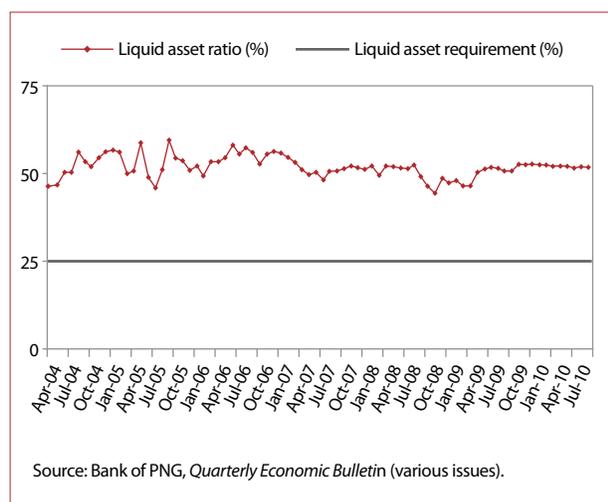
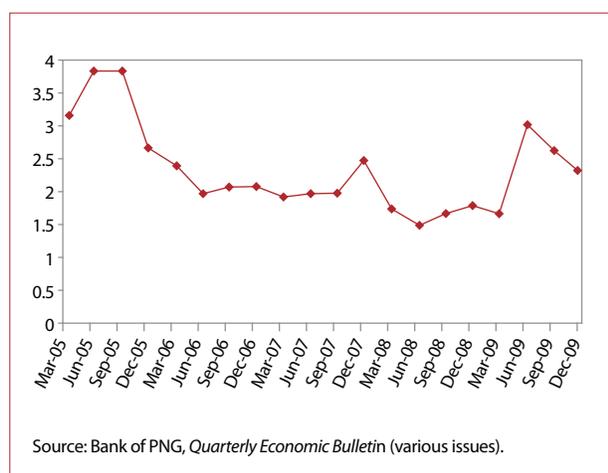


Figure 3.11. Nonperforming Loans (% of total)



respectively. In terms of the capital adequacy ratio, the banking sector ratio in PNG remained stable at about 25% between 2001 and 2009, which is more than double the regulatory minimum of 12% (IMF 2009, 2010b). The ratio also compares favorably with the ratios of Indonesia, Malaysia, and Thailand in 2008, at 16.7%, 12.1%, and 14.2%, respectively (ADB 2010b). Returns on assets have also been gradually improving, with a rate of return of 1.6% reported in September 2008 compared with 1.2% in 2000 (IMF 2009).

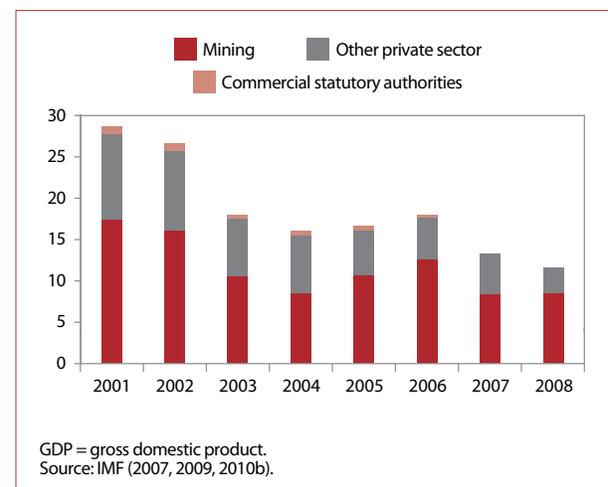
Three other explanations that could explain the low level of private sector credit include a lack of appetite for credit, ability of the investors to access finance, and capacity of the banks to service

the investors. Lack of appetite may be reflected by a scarcity of bankable projects and a lack of demand for lending. This may be due to low rates of returns on investments, which will be examined in detail in the following sections. Another possibility may be that, while the demand for finance is high, the investors may be unable to raise collateral or counterpart funding. This aspect has been examined extensively in a number of studies, which note that the inability to use customary land as collateral for commercial loans has limited potential borrowers' and entrepreneurs' access to finance (e.g., ADB 2001, ERI 2003).

Yet another explanation could be structural rigidities, including weak enforcement of contracts and credit rights (IMF 2009). Such rights, however, seem to be changing with the reforms ongoing in PNG, and the impact is evident in the country's recent rapid growth in provision of credit to the private sector.

Access to international financial markets is limited to the mining subsector and large investors, but may not constitute a critical constraint. The ability to access capital for investment appears to vary considerably by sector and firm size. For example, in the mining subsector, large firms generally source finance from overseas. The subsector takes the largest share of the private sector's external debt, and accounted for 72% of it in 2008. Private external debt increased between 2004 and 2006, mainly due to lending for the mining subsector, but then declined in 2007 and 2008 as two large companies in mining and manufacturing repaid debts (Figure 3.12).

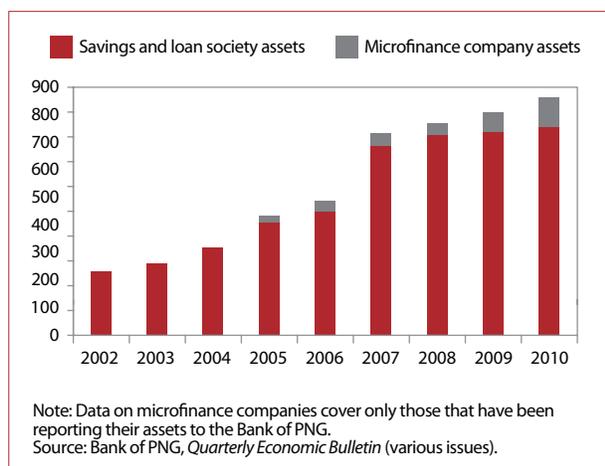
Figure 3.12. Private External Debt (% of GDP)



Foreign equity has been increasing in PNG since 2002, at an average growth rate of 7%. Since 2002, the mining subsector has been the largest recipient of foreign equity investment, with up to 75% of the total (Bank of PNG 2009c). Foreign equity holdings in other sectors grew only about 2.7% between 2006 and 2008. Recent reductions in foreign debt and current account surpluses also indicate that large investors in the mining subsector face few constraints in accessing foreign funds. This is further reflected in the stable outlook for long-term foreign currency sovereign credit ratings, despite PNG still being rated B+, with “significant speculative characteristics” (Standard & Poor).

Although the access to and cost of finance do not seem to constitute a critical constraint to private investment overall, micro, small, and medium-sized enterprises may find it difficult to access finance. Savings and loan societies and microfinance companies have been growing at a rapid pace, with assets of the former more than tripling in real terms between 2002 and 2010 (Figure 3.13). Their lending volume, however, is just a fraction of their assets. In 2010, the savings and loan societies’ lending volumes were 27.4% of their total assets, a decline from 44.1% in 2002. The share of lending to total assets declined despite the fact that the lending volumes in real terms had more than doubled between 2002 and 2010. In the case of microfinance companies, the lending volumes as a proportion of their total assets paint a better picture, at 20.0% in 2010, which was a major improvement over lending volumes of 10.6% of total assets in 2005.

Figure 3.13. Assets of Savings and Loan Societies and Microfinance Companies (K million, in 2008 terms)

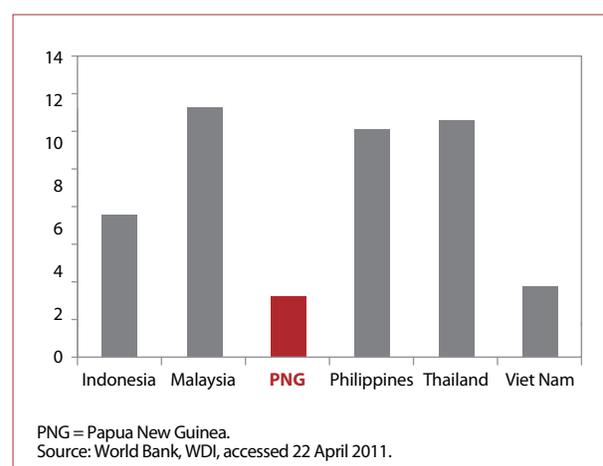


Low lending levels may, arguably, be due to a number of constraints, including lack of easy access to banking facilities, lack of competition, borrowers’ not being familiar with lending, and cost of capital. First, lack of access to banking facilities translates into a small proportion of the population having bank accounts. While the data on savings and loan societies and microfinance companies were not readily available, in 2009 PNG had only 2.9 commercial bank branches for every 100,000 people, well below that in most major economies in Southeast Asia (Figure 3.14).

Second, a lack of competition in the sector and borrowers who are not well-versed with contractual procedures translate into disproportionately high lending rates charged by the microfinance and finance companies, merchant banks, and savings and loan societies. Studies (e.g., Bank of PNG 2008, World Bank 1999) argue that a number of microfinance companies in PNG have not performed well and would need to charge even higher interest rates in the future to recoup their costs. Further, PNG’s microfinance industry is largely informal and unregulated, and it is oriented toward mobilizing savings rather than providing lending.

Last, survey findings suggest that the cost of capital may have been somewhat reduced during 2002–2007 (INA 2008a). In 2007, businesses rated interest rates as a hindrance to business and investment at 3.7 on a scale of 1 to 6, a decline from 4.6 in 2002. Whether this decline occurred also in relation to smaller enterprises cannot be confirmed

Figure 3.14. Commercial Bank Branches (per 100,000 people)

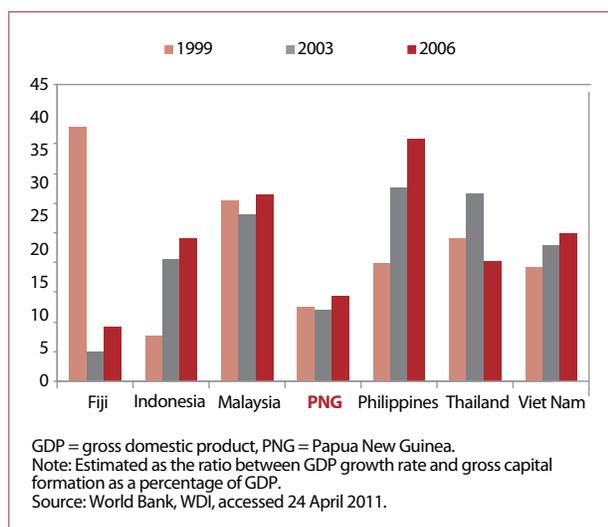


due to a lack of applicable recent surveys aimed at micro and small enterprises and households.

3.2. Social Returns to Investments

Low levels of economic growth and investment can be caused by low social returns to economic activities, which in turn can be due to inadequate human capital, infrastructure, and other public goods that complement private investments. Inadequacy in these complementary factors can lower the productivity of factors of production and increase costs of doing business, which in turn can reduce returns to investment. Figure 3.15 presents estimated social returns to investment. In 2006, social returns to investment in PNG were about 13.1%—above Fiji (8.5%) but below Indonesia (21.7%), Malaysia (28.6%), Philippines (36.8%), Thailand (18.2%), and Viet Nam (22.4%). Comparatively low social returns could be a symptom of deficiencies in human capital and/or infrastructure.

Figure 3.15. Social Returns to Investment (%)



3.2.1. Human Capital

Formal employment opportunities are low in PNG, and a majority of the labor force is involved in farming. In the absence of recent data sets, it is difficult to ascertain employment levels in the country; however, the evidence indicates that formal employment levels are low, with only a small proportion of the labor force being employed in the formal sector and a relatively large proportion engaged in farming. The 2000 Population Census, the latest available comprehensive data set on employment, indicated that only 12% of people 10 years and older had wage employment. This was a slight decline from the level in 1990, when 13.5% of the population was reported as having wage employment (Table 3.1). Census data also noted that self-employment had increased by over 200% between 1990 and 2000, which implies that the importance of the informal sector is increasing.

However, caution is needed when working with the 2000 census data, because they are dated and the census methodology may have some weaknesses. For example, studies (e.g., Booth 2009) point out that only 64.6% of the population age 10 and over was classified as part of the labor force and that, in the 2000 census, a substantial share of respondents reported their employment status as "other" or "unclassified," a majority of whom were under 25. Booth commented that the decline reported in the unemployment level may have been due to large increases in "discouraged workers" who returned to their villages after not being able to find employment. Booth also noted that another reason could be the increased number of people engaged in criminal activities—which accords with a survey that found that as many as 32,000 people, or 4.8% of the urban workforce in 1995, were relying on criminal activities for their main source of income (Levantis 1997).

Table 3.1. Labor Force Status (citizens, 10 years and older)

Employment Category	1990		2000		Growth Rate (1990–2000, %)
	Number	%	Number	%	
Wages	232,162	13.5	288,545	12.0	24.3
Self-Employed	80,612	4.7	247,333	10.2	206.8
Farming (cash)	671,458	39.1	229,127	9.5	–65.9
Farming (subsistence)	598,286	34.9	1,579,729	65.5	164.0
Unemployed	132,812	7.7	68,623	2.8	–48.3
Total	1,715,330	100.0	2,413,357	100.0	40.7

Source: Government of PNG (2001).

Recent survey data of firms suggest that formal employment grew significantly from 2002 to 2009, averaging 2.3% during 2002–2005 and 7.5% during 2006–2009 (Figure 3.16). Although growth in formal employment during 2006–2009 compares well with the 2.6% growth in the population aged 15 to 64 years, the formally employed comprise only a small part of the total labor force.

Skilled human capital is scarce in most of the formal sectors of the economy, and is considered a critical constraint by the private and public sectors. Recent studies indicate that both private and public sectors face a shortage of skilled workers. In the formal private sector, a survey of firms indicated that they considered that availability of skilled labor, though not rated as severely as in 2002, was a major hindrance to economic growth (INA 2008a). Other studies note that the shortage of skills was most severe in engineering, mining, and construction (ADB 2008b). In the informal private sector, findings of the recent survey indicate that a key constraint to improving agricultural productivity, business management, and the development of basic livelihoods is a lack of relevant skills (ADB 2007d). The shortages are anticipated to become even worse when the construction of the PNG LNG Project and associated public investments pick up speed, increasing the demand for labor skilled in engineering, mining, and construction. Skills shortages in these areas are also of particular concern to the public sector, as the Department of Works has difficulty retaining skilled staff and filling vacancies

in engineering-related positions. Similar concerns prevail in subsectors such as manufacturing, where the wages are lower than those in mining.

In-migration of numerous skilled workers tends to reconfirm that human capital may be constraining the investments.

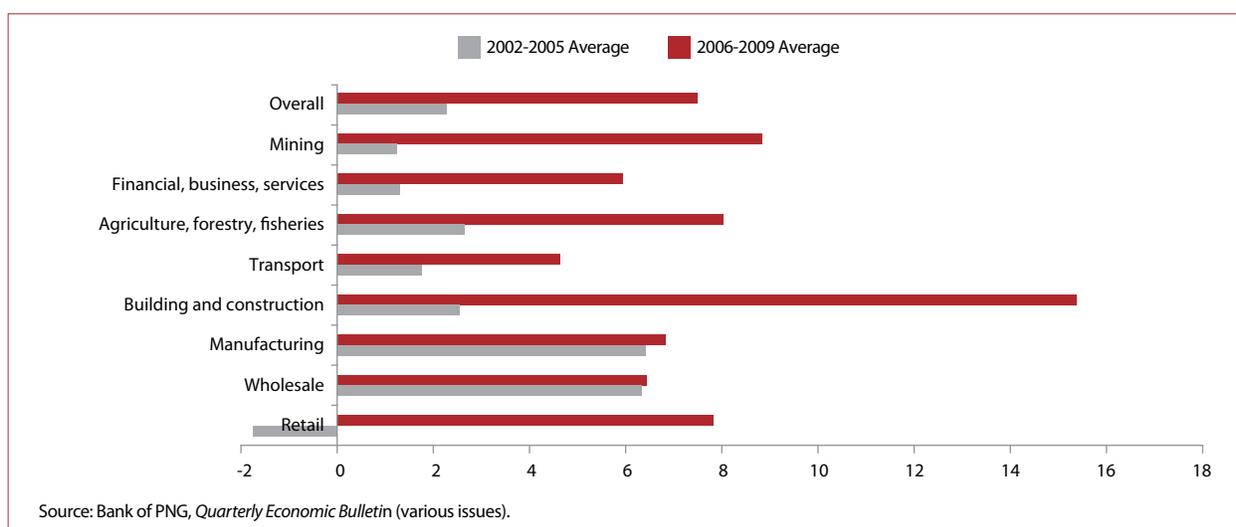
The sharp increase in the number of foreign workers employed in PNG provides evidence of the country's skills deficit. In 2001, PNG issued work permits to about 6,880 individuals, of whom 49% were professional and technical workers and 44% were managers and administrative staff (Table 3.2). By 2009, the number of work permits had risen by 336% to about 30,000. Although

Table 3.2. Noncitizen Employees with Work Permits, by Sector (2001)

Type of Work	Number	Based in the National Capital District (% of total)
Professional, Technical, and Related	3,030	31.2
Administration and Management	3,359	53.9
Clerical and Related	3	100.0
Sales and Service	172	51.2
Agriculture, Forestry, and Fisheries	194	19.1
Production and Transport	122	17.2
Total	6,880	42.3

Source: Government of PNG (2001).

Figure 3.16. Employment Growth Rates by Sector (%)



the breakdown of the work permits by the type of work was not readily available for 2009, such permits may still be predominantly for professional and technical workers and for managerial and administrative staff.

A survey by the Institute of National Affairs (INA 2009)² provided some interesting insights into the reasons for recruiting foreign workers (Figure 3.17). Findings indicated that the shortage of skills may not be the sole substantial reason for recruiting foreign workers. While the top reason cited was a lack of in-country capacities, other reasons related to work ethics: the average score pertaining to overseas workers bringing specialist skills was only marginally higher than scores for time consciousness, work ethics, and impartiality.

The Institute of National Affairs (INA) survey also asked the firms to rank the abilities that the local workers generally lacked. Two abilities that scored as the most lacking were leadership and literacy (Figure 3.18), but numeracy, self-motivation, teamwork, and information technology skills also received bad marks. In summary, the survey results indicate that the major shortcomings among local workers pertain to both technical skills and behavioral competencies. This is in line with observations by studies that document that the experience acquired in technical and vocational education and training institutions does not include the workplace values—such as efficiency, punctuality, working effectively in a team, commitment, and responsibility—that industry requires (ADB 2008b).

² The INA survey used a small sample. Only 86 firms responded, from a range of sectors. The survey covered only firms operating in PNG, and could not capture views of potential investors beyond PNG.

Figure 3.17. Reasons for Employing Foreign Workers

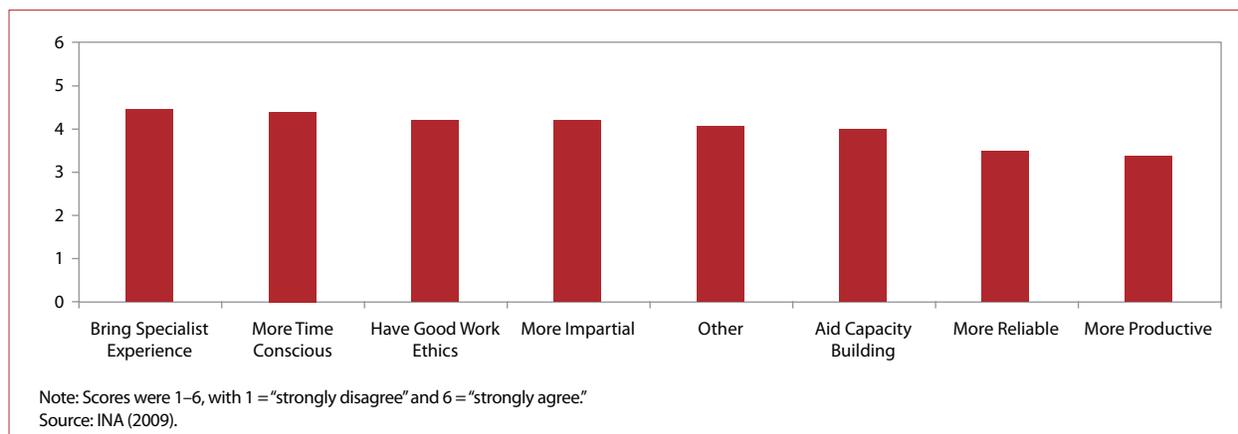
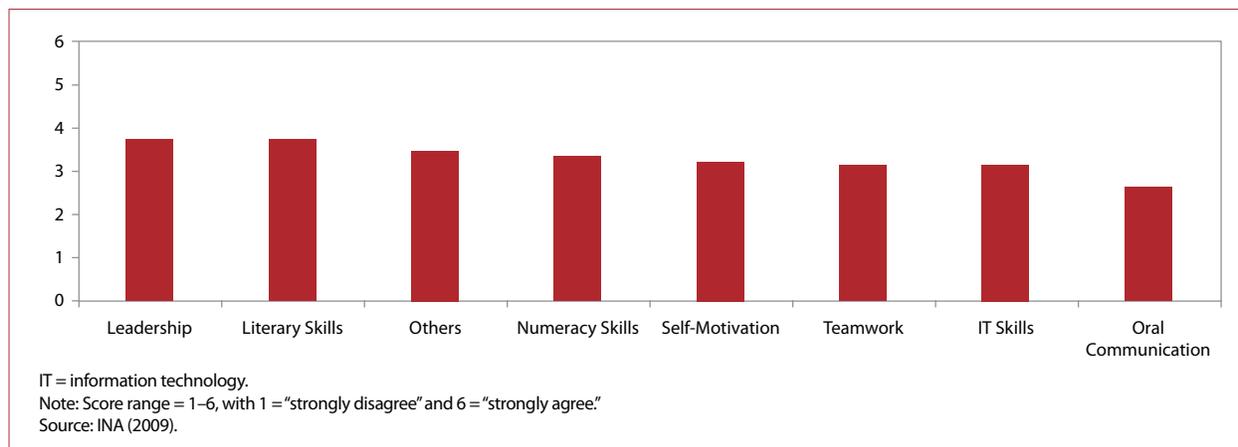


Figure 3.18. Ability Scarcities among Local Workers



3.2.2. Infrastructure

Inadequate infrastructure constrains economic growth and private investment.

Inadequate infrastructure adds to the cost of

doing business, thus reducing economic returns to investments. PNG's infrastructure remains less developed relative to major economies in Southeast Asia and the Pacific (Box 3.1). A recent study by the United Nations Economic and Social Commission

Box 3.1. Key Constraints to Investment in Infrastructure

Many of the issues constraining effective provision of infrastructure facilities and services are common among the subsectors, and constrain investment in the country in general. The key constraints include the following:

Lack of Competition in Key Areas. Although the government has started to open up some of the key areas, such as telecommunications and aviation, state-owned enterprises still hold monopolies in a range of infrastructure services, including power, water, ports, and airports. The presence of state-owned enterprises not only has the effect of crowding out private investment but, in some cases, these enterprises are also loss incurring.

Shortage of Skills. Human capital shortcomings constrain investment in the country, and the design, implementation, and upkeep of the infrastructure. For example, the transport subsector suffers from a shortage of engineering and other technical staff and workers, in both the public and private sectors, and locally based contractors can handle only small-scale projects. Moreover, systems are not in place to replace skilled workers who retire. A significant number of skilled workers in the aviation subsector are due to retire soon, but not enough new workers have been trained to ensure timely induction of the replacement staff.

Difficulties in Acquisition of and Compensation for Land. Property rights in PNG are not well defined and/or protected. Thus, land acquisition, in particular, is a major hurdle for infrastructure development. Although a long-term framework to tackle the problem is being implemented, the full benefits of the system may not materialize for several years. Consequently, land compensation costs (assessment costs and payment to landowners) can be substantial in both money and time due to lack of registration of landowners and social mapping, and extortionary land compensation claims.

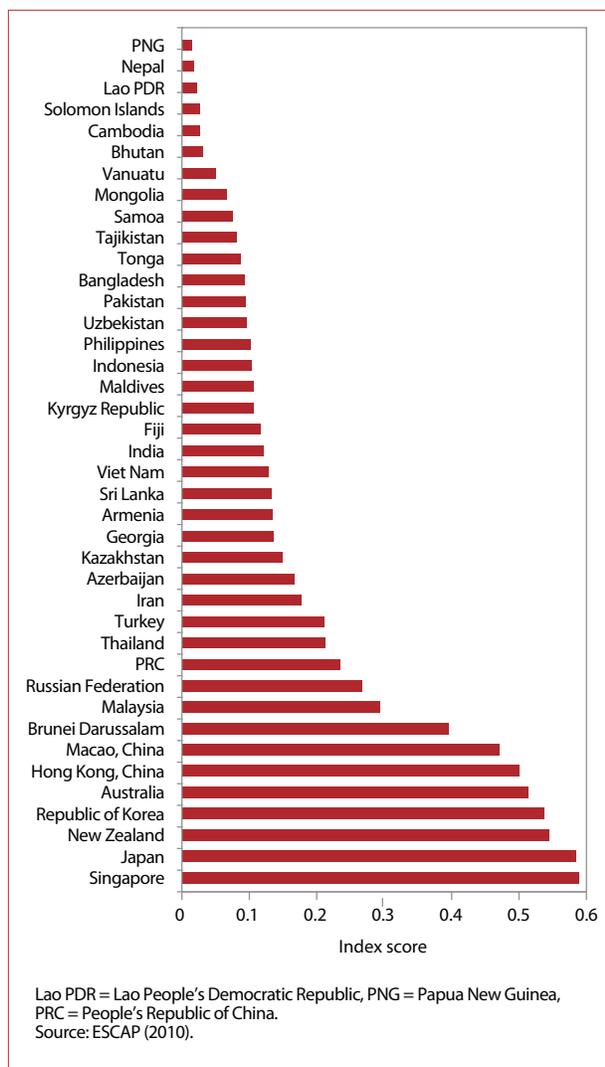
Inadequacies in Operation and Maintenance Financing. Given PNG's difficult terrain and other challenges already discussed, operation and maintenance costs in the country are typically high. In particular, the cost of routine and specific maintenance of roads can be as high as construction costs for the same road length in some of the other economies in Southeast Asia. Operation and maintenance are further impacted by the lack of effective cost recovery mechanisms. A review of the expenditures between 2005 and 2008 revealed that, on average, PNG provinces spent only 14% of what was necessary for infrastructure maintenance, despite some provinces' relatively high financial capacities.^a In fact, between 2007 and 2008, spending for infrastructure maintenance across all provinces decreased, while spending for other sectors (e.g., education, health, and agriculture) increased. Moreover, although regular infrastructure maintenance costs less than rehabilitation and reconstruction, infrastructure ranked 5th vis-à-vis other priority sectors for spending by the provinces under the Medium-Term Development Strategy—the other priorities were administration (1), education (2), agriculture (3), and health (4).

^a Financial capacity here is measured based on the assumption that all funds that are not tagged for another specific purpose (such as staffing grants or development) are available for spending on recurrent goods and services. The reality, however, is that many provinces will not allocate and spend all of these funds on recurrent goods and services. Some of this revenue will be allocated and spent on staff-related costs (such as casual wages) and/or capital, project, and development costs, such as major rehabilitation of a road or a new classroom or a new health clinic (NEFC 2009b).

Source: Authors; ADB (2007a).

for Asia and the Pacific (ESCAP 2010) ranked PNG as the lowest among 40 economies, using a composite infrastructure index (Figure 3.19).³ By comparison, Malaysia ranked 9th; Thailand, 12th; Viet Nam, 20th; Fiji, 22nd; Indonesia, 25th; and the Philippines, 26th.

Figure 3.19. Composite Scores for Infrastructure in Asia and the Pacific (2007)



³ ESCAP's index captures several aspects of transport infrastructure (roads, railways, and air transport density); information and communications technology infrastructure (telephone and internet density); energy availability (intensity of energy use); and banking infrastructure (density of bank branches). The composite measure represents an average of eight indicators following the methodology of the human development index of the United Nations Development Programme.

Among the key infrastructure components, deficiencies in telecommunications, transport, and electricity are the most critical. In the INA (2008a) survey, investors perceived the inadequacies in telecommunications, transport, and electricity infrastructure and services as the 2nd most critical constraint (governance considerations garnered the top spot).

Telecommunications

Information, communications, and technology, particularly, the mobile telecommunications industry, are improving but still lag behind progress in the other major economies in Southeast Asia and the Pacific. Since 2005–2006, mobile telecommunications in PNG have been transforming rapidly due to the introduction of competition in the mobile telephone market. The new entrant, Digicel, was granted a license in late 2006, and consequently the access to, efficiency of, and reliability of mobile phone services have improved significantly. Competition helped increase the network coverage and reduce the rates significantly. The government estimates that the introduction of competition led to an average GDP growth of around 2.5 percentage points in the years immediately following Digicel's entry (Department of Treasury 2009). Indirect and multiplier effects are likely to be substantial, given that the increased access will enable the provision of other services in the future, including mobile banking.

More remains to be done, in terms of both improving the infrastructure and implementing reforms: PNG compares poorly with other selected Asian countries in terms of mobile and fixed line subscription and internet use, even when access to personal computers was at par with major economies in Southeast Asia and the Pacific. In 2009, PNG's access (for every 100 people) to the internet was 1.9; to personal computers, 6.4; and to mobile and fixed-line telephones, 14.3 (Table 3.3). The coverage of telecommunications services is low, and the unit cost for accessing some of the services is relatively high. The state-owned enterprise, Telikom, still holds a monopoly over the international telephone and internet gateways. Despite competition in the retail markets for internet services, access and usage costs remain high, contributing to the limited internet use in PNG. Similarly, while people with

Table 3.3. Access to ICT and International Call Costs, 2009

Country	Access (per 100 people)			
	Internet Users (2009)	Personal Computers (2008)	Mobile and Fixed-Line Telephone Subscribers (2009)	Skype to Landline Rates (\$/minute)
Fiji	13.4	6.0	91.5	0.300
Indonesia	8.7	2.0	84.0	0.096
Malaysia	57.6	23.2	126.3	0.023
PNG	1.9	6.4	14.3	0.820
Philippines	6.5	7.2	85.4	0.198
Thailand	25.8	6.7	132.9	0.116
Viet Nam	27.5	9.7	136.6	0.335

ICT = information and communications technology, PNG = Papua New Guinea.

Data for personal computers are from ADB (2010b), and are for the following years: Fiji (2005), Indonesia (2006), Malaysia (2006), PNG (2005), Philippines (2006), Thailand (2005), and Viet Nam (2006)

Sources: World Bank, WDI, accessed April 2011; ADB (2010b); Skype, accessed April 2011.

internet access can use internet telephony services to communicate overseas, the costs for incoming international calls through services such as Skype remain many times higher than in major economies in Southeast Asia and the Pacific.

Transport

PNG's logistics network performs poorly, largely because of its weak transport infrastructure. The World Bank's Logistics Performance Index⁴ measures the effectiveness of logistics networks, and includes infrastructure as a key determinant (World Bank 2010). In 2010, PNG was ranked 124th of 155 countries on the effectiveness of its logistics (Table 3.4). Among major Southeast Asian and Pacific economies, PNG's rank was only better than that of Fiji. In terms of infrastructure, PNG's rank was 135, which was substantially lower than that of the major Southeast Asian economies and marginally lower than that of Fiji.

Road Network

PNG's road network is inadequate and poorly maintained. Road transport is the main

Table 3.4. Logistics Performance Index Rankings (of 155 countries)

Country	Overall Rank	Infrastructure Rank
Fiji	144	131
Indonesia	75	69
Malaysia	29	28
PNG	124	135
Philippines	44	64
Thailand	35	36
Viet Nam	53	66

PNG = Papua New Guinea.

Source: World Bank (2010).

form of transportation in the country. Provision of an effective road transport infrastructure network, however, remains a challenge. PNG had about 19,600 kilometers (km) of roads as of 2000, only 3.5% of which was paved (ADB 2010b). This equals a road density of 0.43 km of road per square kilometer of land, which is low compared with other major Southeast Asian and Pacific economies (Table 3.5).

These descriptive statistics, however, mask the true severity of the situation, as they provide no information on the accessibility to and quality of the available roads. Accessibility to the road network was low in 1996, with 17.3% of the population living

⁴ The Logistics Performance Index assesses six areas of trade facilitation (customs, infrastructure, international shipments, logistics competence, tracking and tracing, and timeliness) using qualitative data. The data reflect the perceptions of operating staff in global forwarding companies, express carrier companies, and other national and regional partners (through a web-based questionnaire).

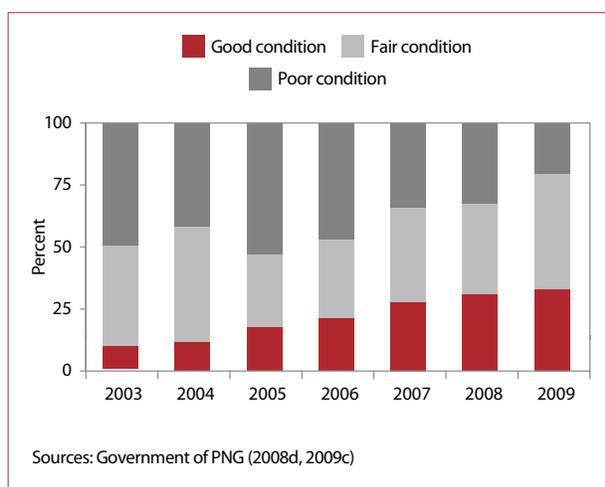
Table 3.5. Road Statistics of Selected Countries

Country (Year)	Total Road Network ('000 km)	% Paved	Density (km/km ²)
Fiji (2000)	3.4	49.2	0.19
Indonesia (2005)	391.0	55.4	0.22
Malaysia (2005)	93.1	79.8	0.28
PNG (2000)	19.6	3.5 (2001)	0.04
Philippines (2003)	200.0	9.9	0.67
Thailand (2006)	180.1	98.5 (2000)	0.35
Viet Nam (2007)	160.1	47.6	0.52

km = kilometer, km² = square kilometer, PNG = Papua New Guinea.
Source: ADB (2010b).

at least 2 hours from the nearest road (Gibson and Rozelle 2003). Although the accessibility has surely improved since 1996, the lack of recent data makes it difficult to gauge the improvements. Continued improvements in access to roads can help expand the access of rural communities to services, markets, and transport.

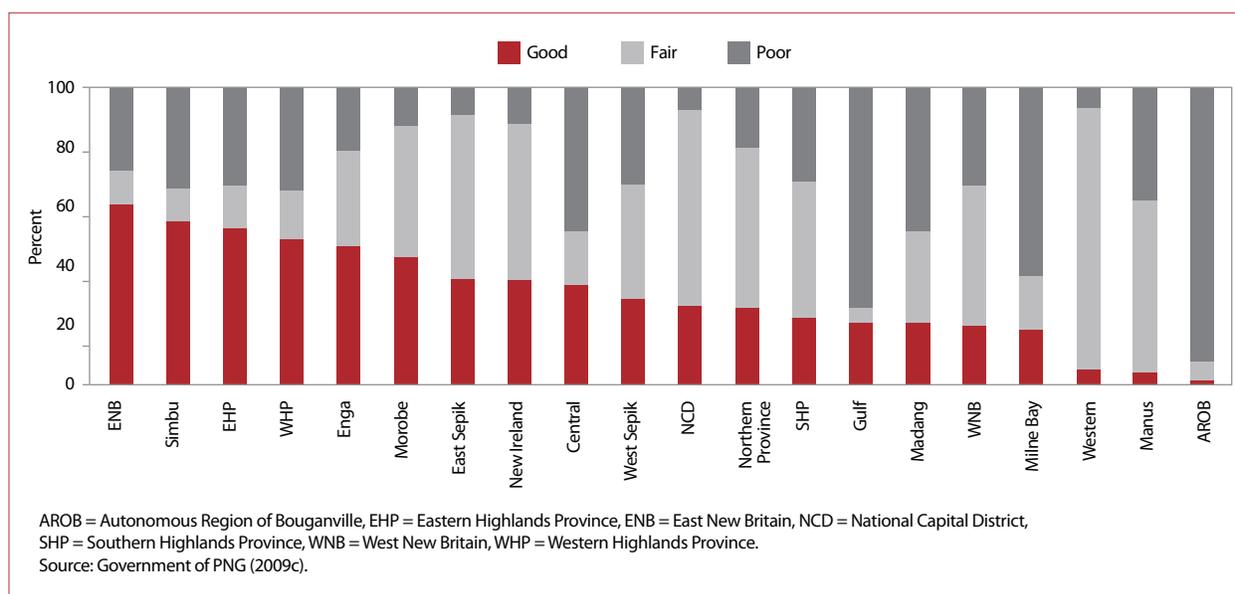
In terms of quality, the condition of the national road network has been improving gradually since 2003 (Figure 3.20). However, the pace of improvement in the last few years has slowed and only 33% of the roads were in good condition in 2009, and 20% of them were in poor condition. Moreover, significant differences in road conditions

Figure 3.20. Condition of the National Road Network (% of total national roads)

existed between provinces (Figure 3.21). While nearly 60% of the road length in East New Britain was in good condition in 2008, less than 5% of roads in Manus and the Autonomous Region of Bougainville were in good condition. In addition, the statistics cited pertain only to the national roads and not the provincial, feeder, and rural roads, and any substantial impact of improvements in investments and entrepreneurship may be evident only if the roads are improved at all levels. The overall cost and risks to freight are important, and this is often determined by the weakest link in the journey rather than the percentage of kilometers in different conditions. The reliability of the road network is also affected by the weather, and about 85% of all main roads and most feeder roads become impassable during at least part of the year (World Bank 2007).

Another handicap is the lack of inter-connectivity of the road network and its limited coverage across the country. In particular, Port Moresby is not connected by road to other major cities. The absence of interconnectivity poses a challenge to transporting goods across the country, and to and from the main ports, as it involves a mix of transport modes or using a single but less optimal mode such as air transport. However, whether it makes economic sense to invest in the road infrastructure to ensure connectivity depends not only on feasibility studies and the capacity to maintain a larger road network, but also on the relative costs and benefits of the different modes of transport.

Public expenditure on infrastructure is insufficient to maintain the current road network, as is common in developing countries. The Provincial Expenditure Review highlighted that provinces do not invest enough in maintaining subnational road infrastructure (NEFC 2009a). The review classified as low (relative to the provincial capacities to spend) the average spending levels on subnational transport infrastructure, including roads, wharves, and rural airstrips, with the average expenditure amounting to only 14% of that required. This is extraordinarily low, even relative to other developing countries, which spend just 20%–50% of what they should on road maintenance (Burningham and Stankevich 2005). National-level funding is also low compared with what is required to maintain the national road network, and funds are not adequately prioritized (Department of Treasury 2009, 2010b).

Figure 3.21. Condition of National Roads in Provinces (sealed and unsealed roads, 2008, % of total)

Road transport costs in PNG are likely to be high enough to act as a critical constraint to doing business in several sectors and provinces. Road conditions can have serious implications for private users, who often bear the brunt of the cost when the road agency is underfunded, with high costs of getting goods to market, high input costs, and high or prohibitive public transport costs for small-scale entrepreneurs.⁵ Poor road conditions can also lead to high risks for businesses, including uncertainty of road closures and increased security risks that come with decreased average road speeds. This is particularly true for agriculture and resource development businesses using the Highlands Highway, which links the Highlands to the seaport of Lae. Furthermore, vehicle operating costs and capital costs for vehicles in PNG are high due to high tax rates and customs clearance fees, which double the cost of purchase, insurance, and freight for an average car imported from Japan.⁶

⁵ The Department of Works is conducting a preliminary analysis of the costs to private users of inadequate funding of the national road network. However, the Department of Works does not currently have recent information on provincial or district roads

⁶ Excise duty on an imported car ranges from 10% to 110% depending on the type of car and size of its engine, goods and services tax, at 10% on top of the car value inclusive of excise duty, and a customs clearance charge, are also applied to the cars.

Box 3.2 summarizes the governance and institutional issues that PNG faces in upgrading its road transport system.

Railways

Railways could be an alternative to roads, but the potential remains untapped. PNG has no major railways, as the system of light tramways and railways has effectively been dismantled. Some mines use railways, but exclusively for their own operations. In light of the high cost of building and maintaining roads in the country, several proposals have been put forward in the past to revive the railway system to augment road transport for passengers and goods, but with no success. Mckillop and Pearson (1997) noted that PNG's failures to establish and sustain substantial railways has resulted in an inadequate industrial and institutional base for a modern transport system. In the absence of a train system in PNG, specifically in its capital, Port Moresby, alternative modes of land transport (e.g., minibuses) have filled the need. The alternate modes are cheap and generate employment, but they also contribute to road congestion and air pollution.

Box 3.2. Governance and Institutional Constraints to Road Transport

Responsibilities. Up to 1995, the Department of Works had a prime role in the construction and maintenance of roads; the Department normally had up to three maintenance teams in each province, and the roads were considered to be in good condition. The subsequent shift in the role of the national department from implementation to monitoring and supervision resulted in duplication of responsibilities. As a result, national and provincial governments abandoned the costly and technical task of road maintenance to each other. The National Economic and Fiscal Commission (NEFC) reported that the responsibility to maintain or rehabilitate provincial transport infrastructure was a “heavy burden” for provincial governments (NEFC 2009a). While provincial governments were provided a Transport Infrastructure Maintenance Grant in the annual national budget (Department of Treasury 2010b), they lacked the right skills and people, did not make road maintenance a priority, and did not deliver matching funds or support. The proposed “corridor protection” bill under the National Transport Strategy 2011–2030 also recognized that provincial governments have devolved powers and responsibilities regarding transport, but not the delegated funds or technical and administrative capacities to meet them.

Maintenance. In its 2008 and 2009 reports, the NEFC calculated that it is 130 times more costly to rehabilitate neglected roads than to maintain them on an ongoing basis (NEFC 2009a, 2010). Part of the difficulty in maintaining roads in PNG is the physical environment. In addition, the overall quality of the road system declined through the gradual politicization of decision making about funding and priorities. Funds for essential maintenance were either withheld or diverted. The PNG culture embeds a “big-man” tradition that dictates that those in high office must “share the wealth” if they are to retain their status and influence. The resulting patronage often results in unethical and illegal transfers.

Contracting and Security. A limitation on the tendering process is PNG’s dearth of contractors capable of completing tendered projects to high standards. Transparency is essential to assure that the government is purchasing goods and services at the best value, and to boost confidence in the government. Some contractors raise concerns about security, especially in remote areas.

Some communities along the roads resort to highway banditry to benefit from passing traffic. Vehicles are stoned or held up in the heart of Lae and in Port Moresby, and along the Highlands Highway and on the Rai coast. Poor road conditions assist criminal activity in Port Moresby, as cars become more vulnerable to attack when they slow down to navigate potholes (Radio New Zealand International 2010).

In many parts of the country, but particularly in the highlands, rugged terrain has limited the establishment of alternative routes. The provision of alternative routes would remove the hold of some landowners over the flow of traffic and improve access to transport for remote communities.

Sources: Authors; ADB (2012).

Ports

PNG’s seaports are inefficient compared with other major Southeast Asian and Pacific economies. Port infrastructure is important for businesses involved in or dependent on international trade, and for the domestic economy, given the lack of road connectivity between Port Moresby, Lae, and the Highlands. The state-owned enterprise, PNG Ports Limited, is responsible for the 16 operational ports, but only 4 of them have container liner service—Lao, Madang, Moresby, and Rabaul (World

Port Source). However, only Moresby and Lae ports are commercially viable.⁷

⁷ About 70%–80% of all trade is handled at Lae and Port Moresby, but Kimbe Port is also of trade significance as the primary port for exporting oil palm. In 2004, Lae Port accounted for 51% of total cargo handled at the 16 ports; thus, its efficiency is of significant importance to the economy. Major improvements in efficiency have been achieved at Lae Port, with turnaround time dropping from 96 hours per vessel before 2009 to 48–60 hours in 2010, partly due to changes in management and improvements in planning, skills of personnel, and transfers in and out of the wharf.

Port throughput and containerized shipping have risen steadily since the early 1990s, with cargo throughput at Lae Port averaging a 3.4% growth rate annually during 1995–2005 (ADB 2006c). Annual containerized throughput in 2009 for Lae and Moresby ports was 131,100 twenty-foot equivalent units (TEUs) and 76,981 TEU, respectively, which is low by world standards—at least 125 of the world’s ports (including ports in Malaysia, Indonesia, and Viet Nam) handle throughput of over 650,000 TEU annually (Containerisation International 2009). Other assessments of port throughput and operating efficiency also rank the ports in PNG low. The Port Traffic League, in its 2007 ranking, ranked the Moresby port 313th of 365 ports (Table 3.6).

The World Bank’s Doing Business Survey ranked PNG 96th of 183 economies in terms of trading across borders, based on the estimated cost and time of exporting and importing a TEU (World Bank 2011b). Compared with other major Southeast Asian and Pacific economies, PNG takes longer to export and import; however, the indicator measures time from packing at the factory to departure from the port and not just the time spent at the port. In addition, the cost of importing and exporting (excluding tariffs) is comparable to that in the other major Southeast Asian and Pacific countries (Table 3.7). But the freight rates may be relatively high, with the base shipping freight rate per TEU from Australia to PNG estimated at \$1,738–\$2,133 versus only \$1,185 from Australia to Fiji in 2003 (ADB 2007b).

Table 3.6. Ranking of Selected Asian Ports by the Port Traffic League (2007)

Port	Country	Rank
Klang	Malaysia	17
Tanjung Pelepas	Malaysia	18
Laem Chabang	Thailand	21
Tanjung Priok	Indonesia	26
Ho Chih Minh	Viet Nam	32
Manila	Philippines	36
Bangkok	Thailand	72
Pasir Gudang	Malaysia	92
Penang	Malaysia	97
Haiphong	Viet Nam	125
Belawan	Indonesia	139
Davao	Philippines	201
Kuching	Malaysia	261
Cagayan de Oro	Philippines	262
Kuantan	Malaysia	281
General Santos	Philippines	296
Moresby	PNG	313
Iloilo	Philippines	315
Pulupandan	Philippines	322
Sibu	Malaysia	334
Zamboanga	Philippines	336

PNG = Papua New Guinea, TEU = twenty-foot equivalent unit.
Source: Containerisation International (2009).

Table 3.7. Comparison of Trading Across Borders

	Trading Across Borders Rank	Documents to Export (number)	Time to Export (days)	Cost to Export (\$ per container)	Documents to Import (number)	Time to Import (days)	Cost to Import (\$ per container)
Fiji	103	10	22	654	10	23	630
Indonesia	47	5	20	704	6	27	660
Malaysia	37	7	18	450	7	14	450
PNG	96	7	26	664	9	29	722
Philippines	61	8	15	675	8	14	730
Thailand	12	4	14	625	3	13	795
Viet Nam	63	6	22	555	8	21	645

PNG = Papua New Guinea.
Source: World Bank (2011b).

The ports may not have constrained investment and economic growth in the past, but the constraints will become critical in the medium term if the ports are not sufficiently maintained and expanded in line with needs.

The total average annual cargo volume was reported at around 5.2 million tons in 2008 and was projected to increase by almost 40% by 2011, to an estimated 7.2 million tons, largely due to the increasing imports as a result of the PNG LNG Project (PNG LNG Ltd.). With Lae and Moresby ports already operating at 60%–70% capacity, increased cargo movements to support the PNG LNG Project may exceed the port capacities, leading to delays, if capacities are not expanded accordingly.

Aviation

Recent progress with improving the aviation-related services and infrastructure has been encouraging.

In 2009, PNG's air transport facilities registered a total of 19 million ton-km of freight and more than 847,000 passengers (Table 3.8). Although the volume of freight and number of passengers PNG's air transport carries are relatively small compared with other major Southeast Asian and Pacific economies and registered carrier departures worldwide, PNG compares well on a per capita basis with the average of Southeast Asian countries. But, given that road transport is poorly developed and the primary means of transport for some provinces to major markets and Port Moresby is by air, aviation services could be expanded significantly.

The market structure of the air industry could be detrimental to the cost and reliability of air travel. The state-owned enterprise, Air Niugini, has a monopoly on all international routes to Asia and on many domestic routes, which contributes to the high cost of international air travel to the country. However, some competition has been introduced in recent times and the privately owned Airlines PNG commenced flights on the Australia–PNG routes in 2005. In addition, code sharing agreements on routes to Australia have been reached between Air Niugini and Qantas, and between Airlines PNG and Pacific Blue. With the introduction of competition, the cost of passenger and freight travel has decreased substantially on these routes, and airfares have decreased by 30%–40% on the Australia–PNG route. The Independent Consumer and Competition Commission found that airfares for international flights are higher on routes with no competition; PNG's domestic airfares (full-fare economy rates per kilometer) are about 9% higher than in Australia, Indonesia, and New Zealand, and discounted fares are less readily available in PNG (ICCC 2006). While the airfares meet the needs of upper scale businesses, they are unaffordable for the majority of the population and uneconomic for most freight.

Domestic airfares are also high because the size of planes and reliability of flights are limited by airfield issues such as short runways, poor maintenance, inadequate navigation equipment, and unreliable electricity supply—indicating the need to improve the airport facilities (ERI 2003).

Table 3.8. Air Transport in Selected Asian Countries (2009)

Country	Total Freight		Passengers Carried		Registered Carrier Departures Worldwide	
	Total (million ton-km)	Per Capita (ton-km)	Total ('000)	Per Capita	Total ('000)	Per Capita
Fiji	66	77.2	1,147	1.35	45.60	0.0537
Indonesia	277	1.2	27,421	0.12	330.11	0.0014
Malaysia	2,853	103.9	23,766	0.87	182.00	0.0066
PNG	19	2.9	847	0.13	21.45	0.0032
Philippines	227	2.5	10,481	0.11	87.03	0.0009
Thailand	2,133	31.5	19,619	0.29	123.54	0.0018
Viet Nam	312	3.6	11,074	0.13	83.72	0.0010

km = kilometer, PNG = Papua New Guinea.

Source: World Bank, WDI, accessed April 2011.

In 2010, only 12 of PNG's 22 national airports met the International Civil Aviation Organization safety and security standards; however, this is a significant improvement, as only 1 airport met the standards in 2005 and 4 in 2007. Much more needs to be done, as there have not been any major improvements in the infrastructure and the concerted focus has instead been on meeting the minimum certification standards.

Electricity

Box 3.3 describes the power sector in PNG.

Lack of access to affordable and reliable electricity is a critical constraint. Among

major Southeast Asian and Pacific economies, PNG ranks lowest in access to and consumption of electricity (Table 3.9), and the access has been improving at a very slow pace. Available data suggest that between 1996 and 2006, the access to electricity improved only marginally, from 12.3% of the households to 12.4%. In comparison, 83%–99% of households in Southeast Asia and about 67% in Fiji had access to electricity. The low level of access to electricity also translates into low per capita consumption levels. In PNG in 2006, per capita consumption was about 133 kilowatt-hours (kWh), whereas the levels in major Southeast Asian economies in 2007 ranged from 586 kWh in the Philippines to 3,667 kWh in Malaysia. Electricity tariffs also seem to be high when compared with

Box 3.3. Power Generation and Supply

Generation, Transmission, and Distribution. PNG has about 580 megawatts (MW) of installed generation capacity, about two-thirds of which are from hydropower (230 MW) and diesel (217 MW). The rest is provided by gas-fired plants, at 82 MW, and geothermal, at 53 MW (ADB 2009b).

PNG Power Limited (PPL) manages about 300 MW of this capacity. The remaining capacity of about 280 MW comprises (1) self-generation systems owned and operated by industrial facilities, including mining companies; and (2) private sector generators supplying the main grids or rural communities.

Transmission is via two main power grids—one in Port Moresby and the other in the Lae–Madang–Highlands areas (the Ramu grid). Both grids are managed by PPL. The two main grids are complemented by small independent power systems servicing the smaller urban centers.

PPL has exclusive license for distributing electricity within a 10 kilometer radius of its grids. PPL services customers in almost all urban centers, encompassing industrial, commercial, government, and domestic sectors, but also, where possible, rural communities adjacent to these urban centers. Beyond the grids are some minor diesel power generation centers funded by the provincial governments. They service primarily the local rural administrator, although some excess power is made available to local communities at no charge. Rural primary and secondary schools generate power from small scale diesel generators and make it available for local community use at no charge.

Regulation and Tariffs. The Department of Petroleum and Energy manages the sector policy formulation, and the Independent Consumer and Competition Commission regulates the sector. The Commission regulates power tariffs via a long-term (10-year) contract with PPL. Power tariffs are set uniformly nationwide, irrespective of local generation costs. The uniform tariff structure cross-subsidizes tariffs for consumers and allows full cost-recovery for PPL.

In January 2011, tariffs and charges were increased by 9.91% except for scheduled services, which were adjusted based on the underlying PNG Consumer Price Index (PNG Power Ltd.). Notwithstanding this, the electricity tariff in PNG remains one of the lowest in the Pacific islands region.

Source: Authors; ADB2007a, 2009b; PNG Power Ltd.

Table 3.9. Cost of, Access to, and Consumption of Electricity

Country	Access to Electricity	Tariffs (US cents/kWh)			Consumption	
	(% of Households)	Commercial	Industrial	Domestic	Total (GWh)	Per Capita (kWh)
Fiji	66.8	...	...	...	...	...
Indonesia	91.1	...	...	...	79,165	566
Malaysia	97.3	5.5	5.1	5.3	61,156	3,667
PNG	12.4	34.0	22.0	24.0	689	133
Philippines	83.3	...	...	...	...	586
Thailand	99.2	...	...	...	...	2,055
Viet Nam	96.1	9.9	5.8	5.9	21,159	728

... = not available, GWh = gigawatt-hour, kWh = kilowatt-hour, PNG = Papua New Guinea, US = United States.

Notes: Per capita electricity consumption here refers only to what is provided by PNG Power, Limited and therefore also appears low, because industries that use power intensively, such as the mineral sector, tend to generate their own power.

Data for access to electricity are for the following years: Fiji (1996), Indonesia (2007), Malaysia (2000), PNG (1996), Philippines (2008), Thailand (2005), and Viet Nam (2005). Data are from World Bank, WDI, except PNG, which was obtained from NSO (2006).

Where pricing differs by load or by supplier, an average was taken.

Data on electricity consumption per capita (kWh) are obtained from ADB (2010b) and are based on 2007 data except for PNG, which was obtained from NSO (2006).

Sources: ESCAP (2003); ADB (2009a, 2010b); NSO (1996, 2006); PNG Government Gazettal Notice No. G295; World Bank, WDI, accessed April 2011.

other major economies in Southeast Asia and the Pacific. Another serious issue is that the households connected to electricity are highly concentrated in the National Capital District and other urban areas, which is discussed in more detail in Chapter 4.

If access to electricity is unaffordable and unreliable, private firms must either incur additional costs of setting up and operating their own power generation or endure frequent power outages, which curtail production and shorten the life of equipment and machinery. Available data suggest that the reliability of electricity supplies is poor by international standards and is increasingly so. In 2004, 5,549 power cuts were reported; in 2006, the number had climbed to 8,282. Because PNG Power Limited's (PPL) service provision fell short of the standards under its regulatory contract, the state-owned enterprise had to issue rebates to its customers in 2008 and 2010. Efficiency losses were estimated at 3.8% of total megawatt-hours delivered during 2004–2006 (PNG Power Ltd.).

Because of insufficient investment in the electricity subsector, the installed generation, transmission, and distribution capacities remain low. PPL accounted for about 800 gigawatts, or 65% of the installed generation

capacity in the country in 2000, and the rest was generated by private sector entities for their own consumption (ESCAP 2003). In addition, the installed generation capacities have been growing at a slow pace. Between 2000 and 2010, PPL's generation capacity increased by only 9%, from 276 megawatts, to 302 mw, which is likely to have little or no effect on improving the coverage and reliability of access to electricity (PNG Power Ltd., ESCAP 2003). Installed generation capacity in the private sector has been rising, but a substantial part of it is on account of captive generation to supply projects in the mining sector. Having said that, the government has embarked on a plan to expand private sector participation in the sector. Some of the salient aspects include drafting of the Electricity Industry Act, which includes concerted focus on private sector participation. In addition, PPL now operates under a government-controlled regulatory contract, which has opened up access for the private sector in a controlled manner. These and other initiatives have led to PPL signing a number of power purchase agreements with private sector suppliers. Furthermore, Western Power has started to supply power outside PPL's grid, and the Kanudi power plant has started to supply to the Port of Moresby grid.

3.3. Appropriability of Returns to Investment

Private parties will invest only when they expect to capture adequate returns from their investments. Anything that weakens the capture discourages investment and, ultimately, slows growth (Box 3.1). Risks to such appropriability can emanate from either government or market failures. Government failures increase either macro or micro risks. The macro risks may include fiscal and financial crises; the micro risks may be bad governance such as corruption, weak rule of law, overly burdensome taxation, and labor–capital conflicts. Market failures affecting the appropriability normally reflect information and learning externalities and coordination failures.

3.3.1. Macroeconomic Risks

Overall macroeconomic management has been good, with low levels of fiscal deficit, public debt, and inflation, and surpluses in the current account position and external trade, and thus, may not be a critical constraint to investment or growth. The decade up to 2002 was characterized by high inflation, high budget deficits, and high interest rates, but PNG's macroeconomic performance has improved significantly since 2002. In particular, through the combination of favorable commodity prices and adherence to sound fiscal strategies, including annual budget targets, the government has brought its budget into balance. Further, the government has built on this achievement and has put in place a strong fiscal framework, including a debt and fiscal strategy.

Public Debt. The Medium Term Debt Strategy (2009–2013) was put in place to reduce debt to sustainable levels, change the composition of the debt portfolio to reduce financial risk, and develop the domestic debt market (Government of PNG 2009a). Aided by a surge in revenues from the mineral sector, the strategy helped decrease the external debt from over 50% of GDP in 2001 to just 10% in 2010. The total public debt also declined, from 72.3% of GDP in 2002 to 25.5% in 2010 (Figure 3.22), which has helped strengthen the kina and reduce interest rate risks.

Fiscal and Current Account Position. Following years of fiscal deficits, 2004–2007 saw sound fiscal management with budget surpluses as high as 3.5% of GDP in 2006 (Figure 3.23). Improved fiscal management was an outcome of a number of key steps by government, including improved fiscal reporting and the 2006 Fiscal Responsibility Act, which restricts the government from raising the overall debt level and requires the budget to be balanced during its term.⁸ In addition, the Medium Term Fiscal Strategy 2008–2012 provides guidance in the use of additional or windfall mining revenues (Government of PNG 2008c).⁹ The strategy mandates additional high priority expenditures on investment projects that benefit future generations without putting pressure on future budgets. The strategy also mandates that 70% of any additional mining revenues be spent on public investment initiatives and 30% for repaying public debt. There, however, have been concerns regarding the government's failure to reduce levels of expenditure in 2008 and 2009, when revenue decreased significantly in real terms, as it led to fiscal deficits (IMF 2010a, b).

The higher commodity prices and stable exchange rate translated into favorable terms of trade and good export performance, which have been the main reason for the current account surplus during 2000–2010. (Figure 3.24).

Government Revenue. Propelled by high commodity prices, government revenue as a percentage of GDP has been high since 2005. In 2010, government revenue aggregated to 26.7% of GDP, which was among the highest in major Southeast Asian and Pacific economies (Figure 3.25). A large share of the revenue is from income and profit taxes, which have accounted for more than 10% of GDP since 1999. Another noteworthy contributor to the revenue is the mineral and petroleum tax, which has been yielding increasing revenues in recent years and peaked at 12.4% of GDP in 2007 (Figure 3.26).

⁸ Annual fiscal reporting has greatly improved since the Fiscal Responsibility Act was put in place. The government publishes an annual Budget Strategy Paper, a Mid-Year Economic and Fiscal Outlook, and a Final Budget Outcome Report in accordance with the Act. Together with the National Budget volumes, these all appear swiftly online when finalized.

⁹ Defined as mineral revenues above 4% of GDP.

Figure 3.22. Domestic and External Debt (% of GDP)

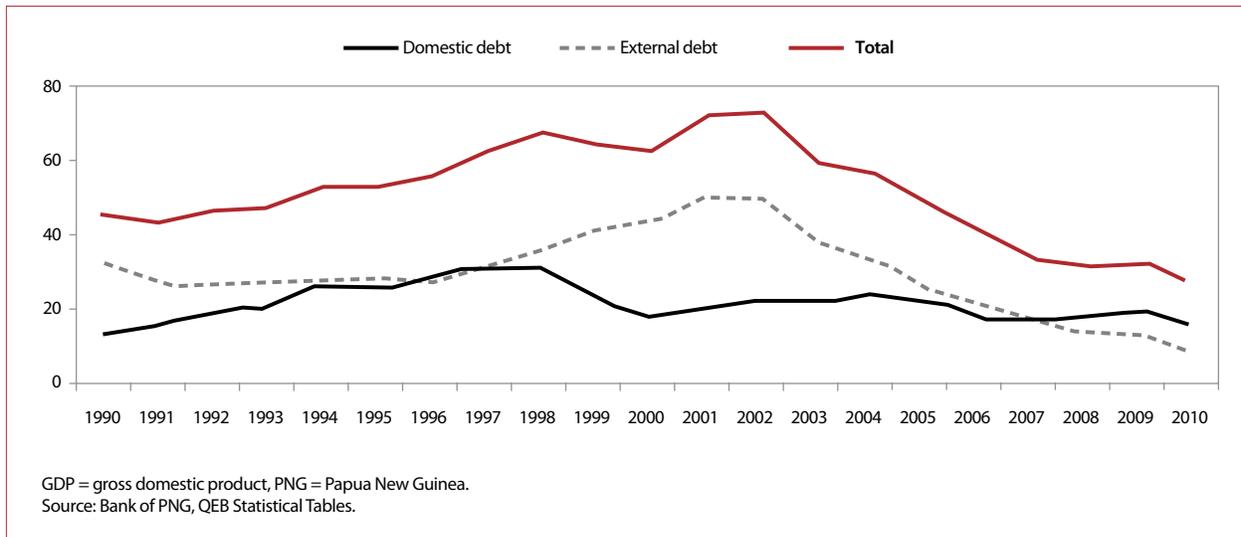


Figure 3.23. Government and Fiscal Balance, Revenue, and Expenditure (% of GDP)

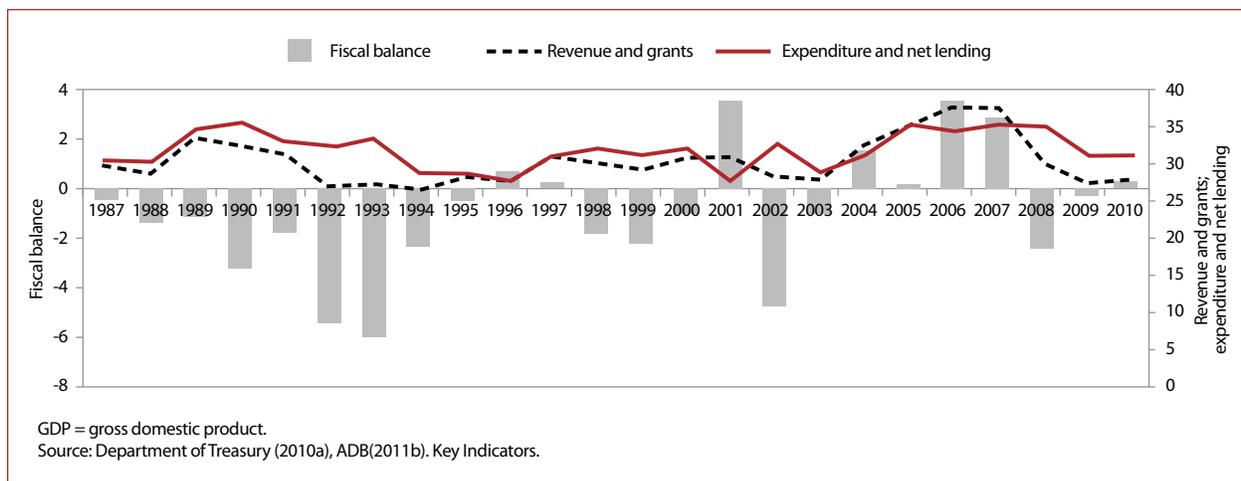


Figure 3.24. Current Account Balance and External Trade (% of GDP)

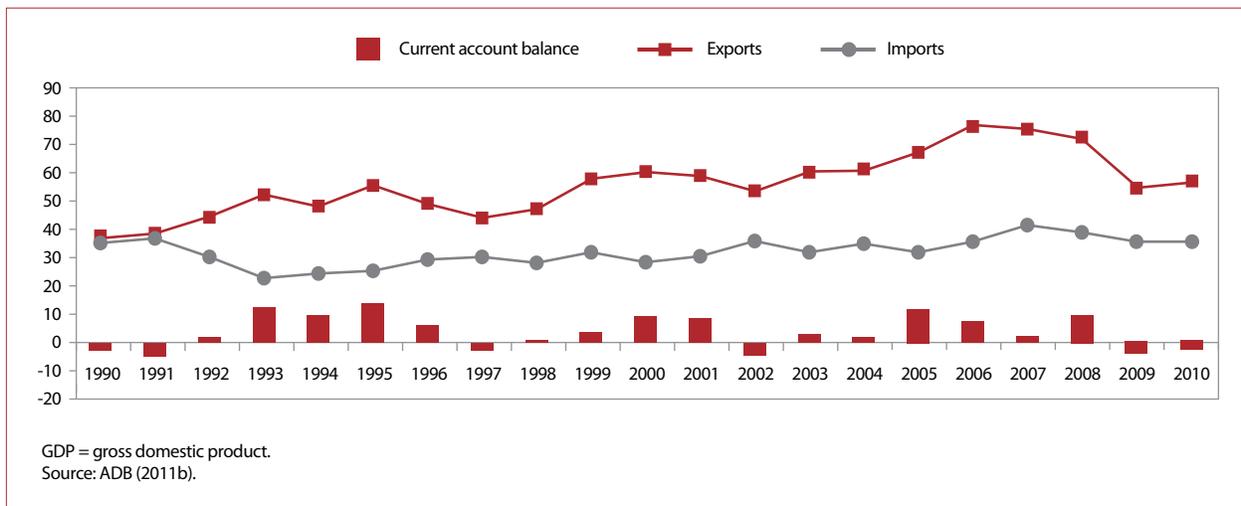
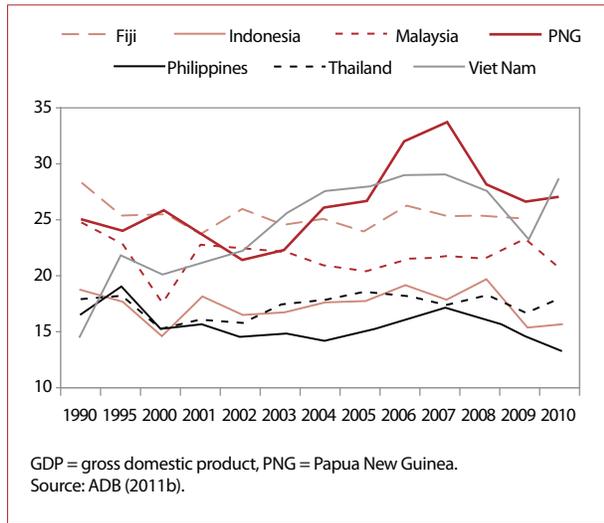


Figure 3.25. Government Revenue in Selected Countries (total revenue as a % of GDP)



Inflation. Following volatility in the inflation rate starting in the mid-1990s, sound macroeconomic policies helped achieve price stability between 2004 and 2007. Due to higher food and fuel prices in global markets, inflation surged to 10.8% in 2008 and somewhat declined to 6.9% by 2009 on account of the drop in price levels (Figure 3.27). While food- and energy-related inflation has eased, there will be upward pressures on the overall inflation in light of increased public expenditure;

increasing growth of private sector credit; and domestic demand pressures, including those associated with the PNG LNG Project.

Investor feedback suggests that the macroeconomic risks are not critical to private sector investment. A 2007 survey of the PNG private sector found that “stability of regulations” and “inflation,” though identified as constraints, were not considered extremely problematic, and other constraints were ranked as more severe than those pertaining to the macroeconomic management (INA 2008a).

While the macroeconomic environment is not a constraint to investment and growth, the risks associated with prudent monetary and fiscal policy need to be effectively managed. Despite recent strong fiscal surpluses, strong current account surpluses, and low external debt ratios, risks such as a decline in commodity prices can test the government’s resolve toward sound macroeconomic management. In this regard, a number of recent government actions are of concern. During the commodity price boom, the government deposited windfall mining revenues in multiple trust accounts earmarked for specific programs or sectors, but in 2009 these funds were withdrawn rapidly from the trust accounts and expenditure was far in excess of the Medium Term Fiscal Strategy rule. There is concern regarding

Figure 3.26. Tax Revenues (% of GDP)

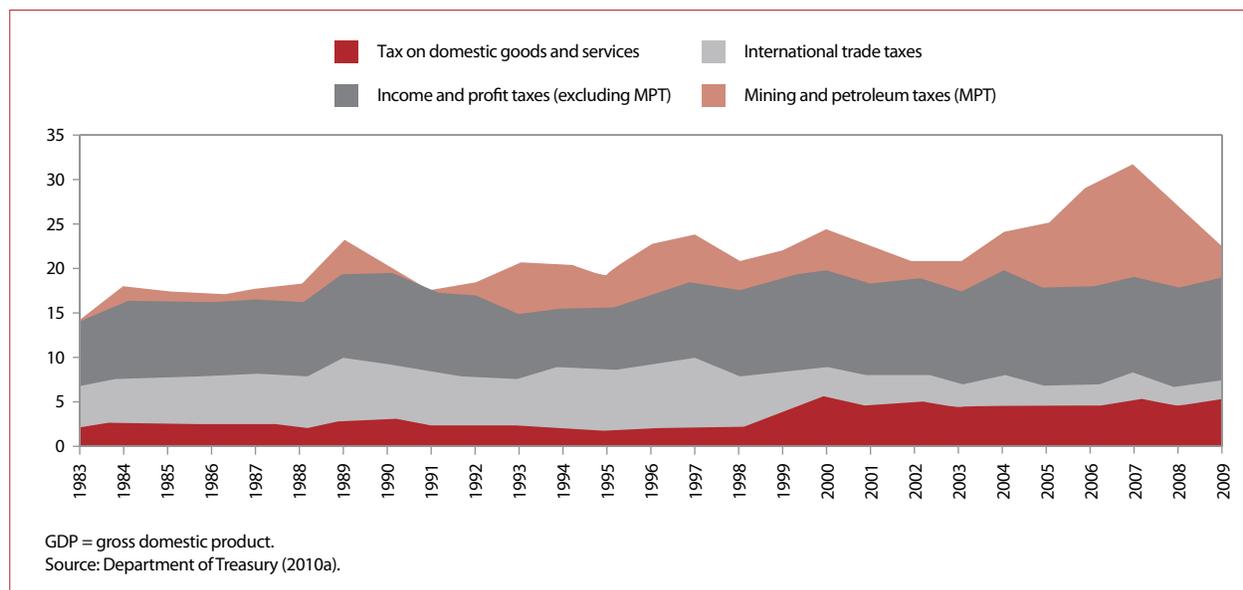
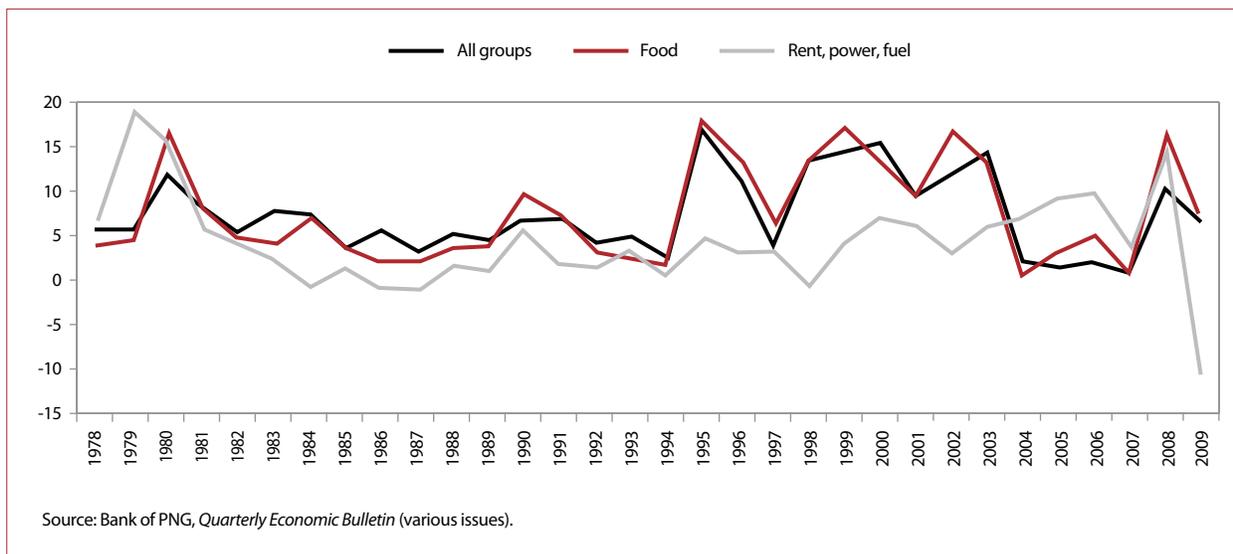


Figure 3.27. Inflation Rate (%)



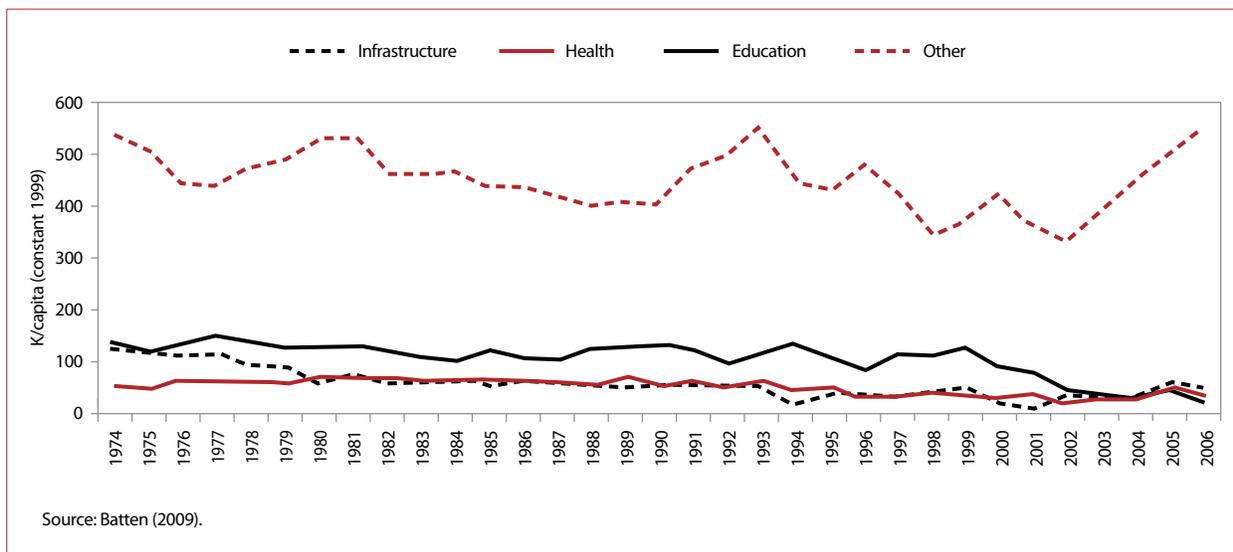
the lack of financial or project reporting, with 10 trust accounts, totaling K652 million (about \$240 million),¹⁰ or over 35% of the value of all 28 trust accounts, having been spent without any financial or project reporting being provided to the Department of Finance (Department of Treasury 2010a). In addition, large unfunded state superannuation liabilities persist, and the state has taken on significant liabilities under the Universal Benefit Sharing Agreement with the landowners of areas

affected by the PNG LNG Project. Furthermore, the Bank of PNG has been issuing central bank bills at high interest rates to withdraw excess liquidity from the financial system, which is costly to both BPNG and, ultimately, the government.

Another critical fiscal concern is inadequate allocations to priority development sectors and the effectiveness of public expenditure. Per capita expenditures on health, education, and infrastructure have shown a decreasing trend since independence (Figure 3.28).

¹⁰ At the 2010 exchange rate of K2.7/\$ (ADB 2010b).

Figure 3.28. National Government Expenditure (per capita)



Similar trends can be seen in the development budget, as the appropriations of some of the priority areas, including health, HIV/AIDS, basic education, and adult education, have not substantially increased despite the enactment of the Medium Term Development Strategy in 2005 (Figure 3.29). The trend is partly because these areas have low capacities to absorb expanding implementation of initiatives. The government reviews identify several projects that were poorly executed because capacity constraints were not adequately factored in the project design (Government of PNG 2008c: 7). The public sector’s capacity to evaluate how to effectively allocate funds is also of concern. This capacity is even more important, because the component of the Development Budget that is directly financed by the government, as a proportion of total expenditure and net lending, was increased from 6.8% in 2008 to 23.6% in 2010.

3.3.2. Microeconomic Risks

Government Effectiveness

Government effectiveness is perceived to be lower than that in other major Southeast Asian and Pacific economies. Government effectiveness is crucial for creating an environment that enables private sector investments and economic growth. The World Governance Indicators (World Bank, WGI, accessed April 2011) review of government effectiveness reported

that PNG compares unfavorably with other major economies in Southeast Asia and the Pacific (Figure 3.30). PNG’s percentile rank for government effectiveness was 22.4 in 2009, above Fiji at 17.6, but well below Indonesia (46.7), Malaysia (79.5), Philippines (50.0), Thailand (59.5), and Viet Nam (46.2). Moreover, PNG’s percentile rank, which declined sharply between 2002 and 2005, has been relatively stagnant since then. These findings are supported by a 2007 survey of firms by the Institute of National Affairs (INA), which found that 22% of the respondents ranked provision of the government services as “very poor,” 19% ranked them as “poor,” and 42% ranked them as “fairly poor” (ADB 2008a).

Weak institutions have adversely affected government effectiveness in the delivery of services—both infrastructure and social. Poor service delivery in the country has been well covered in official government documents, academic studies, and surveys. Singh et. al. (2010), in their study on PNG and other Pacific economies, noted that the quality of services provided to citizens in PNG is not satisfactory, and major bottlenecks to improvement of public service delivery pertain to financial and institutional aspects. Other studies, including Fukuyama (2007), Thomason and Kase (2009), and Esonu and Kavanamur (2010), present similar conclusions about the poor service delivery due to inadequate capacities, investments, and financing of operation and maintenance costs.

Figure 3.29. Development Budget Expenditure on MTDS Priority Areas

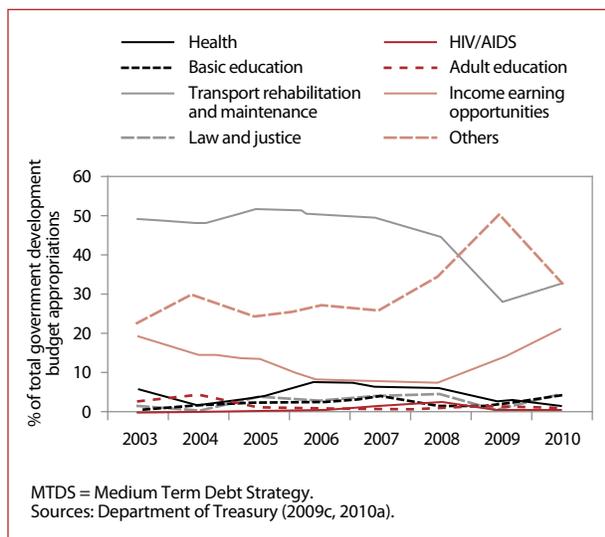
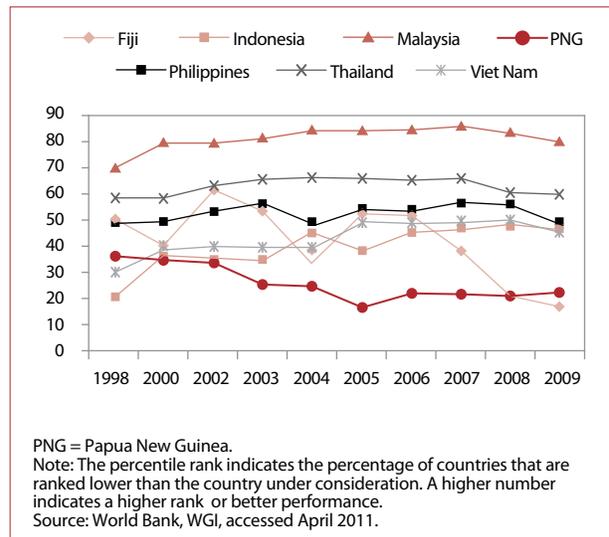


Figure 3.30. Government Effectiveness Indicators (percentile rank)



These studies conclude that the decentralization of the responsibility for delivering services such as education, health, infrastructure, and law and order through the Organic Law on Provincial and Local Level Governments of 1995 started a trend in deterioration of service delivery. Underlying reasons cited for the poor service delivery are complex and include a lack of administrative capacity and infrastructure at lower levels of government, lack of accountability and reporting between the levels of government, and lack of clear responsibilities for capital and recurrent expenditure. Another problem was that the transfer of functions to lower levels of government was not accompanied by additional financial and other resources. These and other studies attribute the issues pertaining to weak accountability and reporting to laws and regulations and institutional changes that need to be put in place to support the transfer of functions.

Law and Order

PNG fares poorly in perception of enforcement of law and order, when compared with other major Southeast Asian and Pacific economies. The Worldwide Governance Indicators (World Bank, WGI) has consistently rated PNG low on the rule of law indicator (Figure 3.31). PNG's percentile rank was 29 in 1996, then dipped sharply to a low of 7.6 by 2003 before climbing back to about 17.0 in 2009, which is still lower than its levels in the mid-1990s. In comparison, percentile ranks of Fiji, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam in

2009 were 24.1–50.9. Factors contributing to the low ranking are generally centered around poor personal security and high crime rates. A World Bank (2004b) study noted that the reasons underlying the sharp decline in law and order between 1996 and 2004 were the limited and declining economic opportunities, poor delivery of basic social services, and an environment of weak governance. The government's Medium Term Development Plan 2011–2015 also recognizes law and order and social unrest or conflicts as areas that pose risks, especially for delivering services to the rural populace (DNPM 2010). The government recognizes that crime and violence substantially reduce the quality of life in both rural and urban communities, with women being at particular risk from violent assault. In addition, individual communities and the nation as a whole bear the cost of the destruction of public assets. Local disputes can result in the destruction of community assets such as aid posts and schools, and children are often prevented from attending school for fear of attack from rival groups.

Data on the crime rate indicate that it is high and reinforce the perception of weak enforcement of law and order. It is hard to obtain accurate information on the true law and order situation in PNG. The rate of crime reporting is assumed to be low and hence to underestimate the reality. The data provide no clear evidence of significant declining trends in the national average crime rates (Figure 3.32). There is a perception that the citizens have been losing faith in the police force and are becoming less likely to report crime.

Figure 3.31. Rule of Law Indicators, Selected Countries

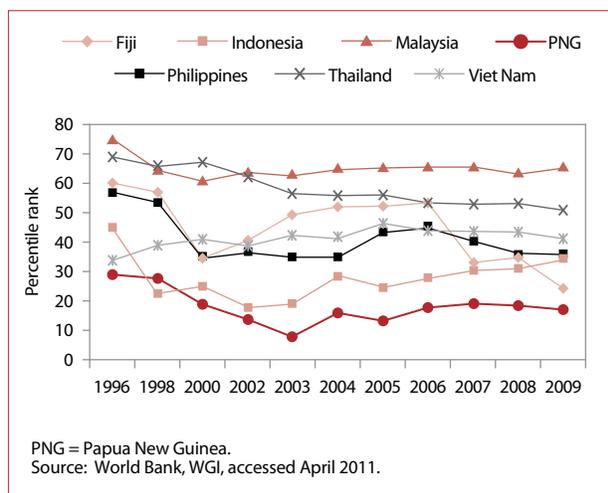
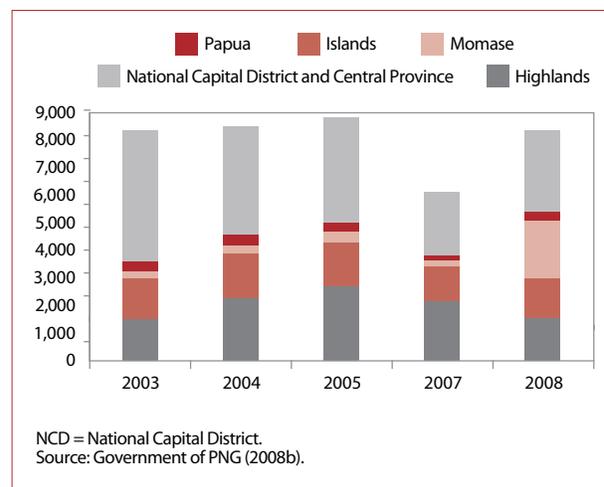


Figure 3.32. Incidents of Crime Reported, by Region (number)



The review by Manning (2005) of the performance of the police force criticized almost all aspects of policing, including management, operations, and training, and cited rampant incidents of corruption and lack of discipline. Findings of the Community Crime Survey of the National Capital District tend to confirm decreasing community satisfaction with police performance—fewer than 1 in 4 households in 2008 were satisfied with the performance of police, and a majority of the respondents reported that the police expected bribes (National Research Institute 2008). Low levels of satisfaction may also be due to very low arrest rates in some of the regions (Table 3.10).

Port Moresby has some of the best infrastructure in the country; however, the high crime rate may be hampering its ability to attract investments. Studies and surveys cite Port Moresby as one of the most dangerous cities in the world. *Foreign Policy* (2008) ranked Port Moresby in the top five murder cities in the world, with a murder rate of 54 per 100,000 people based on 2004 official figures. Similarly, the Economist Intelligence Unit (2010) ranked Port Moresby as the least livable city¹¹ in 2004, and its the latest ranking was 138 out of 140 cities (EIU 2011). While the accuracy of such claims is contestable, this and reports of crime featured in the international

press¹² indicate that the international community perceives crime in PNG to be high. The situation, in which emerging threats have been identified as abduction, murder, and narcotics offences, is of particular concern to foreign investors, as a high risk of employees being kidnapped or murdered could deter investment.

The poor law and order situation is deterring private investment and economic growth. PNG's high crime rate implies higher costs of doing business, as the businesses have to incur additional expenses to ensure security and to pay higher insurance premiums. Hence, it is no surprise that the investor feedback consistently ranks poor law and order as the most significant constraint to business and investment. A 2003 survey of enterprises noted that law and order had deteriorated, with profound consequences on the integrity of property rights and business activity (ERI 2003). These findings were confirmed by a 2007 investor survey, which found that poor law and order was identified as the top constraint to private sector investment (INA 2008a). The survey also found that the high crime rate impacts the productivity of businesses, as workers are either unwilling or unable to work at night. Other studies also note that criminal activities greatly increase the cost of operating businesses in the formal sector and are a major deterrent to foreign investors (DNPM 2010).

Table 3.10. Incidents and Arrest Rates by Region (2008)

Region	Number of Incidents	Arrest Rates (% of Incidents)
Highlands	1,447	20
Islands	1,538	29
Momase	2,175	35
Papua	155	77
NCD and Central Province	2,930	23
Total	8,245	28

NCD = National Capital District.
Source: Government of PNG (2008b).

The costs of dealing with crime are substantial. INA's Business Environment Survey of 2007 noted that 57% of the businesses reported that security costs consume 1%–10% of the value of their sales, and a further 16% of the firms reported the costs at 11%–50% of sales. The survey found that the average security-related costs amounted to 5.8% of the total sales (INA 2008a). AusAID's law and justice program estimated costs of poor law and order and the need for private security at around 9% of sales (Australian Government, AusAID).

The high crime rates are likely to have a severe impact on informal sector business activities. For example, informal vendors may not be able to risk investing in more expensive equipment, and

¹¹ The Global Liveability Report is scored according to over 30 indicators across stability, healthcare, education, infrastructure, and culture and environment.

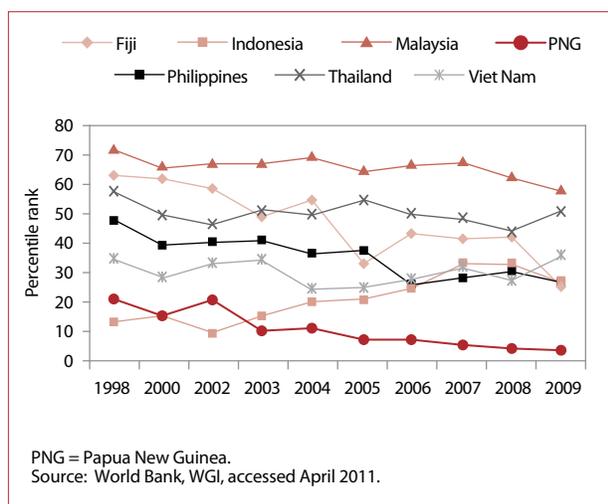
¹² Reports during 2009 and 2010 include anti-Asian riots, the murder of one of PNG's most prominent businessmen, bank holdups, and jail breaks.

the security situation may constrain their ability to get to market and to access microfinance or skills training.

Control of Corruption

Corruption is an impediment to investment. Control of corruption in PNG is seemingly weak and deteriorating in comparison with other major economies in Southeast Asia and the Pacific. The World Bank's Control of Corruption assessment (Figure 3.33) shows that, during 1998–2009, control of corruption in PNG deteriorated from a percentile rank of 20.9 in 1998 to 3.8 in 2009.

Figure 3.33. Control of Corruption Indicators, Selected Countries



PNG likewise performed poorly on Transparency International's corruption perception index in 2010, which measures and ranks perception of corruption across countries (Table 3.11). The index relates to the extent to which public officials and politicians are perceived to abuse public office for private gain. The 2010 Transparency International corruption perception index gave PNG and nine other countries a score of 2.1, ranking it 154 among 178 countries. More worrying is that PNG's rank and the scores have both slipped since 2005.

Although the number of corruption-related complaints has declined, the community and businesses perceive corruption to be rising. There often is a dearth of accurate information on trends in the scale of corruption. Records reported by the Ombudsman Commission show a decreasing number of complaints (Table 3.12). However, critics argue the numbers do not signify scale of corruption and may be declining due to a lack of action on the complaints. Regarding the scale of corruption, critics point to the Public Accounts Committee's findings in 2010, when only 5 of about 1,000 government agencies had transparently accounted for the use of public funds (*Sydney Morning Herald* 2010).¹³ Another recent example that is often cited is that of the Commission of Inquiry into the Finance Department, which

¹³ The Public Accounts Committee inquiry examined 33 government departments; 25 subsidiary agencies, including 19 provincial treasuries; 19 provincial governments, more than 400 districts, 19 urban authorities, 19 hospital boards, 116 statutory corporations, and all trust accounts (Commission of Inquiry into the Finance Department [2009]; also quoted in The Angle [2010]).

Table 3.11. Transparency International's Corruption Perception Index, Selected Countries

Country	2005		2006		2007		2008		2009		2010	
	R	S	R	S	R	S	R	S	R	S	R	S
Indonesia	137	2.2	130	2.4	143	2.3	126	2.6	111	2.8	110	2.8
Malaysia	39	5.1	44	5.0	43	5.1	47	5.1	56	4.5	56	4.4
PNG	130	2.3	130	2.4	162	2.0	151	2.0	154	2.1	154	2.1
Philippines	117	2.5	121	2.5	131	2.5	141	2.3	139	2.4	134	2.4
Thailand	59	3.8	63	3.6	84	3.3	80	3.5	84	3.4	78	3.5
Viet Nam	107	2.6	111	2.6	123	2.6	121	2.7	120	2.7	116	2.7
Total Countries	158		163		179		180		180		178	

PNG = Papua New Guinea, R = country rank (1 = highest), S = score (10 = highest).
Fiji is not in Transparency International's Corruption Perception Index.
Source: Transparency International (2010).

Table 3.12. Complaints to Ombudsman Commission

	Total Complaints Received by Ombudsman Commission	Complaints Against Public Sector	Leaders Referred by OC to Public Prosecutor Under Leadership Code
2005	3,299	...	6
2006	3,823	...	10
2007	2,986	...	2
2008	2,699	2,377	1

... = not available, OC = Ombudsman Commission.
Source: Government of PNG (2008b).

found that hundreds of millions of kina had been paid out in fraudulent claims against the state with collusion among lawyers, bureaucrats, and other parties. The studies note that charges were filed in several high-level corruption cases involving senior government officials in 2008 and 2009, but the investigative and judicial process has been very slow, and the cases remain unresolved, indicating the weak effectiveness of institutions (Fukuyama 2007, Heritage Foundation 2011).

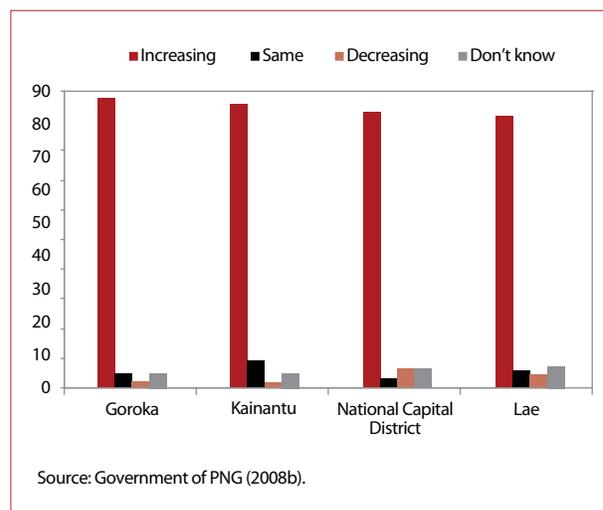
Further, survey evidence indicates that businesses and the community perceive that corruption is increasing. Urban community crime surveys in four centers found that over 80% of the community believed that corruption has been increasing (Figure 3.34).¹⁴ And about 40% of respondents to a recent survey indicated they had been "highly affected" or "very highly affected" by official corruption (INA 2008a).

Political Stability

Political and policy stability has been improving. Political stability appears to be improving in recent years with the introduction of the Organic Law on the Integrity of Political Parties and Candidates in 2002, and the 2002–2007 government was the first to complete a full term in

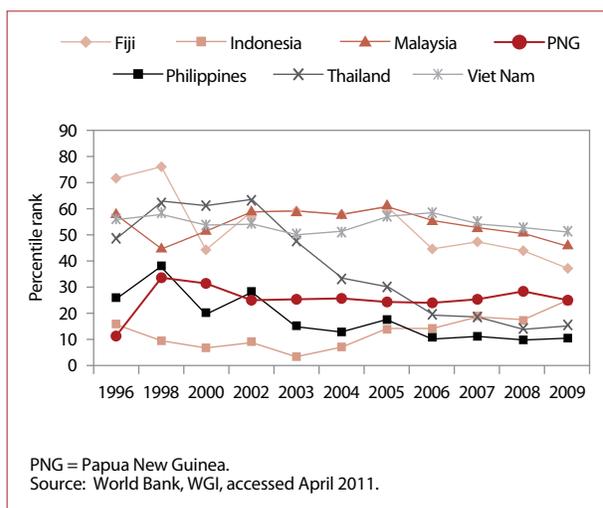
¹⁴ Civil Society Organization Survey 2008 cited in (PNG Law & Justice Sector Secretariat 2008).

Figure 3.34. 2008 Perception of Corruption (% of survey respondents)



office and was reelected in 2007. In addition, the number of Cabinet reshuffles has decreased, with only 1 reshuffle during 2007–2009, compared with 5 during 2004–2006. These observations are in line with the World Bank's political stability indicator, which showed a stable and improving trend between 2006 and 2008, and a slight decline between 2008 and 2009 (Figure 3.35). In 2009, PNG's percentile rank, at 25.5, was higher than the ranks of Indonesia, Philippines, and Thailand and below Fiji, Malaysia, and Viet Nam (World Bank 2009).

Figure 3.35. Political Stability Indicators, Selected Countries



Despite a stable political setup and government policies, investors perceive political and policy instability as among their top concerns. A 2007 business survey indicated that about 90% of the business owners were concerned about political instability and about 80% were concerned about retroactive changes in laws and regulations governing business (INA 2008a). Although on numerous occasions the government has announced its commitment to promoting the private sector, survey results show less than 50% of businesses have confidence in government policy announcements. The business owners' concerns may have persisted, because such apprehensions take many years to dissipate. For example, in Indonesia, more than 5 years of political and policy stability did not dispel investors' fears (ADB 2010a). However, actions such as the formulation of two different national long-term development plans in 2009 under different ministers, with both plans endorsed by the government, could also have created confusion and uncertainty among public and private stakeholders. Legal questions pertaining to the Organic Law on the Integrity of Political Parties and Candidates introduced in 2002 may also be source of uncertainty among investors.¹⁵

Other Aspects of Governance

PNG's performance in other governance-related aspects is either relatively good or improving. Two aspects reported by the World Bank's Worldwide Governance Indicators are voice and accountability, and regulatory quality. PNG's percentile rank in voice and accountability rose from 38.9 in 2004 to 52.1 in 2009, though it did not surpass the 1996 level of 60.3. The regulatory quality indicator, after taking a dip in 2005 at 18.5 percentile rank, improved to 32.4 in 2009, a level that still leaves much to be desired (Figures 3.36–3.38).

Global Competitiveness and Ease of Doing Business

Investors' perception of PNG's competitiveness and ease of doing business has generally been modest. The World Bank's Doing Business 2011 report ranks PNG 103rd of 183 countries, up from 108th in 2010. The

¹⁵ The Supreme Court ruled some provisions of the law as unconstitutional in 2010. Parliament now needs to review these provisions in line with Supreme Court ruling and redraft them (DNPM 2010).

Figure 3.36. Other Governance Indicators (percentile rankings)

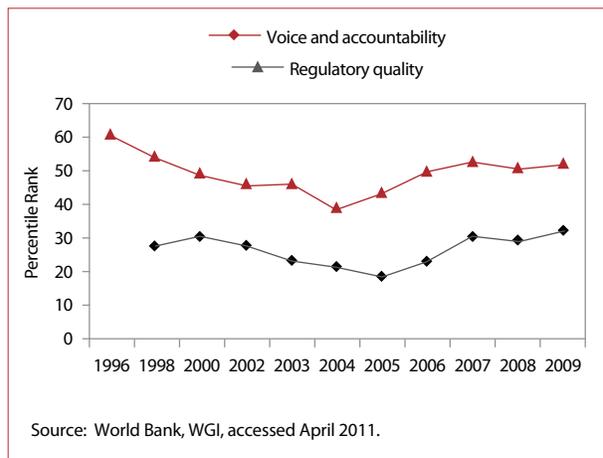


Figure 3.37. Voice and Accountability Indicators, Selected Countries

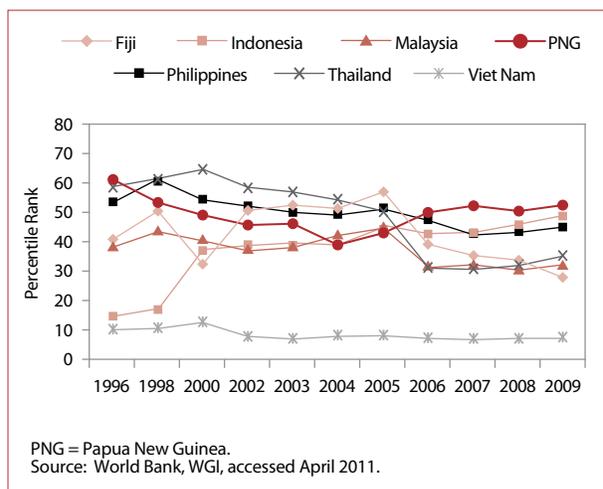
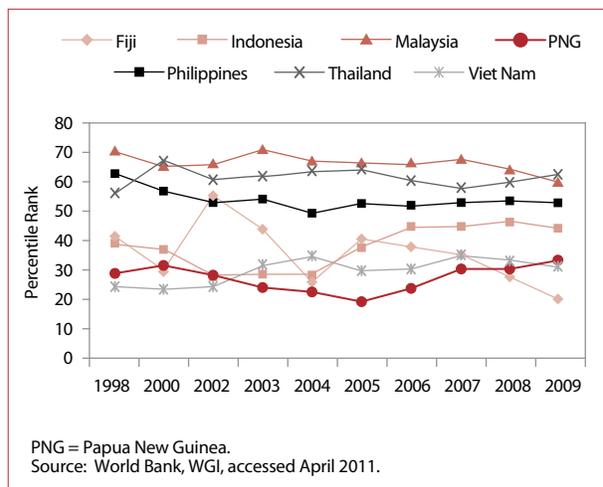


Figure 3.38. Regulatory Quality Indicators, Selected Countries

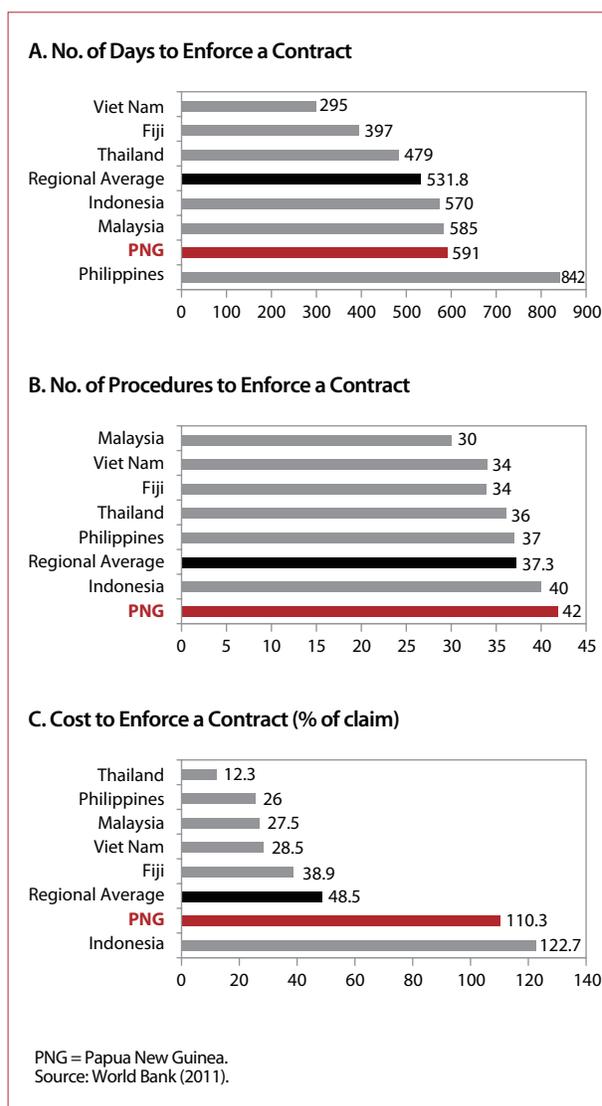


5-notch improvement is due to PNG's impressive performance in facilitating credit or lending services (from 135th in 2010 to 89th in 2011). However, its rank in other indicators dropped by 1–5 notches (Table 3.13).

Poor enforcement of contracts may hinder the entry and expansion of businesses in the country. Among the indicators of ease of doing business, PNG fares worst in contract enforcement,¹⁶ ranking 163rd in the 2011 Doing Business Survey (1st rank denotes the best). As shown in Figure 3.39a, the survey indicated that it takes 591 days to enforce a contract in PNG; among other major economies in Southeast Asia and the Pacific, this is better than only the Philippines (842 days), and is below the average of 531.8 days. Similarly, an investor in PNG will have to endure 42 procedures to pursue enforcement of a contract, versus 40 in Indonesia, 37 in the Philippines, 36 in Thailand, 34 in Viet Nam and Fiji, and 30 in Malaysia (Figure 3.39b). Thus, it is not surprising that the cost of enforcing a contract is as high as 110.3% of the contract, whereas the average for major economies in Southeast Asia and the Pacific is 48.5% (Figure 3.39c).

PNG compares favorably with other Southeast Asian and Pacific economies in the ease of starting business and in costs and procedures to register property. In terms of ease of starting a business, the 2011 Doing Business Survey ranked PNG 81st among 183 countries—in

Figure 3.39. Enforcing a Contract



¹⁶ Encompasses filing and serving of a case, trial and judgment, and enforcement of judgment.

Table 3.13. Doing Business Survey Results

Topic Rankings	2011 Rank	2010 Rank	Change in Rank
Starting a Business	81	77	-4
Dealing with Construction Permits	120	118	-2
Registering Property	85	84	-1
Getting Credit	89	135	+46
Protecting Investors	44	41	-3
Paying Taxes	101	98	-3
Trading Across Borders	96	91	-5
Enforcing Contracts	163	163	0
Closing a Business	108	103	-5
Overall Ranking	103	108	+5

Source: World Bank (2011).

the upper 50% of the surveyed economies and better than major Southeast Asian and Pacific economies. Survey findings also indicated that an investor needed to go through 8 procedures to start a business, requiring up to 51 days, and a cost of 17.7% of income per capita (Figure 3.40).

In the cost and procedures required for registering a property, PNG ranked 85th of 183 surveyed economies, better than Indonesia and the Philippines but lower than most other countries in Southeast Asia and the Pacific. The survey further

reports that to register a property, an investor will need to go through 4 procedures, taking about 72 days and costing up to 5.1% of the property value (Figure 3.41). While the cost to register the property is higher than the regional average, the other measures of property registration are lower.

Tax rates in PNG are generally higher than in other countries in the region, and paying taxes is cumbersome; however, investors do not consider these to be a critical constraint. PNG has one of the highest tax rates

Figure 3.40. Starting a Business

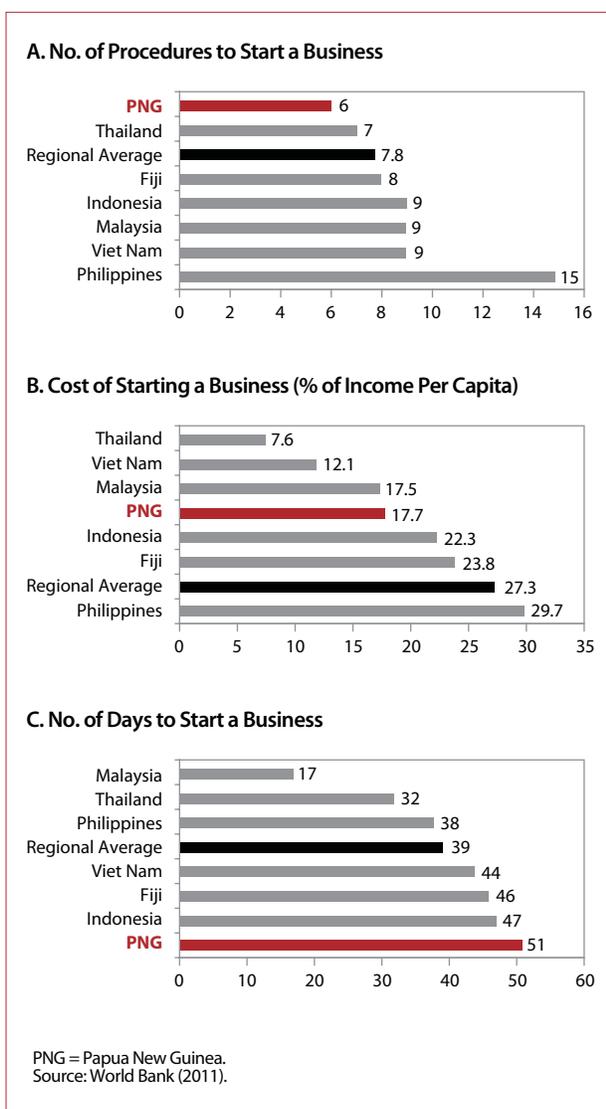


Figure 3.41. Registering Property

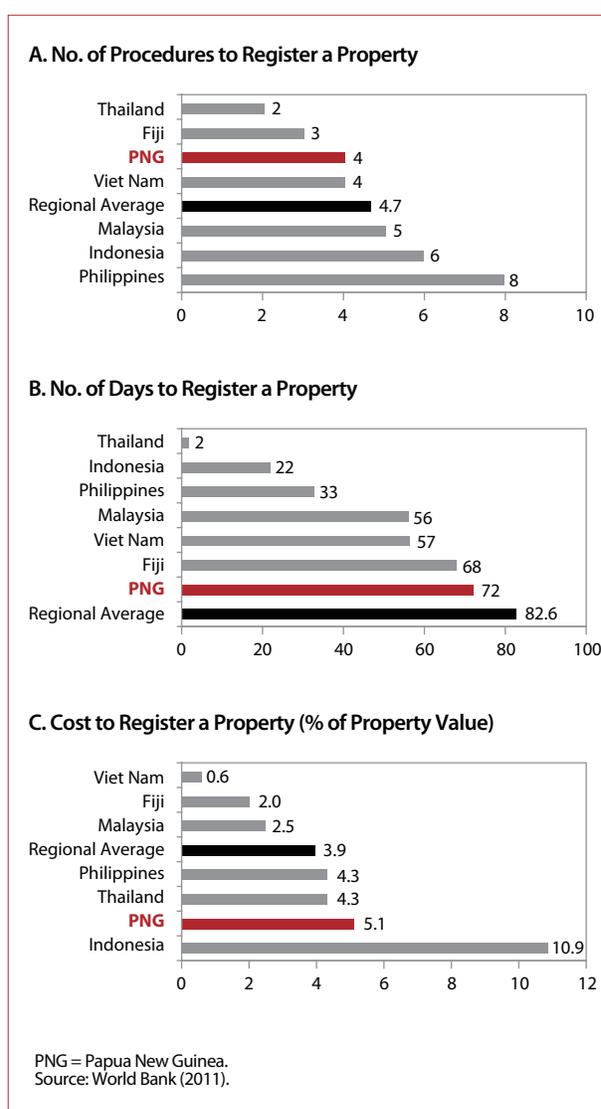


Table 3.14. Tax Rates in Selected Asia and Pacific Countries (%)

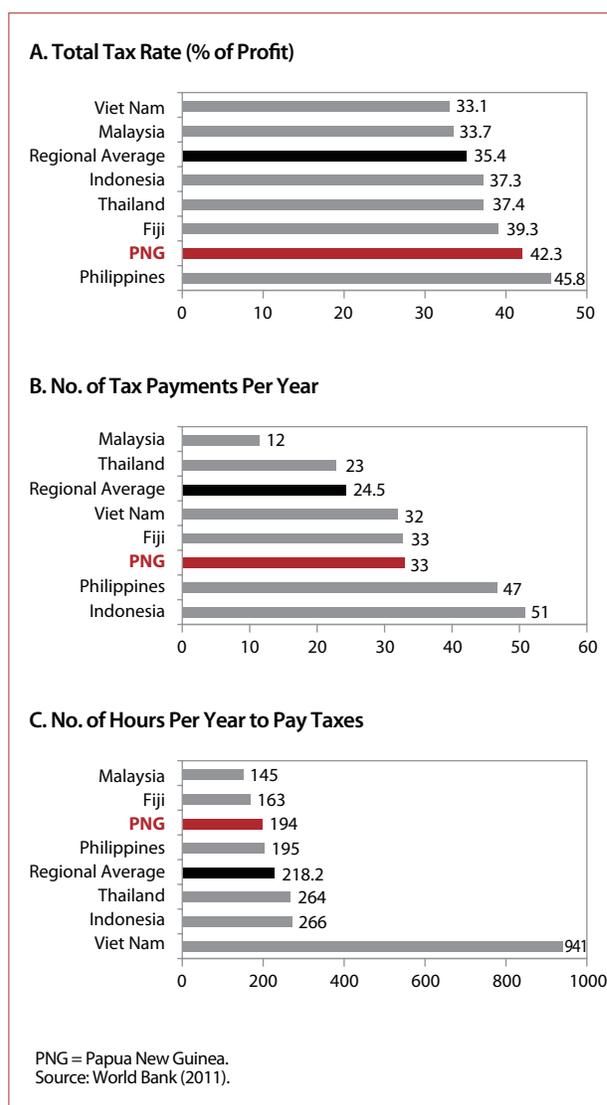
Country	Personal Income Tax	Corporate Income Tax	Value-Added Tax	Branch Profits Tax
Fiji	31	28	12.5	28
Indonesia	30	25	10	20
Malaysia	26	20 (on first RM500,000) 25 (on the balance)	5-10 (sales tax)	0
PNG	42	30 (48 for nonresident companies)	10 (GST)	48
Philippines	32	30	12	15
Thailand	37	30	7	10
Viet Nam	35	25	10 (plus 10–70 special sales tax for luxury goods and services)	0

GST = goods and services tax, PNG = Papua New Guinea.
Source: World Tax Rates 2010/2011, accessed 28 April 2011.

in Southeast Asia and the Pacific region, with a personal income tax rate of 42% and a corporate income tax rate of 30%–48%. Foreign businesses are subject to a 48% “branch profits tax” rate on their branches in PNG. However, goods and services or the value-added tax rate at 10% is comparable to that in other major economies in Southeast Asia and the Pacific (Table 3.14). The 2011 Doing Business Survey estimated the total tax rate in PNG at 42.3% of profits, higher than the regional average rate of 35.4%¹⁷ (Figure 3.42a). In addition, the survey respondents considered the tax payment processes to be cumbersome, and the survey estimated that a business in PNG has to make an average of 33 tax payments a year, compared with 24.5 for the Southeast Asian and the Pacific countries (Figure 3.42b). The survey estimated that tax payment requires about 194 hours of work per year, which is lower than the regional average 218.2 hours (Figure 3.42c).

Together, the high tax rates and cumbersome procedures may deter some investment; however, findings of the INA business survey suggest that taxes and tax payments may not constitute a critical constraint to investment. The survey respondents ranked tax rates in the bottom quartile of 22 constraints to businesses (INA 2008a). In addition PNG has been implementing the Tariff Reform

Figure 3.42. Taxes



¹⁷ In the 2011 Doing Business Survey, the total tax rate, expressed as a percentage of profit, aggregates corporate income tax; mandatory social contributions and labor taxes paid by the employer; property and property transfer taxes; dividends, capital gains, and financial transaction taxes; and waste collection, vehicle, road, and other taxes.

Program since 1997 and tariff barriers are now low relative to other developing countries, with a weighted average tariff rate of only 1.9% in 2008.

Labor market

Labor market rigidities are minimal, but labor efficiency appears to be an issue. Prior to labor market deregulation in 1992, the urban and rural minimum wages were set separately, with the urban wages about three times the rural wages, which is thought to be a contributing factor to the law and order problems, as many people migrated to urban areas. Starting in 1992, minimum wages for both urban and rural areas were brought to the same level through labor market deregulation reforms. The reforms have been considered a success, given the strong growth in urban formal sector employment in the 1990s despite the low level of economic growth (Levantis 2000). As a result of the reforms, PNG's labor regulations are flexible, and employees have low nonsalary costs and can be hired and dismissed relatively easily, which is reflected in the country's rank of 26 out of 183 countries for the ease of employing workers (World Bank 2010a). The unit labor costs may

be high, but limited information is available. A genuine concern in 1992 at the time of labor reform was the high cost of labor and low levels of productivity in the agriculture sector. Duncan (1996) reported evidence of high unit labor costs (ratio of wages to productivity) in manufacturing in PNG compared with other countries in the region.

3.3.3. Market Failures

The manufacturing subsector is small, narrow, and stunted. Manufacturing's share of the industry sector has been historically modest. Manufacturing's value addition as a percentage of GDP is low compared with that in other major economies in Southeast Asia and the Pacific (Figure 3.43). Moreover, growth in the subsector's value addition has been low despite the fact that the economy has grown at an average rate of about 5.1% since 2003 (Figure 3.44). The subsector also has a narrow base comprising mainly petroleum-based products, palm and copra oil, processed timber, food processing, beverage production, and tobacco products.

Figure 3.43. Manufacturing in Selected Countries (% of GDP)

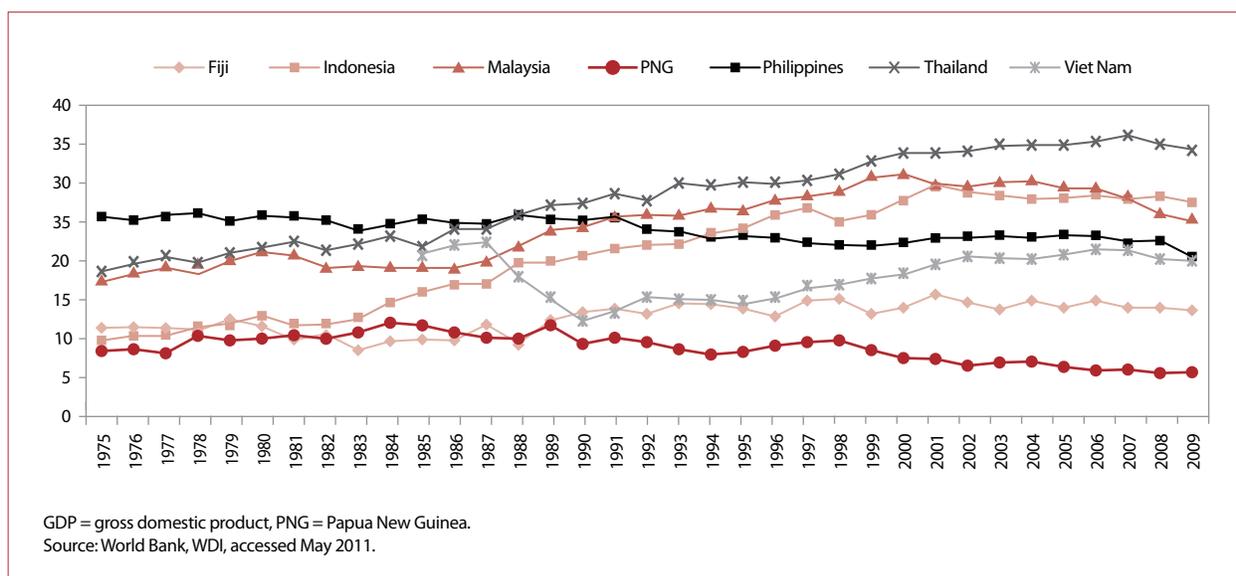


Figure 3.44. Performance of the Manufacturing Subsector

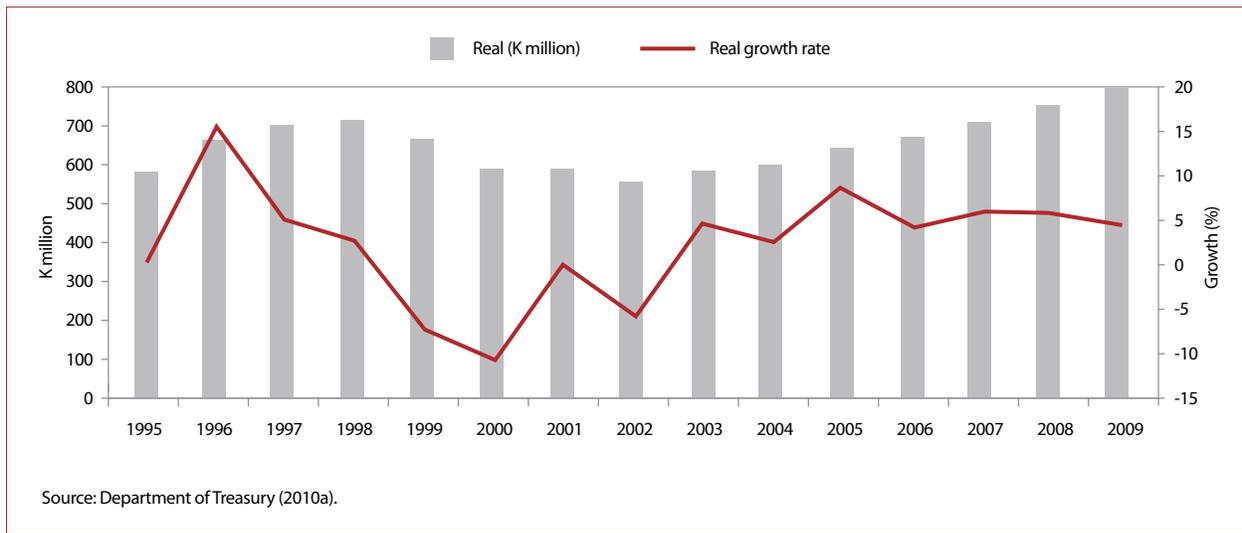
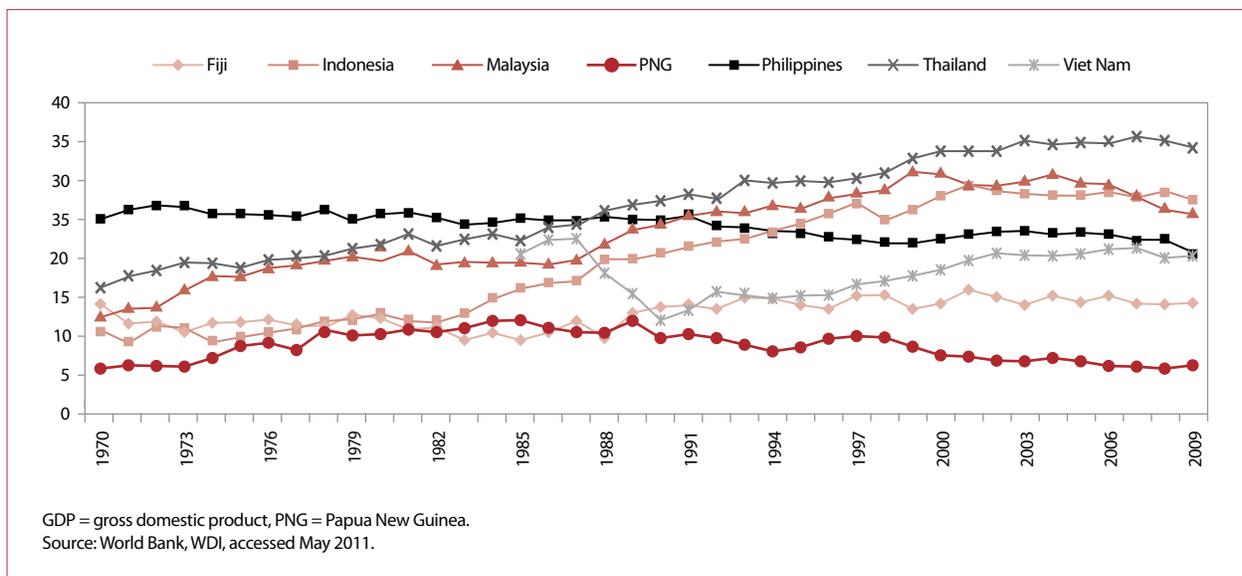


Figure 3.45. Exports of Goods and Services (% of GDP)

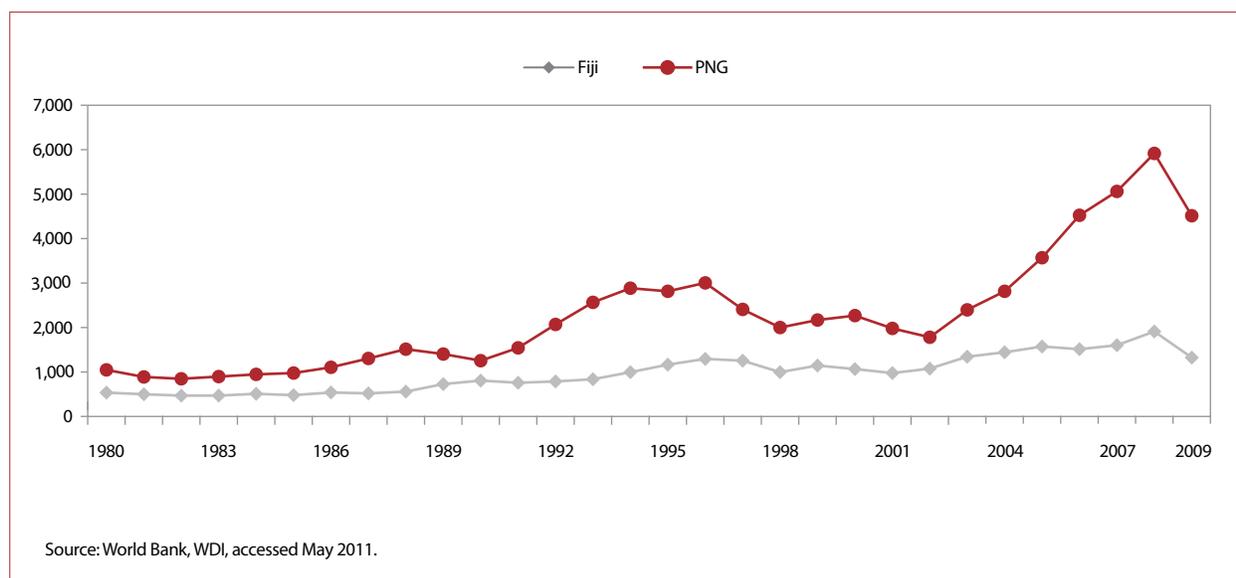


Exports are low in volume and technological content. Similar to the manufacturing subsector, the export base is also relatively small. In 2009, export of goods and services accounted for only about 5.9% of GDP, which is much lower than other major economies in Southeast Asia and the Pacific (Figure 3.45). Although, the recent boom in commodity prices has boosted exports in terms of value, the volumes remain low and exports are largely limited to petroleum-based products, gold, copper ore, logs,

palm oil, coffee, cocoa, crayfish, and prawns. In nominal terms, the value of exported goods and services was \$4.5 billion in 2009, which is one of the lowest in Southeast Asia and the Pacific region (Figure 3.46).

Market failures are likely to be present in the economy, but are less crucial than other binding constraints discussed previously in this chapter. Large impediments to the success of manufacturing lie in the general

Figure 3.46. Exports of Goods and Services (current \$ million)



business environment, including the costs associated with security and poor public infrastructure and high input costs. Recent literature suggests that market failures such as information and learning externalities and coordination failures could lead to low private appropriability of returns and, therefore, can deter private investment (Hausman, Rodrik, and Velasco 2005).¹⁸ Such market failures may also be at play in PNG's manufacturing subsector and its exports; however, lack of data make it difficult to clearly ascertain the degree to which these may be affecting the subsector's growth and diversification.

Foreign direct investment (FDI) is a common vehicle for transfer of technology in a country, with investors bringing new technology and production processes to an economy along with the investments. Spillovers from the FDI can then help upgrade the domestic industry. However, in PNG, less than 5% of the FDI has been for manufacturing

and the absorptive capacity of the domestic firms is low, lowering the likelihood that they can benefit from technology spillovers.

The presence of learning externalities and the absence of incentives to invest in upgrading human capital may be evident in the sparse linkages between universities and industry. University records suggest that there are few incentives for pursuing higher education in science or technology, which may provide the skills required for manufacturing and its upgrade. More than 6,000 students graduated from universities and technical and educational colleges in 2008, but only about 7% graduated with degrees related to information technology, mathematics, science, or engineering (Table 3.15).

¹⁸ "Information externality" refers to the situation when the benefits of successfully introducing new products and/or production processes in a country may spill over to third parties, but in case of failure the cost is borne by the original proponent. "Learning externality" refers to the situation when the benefits from investments in building the capacity of the workforce spill over to third parties if the trained workers switch employers or migrate to other countries. "Coordination failure" refers to a situation where a firm's linkages to upstream and downstream industries are not well developed, or a firm's access to infrastructure, regulation, and other public goods is poor.

Table 3.15. University Graduates in Science and Technology (2008)

	College Diploma		University Diploma		Bachelor		Postgraduate	
	Number	(% of Total)	Number	(% of Total)	Number	(% of Total)	Number	(% of Total)
Science	40	1.2	0	0.0	147	7.8	3	2.3
IT, Mathematics, Electrical and Communication Engineering	209	6.4	48	5.0	60	3.2	0	0.0
Engineering	18	0.6	0	0.0	53	2.8	0	0.0
Total	267	8	48	5	260	14	3	2

IT = information technology.

Note: A college diploma may be a 2- or 4-year course; a university diploma is a 4-year course.

Sources: Government of PNG (2008a), Author's estimates.

Chapter 4

Critical Constraints to Inclusiveness of Growth

Since its independence in 1975, Papua New Guinea (PNG) has made limited progress with improving the welfare of its population. The human development index ranks PNG 148th of 182 countries, and in the Asia and Pacific region, PNG ranks higher only than Timor-Leste (162) and Afghanistan (181). PNG also has one of the region’s highest levels of inequality, with a significant gap in welfare between people in urban and rural areas. The majority of the population resides in rural areas and depends largely on subsistence agriculture for a livelihood. Due to its terrain and scattered population with more than 850 language groups, achieving inclusive growth is particularly challenging for PNG. The available evidence highlights a clear need for improving the access of the population to opportunities to improve their capabilities and their access to key infrastructure and productive assets as a means to improving their ability to benefit from and to contribute toward economic growth. This chapter identifies potential critical constraints to the inclusiveness of economic growth, using the conceptual framework outlined in Chapter 1.

4.1. Employment Opportunities

4.1.1. Availability of Employment

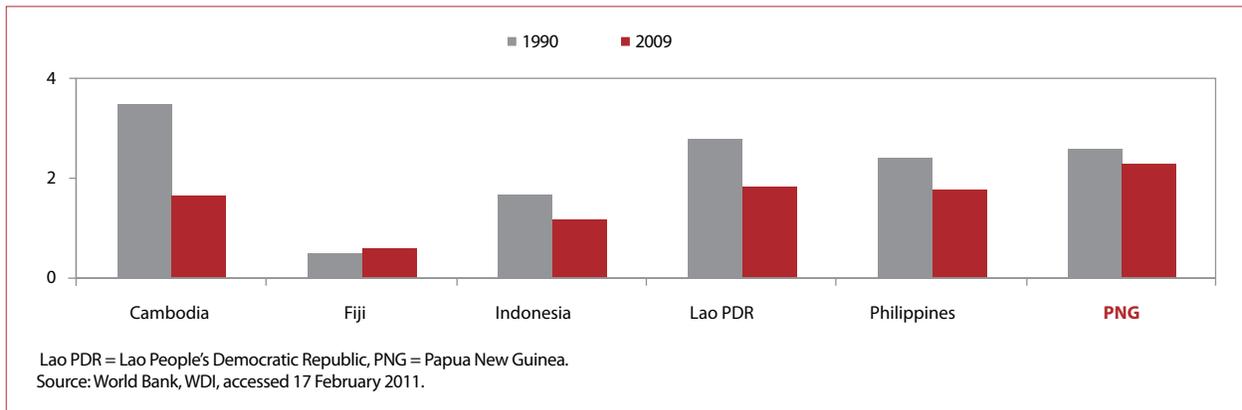
The lack of productive employment opportunities is a critical constraint to inclusiveness. One of the key causes of PNG’s “poverty of opportunities” is that employment growth has not kept pace with population growth. The last employment data collected through the PNG 2000 Population and Housing Census show that the employment rates are relatively high and unemployment rates are low (Table 4.1). However, these employment figures are favorable largely because most people in rural areas are engaged in subsistence agriculture, and the census considers such people as being employed (DNPM 2009). Indeed the majority of the population in PNG—about 72% in 2000—is employed in agriculture. That employment opportunities are limited outside the agriculture sector is also shown by high unemployment rates in urban areas (see the next section).

Table 4.1. Labor Force Participation, Employment, and Unemployment Rates (2000, %)

	Labor Force Participation Rate		Employment Rate		Unemployment Rate	
	Age 10+	Age 15–24	Age 10+	Age 15–24	Age 10+	Age 15–24
Male	66.1	58.5	95.7	92.3	4.3	7.7
Female	64.6	61.5	98.7	97.2	1.3	2.8
Total	65.4	60.1	97.2	94.7	2.8	5.3

Sources: DNPM (2009); NSO, Census 2000.

Figure 4.1. Annual Population Growth Rate (%)



PNG's annual population growth rate has been 2.3%–2.7% since 1990 and has declined only slightly, unlike in selected other countries (Figure 4.1). As Figure 4.2 illustrates, the recent change in the demographic structure, with an increasing working age population, is adding pressure on the economy to generate employment opportunities. Over 50,000 youths (aged 15–24) are estimated to enter the labor market each year, while only a few thousand jobs are being created (Cammack 2007). This has resulted in a greater unemployment rate among the youth than among the overall population (Table 4.1).

PNG's GDP per worker has been low and is one of the lowest among the countries in Figure 4.3. GDP per worker was estimated at \$1,570 in 2000 terms in 2008—only about one-third that of Fiji and Samoa, half that of the Philippines and Vanuatu, and two-thirds that of Indonesia. Not only is per worker GDP low, but it has not risen during the last few decades, and the 2008 level was lower than the 1980 level.

A critical issue PNG faces is that of limited employment opportunities in the formal sector. Only about 10% of household heads are engaged in wage employment in the private sector (Table 4.2). PNG's growth in formal sector employment is limited when compared with that in other countries. Just over 5% of PNG's working-age population is employed in the formal sector, which is the lowest share among the countries in Figure 4.4. Absorbing the growing youth population into the labor market is particularly challenging, given how slowly the formal labor market is growing (Nita 2006). Limited employment opportunities in the formal sector also have an important implication

Figure 4.2. Population by Age Group

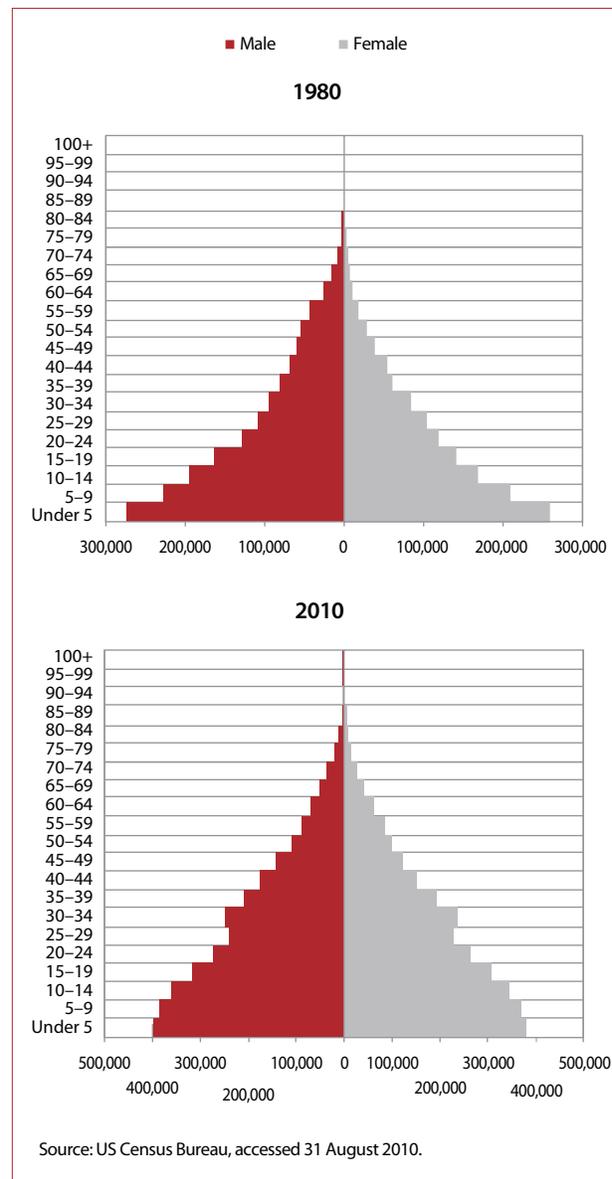


Figure 4.3. Labor Productivity (1980–2008, GDP in 2000 \$/laborer)

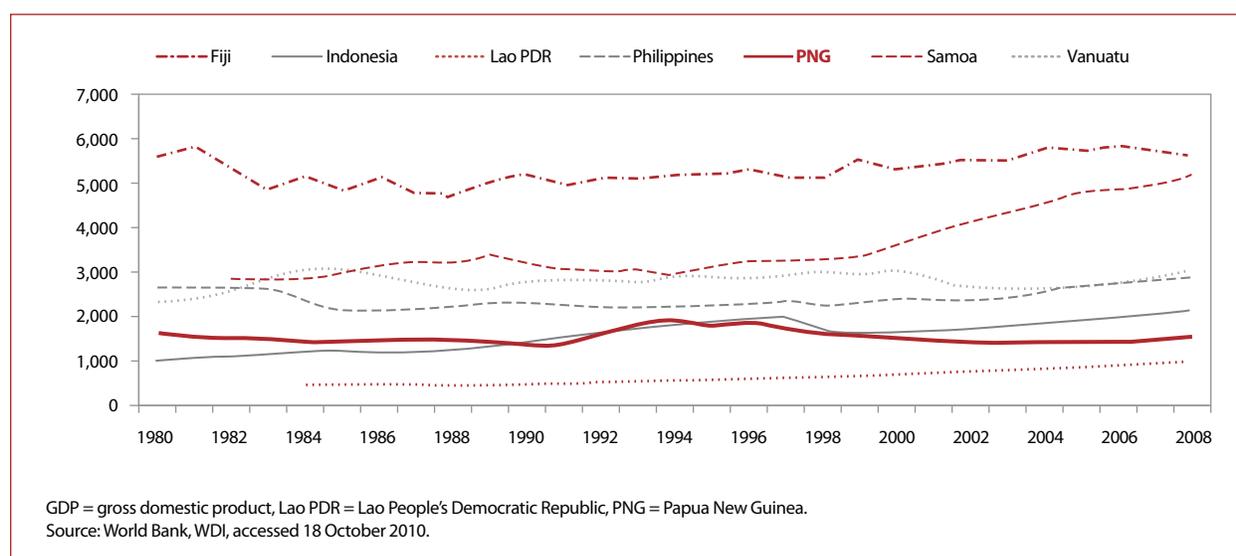


Table 4.2. Incidence of Poverty by Main Income Source of Household Head (1996, %)

	Poverty Headcount Rate	% of Total Poor Population	% of Total Population
No income source ^a	46.9	16.6	13.3
Fishing, Hunting, Gathering	57.3	7.9	5.1
Domestic Agriculture	42.7	19.0	16.7
Cash Crops	44.0	42.5	36.3
Running a Business	24.6	4.2	6.4
Wage Job	16.6	9.8	22.2
Public	13.5	4.4	12.2
Private	20.3	5.4	10.0
PNG	37.5	100.0	100.0

PNG = Papua New Guinea.

^a "No income source" means that the household head does not earn cash income, but the household may still obtain cash from other household members.

Source: Datt and Walker (2006).

for reducing poverty in PNG. The poor tend to have limited access to wage employment and less chance to run their own business (Table 4.2). Given that the poverty incidence is estimated to be lower among people with wage employment or running a business than those earning no cash income or working in agriculture, generating more productive employment opportunities is a vital route to reducing poverty in PNG.

When productive employment opportunities are limited within a country, some people may overcome this by migrating abroad. Emigration

in the Pacific region has increased during the last decade, mainly due to low economic growth at home, cutbacks in public sector employment, and little progress with enhancing the climate for private sector activities (Browne and Mineshima 2007). Yet migration out of the Melanesian countries (PNG, Solomon Islands, and Vanuatu) has not increased despite their relatively low economic growth for a long period (Figure 4.5). Browne and Mineshima suggested several reasons for this, including the limited number of skilled people, less pronounced links than Samoa and Tonga with New Zealand, the high percentage of the population living in rural

Figure 4.4. Share of Formal Sector Employment in the Working-Age Population (%)

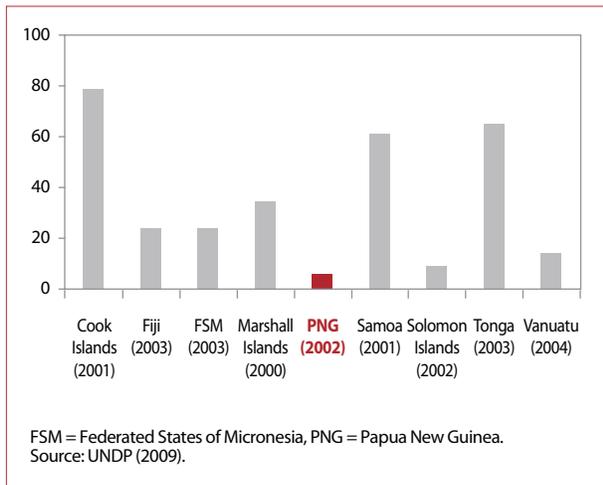
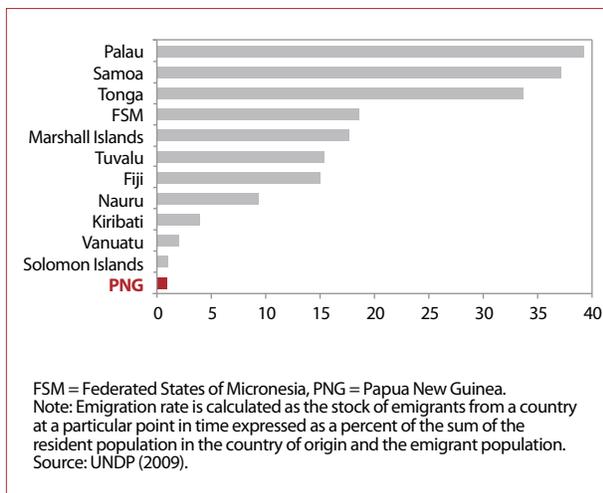


Figure 4.5. Emigration Rate of the Pacific Countries (2000–2002, %)



areas where knowledge of jobs abroad is minimal, and the continued importance of the wantok system through which a high proportion of earnings is expected to be shared with others (discussed in more detail in Section 4.3).

4.1.2. Equality of Access to Opportunities

Unequal access to opportunities across the country poses a critical constraint to enhancing the inclusiveness of growth. Even if the economy succeeds in generating sufficient levels of productive jobs, there is need to improve access to opportunities among various segments of society to effectively reduce poverty and inequality.

Unfortunately, the scarcity of employment data in PNG does not allow us to rigorously assess geographical variations in access to opportunities. However, the available information is that job opportunities are not equally distributed across the country.

Figures 4.6 and 4.7 report labor force participation, employment, and unemployment rates by province. Although labor force participation and employment rates are relatively high in most of the country, they are significantly lower in urban than in rural areas. The labor force participation rate is about 46% in urban areas, compared with 68% in rural areas, mainly due to the low labor force participation rate in the National Capital District (Figure 4.6). The unemployment rate in the urban sector is relatively high, at 16.2%, while that in the rural areas is only 1.5% (Figure 4.7). Such observations support the earlier argument that a large share of the population in PNG relies on agriculture for livelihood, whether for cash or subsistence, and this disguises the dearth of productive employment opportunities in the country.

In terms of the sector distribution, while employment opportunities are generally limited outside the agriculture sector, the few jobs in industry and services are concentrated in urban areas, specifically in the National Capital District where about 12% of the people are engaged in industry and 78% in services (Figure 4.8). Because nonagricultural jobs are concentrated in urban areas and economic growth in the coming years is likely to be driven by the mining (including oil and gas) subsector, it is of serious concern that the growth may not be able to address the unequal distribution of opportunities across the country. Further, the mining sector is capital intensive, and its contribution to generating employment is likely to be limited. In PNG, mining-led growth has come at the expense of government attention to the development of other sectors, thereby hampering other opportunities for poverty reduction in the country (Datt and Walker 2006).

The evidence presented so far, though limited by the absence of labor force survey data, reveals inequitable access to productive employment across the country. The conceptual framework described in Chapter 1 indicates that possible causes underlying the unequal access to opportunities are (1) weak human capabilities, and (2) uneven playing fields.

Figure 4.6. Labor Force Participation and Employment Rates by Province (2000, %)

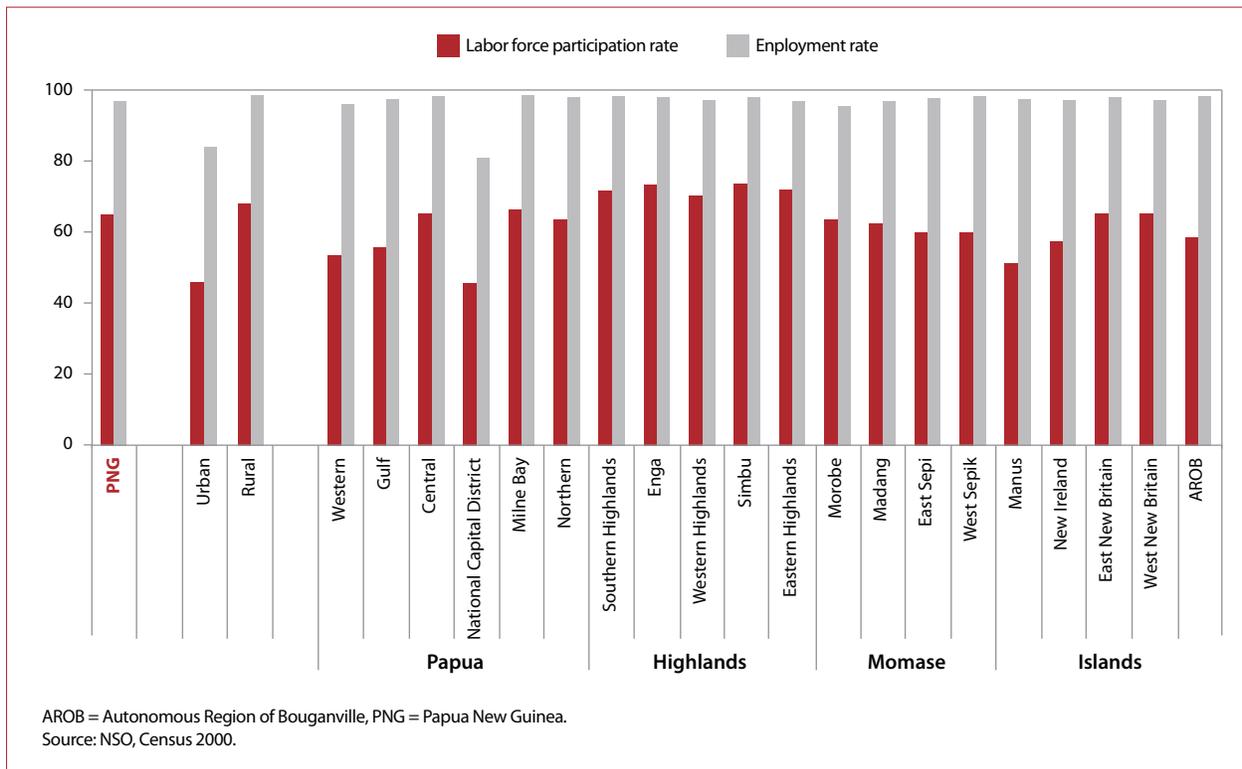


Figure 4.7. Unemployment Rate by Province (2000, %)

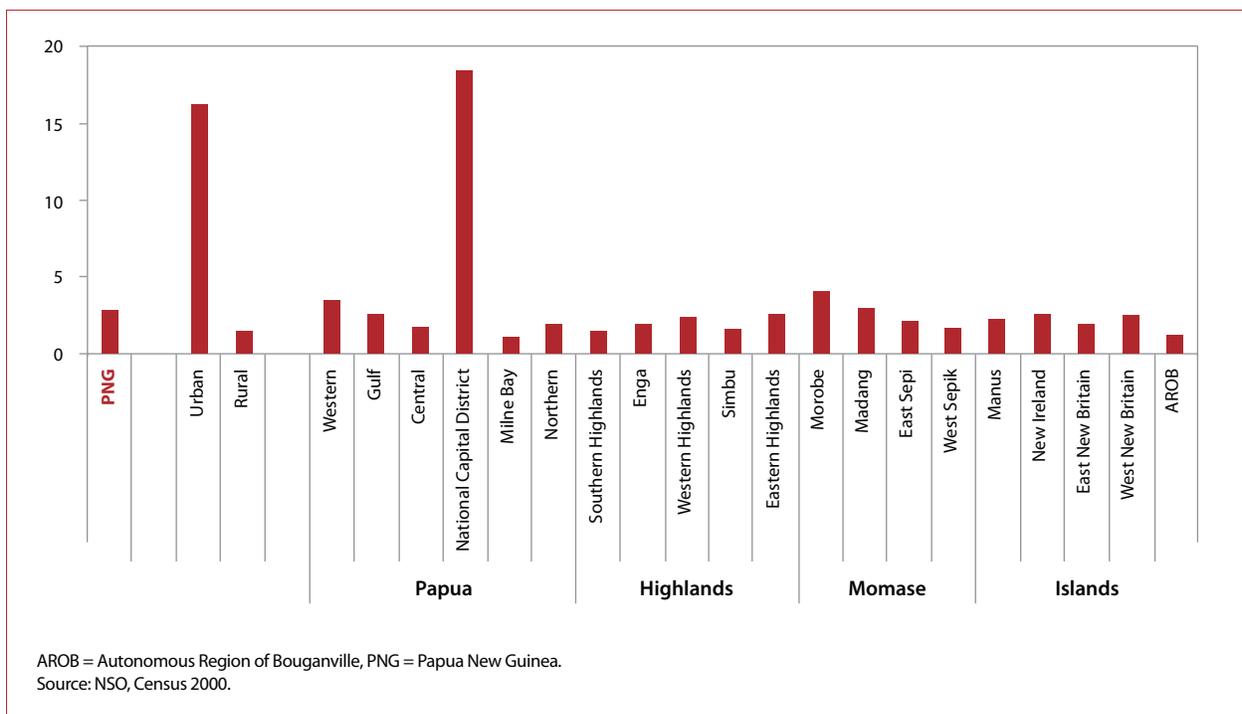
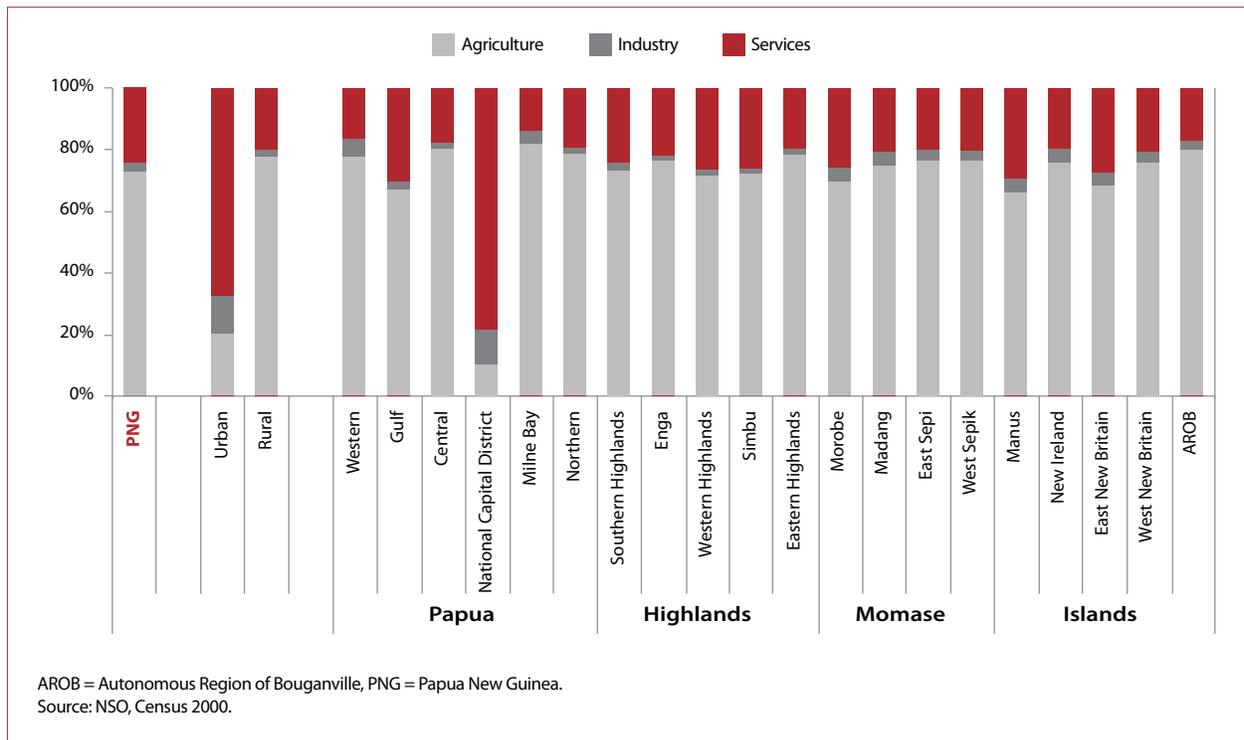


Figure 4.8. Distribution of Employed by Sector (2000, %)



4.2. Human Capabilities

A possible reason for the unequal access to opportunities is that certain segments of the population have weaker human capabilities than others, partly due to unequal access to education, health, and/or other social services such as clean water and sanitation.

4.2.1. Education

Unequal access to and poor quality of basic education pose a critical constraint to reducing poverty and inequality. One of the most important components of human capabilities is education. Box 4.1 provides a brief overview of the challenges faced in delivering education in PNG. The education level of the household head is found to be among the key determinants of a household's welfare level in PNG. Jha and Dang (2008), for example, find in their empirical analysis that the higher the level of education of the head of a household, the lower the likelihood that the household will be poor or vulnerable to poverty. Similarly, Gibson et al. (2005) find that the same trend applies to welfare level measured by real consumption per "adult

equivalent."¹ Further, the poverty simulation analysis by Gibson and Rozelle (2003) indicates that the incidence of poverty in PNG would fall by 17% if all household heads became literate, and by more than 10% if the average schooling achieved in rural areas were raised to a minimum of an elementary school education from the current level of 3 years. One obvious reason for the key role played by education in poverty reduction is that education enhances access to productive employment opportunities. Table 4.3 reports the proportion of men and women engaged in various activities in PNG. It explicitly shows that, for both men and women, people with higher educational attainment are more likely to be engaged in nonfarm work, while those with no education tend to be engaged in subsistence fishing and farming.

Despite the potential role of education for improving household welfare, the education level of the population remains relatively low in PNG compared with that in other countries in the region.

¹ The total household expenditure is divided by the number of individuals in the household, but a child is counted as a fraction of an adult, depending on the age of the child; hence, the term "adult equivalent."

Box 4.1. The Structure of and Resources for Education

PNG's low literacy rate (57.8%) and decreasing rates of retention in primary school severely hamper the country's efforts to reach Millennium Development Goal (MDG) 2, to achieve universal primary education (UNDP, MDGs in PNG). PNG's education system is struggling to provide education services at all levels, and senior educators express concerns about the quality of teacher training, the curriculum, physical and financial resources, and the alignment of the education system with the social and economic needs of the populace (Freeman, Anderson, and Morgan 2005).

Policies and Strategies, Leadership and Structure. The government's policies and strategies for the education sector are established but the leadership and structure are fragmented. The Commission for Higher Education outlined its policy and implementation strategy in 2000 (DOE 2004), and a national plan for education exists for 2005–2014. The Office of Higher Education has recently focused on policy development, institutional linkage, private provision, and a quality framework looking at 2050.

There are separate ministries for education and higher education, while research institutes come under the supervision of a vice-minister. There is a National Education Board, a Teacher's Commission, and education boards at the provincial level. The devolution of responsibilities generates problems as much as it caters to diverse needs. Provincial boards enjoy a devolved level of authority, but they remain under the control of the national level. Lack of clarity of roles and responsibilities of education officers at the national and provincial levels has resulted in duplication of effort and breakdown of the principle of shared ownership and cost.

Resources. Human and capital resources for education are limited. High schools face problems with physical infrastructure, availability of well-trained teachers, and delivery of curriculum. In 2011, for example, the choice of subjects rose from 5 to 16 without requisite additional training for teachers. Language competency is a challenge, as years 1–3 are taught in the vernacular (*Tok Ples* or *Tok Pisin*) and, on entering higher levels, many students remain deficient in the English language skills required for further study. One provincial governor has responded to this by directing all schools to teach in English despite the policy requiring the use of the local language as the medium of instruction.

The Office of Higher Education recognizes six universities, five technical colleges, seven teachers colleges, five nursing colleges, two business colleges, and three "other colleges." The state-run universities are severely underfunded and have critical infrastructural maintenance needs, in addition to expansion needs. The University of Papua New Guinea, established in 1965, is the largest single tertiary education provider in the country and struggles to find adequate resources (Haynes 2010). The limitations have translated to low educational standards from secondary to tertiary level.

Teacher training and upgrading is a challenge. The government requires all teachers to have diploma qualifications. The Institute of Education estimated that it would require about K6.7 million to train all the teachers but only K270,000 was allocated by the national government in 2010.

Sources: Authors; DOE 2004; Freeman, Anderson, and Morgan (2005); Haynes (2010); UNDP, MDGs in PNG; ADB (2012).

Table 4.3. Economic Activity by Gender and Education Level among People Aged 15–49 (2006, %)

Type of Work	Men				Women			
	No Education	Grades 1-5	Grade 6	Grade 7+	No Education	Grades 1-5	Grade 6	Grade 7+
Nonfarm Work	16.3	17.2	23.6	34.5	12.6	11.1	16.5	27.6
Fishing/Farming Cash Income	6.3	7.9	9.1	5.6	3.8	5.5	5.6	3.6
Fish/Farm subsistence	49.4	35.1	38.9	19.1	48.8	40.8	41.5	19.9
Student	0.3	11.8	5.3	19.8	0.4	8.3	5.4	19.3
Housework	14.2	13.4	9.9	8.4	28.5	28.7	26.2	22.9
Unemployed	3.9	3.9	4.8	6.0	0.7	1.0	0.4	1.7
Old/Sick	1.1	0.7	0.4	0.3	0.3	0.7	0.5	0.3
Others	6.8	7.4	6.6	4.5	3.5	2.6	2.7	2.6
Don't Know	0.6	0.3	0.2	0.2	0.5	0.3	0.1	0.0

Source: NSO (2009).

Figure 4.9 shows higher literacy rates among the youth than among adults (15 years and older, including the youth) in all the countries listed. This indicates that the education level in all of the countries has increased, but literacy rates among PNG adults and youth are low compared with those in the other countries.

There is a great disparity in literacy rates between PNG men and women. It is, however, encouraging that the women's literacy level increased between 2000 and 2008, which led to a higher literacy rate for women than for men among the youth in 2008 (Figure 4.10). The literacy level also varies significantly across the country (Figures 4.11 and 4.12). The proportion of illiterates is particularly high in rural areas and the Highlands and Momase regions. Women are more likely than men to have no education, and the geographical disparity in the education level is greater among women than men.

The observations made so far clearly indicate that some population groups have less access to education than others. The education reform process in PNG was initiated in the mid-1990s with the National Education Plan 1995–2004. The main focuses of the reform were to increase access, equity, and retention at all levels and to improve the quality of education (DOE 2004). One of the major changes was the restructuring of the education system. The previous system had a 6–4–2 structure, with community schools offering grades

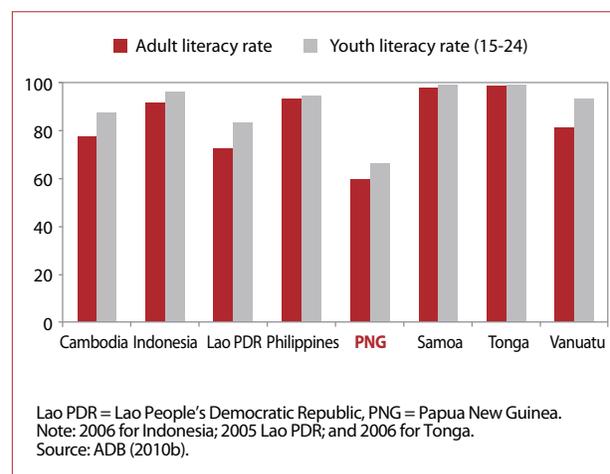
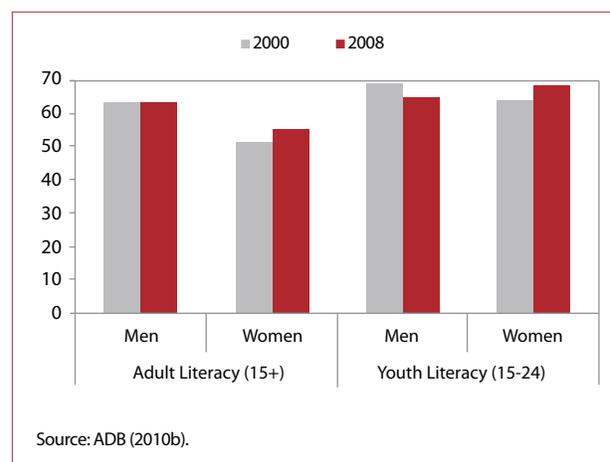
Figure 4.9. Literacy Rate (2008, %)**Figure 4.10. Literacy Rate by Gender (2000 and 2008, %)**

Figure 4.11. Illiteracy Rates among People Aged 10+ (2000, %)

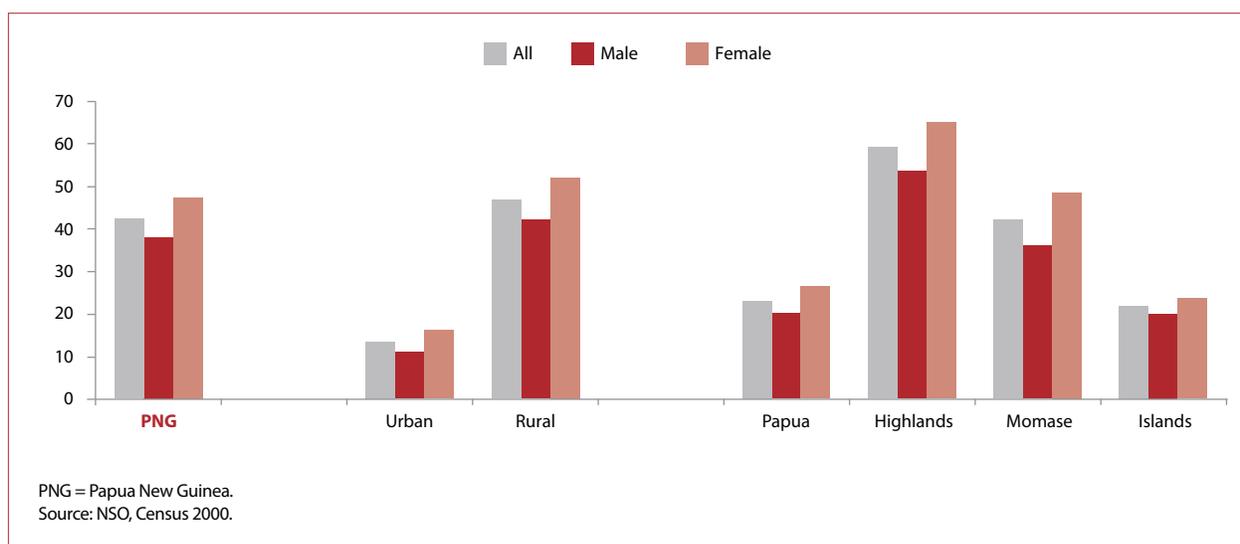
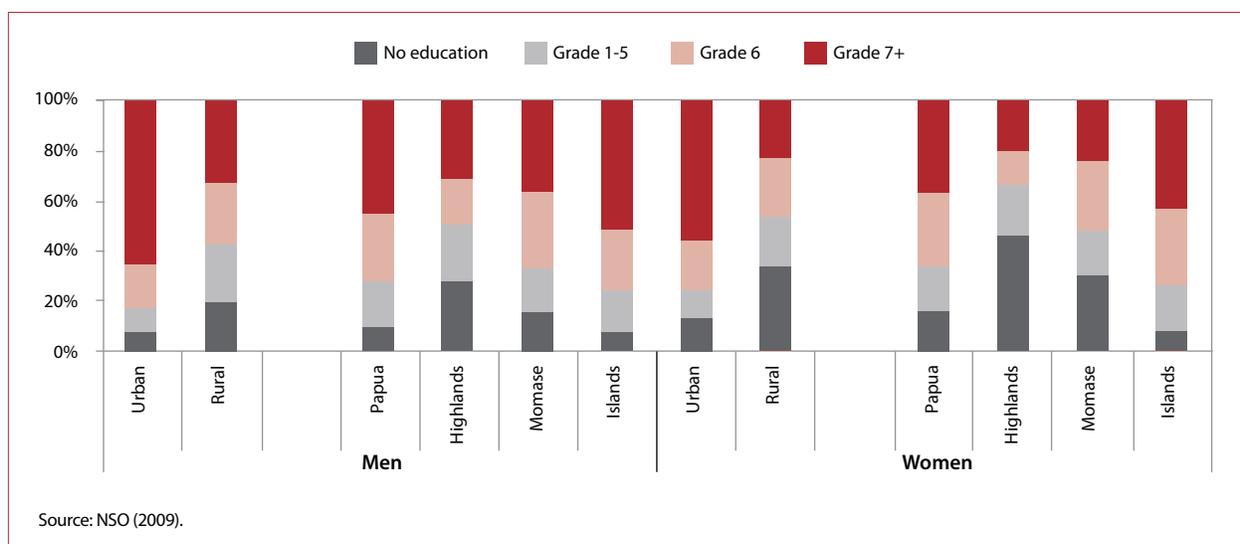


Figure 4.12. Highest Level of Education Attained, People Aged 15–49 (2006, %)



1–6, secondary schools offering grades 7–10, and national high schools offering grades 11 and 12. In the new structure (3–6–2–2), elementary schools (pre-elementary and grades 1 and 2) and primary schools (grades 3–8) offer the compulsory basic education, while secondary education is divided into lower (grades 9 and 10) and upper (grades 11 and 12) secondary. The curriculum was revised to address concerns about the quality of teaching and learning in schools and its relevance to real life. Particular attention was given to improving academic performance and to developing life skills that are relevant to local needs DOE 2004).

The National Education Plan 2004–2015 was introduced to build on the National Education Plan 1995–2004. Further, the Universal Basic Education Plan 2010–2019 was endorsed in December 2009. The overarching goal of this plan is that “all children of school age must enroll in school; complete 9 years of basic education; and should have learned skills, knowledge, and values covered in the basic education curriculum” (DOE 2004). The plan aims to increase the elementary net enrollment ratio of 6-year-olds to 85% by 2015 and 90% by 2019. To achieve the goal, three interrelated specific results have been identified (National Executive Council 2009):

- improved access,
- enhanced retention, and
- improved quality of education.

In addition, two cross-cutting results that will contribute to achieving the specific results are enhanced basic education management and equity. Toward this, the recent introduction of fee-free education will improve accessibility and equity.

Since the reform began in the mid-1990s, the PNG education system has improved, especially in quantitative terms. The total number of students enrolled in the national education system increased to more than 1.1 million in 2005, by about 117% since 1992 (Figure 4.13). This is significantly greater than the 34% increase in enrollment rates expected from the average national population growth rate of 2.7% per year. The number of enrolled students increased at all levels—in elementary, by 121%; primary, by 99%; and secondary, by 224%. The number of teachers and schools was also increased, to about 35,000 teachers and 8,000 schools from about 18,000 teachers and 3,000 schools in 1992 (DOE 2005).

In PNG, nongovernment actors, most notably churches and nongovernment organizations (NGOs), have been playing a key role in providing education at all levels (Booth 2009). While much attention and many resources have been directed to formal education and literacy within the national education system, NGOs, church groups, and the international community have put considerable effort into adult education. Such efforts particularly

support community-based education programs for developing life skills among the many illiterate people (UNESCO 2008).

PNG has made progress since the mid-1990s, and needs to continue its efforts to improve the education system. To do so, the country has to handle several issues. First, access to education remains limited and is characterized by great disparities across the country. The gross enrollment rate for primary schooling in PNG is significantly lower than that in selected other countries (Figure 4.14). The rate also varies significantly by province at all the levels (Figure 4.15), and women, particularly rural women, are less likely to be enrolled in primary and secondary schools than men (Figure 4.16). PNG is one of the few countries in the Asia and Pacific region that has yet to achieve gender equality at the primary level (ADB 2010b).

Second, retention continues to be a challenge in PNG. The Department of Education (2008) notes that the retention of children between grades 1 and 6 has not been improving—only about 62% of children who enrolled in grade 1 in 2002 completed grade 6 in 2007, which is almost the same rate (about 61%) as in 1995 (DOE 2004). The problem of retention is generally greater among older students and female students (World Bank 2004c). In addition, the dropout rates are particularly high in the provinces of the Highlands Region (DNPM 2009).

Student absenteeism is also a serious issue in PNG. The Public Expenditure and Service Delivery

Figure 4.13. Student Enrollment (1992 and 2005)

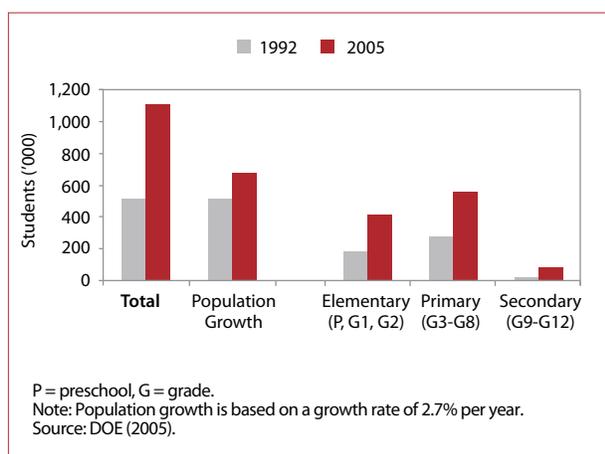


Figure 4.14. Primary School Gross Enrollment Rate (%)

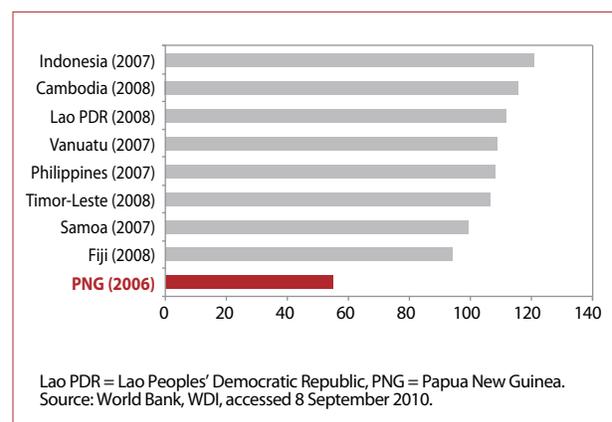


Figure 4.15. Gross Enrollment Rate by Province (2008, %)

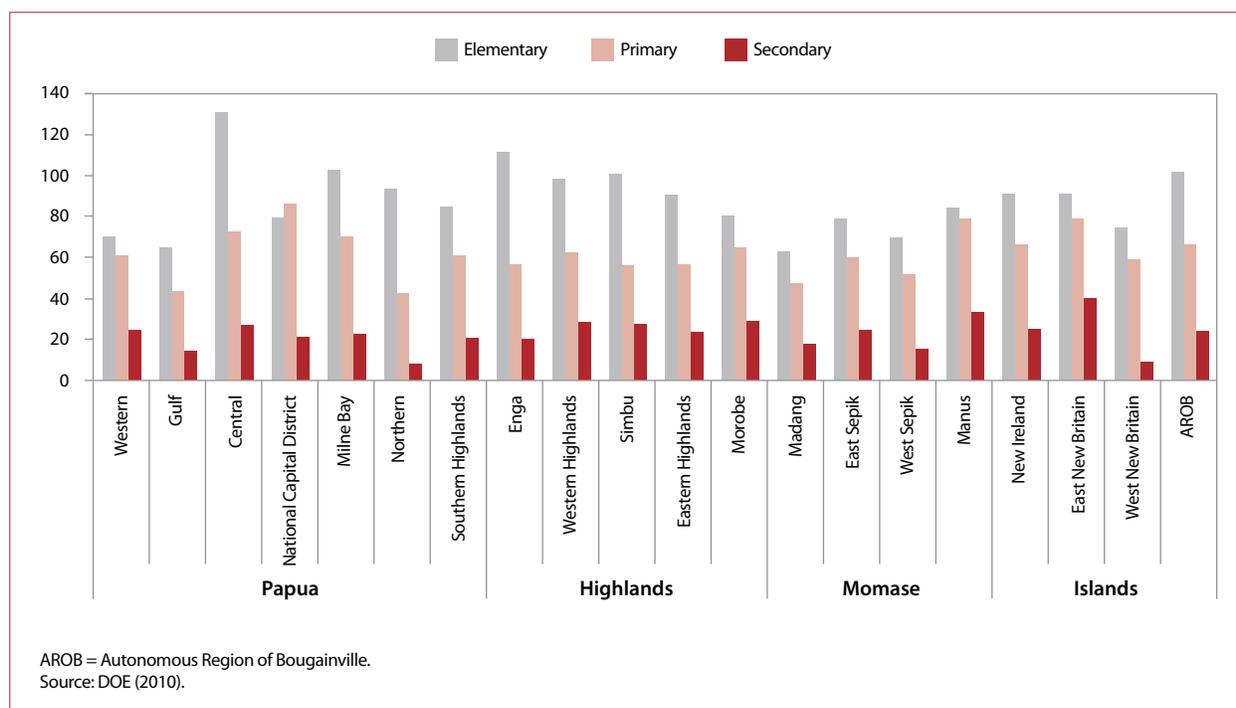
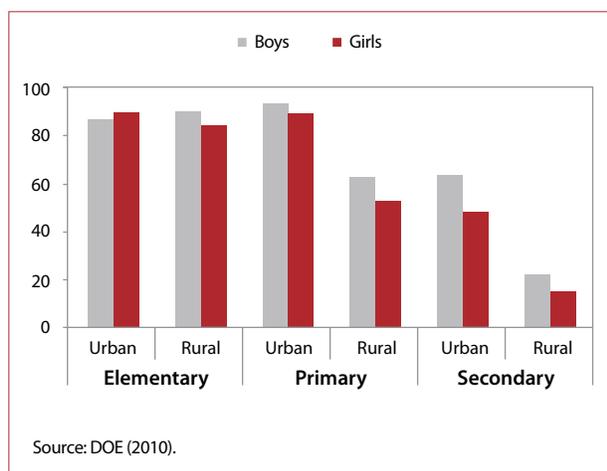


Figure 4.16. Gross Enrollment Rate by Gender and Rural or Urban Residence (2008, %)



(PESD) survey² estimated the average student absenteeism rate at 15% in 2002, with significant provincial variations ranging from 26% in West New Britain to 8% in Morobe. A multivariate analysis based on the PESD data shows that teacher absence has a negative effect on student attendance,

² The survey was conducted during February–August 2002 and covered 214 schools in 19 districts across eight provinces. See World Bank (2004c) for details.

while greater parent and community involvement is associated with higher student attendance (World Bank 2004c).

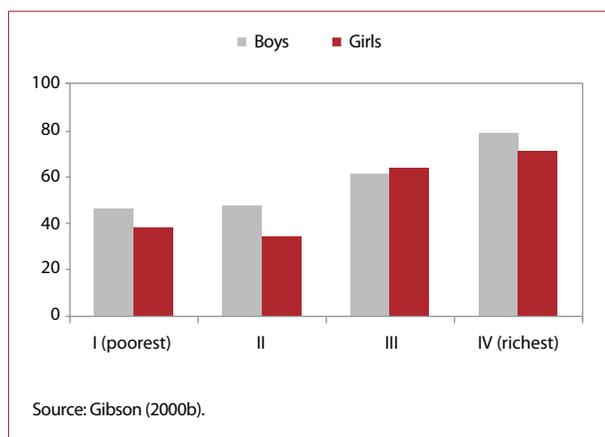
Third, there is much room for improving the quality of education. The rapid expansion of the education system is likely to have adversely affected the quality of education, given that the system has been struggling to adequately plan for, fund, and administer the expansion (DOE 2004). However, while considerable anecdotal evidence suggests that the quality of education is declining, there is little reliable assessment of learning outcomes in PNG (ADB, AusAID, and World Bank 2007). Obtaining timely information from the field, though critical, is a challenge in PNG, and this makes it difficult to assess the academic achievement of students (UNESCO–IBE 2006). One of the few available empirical studies on student performance is the PESD study. Using the results of a national examination taken by students in grade 8, the study finds great variation in test scores among provinces, with poorer performance by students in remote areas than those where schools are easily accessible (World Bank 2004c). The observed disparity in test scores suggests that the quality of education students receive varies across the country. Given the continued high rate of population growth expected,

the quality of education may deteriorate even further unless it is enhanced.

Finally, although achieving universal basic education is one of the top priorities for PNG, there is also a great need for improving technical and vocational education and training (TVET). Despite the skills deficits and the growing demand for TVET in the country, TVET facilities have been deteriorating during the last few decades (Booth 2009). With the forthcoming projects in the mining sector, such as the liquefied natural gas project, the demand for TVET will rise in the near future. In addition, as a result of the recent growth of school enrollment, the number of students seeking to move on to postsecondary education is likely to increase in coming years. To expand and improve TVET, there is great room for strengthening partnerships with the private sector in PNG (DOE 2005).

Root causes of unequal access to and poor quality of education are found on both the demand and supply sides. The demand-side factors include the financial burden faced by households and limited employment opportunities. One of the main demand-side factors for unequal access to education is the financial burden it carries. Many parents, especially those depending on subsistence activities for their livelihood, struggle to find financial means to send their children to school (DNPM 2009). Figure 4.17 illustrates the significant gap in enrollment rates between the richest and poorest income quartiles for both boys and girls. Gibson (2000b) indeed finds that household income is a significant determinant of children's enrollment rates in his empirical

Figure 4.17. Primary School Net Enrollment Rates by Income Quartile (1996, %)



analysis. Another demand-side factor is the limited prospect of finding productive employment in many parts of the country. Thus, employment prospects essentially do not serve as much of an incentive for parents to invest in children's education and for children to attend school and continue with their education. The government's recent initiative of introducing free basic education will ease the financial burden on parents and address some of these demand-side issues.

Figures 4.18. and 4.19 report the main reasons for children not attending school. While the main reason for not going to school for female children was inability to pay school fees (about 22%), lost interest was the main reason for male children (about 22%). These figures highlight the nontrivial role that demand-side factors play in low school enrollment rates in PNG. However, long distance to school is also a main reason for not attending school for both male and female children, particularly in rural areas and in the Highlands and Momase regions.

In PNG, the HIV/AIDS epidemic is also likely to have a negative effect on access to education. Children, especially those in the most vulnerable groups and/or girls, may be expected to drop out of school to look after family members suffering from HIV/AIDS. Children with HIV/AIDS may have limited access to education due to the physical impact of their illness as well as stigma and discrimination against them. Moreover, parents who are infected with HIV/AIDS are likely to have difficulty paying school fees and other related costs for their children (DNPM 2009).

On the supply side, root causes for the inadequate provision of education include poor governance, inadequate allocation of resources, limited availability of schools, poor condition of school facilities, and inadequate supply of teachers. Poor governance is one of the main root causes of unequal access to and poor quality of education. With the introduction of the Organic Law on Provincial Governments and Local-Level Governments in 1995, the education system operates in a highly decentralized context whereby roles and responsibilities are shared between the national and provincial governments. One of the critical issues PNG faces is the failure to implement and enforce the mechanisms needed for effectively supporting and monitoring the decentralized system of public service delivery at

Figure 4.18. Main Reasons for Not Attending School: Male Children (2006, %)

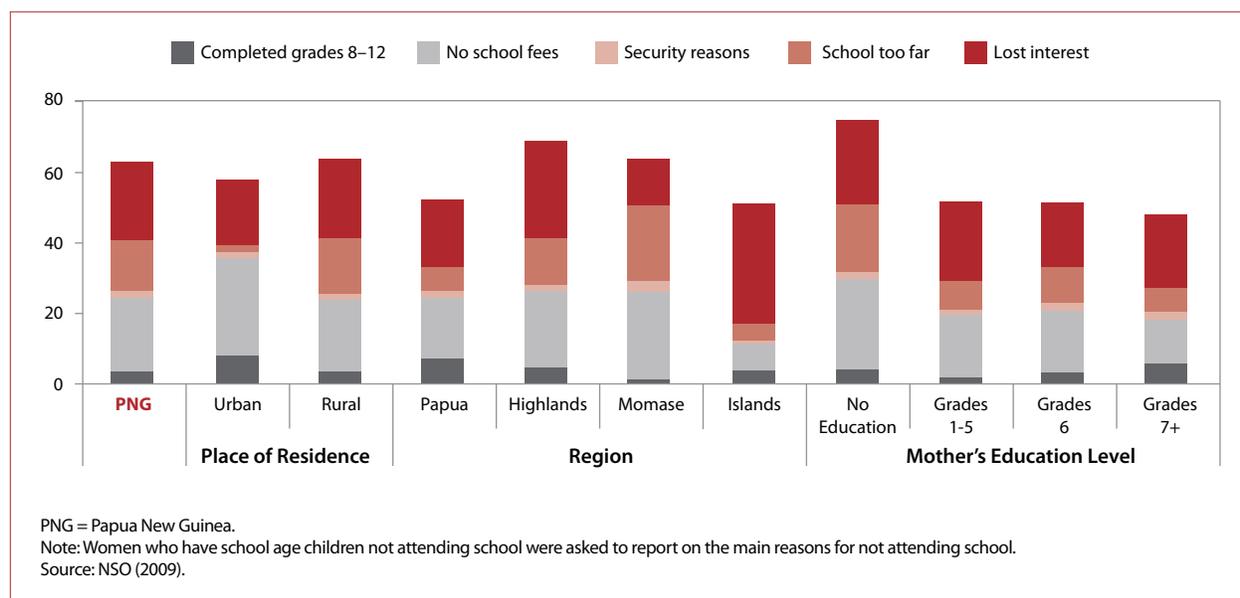
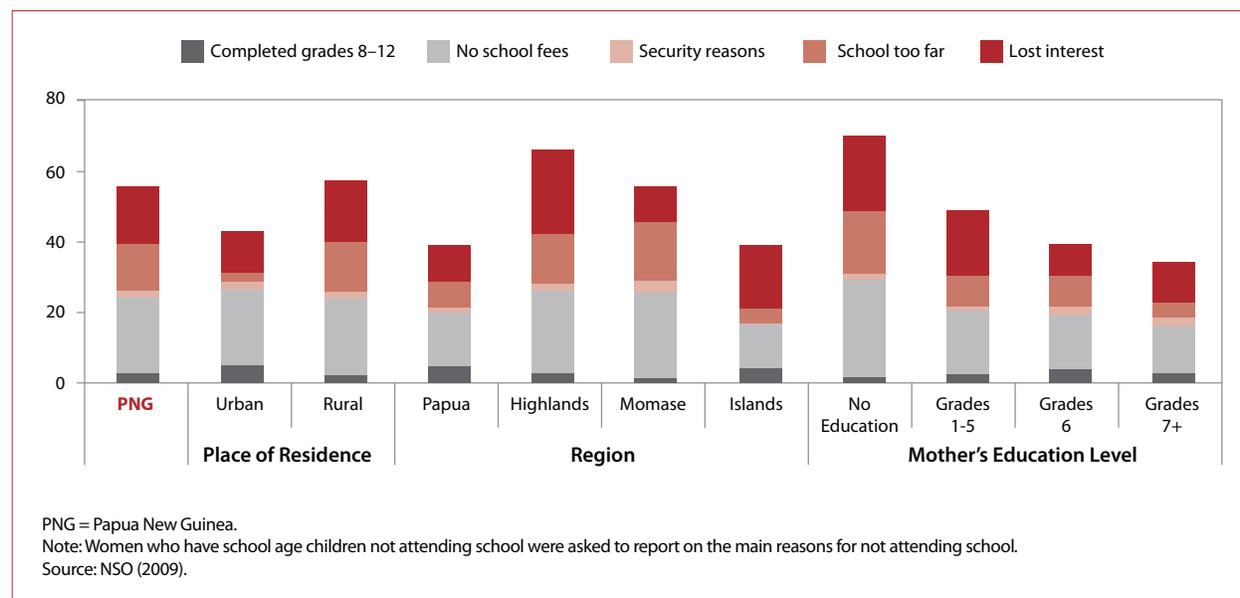


Figure 4.19. Main Reasons for Not Attending School: Female Children (2006, %)



the provincial and local government levels (ADB, AusAID, and World Bank 2007). The Department of Education, for example, has no oversight or quality assurance function over responsibilities decentralized to provinces, districts, and local-level governments (DOE 2004). The lack of vertical communication and coordination aggravates the fragmentation of the education system.

The limited availability of resources for the sector is also a root cause for the inadequate provision of education. Public expenditure on education has been about 5% of GDP and 15% of the national budget, which is not low by international standards and compares favorably with many other countries in the region (World Bank 2004c). A more critical issue is the distribution of resources across provinces

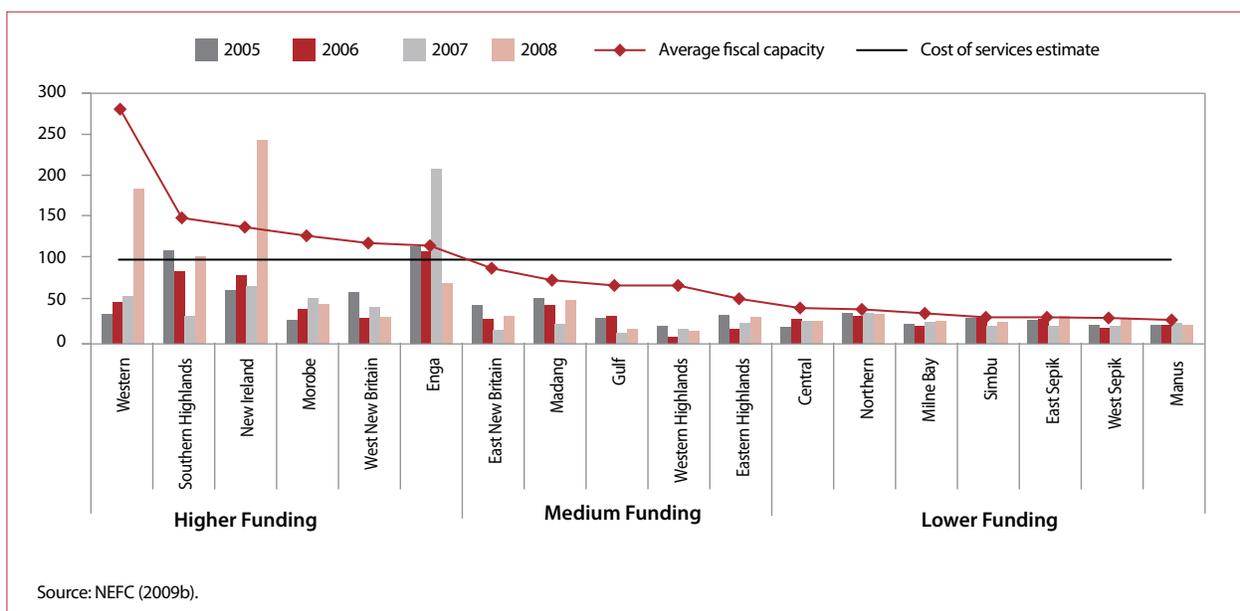
and schools in each province. Decentralization was introduced by a “big-bang” style of reform in PNG, which instantaneously gave provincial governments significantly larger expenditure responsibilities in the delivery of education, health, infrastructure, and economic development services with modest fiscal autonomy (Gouy 2009). For example, responsibility for education up to the secondary level has been delegated to provincial and local-level governments. It is important that these levels of government are given sufficient funds to deliver the services (Booth 2009). With decentralization, the national government reduced its own programs and introduced large intergovernmental transfers, or the so-called “Organic Law” grants. However, these became immediately fiscally unsustainable, and suffered disproportionately during periodic macroeconomic downturns with subsequent fiscal adjustments in 1997–2002. In addition, the formula used for distributing the Organic Law grants was not equitable, and was based primarily on the number of students without taking into account each province’s capacity to raise its own revenues or the different costs of service provision (Gouy 2009).

Figure 4.20 compares provinces’ spending on education versus their fiscal capacity between 2005 and 2008. The red line indicates the fiscal capacity of each province, while the four columns report the percentage of actual expenditures against the cost of services estimates for 2005–2008. Several

important observations can be made from the figure. The variation in the fiscal capacity across provinces is significant. And it is disturbing to see that the majority of the provinces spend less on education than the minimum needed to maintain the services, even though education is the best supported sector in the Medium Term Development Strategy in terms of provincial spending priorities (NEFC 2009b). Not surprisingly, better funded provinces managed to have a relatively high level of spending on education. Nevertheless, provinces that are poorly funded have been spending more, relative to their fiscal capacity, than provinces with medium-level funding and some that are well funded (Morobe and West New Britain).

The new system of intergovernmental financing drawn up by the National Economic and Fiscal Commission is an extremely important step toward achieving a more equitable and efficient system of public finance. This new system will focus on reducing the fiscal imbalances by taking into account recurrent service delivery costs and the total revenue-raising capacity for each province in determining the size of transfers (Gouy 2009). Such a system must be accompanied by strong central audit procedures if the enhanced revenues are to achieve their stated goals of improved service delivery (Booth 2009). Moreover, Figure 4.20 illustrates that, while the central government needs to improve the allocation of resources across the country, it

Figure 4.20. Education Spending Performance by Province (2005–2008, %)



is equally important that local governments be committed to improving education and that they secure sufficient funds for it. In addition, each school needs to improve its use of limited resources and address its poor maintenance of financial accounts and record keeping, which was revealed through the PESD survey (World Bank 2004c).

Another supply-side factor for unequal access to education is the availability of school facilities, which have a major effect on both boys' and girls' school attendance (Figures 4.18 and 4.19). In fact, the availability of school facilities is a more important determinant of school attendance than is household income (Gibson 2000b). The remoteness and inaccessibility of education institutions is a major issue in PNG. Many children in elementary and primary schools have to travel for more than 1 hour to reach the nearest school, particularly in provinces where the rural population tends to live in small remote communities (DNPN 2009). The situation is even worse for postprimary education. The nearest secondary or high school is, on average, almost 4 hours from the primary or community school (about 5 hours away in poor areas and 6 hours in remote areas). The limited accessibility to postprimary education can, in turn, reduce the demand for primary education (World Bank 2004c).

The poor condition of school facilities—including physical infrastructure; access to utilities (electricity, water, and sanitation); and resources for teaching—is a root cause for unequal access to quality education. Table 4.4 summarizes some of the indicators for the conditions of school facilities based on the PESD survey data (World Bank 2004c). That about one-third of the classrooms need to be completely rebuilt indicates the overall poor condition of schools in PNG. Further, just over one-third of classrooms have leaky roofs, and the proportion is greater (about 40%) among schools in remote areas. Infrastructure development in the education sector has had substantial support from local communities, but local governments have provided mixed degrees of support. This is due, at least partly, to a lack of funding that local-level governments have received for maintenance and development in recent years (DOE 2004). However, as discussed earlier, some provinces, given their financial capacity, could increase the financial resources they provide to education.

Access to key utilities—electricity, drinking water, and sanitation—is also limited in many schools

in PNG. Only about 15% of schools are connected to the public electric grid, and, in remote areas, only 3% of schools are connected to electricity. Only 14% of schools source their drinking water from piped water, and about 42% did not have water available throughout the year in 2001. Although virtually all schools have separate toilets for teachers, female students, and male students, many schools need additional toilets. The limited availability of resources for teaching also adversely affects the quality of education. Less than one-quarter of schools have sufficient textbooks, and almost half do not have enough desks for their students. Furthermore, the incidence of school closure is high—about half of schools reported closures during 2001. A significant number of school closure days can have a negative effect on student attendance and academic achievement. Water-related problems are found to be by far the main cause of school closures. And a large proportion of schools are damaged by break-ins, suggesting a great need for improving the security of PNG schools and school infrastructure.

The adequate provision of teachers is also a major challenge in PNG. The student–teacher ratio has been steadily increasing in the last few decades (Figure 4.21), which is partly due to the recent growth of enrollment, as noted earlier. As a result, PNG has one of the highest student–teacher ratios in the region. There is also a great disparity in the student–teacher ratio across provinces—the provinces in the Highlands Region tend to have a higher ratio, while those in the Islands Region have a relatively low ratio (Figure 4.22). The PESD survey indicates that about 62% of schools, on average, reported a teacher shortage for at least one term in 2002, with 71% of remote schools reporting a shortage (World Bank 2004c). One other serious teacher-related issue that PNG faces is the phenomenon of “ghost” teachers (World Bank 2004c). Based on the PESD data, an estimated 15% of teachers on the payroll are not on the school roster. This incidence of ghost teachers varies by province as well as by the level of remoteness and poverty (Table 4.5). The ghost teacher rate is significantly lower in the easily accessible and the National Capital District schools than in very remotely located schools.

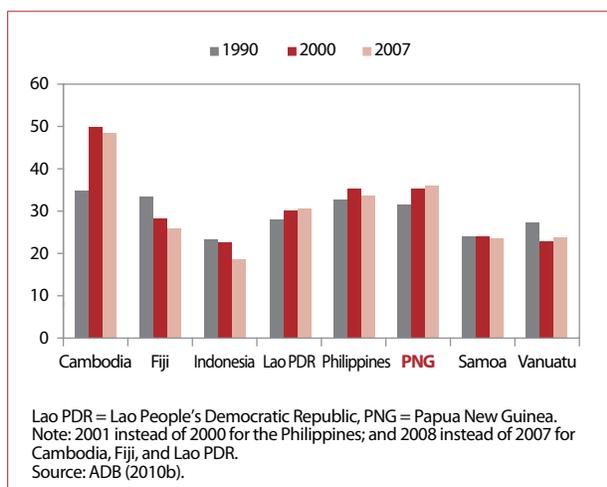
Equally disturbing is the very high rate of teacher absenteeism across the country, particularly in rural and remote areas (DOE 2004). The PESD survey estimates the overall absence rate at 15%, with great variation across provinces (Table 4.5). Another frequently reported issue is that teachers

Table 4.4. Selected Indicators for Conditions of School Facilities (2002, %)

	All	Poverty Status		Remoteness	
		Poor	Nonpoor	Remote	Accessible
Classrooms that Need Complete Rebuilding	33	32	34	36	29
Classrooms with Leaky Roofs	37	37	36	40	33
Public Grid/Elkom Electricity	15	12	20	3	29
Main Source of Drinking Water					
None	2	2	2	4	0
Rainwater tank	45	48	39	34	56
Spring, lake, river	33	32	34	44	21
Well, bore hole	6	5	7	5	7
Piped water	14	13	16	12	16
Water Available Year-Round in 2001	58	58	57	67	48
Toilet Facilities					
None for teachers	1	0	2	1	0
None for boys	2	2	3	3	2
Need at least 1 for boys	42	44	40	34	51
None for girls	2	1	3	2	2
Need at least 1 for girls	49	49	48	42	56
Resource Availability					
Sufficient textbooks	23	24	21	25	21
Adequate or good library	13	9	19	12	14
Enough desks	52	54	49	54	50
Proportion of Schools Reporting Closures in 2001	52	60	42	53	52
Total Days the School Closed in 2001	15	16	12	17	12
Reasons for School Closure in 2001					
Lack of water	38	33	48	18	60
Sewage/toilet problems	9	7	12	8	10
Poor facilities and maintenance	2	4	0	4	0
Shortage of teachers	7	5	10	9	4
Teacher pay problems	3	5	0	3	4
School break-ins	4	3	5	3	4
Death in local community	10	10	10	14	5
Dispute between communities	5	6	3	8	3
Dispute between community and school	4	6	0	7	0
Special events, poor weather	7	6	8	11	2
Other	3	4	0	5	0

Source: World Bank (2004c).

Figure 4.21. Student-Teacher Ratio (%)



often commence their teaching post well into the academic year (World Bank 2004c)—on average, teachers start work 10 days into the school year and even more (about 17 days) in extremely remote areas (Table 4.5).

Given all the issues related to teachers, the supply of teachers is, in effect, significantly lower than one would expect. The World Bank (2004c) indicates that only 68% of teachers on the payroll are actually teaching.

Poor teacher motivation is partly responsible for high teacher turnover and shortages, especially in poor and remote areas. The disadvantaged school allowances are intended to encourage teachers to work in remote areas, but a significant percentage of teachers entitled to these allowances do not receive them. In addition, the social status of teachers is said to be relatively low in PNG, and a review of salaries and working conditions provides evidence of a gap in remuneration between teachers and other occupations (UNESCO–IBE 2006). A regression analysis based on the PESD data reveals that better provision of teaching materials, fewer salary payment delays, and more complete payment of allowances would improve the teachers' performance. In addition, greater parent and community involvement is associated with lower teacher absenteeism. There is, therefore, great room for increasing motivation for teachers in order to address the high turnover and shortage of teachers in the country.

4.2.2. Health

Unequal access to healthcare and the resulting poor health are a critical constraint to reducing poverty and inequality. Health is a key component of human capabilities. Poor

Figure 4.22. Student-Teacher Ratio by Province (2008, %)

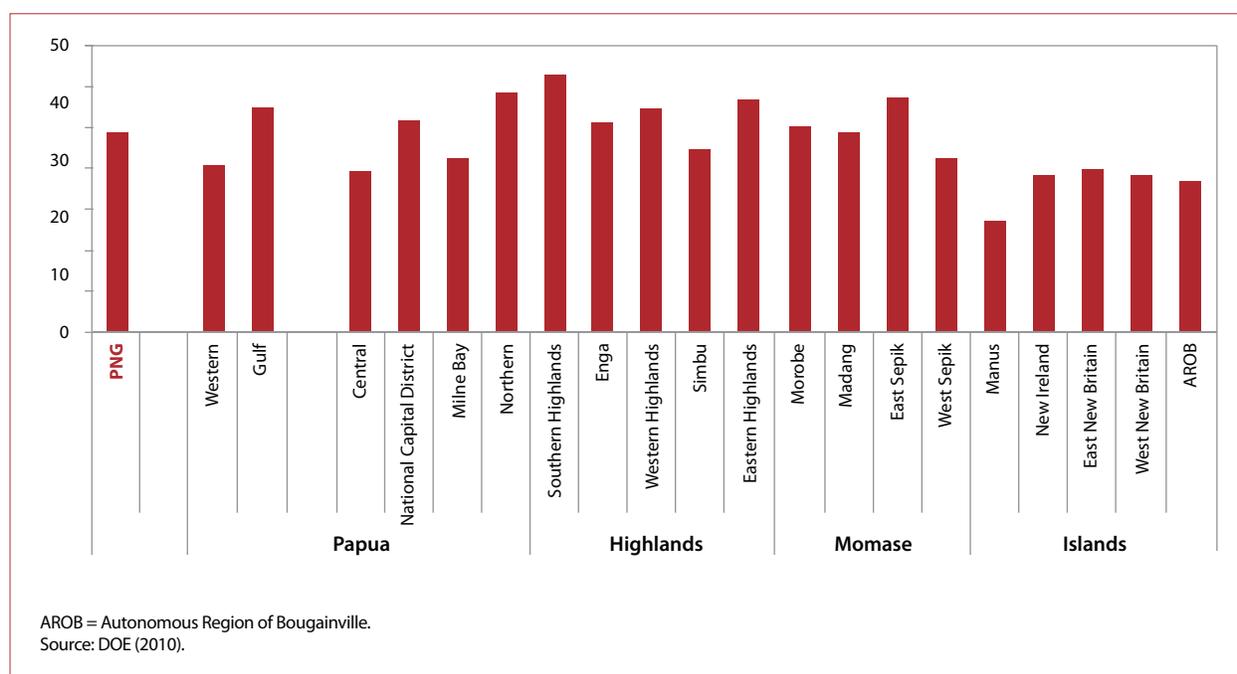


Table 4.5. Rate of “Ghost” Teachers and Teacher Absenteeism (2002)

	Net “Ghost” Teacher Rate ^a (%)	Teacher Absenteeism Rate (%)	Average Number of Days that Teacher Arrived at Post after School Year Started
All	14.7	15.1	10.0
Province			
Eastern Highlands	13.5	14.3	4.8
East New Britain	8.8	11.9	6.4
Enga	6.1	23.8	5.9
Gulf	21.3	22.2	11.2
Morobe	30.0	13.3	15.9
National Capital District	10.2	16.9	9.6
West Sepik	10.5	12.5	9.7
West New Britain	17.6	9.0	12.7
Remoteness			
Easy access	13.5	13.4	9.4
Accessible	13.4	12.8	8.7
Remote	14.5	19.9	7.1
Extremely remote	22.1	17.1	17.3
Poverty Status			
Well-off	16.5	12.5	8.6
Nonpoor	6.5	18.0	8.7
Poor	20.3	13.1	11.5
Very poor	12.9	17.7	10.2
Agency			
Government	14.5	15.4	9.5
Church	15.2	14.6	10.5

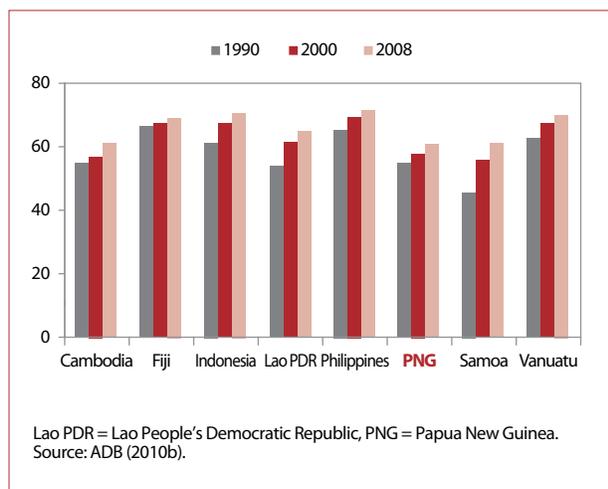
^a The “ghost” teacher rate is calculated as the number of teachers per school on the payroll minus the number of teachers per school reported.

Source: World Bank (2004c).

health can prevent people from accessing economic opportunities. Health is also an important determinant of productivity and can affect earnings. And health outcomes in PNG are said to be very poor. Although PNG’s life expectancy has improved during the last 2 decades, it is one of the lowest (about 61 years in 2008) among the selected other countries (Figure 4.23). While life expectancy was 61 years in both PNG and Timor-Leste in 2008, in Timor-Leste it had increased by about 15 years (from about 46) years in 1990 whereas in PNG it had increased by only about 6 years (from about 55 years) during the same time period.

Communicable diseases remain the major cause (50%) of morbidity and mortality in PNG. Malaria is the leading cause of outpatient visits and the second highest cause of death (Cammack 2007). Malaria is considered epidemic in all provinces, but there is a great disparity in the incidence of malaria across provinces (Figure 4.24). A relatively high incidence is observed in the Papua and Islands regions. HIV/AIDS has also become a generalized epidemic in PNG and is the leading cause of death of adult inpatients in Port Moresby Hospital (Cammack 2007). Since 1987, when the first HIV case was detected in PNG, the

Figure 4.23. Life Expectancy at Birth (years)



number of reported cases has increased steadily, though the noted increase is partly due to a better testing and reporting system (Figure 4.25). While HIV infections are reported in all provinces, more cases are reported in the National Capital District at 47%, followed by the Western Highlands at 20%, and Eastern Highlands and Morobe with 8% each

(NDOH 2009c). Unfortunately, the province of origin is not recorded for a significant proportion of reported HIV infections. HIV/AIDS is likely to have a profound social and economic impact, as it often leads to loss of income and limited employment opportunities and thus can exacerbate the poverty situation and vulnerability of many households.

For early childhood mortality, PNG has had a steady decline in under-5 mortality rates during the last 2 decades but its rate of reduction is much lower than rates of Indonesia, the Lao People's Democratic Republic (Lao PDR), the Philippines, and Timor-Leste, where under-5 mortality was more than halved between 1990 and 2008 (Figure 4.26). Similar observations can be made for infant mortality rates. The prospect of achieving Millennium Development Goal (MDG) 4 of reducing both infant and child mortality rates by two-thirds between 1990 and 2015 appears to be limited in PNG.³

³ The national targets for MDG 4 are more realistic than the global targets. The national targets for the infant and under-5 mortality rates are 44 and 72, respectively. The latter has already been achieved, and PNG should also be able to reach close to the infant target with the current trends (DNPM 2009).

Figure 4.24. Malaria Incidence by Province (2008, per 1,000)

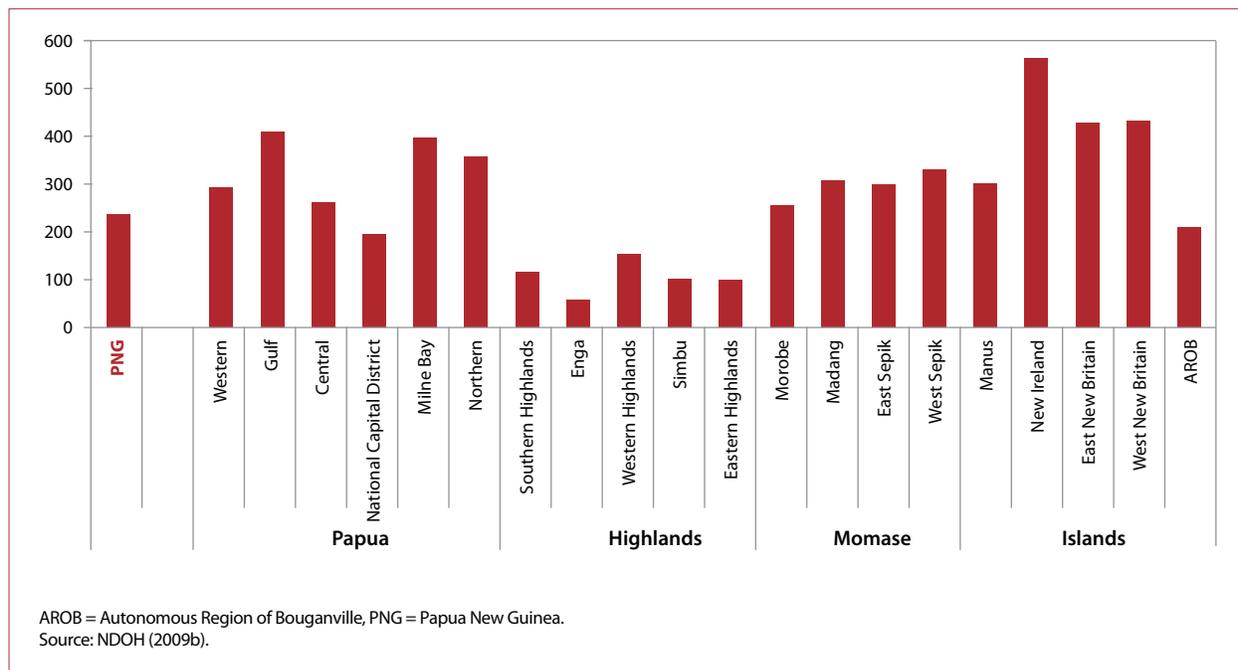


Figure 4.25. New and Cumulative HIV Infections Reported (1987–2008)

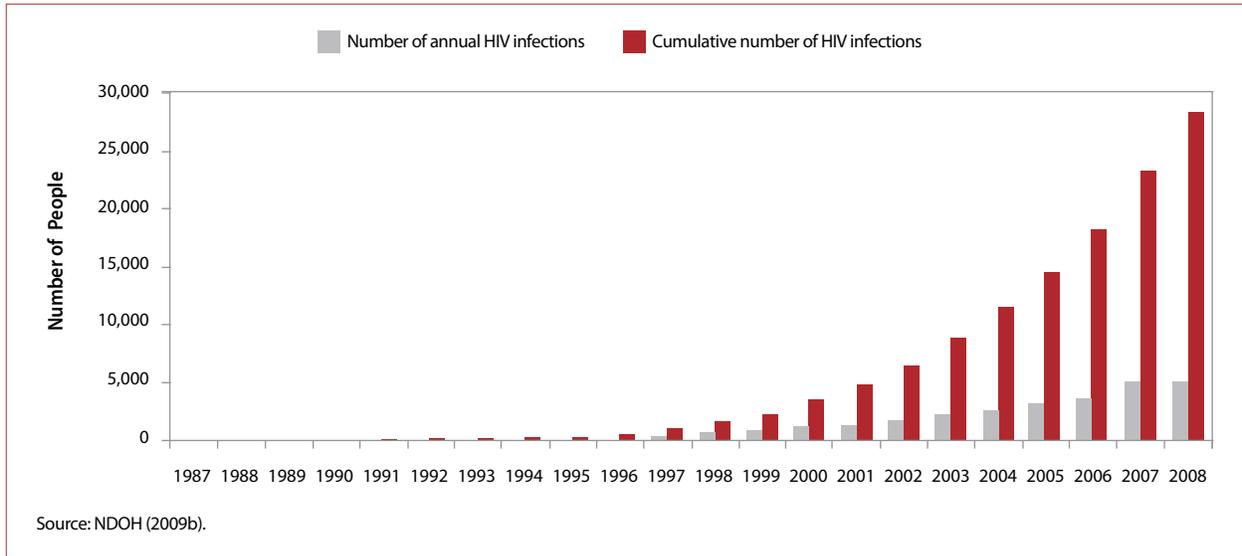


Figure 4.26. Under-Five Mortality Rate (per 1,000 live births)

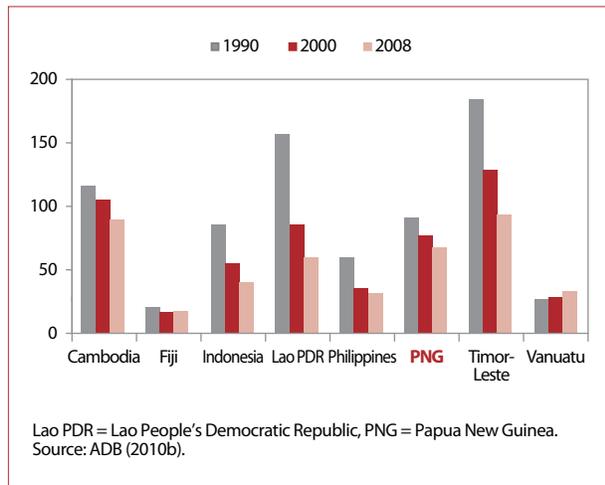
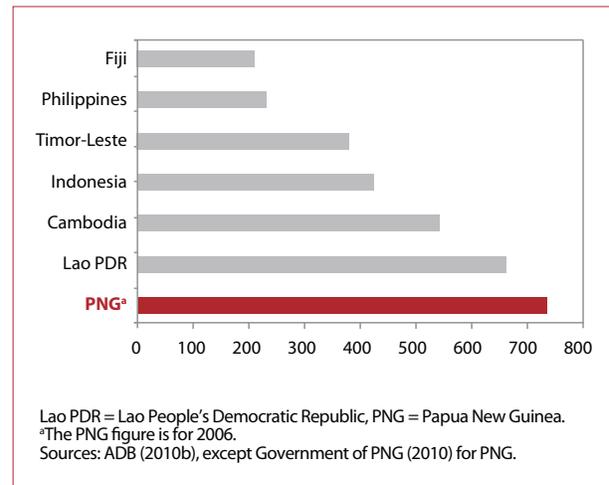


Figure 4.27. Maternal Mortality Ratio (2005, per 100,000 live births)



The country's other major concern is poor maternal health (Figure 4.27). The maternal mortality ratio in PNG is one of the highest in the Asia and Pacific region. The ratio actually increased from 370 per 100,000 live births in 1996 to 733 in 2006.⁴ Although life expectancy is estimated to be longer for women than for men, poor maternal health may indicate a relatively low status of women in PNG.

In addition to the relatively poor health status compared with other countries, PNG faces a significant variation in health within the country (Table 4.6). The table shows that both infant and child mortality rates declined between 1996 and 2006, and it is encouraging to observe that the reduction was greater in rural than urban areas. However, the significant urban–rural disparity remains, particularly for infant mortality. Infant mortality rates in rural areas are double those in urban areas. Regional variations are also significant, with the Highlands and Momase regions reporting relatively high mortality rates. Although infant mortality rates are lower in the Papua and Islands

⁴ The increase may have been due, at least partly, to some differences in the reporting system between the 1996 Demographic Health Survey and that in 2006.

Table 4.6. Infant and Child Mortality Rates (1996 and 2006, per 1,000 live births)

	Infant (0–1 year old) Mortality Rate			Child (1–5 years old) Mortality Rate		
	1996	2006	% change	1996	2006	% change
PNG	69	57	-18	25	19	-25
Place of Residence						
Urban	34	31	-9	13	12	-6
Rural	87	62	-29	27	18	-34
Region						
Papua	41	45	10	26	13	-51
Highlands	114	72	-37	28	19	-33
Momase	76	55	-28	22	18	-19
Islands	49	50	2	18	15	-18
Mother's Education Level						
No education	106	74	-30	30	23	-22
Grade 1–5	68	66	-2	32	14	-56
Grade 6	51	49	-4	18	14	-23
Grade 7+	40	34	-15	10	11	16

Sources: NSO (1997, 2009).

regions, it is worrying to find that the rates actually increased during 1996–2006. While the variation in infant and child mortality rates by the mothers' education level seems to have declined between 1996 and 2006, children whose mothers had no or little education appear to suffer more from ill health.

Preventable and treatable diseases, including malaria, pneumonia, diarrhea, tuberculosis, HIV/AIDS, and neonatal sepsis remain the most frequent causes of childhood deaths (Government of PNG 2010). The National Department of Health notes that 88%–98% of maternal deaths are preventable (DNPM 2009). The data reveal unequal access to health services, such as immunization, antenatal care, and assisted birth delivery, between urban and rural areas and across regions. Access to these services is a key determinant of early childhood and maternal mortality. Immunization coverage improved between 1996 and 2006 (Figure 4.28), particularly in rural areas, where the percentage of children fully immunized⁵ increased from about 32%

to about 50%, while declining slightly from about 70% to about 64% in urban areas. Nevertheless, the urban–rural gap remains significant. In addition, the Momase Region lags behind other regions, and the improvement between 1996 and 2006 was limited in this region compared with the rest of the country. As expected, children whose mothers have no formal education were significantly less likely to be fully immunized than children whose mothers had some education.

For antenatal care, Figure 4.29 shows the percentage of live births to women who had at least one antenatal care visit during pregnancy. The improvement in women having antenatal care visits between 1996 and 2006 remained marginal, with disparity in access observed between urban and rural areas, across regions, and by the mothers' education level. Antenatal care is most effective if sought at regular intervals to delivery. The National Department of Health recommends that all pregnant women have at least four antenatal care visits per pregnancy (NSO 2009). In 2006, about 55% of women who had live births in the 3 years preceding the survey had 4 or more antenatal care visits during the pregnancy. This was only a slight increase from about 49% in 1996 (NSO 1997, 2009).

⁵ According to the international guidelines recommended by the World Health Organization, all children should receive a vaccination against tuberculosis; three doses of DPT (diphtheria, pertussis, tetanus) vaccine; four doses of polio vaccine; and one dose of measles vaccine (NSO 2009).

Figure 4.28. Fully Immunized Children (1996 and 2006, %)

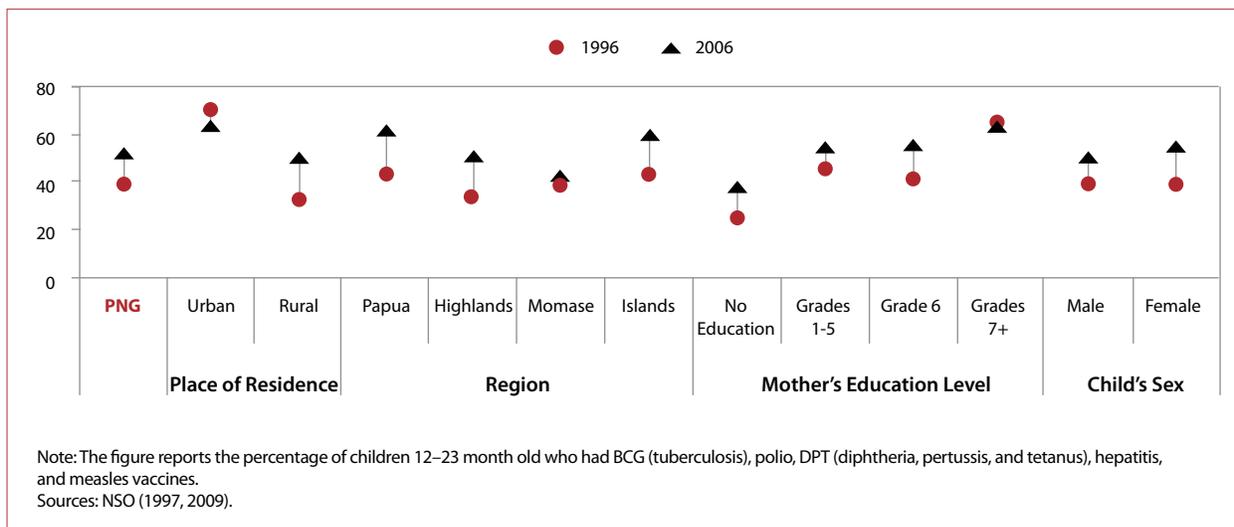


Figure 4.29. Women With At Least One Antenatal Care Visit During Pregnancy (1996 and 2006, %)

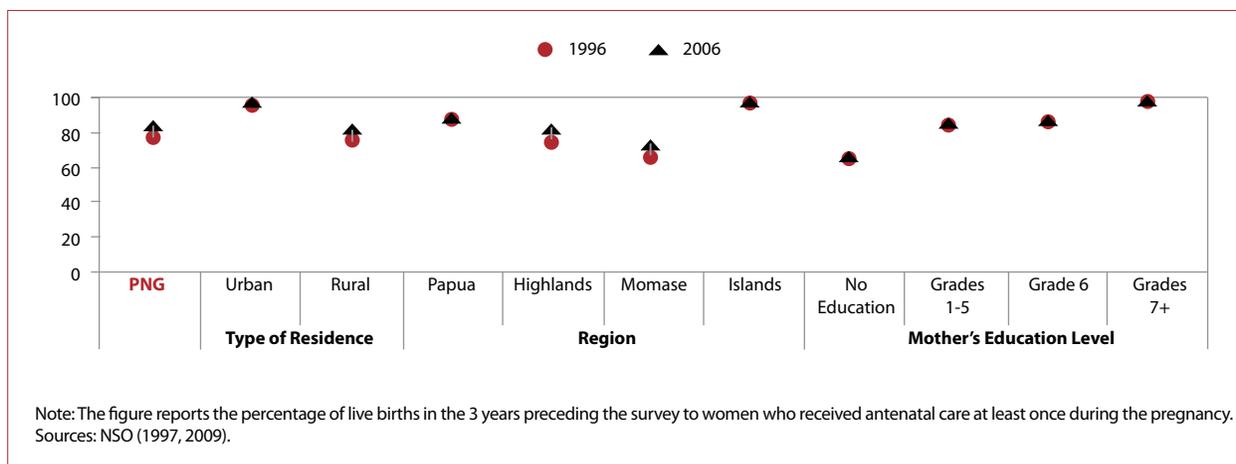
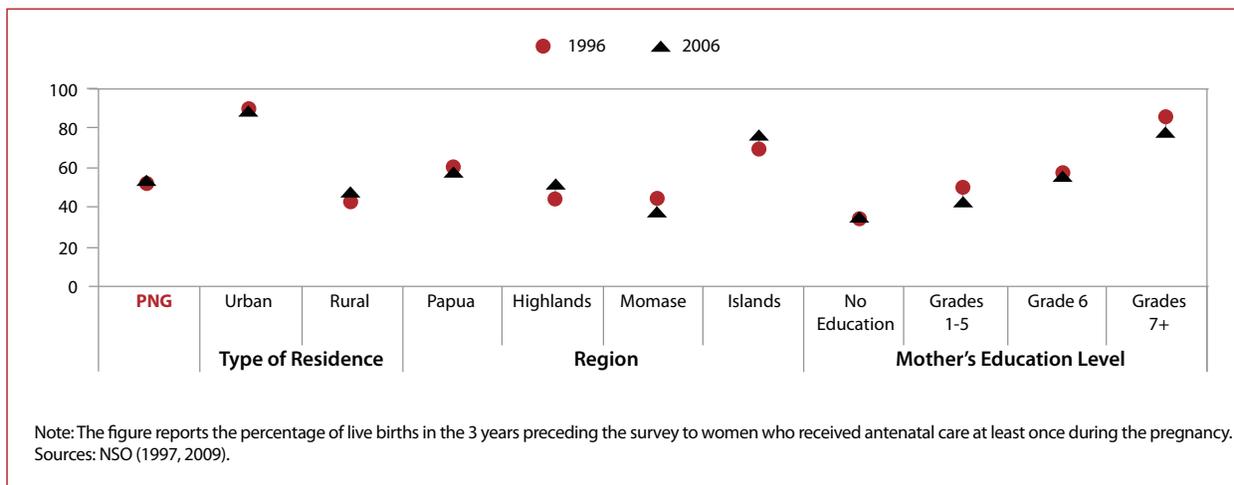


Figure 4.30. Deliveries Assisted by Skilled Health Staff (1996 and 2006, %)



Similarly, the percentage of births assisted by skilled health staff hardly increased between 1996 and 2006 (Figure 4.30, p. 75), and remained relatively low, about 53%, compared with selected other countries (Figure 4.31). The urban–rural disparity is particularly significant—about 88% of live births were assisted by trained medical staff in urban areas, but only about 48% were assisted in rural areas. The disparity by the education level of mothers is also large. Only about 34% of women with no education had deliveries assisted by medical staff, whereas about 79% of women who had education of grade 7 or above had assistance. The limited improvement in assisted birth delivery is disappointing, as it is a key intervention in minimizing maternal deaths.

Root causes of unequal access to healthcare services lie on both the demand and supply sides. The demand-side causes include economic disparity and relatively low level of education. On the demand side, widespread economic disparity is a major barrier to unequal access to healthcare. In particular, limited access to cash income in many parts of the country, especially in rural areas, impedes cash-poor households from accessing healthcare (DNPM 2009). Another demand-side root cause is the relatively low level of education in the population. Mothers' education level is an important determinant of children's health status, as shown by the figures in Table 4.6.

The supply-side root causes of the inadequate provision of healthcare include

an insufficient level and inefficient use of resources, unequal distribution of healthcare facilities, inadequate equipment and medical supplies, inefficient use of staff, and poor governance. On the supply side, a possible root cause of the limited access to adequate healthcare services is the insufficient funding allocated to the sector. Compared with selected other countries, PNG has the lowest level of health expenditure per capita, at \$31, after the Lao PDR (Figure 4.32). This is below the World Health Organization's recommended per capita health expenditure level of \$34 for low-income countries to provide basic healthcare services (WHO 2001). PNG's level of health expenditure is also low in terms of its share in GDP, at about 3.2% in 2007 versus 4.0% in Fiji in the same year (World Bank, WDI, accessed 15 October 2010).

Funding allocated for health is far short of the needs indicated in the country's Medium Term Development Strategy (NEFC 2009b). As the health system is chronically underfunded, it is encouraging that the PNG government, in its Health Vision 2050, has expressed its intention of allocating 20% of the development budget to the health sector (Government of PNG 2009b). Health Vision 2050, a 40-year strategy for the health sector, links to the National Government's Vision 2050 and the Development Strategic Plan 2010–2050. It is the vision of "a healthy and prosperous nation that upholds human rights and Christian and traditional values, and ensures affordable, accessible, equitable, and quality health services for all citizens" (Government of PNG 2010: 1).

Figure 4.31. Births Assisted by Skilled Health Staff (%)

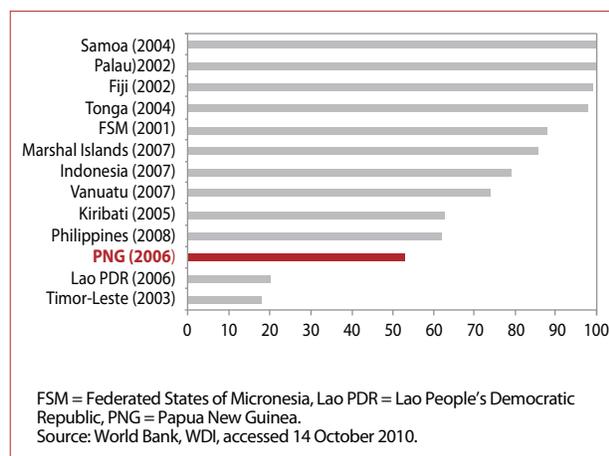
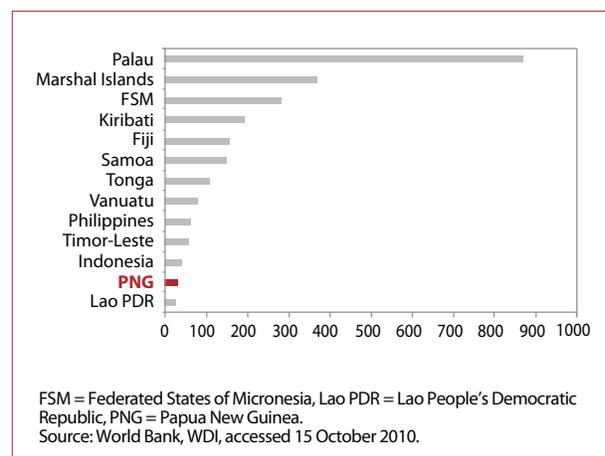


Figure 4.32. Per Capita Health Expenditure (2007, current \$)



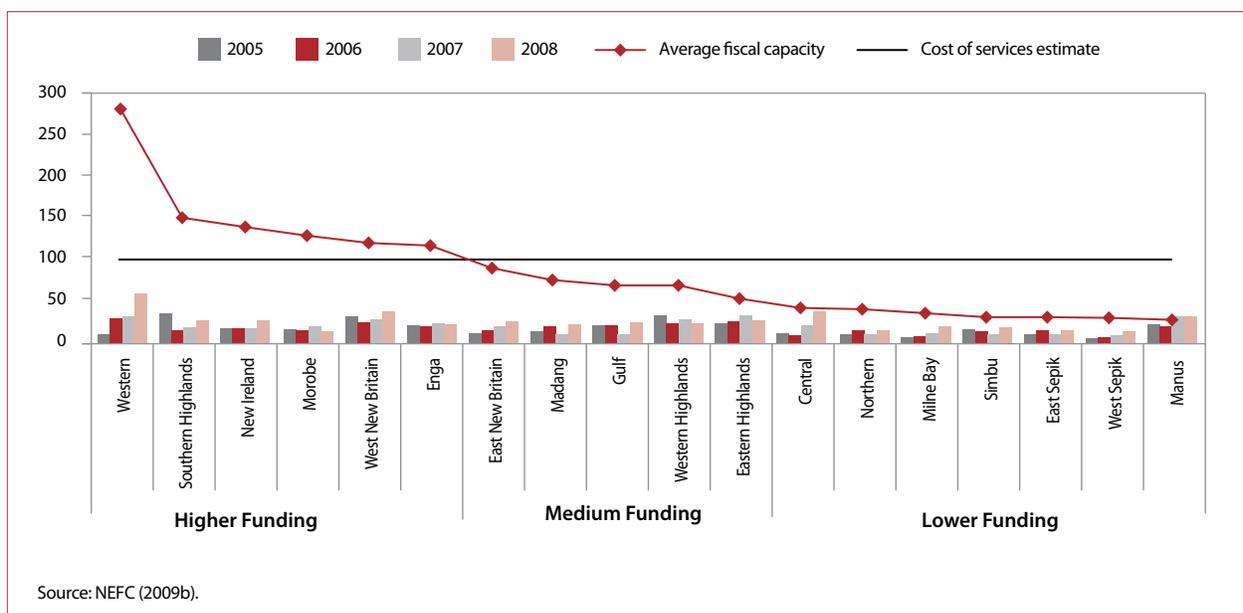
As the Government of PNG (2010) rightly recognizes, however, greater attention must be paid to ensuring more efficient and effective use and allocation of financial resources. One challenge is that funds are not reaching their intended destinations, e.g., health facilities. While the allocation of resources to the health sector has increased steadily at the province level (by 47% between 2005 and 2008), the provinces funded, on average, only about 25% of the costs required in 2008 (Figure 4.33). Western Province had the highest allocation vis-à-vis the required cost in 2008, but this was still only about 59% of the amount needed. Also, the group of provinces with low-level funding continues to outperform those with high and medium funding levels relative to their fiscal capacity (NEFC 2009b). Table 4.7 reports the provision of selected health services as well as per capita health expenditure by province. It is interesting to observe that Manus, which has the lowest fiscal capacity in the country (Figure 4.33), has a significantly higher level of per capita health expenditure than other provinces. The table also shows that Manus performs relatively well in terms of healthcare provision.

An analysis based on the Rural Health Costing Model reveals that rural health centers currently receive much less than they need for their operational and transport costs, including

for drugs and medical supplies, patient transfers, and outreach. Thus, increasing the allocation of resources to health centers is the most strategic way to improve their ability to provide services and would lead to improved access to and quality of healthcare (Inder et al. 2009). Another issue is that a relatively large share of recurrent spending goes to staff-related costs. While the national government pays for the community health workers, expenditures on casual wages continue to be high (NEFC 2009b). In 2008, 52% of all operating costs for health services went to casual wages.⁶ This highlights the need to consider transferring staff to the national payroll system to free up provincial resources for meeting other needs.

Given the limited allocation of resources for daily operations, most facilities tend to rely on user fees to cover operating costs. While many people reported that the fees were affordable, or received treatment despite being unable to pay the fees, about 21% indicated that user fees had been a barrier to accessing healthcare. Also, the people who said that the fees were affordable were those who had accessed a health facility (Inder et al. 2009). Reliance on user charges for covering operating costs can compromise equitable access. To address the insufficient funds faced by health facilities, the National Department of Health will channel

Figure 4.33. Health Spending by Provinces (2005–2008, %)



⁶ Of the total K18.6 million (about \$6.9 million), about K9.6 million (about \$3.6 million) went for casual wages.

Table 4.7. Provision of Health Services and Per Capita Province Health Expenditure (2007)

	Per Capita Provincial Health Expenditure (K)	Percent of Aid Posts Opened (%)	Facility Birth Deliveries (%)	Antenatal Care Coverage (%)	Measles Vaccine Coverage (%)	Adequacy of Drug Supply (%)
PNG	22.39	68	37	60	53	56
Papua						
Western	34.22	76	50	67	42	67
Gulf	28.21	64	31	54	44	57
Central	27.13	86	22	47	44	44
Milne Bay	26.84	89	43	77	83	39
Northern	23.02	52	35	62	45	52
Highlands						
Southern Highlands	26.95	75	16	34	38	59
Enga	22.73	46	23	38	49	59
Western Highlands	16.72	83	32	53	48	56
Simbu	27.58	75	28	58	50	55
Eastern Highlands	16.20	45	33	57	68	61
Momase						
Morobe	15.91	60	37	57	47	54
Madang	10.44	79	24	55	44	60
East Sepik	18.76	35	27	69	51	69
West Sepik	27.05	77	23	44	37	53
Islands						
Manus	61.53	75	54	71	72	56
New Ireland	30.20	59	63	85	71	71
East New Britain	26.41	89	78	82	62	53
West New Britain	18.79	89	40	92	67	35
Autonomous Region of Bougainville	34.86	68	56	87	54	58

K= Kina, PNG = Papua New Guinea.

Note: Shading indicates the five worst performers for each indicator.

Source: NDOH (2008).

funds directly to the accounts of each facility while districts and provinces will maintain their oversight and management responsibilities and their ability to allocate funding (Government of PNG 2010).

Unequal distribution of health facilities is also a major root cause of inequitable access to healthcare. PNG's difficult terrain and poor transport infrastructure considerably reduce the physical accessibility of health services (Izard and Dugue

2003). Box 4.2 describes PNG's health services system. The National Department of Health manages the provincial hospitals, and provincial and local governments are responsible for all other services. Under the Organic Law, the National Department of Health is responsible for policy, standards, training, medical supplies, specialist services, public hospitals (managed by hospital boards), and monitoring. The National Department of Health provides technical assistance to provinces and reporting functions to

parliament (Bauze, Morgan, and Kitau 2009). The provincial and local governments are responsible for implementing health policies, standards, and programs with funding from the national budget and supplemented by internal revenue. Provinces are responsible for managing and supervising primary healthcare services, managed by a provincial health adviser who reports to the provincial administrator. Local governments manage and maintain health facilities (health centers, subcenters, and aid posts) together with communities. Notwithstanding

these reforms, PNG's decentralization efforts have contributed to the further deterioration of health services, particularly in rural areas (European Center for Development Policy Management 2005).

Figure 4.34 illustrates a reduction in the use of health facilities for sick children between 1996 and 2006, which may indicate the deteriorating provision of health services in PNG. The number of aid posts being closed has increased in rural areas during the last decade, and only about 70% of the

Box 4.2. The Health Services System in Papua New Guinea

The national health infrastructure in Papua New Guinea (PNG) comprises 19 hospitals (1 tertiary level hospital in Port Moresby and 18 secondary level public hospitals, 1 in the capital of each province) and several district health services.

Aid posts are the most peripheral health facilities. Each post serves 500–1,000 people, depending on geographical location. The Minimum Standards indicate that one community health worker serves at an aid post with supervision from district health centers at least once every 3 months. The aid posts provide first aid treatment; basic obstetric care and delivery; health promotion and education (including maternal and child health, antenatal and postnatal care, family planning, and nutrition); immunization; identification and referral of at risk cases; and supervision of village health workers. In urban populations, urban clinics serve this peripheral function to approximately 10,000 people in areas beyond the reach of hospitals or health centers.

A health center, depending on size and workload, is staffed by up to seven nurses and community health workers and serves 5,000–10,000 people. It is expected to provide a full range of health promotion and disease prevention services; essential curative care primarily to ambulatory patients; basic inpatient services for emergency and obstetrics and gynecology cases; supervision of aid posts; and referral to district health centers/hospitals.

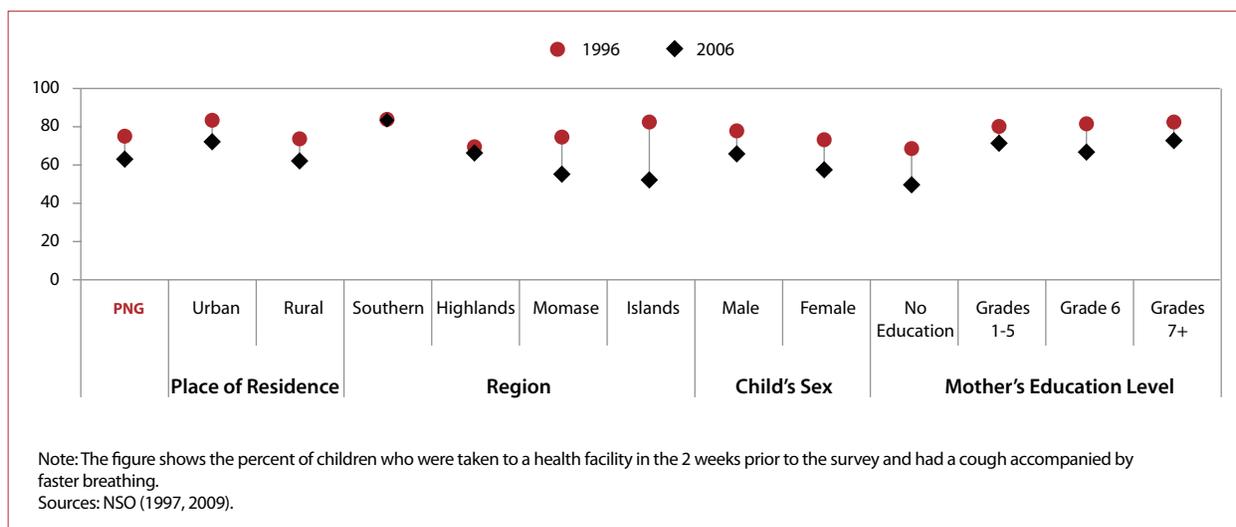
The district health center has up to 22 staff members, including a health extension officer in charge, supported by nurses and community health workers, and a laboratory assistant. For districts with more than 70,000 people, the district health center can be upgraded to a rural hospital with up to 43 staff members, including a medical officer in charge, supported by up to three health extension officers.

Maternal and child health programs are provided largely through peripheral health facilities, either by services at a fixed facility, mobile clinics (daily trips from fixed facility), or outreach patrols. Where they exist, village health volunteers and village birth attendants play an important role in community maternal and child health, including assistance at delivery and health promotion activities. Supplementary immunization activities were implemented in 2003–2004 and 2008–2009 to boost immunization coverage rates.

Churches play an important role in the delivery of health services, providing approximately 50% of the total health services (Bauze, Morgan, and Kitau 2009) and as much as 80% in the rural areas (WHO 2010). While they share many of the problems of public facilities and are financed primarily from public sector funds, they appear to perform better in a number of areas. Churches run five of the seven nursing schools and all of the community health worker training schools.

Sources: Authors; Bauze, Morgan, and Kitau (2009); WHO (2010).

Figure 4.34. Percentage of Children Taken to a Health Facility



registered aid posts are currently open (NDOH 2009a). Factors contributing to the closures include financial constraints, lack of well-trained staff, land ownership issues, damage, and theft (DNPM 2009). Patient retrieval systems in emergency situations are also limited and most villages have poor communication systems. Moreover, outreach clinics from health centers to rural remote villages, to provide essential immunization, nutrition monitoring, antenatal care, and family planning have stalled from an already unacceptably low level (Government of PNG 2010).

The National Health Plan (NHP) 2011–2020, the first of four 10-year plans designed to achieve Health Vision 2050, recognizes the deteriorating provision of healthcare services, particularly in rural areas, and adopts a “back to basics” approach to strengthen primary healthcare for all and improve service delivery for the “rural majority” and the urban disadvantaged people. The NHP will focus on improving maternal and child health and reducing the burden of communicable diseases (Government of PNG 2010). The NHP outlines the progressive introduction of community health posts, district hospitals, regional specialist hospitals, new national referral hospitals, and the National Public Health Institute. The NHP acknowledges that service delivery must be improved at all levels, and that hospitals and rural health services (both public and church-managed) must be integrated. Community health posts are expected to replace aid posts, and will be staffed by three trained health workers specialized

in maternal and child health, reproductive health, and advocacy, e.g., health education and community awareness (Government of PNG 2010).

While the government is the major provider of healthcare in PNG, churches provide to about 50% of the health services (Bauze, Morgan, and Kitau 2009), though church health services are financially supported mainly by the government with annual grants for both operational and staffing grants (Government of PNG 2010). Without the churches’ contribution, the country’s health situation would have been far worse. In the coming years, the government intends to improve basic healthcare delivery further through church–state partnerships, especially in the most isolated parts of the country (DNPM 2009).

Inadequate equipment at facilities is a main constraint on the capacity for delivering healthcare (Inder et al. 2009). In addition, procurement and distribution of basic medical supplies and vaccines to health facilities (Table 4.7) remain a major challenge in PNG (NEFC 2009b, Government of PNG 2010). Inadequate facilities and space for provincial transit storage and distribution of medicines and vaccines as well as poor storage facilities at rural health centers and aid posts are partly responsible for the limited availability of medicines in rural areas (Government of PNG 2010).

Staffing issues also contribute to the deterioration of health service delivery in PNG. The

Asia Pacific Action Alliance for Human Resources for Health 2008 notes that PNG has a relatively low ratio of health workers (doctors, nurses, and midwives), at 0.58 per 1,000 people (based on the 2000 data), compared with 2.23 for Fiji and 2.74 for Samoa.⁷ The analysis by Inder et al. (2009) based on the Rural Health Costing Model shows that sizeable improvements in health service provision would be possible by staffing rural health centers appropriately for their needs. However, the model also finds that a relatively large number of centers appear to have sufficient staffing to absorb growth in patient demand, i.e., significant increases in the level of service provision can be achieved through better use of current staff. Staff with specialist clinical and technical skills are often not occupying appropriate positions. For example, over 30% of skilled health professionals are reported to be occupying administrative and management jobs (Government of PNG 2010).

Finally, another important factor in the limited and unequal provision of health services across the country is poor governance. In PNG, with the introduction of the Organic Law on Provincial Government in 1976 and of the Organic Law on Provincial Government and Local-Level Government in 1995, responsibility for essential health services was decentralized. Management of hospital and rural health services was divided between the central government and local governments, and the 1995 Organic Law gave greater autonomy to district and local-level governments in service planning and management (Cammack 2007). However, the planning capacity at the district level is limited; as a result, budgets tend to be unrealistic, with little connection between the level of funding allocated to health facilities and the costs of health service inputs or health facility outputs (Inder et al. 2009). Moreover, the decentralization took place without a clear definition of roles and responsibilities among different levels of government. The situation is aggravated by inadequate coordination and communication among them. Provincial staffs generally have little authority over district health staff, while the central government has limited discretion to oversee provincial staff (Cammack 2007).

Such institutional problems created by the decentralization of government roles,

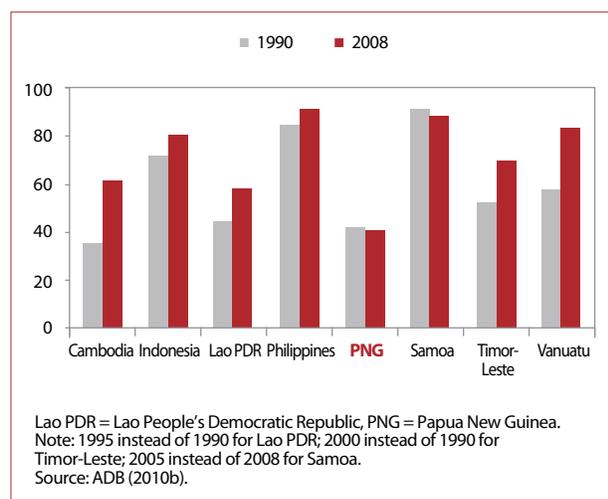
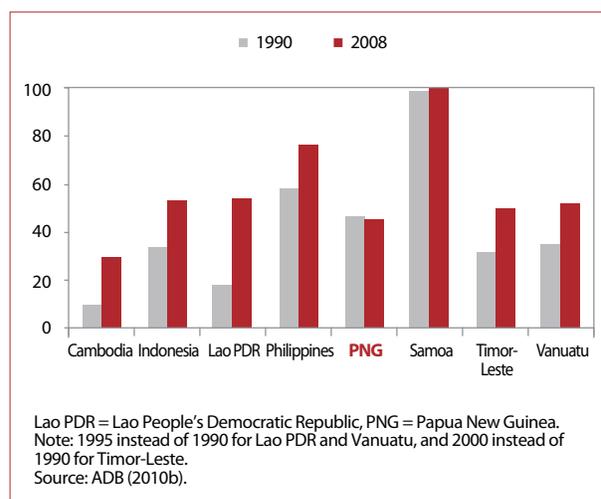
⁷ Cited in Government of PNG (2010).

responsibilities, and financing have compromised the quality and functionality of PNG's healthcare services (DNPM 2009), and hence the health outcomes of the population. The Provincial Health Authorities Act 2007 was introduced to address some of these issues. The Act is intended to streamline provincial health services by transferring the management of public hospital and rural health services to one provincial health authority or entity. While the Act does not fundamentally change the responsibilities and accountability of each level of government, it enhances the ability of government to directly finance priority areas for health service delivery (Government of PNG 2010). In addition, the new system of intergovernmental financing will help to clarify the responsibilities each level of government has for delivering health services and to ensure a more equitable transfer of resources from the national to provincial level (Government of PNG 2010).

4.2.3. Other Social Services

Unequal access to safe drinking water and sanitation is also a critical constraint to reducing poverty and inequality as it adversely affects health outcomes. Access to other social services, such as drinking water and sanitation, impacts health status and thus affects human capabilities. According to the participatory poverty assessment undertaken in 2001 in 18 communities, the problem people cited as most important was the lack of safe drinking water (ADB 2002). Figures 4.35 and 4.36 illustrate that the people in PNG have more limited access to improved water sources and sanitation facilities than people in the other countries. A more disturbing observation is that PNG's provision of clean water and sanitation actually regressed slightly between 1990 and 2008. While about 47% of the population had access to improved sanitation facilities in 1990, only about 45% had such an access in 2008. This contrasts strikingly with the Lao PDR, where the share of people with access to improved sanitation facilities increased from about 18% in 1990 to about 53% in 2008.

Table 4.8 shows accessibility to clean water and sanitation for PNG in more detail. The table illustrates a great variation in access to such services between urban and rural areas. While about 70% of urban households have access to piped water, only about 10% of rural households have such access,

Figure 4.35. Population with Access to Improved Drinking Water (1990 and 2008, %)**Figure 4.36. Population with Access to Improved Sanitation Facilities (1990 and 2008, %)****Table 4.8. Sources of Water and Sanitation Facility by Place of Residence (1996 and 2006, %)**

	1996			2006		
	Urban	Rural	Total	Urban	Rural	Total
Source of Water						
Piped into household/yard	60.5	3.6	12.9	57.7	3.2	9.1
Piped into neighborhood	11.2	4.9	5.9	12.3	6.7	7.3
Well in yard	0.6	1.6	1.4	2.1	1.9	1.9
Public well	1.3	7.1	6.1	3.9	5.5	5.4
Spring	2.0	24.8	21.1	4.3	24.0	21.9
River or stream	2.8	37.9	32.2	2.8	42.6	38.3
Pond, lake, or dam	0.6	6.5	5.5	0.3	3.6	3.3
Communal tank	3.0	5.4	5.0	2.6	3.9	3.8
Rainwater	14.7	6.8	8.1	11.7	7.0	7.6
Tank truck	1.8	0.1	0.3	0.1	0.2	0.2
Other	1.6	1.4	1.4	1.6	0.9	1.0
Not reported	0.0	0.0	0.0	0.5	0.2	0.3
Sanitation Facility						
Own flush toilet	47.9	1.5	9.1	39.5	1.1	5.3
Shared flush toilet	10.4	1.0	2.5	7.2	0.7	1.5
Traditional pit latrine	32.1	76.3	69.1	35.0	73.7	69.5
Improved latrine	2.8	1.6	1.8	8.2	2.9	3.4
Bucket system	3.1	0.0	0.5	1.0	0.0	0.1
Closet over sea/river	0.4	3.3	2.8	3.4	3.5	3.5
No facility	3.1	16.3	14.1	4.8	17.7	16.3
Not reported	0.0	0.0	0.0	0.7	0.3	0.4

Sources: NSO (1997, 2009).

even though there was a slight improvement in access to safe drinking water in rural areas from 1996 to 2006. The majority of rural households still source their drinking water from a spring (about 24%) or river or stream (about 43%). For sanitation, about 47% of urban households have access to flush toilets, but only about 2% of rural households use such toilets and the majority (about 74%) use traditional pit latrines. About 18% of rural households do not have toilet facilities. Moreover, the proportion of urban households using flush toilets declined significantly between 1996 and 2008, indicating that the provision of sanitation systems has not kept up with the growth of urban population in recent years.

In addition to the urban–rural disparity, there is a significant variation in access to clean water and sanitation among provinces (Figures 4.37 and 4.38). Almost all the households in the National Capital District have access to piped water, but this remains limited in the rest of the country, and a large share of households in most provinces take their drinking water from surface sources such as springs, rivers, ponds, and dams. The proportion

of households that source drinking water from a communal tank, rainwater, tank truck, or others is particularly high in the Islands Region. Also, a large share of households in this region have no toilet facilities, as is the case in the provinces of the Papua Region except for the National Capital District.

Lack of access to clean water and sanitation creates a situation where diarrhea and other enteric diseases may spread easily. Diarrhea is a leading reason for visits to health facilities in PNG (Government of PNG 2010). Improved water supply systems could reduce mortality from diarrhea by up to 40% (DNPM 2009). In addition, because contaminated water is a common cause of malaria, diarrhea, and dysentery, it contributes to PNG’s high infant and child morbidity and mortality. Many deaths and illnesses could be prevented by improving access to safe water and sanitation.

The unequal provision of clean water and sanitation across the country shares common root causes with the inadequate provision of infrastructure, which is discussed in the following section.

Figure 4.37. Sources of Water by Province (2006)

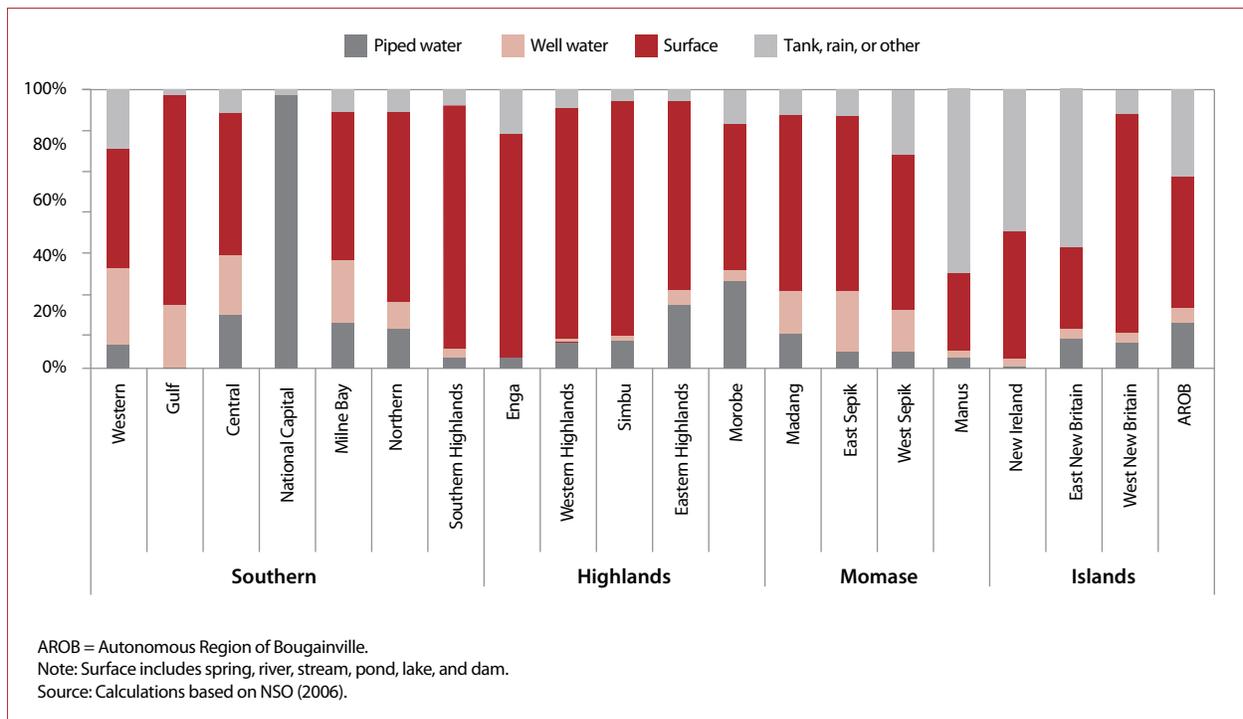
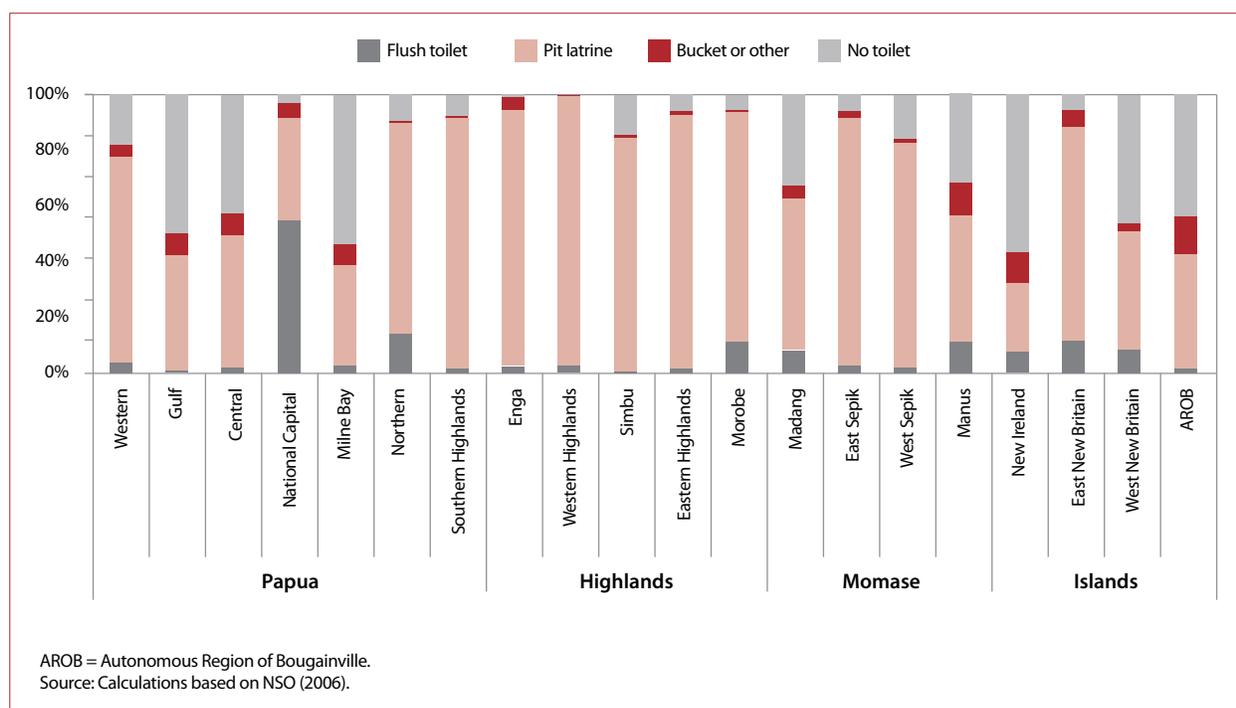


Figure 4.38. Sanitation Facilities by Province (2006)



4.3. Leveling the Playing Fields

Ensuring equal access to opportunities also requires equalizing access to infrastructure and productive assets such as land and credit.

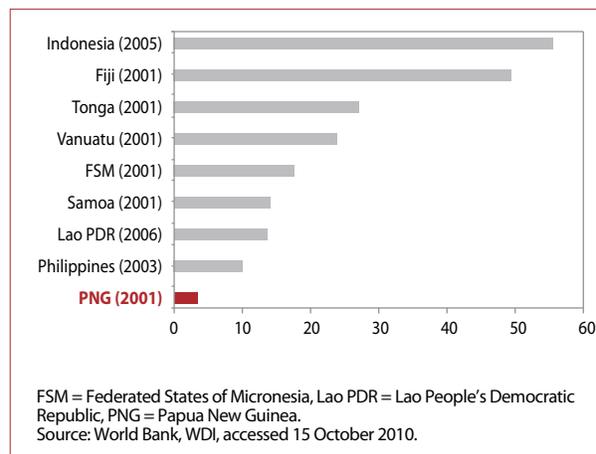
4.3.1. Infrastructure

Inadequate provision of transport is a critical constraint to the inclusiveness of growth, as it limits access to economic opportunities and key social services. As PNG has more than 600 islands and altitudes ranging from sea level to 4,500 meters above it, providing adequate infrastructure is very important for enhancing the inclusiveness of economic growth. The availability of infrastructure affects people’s access not only to economic opportunities, but also to key public services such as education and health. The country’s difficult terrain also limits infrastructure provision. The conditions and coverage of roads, aviation, and shipping services have been deteriorating for the last few decades (Manning 2007). Data from the Department of Works’ road asset management system indicate that about 13% of national roads are in good condition, 42% are in fair condition, and 44% are in a poor state (ADB 2008c). While roads provide by far the main

means of transport in PNG, aviation and coastal shipping are also important for the island provinces and some of the mainland provinces without land connections.

A comparison with selected other countries reveals that infrastructure development is limited in PNG. Only about 3.5% of PNG’s roads are paved—the lowest among the countries in Figure 4.39. PNG also has a limited communication

Figure 4.39. Paved Roads (% of total roads)



network system for the internet and mobile and fixed-line telephones (Figures 4.40 and 4.41). Many rural communities remain isolated because of the inadequate infrastructure. Residents in such communities depend largely on subsistence agriculture and stay outside the cash economy. It is, therefore, not surprising that people responding to the 2001 participatory poverty assessment in 18 communities cited lack of usable roads as their second most important problem. One interviewee from Taluat Sikut village said “...just get us a road... and see what we can do” (ADB 2002:4).

Due to the limited availability of data, the distribution of infrastructure across the country cannot be accurately assessed. Nevertheless, evidence indicates that key infrastructure, such

as roads, other transport facilities, and electricity, is unequally distributed. Table 4.9 illustrates that access to roads is particularly limited in the Highlands Region, where some people have to walk more than 4 hours to reach the nearest road. The roads in the Highlands Region are also in poorer condition than the roads in the rest of the country (ADB 2008c). There is a marked disparity in access to transport infrastructure among income groups. The lowest consumption quartile must travel twice as long as the richest quartile to gain access to the nearest transport facility (Gibson and Rozelle 2003). Access to electricity is also unequal across the country (Figure 4.42). The disparity is most significant between urban (mostly the National Capital District) and rural areas: about 61% of urban households have access to electricity, but only about 7% of rural households use electricity. Given that the majority of the population reside in rural areas, access to electricity remains extremely limited, at about 12% of the people in PNG.

Figure 4.40. Internet Access (2007, per 100 people)

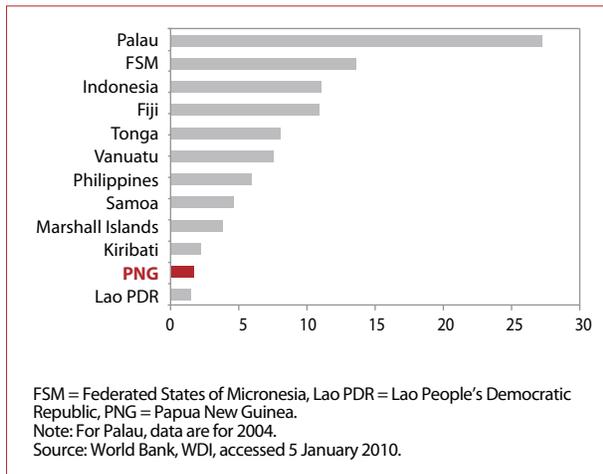
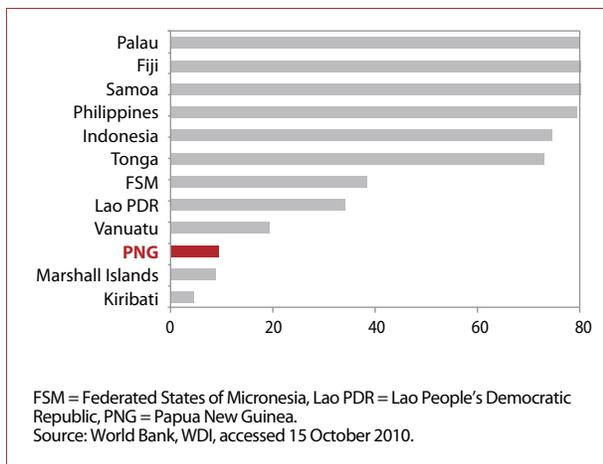


Figure 4.41. Mobile and Fixed-Line Telephone Subscriptions (2008, per 100 people)



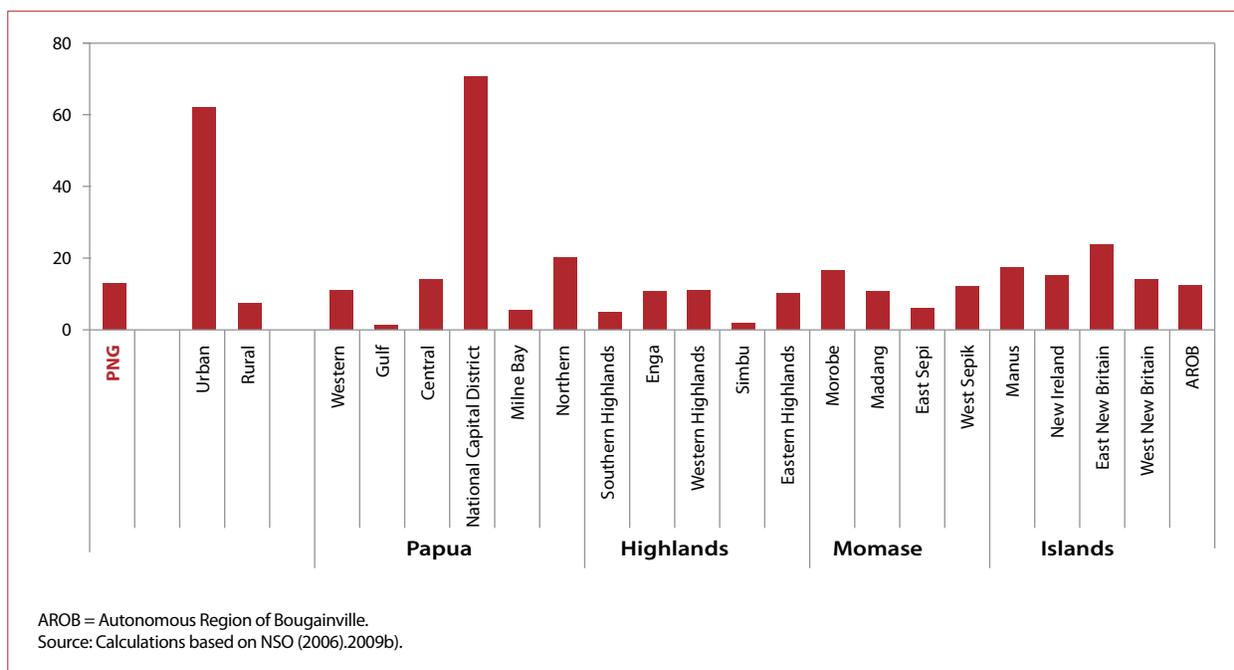
The unequal distribution of infrastructure is a factor in the unequal access to economic opportunities across the country, which also determines people’s welfare. An empirical study verified the poverty-reducing effect of access to roads—cutting the travel time to the nearest road to 3 hours for communities where the road is currently more than 3 hours away would reduce the poverty headcount rate by about 5.4%, or by about 5.8% if the road is 2 hours away (Gibson and Rozelle 2003). Access to roads or other transport facilities affects the prices that farmers receive for their crops and the prices that households must pay for their

Table 4.9. Travel Time to Roads and Transport Facilities in Major Rural Regions (1996, minutes)

	Nearest Road	Nearest Transport (including road, airport, or boat dock)
Papua	93	57
Highlands	256 ^a	53
Momase	95	76
Islands	67	21

^a Two Highland census units are outliers. One community is 30 hours from the nearest road, but only 6 hours from the nearest airstrip. The other is 24 hours from the nearest road, but only 15 minutes from the nearest airstrip.
 Source: Gibson and Rozelle (2003).

Figure 4.42. Use of Electricity by Province (2006, %)



purchased foods. The price that farmers receive for sweet potato, which is the national staple and a widely marketed crop, declines by about 7% for each extra hour to the nearest transport facility. Gibson and Rozelle (2003) show that this rate of price decline can be interpreted as the rate at which the net returns to agricultural production for rural farmers decline as infrastructure becomes less accessible. The same study also shows that access to a road enhances people's opportunities to engage in a wide range of income-earning activities.

The National Research Institute survey of 2004 also shows that farmers identified poor transport as a main constraint to improving agricultural production. An estimated 30%–50% of coffee crops do not make it to market due to the gradual disappearance of government air charters after the 1997 provincial reforms (Manning 2007). A study by the Eastern Highlands Chamber of Commerce and Industry in 2002 also revealed that poor transport conditions caused an estimated 30% decline in coffee shipments from the Eastern Highlands Province (ADB 2006a).

Unequal access to infrastructure is due mainly to the high cost of providing infrastructure, unequal distribution of

funding, limited commitment by local governments to infrastructure development, and poor governance. Chapter 3 identifies several factors responsible for the limited availability of infrastructure in PNG. This part of the report raises additional root causes of the unequal distribution of infrastructure across the country. One obvious reason is the relatively high cost of providing infrastructure services, given the country's topography, low population density, and limited urbanization. However, inherent disadvantages alone cannot explain poor performance in the provision of infrastructure (Chandy 2009, World Bank 2006).

One main factor is insufficient funding. Decentralization introduced a range of transfers to support capital spending by local governments, but the transfers were directed primarily to the mining and oil provinces. While provincial governments were awarded Public Investment Program grants to implement proposed projects, the awards tended to be ad hoc and not distributed in a systematic manner. With modest tax autonomy, limited access to private capital, and no provision of loans by the center, most provincial governments face a binding constraint to financing infrastructure. The intergovernmental financing reforms (mentioned

in the education subsection of this chapter) are intended to address some of these issues.

Limited commitment by provincial governments to infrastructure development is also an important issue. For example, Figure 4.43 illustrates the low level of resources that provincial governments are allocating for maintaining transport infrastructure compared with the required spending—in 2008, provinces spent, on average, only 14% of the estimated cost of needed services. In addition, the trend of spending is increasing in only a few provinces. These figures clearly show the relatively low priority that provincial governments give to maintaining transport infrastructure (NEFC 2009b). The limited funding for routine and periodic maintenance is also an issue for the Department of Works, which is responsible for the national road network (ADB 2008c).

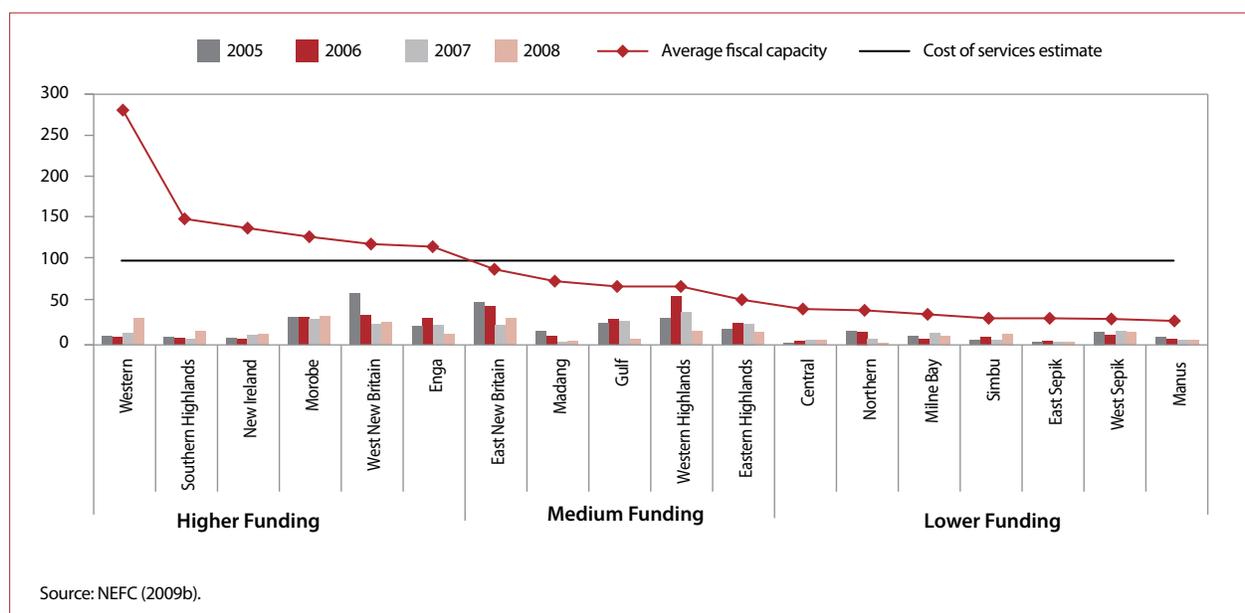
That the national, provincial, and local governments share the responsibility for providing road, air, and sea transport hampers the adequate provision of transport infrastructure (Manning 2007). Land issues (discussed next) also constrain infrastructure development. Moreover, poor governance is an issue, as reflected in the poor budget controls and financial management system, deteriorating technical standards, weak project supervision, and inadequate procedures for monitoring the efficiency and effectiveness

of management and implementation activities (Lee 2004).

4.3.2. Land

The limited mobilization of customary land poses a challenge for development, but most rural families have access to land and, given the complexity of the land issue in PNG, it may not currently be a critical constraint to poverty reduction. Land is one of the key productive assets, particularly for countries such as PNG, where the majority of the people are engaged in agriculture for livelihood, whether for cash or subsistence. About 97% of the total land area is held under a customary land tenure system (Yala 2006), which underpins the kinship ties and social institutions (Bank of PNG 2007). While most rural families have access to land, the National Research Institute in 2004 showed that farmers often consider land as a main constraint to production in the rural informal sector (Manning 2007). Other problems are that the swidden rotations, which used to be 15–20 years, are being shortened, and soil erosion is said to be increasing at a rapid rate in recent years, although soil fertility has not yet been reduced markedly (Manning 2007). The difficulty of acquiring title to or use of customary land for business activities and developmental projects is often identified as a major obstacle to private investment. Group tenure also limits

Figure 4.43. Spending on Maintaining Transport Infrastructure, by Province (2005–2008, %)



the use of land as collateral, which, in turn, limits rural people's access to financial services (Bank of PNG 2007).

The debate over the ownership of land is not new in PNG. Since independence, several attempts have been made to introduce land registration. The Land Mobilization Program, for example, was designed to enable customary landowners to participate in the development of their land. It aimed to promote the formation of landowner groups and investigate ways to mobilize their land for development, such as lease-back arrangements and land tenure conversions (Holden, Bale, and Holden 2003). The argument for land reform has stemmed primarily from economic considerations, especially the need to formalize property rights and the rule of law to underpin investor confidence and allow land to be used as collateral for loans (Yala 2006). In addition, there is need for freeing up land for residential development to accommodate population growth as well as rural–urban migration, and for rural development for agriculture, mining, forestry, and tourism (Manning 2008).

However, the land issue in PNG is complex and sensitive. Solutions may include the development of secure long-term leasehold of customary land, which would generate incentives to invest in agriculture to enhance productivity (Yala and Duncan 2006). Similarly, Manning (2007) proposes a more efficient use of land through adopting different farming systems and better training and knowledge of the dangers of overfarming leading to erosion and soil degradation. He also suggests that customary land can be freed up in a way that is fair and acceptable to both the landowner and the potential developer/user. There should be a way to assist landowners in voluntarily registering their land to allow some form of commercial transaction without impinging on the ownership of the land. Customary landowners are asset-rich but cash-poor and have limited information on the real opportunity cost of their land. As a result, customary landowners tend to value their land at very low cash rates and are vulnerable to agreements for low value leases and/or dispossession of their major assets, which may help explain widespread dissatisfaction with and conflict over leases (Anderson 2006).

Nevertheless, given the complexity of the land issue in PNG and the sufficient access rural households have to land, access to land may not be

a critical constraint to poverty reduction that needs most urgent attention at this time.

4.3.3. Credit

Limited access to financial services may not currently be a critical constraint to inclusiveness. Accessibility to financial services plays an important role in ensuring equal access to economic opportunities, particularly to income-generating opportunities. The incidence of poverty in PNG is linked to households' inability to earn cash to pay for school fees, healthcare, and other nonfood items (ADB 2000). Access to financial services can help households meet these needs, meet daily requirements, and cope with crisis.

The vast majority of people in PNG, particularly those in rural areas and the poorer strata of the population, have no access to financial services by commercial banks and financial institutions. This is, at least partly, due to the lack of adequate infrastructure and integration of significant parts of the society into the cash economy (ADB 2000). Given the limited development of its formal sector, PNG needs micro and small enterprises to generate income-earning opportunities. The limited access to financial services, however, constrains the development of the micro and small enterprise sector (ADB 2000). Conroy (2006) argues that there is a gap, a “missing middle,” between the traditional subsistence economy and the modern monetized economy in many Pacific island countries, including PNG. Although microcredit cannot completely fill this gap by stimulating informal sector activities, providing greater access to finance would certainly help to promote the micro and small enterprise sector (Conroy 2006, 2010). PNG suffers from an extremely low level of financial inclusion (i.e., access to relevant and sustainable financial services), and ranks last among countries in the Asia and Pacific region: only about 8% of the population is financially included in PNG, compared with 15% in Solomon Islands, 19% in Samoa, and 39% in Fiji (Conroy 2010).

There have been several initiatives in PNG to increase access to both saving and lending services (Biggs 2007). Various financial institutions now offer microfinance services, including commercial banks; savings and loan societies; and nonbank financial institutions such as the National Development Bank, which was founded in 1967 to promote

development in rural areas, with capital provided by the government. More recent initiatives include the establishment of two licensed institutions, PNG Microfinance Limited and Wau Microfinance, now Nationwide Microbank (Biggs 2007). These two principal microfinance providers have expanded their rural outreach, and now have a total of 21 branches, with Nationwide Microbank serving more than 100,000 active clients (ADB 2010c).

Despite such efforts, many of the microfinance institutions and other microfinance initiatives have not been as successful as they had expected to be. Their outreach both in scale (number of clients) and depth (service delivery to the lowest income population possible) remains limited, and most of them are not operating on a sustainable basis (ADB 2000, Kavanamur 2003). However, the opening of new branches by PNG Microfinance Limited and Nationwide Microbank has increased deposits, demonstrating significant unmet demand for deposit services (ADB 2010c). Several factors could explain the limited success. First, microfinance institutions are scattered across PNG and operate in isolation, particularly in rural areas (ADB 2000). The geography and low population densities increase transaction costs and result in market failures, inhibiting the viability of Grameen replications and many other forms of microfinance (Conroy 2006, Kavanamur 2003). Government failures to provide required infrastructure exacerbate the situation (Kavanamur 2003). However, institutions are increasingly turning to innovative models for rural outreach, including creating links between the larger, regulated microbanks and local institutions, and branchless and mobile phone payments and banking models (ADB 2010c).

Second, compared with some other countries in the Asia and Pacific region, PNG's microfinance sector is still at an early stage of development. Initially, the Grameen Bank model seemed to have dominated the microfinance landscape, irrespective of its appropriateness and suitability for PNG. A number of studies had raised the concern that the ability to design savings and loan products to suit local conditions and customs has generally been limited (ADB 2000, Kavanamur 2003). The prevalence of the wantok system, with the cultural tradition of sharing rather than accumulating resources, may have also posed a barrier to the development of the finance sector (Bank of PNG 2007). It is not uncommon to find people in PNG

operating income-generating activities with little appreciation of the profit motive (Kavanamur 2003).

Third, microfinance institutions face difficulties in balancing the goals of reducing poverty among clients and staying financially sustainable. There is a great need for microfinance institutions to achieve financial sustainability to ensure that they continue to deliver financial services (ADB 2000). Finally, the microfinance institutions tend to lack the expertise and technical skills required to expand financial services (ADB 2000). Finally, the microfinance institutions tend to lack the expertise and technical skills required to expand financial services (ADB 2000). In this regard, the establishment of the Microfinance Competence Center, a training and support facility set up by the Asian Development Bank and the Bank of PNG, is a welcome step in enhancing the microfinance institutions' capacity.

Although access to credit is limited, it may not currently be a critical constraint to reducing poverty. The reasons for the absence of a thriving informal economy are complex, and merely providing credit would not address this complexity. The survey by the National Research Institute in 2004 shows that, compared with other factors such as transport, a relatively small percentage of the respondents considered credit to be the main constraint to production in the rural informal sector (Manning 2007). In addition, the limited business opportunities and lack of entrepreneurial skills also need to be addressed to reduce the reliance on subsistence agriculture for livelihood in the rural areas.

4.4. Social Safety Nets

While government provision of social safety nets is not adequate, this may not be a critical constraint to poverty reduction, given the informal social safety net system embedded in PNG. The adequate provision of social safety nets is one of the three key drivers for enhancing inclusive growth (Figure 1.3). One way of assessing the adequacy of social safety nets in PNG is to compare its provision with that of other countries. This may be accomplished by using the internationally comparable social protection index (SPI)—a summary indicator of the overall level of social protection activities in a country (ADB 2006b,

2008d). The SPI is derived from four components: (1) social protection expenditures, (2) social protection coverage, (3) social protection distribution, and (4) social protection impact.⁸ Table 4.10 reports the overall SPI ranking, SPI, and each of the four individual components of the SPI for PNG and other countries. The average values are also reported for Asia and the Pacific (for 31 countries) as well as for the Pacific Islands.

The table clearly reveals the inadequate provision of social protection in PNG, which has the lowest SPI rank among the Asia and Pacific countries in the SPI study. Only 0.3% of PNG's GDP is allocated to social protection, while on average 4.8% of GDP is spent on social protection in the Asia and Pacific region (and 4.5% among the Pacific island countries). In PNG, the majority of social protection expenditure, about 86%, goes to social insurance (including pensions, health insurance, maternity, and survivor's and disability benefits). Social assistance programs account for about 10.7%, microcredit programs for about 0.9%, and child protection programs for about 2.4%.

PNG's social insurance system does not provide coverage beyond the government or the formal sector. Therefore, less than 1% of the poor benefit from social protection programs offered in the country, whereas, on average, more than half (about 57%) of the poor receive some sort of social protection in Asia and the Pacific. In addition, given the negligible expenditure on social protection, its impact, expressed in terms of per capita social protection as a percentage of the national poverty line, is extremely small (about 0.3%). PNG also performs poorly in terms of the coverage of social protection when compared with other countries in the region. Less than 1% of the targeted population receives social protection, while the average coverage ratio for Asia and the Pacific is about 35%.

The discussions so far illustrate the limited provision of social safety nets in PNG. However, the sharing of goods and income between households under the wantok system comprises a social safety net in PNG (Gibson, Boe-Gibson, and Scrimgeour 1998). The word "wantok" comes from PNG's

widely used *Tok Pisin* and means "one talk."⁹ The wantok system can be loosely defined as the system of relationships (or set of obligations) between individuals characterized by some or all of the following: (1) common language, (2) common kinship group, (3) common geographical area of origin, and (4) common social associations or religious groups. Wantok is a salient feature of social organization in PNG, especially in urban areas (de Renzio 2000).

Using survey data on households in an urban area (Hanuabada village), Gibson, Boe-Gibson, and Scrimgeour (1998) found that the majority of households in the sample (about 81%) either gave or received cash transfers during the survey period (usually 1 week). Their empirical analysis also suggests that voluntary transfers of cash made on a day-to-day basis are targeted toward the poor, and households receive more of these transfers if they suffer sudden misfortune in the form of lost employment. In addition, even when households have access to formal credit and insurance facilities, they appear to stay in this mutual insurance network of voluntary transfers between households (Gibson, Boe-Gibson, and Scrimgeour 1998).

Such findings show the important role the wantok system plays in providing social safety nets in PNG. The availability of social safety nets would be underestimated if the traditional social protection system were not taken into account. Nevertheless, some findings indicate that low-income individuals have relatively low participation rates in the wantok system, suggesting that some of the poor have nobody to help them (Chandy 2009). Also, the importance of the wantok system has been eroding in recent years due to, among other things, poverty, the rise of cash economies, family breakdown, and the spread of HIV/AIDS (ADB 2002, UNICEF 2006). In most communities, even the better-off people do not have enough to share, and poor households are struggling to maintain traditional kin obligations (ADB 2002). The wantok system is putting extraordinary pressure on wage earners, who are expected support a large number of people, even though they are no longer able or want to do so (UNICEF 2006).

The provision of social safety nets may not currently be a critical constraint to the inclusiveness

⁸ For the detailed methodology of the SPI's construction, see ADB (2008d).

⁹ Tok Pisin, which was originally derived primarily from English but also has words derived from other languages, is one of PNG's three official languages.

Table 4.10. Social Protection Index

Country	HDI Ranking	SPI Ranking	SPI	SP Expenditure (% of GDP)	SP Coverage (%) ^a	SP Distribution (%) ^b	Impact of SP on Income (%) ^c
Asia and the Pacific	n.a.	n.a.	0.36	4.8	35	57	23
Pacific Islands	n.a.	n.a.	0.24	4.5	22	35	11
Cambodia	23	25	0.19	1.4	18	43	4
Cook Islands	5	6	0.55	3.6	67	100	29
Fiji	10	27	0.15	3.0	13	22	8
Indonesia	14	18	0.33	1.9	40	71	8
Lao PDR	24	23	0.19	1.3	21	40	7
RMI	20	15	0.34	14.0	23	9	20
Nauru	25	12	0.42	6.5	31	74	24
Philippines	9	22	0.21	2.2	33	30	5
PNG	31	31	0.01	0.3	0.9	0.9	0.3
Tonga	3	28	0.08	1.3	11	11	2
Tuvalu	26	20	0.26	6.9	17	55	4
Vanuatu	19	29	0.08	1.0	13	10	2

GDP = gross domestic product, HDI = Human Development Index, Lao PDR = Lao People's Democratic Republic, n.a. = not applicable, PNG = Papua New Guinea, RMI = Republic of the Marshall Islands, SP = Social Protection, SPI = Social Protection Index.

^a The number of social protection beneficiaries as a percentage of the reference populations.

^b The number of poor beneficiaries as a percentage of the poor population.

^c Per capita social protection expenditure as a percentage of the national poverty line.

Source: ADB (2008d).

of economic growth. However, with the weakening of the wantok system over time, there is certainly a growing need for the government to provide adequate social safety net programs to help households mitigate the effects of transitory livelihood shocks such as ill health, macroeconomic crisis, and natural disasters, and to meet the minimum needs of the chronically poor.

4.5. Conclusion

This chapter has reviewed PNG's employment opportunities and access to them; human capabilities including education, health, and other social services; the status of access to infrastructure, land, and credit; and social safety nets. The review indicates the following critical constraints:

- lack of productive employment opportunities and unequal access to the opportunities are critical constraints to inclusive growth;
- unequal access to and poor quality of education pose a critical constraint to reducing poverty and inequality;

- unequal access to healthcare and the consequent poor health pose a critical constraint to reducing poverty and inequality;
- unequal access to safe drinking water and sanitation is a critical constraint to reducing poverty and inequality, due to the adverse effects on health; and
- the limited transport system poses a critical constraint to the inclusiveness of growth by constraining economic opportunities and access to key social services.

Three other issues currently pose challenges that may become critical constraints in the future:

- limited mobilization of customary land, which is a challenge for development but may not currently be a critical constraint to poverty reduction;
- limited access to financial services, which may not currently be a critical constraint to inclusiveness; and
- the government's limited provision of social safety nets, which is currently backstopped by PNG's informal social safety net system.

Chapter 5

Summary, Policy Implications, and the Way Forward

Papua New Guinea (PNG) has enjoyed several years of strong economic growth, driven largely by high commodity prices and supported by structural reforms and some sound macroeconomic policies. The growing opportunities and wealth have been skewed increasingly in favor of a small and largely urban-based segment of the population. Many communities and parts of the country, particularly in remote areas, have been marginalized from the development process. The limited, though growing, formal sector is inadequate to absorb the unemployed urban people, and most of them are not prepared for the vacancies in the formal sector, which entail predominantly skilled and semiskilled work. In addition, the informal urban sector is unable to absorb most of the unemployed people.

Challenges that PNG faces include (1) ensuring that the recent higher economic growth rates are sustainable in the medium to long term, and (2) translating high economic growth into much more inclusive development than has prevailed to date. This raises questions as to what are the most critical impediments to inclusive economic growth, and how can they be overcome.

5.1. Critical Constraints to Inclusive Economic Growth

This study employed a diagnostic approach in an attempt to identify the most critical constraints to economic growth and poverty reduction in PNG.

The critical constraints identified and that require the government's focus are

- weaknesses in governance and institutions;
- poor infrastructure (transport, electricity, and water supply);
- shortages of skilled human capital and poor and unequal access to affordable and quality education; and
- lack of and unequal access to affordable and good quality health services.

Overcoming these impediments will help PNG achieve more inclusive growth that provides the country's citizens with more equitably shared opportunities to contribute to and benefit from economic growth. Toward this end, the study proposes process-driven policy options to address the impediments. These policy options benefit from and are consistent with ADB's approach to supporting fragile situations and to ADB's Pacific Approach 2010-2014. Several of the policy options are already central to the government's medium- and long-term development planning and agenda; the resolve to implement them expeditiously needs strengthening.

5.2. Policy Recommendations

5.2.1. Governance and Institutions

Weak governance and institutions undermine all economic activity, delivery of public goods, credibility of the state, and efforts to alleviate poverty. PNG has largely comprehensive laws

and institutions, but, as discussed in Chapter 3, PNG's governance and institutions remain weak in comparison with other major economies in Southeast Asia and the Pacific. As discussed in earlier chapters, of particular concern are the low level of government effectiveness, poor law and order situation, and corruption. In addition, the land administration and difficult access to formal land titles also critically constrain private investment and infrastructure development.

Public Service Delivery

Deficient delivery of core public services, particularly by some agencies and provinces, can be attributed to weakened public sector management and inadequate operational funding for various core functions. This in turn has encouraged, and been the result of, the establishment of parallel and largely ad hoc mechanisms of service delivery. Lack of broad public awareness of civil rights and government responsibilities, and low levels of literacy and public empowerment, have constrained public demand and accountability mechanisms. Two areas of action that are critical to more effective, accountable, and sustained standards of governance and public service delivery are (1) raising public awareness of core public sector functions, responsibilities, and standards; and (2) restoring and reinforcing the independent oversight functions and funding of the legislature and of official and unofficial watchdogs. The following measures should be considered for enhancing public service delivery:

Short to Medium Term

- Reinforce the processes for preparing annual national and subnational budgets—the core instruments for financial planning, management, and monitoring. The process should include timely consultation, implementation, and reporting at all levels, including local-level government budgets.
- Ensure that subnational budgets are concluded and details publicly released shortly after the national budget is approved, and that funds are disbursed early in the new year. Timely reporting during and at the end of the fiscal year is needed, and annual financial statements should be submitted for audit early in the subsequent year.
- Provide adequate budget allocations (at the national and subnational levels of government) for essential public goods and services, particularly recurrent functions. This is especially essential for infrastructure maintenance, police and justice, education, and health. Provide at least the minimum costs of service delivery, as calculated by the National Economic and Fiscal Commission (NEFC). Funds for upgrading or providing new infrastructure should be allocated only when the core infrastructure and services are fully budgeted.
- Ensure that state-owned enterprises (SOEs) are given a full commercial orientation with strong governance arrangements, performance incentives, and hard budget constraints.
- Annual accounts of SOEs must be audited and submitted to Parliament and the public on a timely basis.
- Community service obligations must be delivered only on a full cost-recovery basis, under an approved government policy, and should be contracted out to the private sector where suitable.
- Where possible, withdraw state ownership from commercial enterprises while introducing robust regulatory arrangements.
- Expedite the finalization and implementation of an institutional and legislative public-private partnership (PPP) framework.
- Where full privatization is not feasible, pursue greater private sector participation through PPPs following the principles of strong governance and full transparency.
- Clearly define the functions and responsibilities of public sector institutions, to minimize duplication between national organizations and between national and subnational bodies and tiers of government.
- Strategies and plans (including fiscal and debt strategies) must be realistic and command wide acceptance, based on solid research and wide consultation. This would encourage greater reliability and foster broad acceptance and “ownership” within government and the wider community, which is needed to enable effective implementation of the plans and strategies. Report on the performance toward implementing the strategies and plans regularly to the public.
- Incorporate district grants, allocations, and other budgetary allocations within normal public sector planning, budget, procurement, and implementation procedures. Reinforce local planning, budgeting, and reporting mechanisms

and align expenditure with agreed upon and publicly accessible local plans and priorities.

- Maintain a detailed inventory of compensation payments. Apply compensation (e.g., for forfeited private or customary land and access, or other actions of the state) in accordance with clear standard criteria and procedures. Such compensation should be paid up front, based on verified identification of the genuine landowners or other claimants.
- Establish provincial and district audit committees that include independent private sector and civil society members.
- Reinforce the transparency of the tendering process to ensure compliance with advertised conditions and deadlines. Eliminate mechanisms that abuse and bypass this system.
- Enforce financial regulations and apply penalties for abuse of processes, such as competitive tendering and other selection processes (including for education places and scholarships, lands, licensing, etc.). Consider introducing an administrative appeals tribunal, or reinforcing the Ombudsman Commission's powers to intervene where administrative abuse is apparent.
- Review and reinforce mechanisms to ensure that public service managers and other positions (including at the subnational level) are appointed on merit and transparently. Incorporate independent oversight mechanisms, countering "rubber-stamping of cronyism" and other malpractice.
- Reinforce, or where necessary establish, coordination mechanisms within the public sector, such as the Central Agencies Coordination Committee. Provide them with suitable powers. Provide mechanisms for effective consultation with the private sector and civil society, notably the Consultative Implementation and Monitoring Council and the National Working Group on Removing Impediments to Business and Investment.
- Update short- to medium-term human resource needs assessments for the private and public sectors. Seek to harmonize public sector human resources, including staffing and training, with the outcome of the assessments.
- For political and public sector leaders, establish clear guidelines on conflict of interest in business activities and interaction with the private sector, including clear rules and transparency for political funding.
- The government, the Electoral Commission,

and other independent offices and civil society organizations (including churches) should immediately undertake initiatives to raise public awareness of the core functions of government and the legislature, including basic budget and legal literacy, and the role of members of Parliament. The initiatives should be continued in the medium and longer terms.

Medium to Long Term

- Introduce freedom of information legislation. Reinforce mechanisms for dialogue among public and private sectors and civil society, including at local levels. Enable community participation in setting local priorities, planning, and accountability.
- Reinforce the separate roles and functions of the executive, legislative (Parliament), and judiciary branches of government, and strengthen their capacities to deliver on these roles effectively.
- Strengthen Parliament's committee structure (notably the budget and public accounts committees) through adequate funding. Provide support, by a professionally competent secretariat, to examine and make constructive inputs into proposed legislation, including the annual budget, and to oversee expenditure.
- Review public sector terms and conditions, addressing challenges in cities and in remote locations, to help (1) ensure that training in priority activities proceeds; (2) retain and recruit people for high priority public service positions (teachers, health workers, road engineers, etc.); and (3) provide for a succession of qualified new recruits. Provide adequate incentives, including access to suitable accommodation and schooling, in order to retain top caliber staff in critical public service positions, and to maintain their morale and productivity while restraining corruption.
- An independent review of the public sector is required. The review should incorporate and apply recommendations from past assessments, including from the Rightsizing Committee, to help ensure that institutions meet public sector service delivery requirements, and that the financial, human, and other resources provided are adequate for their intended tasks. In the process, some institutions may need to be reinforced and others may need to be trimmed, merged, or abolished. Avoid the inclination to establish a new institution when an existing one is failing unless a replacement is needed.

Law and Order

Since the mid-1980s, surveys have identified law and order problems, including the high cost of safeguarding against crime. Established businesses in PNG view crime as the major impediment to business and investment (INA 1999, 2000, 2007). Although often highlighted in the context of international investment (and the higher costs of employing foreign workers), law and order problems affect industries and households to different extents, with major enclave operations (such as mining) and wealthier households generally better able to manage the costs of crime prevention. Businesses that are small or vulnerable to crime, such as tourism and hospitality services or agriculture, including smallholder production, are less able to safeguard their operations. Crime and civil disturbance jeopardize the prospects of such businesses and thwart the uptake of new business opportunities. Such small and medium-sized enterprises could generate the bulk of employment opportunities, and merit protection from law and order problems (including tribal conflicts and conflicts over resources).

People who earn little income and inhabitants of settlements where most urban workers, including professionals, live are particularly susceptible to crime. To address PNG's law and order problems requires reaching broad consensus and clear prioritization, with government joining the private sector and entire communities in addressing the root causes and not merely focusing on the symptoms. Addressing the root causes includes enhancing opportunities for legitimate employment and minimizing sources of conflict over land and resources, alcohol- and drug-related accidents and conflict, and family and sexual violence. Measures for improving the law and order situation are as follows:

Short to Medium Term

- Place major emphasis on generating employment opportunities. In the National Capital District and other centers, rapidly expand programs for providing basic skills for entry-level access to employment, work placement, and further training.
- Vigorously apply the new informal economy policy in main and provincial centers and rural areas. Provide access to microfinance and other financial services, venues, and support for individuals and households to engage in informal economic activities. Support should include provision of suitable and sanitary facilities for marketing; micro-industries; general repairs; and basic skills training, including for literacy and numeracy skills.
- Pursue macroeconomic and monetary policies to safeguard and encourage broad-based employment and income-earning opportunities, including in agriculture, while containing excessive cost of living appreciation, notably in urban areas.
- Update and apply the recommendations of the Royal Papua New Guinea Police Constabulary Review Report of 2004 (INA CIMC), including regarding police management; standards and discipline; training; equipment and facilities; employment conditions, including standards of accommodation; and financial and public accountability.
- Ensure that the police force has adequate funding and numbers. The size of the police force has long failed to keep pace with population growth. Reinstate visible foot patrols.
- Ensure that police and other justice-related appointments are made on merit and that the police and the public prosecutor have operational independence. Ensure that independent mechanisms are in place to handle complaints against the police and to review the performance of members of the police force.
- Reinstate and reinforce training of police officers, particularly with regard to human rights. Sensitize police officers about family and domestic violence, and instill in them discipline about handling such matters, including among members of the police service.
- Reinforce funding and other support, including training and operations support (e.g., record keeping and access to and sharing of information) for the courts, magisterial service, and justice system (including land and village courts) and for nongovernment organizations (NGOs) involved in dispute resolution and mediation. Pay particular attention to (1) addressing family and sexual violence, which seriously damages lives and undermines economic prospects, adds to mortality, and contributes to the high rates of HIV prevalence; (2) applying restorative justice to reduce levels of conflict, repeat offenses, and the numbers of people in jail; (3) improving rehabilitation of convicts so they can reintegrate into society and lead productive lives; and (4) enhancing support for victims of crime and conflict.

- Address issues (notably related to alcohol and other drug abuse and gambling) that trigger violence; conflict; and wider social, welfare, and economic problems. Avenues include education and awareness campaigns and application of breathalyzer tests and penalties for driving under the influence of alcohol. (This is especially important, given that alcohol and alcohol-induced accidents trigger much wider conflict.) Review the implications of authorizing casinos and other gaming venues.
- For major resource projects, ensure that (1) they are rigorously assessed prior to implementation; (2) the genealogy of affected people is comprehensively completed; and (3) compensation claims, entitlements, and dispute resolution mechanisms are adequately determined and in place. This is necessary to ensure that fair play and justice apply; to minimize the potential for opportunism and conflict; and to ensure that mediation and dispute resolution mechanisms, including over land, are adequately funded and used.

Medium to Long Term

- Recognize that increasing numbers of people will move to urban areas, and develop coordinated plans to support harmonious and dynamic development in new urban settlements. Provide such settlers with safe living conditions, including effective community policing; local economic opportunities; and access to services such as utilities, healthcare, and education.
- Support phasing out of cash and rapid acceptance of lower risk mechanisms for transactions, notably electronic modes (e.g., mobile phone banking and financial transfers), while ensuring adequate oversight of new mediums for transfers.
- Undertake long-term awareness and consensus building to enhance community knowledge about and commitment to maintaining good law and order, and to reducing the costs of crime borne by business and the community. Start with building legal literacy, including awareness among the public and authorities about PNG's Constitution, laws, and basic human rights.
- Encourage stronger civil leadership, better community policing, and greater respect for human rights and accountability among the law and justice agencies (including prevention of torture and other human rights abuses of people in custody). Include measures to enhance transparency and community relations,

such as routine community visits to police stations, neighborhood crime watch schemes, women and children's secure houses, safe and reliable emergency response and witness protection schemes, community-police liaison committees and civil action schemes, and timely independent financial and operational audits of justice agencies.

- Undertake a major program for raising the status of women in society, to empower women to participate more fully in, and benefit from, the economy, politics, and decision making.

Corruption

As noted in previous chapters, PNG compares unfavorably with other major economies in Southeast Asia and the Pacific in terms of control of corruption. Corruption diverts public sector funds away from priority needs and acts as a tax on and a risk to private investments. The government has recently taken positive initiatives toward greater accountability, such as the Treasury's provision of timely online budget details and performance reporting; however, the impact has yet to be fully reflected in some program expenditures (such as for some infrastructure and agriculture programs); at the subnational level (including use of district grants); or in the application of trust funds and income and expenditure by some SOEs and some statutory bodies. Some of the key steps that the government may consider in its endeavor to control corruption are as follows:

Short to Medium Term

- Endorse and implement the recently prepared National Anti-Corruption Strategy, drafted by the government in consultation with civil society organizations. Also endorse and implement the plethora of related strategies and policies, including national integrity reviews and anticorruption priorities drafted by former Justice Barnett.
- Minimize opportunities for corruption by eliminating, or at least avoiding, sole discretion in decision making and, where practical, avoid selecting exclusive service providers. Ensure a system of checks and balances against abuse of power, through impartial boards, internal audits, and requirements to publicly and promptly release details in print and electronic media on budgets and expenditure.
- Introduce electronic and automatic processing and documentation (notably online), for

customs, excise, and other tax payments; license fees; company registration; and market mechanisms, including land allocations. Transparent and publicly overseen tender or auction processes should be used, with clear criteria, rather than discretionary arrangements.

- Ensure adequate funding, clear independence (in operations and appointments) and suitable powers for independent oversight and official watchdog bodies (e.g., the Auditor General, Ombudsman Commission, and proposed Independent Commission Against Corruption), and reinforce the role and funding of the legislature in overseeing the performance of the executive (notably, the Parliament's Public Accounts Committee).
- Support the interagency coordination efforts of anticorruption agencies, through an effective National Anti-Corruption Alliance.
- Introduce and apply legislation pertaining to freedom of information and protection of whistleblowers. Make publicly available all awards and contracts and public leaders' assets and earnings, the latter by releasing their income tax returns annually via the Ombudsman Commission to Parliament.
- Release findings of all public inquiries, to firmly deter recurrence of malpractice.
- Implement the recommendations of the 2004 Royal Papua New Guinea Police Constabulary Review Report (suitably updated where necessary). Have the implementation process independently monitored, particularly to reduce the politicization of senior appointments and ensure greater transparency in determining fraud prosecutions, and to lessen individual discretion over the withdrawal of cases.

Medium to Long Term

- Launch and sustain an extensive awareness campaign that includes government, the private sector, and civil society organizations. The campaign needs strong leadership from the public sector and community leaders, including from churches, and should have a particular focus on the youth. The campaign should highlight that (1) corruption, including abuse of public funds and the full range of major and petty corrupt practices, costs lives and undermines development and opportunities; and (2) operating openly and transparently enhances opportunities for legitimate, competitive business and service delivery,

and thus is in the best interest of the whole community.

- Update the legislation pertaining to penalties for corruption, to ensure greater relevance and a strong deterrent effect, particularly during boom economic conditions.
- Reinforce Leadership Code standards. Requirements for evidence of infringement of the standards should be lower than what is needed for prosecution under the Criminal Code. Extend aspects of the Leadership Code to nonleaders in the public sector. Adapt the Criminal Code to clarify the definition of malpractice as applied to the public and private sectors.

Land and Land Titles

Inadequate access to land and formal land titles, notably for infrastructure and commercial projects, and urban real estate, has been widely reported as a major constraint to development in PNG. Broad-based access to land under customary title has, however, provided the basis for food security and earnings from cash crops for smallholders. Moreover, the population pressure on land is intense in only a few (although growing) rural and, increasingly, periurban areas, where production is intensifying. Commercial and semicommercial agriculture and urban development have been constrained by the maladministration of the small portion of "alienated" land (approximately 3% of total land area), and by difficulties in transferring titles of alienated rural land and of accessing titles to customary land (including by the customary owners) needed for securing credit and investment capital. Prevailing laws related to customary land do, however, enable major developments to proceed (legally and in practice), where due process is followed and formally approved by the customary landowners, working with authorities and development partners. This takes commitment, time, and a real partnership, and is too often sidestepped for hasty access to resources, usually with negative consequences.

Land laws have been amended in recent years and strategies introduced to improve administration of alienated land, address land disputes, and empower traditional landowners to protect their customary title. The changes intend to enable traditional landowners to designate portions of their land for commercial or urban development, potentially with outside partners, following due

process, and without forfeiting title. Although the new legislation was passed in 2009, it remains ungazetted (i.e., has not been officially announced), and administrative reforms to improve the accountability of alienated land management have yet to be applied. In the meantime, aberrations of prevailing customary land laws have been occurring, effectively entailing the alienation of extensive customary land, largely under 99-year special agricultural and business leases (SABLs). In most cases, such alienation has transpired without the free and informed consent of the landowners. This effectively separated large numbers of rural households from their land and forest resources and threatens to further undermine the transparent administration of land needed for long-term investment (as opposed to resource extraction), whether by the landowners alone or by them with external parties. Going forward, the government may wish to consider the following policy measures:

Short to Medium Term

- Apply and adequately resource the government-approved reforms, based on recommendations of the National Land Development Task Force. Include the amended legislation that remains ungazetted, notably on administration of alienated land; land dispute resolution; and empowerment of customary landowners in the management of their land, to safeguard the continued customary ownership and to enable the owners to undertake commercial development in designated areas without jeopardizing their title and overall control.
 - Consistent with the recommendations of the National Land Development Task Force, replace discretionary or relatively arbitrary mechanisms over land allocation. Replace the Land Board process with an auction mechanism over state land. Remove the sole discretionary powers of the lands minister (or delegate) over customary land, notably with respect to SABLs.
 - Investigate the issue of SABLs and associated forest conversion authorizations and environmental plans, covering vast areas of customary land. Ascertain whether free and informed consent was granted by landowners. Apply (the indicated) moratorium on the issue of further SABLs and forest conversion authorizations until the review has been completed and recommendations made. Penalize people perpetrating misdemeanors against customary owners. The state should provide legal support to landowners who are
- challenging leases given without their approval.
 - Make the long-deficient administration of lands markedly more accountable, with documentation readily accessible, over-the-counter and electronic viewing of titles and other documentation, and use of automated processes (including online transactions). Consider replacing the current Department of Lands and Physical Planning structure with a more accountable and responsive authority, with a board representing diverse community interests, and with all positions to be filled through open and competitive processes.
 - “Clean up” titles of alienated land, addressing duplicate or multiple titles, subject to independent review and appeal, where necessary.
 - Rationalize processes and responsibilities between the Department of Lands and Physical Planning and urban physical planning boards, other boards and successor bodies, and appeals tribunals. Decentralize authority, where practical, to the local level, subject to review or appeal to the national level.

Medium to Long Term

- Carefully monitor the application of the land reform process, to ensure that its implementation complies fully with the stated objectives and to evaluate its effectiveness at empowering and not dispossessing or marginalizing customary landowners. This is especially important for larger scale commercial developments. Revise or rectify the program accordingly if the requirements or original objectives are not being fulfilled, and particularly if (1) land is being alienated to outside parties or a few local beneficiaries, and (2) marginalization is leading to increased poverty in rural areas and among customary landowners in urban areas.
- Facilitate the process of providing suitable security of tenure to urban settlers and for horticultural use of periurban land. The security of tenure should suffice to encourage investment in long-term urban housing and infrastructure and sustainable land husbandry, while still recognizing the title and benefits due to customary owners, where occurring on customary land.
- Research and monitor evolving informal rural and urban land tenure arrangements. As needed, revise land laws and their application to meet evolving needs and priorities,

particularly providing opportunities for customary landowners and settlers to facilitate the development of dynamic, safe, and thriving urban habitation and formal and informal economic activity.

5.2.2. Infrastructure and Infrastructure Services

As discussed in earlier chapters, PNG lags far behind most other major economies in Southeast Asia and the Pacific in key infrastructure, including transport, electricity, and water supply. Inadequacies in infrastructure, in particular, affect the access of rural communities and connectivity between main centers and regions.

Moreover, the state of most of the infrastructure is very poor and in need of major restoration and some cases upgrade. Much of this is due to inadequate routine maintenance and upgrading to meet growing populations and needs. The problem, however, also stems from unclear responsibilities and poor coordination among multiple national and subnational authorities. The lack of investment and maintenance has suppressed private investment (including by agricultural smallholders) and economic diversification, particularly handicapping more remote provinces and districts.

Transport

The Medium Term Development Plan 2011–2015 recognizes the needs for (1) restoring, upgrading, and maintaining land, air, and sea transport infrastructure and services, especially roads; and (2) undertaking feasibility studies and constructing “missing links” and “economic corridor” roads. The transport priorities specified in the Medium Term Development Strategy 2005–2010 were not implemented, and funds must now be budgeted and released to ensure implementation of core priorities (DNPM 2005). These include maintaining infrastructure to satisfactory standards (especially given the prohibitive costs of constant restoration). Recent initiatives such as developing an inventory of road and other transport assets and drafting an integrated national transport sector strategy are encouraging moves toward better sector planning. The challenge now is to ensure consistency between the planning process and the priorities and plans being developed or applied by ministries (other than transport) and subnational authorities, including district-level allocations.

With an increasingly dual economy, the capacity of government to use the proceeds from extractive industries (notably the PNG LNG Project) for effectively restoring and upgrading critical public goods and services, particularly transport infrastructure, will be critical to ensuring that the benefits of economic growth are shared equitably. The benefits should extend across provinces, districts, communities, and industries; otherwise their viability may be jeopardized by negative economic impacts from major resource extraction projects. The private sector is unlikely to invest directly in core transport infrastructure, except seaports, airports, and some major roads under public–private partnership (PPP) arrangements. Combining private sector capacity and public sector funds may also be facilitated in some cases by using the prevailing tax credit mechanism. The mechanism has been used by some resource projects for building and maintaining roads and bridges and other facilities of agreed upon wider public benefit. Projects selected, and their subsequent recurring costs, must be accorded highest priority in budgets and plans. External funding agencies and resource extraction companies should make greater use of “whole of life” contracts, which extend obligations beyond construction to ongoing maintenance and rehabilitation.

Current reforms need to progress to enable the launching of PPPs. The PPPs should be structured to attract private sector investment while fully safeguarding public interests through competitive arrangements and professional and independent supervision to ensure that facilities and services adhere to acceptable standards, costs, and charges. Private and commercial management of public infrastructure, such as seaports and airports, should be favored where competition would encourage expanded service provision. Independent supervision of operations and prices should be maintained where local monopolistic services are retained or still permitted by dint of being a recognized natural monopoly. The following measures may be considered to help address critical and long-standing constraints in the development and maintenance of transport infrastructure:

Short and Medium Term

- Reinforce the National Transport Development Plan 2011–2020 as a master plan for the sector and the guiding instrument for allocations in the annual budget process.
- Update and regularly maintain the Road Asset

Management System and the Bridge Asset Management System, incorporating data from provincial and district levels, so that these can effectively guide investment and maintenance-related planning.

- Clarify immediate and longer term core roles and responsibilities of the Department of Transport, the Department of Works, the National Roads Authority, and other sector agencies.
- Clarify responsibilities for managing and maintaining rural airstrips. Ensure public funding for them, and ongoing community contribution and supervision.
- Review public sector terms and conditions and budgets, particularly to ensure staffing and retention of the essential positions related to critical public transport, e.g., civil engineers, works managers, and core staff for routine works.
- Apply and clarify processes and responsibilities (between agencies) for identifying genuine landowners with respect to payment of compensation for land acquisition. Ensure that the records of payments are clear and accessible for future reference (see also the section on Land and Land Titles).
- Ensure that the entire road tax collections are released to the National Roads Authority.

Medium to Long Term

- Promote public awareness and a sense of public or community ownership of transport and other public goods, including through providing information and mechanisms for participation in infrastructure planning, budgets, and accounting for expenditure.
- Clarify policies and mechanisms for private investment and ownership of transport infrastructure and services.
- Promote an expanded private sector role in the provision of commercially viable infrastructure and infrastructure services, especially in what has traditionally been seen as public infrastructure, such as seaports and airports.
- Focus the public sector role for providing infrastructure and infrastructure services on maintaining basic access for the majority of the population.
- Ensure that the PNG Forest Authority and resource project developers consult with national and provincial transport authorities on proposed and established logging roads and bridges to ensure that roads (and permanent bridges) selected for inclusion as public infrastructure

follow required routes and satisfy minimum standards for road safety and sustainability requirements.

Electricity

Developments in electricity generation have so far been based on a short-term development perspective, which has led to reliance on diesel or heavy fuel-oil power plants and generators instead of PNG's abundant renewable energy resources. Lack of foresight and poor maintenance have resulted in existing plants not being maintained and have necessitated extended closure of already inadequate plants. Even the National Capital District, with about 60% of the nation's power consumers, suffers constant blackouts. Thus, most businesses use stand-by generators, imposing major additional capital and operating costs. Options for improving affordability and reliability of access to electricity are as follows:

Short and Medium Term

- Undertake immediate maintenance, restoration, and interim upgrades of current facilities.
- Update the inventory of current and forecast power supply and demand for main and minor population centers and rural outposts.
- Prepare a national energy plan, focusing on use of locally available renewable resources—hydro (and microhydro), geothermal, wind, and solar—and on future use of domestically produced gas (as already provided from Hides to Porgera gold mine).
- Explore Clean Development Mechanism funding opportunities associated with developing clean energy.
- Open the market to private capital and investment in power provision, including through PPP arrangements with PNG Power and competing local and national suppliers (subject to the National Energy Plan and environmental, including greenhouse gas emission, considerations).
- Ensure that formulation of PPPs entails genuine and transparent tendering and pricing arrangements and avoid uncompetitive build-operate-transfer arrangements.
- Review and revise legal provisions for supply of power by the private sector, including provisions governing issues of direct supply and sale of surplus power to the national grid.

Medium to Long Term

- Develop and improve mechanisms both for centrally supplied and locally operated rural power supply. Use the grid where it is accessible, and local generation and household supply, linked to local needs. Provide technical training and support. Oblige major power generating operators and other players (mines and other commercial projects) to have community service programs, which may be partly financed through tax credit arrangements.
- Use the experience of mobile service providers (notably, Digicel since 2007) to engage with customary landowners to establish and maintain towers and extend the national grid for power distribution, rather than operating multiple autonomous power plants.

Urban and Rural Water Supply

Urban water supply has been poorly coordinated, with responsibility extended to multiple organizations. Equipment has been procured through untenured procedures and has been heavily overpriced. Rural water supply has received low priority, except from some aid agencies and NGOs, notably following major droughts. Support by the government and development partners for installing and maintaining rural water supply is ad hoc and inconsistent. Investment in upgrading, extending, or even maintaining sewerage and related health and sanitation facilities has been almost nonexistent in recent decades, contributing to high bacterial rates in urban areas. Consequently, cholera incidences have recently occurred in many towns and rural areas, and the prevalence of typhoid and other enteric diseases continues to be high. Short and longer term options that can help improve access of the populace to safe drinking water are as follows:

Short and Medium Term

- Undertake and maintain publicly accessible national and local inventories of water demand, supply, and shortfall, detailing existing facilities. Include the requirements for maintaining and progressively upgrading infrastructure to meet the demand.
- Clarify responsibilities and improve coordination in the sector, including with development partners, and ensure that basic standards are met and maintained.
- Apply lessons from recent major water supply projects, including with respect to bureaucratic and other impediments to implementation,

design, construction, and management of ongoing and planned projects.

- Invest in immediate rehabilitation of infrastructure for potable urban and rural water supplies.

Medium to Long Term

- Rationalize administration of water supply services for main centers and ensure greater cost effectiveness, community participation, and accountability.
- Enhance support to lower level governments for rolling out and maintaining local water supply systems (through the Department of Works' technical support unit and technical training for local operators).
- Develop a strategy for tackling periodic major water shortfalls (especially during El Niño years) and the effects of climate change.
- Examine the application of PPPs to substantially expand main urban water supply and sewerage services, including into settlements.

5.2.3. Human Capital and Access to Education

Limited access to employment and income-earning opportunities in the formal and informal economies are major determinants of poverty. The very low (if now improving) school intake and retention levels, particularly in some provinces and rural areas and notably for girls, and the poor standards of education provided in many institutions, contribute to low levels of literacy and numeracy and to poor opportunities for work. The funding of education services in PNG is comparable to that in other developing countries, but costs in PNG are high, with its dispersed population, and funds are used inefficiently. Building and maintaining infrastructure, retaining teachers in rural schools, and delivering materials entail high costs and face other constraints. Prevailing issues include poor transport infrastructure and high rates of teacher absenteeism and waste.

Technical and vocational education and training (TVET) has been badly underresourced for decades. The result is inadequate output to meet the strongly growing demand for an evolving range of technical skills, notably in the resource, construction, and service industries. Consequently, many jobs are filled from overseas. The education also fails to equip the aspiring workforce with life skills adequate to use opportunities on the land or

in the informal economy. Opportunities to build a qualified national workforce are often forfeited due to (1) the poor coordination of tertiary and TVET services between multiple agencies, and (2) lack of commitment by many (especially newer) businesses to develop human resources and recognize the national apprenticeship and trade testing.

In recent years the national government, supported (and encouraged) by some development partners and provinces, has recognized the need for more coordinated investment in steadily raising school intakes (moving belatedly toward Millennium Development Goal [MDG] commitments) and standards, and for investing in enhancing teacher training capacity. Useful partnerships with the private sector and funding agencies have been made to restore and improve technical and specialist training, but this remains limited to a few institutions. Commitments have also been made to upgrade and increase the capacities of community colleges, community learning centers, and vocation schools, although this remains largely in the planning stage, and there is a risk of duplication and inadequate standards. Priorities for the future may include the following measures:

Short and Medium Term

- Prepare and implement a phased sector plan, using government and external funds effectively, to advance the commitment toward achieving the MDG of universal basic education. Coordinate the required inputs, notably classrooms, teachers' housing, school materials, and staffing tailored to meet local needs, based on updated demographic data (e.g., the National Population and Housing Census 2011, Demographic and Health Survey 2006, and Department of Education data). Include adequate output and standards from teacher training facilities.
- Provide annual national and provincial budget allocations to meet at least the minimum costs of education services on an equitable basis, consistent with the minimum cost of service provision as determined by the NEFC.
- Ensure that access to education is equitable, including for female students, whose retention rates have been especially low.
- Restore, reinforce, and fund the school inspectorate adequately to enable effective oversight and to enhance education standards in all schools.
- Publicly release details of the education budget,

from the national allocation to the individual school level, with school budgets required by law to be posted on school notice boards. The aim is to encourage community oversight of compliance, including through a process of social auditing by local communities.

- Review and improve the conditions of employment, including working conditions, of teachers in high-cost urban centers and remote rural locations. In particular, review (1) salaries and the reliability and accessibility of salary payments; and (2) conditions of institutional housing, transport allowances for leaves, communications, and other nonmonetary factors, which affect the morale and commitment of teachers, especially in remote locations. Open access to information and communications technology, including mobile banking, to assist teachers to manage their money.
- Place high-priority focus on TVET and its management and oversight. Restore and upgrade vocational schools with relevant technical and business skills. Provide job training linked with recognized apprenticeship and trade testing. Improve curricula to better link TVET to market needs and to impart essential basic skills (literacy and numeracy). Establish mechanisms to keep up with evolving market demand. Establish transparent oversight and verification of standards at publicly and privately run TVET institutions and business colleges.
- Encourage and require companies to participate in formal apprenticeship and human resources development, or to pay for external training of staff, rather than poaching trained staff from the local market or importing staff.
- Conclude a nationwide literacy survey. Launch a crash program and continuing campaign for literacy, including adult literacy, using formal mechanisms, NGOs, retirees, and other volunteers.

Medium to Long Term

- Fast-track implementation of the phased strategic plan for achieving universal access to basic education, extending to secondary, tertiary, and technical (including business) education. Increase flexibility for school dropouts to reenter formal education or higher levels of education and training.
- Advance and extend the campaign and cooperative multiagency program for universal literacy and numeracy, including for adults,

embracing partnerships with government, the private sector, and civil society. Maintain and keep updated a human resource inventory of population trends and current and prospective employment needs and opportunities, to help determine the specific requirements for graduates of current and future education and training institutions.

- In the education curriculum, emphasize work ethics, including reliability, integrity, and appropriate workplace behavior (including gender policies and issues), as well as skills development.

5.2.4. Health Services

Responsibilities for health issues in developing countries are too often compartmentalized into health and social service agencies, supplemented by the provision of private health care. Access to adequate and reliable income and/or the productive resources for reliable food supply and other basic needs is fundamental to building sound health and nutrition. Access to food must be combined with sound information about the importance of safety standards, good nutrition, and a healthy lifestyle to stay largely disease and accident free.

Preventive medicine, including immunization, and accessible treatment are essential health services, but form only part of what PNG needs to reduce its intolerably high mortality and morbidity rates. These rates include persistent traditional diseases, such as malaria, tuberculosis, pneumonia, and enteric illnesses, particularly affecting infants, and newly occurring ailments, including those reflecting social, environmental, and lifestyle changes. The more recently occurring or recurring illnesses include cholera, HIV/AIDS, and increasing mortality rates from lifestyle diseases such as diabetes and heart conditions. These ailments are noticeable in middle-aged urban residents, and are having a profound impact on the country's economic development and on individual households, including through the loss of breadwinners.

Maternal and child mortality rates continue to be very high. Traditional and new lifestyle diseases and death rates are also very high among younger people. This results partly from very high road fatality rates, due particularly to alcohol use, poor road and vehicle conditions, and poor driving skills. For many years, inadequate attention and

investment have been given to public transport infrastructure and to access to jobs, information, education, and health services, especially in remote locations. PNG needs to increase public knowledge and awareness of hygiene and health, potable water and sanitation, road (and marine) safety, family and sexual violence, and when to seek clinical treatment. The utterly inadequate funding for basic health services (for both awareness and treatment), particularly in some provinces, is highlighted in the NEFC reports, underlining the inequitable access to good health and growing rates of relative, and in some cases absolute poverty, in an increasingly inequitable society. Measures the government may consider for improving its citizenry's health include the following:

Short and Medium Term

- Provide at least the minimum budget, equitably allocated (interprovincially and locally) for primary health care, including immunization, other prevention measures, and treatment, in accordance with the basic service costs identified by the NEFC.
- Create awareness of health issues and preventive measures. Focus particularly on the importance of hygiene and sanitation; nutrition; potable water supplies; immunization; HIV/AIDS; antimalarial bed nets; use of prophylactics; road safety; and the effects of tobacco, betel nut, alcohol, and drug use.
- Place special focus on provision of accessible primary health facilities, for awareness, immunization, and treatment, to provide health facilities equitably across the country and to avoid overburdening weak transport systems and provincial and base hospitals.
- Improve coordination of health services between the National Department of Health, other national agencies, provincial- and district-based services, and health services run by hospital boards and churches, including through the use of the health authorities and other means that are now being introduced. Reach a greater consensus on health priorities by collecting, providing, and using reliable health statistics and through increased consultation, including with general policy makers and the wider public and the private sector.

Medium to Long Term

- Ensure that the medium-term national strategy for health and expenditure is appropriately

focused by identifying, prioritizing, and addressing the full range of health concerns affecting PNG at present and into the future. Consider PNG's fast changing social, environmental, and economic conditions, including as a result of climate change, the spread of new diseases, and the increasing prevalence of lifestyle diseases.

5.3. Special Focus on Agriculture, Broad-Based Employment, Environmentally Sound Development, the Private Sector, and Civil Society

Agriculture and Broad-Based Employment. Agriculture, including fisheries and forestry management, remains one of the dominant sectors in the PNG economy in terms of its overall contribution to gross domestic product. Agriculture is important, directly and indirectly, to broad-based household income and employment, and for meeting subsistence needs for the majority of the country's population. This role is likely to remain in place for the foreseeable future, despite the substantial migration to urban areas in recent years. Many of the urban settlers remain closely linked with the villages, marketing produce grown by rural family members, exchanging remittances and household members in both directions in different seasons. Agriculture provides both an economic backbone and a holding repository for much of the population, and will continue to do so until other economic activities gain importance. As in other major Southeast Asian and Pacific economies, agriculture's contribution to gross domestic product will shrink, as will the portion of the population wholly or partly dependent on agriculture, but agriculture will have a major broad-based economic and social role long into the future. Agriculture provides opportunities for sustainable activities of major importance to the country's future.

The enclave mining and petroleum sectors provide limited direct or indirect long term employment though they may create more significant levels of employment in the construction phase. For example, the PNG LNG project will generate only 500-700 direct employment opportunities in the production phase compared with about 7,000

jobs that it will create in the construction phase. Hence, agriculture will continue to provide formal and informal employment and income-earning opportunities, but the level of employment and income will depend substantially on addressing the sector's needs and constraints. The sector's competitiveness will need safeguarding and enhancing by reducing production and marketing costs. This will require investing in and maintaining transport and communications infrastructure; improving law and order; lowering loss and security costs; increasing competition among service providers; increasing productivity; enhancing control over pests and diseases, notably through more research; using more intensive agricultural management systems; and achieving higher and more consistent standards, quality control, and value addition.

In coming years, the projected impacts of new projects on inflation and the currency need to be contained. These impacts are liable to escalate when LNG production commences, as major currency appreciation could undermine the viability of agriculture and other sectors. The accountable use of sovereign wealth funds to "sequester" some of the income is vital to mitigate some of the impacts, but use of the funds needs to be balanced with effective investment in core infrastructure, capacity development and essential services. Ensuring that the proceeds from the new projects are used strategically and efficiently to boost agriculture and other sectors and to provide broad-based and potentially sustainable economic opportunities is essential.

In due course, the agriculture sector's critical role of providing a social safety net for the majority of the population will decline as industries and the urban areas grow; however, investing in and safeguarding the prospects of the agriculture sector may help ensure its long-term potential and continued major role in the economy. Though past national and sector development plans have aimed to support the sector, major programs were not able to meet their objectives due to lack of professional management, oversight, and accountability.

Environmental Considerations. PNG has long been recognized internationally for its relative remoteness and its pristine terrestrial and maritime natural environment. It is rich in natural resources, although high operating costs have

constrained more extensive resource extraction and development. With high demand for many commodities, and associated high prices for the last decade, interest in exploiting PNG's natural resources has been growing. PNG needs to manage its resources wisely, ensuring that it is fully aware of prevailing investment conditions internationally and negotiating accordingly, while safeguarding its natural environmental and preventing negative impacts on other sustainable sectors, including agriculture, fisheries, and tourism.

PNG does not need to accept all major projects and corporate suitors, and can afford to decline or phase in new developments to ensure that the country can secure the full benefits, including local employment opportunities for a trained workforce. PNG needs to develop the capacity to effectively negotiate, plan, and supervise operations to ensure that sound returns are forthcoming, environmental standards are applied, and renewable resources are harvested only on a sustainable basis and are preserved in land or marine conservation areas. PNG's greatest long-term economic prospects rest on maintaining its relatively pristine environment and marketing its products, whether agricultural, forestry, marine, or tourism, complying with environmental and sustainability standards. These products and services will command an international premium, particularly in years to come.

The Private Sector and Civil Society.

Support from the private sector, civil society, and NGOs is emerging but is still inadequate to support growth. Private companies constitute the backbone of the economy. In PNG, however, the major utilities are operated by SOEs (IPBC website). The SOEs include Air Niugini, Eda Ranu (which provides water and sewerage in Port Moresby), Motor Vehicle Insurance Limited, National Development Bank, PNG Ports Corporation, PNG Power, PNG Waterboard, Post PNG, and Telikom PNG. Some of the SOEs are self-regulating and hence open to conflicts of interest. Moreover, given the government's limited resources, some SOEs are hampered both financially and technically, rendering them ineffective and inefficient at delivering the required services.

Civil society is gradually making its contribution to public policy discourse in PNG. Civil society expresses itself in urban more than in rural areas, and generally through people with a

“western” education. Although civil society attempts to articulate policy options that benefit society as a whole, clan-based claims are generally focused on strategic needs, irrespective of the validity of claims made by other clans, regions, or interests. Thus, the policy environment is shaped by self-interested claims as well as by broader ones.

NGOs express concern that the government has not taken sufficient responsibility for the conduct of public servants or political leaders, and urge civil society actors to increase their vigilance. NGO and civil society activism is playing a beneficial role in increasing citizens' awareness of how they can influence public sector performance in the services they receive. NGOs are mobilizing public support through strategic alliances and networks, and their advocacy of greater transparency in government decision making and action is becoming more multifaceted, for example:

- PNG's Transparency International chapter plays a leading role in building public awareness of corruption issues and in forming alliances through coalition building and smart use of new communications technologies.
- The Business Against Corruption Alliance is using the internet to communicate its messages (ActNow for a Better PNG website).
- Although Global Integrity does not have a presence in PNG, it publishes an influential online country assessment (Global Integrity 2007).
- The Institute of National Affairs convenes the Consultative Implementation Monitoring Council and implements other initiatives (INA CICM, INA 2008b). The Council's 2007 National Development Forum recommended that the Department of Works and Department of Transport “institute a study into alternative methods of road maintenance used by similar countries like PNG with mountainous terrain, etc.” while the 2008 National Development Forum recommended budget support for maintaining infrastructure such as roads and buildings (INA 2008c), and outlined difficulties experienced in road maintenance (CICM 2008).

In response to ongoing challenges with integrity, the government is taking part in the National Anti-Corruption Alliance. This group, which is coordinated from the Prime Minister's Department, is broader than merely the law and

justice sector, and has had some success in Southern Highlands Province and Western Province: The Law and Justice Sector initiative, which links government and nongovernment bodies concerned with the rule of law, established a community policing initiative in Dalo that transformed petty criminals into reserve police and helped reduce problems with drugs and weapons in the region (Government of PNG Law & Justice Sector website); an initiative at Kaupena Hydro station in the Southern Highlands Province established a roadblock to check for alcohol entering the province; and another project is establishing a community center in Nebiliyer.

Faith-based organizations play a significant role in civil society, fostering links between urban and rural consciousness. Christian churches are participating in anticorruption activities, and the Catholic Bishops' Conference continues to speak out on issues of concern.¹

Traditional “word of mouth,” radio, and newsprint means of communication are now supplemented by blogs, text messaging, and internet and telephone-based means of communication. In some cases, this is helping organizations press grievances, such as abuse of human rights and environmental degradation. Civil society however, faces some major constraints, including forms of ethnic/clan allegiances that inhibit the development of wider affiliations and loyalties and promote factional (provincial/ethnic) interests ahead of national ones. There are also limits on the reach of the mass media.

¹ The potential role of the churches in improving governance is considered in Hauck, Mandie-Filer, and Bolger (2005). But there are also constraints on the capacity of civil society and village communities, as outlined by Kameata (2003) and Keig (2001).

5.4. The Way Forward

The PNG government has prepared a 40-year development scenario, Vision 2050, which is ambitious and focuses on achieving a wealthy, healthy, and educated society by 2050. Work to achieve such a society must give attention to priorities already set out in the Constitution and commitments made internationally, such as (1) the MDG targets; (2) opportunities offered by resource development in the coming decades; (3) use of new technology to open up access and markets; and (4) preparations for major new challenges, such as climate change. Some people will consider that, with the ample resource revenue expected in the next 10 years, more emphasis should be given to achieving immediate outputs. There are, however, benefits to focusing on the future, as long as the vision is realistic and designed to evolve progressively.

This report identifies and focuses on recommendations for overcoming critical constraints to a high, broad-based, and inclusive economic growth, which is fundamental to achieving the ambitions of PNG's Vision 2050. To overcome the constraints will require considerable effort, particularly because the government's implementation capacity has been weak for many years. Thus, PNG needs to form and nurture innovative partnerships with private sector investment and participation in the delivery of public goods, while ensuring that the government focuses particularly on core service and regulatory functions. Open and competitive conditions need to prevail in most markets to enable consumers (business and household) to secure a more efficient and wider range of services at affordable and more internationally comparable prices. In addition, the roles of civil society and NGOs can usefully be expanded, and their skills enhanced to better fill their roles.

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Papua New Guinea

Critical Development Constraints

Papua New Guinea's economic growth has outpaced the majority of economies in Southeast Asia and the Pacific since 2007. Its development challenges, however, remain daunting, and it lags behind other countries in the region in terms of per capita income and achievement of the Millennium Development Goals. This raises the question of how the country can make its economic growth high, sustained, inclusive, and broad-based to more effectively improve its population's welfare. This report identifies the critical constraints to these objectives and discusses policy options to help overcome such constraints.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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