

Health Systems in Transition
Vol. 9 No. 1 2019

Independent State of Papua New Guinea Health System Review



Asia Pacific Observatory
on Health Systems and Policies

Independent State of Papua New Guinea Health System Review

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World Health Organization, Regional Office for South-East Asia.
Papua New Guinea health system review.
Health systems in transition. Vol-9, Number-1
ISBN 978-92-9022-674-1

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Suggested citation: Grundy J, Dakulala P, Wai K, Maalsen A, Whittaker M. Papua New Guinea Health System Review. Vol. 9 No. 1. New Delhi: World Health Organization, Regional Office for South-East Asia; 2019.

Cataloguing-In-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris/>.

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Printed in India

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Preface

The Health Systems in Transition (HiT) profiles are country-based reports that provide a detailed description of a health system, and of reform and policy initiatives in progress or under development in a specific country. Each profile is produced by country experts in collaboration with international editors. To facilitate comparisons between countries, the profiles are based on a template, which is revised periodically. The template provides detailed guidelines and specific questions, definitions and examples needed to compile a profile.

A HiT profile seeks to provide relevant information to support policy-makers and analysis in the development of health systems. This can be used:

- to learn in detail about different approaches to the organization, financing and delivery of health services, and the role of the main actors in health systems;
- to describe the institutional framework, process, content and implementation of health-care reform programmes;
- to highlight challenges and areas that require more in-depth analysis;
- to provide a tool for the dissemination of information on health systems and the exchange of experiences between policy-makers and analysts in different countries implementing reform strategies; and
- to assist other researchers in more in-depth comparative health policy analysis.

Compiling the profiles poses a number of methodological issues. In many countries, there is relatively little information available on the health system and the impact of reforms. Due to the lack of a uniform data source, quantitative data on health services is based on a number of different sources, including the World Health Organization (WHO), national statistical offices, the Organisation for Economic Co-operation and Development (OECD) health data, the International Monetary Fund (IMF), the World Bank, and any other sources considered useful by the authors. Data collection methods and definitions sometimes vary, but typically are consistent within each separate series.

The HiT profiles can be used to inform policy-makers about the experiences in other countries that may be relevant to their own national situation. They can also be used to inform comparative analyses of health systems. This series is an ongoing initiative, and the material will be updated at regular intervals.

Comments and suggestions for further development and improvement of the HiT series are most welcome and can be sent to the apobservatory@who.int. HiT profiles and HiT summaries for countries in Asia Pacific are available on the Observatory's website at www.healthobservatory.asia or http://www.searo.who.int/asia_pacific_observatory/en/

Acknowledgements

The Health System in Transition (HiT) profile on Papua New Guinea was written by John Grundy (James Cook University), Paison Dakulala, Ken Wai (National Department of Health, Papua New Guinea), Anna Maalsen (World Health Organization, Regional Office for the Western Pacific) and Maxine Whittaker (James Cook University). Maxine Whittaker and Neville Smith (Independent Consultant) edited the profile. Mikiko Kanda, Nima Asgari-Jirhandeh, Anns Issac and Ritu Aggarwal, acting as the Secretariat for the Asia Pacific Observatory on Health Systems and Policies (APO), provided the overall support for development of the profile.

The authors are grateful to the three independent reviewers on behalf of the APO, Philip Davies (Strategic Health Director, Europe and Asia, ICF Consulting), Aneesa Arur (Senior Public Health Specialist, World Bank) and Ke Xu: (Senior Health Financing and Expenditure Analyst, WHO headquarters), for their valuable commentaries on the profile.

Acronyms and abbreviations

ADB	Asian Development Bank
AFP	acute flaccid paralysis
AIDS	acquired immune deficiency syndrome
AMR	antimicrobial resistance
ANC	antenatal care
ART	antiretroviral therapy
CDC	US Centers for Disease Control and Prevention
CEDAW	Convention for the Elimination of all forms of Discrimination against Women
CEO	Chief Executive Officer
CHP	community health post
CHW	community health worker
CI	confidence interval
CLRC	Constitutional Law Reform Commission
CMC	Churches Medical Council
CMO	Chief Medical Officer
CRVS	Civil Registration and Vital Statistics
CSTB	Central Supplies and Tenders Board
DALY	disability-adjusted life year
DDA	District Development Authority
DFAT	Department of Foreign Affairs and Trade
DHIS	Discharge Health Information System
DHS	Demographic and Health Survey
DNPM	Department of National Planning and Monitoring
DOTS	directly observed treatment, short course
DPT3	diphtheria–polio–tetanus 3rd dose
DSIP	District Services Improvement Programme
DSP	Development Strategic Plan
EHO	Environmental Health Officer
EPI	Expanded Programme on Immunization
FETP	Field Epidemiology Training Programme

FHI	Family Health International
FSW	female sex worker
GAVI	Global Alliance for Vaccines and Immunization
GBV	gender-based violence
GDP	gross domestic product
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GIS	geographical information system
GMP	Good Manufacturing Practices
GNI	gross national income
GST	Goods and Services Tax
HCW	health-care worker
HIC	Healthy Island concept
HiT	Health Systems in Transition
HIV	human immunodeficiency virus
HR	human resource
HRH	human resources for health
HRIS	human resources information system
HSIP	Health Sector Improvement Programme
ICT	information and communications technology
IHR	International Health Regulations
IMF	International Monetary Fund
IMR	infant mortality rate
IMRG	Independent Monitoring and Review Group
IPV	inactivated polio vaccine
ITN	insecticide-treated (bed) nets
JDPBPC	Joint District Planning and Budget Priorities Committee
JICA	Japan International Cooperation Agency
JPPBPC	Joint Provincial Planning and Budget Priorities Committee
KRA	key result area
LLG	local-level government
LLGSIP	Local-Level Government Services Improvement Programme
LNG	liquefied natural gas
LRI	lower respiratory infection
MCH	maternal and child health
MCV	measles-containing vaccine – second dose
MDG	Millennium Development Goal

MDR	multidrug resistance
MDR-TB	multidrug-resistant tuberculosis
MMR	maternal mortality ratio
MP	Member of Parliament
MPA	minimum priority activity
MRA	Medicines Regulatory Authority
MSM	men who have sex with men
MTDP	Medium-Term Development Plan
MTEF	Medium-Term Expenditure Framework
MTFS	Medium-Term Fiscal Strategy
NAC	National AIDS Council
NCD	noncommunicable disease
NDoH	National Department of Health
NEC	National Executive Council
NEFC	National Economic and Fiscal Commission
NGO	nongovernment organization
NHAA	National Health Administration Act, 1997
NHB	National Health Board
NHIS	National Health Information System
NHP	National Health Plan
NIHF	National Inventory of Health Facilities
NSO	National Statistics Office
ODA	Overseas Development Assistance
OECD	Organization for Economic Co-operation and Development
OFID	OPEC Fund for International Development
OLIPPAC	Organic Law on Integrity of Political Parties and Candidates
OOP	out of pocket
OPV	oral polio vaccine
PASHIP	Papua New Guinea Australia Sexual Health Improvement Program
PCV	pneumococcal conjugate vaccine
PEFA	Public Expenditure and Finance Accountability
Penta	pentavalent vaccine
PHA	Provincial Health Authority
PHAA	Provincial Health Authority Act
PHC	primary health care

PHIO	Provincial Health Information Officer
PPP	public-private partnership
PPP	purchasing power parity
PSIP	Provincial Support Improvement Programme
RDT	rapid diagnostic test
RPHSDP	Rural Primary Health Service Delivery Project
SDG	Sustainable Development Goal
SHI	social health insurance
SIA	supplementary immunization activity
STEPS	WHO STEPwise approach to Surveillance
STI	sexually transmitted infection
SWAp	sectorwide approach
TB	tuberculosis
THE	total health expenditure
TT	tetanus toxoid
UHC	universal health coverage
UN	United Nations
UNAIDS	Joint United Nations Program on HIV and AIDS
UNDAF	United Nations Development Assistance Framework
UNDP	United National Development Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VHI	voluntary health insurance
VHV	village health volunteer
WGI	World Bank Governance Indicators
WHO	World Health Organization
XDR-TB	extensively drug-resistant tuberculosis

Abstract

Background. The Independent State of Papua New Guinea is a geographically challenging country. It has a population of over 7 million (2011), which is largely rurally based (80%). Although in the early stages of a demographic and epidemiological transition, the country remains beset with morbidity and mortality challenges linked to maternal and child health and communicable disease conditions, particularly for the rural and remotely located populations. Utilizing in-country consultations and a review of the published and grey literature, this sector review aims to outline the main organizational, financing, human resources and service delivery features of the health-care system. Based upon these findings, it proposes a programme of policy and planning reforms for the sector.

Main findings. Examination of health coverage data demonstrates that there are significant inequities in access to primary health care and the WHO-defined essential package of services. Coverage of these services is low and have stagnated, or in some cases declined, in recent years. Noncommunicable diseases are on the rise. The legislated mandate for decentralization, with the roll-out of provincial health authorities, forms the backdrop for service delivery. Local-level governments have the primary responsibility for the majority of the funding and delivery of provincial- and lower-level health-care services but are inadequately resourced to do so. Churches, through government subsidies, play an active role in the delivery of health care, particularly in rural locations, but are also underresourced.

The Government is the main financing agent of the health-care sector. There is a tight fiscal context for health-care investment, and the country is transitioning in eligibility for international development assistance. Addressing the human resources for health and infrastructure gaps and maldistribution, particularly at the primary level of care in rural and remote locations in Papua New Guinea, are significant policy priorities. These combinations of resourcing shortfalls have contributed to the closure of some peripheral facilities, the continued use of user fees in some locations (although not supported by national policy) to address operational funding shortfalls, and inequities in the subnational coverage of priority interventions.

Several reform measures are proposed by the Government of Papua New Guinea. These include getting back to basics (rural and primary health care), finalizing the roll-out of the decentralized model of governance through the Provincial Health Authority Framework, and reintroduction of a policy of free primary health care. Under consideration are options of direct facility financing, closer linkages between planning and budgeting at the subnational level, and a scale up of investment in the health workforce, particularly for rural and remote areas.

Conclusion. Health policy and planning challenges in Papua New Guinea support the case for the “back-to-basics approach” adopted by the Government. This will entail investment in human resources for health and infrastructure across the country for improved access to primary health care, particularly in rural and remote areas. This back-to-basics approach will need to be reinforced by improved provincial and district health management capacity, and timely availability of operational financing. Systems to support supervision of the services provided and operational referral pathways will need to be in place. The convergence of these reforms will, if achieved, support the transition towards universal coverage of an acceptable quality of and cost-effective primary care services.

Executive summary

Introduction

Papua New Guinea had an estimated population of over 7 million in 2011, with most of the population (80%) living in rural areas. It is a lower-middle-income country with the economy being heavily dependent on the natural resources sector. It has a complex geography – with large areas of the country accessible only by foot, air or boat. The country is classified into four geographical regions of the Highlands, the New Guinea Islands, Momase and the Southern region.

Administratively, the country is made up of 22 provinces (20 integrated provinces, the autonomous province of North Solomons [Bougainville] and the National Capital District), 89 districts, and 318 rural local-level governments (LLGs) and 31 urban LLGs. (LLGs are also called wards.)

The 2015 Human Development Index categorized Papua New Guinea as having “low human development”, with a rank of 158 out of 188 countries, the lowest of all in the WHO Western Pacific Region. In 2014, the country was ranked 140 out of 155 countries on the United Nation’s Gender Inequality Index. This low level of development ranking is also reflected in the health status of the country, which demonstrates the continued high burden of disease attributable to communicable diseases (tuberculosis [TB] and malaria), and maternal and child health conditions. Various risk behaviour surveys and health statistics have identified a rising prevalence of risk factors for developing noncommunicable diseases (NCDs) as well as prevalence of NCDs in Papua New Guinea, and suggest the country is in the very early stages of a demographic and epidemiological transition.

Mortality rates for both women and men have continued to drop over the past 25 years at a slow but steady rate, and as a result, overall life expectancy has increased by 5 years since 1990. Despite this progress, overall life expectancy for Papua New Guinea is shorter than most of its Pacific neighbours. Infant and under-5 mortality has been steadily declining since 1990; however, there was insufficient progress for Papua New Guinea to meet its Millennium Development Goal (MDG) 4 targets. The maternal mortality ratio is also high and again slow change meant that the MDG 5 targets were also not met (see Chapter 1).

Main findings of the health system review

In terms of organization and governance of the sector, the national health system is decentralized (see Chapter 2). The National Health Plan and related service standards delineate a vision of seven levels of health care, from the basic services delivered through Level 1: aid posts (approximately 2500 open) (with a recently commenced pilot of community health posts), through to 629 subhealth centres and health centres, 14 rural/district hospitals (theoretically one per district), 21 provincial hospitals (three of which are regional referral facilities), urban clinics (69) and one national referral hospital (level 7 of the system), which also acts as the Southern regional referral hospital and provincial hospital for Central Province. The extent of coverage of service delivery varies significantly by geographical region and by programme type.

The primary responsibility (most of the funding and implementation) for primary and secondary health-care service delivery in Papua New Guinea is entrusted to the subnational government (provincial- and local-level governments) as prescribed in the 1995 Organic Law and subsequent legislative instruments to support the implementation of the law (called enabling legislation). The churches play a significant role in health service delivery, operating over 50% of the rural health service network but heavily dependent on national government financing. In addition, there are also employer-provided health-care services (agriculture, mining), a small private for-profit medical sector, some small nongovernmental organizations that provide health-care services, and a much larger traditional sector.

In the decentralized context of Papua New Guinea, responsibility for management and organization of health care is divided between the Central and local governments. The dominant system is that the National Department of Health (NDoH) manages the provincial hospitals, while provincial and local governments are responsible for all other services, which includes health centres, rural hospitals and aid posts. This system was developed under the National Health Administration Act of 1997 and was intended to provide the legal framework for linking and consolidating the functions of all levels of government and other agencies involved in the delivery of health. However, a more unified provincial health system was defined (Provincial Health Authorities Act, 2007), under which a single Provincial Health Authority (PHA) would become responsible for both hospital and rural health services. These authorities have been slowly implemented, although the Government is pushing to move from voluntary provincial sign-up to enact the Provincial Health Authorities Act, 2007 to ensure that all provinces have these in place before 2020 (see Chapter 2: Organization and governance). Thus, at the moment, both systems are present in the country.

The Government of Papua New Guinea proposes to respond to many of the challenges of decentralization by extending institutional capacity for planning and budgeting to lower levels of the organizational system. However, this implementation is also slow, uneven and subject to fund flow challenges (see Chapter 3: Health financing).

The Government is the main financing agent through tax-based financing. External assistance still takes up a significant share of total health expenditure (21%), although there are some indications that the share of international development financing for the health sector in Papua New Guinea is transitioning (see Chapter 3 for details). The private health sector, health insurance and other forms of private investment in health care are at much lower levels than regional averages. Although the government policy is for free primary health care and subsidized secondary care, user fees are still in use. This practice has resulted from shortfalls in levels of funding for the operations of health facilities, and untimely flow of funds, particularly to primary health care facilities. The total out-of-pocket expenditure on health care is estimated to be only 10% of the total health expenditure; however, when coupled with low or declining service utilization rates and high mortality, this probably reflects foregone care rather than a positive feature of the health system.

Diversification of health financing sources and expansion of financing volume is a high development priority in the country. Financing is required to support the National Health Plan and Health Policy goals to abolish user fees, expand health infrastructure, and address the critical shortage of human resources for health in rural and remote areas. Broader efforts by the Government to advance public financial management reforms are also a high development priority, particularly with regard to improving linkages between planning and budgeting to enhance the flow of funds to rural facilities and urban clinics. Models of resource allocation will need to be developed and aligned with the decentralized planning system to ensure more equitable patterns of resource allocation across the country, including for basic essential services such as health and education.

With a resource-dependent economy and therefore a volatile macroeconomic outlook and no significant growth in investment in health projected over the medium term, the fiscal space for health is narrow for the 5–10 years. Given this fiscal outlook, there is strong emphasis on improving the overall efficiency of use of government funds through strengthening financial management systems. Specifically, in the health sector, the health financing framework centres around improving resource usage, resource mobilization and exploration of alternative health financing options.

Recent surveys and analyses have identified significant gaps in the quality and coverage of health-care infrastructure. One analysis confirmed that a substantial number of aid posts have closed (reportedly up to 23%) due to shortages and lack of timely availability of funding and other resources, and staff shortages. A 2012 health facility survey of 142 facilities found that 67% of clinic rooms and 77% of health worker accommodation needed rehabilitation, 55% had year-round water supply, 41% of clinics had refrigeration and 40% electricity, and 50% had toilets. In conjunction with the PHA reforms, the Government of Papua New Guinea Medium-Term Development Plan (MTDP-2 2016–2017), entitled “Pathway to a responsible sustainable future”, proposes rehabilitation of aid posts in the next 5 years (to have one in every ward), trialling of community health posts (with the plan to have by 2050 one in every ward replacing the aid posts), and rehabilitation of health centres and hospitals at district, provincial, regional and national levels.

There are significant gaps in the number and distribution of the health workforce in Papua New Guinea, particularly at the primary level of care where there is the greatest potential for impact on health and development. Underinvestment in public sector training has resulted in limited capacity to produce the required levels and mix of the health workforce. Loss of workers to the private sector (in health and non-health positions) or overseas is part of the retention issue faced by the sector. This contributes to the health sector having an ageing workforce that is very low on the critical workforce cadre of, for example, midwives and community health workers. To address this most significant gap, the Government is proposing several policies and planning measures, including the establishment of standardized training systems and a centralized human resource management information system, increased production of critical health cadres, development of career pathways for all cadres of staff, and the introduction of performance-based management systems, including contractual mechanisms and performance-based incentives.

There are many geographical, cultural and institutional barriers to the smooth functioning of the health referral system in the country. Although patient pathways are intended to conform to a health referral model, the realities are of referral bypass and a concentration of inpatients and outpatients in urban and periurban locations (i.e. close to provincial centres). Urban and periurban populations consequently have much better access and much higher outpatient contacts than rural and remote populations. Outpatient contacts of 1.4 per inhabitant per year in Papua New Guinea are well below international norms for outpatient contacts and continue to decline; another symptom of the health system problems in Papua New Guinea.

The Ministry of Health has proposed an ambitious health reform agenda to address the problems of inequities, referral bypass and low utilization rates (see Chapters 6 and 7). These include the proposal to finalize the (slow) roll-out of the PHA, a plan to support facility-level budgeting and direct health facility financing, and to expand access to health services in rural and remote areas through implementation of a system of community health posts. In addition to standards of services, resources, equipment and drugs, staff and infrastructure (called the National Health Service Standards), the Government has also identified in financial arrangements a set of minimum priority activities (MPAs) for provinces. For the health sector, the MPAs are operations of rural health services, conducting of health outreach and mobile clinics (called patrols), and distribution of essential medicines. In an era of tighter fiscal constraints and declining donor aid flows, the policy and planning reform context in Papua New Guinea is driven by the need for greater efficiency and equity, best exemplified through a “back-to-basics approach” for investment in primary health care for the rural majority and the urban disadvantaged.

Conclusions

The health system challenges in Papua New Guinea are formidable, given the level of economic and infrastructure development, and the challenge associated with reaching the rural and remote majority in geographical terrains with limited accessibility. The tight fiscal context and the prospect of declining development partner assistance presents formidable financial challenges and will demand higher levels of efficiency in support of universal health coverage with equity goals.

The shortage of qualified human resources for health in rural and remote areas is a significant policy and planning priority and is the major health system constraint limiting access of the population to essential health services and interventions. Although the country is undergoing an epidemiological and demographic transition with a consequent rise in the incidence of NCDs, it is the gaps in provision of basic services for maternal and child health and communicable diseases that presents the most pressing population health need for the rural majority. These challenges support the case for a “back-to-basics approach”, which will entail investment in health system readiness (drugs, functioning equipment, supplies, skilled human resources for health and infrastructure) across the country for improved access to primary health care, particularly in rural and remote areas. Strong health management capabilities are required at provincial and districts levels to execute these interventions. Whole-of-government financing reforms are essential to ensure adequate and timely financing.

1 Introduction

Chapter summary

Papua New Guinea had an estimated population of 7 275 324 in the 2011 Census. The majority of the people (about 80% of the population) live in rural areas, and most rely on agriculture as their primary means of subsistence. Papua New Guinea is a lower-middle-income country with a gross national income (GNI) per capita of US\$ 2530 in 2016 (World Bank, 2018b). The economy is heavily dependent on the natural resources sector, with mining and petroleum projects accounting for about a third of gross domestic product (GDP) in 2015 (Department of Treasury, 2016). It has limited road and no rail infrastructure and complex geography, making accessibility to many parts difficult. Papua New Guinea is one of the most linguistically and culturally diverse nations in the world.

Administratively, Papua New Guinea is made up of provinces (22), which includes the Autonomous Region of Bougainville and the National Capital District, districts (89), and local-level governments (LLGs/wards) (318). The primary responsibility for service delivery in Papua New Guinea is entrusted to the subnational government (provincial- and local-level governments) as prescribed in the 1995 Organic Law. The quality of decentralized service delivery has, however, remained below ideal standards and levels of performance for a variety of reasons. These include: sector-specific policy and operational challenges such as human resource distribution, health financing levels and flow, and logistic systems challenges and intersectoral issues related to weaknesses in public administration and governance, such as tight and volatile fiscal environment, public financial management, policy coordination and coherence, and human resources management.

Ranked by the 2015 Human Development Index as having “low human development,” Papua New Guinea has the lowest ranking in the WHO Western Pacific Region (United Nations Development Programme, 2016). It was one of only two countries in the world to not achieve any of the Millennium Development Goals (MDGs), including the “health” MDGs. In terms of gender equity, Papua New Guinea was ranked 140 out of 155 countries on the United Nations (UN)’s Gender Inequality Index (United

Nations Development Programme, 2017b) the lowest in level the Western Pacific Region, and below levels in sub-Saharan Africa (2014 data).

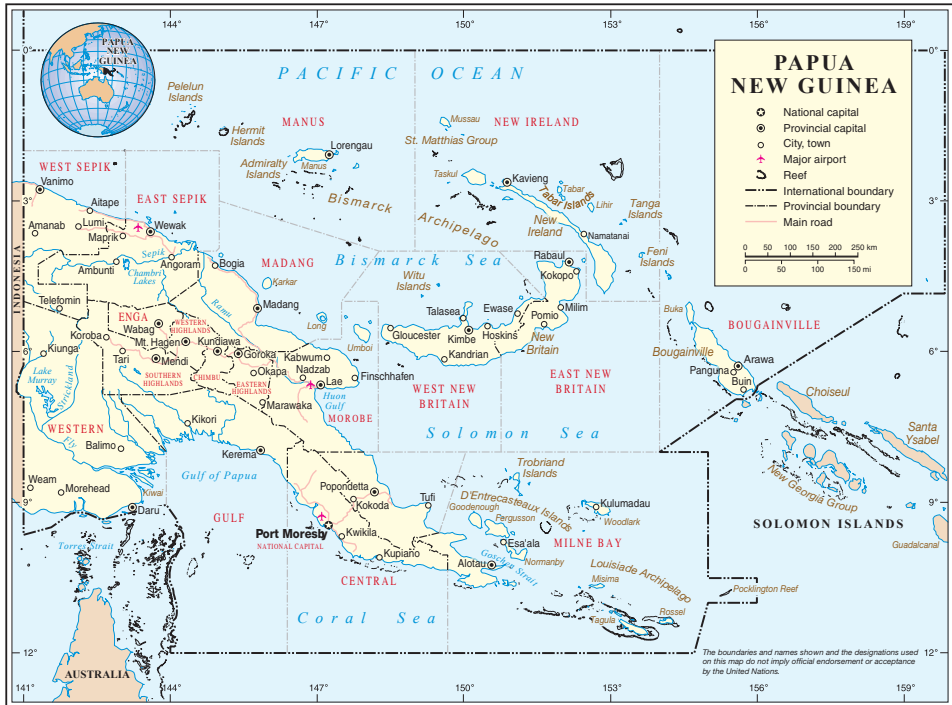
This lower level of development ranking is also reflected in the health status of the country, which demonstrates a high burden of disease attributable to communicable diseases (such as tuberculosis [TB] and malaria), maternal and child health (MCH) conditions and high levels of chronic malnutrition (see section 1.4). In addition, a rising prevalence of risk factors for noncommunicable diseases (NCDs) and NCDs themselves reflects that Papua New Guinea is in the early stages of a demographic and epidemiological transition.

Mortality rates for both women and men have continued to drop over the past 25 years, resulting in a 5-year increase in overall life expectancy since 1990. In line with global trends, females have a longer life expectancy than men, living on average 5 years more. Despite this progress, overall life expectancy is shorter than in the majority of its Pacific neighbours. Infant and under-5 mortality has been steadily decreasing since 1990, and WHO estimated the maternal mortality ratio (MMR) at 230 per 100 000 live births (2010).

1.1 Geography and sociodemography

Geography. The Independent State of Papua New Guinea (hereinafter referred to as Papua New Guinea) was established on 16 September 1975, when full independence from Australia was gained. Papua New Guinea is located 160 km north of Australia in the South Pacific and shares a land border with Indonesia to the west, and an ocean border with the Solomon Islands to the east and Australia to the south. It is a geographically diverse country, comprising over 600 islands and 5152 km of coastline, and has a total land area of 462 840 sq. km (National Statistical Office, 2013). Only 27% of the total landmass is inhabited. The largest island, New Guinea, is characterized by rugged mountainous terrain, volcanoes and wide swampy river deltas that drain the highlands (National Statistical Office, 2013). Among the many hundreds of smaller islands are New Britain, New Ireland and the Autonomous Region of Bougainville and Manus. Only 3% of the roads are paved and many villages can be reached only on foot. Most of the travel between provinces is by air. The capital, Port Moresby, is not linked by road to most of the rest of the country (Fig. 1.1). (See later discussions about access to services.)

Fig. 1.1 Map of Papua New Guinea



Source: United Nations Geospatial Information Section, 2004

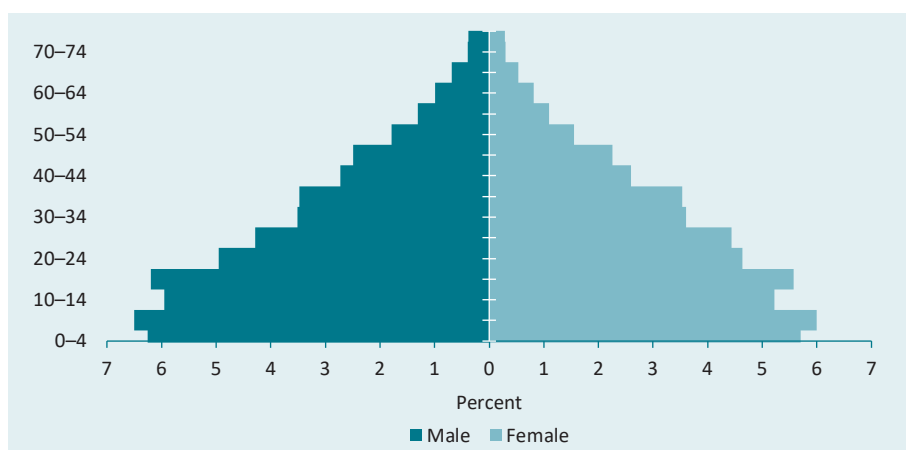
Administratively, Papua New Guinea is made up of 22 provinces, which includes the Autonomous Region of Bougainville and the National Capital District, 89 districts, and 318 LLGs (also called wards). The country is often categorized into four geographical regions and these are used for grouping of consultations, for regional referral hospitals and as sampling frames for surveys:

1. the Highlands, consisting of the provinces of Enga, Western Highlands, Eastern Highlands, Southern Highlands, and the new provinces of Jiwaki and Hela;
2. the New Guinea Islands, consisting of East New Britain, West New Britain, New Ireland, Autonomous region of Bougainville;
3. Momase, with the provinces of East Sepik, West Sepik, Manus, Madang, Morobe; and
4. the Southern region, made up of Central, Western, Gulf, Milne Bay, National Capital District and Oro (National Statistical Office, 2013).

Population growth. Papua New Guinea had an estimated population of 7 275 324; an increase of 40% since the 2000 Census. That is an annual growth rate of 3.1% (National Statistical Office, 2013). Papua New Guinea's population growth rate is high; it has more than doubled in 31 years from 1980. The crude birth rate is 29 per 1000 live births. Since 1980, the life expectancy at birth has risen from 49 to 61 years of age. The child under-5 mortality rate is 58 per 1000 live births and, although decreasing, it remains the highest in the WHO Western Pacific Region with an estimated 13 000 child deaths per year (Black et al., 2010). Eighty-seven per cent of Papua New Guinea's population lives in rural areas. The Highlands region is by far the most populous, with 39% of the total population, followed by the Momase region with 26%. The Southern Region, which includes the National Capital District, accounts for only 20% of the population. The National Capital District, with only 364 125 persons or 5% of the total population, has a household size of 8.5, which is the highest in the country. The large number of persons per household in the National Capital District reflects the high cost of housing and living in the capital city, as well as limited housing stock. This has resulted in an increased number of settlements within the National Capital District. The New Guinea Islands region has the remaining 15% of the population but has had the highest annual growth rate of 3.5% over the past 10 years.

Population structure. Demographic transition has been slow in Papua New Guinea, with the median age of the population in 2011 being 21.4 years of age. Only 2.6% of the population is currently aged over 65 years (National Statistical Office, 2013). The population pyramid (Fig. 1.2) demonstrates the broad base consistent with an expansive demographic model, indicating a high proportion of children (36% of the population is under 15 years of age), a rapid rate of population growth, and a low proportion of older people. Just under half (48.14%) of the population is female; however, as females have a life expectancy which is 5 years more than males, the proportion of the population which is female will increase in the future (World Bank, 2018b). The dependency ratio of 67.4 is very high, meaning that there are 67 persons depending on every 100 persons of working age (15–64 years). This rate has decreased from 75.1 in the 2000 Census, which may be related to the shift in the proportion of the population to the 15–64 years age group (Table 1.1).

Fig. 1.2 Population pyramid, Papua New Guinea, 2011



Sources: National Department of Health, 2013e; National Statistical Office, 2013

Table 1.1 Trends in demographic indicators, Papua New Guinea, 1980–2015

Indicators	1980	1990	1995	2000	2005	2015
Total population	3 304 473	4 313 059	4 894 276	5 572 222	7 108 239	7 919 825
Population aged 0–14 years (% total)	43.6	42.0	40.6	39.7	39.1	36.6
Population aged 65 years and above (% of total)	2.7	2.9	3.1	3.2	3.3	3.6
Population growth (average annual growth rate)	2.8	2.5	2.6	2.6	2.5	2.1
Population density (population per sq.km)	7.3	9.5	10.8	12.3	13.9	17.5
Fertility rate (births per woman)	5.7	4.8	4.7	4.5	4.3	3.7
Birth rate, crude (per 1000 people)	39.4	34.8	34.6	34.0	32.1	27.9
Death rate, crude (per 1000 people)	11.3	9.5	8.8	8.3	7.7	7.1
Age dependency ratio	86.3	81.7	77.6	75.1	73.7	67.4
Rural population (% of total population)	87.0	85.0	85.9	86.8	86.9	87.0
Adult literacy levels (%)	..	..	..	57.3	..	..

Source: World Bank, 2018b

Ethnicity. Papua New Guinea is one of the most linguistically and culturally diverse nations in the world. There are over 800 languages spoken in the country, which represents 12% of the world’s living languages. Each language group has a distinct culture, and there are large sociocultural differences

within and between provinces (National Department of Health and World Health Organization, 2016). Papua New Guineans are mostly of mixed Melanesian ethnicity, with small communities of Polynesians on outlying atolls. The non-indigenous population is small (several thousand Australians and a small Chinese population).

Language. English is the official language, but *Tok Pisin* (an English-based Creole) is more widely used, and *Hiri Motu* is spoken around Port Moresby and Central Province. Most Papua New Guineans speak at least three or more languages, English, *Tok Pisin* and their local language. Adult literacy rates remain low at 63.4%. However, this has increased over the past 35 years from 32%.

Education. The Government of Papua New Guinea introduced the tuition fee-free policy in 2012, which effectively eliminates tuition fees from elementary school to Grade 10 as part of the Basic Universal Education Plan 2010–2019. The policy, combined with the reintroduction of a national scholarship programme, aims to address poor school attendance. Papua New Guinea's net primary school enrolment rate is 63% for males and 56.5% for females (UNICEF, 2017), which is the lowest in the Asia Pacific Region. There is significant variation in enrolment rates across provinces. The mean years of schooling in Papua New Guinea for females aged 25 years and above is only 3.2, compared to 9.8 in Fiji and 10.3 in Samoa (United Nations Development Programme, 2017a). These policies have not been supported by improved school infrastructure, increased number of teachers or improved teacher training and curriculum upgrades required to improve the quality of education. Adult literacy is reported as 57.3% (2000) (Table 1.1). Furthermore, only half of all women aged 15 years and above and two thirds of all men aged 15 years and above have ever attended school. Adolescent girls in school suffer the most, with higher levels of absenteeism. Factors contributing to this are household duties, the low value of women in many parts of Papua New Guinea (see Gender this section), and the lack of sanitation facilities to meet the needs of menstruating women.

Tertiary education rates (university and non-university) are also low, with only an estimated 1% of the 19–24-year age cohort enrolled in higher education (in 2013 there were 9316, and in 2010 there were 6993). The proportion of Nursing, Medicine, Dentistry and Health Sciences graduates of the total higher education graduates across 2010–2013 was 8% (Department of Higher Education Research Science and Technology, 2015).

Religion. Christianity is enshrined in Papua New Guinea's Constitution, which declares that Papua New Guinea is a Christian country. Christianity, an entrenched cultural legacy of missionaries in the 19th century, is practised by 96% of all Papua New Guineans (National Statistical Office, 2013), with 73.6% following a Protestant denomination (Evangelical Lutheran 18.4%, United Church 10.3%, Seventh-Day Adventist 12.9%, Pentecostal 10.4%, Evangelical Alliance 5.9%, Anglican 3.2%, Baptist 2.8%, other Protestant 9.7%). The remaining 26% are Roman Catholics. Christianity permeates nearly every aspect of daily life, acting as a central framework through which people make sense of the world. Christian beliefs coexist with traditional beliefs, spirituality and values, and have a strong influence when facing life-or-death realities. Ancestor worship is important, and animal totems are involved in creation myths, such as the crocodile, which is revered by some clans in the Sepik River region. The churches play an integral and important role in the delivery of health-care services across the country (discussed in more detail in Chapter 2).

Family structure. In Papua New Guinea, the family and extended family play a central role in everyday life, underpinning the basic social support system. This support system is known as the *wantok* system and can be loosely defined as the system of relationships or obligations between individuals of some or all of the following: common language, common kinship group, common geographical area of origin, or common social associations or religious groups. It is a prominent feature of social organization, particularly in urban areas, and plays an important role in caring for the sick, disabled and older family members.

The family structure is typically patriarchal, although there are some matriarchal societies – mainly in the New Guinea Islands Region and Milne Bay Province. Overall 88.3% of households are headed by men, and 11.7% by women (National Statistical Office, 2013).

Land is the most important family asset and is passed down either patrilineally or matrilineally, dependent upon the culture of the relevant language group. The highest level of respect is conferred upon the oldest members of the family and society, and the male patriarch makes the decisions on behalf of the family members. In some matriarchal clans such as in Bougainville, for example, a trusted brother or an uncle who speaks on a woman's behalf is used to convey her decision at men-only meetings. Polygamy is practised in Papua New Guinea and is the most prevalent in the Highlands region where 29% of women are in polygynous unions, followed by the Momase region with 12%, Islands region with 11% and Southern region with 10% (National Statistical Office, 2013).

Gender. In customary Papua New Guinean society, women have a lower status than men, with the exception of some matriarchal societies. Work is typically divided across traditional gender roles. Women are responsible for child care, cooking as well as gardening, while the men hunt, build and prepare ground for gardening. Men are the key decision-makers in society, across the public, political and private spheres, as reflected in the low representation of women in Parliament, where they hold only three of the 109 seats. There is only one female national judge out of 27 judges, and the first female law lecturer was appointed in 2005. The legal profession is male dominated with 90% of the positions held by men.

In 2014, Papua New Guinea was ranked 143 out of 188 countries on the UN's Gender Inequality Index (United Nations Development Programme, 2017b), slipping from 135 in 2013. It is ranked the lowest in the whole of the WHO Western Pacific Region, and is ranked lower than sub-Saharan Africa. Although Papua New Guinea has either endorsed or ratified major international and multilateral conventions, and agreements on gender equality, including the Convention of the Elimination of all Forms of Discrimination against Women (CEDAW), they have not been effectively implemented. Papua New Guinea is one of the most dangerous places in the world to be a woman, with a high percentage of women experiencing rape or assault in their lifetime and facing systemic discrimination (Human Rights Watch, 2015). The magnitude of gender-based violence (GBV) is widely acknowledged to be of epidemic proportions. Two thirds of all women have experienced some form of physical or sexual violence over their lifetime; 50% of women have experienced forced sex; half of all the reported victims of rape were under the age of 15 years (Japan International Cooperation Agency, 2010). Only 73% of survivors of GBV seek assistance, and 88% of those women seek assistance through informal structures such as family, kin or community leaders. There has been some progress in improving legislation and policy around gender issues, such as the *Lukautim Pikinini* Act (Government of Papua New Guinea, 2009) and the National Health Sector Gender Policy (Government of Papua New Guinea, 2014b); however, inadequate capacity to uphold law and order make the laws largely ineffectual.

Apart from the various traditional forms of gender relations that contribute to the high gender disparity, unequal access to education, health care and business opportunities, as well as inadequate institutional responses to preventive measures and a wide social acceptance of violence against women also exacerbate the issue.

1.2 Economic context

Papua New Guinea is a lower-middle-income country with a GNI per capita of (Atlas method, current) US\$ 2530 in 2016 (World Bank, 2018b). Papua New Guinea has a dual economy: a “modern”, formal, cash-based economy that includes natural resources and extractive industries, manufacturing, cash crops, construction and service sectors; and a “traditional”, informal economy based on subsistence activities and unregulated commerce. The economy is heavily dependent on the natural resources sector, with mining and petroleum projects accounting for about a third of the GDP in 2015. Oil and gas extraction accounted for over a quarter (27.8%) of the GDP in 2015, and mining and quarrying a further 5.7% (Department of Treasury, 2016). The biggest project is the Exxon-led liquefied natural gas (LNG) project completed in 2013 and is the first major commercialization of the country’s estimated 227 billion cubic meters of natural gas reserves. Despite the size of the sector, only 1.7% of citizens in 2011 were employed in wage jobs by the mining and quarrying industry (National Statistical Office, 2013).

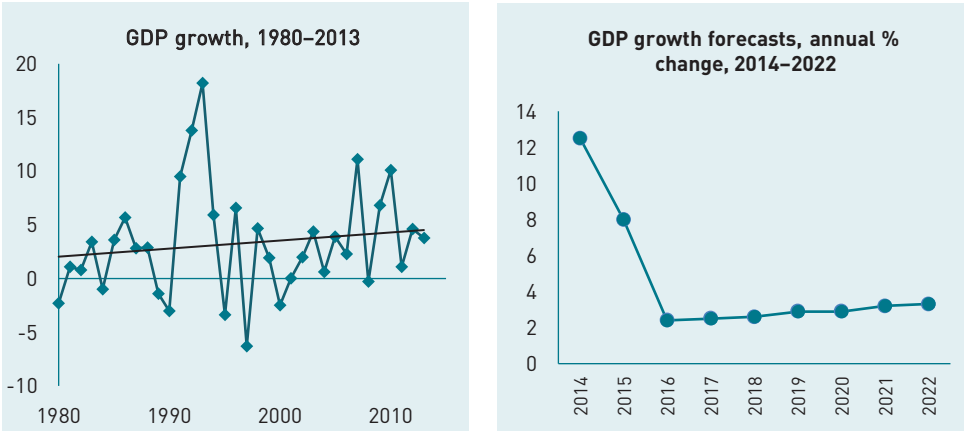
Agriculture, forestry and fishing accounted for 21.0% of the GDP in 2015. Although agriculture accounts for about a fifth of the GDP, more than 5 million rural dwellers (80% of the population) earn a living from subsistence agriculture and selling crops in domestic and international markets (Bourke and Harwood, 2009). The next largest sector is construction (15.2%), which has benefited in recent years from the construction of the LNG project and government investments in infrastructure. Manufacturing, despite Papua New Guinea’s industrialization strategy, contributes to 5.7% of the GDP. Other “service” sectors – including retail, financial and community services and utilities – account for the remaining 24.7%.

Economic growth. The economy has increased by a factor of six between 2000 and 2016, rising from US\$ 3.5 billion in 2000 to US\$ 19.9 billion (World Bank, 2018b). However, this growth was volatile and tended to follow cycles of “booms and busts” in the mining and petroleum sectors. This included closure of the Bougainville mine in 1990; development of Kutubu oil in the early 1990s; collapse of commodity prices in the late 1990s; recovery from about 2007; and the start of the Papua New Guinea LNG project in 2013.

Between 2007 and 2015, the economy enjoyed strong growth, averaging about 7.7% per annum on the back of favourable commodity prices, and investment in a US\$ 19 billion Exxon-led LNG project that started construction in 2010 and commenced production in 2014. Since 2015, the economy has started to slow – because of falling commodity prices, the impact of the El Nino drought and temporary mine closures (at Ok Tedi and Porgera). Slower growth rates

are expected over the next few years (2017–2021), around an average of about 3% per annum (International Monetary Fund, 2016), presenting considerable fiscal challenges for the Government. The National Economic and Fiscal Commission (NEFC) predicted a continued decline in GDP growth to 3% in 2017 (6.6% in 2015) due to stagnation in prices for many natural resources as well as having reached peak production for LNG (National Economic and Fiscal Commission, 2017a); however, it reached only 2.2% in 2017 (World Bank, 2018b).

Fig. 1.3 GDP growth, past and future, 1980–2022



Source: International Monetary Fund, 2016

Translating resource income into better social and economic development outcomes has been an ongoing challenge for Papua New Guinea since Independence in 1975. This critically depends on government development programmes, and the effectiveness of public expenditure and its responsiveness to shocks. There is no evidence of any decline in poverty over this period, and some evidence that poverty in Port Moresby increased and became more severe (Gibson, 2013). The World Bank estimated that 38.0% of the population lived in extreme poverty (at \$1.90 /day) in 2009, the highest in the Pacific region (World Bank, 2018a).

Fiscal revenues, 2006 to 2017

The Government’s development objectives and financial plans are set out in several statements:

- a Development Strategic Plan (DSP), 2010–2030,
- medium-term fiscal, debt and development strategies, and
- annual budgets.

Together, these policy statements, in principle, seek to ensure aggregate discipline (e.g. government spending is consistent with expected revenues and debt sustainability), allocation of resources towards development priorities and value for money in the use of resources (e.g. through proper planning and improved government capacity). In practice, discipline and efficiency have been hard to achieve and until recently, government revenues were increasing rapidly; almost doubling in real terms between 2003 and 2014.

When government revenue grew between 2012 and 2014, this was used to increase expenditure on Members of Parliament funds, salaries and wages, and debt servicing costs – budget lines that were very difficult (either contractually or politically) for the Government to adjust when revenue declined. This pro-cyclical fiscal policy left the Government in an exposed position when the economy started to slow in 2015 and resource revenues collapsed following falls in commodity prices, temporary closures of two mines and the impact of tax concessions (especially for the LNG project). With the slowdown in the economy, government revenues fell by 14% in real terms in 2015 and were expected to fall by a further 6% in 2016. The shock to revenues in 2015 also coincided with an El Nino drought that devastated crops, leading to hunger and increased mortality, especially in remote parts of Papua New Guinea (Bourke et al., 2016). This structural worsening of public expenditure in recent years has limited the scope for the Government to adjust spending. As a result, cuts to expenditure have been hardest on “discretionary” lines in the budget such as goods and services, and development projects. The health sector, which received a 37% cut to its 2016 budget (410 million kina), was the hardest hit by the economic slowdown and the associated tightening fiscal measures enacted by the Government. The health sector was closely followed by the transport and infrastructure sector, which received a 36% budget cut for the same period (Flanagan, 2015a & 2015b). The 2016 budget was passed in November 2015, but by early 2016, it was already apparent that growth and revenue forecasts were overly optimistic, and a further round of spending cuts would be needed. The country’s fiscal constraints have been further compounded by the restriction placed on access to foreign currency implemented by Papua New Guinea’s Central Bank (Flanagan, 2015b). A further round of cuts occurred in 2017 and are forecast to be required for the next 3–5 years, and that health financing is projected to contract over this same period (World Bank, 2017b).

Two other ways that the Government has sought to manage the revenue shock have been through external borrowings, such as a US\$ 500 million commercial loan from Credit Suisse (PNG Economics, n.d.), and increasing dividends from public enterprises (funding a large part through borrowing

from local banks). Such increases in debt will have to be repaid in future and may impact upon economic growth and public finances. On the up side, tax revenues from the Papua New Guinea LNG project are expected to peak in the mid-2020s, and there is potential for further development of mining and petroleum projects. Levels of political instability at national and clan levels, and natural disasters such as the recent earthquakes in the Highlands, continue to jeopardize the growth potential.

Poverty, land and safety nets. Most of the people (about 80% of the population) live in rural areas, and most rely on agriculture as their primary means of subsistence. Income is also unequally distributed, with 38.0% of the population living in extreme poverty (2009) and a third (31.0%) of the income held by 10% of the population (World Bank, 2018a). The 2016 Human Development Index categorized Papua New Guinea as having “low human development”, with a rank of 154 out of 188 countries, the lowest of all in the WHO Western Pacific Region (United Nations Development Programme, 2016).

In Papua New Guinea, 97% of all land is held under customary land tenure, which reflects the strong culture and social systems. Land tenure is not absolute, and land rights are held in common with other members of the clan, family or group. There is no land title system because there is no traditional hierarchical system of ownership. Many publicly run health facilities are on customary land, and therefore it is not unusual for health facilities to close due to land ownership disputes.

The customary land tenure also means that there is exceptionally high home ownership in Papua New Guinea; occupants own 92.9% of homes. However, 76.1% of homes are traditional dwellings, made of materials such as grass, bamboo or wood. In urban areas occupants own only 68.2% of households, and the average household size is larger than in rural areas; the highest is in the National Capital District, with an average of 8.5 persons per household.

The *wantok* (one language, someone with whom one shares a close social bond) system and land tenure act as a social safety net in Papua New Guinea, ostensibly ensuring that all individuals obtain their basic needs for food and shelter. It is common for those who have tried to carve out a better existence in urban areas to return resources to their rural *wantoks*.

There is a persistent and strong spatial distribution of disadvantage (educational attainment, literacy rates, malnutrition) in Papua New Guinea, with the poorest areas showing relatively little change over 30 years. The

main factors identified as contributing to this situation are isolated locations, lack of income-earning opportunities and geography (Rogers et al., 2011).

Development assistance. The inadequacy of fiscal policies to manage resource booms and busts increases the significance of development assistance. Papua New Guinea receives considerable support from its development partners to address its development challenges and is a net aid recipient. Australia is Papua New Guinea’s largest bilateral donor. In total, US\$ 753.37 million in Official Development Assistance (ODA) was received by Papua New Guinea in 2014 (National Department of Health and World Health Organization, 2016). ODA grants comprised a third (33.9%) of the total development budget in 2011 and made up around 16% of total government spending (Government of Papua New Guinea, 2013a). ODA to the health sector in 2014 totaled US\$ 130 million. Papua New Guinea had reduced its aid dependence from 13.3% of the total government budget (which equals its revenues plus development budget) in 1990 to 8.3% in 2000, and 5.5% in 2010 (Government of Papua New Guinea, 2013a). In the context of a collapse in discretionary expenditure, donor funds could potentially play a pivotal role in protecting vulnerable budget lines (e.g. drugs, funding for nongovernmental organization [NGO] service providers, etc.). However, development assistance to Papua New Guinea is in transition.

Table 1.2 outlines the trends in macroeconomic indicators between 1980 and 2017. These trends highlight many of the issues already alluded to above. In summary, these include an economy with steady rates of growth but persisting inequalities. Despite growth in GDP per capita from US\$ 770.5 in 1980 to US\$ 34.6 in 2017, the poverty headcount ratio remained at 38% in 2009.

Table 1.2 Trends in macroeconomic indicators, Papua New Guinea, 1980–2017

Indicators	1980	1990	1995	2000	2005	2010	2015	2017
GDP, PPP (current international US\$) (in billion)	2.5	6.6	11.3	12.1	15.2	22.2	32.3	34.6
GDP per capita (current US\$)	770.5	746.5	947.2	631.9	770.6	2004.8	2605.9	2555.9
GDP per capita, PPP (current international \$)	..	1534.1	2302.9	2175.7	2400.2	3127.0	4072.8	4197.3
GDP growth (annual %)	-2.3	-3.0	-3.3	-2.5	6.3	10.1	5.3	2.2
Tax revenue (% of GDP)	..	20.1	19.7	19.0	21.0 (2002)	..	16.0	13.5 (2016)

Table 1.2 Trends in macroeconomic indicators, Papua New Guinea, 1980–2017 (contd)

Indicators	1980	1990	1995	2000	2005	2010	2015	2017
Value added in industry (as % of GDP)	26.8	30.4	32.1	39.3	37.0 (2004)	33.2	31.9 (2014)	..
Value added in agriculture (as % of GDP)	33.1	29.0	33.8	34.0	36.0 (2004)	19.6	17.8 (2014)	..
Labour force (total)	..	1 813 873	2 060 757	2 416 828	278 349	3 143 422	3 514 523	3 695 703
Unemployment total (% of labour force) (modelled ILO estimate)	..	..	2.9	2.9	2.5	2.0	2.6	2.7
Poverty headcount ratio at \$1.90 per day (PPP)	..	..	53.2% (1996)	..	38.0% (2009)	..	..	..
Real interest rate (%)	3.8	10.5	-0.4	3.7	-1.3	0.6	13.4	..
Official exchange rate (LCU per US\$ period average)	0.7	1.0	1.3	2.8	3.1	2.7	2.8	3.2

Key: GDP: gross domestic product; LCU: local currency unit; PPP: purchasing power parity
Source: World Bank, 2018b

1.3 Political context

Papua New Guinea became independent in 1975. It has a Westminster-style parliamentary democracy, based on a Constitution that provides for three branches of government:

1. a legislative branch, whose members are elected for five-year terms;
2. an executive led by a Prime Minister and National Executive Council; and
3. a judiciary overseen by a Chief Justice.

Other constitutional bodies include the Ombudsman Commission, which seeks to ensure that leaders comply with a code of conduct. Queen Elizabeth II is the Head of State and is represented by a Governor-General, who performs mainly ceremonial functions.

The current single-chamber Parliament has 111 members, comprising one representative from each of the 21 provinces and the National Capital District, and one representative from each of the 89 open constituencies.

Every five years, political leaders are elected to the two tiers of government: national and local. At the subnational level, there are three levels of administration: provincial, district and local (including several communes with their villages) (Government of Papua New Guinea, n.d.).

Up to and including the June 2002 general election, Members of Parliament (MPs) were elected on a first-past-the-post basis and, due to there often being many candidates; they frequently won with less than 15% of the vote. After the 2002 election, a system of limited preferential voting was introduced, under which voters are required to list a first, second and third preference. Though parties and party allegiances within the Papua New Guinea parliamentary system are fluid, the country has had an unbroken, albeit fragile, record of democratic continuity since Independence.

National politics. National politics are characterized by a plethora of political parties, coalition governments, shifting party loyalties and motions of no-confidence in the leadership. There is a history of instability in political proceedings in the country. The main parties include the People's National Congress, the Triumph Heritage Empowerment Party, Papua New Guinea Party, United Resources Party, People's Progress Party and the People's Party.

The *Organic Law on Integrity of Political Parties and Candidates* (OLIPPAC) or "Integrity Law" was enacted by the Morauta Government in 2001, with the aim of strengthening political parties and the executive government of Papua New Guinea. The OLIPPAC included regulations on the formation, composition and funding of parties; limitations on how MPs could vote on a motion of no-confidence against the executive; changes to the rules on the formation of a government, defections from political parties and offences for breaking the law; and restrictions on independent MPs. Sections of the OLIPPAC, including restrictions on politicians changing parties and limitations on no-confidence motions, were declared unconstitutional by Papua New Guinea's Supreme Court in July 2010.

Historically, there has been a high turnover of parliamentarians at general elections. In 2002, for example, around 80% of sitting members lost their seats. In the 2012 elections, the figure was almost 60%. Women are chronically underrepresented in Parliament, although three new women MPs were elected in July 2012, but in the 2017 election there were again no women in Parliament. To date, no single party has won enough seats to form a government in its own right; all governments have been coalitions.

Subnational politics. Papua New Guinea has 22 provinces. These provinces include the Autonomous Region of Bougainville and the National Capital District. Two new provinces were declared in 2012. These are Hela and Jiwaka in the Highlands Regions. Each province has one or more districts, and each district has one or more LLG areas (wards). There are 89 districts in total and 318 LLGs.

The primary responsibility for service delivery in Papua New Guinea is entrusted to the subnational government (provincial and LLGs) as prescribed in the 1995 Organic Law and subsequent legislation to support the execution of the Law (called enabling legislation). The quality of decentralized service delivery has, however, remained unsatisfactory for a variety of reasons. These include:

- sector-specific policy and operational challenges;
- cross-cutting issues related to weaknesses in public administration and governance such as public financial management, policy coordination and coherence, and human resources management;
- issues to do with politics, power and leadership, funding; as well as
- logistical and technical issues.

The MPs receive a discretionary development fund to support development activities (including health) in their representative areas (province or district). However, critics argue that these funds are geared more towards political patronage than service delivery (Reilly et al., 2014). A critical issue over the past decade is the ballooning of MP-managed funds, which increased from 93 million kinas per annum (2000–2003) to 1.5 billion kinas in 2014 (Howes, 2016); values in 2015 prices.

To address the shortfall in funds that were meant to go from this MP development fund to basic services, the Government instituted the District Services Improvement Programme (DSIP) in 2007. The DSIP was designed as a comprehensive approach to include MPs, national departments and agencies, and provincial and district administrators to be managed through the DSIP Trust Account (Auditor General's Office of Papua New Guinea, 2014). In 2017, this was allocated as 10 million kinas per district, although it faced cuts due to the rebudgeting exercise initiated post-election to stimulate economic growth. A 2014 study (Wiltshire and Mako, 2014) found that only 12% of the DSIP had been allocated to health facilities. An Auditor-General's report based on the 2012/2013 district audits relating to DSIP expenditure highlighted ineffective and inefficient application of DSIP funds and limited accountability of those charged with the responsibility to administer the funds (Auditor General's Office of Papua New Guinea, 2014).

In 2009, the Government implemented a new intergovernmental financial arrangement to ensure better equity of funding distribution to provinces most in need (Government of Papua New Guinea, 2010a). This funding is targeted to the delivery of basic services (including health) and is provided through function grants. For health services, the health function grant was intended to support three minimum priority activities (MPAs) for subnational rural health – operational funding for rural health facilities, rural outreach patrols, and the distribution of drugs and essential medical supplies (National Economic and Fiscal Commission, 2017b; World Bank, 2013). (See Chapter 3: Health financing)

Governance. Papua New Guinea scores poorly on various governance indicators and assessments. Transparency International has ranked Papua New Guinea 150th (out of 176 countries) on its Corruption Perception Index, with a score of 25/100 (where scores range from 0 [highly corrupt] to 100 [very clean]).

World Bank Governance Indicators suggest a slight, though not statistically significant, improvement in governance over the past decade across a range of measures compared to other countries. Nevertheless, Papua New Guinea remains in the bottom quartile of countries for Political Stability and Absence of Violence/Terrorism (24th percentile), Rule of Law (19th percentile) and Control of Corruption (14th percentile) (World Bank, 2017c).

The Government has limited public financial management capacity, weak institutions and poor financial integrity. A 2015 International Monetary Fund (IMF) Public Expenditure Finance Accountability (PEFA) assessment rated public financial management across 30 high-level indicators: Papua New Guinea got one A (above good international practice) and 21 Ds (at less than the basic level of performance or is absent altogether, or there is insufficient information to score the dimension). The PEFA highlighted some positive points, such as relatively good credibility of fiscal strategy and budget and performing reasonably well in policy-based planning and budgeting, and the availability of budget information. However, the PEFA noted several areas of concern in accountability, management of public assets, liabilities and fiscal risks, and the availability, comprehensiveness, timeliness and quality of fiscal accounts (International Monetary Fund, 2015).

These findings are also reflected in government audit reports. Audits of the public accounts had not been completed for the years 2012–2015, and the audit for 2011 includes a heavily disclaimed opinion due to issues such as lack of reports and reconciliations on 365 trust accounts, a lack of disclosure of the State’s investments in various companies and public bodies, no

register of State guarantees, a high rate of non-compliance with procurement and payment procedures, significant weaknesses in payments and acquittal of advances, and non-existent or poorly maintained assets registers (Auditor General's Office of Papua New Guinea, 2014).

1.4 Health status

Papua New Guinea, like other nations in the Western Pacific Region at a similar stage of development (such as the Solomon Islands, Vanuatu and Lao People's Democratic Republic), is in the early phases of epidemiological transition, facing a double disease burden with a rapid growth in NCDs and a continuing high prevalence of communicable diseases.

Mortality rates for both women and men have been dropping over the past 25 years, and as a result, overall life expectancy since 1990 has increased by 5 years (see Table 1.3). In line with global trends, females have a longer life expectancy than men, living on average 5 years more. Despite this progress, overall life expectancy for Papua New Guineans is shorter than the majority of their Pacific neighbours (World Health Organization, 2018a).

Infant and under-5 mortality has been steadily decreasing since 1990; however, estimates in 2011 indicated that the country made insufficient progress to meet its MDG 4 targets. The infant mortality rate (IMR) in 2011 was 45 per 1000 (the 2015 target was 24 per 1000) and in 2014 under-5 mortality was 46.2 per 1000 (the 2015 target was 32 per 1000) (Hetzl et al., 2014). The prevalence of stunting is high, 48.2% in 2010, and is much higher in rural areas (50%) compared to urban areas (35%).

Improvement in health has not kept pace with the country's economic growth over the past 10 years, and in part reflects the difficulty in access to primary health care (PHC) services. There has been a gradual decline in the percentage of functioning health facilities in some parts of the country over the past 20 years. In 2014, only around 70% of aid posts were operational nationally (National Department of Health, 2013e). Some of the bottlenecks reflect the lack of constant availability of basic commodities, including essential drugs, as well as a lack of health staff in adequate numbers and with the proper qualifications. The unsuitability of the health infrastructure contributes to the erosion of public confidence in the health system (National Department of Health, 2013e).

Table 1.3 Mortality indicators, Papua New Guinea, 1990–2015

Indicators	1990	2000	2005	2010	2015
Life expectancy at birth, total (years)	58	58.9	60.4	61.8	62.9
Life expectancy at birth, male (years)	54.9	56.7	58.1	59.5	60.6
Life expectancy at birth, female (years)	56.7	61.3	62.8	64.3	65.4
Total mortality rate*(both sexes)	..	335	307	286	275
Total mortality rate, adult, male (per 1000)	..	374	344	312	324
Total mortality rate, adult, female (per 1000)	..	293	267	248	236

Note: * Adult mortality rate is the probability of dying between 15 and 60 years per 1000 population

Source: World Health Organization, 2018a

1.4.1 Mortality

Most of the mortality statistics for Papua New Guinea are based on estimates, models and/or are indirectly obtained. This is because the civil registration and vital statistics (CRVS) in Papua New Guinea has poor coverage of birth and death registration (less than 5%) and very limited collection of cause-of-death data. Despite some recent improvements due to focused efforts, the levels of birth and death registration remain low and hospital discharge data, which also include cause-of-death data, is 5 years behind in data entry (Bloomberg Philanthropies Data for Health Initiative, 2017).

The national censuses and demographic and health surveys are the primary data collection tools for mortality data. The mortality estimates are primarily based on histories of births and deaths over the 5-year period before a survey (Riley, 2009). Infant and under-5 mortality direct estimates “are based on a mother’s information about the date of birth and, if relevant, the age at death of every liveborn child she has had” (Riley, 2009). There are no data on mortality rate variations due to socioeconomic status or ethnicity.

Mortality rates for men and women have dropped over the past 10 years with a corresponding increase in life expectancy at birth (Table 1.3). In 2012, overall age-standardized mortality rates for communicable diseases, NCDs and injuries was 1347 per 100 000 (World Health Organization, 2015), which is the highest in the Western Pacific Region.

NCDs accounted for an estimated 44% of all mortality (2008), an increase of just over 6% from the 2004 reported levels (Department of National Planning and Monitoring, 2015). The main contributor to this NCD-linked mortality was cardiovascular diseases (21%) followed by cancers (8%), noncommunicable variants of respiratory diseases (5%) and diabetes (2%). In terms of communicable diseases, pneumonia is the main cause of lower respiratory

infection (LRI) deaths and is the highest ranked cause of death associated with communicable diseases, although deaths due to LRI are declining. Tuberculosis (TB) ranks fifth among the causes of death. The estimated mortality rate for TB among HIV-negative people was estimated to be 41 per 100 000 population in 2014 (World Health Organization, 2016a).

Deaths due to diarrhoeal diseases remain in the top 10 causes of death. Papua New Guinea remains vulnerable to outbreaks of *Vibrio cholerae* and shigella. The cholera outbreak from July 2009 to late 2011 reported more than 500 deaths and over 15 000 suspected cases (Horwood et al., 2014). Deaths due to diarrhoea have dropped by 31.6% since 2005. Malaria remains within the top 10 causes of death, and the number of reported deaths in a health facility due to malaria in 2014 was 203. Significant progress has been made in malaria control over the past 10 years, and deaths due to malaria have reduced by 28.6% since 2005 (World Health Organization, 2016b). There were an estimated 25 000 people living with HIV/AIDS in 2013 (UNICEF, 2017). Age-standardized death rates show some decline in AIDS-related deaths from 11.5/100 000 population in 2010 to 7.9 in 2015.

Self-harm and interpersonal violence, and transport-related injuries are also major contributors to mortality in Papua New Guinea, accounting for 59.7 deaths per 100 000 population in 2015 (Table 1.4).

Table 1.4 Main causes of death, Papua New Guinea, 2000–2015

Cause of death	Age-standardized death rates per 100 000 population				
	2000	2005	2010	2013	2015
Communicable diseases					
Tuberculosis	18.7	17.8	15.0	12.8	11.4
Sexually transmitted infections excluding HIV	7.4	7.7	10.6	9.6	8.6
HIV/AIDS	8.3	16.3	11.5	9.6	7.9
Non-communicable diseases					
Neoplasms	120.8	124.0	124.3	123.0	122.0
Colon and rectum cancer	8.7	8.9	9.0	9.0	9.0
Larynx cancer	1.7	1.7	1.7	1.7	1.7
Tracheal, bronchus and lung cancer	18.9	19.1	18.9	19.0	19.1
Breast cancer	11.7	12.5	12.7	12.6	12.6
Cervical cancer	11.1	11.3	10.9	10.4	10.0
Diabetes mellitus	86.6	99.7	107.1	109.5	111.0
Mental disorders	1.6	1.6	1.6	1.6	1.6
Ischemic heart disease	290.9	303.5	302.4	296.6	291.7
Cardiovascular diseases	633.5	646.5	634.4	614.2	598.8

Table 1.4 Main causes of death, Papua New Guinea, 2000–2015 (contd)

Cause of death	Age-standardized death rates per 100 000 population				
	2000	2005	2010	2013	2015
Chronic respiratory diseases	382.7	381.3	369.8	357.1	347.1
Digestive diseases	44.1	43.1	41.2	39.3	38.0
External causes					
Transport injuries	38.8	39.3	38.5	37.2	36.4
Self-harm and interpersonal violence	23.9	24.3	24.2	23.6	23.3

Source: World Health Organization, 2018a

1.4.2 Maternal and child mortality

Maternal mortality. The 2006 Demographic and Health Survey (DHS) reported an MMR of 755 per 100 000 live births (used as the official Government figure) (National Statistical Office, 2009). This puts Papua New Guinea’s maternal mortality on a par with fragile states such as Afghanistan. WHO estimated the maternal mortality ratio at 238 per 100 000 live births in 2010 (World Health Organization, 2015). Whatever is the actual level between these ranges of MMR, the MDG target for 2015 for Papua New Guinea set at 98 cases per 100 000 live births was not achieved. Obstetric haemorrhage, sepsis and eclampsia are the main proximate causes of maternal death, compounded by severe anaemia often associated with malaria (National Department of Health, 2013b). Given the importance of family planning in reducing the levels of maternal and infant mortality, it is important to note that the last available survey data indicate that there is a 27.4% unmet need for contraception in Papua New Guinea (World Bank, 2017c).

A high MMR is an indication of very poor and possibly worsening maternal health. Current progress is at risk, with a decline in supervised births in health facilities from 44% in 2012 to 37% in 2015, and huge disparities between urban and rural areas. In 2016, the percentage of pregnant women who attended at least one antenatal visit at a hospital, health centre or outreach clinic was only 54%, decreasing from 66% in 2012. But in general, the rate has been relatively stagnant at about 60% since 2011 (National Department of Health, 2017b). Although most women received some antenatal care (ANC) from skilled health personnel, on average, only 53% of them deliver with the assistance of a skilled health-care worker (rural: 48% and urban: 88%) and only 44% of births occur in a hospital or health centre. Maternal mortality audits have now commenced in some hospitals in Papua New Guinea, but most deaths at the community level are still not recorded or reviewed. At the local level, the National Department of Health (NDoH) is supporting a mother and child accountability scorecard approach,

which commenced in one district in one province and will scaled up over the next few years. Based on global experiences and recommendations of the Commission on Information and Accountability for Women's and Children's Health, this scorecard functions as a management tool to enhance accountability, transparency and action in relation to priority MCH interventions using a set of core indicators (input, process and output). The level of shortage of skilled human resources, particularly obstetricians, midwives and trained birth attendants, has been described as "extreme", and so increasing the workforce is a top priority for the health sector. Referral systems are either "nonfunctioning or nonexistent" (National Department of Health, 2013d).

High MMR and overall poor maternal health must be put in a broader perspective of women's health, linked to the low status of women in many societies of the country. Papua New Guinea ranks in the bottom 10 countries of the Gender Inequality Index. Women and girls have substantially less access to health care and education services than males. Violence against women and GBV is high, with two thirds of women estimated to have experienced it. Additionally, women are underrepresented at all levels of government, which limits their power to influence public policy (UNDAF, 2012). In 2009, the then Minister of Health, Hon. Mr Zibe, in the foreword of the Report of the Taskforce on Maternal Health noted "The Taskforce has clearly identified that Papua New Guinea is currently failing its mothers and that there is a crisis in maternal health" (National Department of Health, 2009).

Child mortality. Papua New Guinea's under-5 and infant mortality rates have been steadily declining over the past 10 years. However, they remain very high at 56.2 per 1000 live births and 43.8 per 1000 live births, respectively. Proximate causes of child mortality are pneumonia, diarrhoeal diseases, malaria and other vaccine-preventable diseases, with diarrhoeal diseases in children under 5 years of age on the rise over the past 5 years (National Department of Health, 2013e). A study (Bauze et al., 2012) found that district-level under-5 mortality rates correlate strongly with poverty levels and access to services, and that there is a high degree of variation between districts. There is no clear estimate on how much of the decline in infant mortality is due to immunization alone. Table 1.5 provides an overview of maternal, child and adolescent health indicators for selected years.

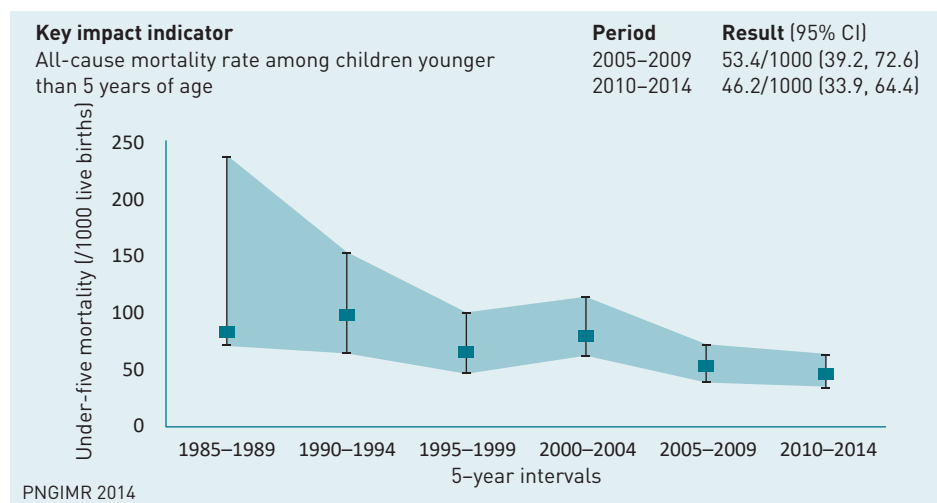
Table 1.5 Maternal, child and adolescent health indicators, Papua New Guinea, 1980–2015

Indicators	1980	1990	2000	2010	2015
Adolescent fertility rate (births per 1000 women aged 15–19 years)	100.2	73.0	66.3	58.6	54.4
Neonatal mortality rate (per 1000 live births)	36.7	31.1	29.6	26.5	24.0
Infant mortality rate (per 1000 live births)	76.6	64.4	57.5	49.8	43.8
Under-5 mortality rate (per 1000 live births)	107.3	88	77.2	65.2	56.2
Maternal mortality ratio (per 100 000 live births)	..	470	342	238	215
Prevalence of HIV, total (% of population aged 15–49)	..	0.1	0.7	0.9	0.9
Measles immunization (% children aged 12–23 months)	..	67	69	74	79
Prevalence of stunting, height for age (% of children under 5)	50.2% (1983)	..	..	49.5% (2010)	..
Prevalence of underweight, weight for age (% of children under 5)	24.6% (1983)	..	..	27.9% (2010)	..

Source: World Bank, 2018b

There has been a general decline in all-cause mortality rates for under-5-year-old from over 200 per 1000 live births to rates under 100/1000 in recent years (Fig. 1.4).

Fig. 1.4 All-cause mortality in children under 5 years at 5-year intervals, 1985–2014



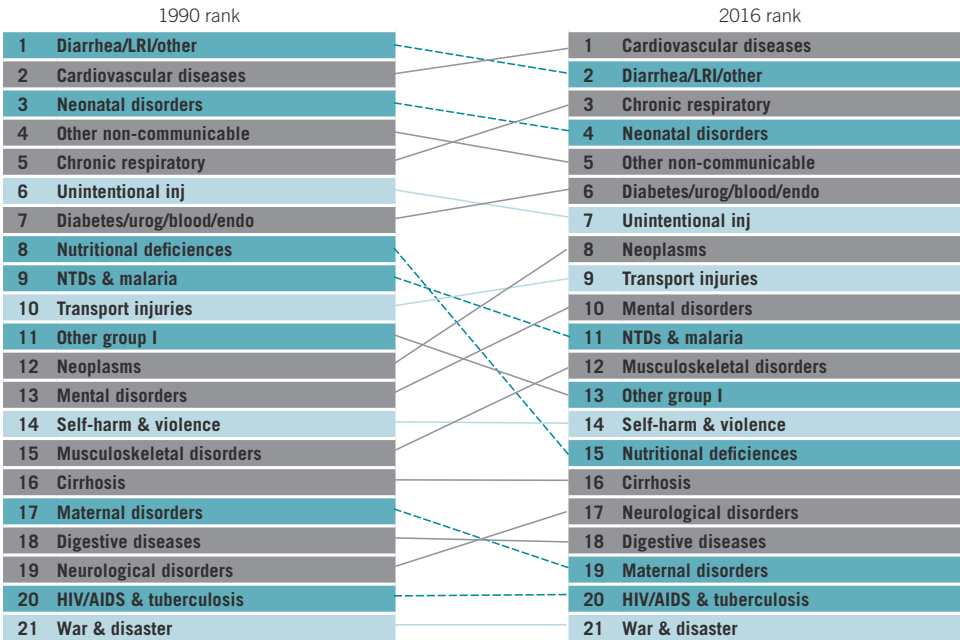
Source: Hetzel et al., 2014:p.15

1.4.3 Morbidity

There is evidence that the epidemiology of the country is undergoing some transition. The most recent data confirm that diarrhoea is no longer the leading contributor to disability-adjusted life years (DALYs) in Papua New Guinea. The 2016 Global Burden of Disease study ranked three NCDs as the top 10 leading causes of death in 2016 (GBD 2015 DALYs and HALE Collaborators, 2016). Compared to 1990, the results in 2016 indicate that cardiovascular diseases are the leading causes of DALYs in Papua New Guinea. In the 2017 Global Burden of Disease estimates, only two of the top 10 conditions causing DALYs include the MCH agenda – these are diarrhoea/LRI (2nd) and neonatal disorders (4th).

Of particular concern to policy-makers in Papua New Guinea is the potential large-scale underreporting of mental health conditions, and the increasing burden of disease attributable to dengue fever and neonatal health conditions. They are also worried that there may be skewing of the data due to better collection of health information in urban compared to rural areas, and therefore underrepresentation of the health problems and therefore DALYs for rural populations – the so-called rural majority, a key focus of the Government and NDoH.

Fig. 1.5 DALYs per 100 000 population, both sexes, 1990 and 2016



- Communicable, maternal, neonatal and nutritional diseases
- Noncommunicable diseases
- Injuries

Source: Institute for Health Metrics and Evaluation, 2017

During 2007–2008, WHO conducted a STEPwise approach to NCD risk factors (STEPS) survey to assess the risk factors contributing to chronic disease in Papua New Guinea (World Health Organization, 2008). The findings revealed the three most prevalent risk factors in the population aged 15–64 years are: overweight (32.1% all sexes; males 30.3%; females 33.9%), smoking (44% all sexes; 60.3% of men; 27% of women) and raised cholesterol (36.8%). The survey found a very high rate of undiagnosed diabetes, which “will cause a huge burden of morbidity and mortality”. Less than 0.4% of females and 0.3% of males (aged 25–64 years) had none of the five combined risk factors for NCDs. Other behavioural risk factors included alcohol consumption and poor fruit and vegetable intake. The majority of respondents (98.9%; 95% confidence interval [CI] 98.1–99.7) reported consuming less than five combined daily servings of fruit and vegetables. Of those surveyed who stated that they were current drinkers, 77.6% men reported binge drinking (five or more drinks on any day in the last week). Abstinence from alcohol in the past year was reported by 92.9% of women surveyed and 62.1% of men (World Health Organization, 2008).

Like other countries across the Pacific, a rapid transition towards a Western diet and lifestyle is occurring in Papua New Guinea, largely as a result of economic growth, trade liberalization and transition to a cash economy. However, rates of chronic malnutrition in under-5-year-old children are high (e.g. stunting rate of 49.5% in 2011) and have remained unchanged since 1983.

Table 1.6 Behavioural risk factors for NCDs in Papua New Guinea

Behavioural risk factor	Males (%)	Females (%)	Total (%)
Current smoking (age-standardized rate) (2011) ^a	55%	27%	41%
Obesity in adults 20 years and over (%) (2008) ^b	11.8	20.1	..
Total alcohol per capita consumption, in liters of pure alcohol (2010) ^a	5.1	1.0	3.0
Consumption of less than 5 servings of fruit and vegetable per day (2007) ^c	99.1	98.6	98.9
Low physical activity (2007) ^c	9.0	10.9	9.9
Prevalence of raised fasting blood glucose among adults aged 25 years and over (%) (2008) ^b	15.2	14.7	..
Prevalence of raised blood pressure among adults aged 25 years and over (%) (2008) ^b	21.1	18.1	..

Sources: ^aWorld Health Organization, 2018b; ^bWorld Health Organization, 2012b; ^cWorld Health Organization, 2014b

Unintentional injuries, transport-related injuries and self-harm are now ranked as the seventh, ninth and fourteenth of the top 20 contributors to DALYs in Papua New Guinea (2016) (Fig. 1.5).

1.4.4 Status of other noteworthy morbidities and preventable health conditions

Malaria. Although the overall malaria incidence has declined markedly during the 2008–2012 period (18.2% to 1.6% population parasite prevalence), it still constitutes a significant burden on the health system. The 2016 World Malaria Report (World Health Organization, 2016b) stated that in 2015, there were 297 787 reported confirmed (microscopy and rapid diagnostic tests) cases at health facility level and another 48 644 confirmed cases at community level and 163 reported deaths. The same report estimated the number of cases for 2015 to be at 900 000 (range of 650 000–1 200 000) and an estimated 1200 deaths (range 140–2300). NDoH data confirm that malaria is in the top ten leading causes of hospital and health centre admissions and the second-leading cause of death (Government of Papua New Guinea, 2010c). The entire population is at risk for malaria and 94% live in areas with potentially high transmission (>1 case per 1000 population) (World Health Organization, 2016b). The national proportion of children sleeping under an insecticide-treated bednet is 59%, and there are more male children under 5 years of age sleeping under insecticide-treated bed nets than female children (National Department of Health, 2013b).

Tuberculosis. The incidence of TB was estimated at 432 per 100 000 (range 352–521) with an estimated mortality rate of 40 per 100 000 (excluding HIV). Papua New Guinea currently has the second highest TB incidence in the WHO Western Pacific Region and tenth highest globally (World Health Organization, 2016a). Multidrug-resistant TB (MDR-TB) was estimated to be present in 3.4% (1.7–5%) of new cases and 26% (15–36%) of previously treated cases in 2015 (World Health Organization, 2016a). There have been 254 laboratory-confirmed MDR-TB (rifampicin-resistant) cases, and 11 confirmed cases of extensively drug-resistant TB (XDR-TB) (World Health Organization, 2016a). For MDR-TB, the majority of the cases diagnosed are in the hotspot areas of Daru Islands, Western Province and the National Capital District, which has a high TB notification rate (four times more than the national average) and contributes to 25% of the country's TB burden despite hosting only 5% of the country's population. A prospective study in Kikori District in Gulf Province reported a prevalence of 1290 per 100 000 people (95% CI: 1140–1460) in 2012 (Cross et al., 2014). Three of the 32 TB only cases tested were rifampicin resistant. In conclusion the study stated that TB was found to not be driven by HIV coinfection, as the proportion of TB/HIV co-infected cases was only 1.9%.

Vaccine-preventable diseases. Papua New Guinea was certified as a country free of poliomyelitis by the Regional Commission for Certification of Poliomyelitis Eradication in 2000. It made the switch from OPV (oral polio vaccine) to the IPV (inactivated polio vaccine) on 18 April 2016 and was validated on 2 May 2016.

Vaccine coverage has declined over the past 5 years and continues to fall below targets across all antigens. Against the third dose of diphtheria–tetanus–pertussis (DTP3) national coverage target of 72%, the official estimate is 61% (2016), down from 68% in 2013. WHO/UNICEF estimates are higher at 72% coverage (GAVI, 2017). Estimated coverage with measles-containing vaccine (MCV) continues to stagnate at 70% since 2013 and stayed at 70% in 2016 (GAVI, 2017).

Pneumococcal conjugate vaccine (PCV) was introduced formally in November 2013, but only in some provinces. Roll-out continued in 2014, though impacted significantly by delayed training and a major measles outbreak (described below), and without formal coverage estimates. The national roll-out in late 2015 was consistent with the official estimated coverage of 20%. IPV was introduced nationally with PCV in November 2015 but coverage estimates are not available for IPV, or for second-dose MCV2 (introduced in early 2016).

There was a large-scale measles outbreak from September 2013, with the last case reported in September 2015. In total, 2649 confirmed cases and no deaths were officially reported to WHO through the national surveillance system. However, the National Verification Committee report notes that there were more than 75 000 suspected cases during this period. The sensitivity of the surveillance system is not adequate, as measured by performance on standard surveillance indicators (the rate of reporting of suspected cases with fever and rash that tested negative for measles and rubella). In 2016, the annualized national reporting rate of non-measles/non-rubella suspected cases was 0.5/100 000 population (target >2/100 000 total population at the national level) and only 10% (target >80%) of provinces are achieving this recommended reporting rate.

More positively, there was an improvement in the drop-out rates between pentavalent (penta)-1 and (penta)-3 vaccinations from 29% in 2014 to 25% in 2015, though this was still significantly worse than the target of 16%. Provincial and district penta-3 coverage levels vary widely across Papua New Guinea, from 20% to 97%, though there are concerns with both the numerator and especially the denominator, with the number of eligible children based on a 2011 national Census adjusted for annual population growth.

In terms of equity of vaccine coverage, just 18% of the 89 districts have penta-3 coverage above 80%, down from 20% in 2014. Although a signatory to Maternal and Neonatal Tetanus Elimination, routine administrative coverage of tetanus toxoid 2+ dose (TT2+) decreased from 60% in 2008 to 50% in 2014. Papua New Guinea faces serious challenges in improving TT coverage even where ANC attendance rates are higher than the TT+ coverage rates, and reflects the serious and complex problems in the system, including vaccine availability. No data were reported on the number of cases of neonatal tetanus in 2014, impeding the Expanded Programme on Immunization (EPI)'s ability to design and plan effective and evidence-based interventions (GAVI, 2016).

HIV/AIDS. Over 95% of HIV cases reported in the Pacific between 1987 and 2015 have been from Papua New Guinea. United Nations (UN) agencies estimate that approximately 46 000 people were living with HIV in Papua New Guinea in 2016, of whom 23 875 (52%) had received antiretroviral therapy (ART) (UNAIDS, 2017). However, the inconsistent availability of antiretroviral drugs and supplies throughout the country remains a major constraint. The HIV prevalence is estimated at 0.79% of the total population in 2015, up from 0.7% in 2014. In 2015, Enga, Jiwaka, Western Highlands, Eastern Highlands and the National Capital District all reported more than 1% HIV prevalence among pregnant women attending an antenatal clinic (PEPFAR, 2016).

The HIV epidemic in the country is predominantly driven by heterosexual transmission with a background of a high rate of untreated sexually transmitted infections (STIs). The modes of HIV transmission consist of heterosexual intercourse (93%), mother-to-child transmission (4%), body piercing and homosexual contact (<2%) (UNAIDS, 2012).

The Integrated Behavioural Surveillance Survey (2011) (USAID/FHI, 2011) identified rates as high as 17% among surveyed female sex workers and 24% among surveyed transgender sex workers in Port Moresby. Additionally, a high prevalence was found among surveyed men (302) who identified as male sex workers in Port Moresby, with a 9% rate among men who sell sex and 24% among transgendered males who sell sex. Injection drug use is very rare in Papua New Guinea. However, criminalization, stigma and discrimination related to homosexuality contribute to men who have sex with men (MSM) remaining hidden, making data on this population underreported. Other HIV surveillance sites and positivity rates include: STI clinics (4%), TB clinics (5%), health facilities (6%), blood banks (0.3%) and HIV counselling and treatment clinics (4%) (USAID/FHI, 2011).

Dental health. Due to many competing health priorities, dentistry is not a high public health investment priority in Papua New Guinea. As illustrated in this study (see Chapter 4 on Physical and human resources), there are very few public sector dentists in the country. The current National Health Plan 2011–2020 does not mention dental health in the strategies outlined, although a brief mention of oral cancer is made. Although no large oral health epidemiological surveys have been undertaken in Papua New Guinea, anecdotal evidence indicates that both tooth decay and gum disease are major public health problems. Oral cancer is the most common cancer in Papua New Guinea due to smoking and chewing of betel quid made of areca nut, part of the Piper betel plant and slaked lime (Crocombe et al., 2017).

2 Organization and governance

Chapter summary

The Papua New Guinea national health system has a decentralized model. It is based on the PHC approach. The network consists of 1800 community-level facilities called functioning aid posts (planned to transition to community health posts by 2030) and approximately 800 subhealth/health centres. The secondary health-care level consists of 22 provincial hospitals, one of which is also the national referral hospital. The Government and Church-based service providers are the main providers of health services, both services being funded by the Government. The churches play a pivotal role in health service delivery, operating over 50% of the rural health service network. There are also employer-related health-care services (agriculture, mining), and a small private medical sector and a much larger traditional sector.

The NDoH has statutory responsibility to oversee the establishment, maintenance and development of the health-care system in Papua New Guinea. The National Health Administration Act (NHAA) of 1997 was developed to provide the legal framework for linking and consolidating the functions of all levels of government and other agencies involved in the delivery of health care (Government of Papua New Guinea, 1997a). This legislation supported the introduction of national standards, defined administrative functions, and established relevant boards and management committees at national, provincial and district levels. The responsibility of the provincial government was to coordinate the operation of health facilities and the provision of health services and programmes in the province. The Public Hospitals Act (Government of Papua New Guinea, 1994) defined the role of provincial hospitals, funded by and reporting to the NDoH for the operation and provision of services by public hospitals, and the hospitals' role in supervising and supporting rural clinical services in PHC facilities within the province. Provincial and local governments are responsible for all other services (health centres and subcentres, rural hospitals and aid posts) with the NDoH centrally purchasing medical supplies that are distributed to the provinces for their onward distribution within the province.

However, many problems were identified with this provincial two-system approach, including cost inefficiencies, limited human resource capacity

and management issues. A more unified provincial health system, under which a single provincial health authority (PHA) becomes responsible for both hospital and rural health services, has been defined in the Provincial Health Authorities Act (PHAA) (Government of Papua New Guinea, 2007), which enabled the creation of a statutory body at provincial level responsible for both hospital and rural health services. This is presently being rolled out throughout the country after a slow start. To support this unified provincial health service, a set of standards for health service delivery has clarified the functions of the various (seven) levels of the health-care system (Government of Papua New Guinea, 2011a). By 2017, 10 provinces (out of 22) had enacted this system, and all provinces are expected to have introduced the reform by 2018. This PHA is headed by a provincial director of health, who reports to both the national and provincial governments' leadership.

The 2017 National Department of Health Corporate Plan identified seven priority areas for action, which included effective leadership, workforce planning, medical supply reforms, health infrastructure and equipment, PHA reform, health financing, and monitoring and evaluation. These include sectorwide planning approaches, better integration of the health planning with LLG planning (the *Kundu* approach), facility-based planning and budgeting, and more direct models of resource allocation at provincial and district levels (see section 2.4).

2.1 Overview of the health system

The Papua New Guinea national health system is based on a decentralized model (Table 2.1). Based on a PHC approach, it consists of a network of 2500 aid posts (1800 functional), approximately 800 sub-/health centres, 21 provincial hospitals and one national referral hospital (which also operates as a provincial hospital). The Government and Church-based service providers predominantly provide health services (World Health Organization and National Department of Health, 2012). The Department of Health is responsible for the national referral hospital and 21 provincial hospitals (three which also operate as regional referral hospitals). The provinces and LLGs are mandated by law to provide PHC services through the rural health service network of district hospitals, sub-/health centres, aid/community health posts and outreach services (World Health Organization and National Department of Health, 2012).

Table 2.1 Public health system network in Papua New Guinea

Government administrative structures	Formal public health system (including Church health system) (minimum average number of staff indicated)	Private health system	Employer-provided health services
Community/ Village /Ward	Aid Post - 1 community health worker (CHW) Community Health Post - 2 CHWs Population served: 500–2000	Village birth attendants, village health volunteers, Traditional practitioners	Aid post/First aid post
Ward/Local-level government or Urban council	Health subcentre/ Urban clinic 300–1500 inpatients per year 100–150 deliveries per year 2000–5000 rural > 10 000 urban 1 nurse, 3 CHWs		Health subcentre
	Health centre 2 nurses, 5 CHWs 5000–10 000 population 400–600 inpatients/year 100–150 deliveries/year		Health centre
District	District health centre 1 Health Extension Officer (HEO), 6 nurses, 7 CHWs <70 000 population 30 beds	Private doctors, private clinics, private pharmacies	Hospital (own or manage/support public)
	Level 5 Rural hospital 1 Medical Officer (MO), 3 HEOs, 9 nurses, 22 CHWs 70 000+ population No more than 2 in a province 50 beds		
Province	Level 4 hospital 2 MOs, 1 HEO, 25–35 nurses, 25–30 CHWs	Private doctors, private clinics, private pharmacies, private hospitals	
	Level 3 hospital 10–20 MOs, 5–10 HEOs, 30–80 nurses, 50–90 CHWs		
Province/Region	Level 2 hospital 25 MOs, 5+ HEOs, 100–200 nurses, 70–120 CHWs (Western Highlands province, Morobe province, East New Britain province)		
	Level 1 hospital 30 MOs, 5+ HEOs, 100–200+ nurses, 70–120 + CHWs Port Moresby General Hospital		

Source: Compiled by authors

Overall legal framework. The Minister for Health and HIV/AIDS has the portfolio responsibility for health as determined by the Prime Minister. The Minister executes government health policy and is assisted by the NDoH to discharge that responsibility. The NDoH has an overarching governance role in the health-care system. It has statutory responsibility to oversee the establishment, maintenance and development of a health-care system in Papua New Guinea (Elich and Day, 2014; Government of Papua New Guinea, 2008). It also sets policy and standards for improvement of the health of the population (Government of Papua New Guinea, 2008). It provides technical advice and support for the operation of health facilities and the delivery of health services and maintains a national health information system. The NDoH also oversees the management of public hospitals in accordance with the Public Hospitals Act of 1994 and the roll-out of the recent legislative changes in the PHAA, 2007 (see next paragraph).

The health sector responded to the passage of the new Organic Law, which defined decentralization in the Papua New Guinea Government system by introducing legislation to enable this to be implemented in the health sector (so-called enabling legislation). The NHAA of 1997 was intended to provide the legal framework for linking and consolidating the functions of all levels of government and other agencies involved in the delivery of health care. Instruments to support this included the introduction of national standards, definition of administrative functions, and establishment of relevant boards and management committees at national (National Health Board), provincial (Provincial Health Board) and district levels (district health committees). The responsibility of the provincial government was to coordinate the operation of health facilities and provide health services and programmes in the province, other than the operation of public hospitals (Elich and Day, 2014). The Organic Law also meant that health budgets were now in the control of the Provincial Administration, and not the remit of the health sector (Bolger et al., 2005).

However, concerns were raised about the lack of attention by the provincial governments, including the lack of funding being made available for provincial health services. This has made it difficult for most of the provincial health offices to access and control the required level of resources to implement their annual plans. Maintenance of health facilities has been severely neglected, rendering many inoperable (McNee, 2011). The results of this neglect were critical weaknesses in the medical supply chain within the province resulting in health facilities being stocked out of medicines for months and forced closure of facilities. There was also widespread anxiety that the decentralized functions and roles for provinces and lower levels of government were poorly understood, and that many of the District Health Management Committees are not functional (McNee, 2011). The PHAA was

also introduced in 2007 enabling the creation of a statutory body at provincial level responsible for both hospital and rural health services. Table 2.2 provides an overview of the governance functions of the health system in Papua New Guinea (National Department of Health, 2013b).

Table 2.2 Main governance functions at each level of the health system in Papua New Guinea

Levels of governments	Main functions (as described in NDoH Corporate Plan 2013–2015)
National Government	Oversee health-care system Coordinate and provide technical advice and support to lower levels of Government Oversee management of public hospitals
National Health Board	Endorse the National Health Plan and recommend its adoption to the National Executive Council It also approves standards and monitors progress against the National Health Plan May be requested or directed to carry out enquiries
National Department of Health	Provides assistance and support to the National Health Board to discharge its functions Develops standards, monitors and ensures compliance against standards, as well as provides technical assistance to the provinces to assist them in implementing the NHP and meeting relevant standards Required to maintain National Health Service Standards
Provincial governments	Responsible for planning, implementation and funding of the NHP through service delivery at the district level Fund health activities that allow for minimum standards to be met Have powers under Section 42 (1) (n) of the Organic Law on Provincial Governments and Local Level Governments Administration Act, 1997 and Section 19 of the National Health Administration Act, 1997 to make laws in relation to rural health.
Local governments	Responsible for funding health activities at the local level and should participate in planning Provide information to the NDoH for the National Health Information System (NHIS) Chair the district health management committees Participate in planning activities
Hospitals	Specific functions described under the Public Hospitals Act (1994) and are required: <ul style="list-style-type: none"> • to provide curative care and support rural health-care delivery • to provide support to rural health services • to conduct in-service training • to develop agreements with the nongovernment sector to deliver health services

Source: National Department of Health, 2013b:p.6

In its 2017 Corporate Plan, the NDoH identified the following seven priority areas for governance action: effective leadership, workforce planning, medical supply reforms, health infrastructure and equipment, PHA reform, health financing, and monitoring and evaluation (National Department of Health, 2017a).

Additionally, it noted five broad areas for policy emphasis:

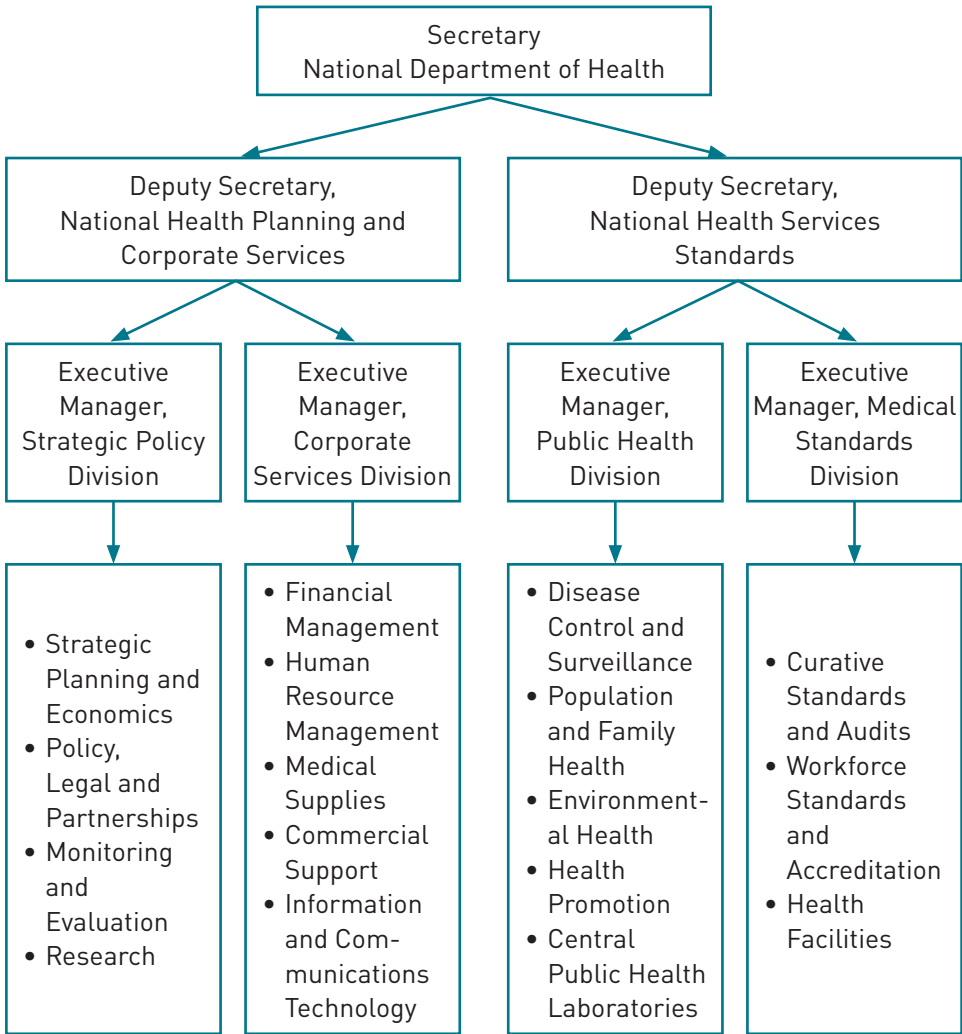
1. implementation of strategic priorities of the health sector plan;
2. the Community Health Post Initiative;
3. free PHC and subsidized specialist care;
4. national Health Services Standards; and
5. implementation of priority public health programmes.

2.1.1 Central-level governance

At the Central level, the NDoH has into four divisions: strategic policy, corporate services, public health and medical standards (Fig. 2.1). A deputy secretary is responsible for two divisions each and reports directly to the Secretary of Health. The Secretary of the NDoH has powers that complement the Department's role as a steward of the health system, including powers to issue operational directives to nongovernmental health-care providers concerning administrative measures that are necessary or convenient for the implementation of the National Health Plan (NHP) or National Health Standards (Government of Papua New Guinea, 2011a). The National Health Standards may specify minimum requirements for provision of staff, equipment and facilities for the operation of health facilities and the delivery of health programmes consistent with the NHP (Elich and Day, 2014).

The NHAA, 1997 establishes the National Health Board, which is responsible for advising the Minister on policy matters relating to health, including the formulation, extension, amendment and replacement of the NHP and to approve the National Health Standards for the purpose of implementing the NHP (Elich and Day, 2014). Along with this Act, the Central level has undertaken a programme of health legislation in recent decades, which has resulted in the enactment of health laws in various areas, including governance (Government of Papua New Guinea, 2007), essential medicines policy, communicable disease control and legislation to support environmental health standards (World Health Organization and National Department of Health, 2012) [see section 2.8].

Fig. 2.1 Organizational structure of the National Department of Health



Key: CPHL: Central Public Health Laboratories; CS: Corporate Services; ICT: information and communication technology; NDoH: National Department of Health; NHP: National Health Plan; NHSS: National Health Service Standards

Source: National Department of Health, 2013b

2.1.2 Provincial and local-level governments

The health functions of the Provincial Government and LLG are primarily determined in accordance with the Organic Law on Provincial and Local-level Government and the NHAA. The Organic Law details the law-making powers of provincial governments on a range of specified health matters, including sale and distribution of alcohol; community, urban and rural development;

rural health; and town and urban planning (Government of Papua New Guinea, 2008).

The NHAA extends these powers to include aid posts, health centres and subcentres, and rural hospitals; health-care and dental-care services other than those provided in a public hospital; preventive health services; and disease control (Government of Papua New Guinea, 1997a). It provides that “the responsibilities of a Provincial Government are to coordinate the operation of health facilities and the provision of health services and programmes in the province, other than the operation of public hospitals and the provision of services in public hospitals (Government of Papua New Guinea, 1997a). The NHAA also establishes provincial health boards that are chaired by the Provincial Administrator and their functions include advising the Provincial Government on health policy, coordinating implementation of the NHP, advising the Joint Provincial Planning and Budget Priorities Committee, and monitoring the implementation of plans and standards.

The Provincial Governments Administration Act, 1997 (Government of Papua New Guinea, 1997b) further extends the health function responsibility for provincial governments, outlining principal administrative functions for provinces. The additional functions created under the Provincial Governments Administration Act are:

- establishing the basic minimum needs for the development of rural and urban areas; and
- maintaining minimum standards as required by law in relation to health facilities, the health programme and hygiene; safe and accessible water; and safe environment and proper rubbish disposal.

The Organic Law grants the following law-making powers of LLGs in relation to health:

- cemeteries; town, city, village and community planning;
- control on consumption and use of alcohol, betel nut and betel nut-related products or any other marketable items;
- hygiene and sanitation;
- village communities; and
- local aid posts and clinics.

Under the NHAA, LLGs have the responsibility to ensure that adequate funds are budgeted for to meet the expenses of health-care facilities, services and programmes that service the population of the LLG.

The present Government of Papua New Guinea is committed to promoting improved accountability of district-level politicians for health sector performance. Several measures are proposed to support this approach. Simplifying the presentation of the National Health Services into checklists and managerial tools that can be more easily used by district managers and political leaders is one approach. Accountability and transparency will also be promoted through development of local-level planning and budgeting tools that can be linked to the national health information system (NHIS) and to health workforce data.

2.1.3 Public hospitals and provincial health authorities

Public hospitals are established as statutory authorities and are administered under the Public Hospitals Act (1994). Public hospital boards and provincial health boards report directly to the Minister for Health and HIV/AIDS. Under the PHAA, 2007, provincial governments can enter into a partnership agreement with the Minister to establish a Provincial Health Authority (PHA), which is responsible for both hospital and rural health services in a province. Under the arrangements for provincial health authorities, the Provincial Administrator delegates responsibility as departmental head in relation to provincial health staff to the Chief Executive Officer (CEO) of the PHA. The administrative, financial and decision-making powers are all held under this CEO. To date, 10 provinces (Western Highlands, Eastern Highlands, Milne Bay, New Ireland, West New Britain, East Sepik, West Sepik, Manus, Enga and Hela) have sworn in boards, while additional provinces Jiwaka, National Capital District and Autonomous Region of Bougainville, Madang are currently preparing for implementation in 2017/2018. All provinces are expected to have introduced the reform by 2018.

2.1.4 Other key stakeholders

At the national level, in addition to the central role of the NDoH, other key stakeholders include the Departments of Finance, Treasury, Personnel Management, National Planning and Monitoring, Provincial Affairs and Local Government, Community Development, the National Economic and Fiscal Commission, the Churches Medical Council (CMC), the Central Agencies Coordinating Committee, the Papua New Guinea Institute of Medical Research, University of Papua New Guinea (UPNG) and various tertiary education institutes. At the provincial and district levels, stakeholders include the provincial assemblies, provincial/district administrators, joint provincial/district planning and budget priority committees, provincial health boards, provincial hospitals, district health offices, aid posts, health centres, the church health service, community-based health-care providers and users of the health-care system.

2.1.5 *The Church*

The role played by the churches in service delivery in Papua New Guinea today can be directly attributed to their ongoing involvement since colonial times, filling the gaps in remote areas and taking up the role of the Government where services have failed because of governance reforms and capacity constraints (Kasse, 2008; Waiko, 2007). Church health services currently provide almost 50% of the rural health services, subsidized by the State (World Health Organization and National Department of Health, 2012).

The integral role of churches can be traced back to the Christian missionaries who first arrived in 1848 (Hauck et al., 2005) and were further followed in the 19th and 20th centuries by the missionary nurses (Ascroft et al., 2011). These communities have grown and spread across much of the country (Hauck et al., 2005). Further, churches are responsible for running six of Papua New Guinea's nine nurse training facilities and 14 training facilities for community health workers (CHWs) (Bolger et al., 2005; Hauck et al., 2005). Churches are also active in the provision of HIV/AIDS-related services (Ascroft et al., 2011). Because of this history, in some rural and remote areas, Church-based health facilities have a stronger presence than government facilities. More recently, churches have also taken over the management of several health facilities from the Government (Ascroft et al., 2011; Hauck et al., 2005).

The churches report technical and clinical data through the NHIS in line with the overall health system reporting requirements. However, each Church health service is responsible for the management of its own facilities, which it supervises, both clinically and administratively. Staffing terms and conditions of the Church health service are also the responsibility of each respective service, e.g. remuneration, hire/fire and discipline (Hauck et al., 2005).

For church health services, each facility receives funding from the National Government Church health service grants, through its respective Church Health Secretary. Each facility has a board or Management Committee, which provides day-to-day management. From its budget, a Church health facility provides the same services and funds the same programmes as government services do. As for the government facilities, designated Church health service centres have, and fund, supervisory responsibilities over other designated Church health service facilities.

The Churches Medical Council (CMC) is an umbrella organization established in 1972 to represent church health service providers. It represents 27 (of 82) registered church agencies from 14 different Christian denominations. Membership is limited to denominations recognized by other member

churches. It is a national-level body and works directly with the Central Government, but there are also subnational chapters that work with provincial counterparts in accordance with the ideals and constitution of the CMC. The CMC is a democratic organization with a form of proportional representation: the number of voting members is governed by the number of “appropriate health workers” employed. Membership fees are a source of income for the CMC. Income also comes from government and donor agencies (Ascroft et al., 2011). The CMC has the role of negotiating funding and human resource issues with the Government. It also functions as a voice for a diverse group of Church-based organizations to exchange views on health reforms and to disseminate health information. This mechanism has the potential to contribute to policy dialogue and coordination, given the strong role of churches in the health sector (Hauck et al., 2005).

2.1.6 Private providers

There is a relatively small but growing for-profit private health sector in Papua New Guinea. This consists of local private providers, some blurred public/private provision, and a significant contribution from large mining and plantation companies to direct provision (McKay and Lepani, 2010; Thomason and Hancock, 2011). Private medical clinics are mainly staffed by general practitioners, a few clinical specialists and allied health practitioners, mainly urban-based, and their number is increasing. Standards of practice and levels of fees vary greatly due to lack of regulation. These services are largely utilized by individuals who have the means to pay and those who are covered by health insurance (see section 3.5). There is little collaboration between the private sector and public hospitals and urban clinics (Thomason and Hancock, 2011).

Over the past decade, the health system has struggled to respond to and meet the needs of the population, with little change in most health indicators (Asante and Hall, 2011; World Health Organization, 2012b). Ubiquitous health system issues such as critical shortages of health-care workers, supply chain problems including stock-out of medicines and vaccines, and an unreliable health-care financing system leave a large proportion of health facilities without adequate funding, staffing or essential medicines to deliver quality services (Asante and Hall, 2011; Howes et al., 2014; World Health Organization, 2012a).

2.2 Historical background

Prior to Independence in 1975, Papua New Guinea was under the colonial administration of Australia. Services were delivered through a centralized administration that had district commissioners who were responsible for ensuring that the directives of the Central Government were implemented

(Day, 2009). This type of administration combined with policies at the global level such as the WHO's Global Malaria Eradication Programme meant that service delivery was organized through large vertical programmes, controlled at the central level (Keusch et al., 2010). Missionaries worked closely with the administrators during this period, setting up "mission stations" that included health posts (Waiko, 2007).

Independence in 1975 brought with it a new Constitution and a new legislation, the Organic Law on Provincial Government, in which decentralization of the Government began (Day, 2009). The legislation was born out of a political compromise to gain national unity and was an attempt to bring decision-making closer to service delivery. The rushed process of decentralization meant that little thought went into how to effectively implement a governance structure to support it, especially in terms of taking human resources from the central level and allocating them too thinly out across the country. Service delivery was further fractured with the New Organic Law in 1992, which created another level of government referred to as "local-level governments". The national level handed over to the provinces the control of their budgets and service delivery, with the national level retaining responsibility to act as the steward for the health sector (Day, 2009). At the same time, the effect of the Alma Ata declaration in 1978 and the Primary Health Care Policy saw the further dismantling of the large vertical programmes, as services were integrated into rural health services (Merson et al., 2006; Welsch, 1988).

The decentralization policy has meant that the NDoH plays a key role in the regulation of the health sector, developing policies and standards, providing sectoral coordination and maintaining the NHIS. The NDoH is also responsible for the procurement of medical supplies and commodities for all health facilities in the country. However, the implications of the reforms have meant that distribution from the provinces to the health facilities is the responsibility of the provinces.

Patterns of resource allocation had been based on the formula in the 1995 Organic Law related to population, land and sea area (Bolger et al., 2005). Poorer provinces' needs were not met under this formula, and there were notable deteriorations in the quality of services at health centres and aid posts as a result. A new allocation formula was developed after this review, which considered other key, measurable indicators, including population, IMR, number of disadvantaged districts, capacity to pay and capacity to spend (Bolger et al., 2005). Historically, a significant part of the problem of resource allocation has been the largely unconditional nature of the grants provided by the Government to the provinces. Loose arrangements for allocation have meant that provinces are under no obligation to allocate specific volumes

of resources to implement national policies. This contrasts with the period before 1995, when the vertical programme approach assured that funding was allocated centrally to specific priority health programmes.

These challenges with resource allocation and the public financial management systems in Papua New Guinea have triggered further administrative reforms in recent years. The District Services Improvement Programme (DSIP) was designed by the Government as a model to fast-track infrastructure improvement. This policy direction was aimed at moving the focus of service delivery to districts and LLGs (Richards et al., 2012). In 2009, reform of the intergovernmental financing arrangements was undertaken (called RIGFA) to improve equity of funding to provinces in most need, especially targeted at the delivery of basic services. This funding is packaged as function grants, which support a defined package of minimum priority activities (MPAs) (National Economic and Fiscal Commission, 2017b). The development and regular review of the level of these grants is conducted by the NEFC through a cost of services study, which estimates the operational costs necessary to support subnational-level service delivery and administrative activities at provincial, district and LLG levels (see section 3.2 for more details on health function grants and MPAs).

In addition to the role in health development outlined earlier of local governments, churches and the private sector, several other institutions and sectors outside the health sector have contributed to resourcing, planning and monitoring, in active partnership with the NDoH. These include the following:

1. Central agencies such as the national Departments of Finance, Treasury, Planning and Monitoring, which drive planning, public sector reform and national budgets through to support the development and oversight of national plans and policies, related budgets and financial management of government expenditure;
2. the Department of Prime Minister and National Executive Council and the Papua New Guinea VISION 2050 Development Centre (previously called Public Sector Reform Management Unit), which oversees and monitoring the implementation of the Government's 40-year plan PNG Vision 2050;
3. the National Economic and Fiscal Commission (NEFC), which is an independent constitutional advisory body of the State and provides advice to national government agencies (e.g. Treasury, Finance and Planning) and decision-making bodies (e.g. National Executive Committee) regarding economic policy and levels and equitability of allocations of government funds between various levels of government. It has also played a major role in establishing processes

to ensure funding for service delivery at local levels through the health function grants, developing costing models for health service activities in each district and province, and being an advocate for improved funding of basic services at the local level (National Economic and Fiscal Commission, 2017b);

4. the Department of Provincial and Local Government Affairs and its Provincial and Local-level Service Monitoring Authority (PLLSMA), which are responsible for implementing national policies at the provincial level. Membership comprises key national government agencies at the department head level to coordinate their work on policy implementation and service delivery, and to assess the efficiency and effectiveness of provincial governments and LLGs, including monitoring and oversight of grants made from the national budget to lower levels of government; and
5. the Department of Personnel Management, which is responsible for overseeing Papua New Guinea's public service employment, industrial relations and human resource development and management, as defined under the Public Service (Management) Act, including setting and monitoring the public service standards and code of conduct, and approving levels of personnel at national level (National Department of Health, 2017a).

Initiation of the Sectorwide approach. As part of the response to improving the poor service delivery indicators, the Government of Papua New Guinea established the Health Services Improvement Programme (HSIP), which was the beginning of the Sectorwide Approach (SWAp) for the health sector (Richards et al., 2012). Initially set up as a Trust Account in 1996 by the Asian Development Bank as a temporary mechanism to allow for strengthening of public financial systems, the Trust Account system was designed to channel aid through government systems in a more aligned and harmonized manner (Richards et al., 2012). However, a certain degree of consensus had been reached among donors at the end of the 1990s that the SWAp offered a better prospect to achieve sustained improvement in health systems than the piecemeal pursuit of separately financed projects and supported the request by the NDoH for a more efficient and effective way to manage donor assistance to the sector. The Trust instrument was revised in 2009 and gave trusteeship to the NDoH.

Performance issues of the SWAp were raised as early as 2007, when the Independent Monitoring and Review Group (IMRG) concluded that more resources had been committed through the HSIP mechanisms than were originally anticipated (Richards et al., 2012). Furthermore, in 2008, an AusAID

review through the Office of Development Effectiveness found that less than 40% of pooled development partner funding had been spent (Richards et al., 2012). Difficulties in spending at the provincial level were exacerbated by onerous acquittal processes, lack of provincial or district treasury engagement, and a disincentive for use of funds at district and facility levels in remote areas because of difficulties in attaining original receipts.

Financial performance issues were also identified when adverse audit findings from donors such as the Global Fund to Fight AIDS, TB, and Malaria (Global Fund), and more recently, the 2016 Vaccine Alliance (GAVI) have resulted in the NDoH and the Global Fund agreeing to an external Principal Recipient arrangement as agreed to by the NDoH, and for the United Nations Children's Fund (UNICEF) and WHO to manage the GAVI grants.

Today, while still in operation, the SWAp Trust Account holds significantly less funds than during the mid-2000s. The current Government is committed to reviving and improving SWApS in Papua New Guinea but will review lessons learnt from these experiences and also in a climate of some changes in financial management capacity at the provincial and local levels.

2.3 Organization

As noted earlier, the health services are provided both by government providers and the Church, both of which are financed primarily by the Government. There are also employer-provided health-care services (predominantly in agriculture, mining) and a small for-profit private medical sector. A complex and varied traditional health sector exists (see Chapter 5). Responsibility for the management and organization of health care is divided between the Central and local government responsibilities (see section 2.1) (World Health Organization and National Department of Health, 2012).

Following a National Health Conference conducted in 2001, it was agreed to support a proposal for a more unified provincial health system. Under this system, a single PHA becomes responsible for both hospital and rural health services. This PHA is headed by a provincial CEO, who reports to both the national and provincial governments' leadership. This system is gradually being implemented across the country. (See earlier this chapter for details.) This reorganization of health-care services is being supported by several other measures to improve subnational health-care management. These include the following:

1. amendment of selected public finance and management procedures;
2. quarantining (earmarking) of health funds in provincial grants (see section 3.2 for more details on these health function grants);

3. delegation of powers over district health staff from the provincial administrator to the provincial health adviser; and
4. alignment of Treasury warrants to provincial budgets.

A review of organizational functions has also recommended that provincial health budgets should make provision for each rural health facility (World Health Organization and National Department of Health, 2012). This linking of budgets and plans at the operational level (see section 2.4 below) should help in arresting the decline in service coverage and in allocation of health human resources to more rural and remote areas.

Table 2.3 provides an overview of the overall governance structures for health in Papua New Guinea. The main feature of this organizational system is the transition to a more decentralized model of governance (see section 2.4), with split responsibilities for management between provincial and central levels.

Table 2.3 Governance arrangements in Papua New Guinea: An overview

Administrative level	Political structures	Administrative structures
National	National Parliament National Executive Council Ministries	National Parliament Statutory Bodies National Department of Health National Health Board
Province	Provincial Assembly Provincial Executive Council Provincial Committees Joint Province Planning and Budgetary Priorities Committee	Provincial Administration Provincial Treasury Provincial Audit Service Provincial Health Board Provincial Health Advisor*
District	Joint District Planning and Budgetary Priorities Committee	District Administration District Treasury District Health Manager District Health Management Committee
LOCAL LEVEL		
Each district is divided into local-level governments (LLGs). There are 284 LLGs in Papua New Guinea.		
WARD LEVEL		
Each LLG has many wards. There are 5747 wards in Papua New Guinea.		
COMMUNITIES AND VILLAGES		
Each ward is made up of many hamlets, villages and non-traditional village areas.		

Note: * Changes under the PHAA to a CEO of provincial health

Source: Asante and Hall, 2011:p.13

A large number of non-State actors, including civil society organizations, industry and landowner groups, support the management and delivery of health services (Table 2.4).

Table 2.4 An overview of non-State actors' roles in the health system in Papua New Guinea

Name of organization	Main role and responsibility in health care
Agriculture and extractive industries	Extractive industries develop infrastructure to provide health services for their employees. Such groups include OK Tedi Mining Ltd., Oil Search, and palm oil companies and agricultural estates. Such enterprises provide primary care, a laboratory and hospital services (Government of Papua New Guinea, 2010b & 2010c).
Institute of Medical Research	Established in 1968, the Institute is a statutory body and reports to the Minister of Health.
National AIDS Council	Established by an Act of Parliament and is designed to facilitate a multisectoral response to HIV and AIDs
Nursing Council of Papua New Guinea	The law governing nursing practice is in the Medical Registration Act passed by National Parliament. The Nursing Council for Papua New Guinea is a statutory (legal) body that registers nurses and controls their practice.
Papua New Guinea Alliance of CSOs against HIV AIDs	Formed to more effectively advocate for social and behavioural change to prevent HIV and AIDS and mitigate the impacts of the epidemic
Papua New Guinea Business Coalition Against HIV and AIDS	Established to assist business in Papua New Guinea to implement an HIV workplace policy
Papua New Guinea Industry Malaria Initiative	Established in 2013 to bridge the gap between the public and private sectors for malaria control. Advocates and supports major resource sector industries to accelerate implementation of malaria control and elimination by 2050
Papua New Guinea Medical Board	Undertakes registration according to the Medical Registration Act of 1980
Papua New Guinea Society of Rural and Remote Health	Registered as a professional society in 1962 for the purpose of promoting rural health and continuing education

Source: Compiled by authors

2.4 Decentralization and centralization

As described earlier, prior to Independence in 1975, the Department of Health in Papua New Guinea was a highly centralized organization and administered a series of vertical programmes to deliver services. The current legislative and governance arrangements in the health sector are the result of successive decentralization reforms. Provincial governments were established through the passage of an Organic Law in 1976. Under this law, responsibilities were delineated as:

- national functions, where relevant national departments retained control;
- transferred functions, which became the responsibility of the provincial government; and
- “national delegated functions” (including health), which were to be performed by the province but ultimately remained the responsibility of the national department. Functions in this third category were intended to be handed over to the provincial government once they demonstrated sufficient capacity to manage them. Health was transferred to the provinces in 1978 (Elich and Day, 2014). When decentralization to the provinces was implemented, it took five years (1977–1982) for it to be finally completed in the health sector. It was reported that there was strong resistance from senior officials at the national level and reluctance of some provinces to take on the additional burden of managing provincial hospitals (which was then addressed by the (Government of Papua New Guinea, 1997a).

In 1995, a new Organic Law was passed, which created LLGs. This law created district administrations that corresponded to the electorate of open members of the national Parliament and removed elected members of the provincial government. Open members also became chairs of the newly formed Joint District Planning and Budget Priorities Committee (JDPBPC) at the district level – a quasi-political structure with significant authority over resource allocation (Day, 2009). Similar structures were instigated at the provincial level. The health sector responded to the passage of the new Organic Law by introducing enabling legislation. The NHAA, 1997 was intended to provide the legal framework for linking and consolidating the functions of all levels of government and other agencies involved in the delivery of health – including introduction of National Health Services Standards, defining administrative functions, and establishing relevant boards and management committees. The responsibility of the provincial government was to coordinate the operation of health facilities and the provision of health services and programmes in the province, other than the operation of public hospitals and the provision of services in public hospitals

(Government of Papua New Guinea, 1997a). An extensive training programme was conducted by the NDoH throughout Papua New Guinea to support the implementation of this Act and the operations of the provincial health boards.

More recently, Papua New Guinea has introduced significant fiscal decentralization reforms, in part as a response to strong advocacy based on an evidence base of major resourcing issues for provincial health services. The NEFC guided a review of intergovernmental financing arrangements, in which the NDoH participated, which led to amendments to the Organic Law in 2008 and the passage of the Intergovernmental Relations (Functions and Funding) Act of 2009 (Government of Papua New Guinea, 2010a). The new system began in 2009 and changed the way the Government calculated how it would provide function grants to the provinces. Instead of supplying funding on a per capita basis, as had happened previously, the reforms meant that the national Government distributed funds to provinces according to the cost of delivering services (see section 3.2).

Papua New Guinea is now embarking on a further round of decentralization reform and a major reorganization of the subnational government. The Constitutional Law Reform Commission (CLRC) has undertaken a review of the Organic Law. Administratively, it is envisaged that:

- the national Government will coordinate and monitor the implementation of its policies at the provincial level;
- the provincial government will coordinate, facilitate and monitor the implementation of service delivery at the district level;
- district development authorities (DDAs) will implement government service delivery policies and programmes; and
- municipal authorities will manage towns and urban centres.

Importantly, the CLRC recommends that PHAs be retained and made mandatory under the Organic Law.

The most significant reform for service delivery, which is already progressing, is the introduction of DDAs as the frontline service delivery mechanism for Papua New Guinea. An amendment to the Organic Law has already been passed by the National Parliament as well as the District Development Authorities Act, 2014 (Government of Papua New Guinea, 2014a). The District Development Authorities Act changes the nature of the JDPBPC from a planning and budgeting committee to a statutory corporation with service delivery functions and responsibilities. This Act creates DDA boards and a power for the Minister for Provincial and Local-level Government Affairs to allocate district service delivery functions and responsibilities.

To support these improvements, an area that will require more policy and planning focus is NHIS reform. Such reforms need to be institutionalized so that local-level planning has a firm evidence base, and so that local-level managers can be held accountable for health sector performance (see Chapter 4 for more details).

2.5 Planning

2.5.1 Overall health planning system in Papua New Guinea

The theoretical process of health planning is a complex and iterative process, linking health sector plans to whole-of-government plans at each level of government. The health plans are informed by and subsets of the National Strategic Plan entitled Vision 2050 (2011–2050), which defines the vision of a smart, wise, healthy and happy society by 2050. The Department of National Planning has broken that Vision into the Development Strategic Plan 2010–2020 (DSP), providing the policy direction and sector interventions of the key focus areas of Vision 2050 and the Medium-Term Development Plan (MTDP) 2011–2015 and MTDP2 for 2016–2017. It was developed for only 2 years to allow realignment with the Parliamentary cycle as elections were held in 2017. Additionally, a Medium-Term Fiscal Strategy (MTFS) has been developed, which both sets the levels of public spending based on anticipated inflows from revenue sources and desired debt levels, as well as defines guiding Provincial development plans are informed by these key documents to guide provincial implementation and expenditure frameworks for the provinces. Similarly, district and LLG development plans have been developed in 5- and 10-year time frames. At each level, i.e. LLG, district, province and nationally, the health sector plans at each of these levels feed into the overall development plans for these levels.

The cascading logic planning framework (Fig. 2.2) demonstrates the alignment of the health sector plans to these whole-of-government plans.

In summary:

- The National Health Plan 2011–2020 details the health sector policies and strategies for health sector improvement for the first 10 years of the DSP;
- Medium-term expenditure framework (MTEF);
- NDoH 3-Yearly Corporate Plan 2017–2020 acknowledges the higher-level strategies and goals of the national development plans and Vision 2050. The Corporate Plan translates the MTDP into a 3-year focus on the Department's core business and strategic directions. This details the work the NDoH is mandated to undertake under the NHAA, such

- as policy development, definition of standards, sectoral monitoring and evaluation, and technical assistance to the provinces and below;
- Based on the NHP and the 5-year strategic implementation plans, the provincial health sector plan has been developed. This is also fed into by and informs in an iterative manner the district health implementation plans, and likewise iterative and linked approaches for health facility implementation plans.

Fig. 2.2 Overview of the planning system in Papua New Guinea



Source: National Department of Health, 2017a

As noted in the opening, this is the theoretical process for planning but often consultation, review and editing processes disrupt the relationships.

2.5.2 National health planning agencies for health

Informed by the processes detailed above (Fig. 2.2), the health sector also has a multilayered process of developing strategic, annual operational/ activity plans and expenditure, and monitoring and evaluation frameworks to support implementation of these plans. The main agency involved in planning includes the NDoH at the strategic level. The NDoH and development partners are both involved with the system of annual review of the Corporate Plan. The PHA/Provincial Health Board and district and hospital management are concerned with the development of annual activity plans.

These health sector plans are reviewed and approved within the health sector governance arrangements (i.e. provincial health boards/authorities and national health boards) and then submitted to the whole-of-government

bodies involved in planning and monitoring the nation's strategic development. The National Executive Council (NEC) may, after considering a report and recommendations of the National Health Board, approve the National Health Plan. The NEC comprises the Prime Minister and 31 Cabinet members (all ministers) and provides leadership and guidance in coordinating and overseeing the implementation of the Government Vision 2050 and other national strategic plans.

The Provincial Health Board provides advice to the Joint Provincial Planning and Budget Priorities Committee on the provision of adequate resources required to ensure the National Health Services Standards and the provincial implementation plan in the province (Government of Papua New Guinea, 1997b). These implementation plans in all provinces and provincial hospitals have developed 5-year health sector service improvement plans. These plans identify key projects needed to rehabilitate service delivery. Projects are then integrated into the health MTDP proposal to the Department of National Planning and Monitoring for funding. According to the NHP, the role of the Joint Provincial Planning and Budget Priorities Committee at the provincial and district levels is critical for supporting a decentralized health planning system. According to the NHP, "each local-level government plan is expected to reflect the needs and priorities of communities, while each provincial plan is expected to relate to local realities and national priorities" (Government of Papua New Guinea, 2011c) (Fig. 2.3).

Fig. 2.3 Main classifications in the planning system in Papua New Guinea

	Health sector plans	Health sector approval	Whole of Government
Strategic planning	National health plan (developed every 10 years, reviewed every 5 years)	Presented to National Health Board (NHB) for approval	Submitted to National Executive Council. Feeds into Medium Term Development Strategy (MTDS)
	Health sector strategic plans such as health workforce and infrastructure plans (developed every 5 years, reviewed annually)	Presented to provincial health heads /CEOs for review & endorsement. Approved by NHB	Submitted to National Department of Planning and Monitoring. Feeds into Medium Term Expenditure Framework (MTEF)
	NDoH corporate plan (developed every 3-5 years)	Annual review by NDoH executive Report to NHB	
	Provincial health strategic plans (developed every 5 years)		Presented to Joint Provincial Planning & Budget Priorities Committee for review/incorporation into provincial 5-year or annual plans
Operational planning	Provincial health annual plan and budget (developed as part of provincial partnership agreement with NDoH)	Presented to Provincial Health Board for approval	
	Annual operational unit activity plans <ul style="list-style-type: none"> ▪ Provincial hospital ▪ Provincial health office ▪ Other health facilities ▪ etc Annual service level activity plans <ul style="list-style-type: none"> ▪ Immunization plans ▪ outreach visit schedules ▪ etc. 	Annual evaluation by unit ↓ Annual review by provincial health authorities ↓ Provincial /NDoH partnership agreements annual review	No linkages

Source: By the authors

Under consideration is a more directly linked planning and budgeting process for the district level and below (down to facility level), which is still being reviewed for feasibility. The desired outcome of these mooted changes is

to improve service delivery through securing the necessary decentralized funding to support operations in such areas as expansion of health outreach services from health centres (Government of Papua New Guinea, 2011c).

2.5.3 Human resources planning

Available evidence indicates that Papua New Guinea has been for several years, and currently is facing, a human resources for health (HRH) crisis. The health sector is experiencing a decline in the number of skilled health workers, including a disproportionately low number of skilled workers in rural areas resulting in: (a) inequitable access to health services; (b) low productivity of health workers; and (c) uncompetitive conditions of service. The human resource management challenges facing the sector stem from years of underfunding by the Government and the neglect of human resource (HR) issues. The capacity to produce the required number of competent health staff is also severely compromised. These challenges now demand attention from the Government because of an overall decline in the quality of health services delivered and the poor health status of citizens. Guiding documents for HR planning and management include the Health Sector Human Resources Policy, 2013 (Government of Papua New Guinea, 2013b) and the Health Sector Human Resource Management Policy, 2012 (National Department of Health, 2012). Although the two policies were similar, it was the 2013 policy was the one approved for implementation. The development of these documents was protracted over several years (commencing 2002). A detailed intersectoral consultative process fed into the development of these policies, including an HR Forum in 2008 (attended by a broad cross-section of provincial managers, including health, national departments and development partners and other stakeholders) and an HR training forum in 2010 (again with broad and deep representation, including training institutions and accreditation and registration authorities, e.g. Papua New Guinea Medical and Nursing Councils). These policies were also informed by evidence collected through the Papua New Guinea Health Human Resources Review commissioned by the NDoH and undertaken by the World Bank in 2011 (Morris and Somanathan, 2012). Issues raised in the 2009 and 2010 Auditor General's Reports and the 2011 Public Accounts Committees' recommendations on multiskilling and the need for effective recruitment and management of casual employees in the health sector were incorporated into the policy.

The HR Policy 2013 has the following vision: "By 2020, the health sector shall have a well-managed, highly qualified, skilled and sustainable health workforce that delivers quality health services to meet the country's population needs, and focuses on the rural majority and urban

disadvantaged” and an explicit objective, “to ensure workforce planning becomes the foundation for all health sector workforce training, recruitment, job placement and professional development” (Government of Papua New Guinea, 2013b). This Policy in the preamble noted that Papua New Guinea had not had a workforce plan for the sector, and that the ad-hoc approach to HR workforce planning as well as the lack of a comprehensive and up-to-date HR information system (HRIS) has contributed to the critical state of the health sector workforce. Among strategies, it details the following:

- The health sector will develop a comprehensive and well-coordinated national health workforce development plan in collaboration with its main partners based on the analysis and review of the HRH situation conducted for Papua New Guinea;
- Workforce plans will be developed every 10 years and reviewed every 5 years in tandem with reviews of the NHP and Health Sector Training Plans;
- The capacity for HR planning within the NDoH, provincial governments and PHAs will be strengthened and integrated in all planning processes;
- An operational guideline manual will be developed to guide the management and treatment of casual employees.

The focus of the NDoH Human Resources Department has been skewed towards personnel administration as opposed to focusing on a more holistic and integrated approach that addresses all aspects of workforce issues. These include planning for supply of the workforce, liaising on education and training, management of performance and improving their working conditions. The lack of regular strategic consultations has resulted in training programmes either duplicating other training programmes or not responding to health sector needs and priorities.

Improved planning requires accurate and reliable data and information on the prevailing staffing situation, accurate methods for staff projections and close coordination between supply and capacity absorption. Weaknesses in information capture and management over time have contributed to unbalanced and inequitable distribution of health staff between remote and isolated areas and urban areas (see section 4.2). This imbalance has been compounded by inadequate HRH management capacity within provincial governments, especially after the decentralization of decision-making with regard to HRH issues (refer to section 4.2 for more detail on planning and management of human resources).

Considering that the health sector employs a large proportion of women, women still have fewer opportunities than their male counterparts to occupy

leadership positions within the health sector (National Department of Health, 2013b). There is a need to create a conducive environment that tolerates women and encourages and supports them to apply for other types of health professions and management positions. In the HR Policy (Government of Papua New Guinea, 2013b), Strategy 3.2.8.1 details “The health sector will promote gender equality principles in all aspects of work, including training, recruitment, selection, placement, promotion and professional development in consistence with the Gender Equity and Social Inclusion Policy and Health Sector Gender Policy.” Within the context of implementing this Policy, a monitoring framework for gender equity has been included in the HR Policy 2013, namely:

- number of policies reviewed to facilitate gender equality; and
- issues of gender equality are addressed in all HR policies.

However, it falls short of actually measuring changes in the percentage of women in leadership and management positions.

2.5.4 Infrastructure/capital planning

The Government of Papua New Guinea has a substantial health infrastructure development programme. As an example, the NDoH capacity assessment found that the capital works programme had over 300 projects in 2013, most of which were for buildings but also for static plant and biomedical equipment (National Department of Health, 2013d).

There are a range of agencies responsible for implementation of the NDoH health infrastructure plan. The NDoH has a functioning Infrastructure Division delivering the infrastructure required to execute the NHP. There are three main players in this Division – the Facilities Branch, the Health Facilities Standard Branch (develops design policy standards for health infrastructure) and the Rural Primary Health Service Delivery (RPHSD) Project. The RPHSDP is an eight-year (2011–2019) joint initiative of the Government of Papua New Guinea, the Asian Development Bank (ADB), Department of Foreign Affairs and Trade (DFAT), OPEC Fund for International Development (OFID), World Health Organization (WHO), UNICEF and the Japanese International Cooperation Agency (JICA) (see section 4.1) (Asian Development Bank, 2017).

In the NHP, infrastructure development is identified as a key result area (KRA) of the strategic area of health systems strengthening (Government of Papua New Guinea, 2010b). The NHP in its infrastructure planning focuses on development of PHC facilities and some hospitals to ensure that health facilities at every level of the system are equipped to provide high-quality

care for mothers and children; rehabilitation of water supplies and sanitation; and renew basic clinical equipment and assets (Government of Papua New Guinea, 2010b). An independent capacity assessment conducted in 2013 recommended that the Government develop a PHA infrastructure capacity-building strategy to support infrastructure development in PHAs based on their capacity/needs and consistent with national policies and functions (National Department of Health, 2013d). A Joint Health Sector Assessment conducted in 2015 noted that diffuse funding sources with multiple health infrastructure purchasing arrangements is leading to poor use of available investments (National Department of Health, 2016).

2.5.5 Health plans at other levels

A detailed planning process is defined in the health sector (see section 2.5.1), although often these plans are incomplete, do not use evidence to prioritize implementation of activities or adapt based on monitoring and evaluation data, and are finalized late. Additionally, funding is often not provided by the Government at the planned levels to deliver on these plans and is released late (see section 3.1).

The process (see Fig. 2.3) is that at the provincial level, provincial administrations develop 5-year development plans that are aligned with the MTDP and, within the health sector, to the NHP strategic directions and priorities. The health sector uses this information to develop 5-year provincial health sector implementation plans. These plans are intended to direct all health sector service providers in the province. The PHA (or in provinces without the PHA reform, the Provincial Health Office) in each province is responsible for developing plans that conform to the standards, guides and templates developed by the NDoH.

Annual activity plans are then used to implement strategic directions in the multiyear plans. Activity plans include activities that will be implemented by each management unit. The NHP proposes that standard templates will be updated to reflect the evolving “whole-of-government” concepts in the development of annual district- and local-level budgets and plans. The Provincial Annual Activity Plan is developed jointly with all service providers, the public, Church and private sector. Activities and costs are consolidated into a yearly consolidated action plan. The lower-level district annual activity plans form the main content areas of the Provincial Annual Activity Plan.

The reality is that the lower-level plans tend to be copied from year to year with minimum review and adjustment. Although the variation in what needs to be done at the lower levels is minimal from year to year, the targets

and possible prioritization dependent upon budget allocations may vary. Additionally, the time required for every facility to develop its plan, then feed it upwards to the district and then province to inform the provincial plans as described above means that the provincial and district plans often assume the same activities at each facility in their plans and do not wait for the arrival of facility plans, even if they are completed.

Over the period of the 2011–2020 NHP, concerted efforts will be made to encourage and improve facility-level planning. Given that the Government is considering a roll-out of the NEFC-recommended reforms to enable direct facility funding (see section 2.3), each health facility should be able to plan and budget autonomously according to a defined resource envelope. Aggregation of facility-level plans would comprise the core of the District Annual Activity Plan. The objective is for the District Annual Activity Plan to better reflect the health service needs of the local population (Government of Papua New Guinea, 2010b). In the same context, a recent NDoH capacity assessment highlighted the need for this facility-based budgeting to be linked to Government PFM reform initiatives. Specifically, this means designing a chart of accounts (i.e. financial organizational tool wherein every account that is a unique record for each type of asset, liability, equity, revenue and expense, is listed) that aligns with NHP KRAs. Together, the vision is for a practical “bottom-up” linked planning and budgeting process, and practical measures to improve systems for tracking expenditures on health at all levels (National Department of Health, 2013d). Capacity to develop such plans at these levels is part of the feasibility issue being considered at the national level.

2.5.6 Policy development and priority-setting by different tiers in the system

Traditionally, policy, planning and priority-setting is largely “top-down” in the Government context, although the aforementioned reforms through NEFC guidance aim to move that to bottom-up. The NDoH has been active, especially since the NHAA (see section 2.1), to seek more engagement with local-level facilities, health staff and managers and government in health planning, budgeting and review processes. This includes the annual national health conference, in which provincial health and hospital management, senior-level NDoH staff, Church health services leaders, development partners and senior staff from other sectors (e.g. NEFC, Treasury, National Planning) participate to review the performance of the health sector, discuss innovations and changes required in programmes, review the policies of and for the sector, and feed into the annual and national health planning and implementation processes as well as the NDoH corporate plan and annual programme.

The whole-of-government MTDP 2011–2015 (Department of National Planning and Monitoring, 2010) has identified improving health services to the rural majority and urban disadvantaged as a priority. There is then alignment between the MTDP and the NHP on these activities, resourcing and outputs. In support of the strategic priorities of the NHP, the NDoH corporate plan (2017–2020) specifies the main priorities for the next 3 years for the NDoH according to its roles and responsibilities (National Department of Health, 2017a). These priorities are:

1. free health care and subsidized specialist health services (implementation of the Free Primary Health Care and Subsidized Specialist Health Care Policy, 2013) (more details in Chapter 3);
1. improved health infrastructure;
2. medical supply procurement and distribution reform;
3. health workforce planning;
4. implementation and completion of roll-out of the PHA;
5. support of the church health services; and
6. improved leadership and governance.

At the facility level, the three MPAs defined by the NEFC (see section 2.3) as part of the health function grant are:

1. outreach patrols (health staff from the health centre taking services to communities and aid posts);
2. operations such as maintenance of the facilities and equipment; and
3. delivery of medical supplies.

Priority-setting in the health plans is also guided by the National Health Services Standards for Papua New Guinea (2011–2020) (Government of Papua New Guinea, 2011a). These standards outline the minimum support services, staffing, safety, quality and design standards and other requirements of health services at the various levels of the system, to ensure safe and appropriate (best practice) service delivery. They are intended to be utilized by planners when developing their strategic and annual activity plans. The proposed shift towards facility-based budgeting, and integration of such facility plans into district activity plans, should result in the priority-setting process gradually shifting closer to community level over the coming years.

2.5.7 Evidence regarding the effectiveness of the planning system in implementing change

The overall aim of developing these planning frameworks as outlined in the NHP is to improve alignment and harmonization of planning efforts at all levels of the health system, and plans and processes at all levels within the Government. However, during the in-country consultations undertaken to develop this review, NDoH managers confirmed that the service-level plans take 8–18 months each time to guide annual planning, making alignment difficult. More streamlined planning, budgeting, and monitoring and evaluation systems are needed to ensure timelier implementation and operational financing for basic health services. This is especially so as it must take into account the complexities associated with planning and budgeting for 89 districts across the country. In line with the Minister of Health and Government objective to improve sectoral alignment, including SWAp strengthening, development partners should be, and will be, encouraged to better coordinate and plan their inputs based on the priority investment areas as identified in the NHP and MTDP.

The proposal under consideration to move towards facility-based budgeting also aligns very well with the overall decentralization strategy of the Government. An evaluation of the progress of facility-based budgeting in operation since 2011 in Bougainville found that health centres receiving direct financing could deliver more health services than health centres that did not implement the strategy. To derive the full benefit from such a decentralized budgeting strategy, public financial reforms and capacity-building efforts would be required to ensure adequate middle-level management skills in such areas as planning, budgeting, and monitoring and evaluation.

The other main issue that challenges the effectiveness of health planning in the Papua New Guinea context is the discrepancy between the appropriated budget and the timeliness of the issue of warrants by the Treasury. Annually there is a delay in issue, which results in delays in overall budget execution and “burn rate” of financial resources, whether sourced from the Government or donors (National Department of Health, 2013b). The delivery of health function grants for operations can be delayed by up to 6 months, which means underutilization of services for the first half of the year, and limited capacity by management units to absorb funds in the second half of the year. This is a major contributor towards inefficiency and inequity in the provision of services. As outlined elsewhere in this sector review (see section 3.2), delay in funding flows has resulted in some facilities continuing to charge patients so they can maintain operations (National Department of Health, 2016).

The NHP intends to address this situation through the establishment of a decentralized planning framework (see section 2.5.2) as well as implementation of public financial management reform, and through exploration of the policy option of developing systems for facility-level planning and budgeting.

2.5.8 Cross-border mobility of patients and health workers

Most of the migration and health issues in the Papua New Guinea setting relate to the rapid migration of rural populations into urban areas, and the delayed response in developing an effective urban strategy for the poor. There is some cross-border movement and referral for TB and malaria cases to Queensland and Darwin, Northern Territory. Weaknesses of health-care systems in rural and remote areas of Papua New Guinea may contribute to the demand for health services across borders (World Health Organization and National Department of Health, 2012).

2.5.9 Involvement of the health sector in multisectoral disaster risk management and preparedness, including humanitarian assistance

Disasters and medical emergencies occur frequently in Papua New Guinea. The risk in the country's setting is very high, given the remoteness of many locations, the absence of rapid referral and retrieval systems, and significant gaps in telecommunications. Due to the geographical setting and institutional limitations, Papua New Guinea lacks the infrastructure and the technical management capacity to prepare adequately for disasters and respond effectively to them.

There are policies outlined in the NHP (Government of Papua New Guinea, 2010b) to address issues of disaster prevention and management:

- All health institutions shall have in place a disaster preparedness and response plan.
- All health facilities shall have firefighting and escape systems and evacuation exercises conducted at least once per year.
- All public hospitals shall coordinate annually a mock rescue and evacuation exercise simulating a major aviation accident.
- An inventory of qualified health personnel and equipment shall be established and maintained for emergency recruitment and deployment.

However, the execution of these plans is very limited, and many of these activities do not appear in annual activity plans or related budgets. There is a register at the national level of health professionals trained in disaster

management, including outbreak management, and they have been mobilized from wherever they are in the country to assist in the planning and response to disasters. But at the local level, there is limited attention to these aspects.

2.5.10 Health sector preparedness for all types of hazards, including through implementation of the International Health Regulations

As part of the international system of health, Papua New Guinea is a signatory to several international agreements to assist health sector preparedness for all types of hazards. It has obligations under International Health Regulations (IHR), 2005. Papua New Guinea has adopted the Pacific Islands Framework for Action on Climate Change 2006–2015, and the Regional Framework for Action to Protect Human Health from the Effects of Climate Change in the Asia Pacific Region of December 2007. The main areas of work under this framework include increasing awareness of the health consequences of climate change and strengthening health systems capacity to provide protection from climate-related risks. Papua New Guinea has also adopted the Disaster Risk Reduction and Disaster Management Framework for Action and, in 2008, entered into a partnership with Australia to cooperate on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries.

The Office of Disaster Management and Emergency Services within the Department of Provincial Affairs coordinates disaster management in cooperation with the Papua New Guinea Chapter of the Red Cross. The provincial governments appoint disaster coordinators. The Office of Disaster Management is working with the Department of Education to integrate disaster training into the school curriculum.

2.5.11 Management and coordination of health-related international development assistance

Since the establishment of the SWAp mechanism in 1996, the Government, in collaboration with development partners, has established new mechanisms and agreements to facilitate better coordination of development assistance. At a 2006 Donor Consultation Forum, the Government expressed the intent to develop a plan of action to engage with development partners. This led to the Madang Plan of Action, which is an agreed set of actions for both the donor partners and the Government to implement, re-enforce and improve the coordination and harmonization of development assistance. Development partners will base their support on the Government of Papua New Guinea's MTDP and related national and sectoral plans. This resulted in the establishment of two technical working groups for coordination. These

were the Interagency Working Group (consisting of Government agencies) and Joint Working Groups (consisting of both Government and development partners) (Sopol, 2008).

Ongoing issues with aid management such as adverse audit findings and low rates of operational expenditure at the subnational level are increasing the pressure for models of development assistance that are more aligned to the national strategy. Due to the expansion of the mining and agriculture industries, health impact assessment is being increasingly identified as an essential aspect of public policy development (Health Impact Assessment Blog, 2012). The proposed planning model (see section 2.5.2) will enhance coordination through reflection of development assistance partners' efforts and resources in developing annual implementation plans at every level of the health-care system. KRA 2 of the NHP involves strengthened partnerships and coordination with stakeholders. To assist in this coordination, the main strategies proposed include the following:

1. implement a national public-private partnership strategy;
2. expand partnerships with resource developers, private providers, churches and NGOs; and
3. coordinate national support through the National Health Board (NHB).

Effective partnership models for health are critical in the decentralized context, as local leaders will require the capacity to co-plan and manage services with other agencies, including extractive industries (oil, gas and minerals), NGOs and churches. Examples that occur are:

- regular development partner monthly forums where inputs to support the Government's priorities are harmonized and opportunities for joint or delegated analytical work such as reviews of particular aspects for support are developed;
- joint quarterly review of advisory support, especially on quality assurance and performance management;
- joint reviews at provincial and district levels regarding levels of support for service improvement;
- industry partners such as Oil Search Foundation, working with provincial health authority, health board and development partners to build the new province's health system; and
- health facility roundtables between the NDoH and development partners around the priorities for infrastructure linked to the NHP 2011–2020 as part of the Rural Primary Health Service Delivery Project (see section 4.1.1).

2.6 Intersectorality

Given the highly decentralized context in Papua New Guinea, the *Kundu approach* for planning adopted by the National Government illustrates the importance of linking service delivery plans directly with provincial and district development planning. As detailed earlier, health planning is linked closely to wider development planning in the country. The main institutional challenge associated with this approach is integrating the health plans and processes at all levels (local, district, provincial and national) and across all sectors. Successful integration is dependent upon support from health staff and managers at these levels, and “navigating” the political processes that are embedded into district-level planning.

In addition to this hierarchy of health and development plans, the Government at a higher level has also expressed its political commitment to universal health care in Papua New Guinea. In late 2012, the Government outlined a programme of action referred to as the “Alotau Accord” and the further developed “Alotau II” detailed in 2017. These accords outline the Government’s vision, mission and strategies, including “every citizen has the right to quality health care”.

The decentralization policy of the Government of Papua New Guinea promotes models of intersectoral collaboration. The NHAA of 1997 provides a framework for collaboration between the National Government through the NDoH and provincial governments. The PHAA (Government of Papua New Guinea, 2007), in establishing a single PHA to manage both hospital and rural primary health-care services, links management of health services to management of development more generally. The provincial and district health boards have intersectoral involvement (government, community and private sector).

In addition to these broader sectoral approaches to intersectoral collaboration, there are also programme-specific approaches to multisectoral collaboration. The HIV/AIDS Management and Prevention Act, 2003 (“HAMP Act”) provides a legal framework for addressing HIV and human rights (Government of Papua New Guinea, 2003). The National AIDS Council Act was passed in 1997 and established the National AIDS Council (NAC) as a separate statutory body with a Secretariat. Its main objective is to take multisectoral approaches to prevent, control and eliminate transmission of HIV in Papua New Guinea (National AIDS Council of Papua New Guinea, 2010). Another example was the establishment of a time-limited Ministerial Task Force on Maternal Mortality Reduction (2009–2011) convened to review the levels and causes of and recommend solutions for the maternal mortality situation in Papua New Guinea (see section 5.1) that fed into the NHP 2011–2020.

As discussed earlier in this sector review, there are a broad range of stakeholders directly involved in the health sector such as the Church health services; major employer groups (mining and agriculture) provide health services to their employees, their families and often more broadly to the catchment populations. The proposal in the NHP to develop annual implementation plans that are integrated upwards into district and provincial plans also strengthens the case for ensuring that all stakeholders are engaged in the planning and planning implementation efforts.

2.7 Health information management

The NDoH clearly recognizes that reporting of real-time data, tracking the implementation of key projects and programmes, and having sufficient reliable information for health planning are vital for proper management decision-making and the longer-term health outcomes and impacts desired in the NHP 2011–2020 and the Government’s Vision 2050. The improved use of information and communications technology (ICT) and strengthening the NHIS is one of the pillars of the NDoH Corporate Plan.

2.7.1 Information system

Data collection, analysis and dissemination

There are four core national data collections in the Papua New Guinea integrated health and management information system. Many of these have been in operation since at least the 1990s and have undergone several reviews and updates (discussed in detail later this section).

1. The National Health Information System (NHIS). This is the “flagship” data collection instrument and contains a monthly record (four A4 pages) from every health centre and public hospital in the country. Its focus is PHC but it does contain some basic counts of inpatient discharges.
2. The Discharge Health Information System (DHIS). This contains a record for every inpatient discharged from every public health facility in the country, from health centres to tertiary hospitals.
3. The National Inventory of Health Facilities (NIHF). The NIHF is a yearly census of all health facilities in the country. This includes regular availability of “core” medical supplies, water and sanitation, power sources, staffing levels and status of the infrastructure. It uses the National Health Services Standards to inform this survey tool.
4. Management information systems data are primarily from the pharmaceutical branch and human resources branch (more details

in relevant sections of the review). The m-Supply system is being rolled out to manage medical supply procurement, warehousing and distribution functions, with installation completed in 2017 in the Central office to manage procurement. Vaccines are distributed from the Port Moresby Badilli medical store directly to each of the provincial EPI chain officers who maintain their own records of their distribution to health facilities.

Data collection. The theoretical process is that the core inputs to the NHIS are the tally sheets, registers, forms and record books at the health facility level. A monthly summary form is designed to be completed by all health centres, subcentres and public hospitals and sent to their respective provincial office. Each of the 22 provincial offices provides this data to the centralized computer system at the NDoH on a monthly basis.

Data flow. Briefly, the data flow is designed to operate as follows:

- Tally sheets (e.g. outpatient tally sheet and the family planning tally sheet) are completed at clinics held at the aid post, health centre or from outreach activities or activities carried out “on patrol”.
- The tally sheet totals are entered each day into daily register books (often this step is not undertaken).
- Daily register books are totalled at the end of the month and entered into a summary book, one for each type of data. (Often the tally sheets are used to directly enter into the summary and/or health centre record book.)
- The totals from these summary books are copied to a health centre record book and onto the monthly summary form. The monthly summary form includes counts of inpatient and outpatient attendance broken down by key diseases and causes and counts of in-facility deaths by disease/cause. There is also information on malaria laboratory results, HIV and leprosy, family planning, antenatal care, deliveries, immunization (facility, aid post and school) and MCH outreach. Sections of the form also allow space for documentation of shortages of key drugs and observations from supervisory visits. (In practice, this flow is rarely followed and at the end of the month, the tally sheets are generally totalled and the figures entered directly onto the monthly summary sheet.)
- At the end of each month, the completed monthly summary form is sent to the provincial headquarters. This may be sent by mail but is now increasingly dependent upon electronic connectivity. Often, the forms are hand-carried opportunistically by staff to the district office, and similarly to the provincial office. At the provincial office, the

forms are reviewed and the data are entered by the Provincial Health Information Officer (PHIO). During this process, queries should be followed up with the contributing health centre. (This is uncommon, and dependent upon individual Officer's motivation. It should be noted that, at present, there are no documented procedures for reviewing, tracking and amending information.)

- All inpatient discharges from all public facilities are recorded on a standard discharge register, using an abbreviated version of the International Classification of Diseases (ICD)-10 code set. This register records the month and facility of discharge, discharge status, sex, age, length of stay in hospital, a brief description of the discharge diagnosis and up to two ICD-10 diagnosis codes. These are designed to be forwarded (physically or electronically) to the NDoH (although in practice this has been less frequent than required).
- There are presently two processes for transmission of the provincial monthly data summaries to the NDoH monitoring and evaluation branch responsible for these activities. The provincial forms may be bundled together and sent to the national level where the forms are manually re-entered, or the month's data for the province is extracted and sent electronically to the national office. Currently, less than a third of the provinces are sending their data electronically, although achieving this capacity is a targeted activity of the NDoH Corporate Plan.

Quality, completeness and timeliness of data. Previous comparisons between provincial and national copies of the NHIS databases have shown very strong agreement for the sampled provinces. This has been interpreted by the NDoH as data entry not being a large source of error and not much data loss in the transfer of forms from the provincial to the national levels. A significant number of forms do not reach the national office until well into the following year, and most forms take several months to reach their destination. Despite these challenges, the overall completion rate for the return of the NHIS monthly summary forms is very high, with national rates consistently around 90%. However, this is an annual figure, and often additional effort is undertaken at the end of the year to chase up facilities, districts and provinces for missing data to achieve this level.

There is little checking of data quality. Data are not reviewed at the national office until the generation of the sector annual review report each year. This may be many months after the data have been supplied. Data for the report are extracted to spreadsheets for manual analysis and if corrections are made they are made in this extracted dataset, not on the original source data. This has a significant impact upon data integrity and on the use of the NHIS data supplied to any other organization or researcher.

The larger hospitals are often the least compliant in supplying data in a timely manner, and sometimes do not return the forms at all. In the large hospitals with multiple outpatient clinics, there can be problems in ensuring that all outpatient attendances are recorded. As the larger hospitals constitute a large proportion of some areas of data, this can result in a significant loss of data. A notable example is the underreporting of births from Port Moresby General Hospital.

Data usage. The health centre record book has the capacity for recording a wide range of health centre data and for plotting these data to detect trends and patterns. In practice, the health centre record book is rarely used in this manner. Staff generally receive no training in how to use the book, plot data or how to use their own data.

The NDoH has produced an annual performance report since 2001. The report tracks the health sector performance at district, provincial and national levels using a set of key indicators, which has remained consistent over almost 15 years. There are no defined processes or documentation on how the NHIS reports should be used at the provincial level. PHIOs have a wide variety of backgrounds and receive effectively no training in the use or interpretation of reports produced by the NHIS. The common practice is for the one-page summary report to be produced quarterly for the province and for each district within the province, and for these to be presented and discussed at the provincial quarterly planning meetings and in theory by the provincial health boards. While this is the common practice, it is certainly not universal. Supply of reports to individual health centres tends to be on an ad-hoc basis, depending on the interests of the PHIO, opportunistic visits by health centre staff to the provincial office and, at times, the availability of a printer and supply of paper.

In summary, the principal strengths of the NHIS system and linked national census data, are that:

- there is increasing use of the data at the provincial and district levels for planning and setting targets; and
- standardized data items have been collected for a considerable period, allowing the analysis of time trends across all areas in the country.

The principal weaknesses are that:

- there is limited verifiable information on the status of health facilities (open/closed) and their catchment population (that is, data on coverage);
- there are issues relating to timeliness of reporting;

- there is very limited feedback to data providers;
- there are problems with the process of double entry of information at all levels with respect to staff time (and the opportunity costs), inconsistency of information and loss of information; and
- there are issues with access to data and its transformation into information, both in terms of timeliness and dissemination to all relevant decision-makers at different levels of the health system.

The NHP 2011–2020 under KRA 3 and Objective 3.4 recommends that “The health sector proactively identifies and uses innovative and evolving ICT solutions and delivers accurate and timely information for planning and decision-making” in order to support the NHP Performance Assessment Framework. The objective and its strategies support many of the key issues related to establishing an e-health strategy in Papua New Guinea and is mostly aimed at monitoring the information needs of managers. Of importance, but not covered under the NHP Objective, are the potential e-health needs of health-care workers (HCWs) at the point of care, and information needs of patients or communities (e.g. health messaging and information, mobile reminder systems, etc.). In 2011, a National e-Health Steering Committee was formulated to guide this process, from framework development, information architecture, and monitoring and evaluation of the e-health system. The information architecture should include national health indicator statistics and disease surveillance; discharge data from hospitals, electronic health records (clinical and non-clinical, e.g. HR databases), health management information needs of the NDoH, PHAs, hospitals and broader health-care needs across the whole of the health sector. It will assess the advantages and disadvantages/risks of different software solutions, and systems and interoperability requirements with other systems and applications, e.g. m-Supply. The Committee is chaired by the Secretary of Health and has key NDoH and provincial health and hospital stakeholders and experts, service users in the Church health services, development partners who support various aspects of the information system, university stakeholders (with health training programmes), private sector partners, e.g. Oil Search Foundation and other Government stakeholders such as the Department of Information and Communication and National Statistics Office. The NDoH RPHSDP (see section 4.1.1) is assisting in the development and roll-out of these information system upgrades, including:

- provision of international HIS expertise;
- appropriately skilled JICA volunteers at the provincial level; and
- the application of ICT (including mobile phones) and geographical information system (GIS) technology (geomapping) following its pilot application in two provinces Enga and the Autonomous Region of Bougainville).

2.7.2 Information management system for emergencies

A surveillance unit was initially established in the Disease Control Branch of the NDoH in the late 1990s to strengthen surveillance for acute flaccid paralysis (AFP). Since this time, the unit has expanded its scope and capacities to conduct surveillance and response for all epidemic-prone diseases, as required under the International Health Regulations (2005). As with other disease control programmes, timely NHIS data are not currently available to surveillance unit staff for surveillance or programme evaluation purposes. For routine surveillance, the unit is currently implementing a weekly mobile technology-based syndromic surveillance system in a small number of selected sites. The system collects some data from the NHIS outpatient tally sheets (e.g. measles) and a small number of additional variables not collected in the NHIS. It is anticipated that the two data collections could be merged, provided the selected conditions could be reported weekly rather than monthly (as per the NHIS) under the reforms to the HIS (see section 2.7.1).

In the case of outbreaks, data are collected at health-care facilities using paper-based forms, which are frequently sent to the provincial level. Data may be entered into an Excel spreadsheet at either provincial or national level, frequently with delays. Data may not be nationally standardized and no automatic reports are generated. There are no data management protocols. Laboratory data are currently linked to outbreak clinical data manually, with timeliness and completeness issues noted. The role of mobile phones in enhancing the timeliness of data transmission has been considered (Rosewell et al., 2013) and will be included in the broader e-health development activities.

2.8 Regulation

The main legislations governing the regulation and governance of third party payers, providers, HR, pharmaceuticals and equipment are as follows:

- *Medical Registration Act, 1980;*
- *Medical Registration By-laws and Nursing Registration By-laws, 1984;*
- *Public Services (Management) Act, 1995;*
- *National Health Administration Act of 1997;*
- *Provincial Health Authorities Act, 2007.*

These Acts' role in governance and regulation are described below, and their influence, and related policies and guidelines developed in the specific areas of focus appear in other parts of the review, e.g. facilities, HR, financing.

2.8.1 Regulation and governance of third party payers

According to the NHAA 1997, the Government is empowered to enact regulations, particularly in relation to the regulation of user fees for health facilities and setting standards for health services and facilities (Government of Papua New Guinea, 1997a). The NHP views this Act, along with the PHAA, as the overarching regulatory instruments of the sector. This then means that the Secretary of Health holds national and provincial management accountable for the delivery of services in PNG.

In addition to legislative measures, the Government also implements regulations through policies, procedures and health professional registration systems. The most significant procedural development was the publication of a set of health service standards for the Papua New Guinea health sector (Government of Papua New Guinea, 2011a & 2011b), which sets out the minimum service, equipment, infrastructure and human resource needs for each level of the system, built upon a previous version of these standards. Other regulatory policies and procedures governing registration, equipment, infrastructure and essential medicines supply are outlined in the sections that follow.

2.8.2 Regulation and governance of providers

The Government has enacted legislation to regulate the provision of health care. Legislation includes the Public Services (Management) Act (1995), the Medical Registration By-laws and Nursing Registration By-laws, 1984, and the Medical Registration Act, 1980. The NDoH is revising the current Medical Registration Act in 2017–2018 with a plan to replace it with a Health Practitioners' legislation that will consider the registration, discipline, ethics and licensing the private practice of all health practitioners. Policies that assist in regulating providers include the Health Human Resources Policy of 2013, which provides overall guidance for the management of HR, in such areas as recruitment, retention and professional development (Government of Papua New Guinea, 2013b) (see section 4.2).

2.8.3 Registration and planning of human resources

Data on the numbers of staff by cadre, location, age and qualifications are essential to align staffing with activity and needs, and for strategic workforce succession planning. Currently, the health sector does not have the basic information on its workforce, which any health system needs for planning and management. In recent years, the sectorwide indicator “Number of health workers per 10 000 population (stratified by cadre)” has been reported as unavailable. In previous stakeholder discussions, senior management

commonly expressed the view that access to HR information was one of their key requirements. There is no clear or common view regarding what sort of information is required or how it would be used.

The current Medical Registration Act, 1980 only stipulates the requirements for a doctor (and dental officer and other allied health workers) to get registered for the different classes of registration but does not have any specific requirements or limitations when it comes to how, what and where a practising doctor in Papua New Guinea with full registration (whatever the class of registration) can practise. Essentially this means that any registered doctor can legally perform major surgery on a consenting patient. Most doctors know their individual professional limitations and perform within these limits. The Medical Registration Act of Papua New Guinea does not require non-residents who are medical practitioners working in Papua New Guinea to be registered.

The Papua New Guinea Nursing Council is responsible for the registration of nurses and midwives under the Medical Registration Act, 1980 and the Nursing Registration By-Laws, 1984. Minimum requirements for nursing registration include the successful completion of a training course at a Council-approved training school and satisfactory completion of probationary registration. Registered nurses include the categories of general, MCH and community health, and require completion of a 3-year general nursing programme. Post-basic midwife registration is provided after completion of a further 48-week training course. Enrolled nurses are also approved under the above Act and By-Law following completion of a Maternal and Child Health Programme, Territorial Programme, Community Health Programme or Hospital Nurse Programme.

2.8.4 Regulation and governance of pharmaceuticals

The Medicines Regulatory Authority (MRA) utilizes a computerized information management system to store and retrieve information on processes that include registrations, inspection, etc. (World Health Organization, 2012a). Papua New Guinea has an official National Medicines Policy document and implementation plan, which was updated in 1998. However, implementation of the pharmaceutical policy is not regularly monitored or assessed. The Pharmaceutical Services at the NDoH is responsible for monitoring implementation. There are policies covering the selection of essential medicines, financing, pricing, procurement, distribution and regulation, pharmacovigilance and rational use of medicines.

There are no licensed pharmaceutical manufacturers in Papua New Guinea. No multinational pharmaceutical companies currently manufacture medicines locally (and so no manufacturers are Good Manufacturing Practice [GMP] certified). In Papua New Guinea, there are legal provisions establishing the powers and responsibilities of the MRA. The MRA is a part of the NDoH with the functions of marketing authorization/registration, inspection, import control, licensing, market control, quality control, medicines advertising and promotion, clinical trials control, pharmacovigilance, registration of pharmacists and pharmacy technicians, and revision of the Essential Medicines List. In Papua New Guinea, legal provisions require marketing authorization (registration) for all pharmaceutical products on the market (World Health Organization, 2012a).

2.8.5 Regulation of equipment

The official national policy for effective procurement, distribution, utilization and administration of medicines and other medical supplies and equipment is the National Drug Policy, 1998 (Ministry of Health, 1998). The National Policy on Medical Equipment for Papua New Guinea states that the introduction of medical equipment or new medical technologies will continue to be based on appropriateness and affordability (Government of Papua New Guinea, 2004). More specifically, this concept will be applied through the following criteria of overall health benefit, total cost of implementing the technology, equitable access and distribution, appropriateness of the technology for Papua New Guinea, cost-effective use of medical equipment and sustainability of the technology. The Policy also states that the procurement of medical equipment for district hospitals and health centres will be assessed against the Minimum Medical Equipment Standards that indicate the types of medical equipment appropriate to each health facility – a subset of the National Health Service Standards previously described. A national medical equipment inventory exists and is used to forecast the annual countrywide medical equipment procurement needs for provincial hospitals and to develop estimates for recurrent expenditure for medical equipment (National Department of Health, 2017a).

2.8.6 Health technology assessment

No information is available on the conduct of a current health technology assessment in Papua New Guinea. The 2011 initiative undertaken to establish a national e-health strategic framework and committee (see section 2.7.1) is the first working example.

2.9 Patient empowerment

The NHP proposes a large-scale expansion of the PHC system through expansion of the facility level of “community health post”. Locating health facilities closer to the population provides the strategic opportunity to engage community-based organizations in the planning and delivery of health services (Government of Papua New Guinea, 2010b). Focus on increasing the number of nurses, midwives and CHWs (Objective 3.2 of the NHP) and extending the reach of village volunteer networks (objective 5.1) will provide additional opportunities to bring health providers in closer contact with the population they serve. It is in this context of expanded supply of PHC services that the NHP argues the case for implementing “strategies that empower the community and the individual to take ownership and direction of their health and the health of their families” (Government of Papua New Guinea, 2010c:p.28).

Given this emphasis on strategic planning of expansion of supply of services, demand-side strategies are not equally emphasized in strategic planning documents. In the NHP, there is no clear community participation or empowerment model described or proposed. Several projects in the health sector over many years have developed models of participation and empowerment; however, many of these close soon after funding is withdrawn. Lessons have been learnt from these activities (Ashwell and Barclay, 2009) to help inform future efforts. Given this supply-side emphasis in strategic and operational planning, there is limited information on patient information, patient choice or community empowerment in the Papua New Guinea context. The concept of empowerment is therefore linked in the first instance to development and extension of the PHC system, to which community health workers and village volunteer networks are major contributors.

The Ministerial Task Force on Maternal Health (National Department of Health, 2009) reported:

“People’s confidence in the existing health system is poor,” and that “Their concerns included facilities closed, lack of personnel, drugs and supplies, charges for health services and staff rude and disrespectful. Women do not trust the health system to look after them respectfully and safely. Maternity care can be disrespectful and contingent upon payment of fees. Offensive and demeaning language by health personnel, and ridiculing of women’s poverty, clothing, parity, smell, hygiene, cries of pain, or desire to remain clothed is not only disrespectful, but abusive.”

The report commented that the public submissions made to the Task Force reinforced that these experiences are more normal than the exception.

Work undertaken by Howes et al. (2014) found that many “patients” did not request support when they attended a clinic, that it was often not provided directly, and that less than 50% of the respondents in their study of health expenditure in eight provinces (142 clinics across all four regions in 2012) stated that they were very satisfied and 32% a bit satisfied with services provided (Fig. 2.4).

Fig. 2.4 Clinic decision-making and satisfaction with support received



Source: Howes et al., 2014:p.112

2.9.1 Patient rights

There is a strong rights basis to the NHP. The NHP Vision argues for a “healthy and prosperous nation that upholds human rights and our Christian and traditional values, and ensures affordable, accessible, equitable, and quality health services for all citizens” (Government of Papua New Guinea, 2010b:p.17). Underpinning this right of access approach is a recognition of the inequities in society, and the importance of addressing these imbalances through extension of the PHC strategy. In support of the rights-based approach, Papua New Guinea ratified the Convention on the Rights of the Child in 1993. The NHP discusses elsewhere the importance of addressing issues of vulnerability of population subgroups, including women and girls and victims of domestic violence. Appreciation of differences (the equity perspective) and the importance of correcting imbalances in equity of access underpins the rights-based approach.

The Quality Standards for Health Management in Papua New Guinea state that each governing board of a health facility should document the rights and responsibilities of patients.

2.9.2 Complaints procedures (mediation, claims)

The National Health Service Standards requires that each governing body of a facility should have a system for handling complaints from patients, staff, suppliers and other clients. The governing body should also be informed about the numbers and subjects of patient complaints and litigation (Government of Papua New Guinea, 2011a). Published standards for public hospitals state that the rights and responsibilities of patients are clearly addressed through policy set by the Board of Management and there is a protocol to deal with complaints. The rights and responsibilities of patients/clients should be addressed through a governing body or government policy, which should be available to all patients, i.e. publicly displayed (Government of Papua New Guinea, 2011a). Despite these standards being in place, there is lack of evaluative evidence to establish to what extent these standards are being maintained in the health sector in Papua New Guinea.

2.9.3 Public participation

There is scope for community participation in the health-care system via the mechanism of management boards at various levels. These include national, provincial and hospital boards, and some local health management committees. Except for the hospital boards, these committees are advisory in nature, and unevenly supported and activated (McNee, 2012). The Public Hospitals Act of 1994 mandated the establishment of a management board for each public hospital. The objectives of the boards are to make the public hospital accountable to the local community, to provide services in the public hospital appropriate and acceptable to the local community, and to encourage the local community to participate in planning and decision-making in relation to the public hospital (McNee, 2012).

2.9.4 Patients and cross-border health care

The three borders that Papua New Guinea shares with neighbours are a land border with Indonesia, and two sea borders with the Solomon Islands and Australia. There is limited formal information on the first two of these borders, although anecdotally people move across these borders on a regular basis.

The most detailed information is around the Australia–Papua New Guinea border across the Torres Straits. The Torres Straits Treaty was signed

in December 1978 and implemented from February 1985. It provides a framework for the management of the common border area. A special provision of the Treaty allows free movement (without passports or visas) between Australia and Papua New Guinea for traditional activities. This is only for Torres Strait Islanders and for coastal people from Papua New Guinea who live in and keep the traditions of the region. A list developed by each government defines eligible people:

- Papua New Guinea traditional inhabitants come from Bula, Mari, Jarai, Tais, Buji/Ber, Sigabadaru, Mabadauan, Old Mawatta, Ture Ture, Kadawa, Katatai, Parama and Sui (the 13 Papua New Guinea Treaty Villages);
- Australian traditional inhabitants come from Badu, Boigu, Poruma (Coconut Island), Erub (Darnley Island), Dauan, Kubin, St Pauls, Mabuiag, Mer (Murray Island), Saibai, Ugar (Stephen Island), Warraber (Sue Island), Iama (Yam Island) and Masig (Yorke Island).

While the Torres Straits Treaty does not allow free movement to Australia for seeking health care, the reality is that Papua New Guinea community members have accessed health clinics in the Torres Straits for many years. This is particularly “visible” in the TB cases being managed in the clinics. In a paper published in 2008, one study described 60 patients from Papua New Guinea who presented to Torres Straits Island clinics from 2001 to 2006 with TB, 15 of whom had MDR-TB (Gilpin et al., 2008). Reasons stated by patients for using the Australian services included: transportation availability and costs within their district, stock-outs of required medicines and quality of services (Gilpin et al., 2008). A Torres Strait cross-border health issues committee has been established to work with member agencies to identify appropriate strategies and resources to address concerns of cross-border health, including a review of the memorandum of understanding between Queensland and the Government of Papua New Guinea (Torres Strait Cross Border Health Issues Committee, 2013).

3 Health financing

Chapter summary

The Government in its NHP has proposed a goal of universal health coverage (UHC). Despite steady rates of economic growth and the development of a new NHP, several external factors threaten the capability of the Government to explore these opportunities. Advancement of the decentralization agenda, donor graduation, an HRH crisis and recent severe drought conditions are all threats to the attainment of UHC.

Trends in health financing and expenditures fluctuate. The Government is the main financing agent through tax-based financing to both the Government and church health services. External assistance still makes up a significant share of the total health expenditure (21%). The private health sector, health insurance and other forms of private investment in health care are low. A policy of free primary health care and subsidized specialist services is compromised at the frontline by local health facilities introducing “informal” fees to address shortfalls in operational funding. These gaps arise from delays in release of funds, bottlenecks experienced in flow of funds to primary care levels and the amount of funding provided.

Despite a volatile macroeconomic outlook, the Government projects no significant growth in investment on health over the medium term. Given this fiscal outlook, there is strong emphasis on efficiency in strengthening financial management systems. The low expenditure rate of disbursed funds at the provincial level and below, and inequities of resource allocation across the country, delays in financial warrant releases from the Treasury, and lack of credibility of many of the budgets developed are some of the main financial management concerns. The health financing framework of the Government centres around improving resource usage, resource mobilization and exploration of alternative health financing options.

The total out-of-pocket (OOP) expenditure on health care is estimated to be only 10% of the total health expenditure (THE). Health expenditure per capita (US\$ 109 PPP) and the THE/GDP for health (4%) is also significantly lower than regional countries, which indicates that there is some potential for expansion of health spending in Papua New Guinea. This diversification

of health financing sources and expansion of volume is a high development priority in Papua New Guinea. These are implied in the health policy goals to abolish user fees, expand health infrastructure and address the critical shortage of HRH in rural and remote areas. Efforts to advance public financial management reforms are also a high development priority, particularly with regard to improving linkages between planning and budgeting to enhance the flow of funds to rural facilities and urban clinics. Models of resource allocation will also need to be developed and aligned with the decentralized planning system to ensure more equitable patterns of resource allocation across the country.

3.1 Health expenditure

3.1.1 Strategic and fiscal context

Health is a major development priority of the Government of Papua New Guinea. The guiding principles of the Medium-Term Fiscal Strategy, 2013–2017 are to shift resources from non-priority expenditures towards the MTDP enablers of infrastructure, health, education, and law and order (Department of Treasury, 2016). This should result in an increase in public expenditure for basic services.

The NHP 2011–2020 identifies as its main objective “strengthened Primary Health Care for all and Improved Service Delivery for the Rural Majority and Urban Disadvantaged” (Government of Papua New Guinea, 2010b). In effect, this assumes UHC with an equity goal. Consideration of the adequacy of fiscal space is therefore crucial for assessing the country’s capacity to finance the sector to support this development goal. The narrowness of the fiscal space also necessitates a renewed focus on priority-setting. It may, for example, require a medium-term focus on elimination of some pressing MCH and communicable disease problems before reorienting the system towards control of NCDs.

There are several threats to macroeconomic stability and resource mobilization. These include severe cuts to the national budget, a new Organic Law decreeing further decentralization to the district level, donor graduation, an HRH crisis, and recent severe drought and other disaster events (World Health Organization, 2010). Papua New Guinea is a hot spot for emerging, re-emerging and drug-resistant infectious diseases. Limited border protection and recent vector-borne disease outbreaks demonstrate this problem, which is exacerbated through limited implementation of the IHR, 2005.

The THE per capita in Papua New Guinea has fluctuated but risen from \$45.7 (international \$) in 1995 to \$109.5 in 2014 (139% increase) (see Table 3.1). In

the same period, the total GDP has expanded (in million current PPP) from \$7356 in 1995 to \$20 719 in 2014, which represents a 181% expansion of the size of the economy. Over a similar period (1995–2014), the population has expanded from 4 894 276 in 1995 to 7 755 785, which represents an increase in population of 58%. Based on these comparisons, economic growth is outpacing the growth in THE (Table 3.1).

In summary, sustained economic growth rates, reducing public debt, and medium-term plans to increase revenues and expand public expenditure provides some scope for public policy consideration of increased investment in health. Reforms in securing financing for health such as the health function grants and district services improvement programme (see section 3.2) are instruments to deliver that investment to where it is needed.

3.1.2 Health financing policy framework

Papua New Guinea has developed a broad social protection framework that includes the categories of child protection, national disaster and emergency services, disability support and various social insurance programmes (Asian Development Bank, 2012). In support of the goal of UHC and embedded within the overall NHP strategic framework is the KRA of health systems strengthening, of which one major component is health financing.

Although a main priority for health financing of the sector is to expand the volume of resources to achieve health sector goals, the NHP recognizes that more money does not necessarily equate to improved public services. Taking into consideration the observation of health system performance over the past decade, the health financing strategy has three focus areas. These are: improving resource usage (see section 3.2), resource mobilization and exploration of alternative health financing options.

The Government of Papua New Guinea finances approximately 50% of the health sector through general revenue raised via taxation. Churches contribute to 50% of the services in rural areas, although it should also be recognized that these Church services are also supported by Government grants for recurrent expenditures. The high population growth rate of 2.7% is also increasing pressure on the Government to mobilize additional resources. The Government is therefore considering alternative financing options, including expansion of health insurance, to address potential shortfalls in revenues for health. These have been informed by an analysis undertaken in 2014 by the World Bank (World Bank, 2014b), which identified the sustainability and feasibility of the financing mechanism, the degree of risk pooling and financial protection it provides, the extent to which the

mechanism/s improve the efficiencies in health system financing and service delivery, and the extent to which equity in financing and delivery will be improved (see section 3.2).

More specific health financing strategies proposed in the NHP include increasing the percentage of GDP allocated to health, facilitating improved flow of funds to facility level, developing a single health sector funding plan and institutionalizing a system of national health accounts (Government of Papua New Guinea, 2010b).

3.1.3 Trends in health expenditure

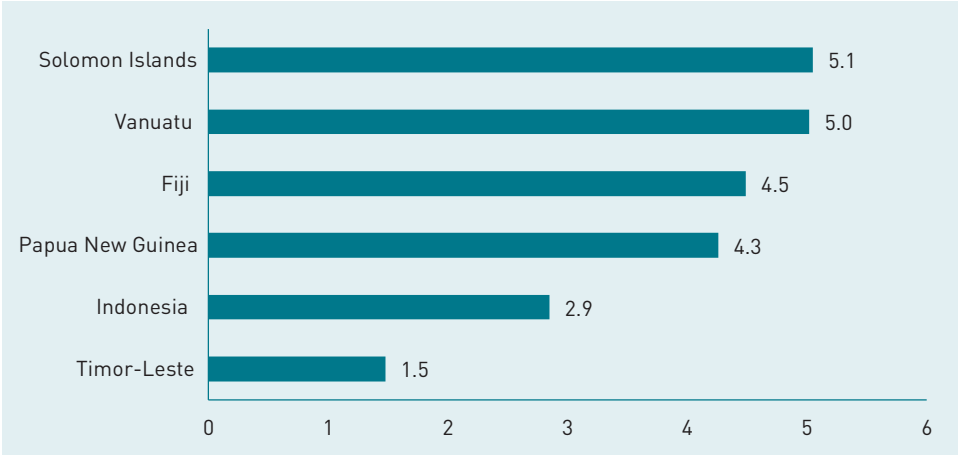
In 2014, THE as a percentage of the GDP reduced to 4.3% compared to a peak level of 8% in 2004 and 6.4% in 2005 (see Table 3.1). Although this proportion of expenditure is somewhat higher than in neighbouring countries such as Timor-Leste and Indonesia, the proportion of GDP expended on health is higher in other Pacific countries, including Vanuatu (5%) and the Solomon Islands (5%) (Fig. 3.1).

Table 3.1 Trends in health expenditure, Papua New Guinea, 1995–2014

Indicators	1995	2000	2005	2010	2014
Total population	4 894 276	5 572 222	6 314 709	7 108 239	7 755 785
Total health expenditure per capita, PPP (constant 2011 international \$)	45.7	58.6	104.2	88.6	109.5
Total health expenditure as % of GDP	2.9	4.0	6.4	4.2	4.3
GDP (million current PPP)	7356	7912	9891	14 535	20 719
Public expenditure (general govt. health expenditure) on health as % of total expenditure on health	83.5	81.7	85.3	76.2	81.3
Private expenditure on health as % of total expenditure on health	16.5	18.3	14.7	23.8	18.7
Government health spending as % of total government spending	8.6	9.9	15.5	10.4	9.5
Government health spending as % of GDP	2.5	3.3	5.5	3.2	3.5
Out-of-pocket (OOP) payments as % of total expenditure on health	7.6	10.2	8.2	13.3	10.5
OOP payments as % of private expenditure on health	46.3	56.0	55.9	55.9	55.9

Source: World Health Organization, 2017a

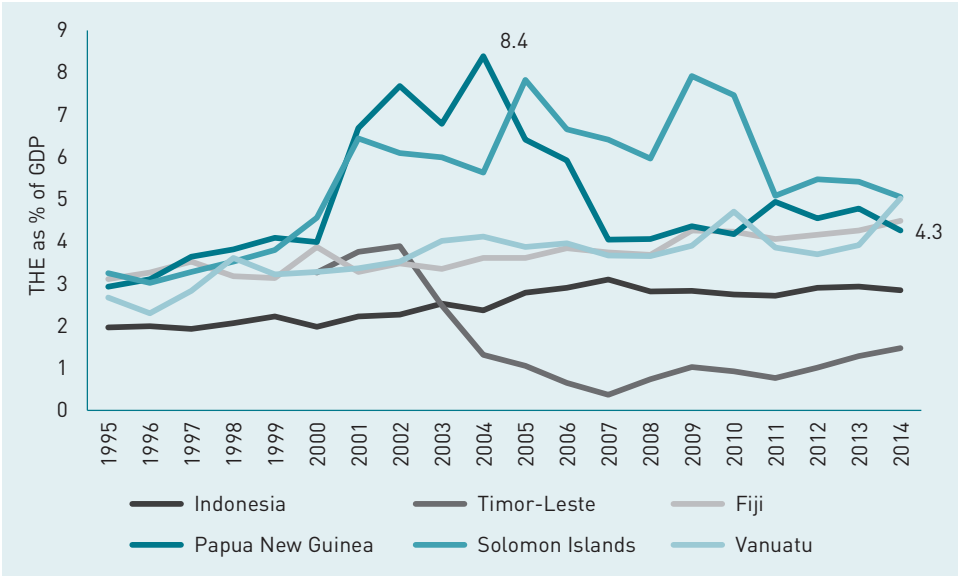
Fig. 3.1 Total health expenditure (as % of GDP), selected countries, 2014



Source: World Health Organization, 2017a

However, trends in health expenditure as a share (%) of GDP have declined from the peak levels in the mid-2000s (6% in 2005, 4% in 2014) and is lower than the levels in neighbouring countries in the region (Fig. 3.2).

Fig. 3.2 Trends in health expenditure (as % of GDP) in comparable countries, 1995–2014



Source: World Health Organization, 2017a

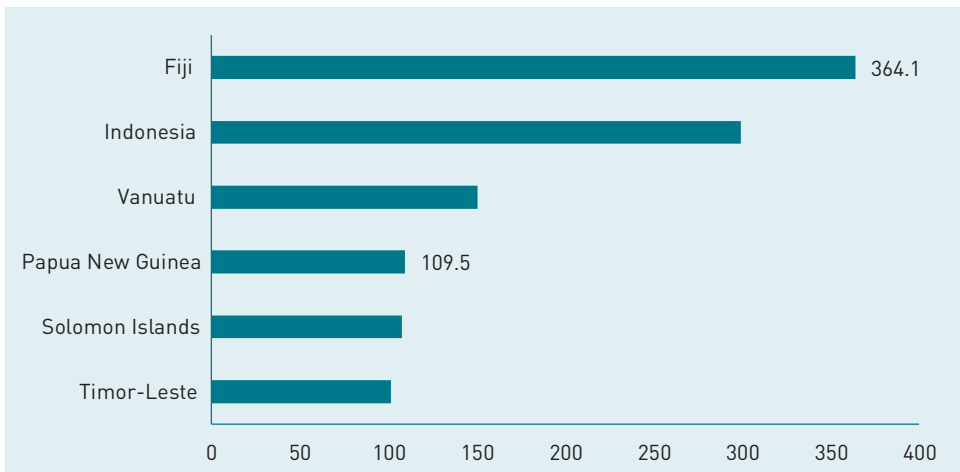
This trend is probably attributable to the following:

1. steady economic growth rates are expanding the size of the economy, and THE is failing to keep up with this expansion; and
2. the proportion of total Government expenditure invested in the health sector has declined from a peak of 16% in 2005 to just 10% in 2014.

In recent years, the Government has provided 1.4 billion kina per year for the health sector. This figure has now plateaued and in 2017, the budget has been reduced to 1.3 billion kina. This reduced domestic expenditure, in combination with some reductions in development aid commitments (New Zealand Aid [NZAID] has left the sector, DFAT contributions have reduced, and GAVI and the Global Fund are transitioning from the sector) are all factors serving to limit THE and narrow the fiscal space for investment in health.

A regional analysis of the THE per capita, public and private, US\$ PPP, 2012 confirmed that there is comparatively low expenditure per capita in Papua New Guinea; the country was ranked 17th out of 24 regional countries in 2012 (Organization for Economic Co-operation and Development and World Health Organization, 2014). As can be observed in Fig. 3.3, Fiji has more than three times the THE per capita than Papua New Guinea.

Fig. 3.3 Total health expenditure per capita (PPP, constant 2011 international \$), selected countries, 2014

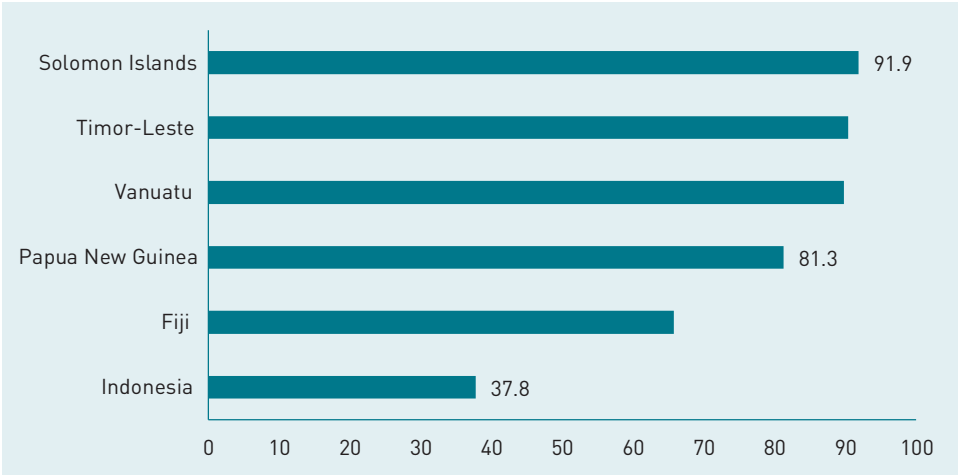


Source: World Health Organization, 2017a

One of the main features of the pattern of health financing in Papua New Guinea is the comparatively high level of Government share of the THE. As is the case with other Pacific and neighbouring countries (see Fig. 3.4), the rate

of 81% of the Government share of THE is significantly higher than regional rates in countries such as Myanmar (46%), Indonesia (38%) and Cambodia (22%) (World Health Organization, 2017a). These high proportions of THE being sourced from the Government is likely to be an outcome of limited development of health insurance and social health insurance mechanisms.

Fig. 3.4 General Government health expenditure (as % of THE), selected countries, 2014



Source: World Health Organization, 2017a

This planned public health expenditure (2011–2015) is classified into seven programme areas (Table 3.2).

Table 3.2 Public health expenditure by service programme, 2011–2015

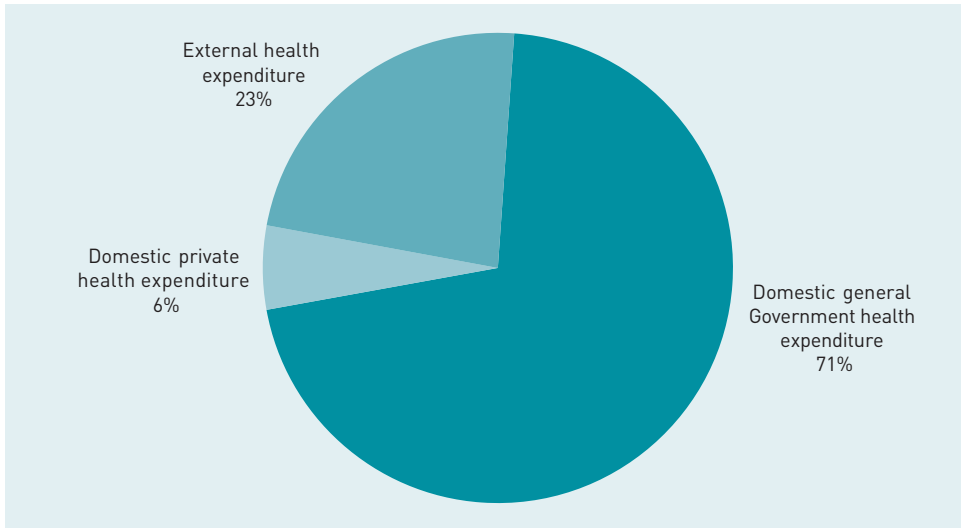
Focus area	Estimated inputs, 2011–2015	
	Kina (million)	Percent of total
Personnel	4265	30.1%
Medical supplies	1973	13.9%
Operating costs	4559	32.2%
Rural health services	454	3.2%
Rural water supply	215	1.5%
General hospitals	2625	18.5%
Central	79	0.6%

Source: Department of National Planning and Monitoring, 2010:p.42

3.2 Sources of revenue and financial flows

Sources of finance. The health system in Papua New Guinea is primarily funded by the Government, with over 80% of public sector expenditure through its taxation base (Table 3.3). The other main health financing agent is external resources, which constitutes 23% of the current health expenditure (see Fig. 3.5).

Fig. 3.5 Current health expenditure by source of revenue, 2015



Source: World Health Organization, 2017a

Private expenditure on health care is comparatively low in the Papua New Guinea setting, with OOP payments at only 6% of the CHE, and total domestic private investment in health at only 6%. Health insurance is only a limited source of expenditure in Papua New Guinea. However, the 2015 launch of BIMA's hospitalization (*Haus Sik*) insurance cover as a mobile platform partnering with Digicel (similar to their mobile micro-insurance models in other low-income settings) is attracting an increased number of subscribers in urban and rural areas.

The National Tobacco Control Policy, 2015 developed by the NDoH describes the need to raise the level of tobacco tax in a systemic manner. This would mean that tobacco products become increasingly and progressively expensive. This would need legislation to support tax and pricing measures and allow a share of the collected tobacco taxes to fund tobacco control programmes. Detailed legal consultation is under way to review the feasibility of this approach. An alternative being considered is to set up a foundation to recoup funds from tobacco sales.

Benefits package. With regard to the eligible set of benefits available through universal care, the vision of the 2011–2020 NHP is to ensure affordable, accessible, equitable and quality health-care services for all citizens (Government of Papua New Guinea, 2010b). The aim is to provide essential public services with a focus on strengthened PHC, with services particularly targeted towards the needs of the rural and urban disadvantaged. Specific PHC programmes that are considered KRAs for investment include child survival, maternal health, communicable disease control, emergency preparedness and response to outbreaks and promotion of healthy lifestyles (Government of Papua New Guinea, 2010b). The intent of public policy is therefore to provide a universal package of services for PHC, although the reach of services is limited by weak infrastructure and depleted human resources in rural and remote areas (sections 4.1 and 4.2).

Table 3.3 Revenue as percentage of current health expenditure (CHE), by source, 2000–2015

Source of revenue	2000	2005	2010	2014	2015
Domestic general Government health expenditure (GGHE-D) as % current health expenditure (CHE)	83	66	62	75	71
External health expenditure (EXT) as % of CHE	8	26	26	21	23
Out-of-pocket (OOP) as % of CHE	9	8	12	4	6
Voluntary health insurance (VHI) as % of CHE	0	0	0	0	0

Source: World Health Organization, 2017a

Financial flows. The Organic Law of decentralization delegated responsibilities to three levels of Government with funding flows according to the structure of these delegated functions. Funding for transferred functions (of which health was one) was provided by the Minimum Unconditional Grant according to a formula provided in the Organic Law. The Grant was to reflect the cost of providing the delegated functions. As such, it became the major source of provincial government revenue. Given that the grants were unconditional, the funds could be allocated according to the priorities of the provincial government (Day, 2009). There is also scope within the Organic Law for National Government (through the National Fiscal Commission) to provide additional unconditional grants for new activities and to reduce inequalities between provinces (Day, 2009). This process of decentralization is continuing, with the Government having recently established the DDAs, whose purpose is to improve service delivery at district and ward levels (Department of Treasury, 2016).

Bottlenecks in budget flow have been a long-standing problem in the country, particularly in terms of facilitating operational financing of rural and remote health-care facilities (see *below* about the continued use of user fees to address operational funding shortfalls) (World Health Organization, 2010). The other significant problem with budget flow is the disconnection of reporting of the budget from reporting of results. Finally, there are recurrent problems of delays in disbursement, from the Treasury to the provinces and then to the frontline, which contributes to poor budget execution, and lack of absorptive capacity, as evidenced by significant underspends of disbursed budgets at the provincial level and below. A recent sector review confirmed that in 2013, the rate of execution of the budget was only 52% at provincial level and below.

As discussed in Chapter 1, the Government introduced a new intergovernmental financing arrangement to ensure that funds were transferred to the provincial level to support the delivery of basic (including) health services (called the reform of intergovernmental financial arrangements – RIGFA). It was developed to improve equity – defined as ensuring that funding is given to those provinces most in need and targeted to basic services. This financing is distributed through function grants, one of these being the health function grant for rural health services. More than 80% of the costs of delivering health services occur at the district level.

To define the activities (entitled MPAs) to be covered by this grant and develop a process to determine the size of the grant, a series of analyses have been undertaken by the NEFC, in close association with the NDoH. These included:

- cost of services study (2005), which sought to estimate the operational costs necessary to support the functional responsibilities of provincial and local governments for administrative and service delivery activities. These utilize the existing levels of infrastructure and the cost variations for inputs and activities linked to the geography of the location (e.g. no road infrastructure requiring boat or aeroplane delivery). Some argue that these estimates were highly conservative such as such as World Bank (2014b);
- iterations of this cost of services study have included the provincial expenditure reviews (first in 2007), which compare provincial spending against the benchmark data of the cost of services study. These are now an annual feature of NEFC work;
- the Provincial Budget Model (2008), which provides provincial administration with a prepopulated tool for operational budgets;
- provincial budget assessments (2010), which compared budget allocations with the cost of services study; and

- updation of the cost of services study in 2011 and planned adaptations as more data become available, e.g. sustainable travel routes, new provinces, free health-care policy.

These mechanisms provide more transparency to allocations and expenditure on health, at least for the basic operational requirements of rural health services.

These financial flows have all contributed to the poor health sector performance in rural areas. A 2014 analysis of the provincial administration's rural health expenditures found that in 2010:

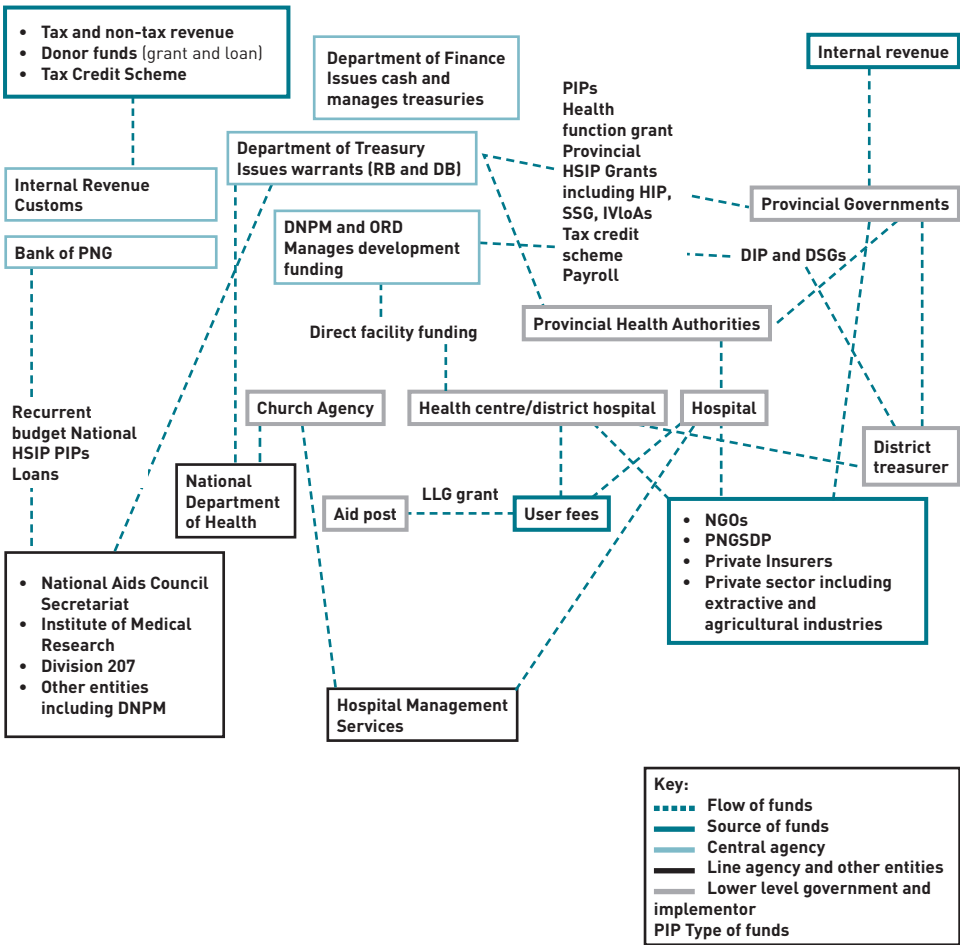
- two thirds of the provinces spent little or nothing on drug and medical supply distribution within the provinces, one of its designated functions;
- little funding had been specifically allocated for or spent on emergency patient transfers; and
- there was a need to systematize and streamline the mechanism to fund rural facilities, including outreach activities (National Economic and Fiscal Commission, 2014).

This issue of underspending applies to both Government funding and development partner funding (National Department of Health, 2016). Such underutilization of funding provides a powerful rationale for focusing on improving the managerial, service delivery and financing efficiency of the sector as a health planning priority (World Bank, 2014b). An increasingly important development priority is therefore to increase the capacity of DDAs to utilize and account for utilization of funds in the health sector. The critical outcome being sought by planners is that the mismatch be reduced between population health needs, plans and the budgets required to implement these plans. The NHAA, 1997 and the new PHAA, 2007 are the key legal documents guiding the structure and functions of the health-care system. The PHAA transferred the management of public hospital services and rural health services under the management of a single PHA, and by the end of 2018, the NHP targeted all provinces operating under this new system. While the Act did not change the functions of each level of government, it enhanced the capability of the Government to direct finance to priority areas; however, the adoption of this PHAA was voluntary by a province until recently. Fig. 3.6 provides an overview of the complex funding flow arrangements for the health sector.

At a higher level of granularity, the province requires funding for administration, staff training, operations of the provincial health board, supervision of the health information system of district offices and health

services, disease control activities, including outbreak investigations, distribution of medical supplies within the province and health promotion. The district has funding to support administration, the running of the district health management committee (“board”), supervision, patient transfers, in-service training, operations of rural health facilities, rural health centre transportation, maintenance of medical equipment, provision of rural water supply, immunization and MCH services, maintenance and operations of the health centre high frequency radios and health promotion. The LLG has financing responsibility for aid post maintenance (although few can afford this function) (National Economic and Fiscal Commission, 2014).

Fig. 3.6 Funding flow system, Papua New Guinea



Source: World Bank, 2014b:p.14

Further, as part of the 2013 budget process, the Government significantly increased the control and execution of development funding by subnational

governments and districts. This involved the expansion of the DSIP and the introduction of a Provincial Support Improvement Programme (PSIP) and Local-Level Government Services Improvement Programme (LLGSIP). The DSIP (as well as LLGSIP) are managed through the JDPBPC at the district level. A Member of Parliament chairs this Committee, and this Committee has become the primary source of development financing, including health, across Papua New Guinea.

3.3 Overview of public financing schemes

3.3.1 Coverage – breadth: who and what is covered?

The NHP, National Policy on Free Primary Health Care and Subsidized Specialized Care outline the scope of services to be provided through the public sector. There is in this sense universal entitlement to public health care in Papua New Guinea. The National Constitution also mandates improvement in the state of nutrition and the standard of public health to enable people to achieve self-fulfilment. However, as quantified in other sections of this review (Chapters 1 and 2), there is inequitable access to health and outcomes based on location and socioeconomic status, which compromises the degree of universality of this public service. A review of the Sustainable Development Goal (SDG) indicators for Papua New Guinea demonstrates significant coverage gaps for MCH and for programmes to control malaria, TB and HIV (Table 3.4).

Table 3.4 Coverage of selected Sustainable Development Goals indicators, Papua New Guinea

Indicator	Year	Result
Proportion of moderately or severely stunted children under 5 years of age	2010	49.5%
Proportion of moderately or severely overweight children under 5 years of age	2010	13.8%
Proportion of moderately or severely wasted children under 5 years of age	2010	14.3%
Maternal mortality ratio*	2015	215
Under-five mortality rate (per 1000 live births)	2016	54.3
Neonatal mortality rate (per 1000 live births)	2016	23.5
Number of new HIV infections per 1000 uninfected population (all ages)	2016	0.37
Tuberculosis incidence per 100 000 population	2016	432
Malaria incidence per 1000 population	2016	179.4
Proportion of seats held by women in national parliaments	2017	2.7%

Notes: *This is a middle-bound value. The NDoH uses the DHS (2006) of 755/100 000 live births; the WHO 2010 figure is 230 (see section 1.4.2).

Source: United Nations Statistics Division, 2018

3.3.2 Collection, pooling and resource allocation

Taxation is the principal means by which the Government raises revenues for health. Taxation contributes to 94% of total government-provided health revenue, with the remaining 6% generated by income from the export of mining and petroleum products (World Bank, 2014b). The overall budget framework for health is set at national level according to a medium-term planning framework. Due to the decentralized character of the governance system in Papua New Guinea, decisions about the size and priorities of the health budget are also set at provincial level. Under the PHAA, 2007, PHAs are being established as these are statutory corporations. These corporations will, when established, have both administrative and financial responsibility for hospitals (no longer the NDoH as per previous legislation and arrangements – see Chapter 2) and public health (including PHC) services.

There are three main sources of funding for rural health services – health function grants, own-source revenue and transfers to Church health providers. The first and largest is from the above-mentioned grant transfers, which are mainly for those provinces that lack internal revenue.

The recurrent funding of the budget is administered through the Department of Treasury. From this budget at the national level, health function grants are provided to provincial governments. These grants support financing of staff salaries and service delivery costs, as well as separate appropriations for hospital services. These health function grants are appropriated in the national budget by the NEFC. The size of allocation to the provinces is based on an estimate of the cost of delivering services within each province (see section 3.2).

The second source is from the provinces own revenues. Provincial governments utilize internal revenue resources to allocate funds towards health. Sources of this internal revenue include Goods and Services Tax (GST) distribution, own-source revenues, royalties and dividends. A recent analysis of health expenditure by source demonstrated that the provincial internal revenues accounted for only 0.9% of all health expenditure (World Bank, 2014b).

The third source includes national transfers to Church health providers. Church-run facilities are supported by grants from the NDoH. Church-run organizations formulate two grant requests to the NDoH – one for operational expenses and one for staff salaries (Ascroft et al., 2011) (see section 3.3.3).

All the above-mentioned sources of funding are supplemented by funding through the SWAp mechanism (World Bank, 2013).

3.3.3 Purchasing and purchaser–provider relations

According to the Organic Law on Provincial Government, staff carrying out provincial functions are accountable to the provincial government (Day, 2009). Under the PHAA, 2007, the PHA has the responsibility of integrating government and nongovernment service providers (Ascroft et al., 2011).

The NDoH provide grants (one for wages and one for operating costs) to Church-run facilities. Church organizations are requested to prepare work plans and budgets. A Church Medical Council (an umbrella organization) uses these submissions to formulate two grant requests to the NDoH, one of which is for staff salaries and the other one for other operational expenses. Medical and drug supplies are financed centrally, although external donors contribute. The Health Sector Improvement Program Trust Account (pooled funds from development partners engaged in the SWAp) (see section 2.2) also funds goods and services for Church PHC facilities. One recent analysis of Church rural services in Papua New Guinea confirmed that “at present the CMC [Church Medical Council] negotiates annual grant funding based upon budgeted resource inputs. Output-based contracting may allow more flexibility for the contracted party to determine the resource mix that will deliver the agreed outputs” (Mapira and Morgan, 2011).

The NHP also observes that resource and agribusiness companies that provide health care to their employees and their families are also important partnerships to foster in order to take the pressure off public expenditure and expand service access (National Department of Health, 2016).

The NHP 2011–2020 is committed to improving purchaser–provider relations, as it is considered that currently systems of accountability need to improve. A main objective of the NHP is therefore to expand partnerships with resource developers, private health-care providers, churches and NGOs in rural (remote) areas and urban settlements (National Department of Health, 2016).

3.4 Out-of-pocket payments

Although OOP payments are by regional comparison comparatively low at 10% (compared to the average of 60% in the region), there is still a concern that imposition of user charges at primary care facilities (despite the policy) will threaten the affordability of such services for the population. According to one assessment conducted in 2010, of the 21% of health-care finance sourced privately, up to 40% is OOP expense (Irava et al., 2015). Although there is anecdotal evidence to suggest that there is increased cost-sharing at facilities due to poor financial flows to PHC, the research evidence that is available seems to indicate that OOP payments as yet do not represent

a significant barrier to health care. A study on household income and expenditure in 2009 found that the cost of service was not a significant deterrent to seeking health care among those people who reported having a health problem in the past month. The range was 13.4% in the islands to 22% in Momase Region (National Statistical Office, 2010). This is an aggregate figure and may not reflect variation across different income levels. (Details of the questionnaire not available in the public domain so the quality of the study cannot be assessed.)

3.4.1 Cost-sharing (user charges)

The Public Hospitals (Charges) and Dental (Charges) Act, 1995 is the enabling act that grants power to public hospitals to charge fees. Fees for medical services and exemptions are set out in the Public Hospitals (Charges) Regulations. The Free Primary Health Care and Subsidised Specialist Services (Government of Papua New Guinea, 2014c) has refined this power by stating that for levels four to seven of the health system (district, provincial and regional hospitals, and the national hospital in Port Moresby), specialist services be subsidized, and also proposes that rules be established to continue to charge for patients arriving at higher-level facilities who come from outside the catchment area (Government of Papua New Guinea, 2014c).

The policy mandates the abolition of user fees for facility levels one to three in the Papua New Guinea health system (aid posts/community health posts, sub-/health centres and urban clinics). Systems of user fees have continued to be applied in response to delayed funding of the operational costs of health facilities (World Bank, 2014b). One recent study has indicated that 83% of PHC clinics charged for consultations or drugs (Wiltshire, 2016). From this legal standpoint, the full package of primary care services should be available free of charge to the population.

3.5 Voluntary health insurance and social health insurance

The Alotau accord (a national statement of the new Government's priorities) (Government of Papua New Guinea, 2012b) expressed political commitment to the concept of a national health insurance model. This high-level statement of political priorities commits to the development of a national health insurance policy as one means by which to enforce the policy on free PHC. The NHP observes that "Currently health insurance in Papua New Guinea is private and voluntary, and the market size for it is small. However, the demand for private health care is increasing and this has created the need or potential for using health insurance as an option for health care financing" (Government of Papua New Guinea, 2010b) (page 43).

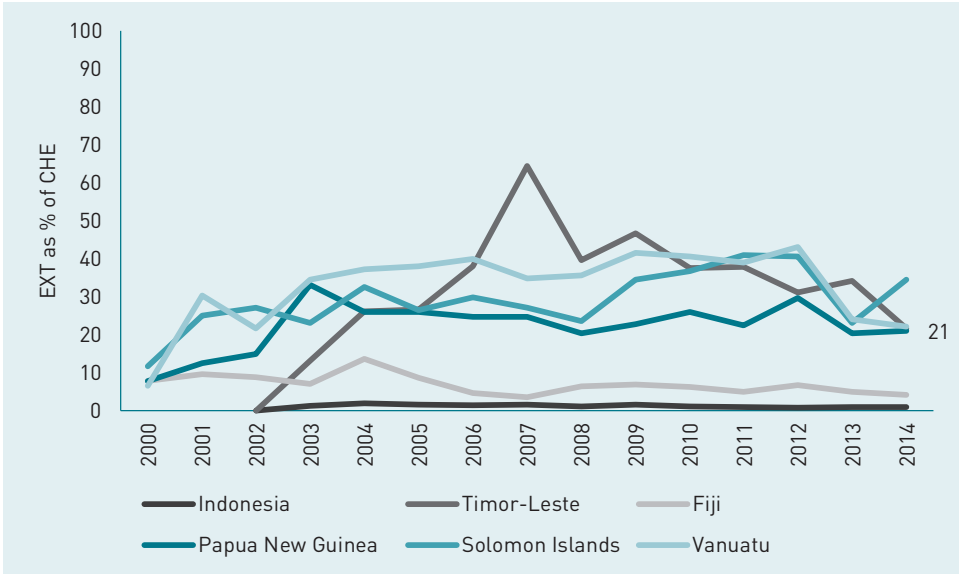
In the current context, the introduction of comprehensive social health insurance is not feasible or sustainable according to one recent review of health financing options. Factors working against the development of social health insurance in Papua New Guinea include a large informal labour market (67%), limited administrative capacity for collection, and lack of developed regulatory and oversight structures (World Bank, 2014b).

The manufacturing and formal sector in Papua New Guinea is very small so that company-paid medical care is rare. Bougainville Copper, through the North Solomons Medical Foundation, runs a private, VHI scheme for employees. Ok Tedi (another large mining company in the Western Province) also provides free medical treatment and reimburses 80% of medical expenses of its employees if care has been received elsewhere. A few smaller companies offer limited health benefits to their employees (Thomason and Hancock, 2011). The current global health expenditure database of WHO has no data on either VHI or social health insurance in Papua New Guinea. Also, the fact that the country has not yet institutionalized a system of national health accounts means that data on the tracking of investment in health insurance are not available.

3.6 External sources of funds: ODA

Both historically and up until current times, external resources have contributed a significant proportion of funding to the health sector. As illustrated by Fig. 3.7, the proportion of CHE sourced through external funds has fluctuated over the past 20 years in Papua New Guinea and has ranged from 30% in 1997 to 21% in 2014. It can also be observed from these data that, although external funds as a proportion of CHE are significantly lower in Fiji (4.1%), the Papua New Guinea proportion is much smaller than that invested externally in the Solomon Islands (34.4%).

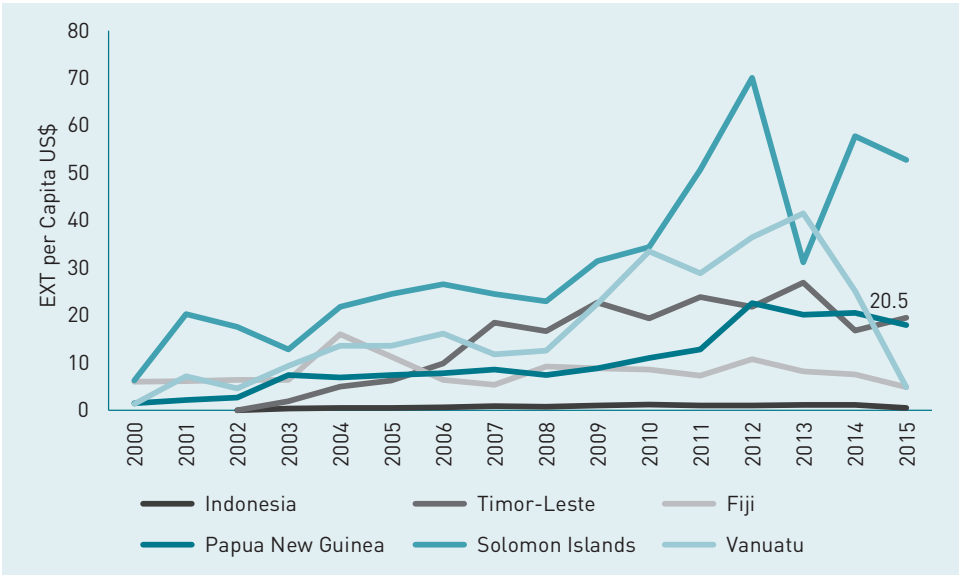
Fig. 3.7 External health expenditure as percentage of current health expenditure, selected countries, 2000–2014



Source: World Health Organization, 2017a

Trends in EXT also confirm that the volume of aid has kept track with population growth. At its peak in 1997, the aid per capita was US\$ 30 and was reported to be US\$ 21 per capita in 2014. It has plateaued at this rate since 1998 (Fig. 3.8). Although this rate is significantly lower than some countries with smaller populations in the region, the per capita EXT for health in 2015 is significantly above the rate for Fiji (\$4.9 per capita) and Indonesia (\$0.4 per capita).

Fig. 3.8 External health expenditure per capita in US\$, selected countries, 2000–2015



Source: World Health Organization, 2017a

The main source of funding for EXT (all sectors) is Australia, with other significant donors including the ADB, the World Bank Group, Japan, the European Union (EU), New Zealand, the Global Fund and GAVI. In 2015, 42% of all development assistance was invested in the social sectors (Organization for Economic Co-operation and Development, 2017). A SWAp called the Health Sector Improvement Programme (HSIP) has been implemented in Papua New Guinea since 2004. A Trust Account has been set up through the NDoH to manage these funds. This HSIP has been an important source of funds for supporting rural health services in Papua New Guinea. Since 2013, pooled funding supports the Government’s programme and uses Government systems for accounting and reporting – there is no separate project management unit in place. Limited data are available on what percentage of EXT is managed through the HSIP Trust Account.

There have been several concerns about the efficiency of the HSIP. A recent review noted, “Poor financial management systems within NDoH have prevented donors from increasing on-system support through the Health Sector Improvement Program (HSIP) trust account. Improving this capacity would serve as a precondition and allow donors to increasingly rely on government systems” (Hou et al., 2017). The Government proposes to strengthen coordination processes through several measures. These include

alignment with the directions of the NHP, while the development of national monitoring and evaluation and medium-term expenditure frameworks are intended to guide the inputs of development partners as well as focus them on a common set of goals (National Department of Health, 2016:p.37).

3.7 Payment mechanisms

3.7.1 Payment for health services

As described earlier, the majority of the payment for health services is from the Government through various channels, levels and for various purposes. The health sector budget is administered by the Department of Treasury and the development budget for health is administered by the Department of National Planning and Monitoring.

One health facility survey found that there are three main sources of payment for PHC – these are cash funding through budgets or direct facility payment, in-kind support and charging fees for services. In-kind support consists of funding providers to support health activities and programmes such as conducting an immunization patrol to villages, family planning and health promotion activities or transport for referral. This is often the most common form of funding for primary care (Wiltshire, 2016). There are also often large gaps between requested budgets of health facilities and funds that are actually disbursed (Wiltshire, 2016).

Due to irregularities and bottlenecks in payment mechanisms, several reforms have been implemented in recent years to improve payment mechanisms for health services. One model is referred to as “direct facility financing” (see also Fig. 3.6 on flow of funds). Under this model, money is transferred on a quarterly basis from a central or provincial account directly to a health centre or aid post. A second strategy being implemented is facility-based budgeting. The main constraint of this system is lack of sufficient institutional capacity for internal controls. A survey of 141 primary care clinics in 2012 found that only 25% of facilities were submitting budget requests (Howes et al., 2014). The National Government procures all drugs and supplies, which are distributed and supplied through the public health-care system. Studies have indicated that lack of operating funds and medical supplies at the facility level are major constraints to improved service delivery. The availability of common drugs and medical supplies has declined over the past decade, with the same survey indicating that the availability of six essential drugs and supplies (paracetamol, sulfadoxine and pyrimethamine, chloroquine, TB blister packs, condoms, liniment) had declined from 82% in 2002 to 74% in 2012 (Howes et al., 2014). The

procurement costs of drugs and medical supplies have almost doubled from 2010 to 2014 (World Bank, 2014b).

3.7.2 Paying health workers

Following the new Organic Law in 1995, which delegated powers to provincial governments to manage health-care services, the Provincial Health Adviser (reporting to the Provincial Administrator) is responsible for all health staff and service operations. For budget and personnel management, the province relates directly with central agencies and operates independently from the NDoH, which retains the main functions in the areas of policy, hospitals and pharmaceutical procurements (World Bank, 2013). Each of the subnational entities have their own payroll systems and human resource management information systems.

A recently developed health sector human resource policy proposes that performance-based salary at the lowest level or scale will be reviewed to attract, retain and motivate health staff. Similarly, the policy proposes that strategies and incentives be developed to attract skilled health workers to work in rural and remote areas of Papua New Guinea (Government of Papua New Guinea, 2013b).

In terms of the functions of payroll and human resource budgeting, each ministry manages its own human resource information. The Department of Finance runs the payroll fortnightly and configures codes and rates according to the General Orders (*see below*). The Department of Treasury identifies staffing and payroll personnel ceilings for each agency and produces the budget. The Department of Personnel Management monitors and ensures compliance and control over personnel expenditure.

Payments to health workers in public service are regulated by general administrative orders on salaries and allowances. These orders are outcomes of industrial agreements between government and professional associations (Government of Papua New Guinea, 2012a). Survey data on payment of health workers, particularly at the primary level of care, provides evidence to support the link between weak financing systems and decline in the quality and coverage of care. A survey of 142 clinics in 2012 found that 55% of health workers were paid at grade level, 30% were paid allowances, and 75% used their own financial resources to help deliver services (Howes et al., 2014).

4 Physical and human resources

Chapter summary

This section contains details of the health infrastructure and HRH of Papua New Guinea. The health system has a network of health-care facilities that extend from the national to village level and include a national referral hospital, provincial hospitals, urban clinics, district and rural hospitals, sub-/health centres and health aid posts (see Chapter 2).

Infrastructure and equipment. Recent surveys and analyses have identified significant gaps in the quality and coverage of health-care infrastructure. These include closed aid posts, lack of appropriate clinical spaces, inadequate water and sanitation facilities, and poor power supplies.

The MTDP focuses on rehabilitating facilities to a level where each facility is fully operational and is being utilized. In conjunction with the PHA reforms, the MTDP proposes rehabilitation of aid posts in the next 5 years, trialling of community health posts, and rehabilitation of health centres and hospitals. Specific targets include developing one community health post and aid post for every ward, and hospital construction and rehabilitation targets at district, provincial and regional levels (including national levels). In line with a general direction of improved availability and quality of care, the NHP proposes an increase in the number of facilities in rural areas and urban settlements that have essential equipment available in accordance with the National Health Standards, including a functioning cold chain, communications and transport network.

Human resources. Papua New Guinea has over 12 000 HCWs, which includes medical doctors, nurses, midwives, health extension officers and community health workers. In terms of staff numbers, distribution and mix, Papua New Guinea has not kept pace with regional and international standards. The country has the lowest staff-to-population ratios in the region and maldistribution in many locations. These HR issues and challenges create a huge gap in health workforce numbers, particularly at the primary level of care where there is the greatest potential for health and development impacts. This fall-off in the production and retention of staff is attributed to underinvestment in public sector training and loss of workers to the private

sector or overseas. A picture is emerging from several studies of an ageing workforce, especially in the critical workforce cadre of midwives and CHWs.

Given the multiple determinants of the infrastructure and HRH capacity decline in Papua New Guinea, multiple policy and planning interventions have been designed and recommended in the NHP, MTDP and Health Human Resource Policy. These include the establishment of standardized training systems and a centralized human resource management information system, increased production of a critical health cadre, development of career pathways for all cadres of staff, and the introduction of performance-based management systems, including contractual mechanisms and performance-based incentives.

4.1 Physical resources

4.1.1 Capital stock and investments

Current capital stock

The Papua New Guinea health system has a network of health-care facilities that extend from the national to the village level and include a national referral hospital, provincial hospitals, urban clinics, district and rural hospitals, health centres and health aid posts. Table 4.1 provides an overview of the number of facilities.

Table 4.1 Number of health facilities in Papua New Guinea, 2008

Facility level		Government	Mission	Other	Total
Provincial hospitals		20 (95.2%)	2 (4.8%)	0	22
Urban health clinics		48 (69.6%)	10 (14.5%)	11 (15.9%)	69
District and rural hospitals		5 (35.7%)	7 (50.5%)	2 (14.3%)	14
Health centres		149 (74.1%)	48 (23.8%)	4 (2.1%)	201
Health subcentres		158 (36.9%)	263 (61.5%)	7 (1.6%)	428
Aid posts	Open				2672 (77.5%)
	Closed				776 (22.5%)

Source: World Health Organization and National Department of Health, 2012

There is one provincial hospital in each province, with Port Moresby General Hospital in the National Capital District being the National Referral Hospital and the regional hospital for the Southern region and provincial hospital for Central Province. Four provincial hospitals also function as regional referral hospitals, in Morobe, Madang, Western Highlands and East New Britain.

Recent surveys and analyses have identified significant gaps in the quality and coverage of health-care infrastructure. One analysis confirmed that a substantial number of aid posts have closed (reportedly up to 23%) due to shortages of funding, staff and other resources (World Health Organization and National Department of Health, 2012). One other assessment in 2010 found that the proportion of aid posts that have remained open has fluctuated between 66% and 71% over the previous 5 years. There is significant variability between regions in terms of rates of closure, with some regions reporting that half of the aid posts have closed.

A 2012 health facility survey of 142 facilities found that 67% of clinic rooms and 77% of health worker accommodation needed rehabilitation, only 55% had year-round water supply, 41% of clinics had refrigeration, 40% electricity and 50% had toilets (Howes et al., 2014). Just 33% of facilities had the capacity to support patient referral. In 2012, 68% of facilities indicated that they had had no maintenance in the past year. Surveyors assessed that 24% of clinic rooms required reconstruction. There is also significant variation between provinces with regard to the quality of health-care infrastructure. For example, one study found that 94% of health facilities in the National Capital District have electricity, but none in West New Britain had it (Howes et al., 2014). In order to arrest the health system, decline and increase population coverage, provincial governments would need to open more facilities a year in their provinces at the national standard levels.

The MTDP focuses on rehabilitating facilities to a level where each facility is fully operational and is being utilized. In conjunction with the PHA reforms (described in Chapter 2), the MTDP proposes rehabilitation of aid posts in the next 5 years, trialling of community health posts, and rehabilitation of health centres and hospitals. Specific targets include developing one community health post and aid post for every ward, and hospital construction and rehabilitation targets for hospitals at district, provincial and regional levels (including national levels). Storage, distribution and procurement of basic drugs, vaccines and medical equipment will be improved (Department of National Planning and Monitoring, 2015).

The NHP also has an infrastructure focus and states a national objective of a “Rehabilitated and strengthened primary health care infrastructure and equipment” (Objective 1.2). Strategies include:

- increasing the number of ward areas with at least one aid post open and available to deliver services;
- prioritizing the rehabilitation of aid posts, health centres and district hospitals;

- increasing the number of facilities in rural areas and urban settlements that have essential equipment available in accordance with the National Health Standards; and
- gradually rehabilitating essential plant equipment at district hospitals and health centres (Government of Papua New Guinea, 2010b).

The Health Facilities Standards Branch has developed design policy standards for health infrastructure, including the publication of the National Health Service Standards for Papua New Guinea 2011–2020. Additional institutional capacity development will be required to support PHAs in developing infrastructure that is consistent with national policies and functions (National Department of Health, 2013b).

The NDoH has a specific joint initiative project with several donor partners called the Rural Primary Health Service Delivery Project (RPHSDP). The Project (2011–2019), based in the NDoH Health Facilities Standards Branch, provides national and international consultants and financial resources to support national, provincial and district personnel to achieve the objective of improving access to quality PHC for those living in the remote rural areas. The goal is to strengthen the rural health system in selected areas of Papua New Guinea by expanding the coverage and quality of PHC in partnership with both State and non-State health service providers. This goal is in line with the NHP 2011–2020 as it relates to primary health service delivery in rural areas.

The selected areas of operation for the Project are:

- Enga Province’s Laiagam and Kompian-Ambum districts;
- Western Highlands Province’s Mul-Baiyer and Tambul Nebilyer districts;
- Eastern Highlands Province’s Okapa and Kainantu districts;
- East Sepik Province’s Wewak and Maprik districts;
- Morobe Province’s Bulolo and Menyamya districts;
- Milne Bay Province’s Kiriwini-Goodenough and Alotau districts;
- West New Britain Province’s Talasea and Kandrian-Gloucester Districts; and
- Autonomous Region of Bougainville’s Central and South Bougainville Regions.

The RPHSDP has a total of 32 community health posts (CHPs) planned for construction across 16 districts as well as 10 provincial hospitals. In 2017, four CHPs were under construction and a further 11 in the design phase. Responsibility and funding for further developments at this level have been redirected from the Facilities Branch to local government structures (Asian Development Bank, 2014).

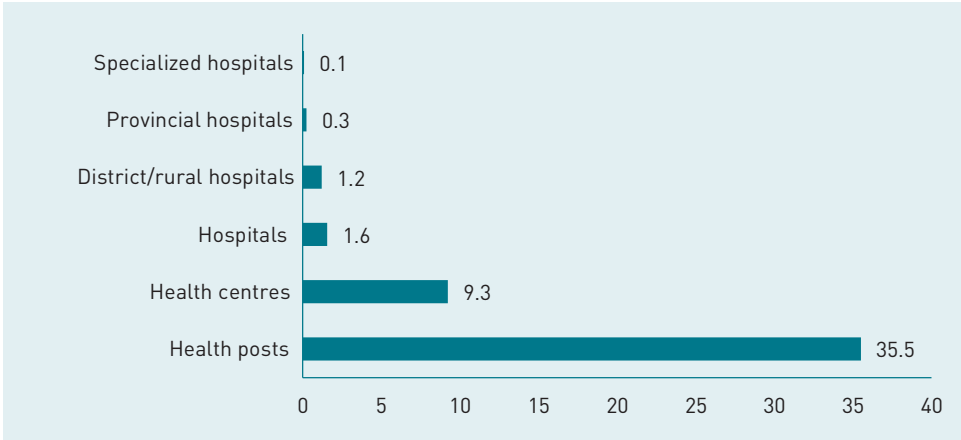
A mid-term evaluation of the NHP has indicated that most infrastructure development in recent years has been at the provincial level. Seventy per cent of hospital equipment has been replaced and modernized (Carmichael et al., 2015).

4.1.2 Infrastructure

Fig. 4.1 outlines the density of population for the various facility levels in the health-care system in Papua New Guinea. The highest density of facilities per population catchment are the primary care health posts, after which densities decline progressively to higher levels of the health system.

As Fig. 4.3 demonstrate, there are limited data from neighbouring countries on which to make a comparison of the availability of health-care infrastructure in Papua New Guinea. In terms of density of hospital facilities per 100 000 population, Papua New Guinea has much lower densities than in Vanuatu but much higher than in Indonesia. No data are available for other neighbouring countries. However, facility density data are only part of the picture for availability of services. Whether these facilities are open or closed, and how operational and/or fit-for-purpose they are is an important factor. As will be discussed later in this chapter, inadequate numbers/distribution of primary care health staff is another factor.

Fig. 4.1 Density of facilities (per 100 000 population), 2013



Source: World Health Organization, 2017b

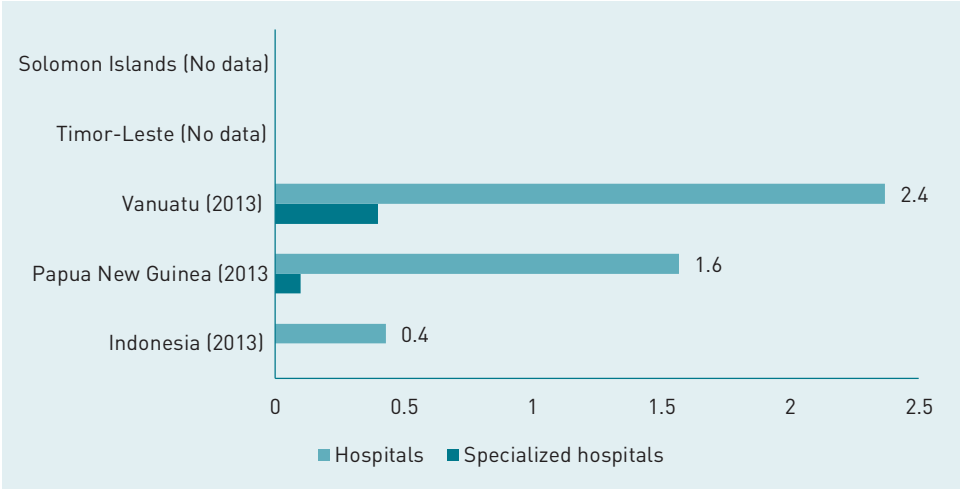
With the data that are available in relation to average length of stay in hospitals, Papua New Guinea occupies the middle range for average length of stay.

Fig. 4.2 Average length of stay for acute care in hospitals, selected countries, 2010 (or nearest year available)



Source: Organization for Economic Co-operation and Development, 2012

Fig. 4.3 Hospitals per 100 000 population, selected countries, latest available year



Source: World Health Organization, 2017b

The decline in health-care infrastructure, medical supplies and health worker availability (see *also* section 4.1.2) are major contributors to the reduction in outpatient contacts. The Sector Performance Annual Review estimates that the average number of outpatient visits per year has fallen from 1.62 in 2010 to 1.24 per person visits in 2014 (National Department of Health, 2013a & 2016).

4.1.3 Medical equipment

The Health Facilities Standards Branch is the national agency for developing the design policy for infrastructure (including equipment) health standards across Papua New Guinea (National Department of Health, 2013b). A Central Supplies and Tender Board is responsible for procuring all major essential medicines, equipment and supplies (Department of National Planning and Monitoring, 2015). An assessment of the recurrent budget in 2012 indicated that the total equipment and supplies budget came to 150 659 000 kina out of a total budget of 268 768 000 kina, which is equivalent to 56% of the recurrent budget.

A medium-term evaluation of the NHP has confirmed that there have recently been significant equipment upgrades across the country, with 70% of hospital equipment (such as X-ray machines) being updated or replaced. However, this evaluation has confirmed that the equipment upgrades have primarily occurred at provincial hospitals (Carmichael et al., 2015).

The Facilities Branch of the NDoH has undertaken a national assessment of infrastructure and equipment needs, and found that in rural areas, there were shortages of running water and energy, and that cold chain systems were very limited. In fact, 70% of refrigerators examined were not functional. In another national study, it was found that only 23% of health clinics (health centres and aid posts) have functional transport, 20% have beds with mattresses and 23% have a kitchen (good or adequate) (Howes et al., 2014). The same study confirmed that the availability of essential medicines and supplies had declined over the past 10 years (2002–2012).

In line with an NHP goal of improved availability and quality of care, there is a strategy to increase the number of facilities that have essential equipment available in rural areas and urban settlements in accordance with the National Health Service Standards, including a functioning cold chain, communications and transport. It is also proposed by the NHP to gradually rehabilitate essential static plant equipment at district hospitals and health centres as per National Health Service Standards. Table 4.2 provides a list of current functioning diagnostic imaging facilities in Papua New Guinea.

Table 4.2 Density of selected diagnostic imaging equipment in Papua New Guinea (as of 2014)

Item	No. in public and private sector	Density per 1 000 000 population
Magnetic resonance imaging (MRI) units	0	0
Computerised tomography (CT) scanners	3	0.410
Positron emission tomography (PET) scanners	0	0
Nuclear medicine	0	0
Mammograph*	3	8.511
Linear accelerator	0	0
Telecobalt unit	1	0.137
Radiotherapy	1	0.137

Note: *Density per 1 000 000 females aged 50–69 years

Source: World Health Organization, 2014a

4.1.4 Information technology

The NHP 2011–2020 states that information technology and ICT infrastructure are highly underdeveloped in Papua New Guinea. The one exception that was noted was the Papua New Guinea health radio network that connects over 1300 health facilities across the country (Government of Papua New Guinea, 2010b). However, this network is now underutilized as there is a loss of capacity to operate, and maintenance of the system has been limited.

There are some mobile telephone systems that already have wide and steadily increasing coverage, although many rural and remote areas are without coverage. In the past 5 years, mobile phone coverage has increased to over 2.7 million subscribers in 2015 from 9000 in 2000 (Department of National Planning and Monitoring, 2015). There are currently around 600 000 Internet users, the majority of whom access the Internet via mobile phone. Information technology is therefore a growing sector but still without sufficient coverage to support all aspects of health reporting and management in the health sector. Support is being made available through the RPHSDP to develop an electronic NHIS, which has been piloted across five provinces –Western Highlands, Milne Bay, Bougainville, West New Britain and Enga (see section 2.7).

At the national level, a recent Department of Health institutional assessment found that, although ICT systems are widely used across the NDoH, both the equipment and infrastructure are reported to be ageing and not keeping pace with

the changes in software (the NHP described it as “underdeveloped”) (National Department of Health, 2013d). The assessment team found that the introduction of new ICT systems will be key to improving communication throughout the health sector in such areas as management of the supply chain. Recent infrastructure developments and the need to strengthen assets management will increase the need for development of a comprehensive ICT policy.

4.2 Human resources

4.2.1 Health workforce trends

The World Bank in described the health sector HR issues in Papua New Guinea as a crisis (Morris and Somanathan, 2012) and noted the “woefully inadequate data on the size, characteristics and deployment of the current publicly financed workforce” (Morris and Somanathan, 2012:p.xvi). With those caveats, this section provides data that are available in the public domain on the health workforce.

In terms of overall health professionals’ density, it has been estimated that there are 5.3 nurses/midwives and 0.5 doctor per 10 000 people (World Health Organization and National Department of Health, 2012) (Table 4.3).

Table 4.3 Number of health workers by category, Papua New Guinea, 2000–2012

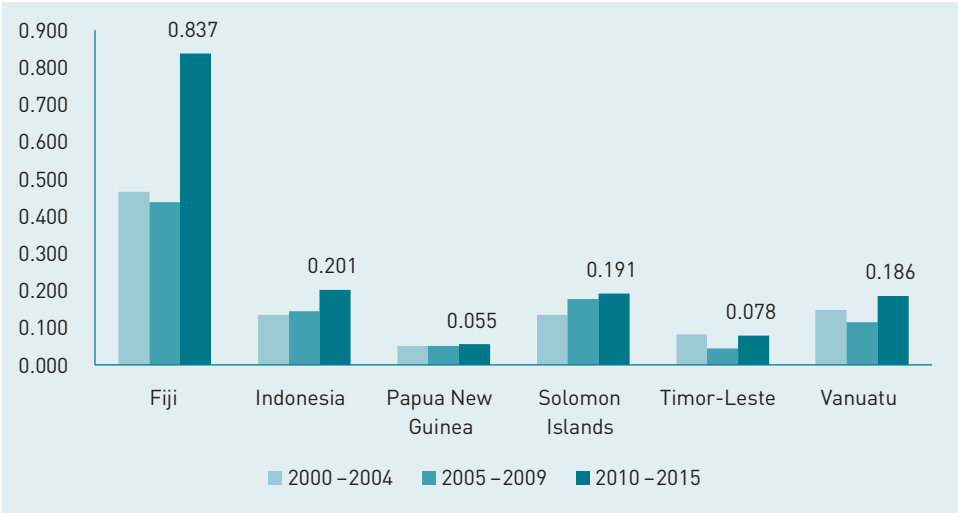
Category	Number of health workers			
	2000	2008	2010	2012
Physicians	275	333	376	No data
Nurses and midwives	2841	2844	3643	No data
Dentists	90	121 (2009)	No data	No data
Laboratory health workers	No data	No data	No data	No data
Pharmacists	No data	No data	No data	354
Other health workers	No data	2261	4880	No data
Health management and support workers	No data	1821	No data	No data
Community and traditional health workers	No data	3883	No data	No data

Source: World Health Organization, 2017b

Based on a regional comparison, Papua New Guinea has the lowest ratio of physicians per 1000 population of just 0.055, which is significantly lower than in countries such as the Solomon Islands (0.191) and Vanuatu (0.186) (Fig. 4.4). Similar findings are also demonstrated in the case of the ratio of nurses and midwives for every 1000 population. Papua New Guinea has the lowest ratio in the region of just 0.532 per 1000 population, compared to Fiji (2.938), Vanuatu (2.218) and the Solomon Islands (1.78). Indonesia has almost double the ratio of Papua New Guinea of 1.365 nurses and midwives per 1000 population (Fig. 4.5).

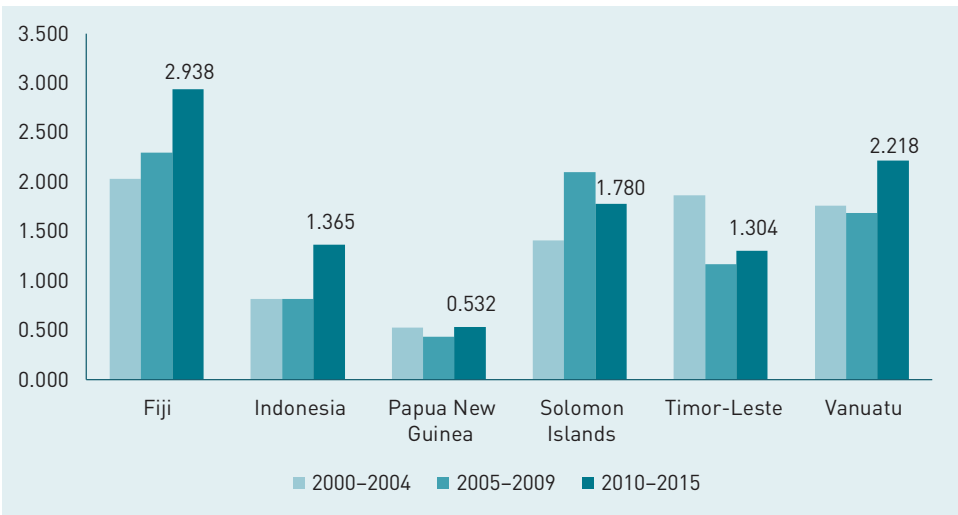
When these professional categories are integrated, it can be seen from Fig. 4.6 that Papua New Guinea has the lowest professional health worker numbers per 1000 population in the cluster of neighbouring countries used here for comparison. Both Fiji (3.8) and Vanuatu (2.4) have four times the number of health workers per 1000 population than Papua New Guinea (0.587). This density is well below the recommended WHO international standard of 2.3 per 1000 (Fig. 4.6).

Fig. 4.4 Physicians per 1000 population, selected countries, 2000–2015



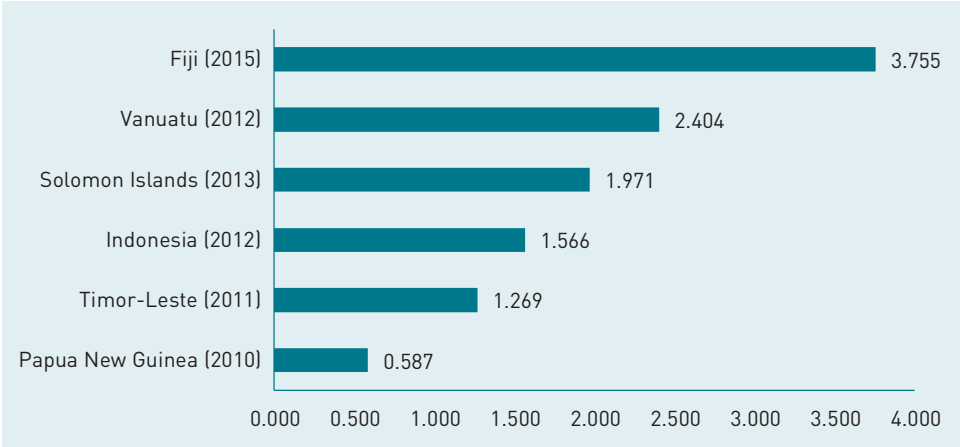
Source: World Health Organization, 2017b

Fig. 4.5 Nurses per 1000 population, selected countries, 2000–2015



Source: World Health Organization, 2017b

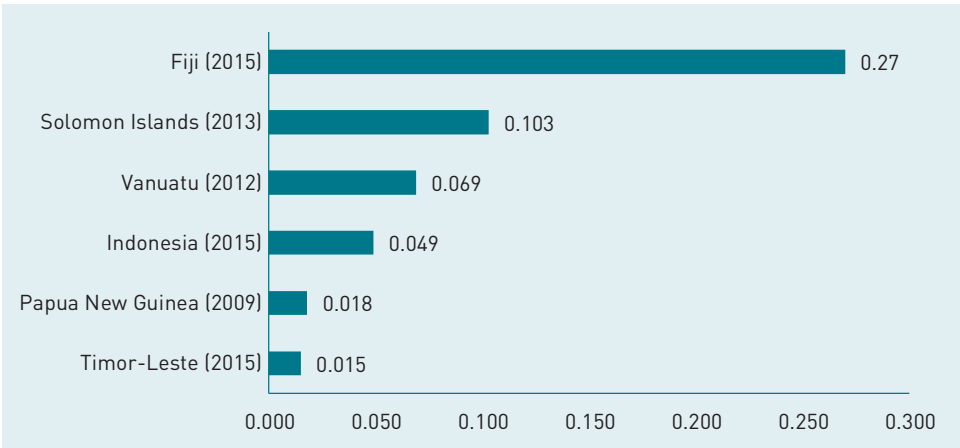
Fig. 4.6 Physicians, nurses and midwives per 1000 population, selected countries, latest available year



Source: World Health Organization, 2017b

The density of dentists and allied health workers such as pharmacists is also very low when compared to regional figures (Fig. 4.7). Fiji has tenfold more dentists per 1000 population in the country.

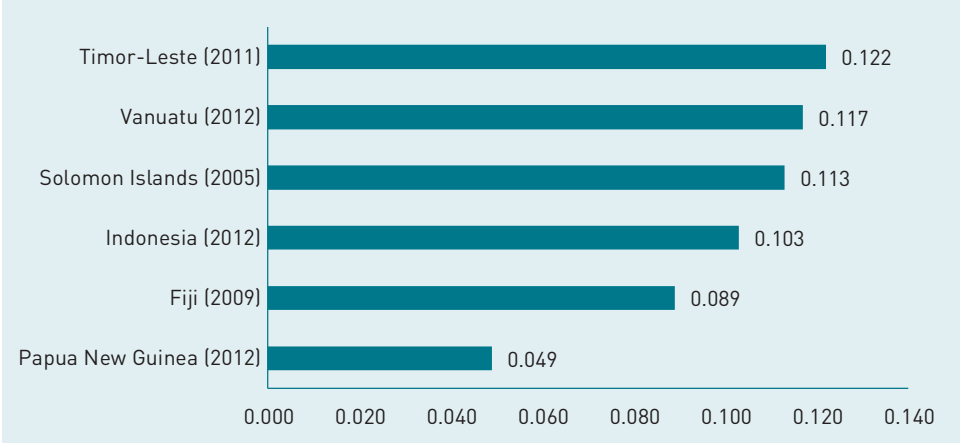
Fig. 4.7 Dentists per 1000 population, selected countries, latest available year



Source: World Health Organization, 2017b

In comparison with the same cluster of countries, Papua New Guinea has the lowest number of pharmacists per 1000 population (Fig. 4.8).

Fig. 4.8 Pharmacists per 1000 population, selected countries, latest available year



Source: World Health Organization, 2017b

Overall, 52% of the Papua New Guinea health workforce comprises CHWs. Nurses comprise about 40% of the workforce. Despite a large majority of Papua New Guinea’s population being rural, 52% of staff (6801) are engaged in urban areas, including at the NDoH, hospitals and in urban clinics, and only 48% reside in rural areas. Sixty-nine per cent of staff are involved in direct service delivery (Morris and Somanathan, 2012). The mix of the health-care workforce is not discussed in the NHP although the HR policy 2013 notes that this must be determined and planned in the future. The National Health Service Standards also identify the recommended minimum levels and mix of health staff for rural health facilities (Government of Papua New Guinea, 2011a & 2011b) based on the services scheduled for provision at each of those facilities, but then these need to be varied according to population numbers and accessibility. As discussed earlier, the proposal in the long-term 2050 Health Vision Statement to establish community health posts (to replace aid posts) at the periphery of the health-care system will require upskilling of PHC workers in MCH, midwifery, health promotion and community awareness programmes (Morris and Somanathan, 2012).

In addition to shortages in the number of health workers and professionals, limited capacity to produce the numbers required and the challenges in achieving the right mix of staff, there are also reported to be widespread disparities in the distribution of health staff across the country. One analysis

suggests that this has occurred because it is the responsibility of the provincial administration to recruit and place HCWs in provinces. Behind this statement is the tendency of the provinces to determine how many and what level of health workers above the minimum recommended they wish to hire and that they can incentivize the positions to encourage health workers, especially doctors and specialists, to their province over other provinces (National Department of Health, 2013g). The lack of mechanisms to monitor and evaluate standards for staffing norms have meant that these disparities in allocation of resources have persisted since Independence in 1975 (National Department of Health, 2013g).

Based on the information received (five hospitals did not provide data), the 2013 NDoH arrest plan estimated a shortfall of 2183 provincial hospital staff based upon estimated service demand against existing staff on the payroll. The provincial differences in the percentage of hospital staff needed compared to the existing number of staff ranged from 3.8% at Mt Hagen (Western Highlands) and 4.1% at Lorengau (Manus) hospitals to 102.7% at Buka Hospital (AR Bougainville) and 108.4% at Boram Hospital (East Sepik Province). Interestingly, Port Moresby General Hospital, the national referral facility, had an 80.6% gap. The same report estimated the shortfalls in PHC service delivery facilities. Overall it found that the system was short of 3891 aid posts, 143 health centres and 74 district hospitals in order to be open, staffed and operating. Again, there were wide variations between provinces.

There are also issues with gender disparities in HRH. In terms of gender equity, the HR Policy identifies that there are more females than males employed throughout the health sector. However, this ratio does not hold for leadership roles and senior appointments within the health sector (Government of Papua New Guinea, 2013b).

This current health workforce crisis in Papua New Guinea is attributable to many causes, including:

- the current severely constrained training system (capacity, infrastructure, appropriately skilled training workforce, clinical placements), which is unable to meet the needs for existing and new health workforce cadres (Government of Papua New Guinea, 2013b; World Bank, 2013);
- the large percentage of the health workforce, especially in rural areas, who are due to retire within the next 10 years – over half will retire within that period;
- the continued expanding demand for services over the past decade and for the next 10–20 years due to a sustained increase in the population;

- lack of a health workforce development plan for the health sector, and poor access to HR information to assist in planning. The current HR Policy states that the sector does not have access to data on the number, qualifications and distribution of health workers in the country (in both the public and private sectors). This then impacts on forecasting, leading to a mismatch between production numbers and availability of positions;
- loss of health professionals to other sectors (often in non-health positions) or overseas; and
- inadequate amount and inefficient use of finances provided to the sector.

The available data present some stark policy options for development and health system planners. For example, of the total skilled health workforce, 30% are in administrative positions and 40% are either over the retirement age or close to reaching it (Government of Papua New Guinea, 2013b). To reach the WHO standard of 2.28 per 1000 (or population-to-staff ratio of 439 to 1), Papua New Guinea would need to increase total staff numbers from 8 440 (in 2009) to almost 26 000. This would be equivalent to an increase in staff numbers of 200% (Morris and Somanathan, 2012). An assessment conducted by the World Bank proposed several policy options for responding to HR shortages in Papua New Guinea (Morris and Somanathan, 2012), which may have negative/neutral/positive outcomes on access and health. These were based on what would be needed to meet the Papua New Guinea development strategy by 2010–2030 and comprised the following five scenarios:

- Scenario 1: The no-change-in-HR supply capacity
- Scenario 2: Aspirational targets envisioned by the Papua New Guinea Development Strategic Plan, 2010–2030
- Scenario 3: Maintaining existing population-to-service-delivery ratios
- Scenario 4: The WHO-recommended “threshold” service-delivery staff-density targets
- Scenario 5: The suggested pre-service training for direct service-delivery staff.

Scenario 5 was the broadly recommended one. It assumed that there would be growth in the resource envelope available for health and service delivery staff, and a required ramping up of pre-service training to meet the present rates of attrition in the workforce and needs of a growing population. Through a reasonable expansion of the number of doctors, targeting rural health practice and an expansion in general nursing graduates relative to CHWs and sustaining health extension officers (HEOs) training programmes at the present levels, it envisioned a gradual reduction in the population-to-doctor,

-nurse and -CHW ratios. Total service-delivery staff numbers under Scenario 5 would rise from 8440 in 2009 to 18 407 in 2030, which represents an increase of 118%. This will be a challenging policy and planning endeavour, given the current restrictions on fiscal space for health (see section 3.2) and the projected modest growth in recurrent health expenditure over the medium term. The costing of the NHP indicates a growth in personnel expenditure from 371 million kina in 2010 (current prices) to 456 million kina for the period 2016–2020 (Government of Papua New Guinea, 2010b). The World Bank study indicates that 615 million kina would be required by 2030 to achieve the HRH goals of the Papua New Guinea Development Strategic Plan.

The other scenarios were seen to not be feasible, given the health sector funding and HR production capacity, service environment and the country's health needs. For example, Scenario 4 would need a 200% increase over 21 years, resulting in a 390% increase in staff remuneration costs to the sector by 2030. Scenario 3, although unlikely to be affordable, was not projected to result in the right health worker mix required to achieve the NHP health outcomes. Scenario 2 was “extremely ambitious” and very likely unaffordable. Scenario 1 just meant that the crisis already in health workforce would exacerbate with a breakdown in rural health service delivery and worsening health outcomes for the nation.

4.2.2 Professional mobility of health workers

The international migration of health workers from the Asia Pacific, mostly to high-income countries, has been a growing problem in the region (Connell, 2010), including in Papua New Guinea. One in-depth analysis of Pacific Island country health worker migration conducted in 2000 found that, of the 3 282 professional health workers from Pacific Island countries that were working overseas, 10% were from Papua New Guinea (Morris and Somanathan, 2012). The main destination country for emigration of skilled health workers is Australia. Interviews with migrating staff confirmed that lack of career progression is a major reason for leaving or not returning after training. Tracking of migration data is also a significant issue in adopting a clear policy response.

The current crisis in the health workforce in Papua New Guinea is also partly attributable to the drift of health workers out of the public sector and into the private sector when the extractive industries geared up dramatically and provided higher pay for health, management and other positions (see section 4.2.4). The HR Policy reports high attrition rates of public sector workers to the liquid natural gas project (Government of Papua New Guinea, 2013b). A recently developed HR management policy provides a wide set of strategies

to retain health staff, among which is the proposal to contractually bond staff educated through the public sector to serve in the public sector for a period of at least 5 years (Government of Papua New Guinea, 2013b).

4.2.3 Training of health workers

Training of health workers was initially conducted at the community level by missionaries. These included training for aid post orderly, nurse aide and nurse. These programmes were then later delivered by government agencies and by Church health agencies in training schools across the country. In the 1960s, the first medical officers of Papua New Guinea were trained in Fiji, after which the Paramedical College at Port Moresby was established for training of doctors and allied health staff. Due to a shortage of doctors, the Madang Paramedical College produced the HEOs (paramedics) as there were not enough trained doctors for the country. The School of Medicine and Health Sciences at the University of Papua New Guinea is responsible for medical, nursing, public health and managerial training.

Following Independence and introduction of the provincial government system in 1976/1977, all training programmes remained the responsibility of the NDoH. However, due to the impacts of structural adjustment programmes in the 1990s, funding for training started to fall away, leading to the closure of many training institutions, especially government-run institutions. This has resulted in a decline in graduate output and the resulting closure of health facilities and the ongoing HRH crisis being experienced in rural regions.

Table 4.4 provides an overview of the undergraduate health programmes conducted in Papua New Guinea. For nursing, there are three government schools and colleges of nursing and another five managed by the Church health sector. The three government schools and colleges of nursing conduct a three-year Diploma in General Nursing programme. At the Church training colleges, four schools and colleges of nursing offer the Diploma of Nursing programme, while the fifth provides a Bachelor's programme in nursing (4 years undergraduate programme). A recent assessment of these nursing schools found that there is limited capacity to increase intake due to infrastructure shortages, weaknesses in information technology, and insufficient teaching positions and teaching aids.

Table 4.4 Overview of education programmes for the health sector in Papua New Guinea

Category	Entry year	Duration (years)	Level	Provider	No. of schools
Community health worker	10	2	Certificate	Churches and 12 provinces	12
Nursing	12	3	Diploma in General Nursing	Churches and Government located in 8 provinces	7
Bachelor of Nursing	12	4	Degree	School of Health Sciences – Pacific Adventist University	1
Physiotherapist	12	4	Degree	Divine Word University	1
Bachelor of Rural Health	12	4	Degree	Divine Word University	1
Environmental Health Officer (EHO)	12	4	Degree	Divine Word University	1
Bachelor of Health Management (BHM)	12	4	Degree	Divine Word University	1
Bachelor of Oral Health	12	4	Degree	University of Papua New Guinea (UPNG), School of Medicine and Health Sciences (SOMHS)	1
Bachelor of Dental Surgery (BDS)	12	4	Degree	UPNG, SOMHS Taurama campus	1
Bachelor of Pharmacy	12	4	Degree	UPNG, SOMHS Taurama campus	1
Bachelor of Medical Laboratory Sciences	12	4	Degree	UPNG, SOMHS Taurama campus	1
Bachelor of Medical Imaging	12	4	Degree	UPNG, SOMHS Taurama campus	1
Bachelor of Medicine and Bachelor of Surgery (MBBS)	12	5	Degree	UPNG, SOMHS Taurama campus	1

Source: Compiled by authors

The NDoH provides the staffing and operational financing for nursing schools and colleges that have not amalgamated with universities. The churches conduct all the community health workforce training through their 12 schools and provide a 2-year certificate course.

In terms of in-service training, the Provincial Principal Health Adviser/CEO and District Health Adviser have the primary responsibilities for overseeing continuing training programmes. These are usually conducted for priority programmes such as immunization, reproductive health, child health, communicable disease control and health promotion. Papua New Guinea experiences many of the challenges associated with the management and delivery of in-service training. These include gaps in teaching infrastructure, poor monitoring and evaluation and follow up of training, lack of a training information system, unnecessary duplication of in-service training activities

and finally, a lack of linkages between in-service training and a career pathway system (Government of Papua New Guinea, 2013b).

The HRH Policy describes the current training system in Papua New Guinea as being poorly coordinated and lacking an evidence base. Policy analysts attribute this to lack of systems for assessment of training needs. The policy background also makes the case that limited quality control of undergraduate curricula has meant that graduates do not have the necessary skills that match the population health needs in Papua New Guinea, and therefore are not competent to work upon graduation and require further training and experience. In terms of in-service training, absence of standards, guidelines and procedures and other management system processes have contributed to the overall effect of weak coordination of the training system.

The Government is proposing major policy changes to improve the coordination and evidence base of training systems. Policy initiatives (Government of Papua New Guinea, 2013b) proposed include the following:

- training plans to be linked to national qualification standards;
- setting up of academic and professional quality standards;
- all training curricula to be competency based; and
- standardization of curricula for each health cadre.

4.2.4 Career paths

In-service training is available for all health staff on completion of undergraduate training. The fact that there is no compulsory in-service training linked to career progression for staff in clinical care or management is a major constraint.

Several opportunities exist for medical officers after graduation. Medical officers can train in many specialties provided through the University of Papua New Guinea or at overseas institutes. Nurses have opportunities for midwifery, paediatrics, psychiatry, anaesthesia and community health. It has been reported that other cadres have fewer opportunities for advancing their careers through in-service or postgraduate training. Lack of career development opportunities can impact on motivation.

Career pathways for health professionals are not well developed or articulated in Papua New Guinea. The recently developed HRH Policy is proposing an agenda of reform measures to strengthen career progression pathways (Government of Papua New Guinea, 2013b). Such policy initiatives include the following developments:

- training plans that conform to national curriculum standards;
- academic and professional accreditation standards; and
- career frameworks for various health cadres.

Career progression is also linked closely to issues of retention and motivation of the health workforce. The HRH Policy proposes to address these issues through policy interventions in areas such as performance-based salary, incentives, contractual mechanisms and other evidence-based motivation strategies.

4.2.5 Private practice and dual practice

Private sector health professionals are required to register annually. Despite the lack of solid evidence, some assessments indicate that the private sector health workforce is growing. The private sector is expected to expand due to a combination of factors, including a rising GDP, urbanization and the emphasis on private sector growth in broader development planning. In addition, many agribusiness and resource companies are also organizing health service provision for their employees and sometimes to the employee's immediate families and even surrounding catchment areas of the industry enclave.

It is probable that the private sector employs 10–15% of the total health service delivery workforce. This could rise to 20% within the next decade. The total health workforce in the national health services system is estimated to be about 12 294 altogether, of whom about one quarter (3560) work in missions or private institutions (National Department of Health, 2013d).

Currently, there is a lack of in-depth health systems data on the private medical sector. In fact, one assessment has indicated that data on the private medical sector are almost non-existent (Morris and Somanathan, 2012). Given the drift of public sector workers into the private sector, lack of adequate health systems' support for rural health workers and economic pressure for privatization, more policy attention will need to be given in the coming years to regulation of private practice.

The NHP proposes several strategies to regulate the growth of employer-related health services in rural Papua New Guinea. Strategies include:

- establishing public–private partnerships (PPPs) with relevant major mining and agriculture ventures;
- establishing health sector monitoring and coordination mechanisms for PPPs;
- improving purchaser–provider relationships between private health-care providers, churches, NGOs and the resource industry; and

- increasing the use of outsourcing, when relevant, as a means of increasing public–private alliances/ partnerships (Government of Papua New Guinea, 2014b).

The NHP also recommends that Provincial Health Activity Planning be conducted jointly with public and private providers.

Traditional health providers

Papua New Guinea also has a long tradition of village health volunteer (VHV) programmes. Beginning in the 1980s, the Government established a VHV programme that sought to bring basic health services to rural communities, as part of scaling up PHC in line with the 1978 Alma-Ata Declaration. The early VHV programme trained thousands of VHVs across the country to provide a wide range of services, including provision of first aid, treatment of diarrhoea, village birth attendants and nutrition. A standardized training programme, policies and VHV organizational networks were developed to support this cadre and the quality of their operations.

The most successful VHV programme was implemented under the Women’s and Children’s Health Project (1998–2004) funded by Australia. It helped bring all partners involved in training and using VHVs, of whatever kind, to define core competency sets, develop standardized training packages and referral pathways, and have annual reviews and conferences around VHVs. Strong remnants of this programme can be seen in East Sepik and Milne Bay Provinces. However, the programme faced limitations due to severe resource constraints experienced during the economic crisis of the late 1990s and early 2000s, which saw Papua New Guinea requesting emergency assistance from the International Monetary Fund and the World Bank. This resulted in limited investment in the health system and saw most of the VHV programme dismantled as provinces struggled to maintain basic health services. Where there are no aid posts, VHVs, village birth attendants and *marasin meri* (medicine women) still provide basic first aid and health education in villages and homes.

5 Provision of services

Chapter summary

There are seven levels of the health-care delivery system, ranging from aid posts at the lowest level to the National Referral Hospital in Port Moresby at the highest level. The extent of coverage of service delivery varies significantly by geographical region and by programme type.

Within the NDoH, there are specific sections responsible for the programmes. The Public Health Division plays a major role in the stewardship of several KRAs of the NHP 2011–2020. The present performance in communicable disease control and environmental health is mixed. Immunization coverage is low. In contrast, coverage of the malaria programme is high, with several factors having been identified as contributing towards this success (see section 1.4.4). There are major gaps in performance in the area of reproductive health. The capacity to prevent, detect, respond and mitigate the impact of disease outbreaks that are a risk to health security is limited. Preventive health services have been defined and build upon the Healthy Islands concept. However, minimal support is provided to these activities.

There are many geographical, cultural and institutional barriers to the smooth functioning of the health referral system in the country. Although patient pathways according to policy are intended to conform to a primary–secondary–tertiary health referral model, the reality is that referral is bypassed and there is a concentration of inpatients and outpatients in urban and periurban locations. Emergency services are limited in their reach beyond the provincial hospital catchment area. Ambulatory services are impeded by the financial constraints experienced in rural health; namely, lack of operational funds for outreach.

Due to the priorities of communicable disease control and MCH, there are aspects of specialized health care that have not yet been well developed in the country. In some areas such as mental health, preventive health services, dental care, palliative care and long-term care, there are early signs of policy and national programme development, although poorly resourced. Complementary and traditional medicine services are available and used.

5.1 Public health

In Chapter 2, a table detailing the public health system of Papua New Guinea is provided (Table 2.1). The structure of the NDoH is detailed in Fig. 2.1. Within the NDoH is the Public Health Division, which is headed by an executive manager who is also part of the NDoH Executive, and the manager reports to the Deputy Secretary, National Health Services and Standards. The Division comprises the following “branches”: Family Health; Emergency Preparedness and Response; Central Public Health; Health Protection and Promotion; and Disease Control. As such, it is the overseer of five of the eight NHP KRAs:

1. Improve child survival (KRA 4)
2. Improve maternal health (KRA 5)
3. Reduce the burden of communicable diseases (KRA 6)
4. Promote healthier lifestyles (KRA 7)
5. Improve preparedness for disease outbreaks and emerging population health threats (KRA 8)

The publication of a set of standards for health service delivery has clarified the core services for each level of the public health-care system (Government of Papua New Guinea, 2010b & 2010c) into which the provision of public health services is fully integrated. The National Standards need to be cross-referenced with other documents to see the content of these core services. This complexity was noted to be a problem that remains in the utility of the documents by the NDoH staff interviewed.

Level 2 differs from Level 1 in that Level 2 provides some level of inpatient short-term care. Level 3 (rural and urban health centres) must ensure minimum standards for medical, obstetric, paediatric, surgery and public health services. Levels 4–7 (district hospital to National Referral Hospital) provide various levels of hospital care. Both provincial and regional hospitals have some form of subspecialty areas, as well as supporting a referral role within their jurisdiction. The National Referral Hospital provides referrals for urgent and critical care on a nationwide basis and provides a full range of subspecialty services (Government of Papua New Guinea, 2011a).

All service levels provide a mix of treatment and public health services. A set of National Health Services Standards has clarified the treatment and public health functions of each level of the system (Government of Papua New Guinea, 2011b). These standards stipulate that such public services can be provided through facilities or through outreach patrols. The standards

classify five core areas of work for the health sector, which include the following:

- medical services and related public health services (including sexual health);
- surgical services and related public health services (including oral health);
- maternity services (including obstetrics and gynaecology and reproductive health);
- child health services (including paediatrics and neonatal care and youth, adolescent and school health); and
- psychiatry/mental health and addiction services.

Supporting services include the following:

- critical care (high dependency, intensive care and coronary care, and emergency/retrieval services);
- anaesthesiology (including recovery care);
- operating theatre (including central sterilizing area);
- diagnostic services – medical imaging and pathology (including mortuary and blood bank);
- pharmacy services;
- allied health (rehabilitation services including orthotics/prosthetics);
- biomedical engineering and engineering;
- infection control;
- public health, environmental health, waste management, occupational health and safety;
- sustainable development and healthy environment; and
- food services and security.

Management support includes the following:

- management and leadership support;
- teaching and training and research;
- disaster preparedness (including epidemic and disease outbreak); and
- health information (including population and bed capacity).

Subspecialty services include the following:

- Subspecialties of medicine: Cardiology, Endocrinology (lifestyle diseases), Gastroenterology, Respiratory Medicine, Cancer services, Geriatrics/Aged care, Haematology, Medical Oncology/Palliative care, Neurology, Radiation Oncology, Renal medicine, Haematology.
- Subspecialties of surgery: Cardiothoracic surgery, Ear–Nose–Throat surgery, Ophthalmology, Orthopaedics, Neurosurgery, Urology,

Burns, Head and Neck, Plastic surgery; some other specialties and anaesthesiology.

The core areas of work are then further categorized into support services and management support (Government of Papua New Guinea, 2011a) (Table 5.1).

Table 5.1 Levels of the public health care system in Papua New Guinea

Level	Name of level	Core service
1	Aid Post/Public Health Services and Community	Basic medical services (as per competencies of the aid post worker)
2	Community Health Post/Public Health Services	Basic medical services and primary emergency obstetric and neonatal care
3	Rural Health Centre/Public Health Services Urban Health Services	Medical, child, neonatal and paediatric services
4	District Hospital/Public Health Services	Medical, child, neonatal and paediatric services, basic surgical services
5	Provincial Hospital/Public Health Services	All of the above plus basic specialist obstetric, medical and surgical services. Service support (Diagnostics and Allied Health)
6	Regional Hospital/Public Health Services	All of the above plus some subspecialty medical and surgical services. Management and leadership, clinical, public health and professional support
7	National Referral Hospital/Public Health Services	All of the above plus critical care. Management and leadership, clinical, public health and professional support

Source: Government of Papua New Guinea, 2011a

5.1.1 Environmental and communicable disease control functions

The majority of the environmental and communicable disease control functions are within the provinces and districts, with the NDoH's role being, as previously noted, to provide policies, standards and technical support and supervision.

KRA 6 of the NHP includes objectives relating to the prevention and control of communicable diseases. Specifically, these objectives relate:

- to reducing malaria-related morbidity and mortality;
- to controlling TB incidence by 2020, scaling up prevention, treatment and care;
- to providing support for STIs and HIV to meet universal access targets; and
- to strengthening communicable disease surveillance and monitoring systems (Government of Papua New Guinea, 2010b).

Details of the morbidity and mortality profile of the country appear in section 1.4. This chapter will review programme performance and system capacity to deliver the services required to address those health problems.

Vaccine-preventable diseases

Papua New Guinea has one of the lowest immunization coverage rates in the Asia Pacific region. Coverage from routine EPI services has been static or even declining over the past decade. The United Nations Development Programme (UNDP) 2014 Human Development Report for Papua New Guinea noted that “Immunization coverage (measles in particular) has declined over the last 5 years from 57 per cent in 2008 to 46 per cent in 2012 followed by a slight increase to 52 per cent in 2013 (National Department of Health, 2013c). This level of coverage rates remains well below the levels required to prevent a resurgence of epidemic transmission of vaccine-preventable diseases. Whilst Papua New Guinea has maintained its polio free status since 2000, there have been measles outbreaks in 2005 and again recently in 2013–2014” (United Nations Development Programme, 2014).

The official country estimates for immunization coverage in 2016 (World Health Organization, 2017c) were noted as:

- BCG 72%
- DPT 1 87%; DPT 3 61%
- IPV1 14%
- Hep B birth dose 35%; Hep B 3 61%
- HiB 3 61%
- MCV1 51%
- PCV1 34%, PCV2 25%, PCV 3 20%
- Pol 3 62%
- Rubella-containing vaccine (RVC) 1 51%
- TT2plus 48%

The WHO/UNICEF estimates for the same period were noted as several points higher for BCG (89%), DPT 3 (72%), HiB3 (72%), MCV1 (70%), Pol3 (73%) and RCV1 (70%). GAVI noted that the male–female ratio of coverage for DPT 3 was 1.08, and that only 17% of districts had achieved more than 80% DTP3 coverage (2016) and 44% of districts had achieved less than 50% DTP3 coverage (2016) (GAVI, 2016).

As noted above, vaccine-preventable disease outbreaks still occur. Papua New Guinea continues to periodically use supplementary immunization activities (SIAs) to minimize the occurrence of outbreaks. The major reason given for this static immunization outcome was declining population contacts with the health system.

A capacity assessment undertaken in 2013 (National Department of Health, 2013d) found that the Ministry was struggling to achieve the communicable disease control goals as outlined in the NHP, particularly in relation to immunization coverage and reduction in mortality due to pneumonia. However, at a regional level, some improvements have been identified in some subregions, including the National Capital District and the New Guinea Islands region.

Malaria

The NDoH lost its management of the principal recipient status for management of malaria grants in 2012, after which grants were administered through a range of civil society organizations.

The capacity assessment (National Department of Health, 2013d) noted that malaria control had seen a sustained reduction in cases per 1000 population in all regions. The decrease in deaths (World Health Organization, 2016b) due to malaria are likely to be attributed, however, to the successful scale up of the National Malaria Control Programme since 2008. Major budget support from the Global Fund starting in 2004 has allowed Papua New Guinea to make this significant progress in malaria control. This support comprised US\$ 127 million in malaria funding to the country between 2004 and 2016, an average of US\$ 1.5 per capita per year (The Global Fund, 2017). This programme has been implemented by the NDoH through partnerships with Rotary Against Malaria, PNG Institute of Medical Research, Population Services International (PSI) and other partners in civil society organizations and the private sector. The 2014 malaria indicator household survey found that 82.2% of households reported that they now had access to at least one insecticide-treated net (ITN), and that 59.5% of children under 5 years had slept under an ITN the night before (Hetzl et al., 2014). The coverage of ITNs appears to be the key intervention responsible for the success in reducing malaria, despite the change in implementation of the new standard treatment guidelines. Only 43.3% of fever cases sought treatment at a health facility, and of those, 15.9% received a diagnostic test (rapid diagnostic test or blood slide) (Hetzl et al., 2014).

The capacity assessment outlined the main success factors in the Malaria Control Programme as:

- effective leadership;
- sustained funding;
- effective partnership approaches;
- technology service innovations;
- accessible diagnostic tests;

- bednet distribution; and
- ensuring all strategies had been informed by locally generated operational research (National Department of Health, 2013d).

Within the country, concern is being raised about the fragility of these gains, as external and internal funding for the malaria programme declines, and as the medical supply system remains unpredictable. The Prime Minister has signed the Asia Pacific Leaders Malaria Alliance goal of an Asia Pacific Free of malaria by 2030, and some pockets of the country are in the pre-elimination phases. But the ability to achieve this ambitious goal of elimination is fragile.

Tuberculosis

In 2013, the Government became the dominant funder for the TB programme. The programme focuses on expanding coverage of the directly observed treatment, short-course (DOTS) approach throughout the country, strengthening diagnostic and laboratory facilities and quality assurance, improving health workers' skills and scaling up TB/HIV activities. This has been done in partnership with World Vision, Hope Worldwide, Papua New Guinea Institute of Medical Research and Queensland Health Laboratory, and technical support from development partners. However, as the capacity assessment in 2013 noted (National Department of Health, 2013d), the national TB response is inadequate. A Joint Sector Review in 2013 found that the TB national cure rate had declined from 60% in 2011 to 52% in 2012. Similarly, the national treatment success rate had declined from 73% to 68% (National Department of Health, 2013a). Declining coverage and expanding rates of multidrug resistance are attributed to wider social conditions, health system constraints and, more specifically, through erratic supply of medicines, poor patient compliance and DOTS application. The World Bank in 2017 noted that, "Tuberculosis (TB) has emerged as a serious public health issue and the leading cause of death in PNG", and that although "the high TB infection rate is in part due to persistent poverty and the associated poor nutrition and crowded housing/settlements with limited ventilation. The rise in TB rates is also due to weak health service delivery systems, which have resulted in delays in TB diagnosis and inadequate and ineffective TB treatment" (World Bank, 2017a).

Compounding these high and rising rates of TB is the high incidence of MDR-TB and XDR-TB. Papua New Guinea has been identified by WHO as a high-burden country for TB due to the (a) TB burden; (b) coinfection of HIV and TB burden; and (c) high MDR-TB burden. In 2015, the Government made special note of the seriousness of the TB situation, especially drug-resistant TB levels, and declared a public health emergency relating to TB in the Western

Province. An Emergency TB Response Plan of the NDoH has been developed and additional funding from development partners sought for these activities. The Plan aims to control the spread of TB and MDR-TB in hotspot areas by strengthening programmatic management and has three key components: (1) early detection of active TB patients; (2) effective treatment of TB patients; and (3) strengthening of health delivery systems. This builds upon existing support through WHO and Australian aid funding, and gains made with Global Fund support to address this problem. The Government has secured US\$ 15 million (48 million kina) from the World Bank for an emergency TB project (World Bank, 2017a).

STIs, HIV and AIDS

As noted in Chapter 1, the rates of STIs are the highest in the Asia Pacific that of HIV in the Pacific. HIV appears to be a concentrated epidemic, and 93% of reported cases are in the highlands provinces, Morobe, Madang and the National Capital District. The highest prevalence rates are reported among sex workers (17.8%) (UNAIDS, 2017). It has been estimated that around 22% of neonatal deaths in Papua New Guinea are due to congenital syphilis, an indicator of the poor access to and utilization of sexual health services in the country. An independent assessment of the Papua New Guinea–Australia Sexual Health Improvement Programme (PASHIP) in 2011 noted that “More than two thirds of the total reported STI cases in 2009 were females. This ratio is the result of multiple factors. Women are more vulnerable to STIs and HIV than men, both physically and socially due to higher rates of sexual violence towards women. Polygamous marital practices also contribute to the gender imbalance. Finally, more women seek sexual health services than men, and STI screening for syphilis is included in antenatal clinic services” (Butcher and Martin, 2011). Most of the emphasis over several years has been on the HIV programme, although from 2007 to 2012, the PASHIP had the broader remit of sexual health.

The country has experienced a significant improvement in the roll-out of HIV treatment services, but the health system is facing difficulties in retaining people on lifelong treatment, especially among key populations and in the country’s remote and often hard-to-reach communities. The programme for HIV has again been a partnership between various funding agencies (including the Australian Government, United States Agency for International Development [USAID] and the Global Fund) and Anglicare STOP AIDS, FHI360, Clinton Foundation, Save the Children, Oil Search Ltd., Kainantu Gold, The Business Coalition against HIV and AIDS (PNG), and faith-based and civil society organizations. However, a review in 2013 among people living with HIV (PLHIV) described poor coverage of screening for TB symptoms and that less

than half of the estimated incident cases of TB among PLHIV began anti-TB treatment (Carmone et al., 2017). Many challenges remain in the public health approach to STIs and HIV in Papua New Guinea, and a multisectoral and population-targeted approach needs to be sustained.

Other communicable disease issues

Antimicrobial resistance (AMR) is a growing concern. AMR is not routinely monitored but the country is now building capacity with an AMR laboratory (WHO design) at the Facilities Branch of the NDoH. By the end of 2017, it is expected that the country will have the capacity to monitor drugs as they come into the country. This will allow them to identify whether these drugs contain what they are declared to contain, at the right levels, without contamination or mixing with cheaper drugs such as first-line generic antibiotics, which are common drivers of AMR. Standard operating procedures for these processes have not yet been developed.

Environmental health

The implementation of rural water and sanitation programmes is a responsibility of the provincial government and health authorities. The NDoH has a role in advocacy, guidelines development and standards, and works with other sectors and levels of government to coordinate activities. There are limited reliable data on coverage in rural communities. It has been reported that in 2015 only 40% of the population uses improved drinking water sources, and 19% use improved sanitation (World Health Organization, 2016c).

The Environmental Health branch also has responsibility for other areas of health protection, including food safety and quarantine, sustainable development and healthy environments, although there is limited budgetary support for these activities.

The NHP identifies KRA 7 as “Promoting Healthy Lifestyles” of which one main objective is to “reduce the number of outbreaks of food- and waterborne diseases” (Government of Papua New Guinea, 2010b). A joint assessment of NHP found that, for this area of work to be successful, close collaboration with other sectors such as the extractive industry, forestry, city planners, public works, transport, Department of Agriculture and Livestock, Office of Climate Change, and the law and justice sector is essential (Carmichael et al., 2015).

5.1.2 Reproductive health-care services

Both infant and maternal mortality is higher in Papua New Guinea than in the neighbouring Pacific countries, so it remains a priority public health concern

for policy-makers and planners (see Chapters 1 and 2). It is estimated that over 3000 health workers nationally are involved in maternal care. However, HR statistics indicate that the nurse/physician-to-population ratio of 0.587 per 1000 (World Health Organization, 2017b) is among the lowest in the Pacific Region (see section 4.2).

The NHP also notes the very high maternal mortality ratio of 733 per 100 000 live births and signals an intention to reduce it to less than 100 by 2030. The Plan proposes the new Community Health Post as the major health system strategy to address reproductive health-care gaps. This new type of facility will gradually replace aid posts, and will have three staff, one of whom will be skilled in emergency obstetric care, but at a level appropriate to a community facility (i.e. there will not be blood transfusion or surgical capacity). These locations will also be equipped with a labour room (National Department of Health, 2013d). The main rationale for this approach is to bring services much closer to where the population lives.

As well as promoting equity of access for populations, it will also drive health system efficiencies by reducing the pressures on urban-based facilities in National Capital District and provincial capitals (see section 5.3.4, which provides more detail on geographical equity of access and other equity-related issues). Five provinces are presently trialling an MCH accountability framework (as described in the Global Commission on Information and Accountability for Women's and Children's Health) that utilizes both audit systems and indicators to track progress in MCH management. This is envisioned as a tool for advocacy, programme management and investment.

5.1.3 Mechanisms for notification and surveillance of disease outbreaks

Papua New Guinea has experienced both measles and cholera outbreaks since 2010. Due to low coverage for priority interventions, the country is at high risk for communicable disease outbreaks (National Department of Health, 2013d).

The surveillance unit was initially established in the late 1990s and its function is to conduct surveillance for and respond to all epidemic-prone diseases, as required under the IHR, 2005. In the case of outbreaks, data are collected at health-care facilities using paper-based forms that are meant to be sent as soon as possible after collection to the provincial level, after which it is entered into an Excel spreadsheet at either the provincial or national level.

An NDoH capacity assessment conducted in 2013 confirmed that epidemiological skills are required across the Public Health Unit centrally as well as at the provincial level (National Department of Health, 2013d). Due to insufficient population health focus in management and programming, it makes it more difficult to facilitate actions to achieve the NHP public health goals. Provincial plans and budgets are being made without sufficient analytical work on epidemiological and surveillance data (National Department of Health, 2013d). The Joint Sector Review of 2015 also makes observations regarding the depleted public health skills and leadership in the sector (National Department of Health, 2016). Attempts to address these shortfalls have included the Field Epidemiology Training Programme (FETP) organized and facilitated with technical and financial support from the NDoH, WHO, the US Centers for Disease Control and Prevention (CDC), Thailand International Field Epidemiology Training Programme and DFAT. The first cohort of 16 field epidemiologists, otherwise known as “disease detectives”, successfully completed the course in 2013. The 6-month FETP aims to provide Fellows with advanced skills in disease surveillance analysis and outbreak response. The NDoH aims to train one field epidemiologist in each district by 2019. The Capacity Assessment report (National Department of Health, 2013d) suggested that the provision of a technical service on epidemiology and population health to the sector would assist in ramping up these capacities.

Refer to section 2.7.2 (Information management system for emergencies), which provides more details on mechanisms for notification and surveillance of disease outbreaks.

The dramatic improvements in malaria prevention and control have shown that it is feasible to transition towards a more population-based approach in Papua New Guinea. The investment by the Government and Global Fund in field epidemiology, laboratory support and rapid diagnostics have supported these gains, and could also support other public health programmes such as immunization, TB control and MCH. However, the vulnerability of these programmatic successes to weaknesses and failings in the health system, e.g. medical supplies and financing of the health sector (see Chapter 3), threaten to undermine and reverse these gains.

5.1.4 Preventive health services

KRA7 of the NHP focuses on the promotion of healthy lifestyles. The main objectives include:

- increasing the health sector response to prevention of injuries, trauma and violence;

- reducing the number of outbreaks of food- and waterborne diseases;
- increasing individual and community involvement in health; and
- reducing the morbidity and mortality from NCDs.

The Healthy Island concept (HIC) is an approach through which communities work together to establish linkages between an individual's behaviour, their environment and health outcomes (Yeung and Selep, 2016). The HIC is highly relevant to the National Health Strategy, as its implementation is seen to be of benefit to vulnerable groups; namely, the rural and urban disadvantaged as defined as a priority in the National Health Plan (Government of Papua New Guinea, 2010b). The country has been pursuing this approach for several years.

According to one estimate, NCDs account for 44% (see section 1.4.1) of the mortality burden in Papua New Guinea. Despite this situation, there is a mismatch between the size of this disease burden and the health system response. However, there have been some developments in NCD prevention and control, including budget appropriations for health promotion and some actions on tobacco control (section 3.1). The District Health Supervisor or Principal Adviser in the provinces has a role in overseeing that in-service training on health priority programmes includes health awareness programmes on healthy communities (National Department of Health, 2013b).

Another review conducted in 2015 found that the current national plan has not yet given sufficient prominence to the issue of healthy lifestyles and the environment (Carmichael et al., 2015). The NDoH has been trialling a “40-year-old plus” health screening and prevention model, and planners have expressed interest in broadening this strategy to include workplace health for NCDs once it is evaluated.

5.2 Patient pathways

The Papua New Guinea National Health Plan 2011–2020 envisages a hierarchical structure for health services across the nation. It commences with village aid posts/community health posts providing PHC services through a referral arrangement linking health centres, district hospitals, provincial public hospitals, regional referral hospitals and ultimately to the National Referral Hospital offering secondary- and complex tertiary-level clinical services (Government of Papua New Guinea, 2010b) (see section 4.1 and Fig. 5.1). The proposed roll-out of the community health post reform is also viewed by planners as a critical intervention for strengthening the

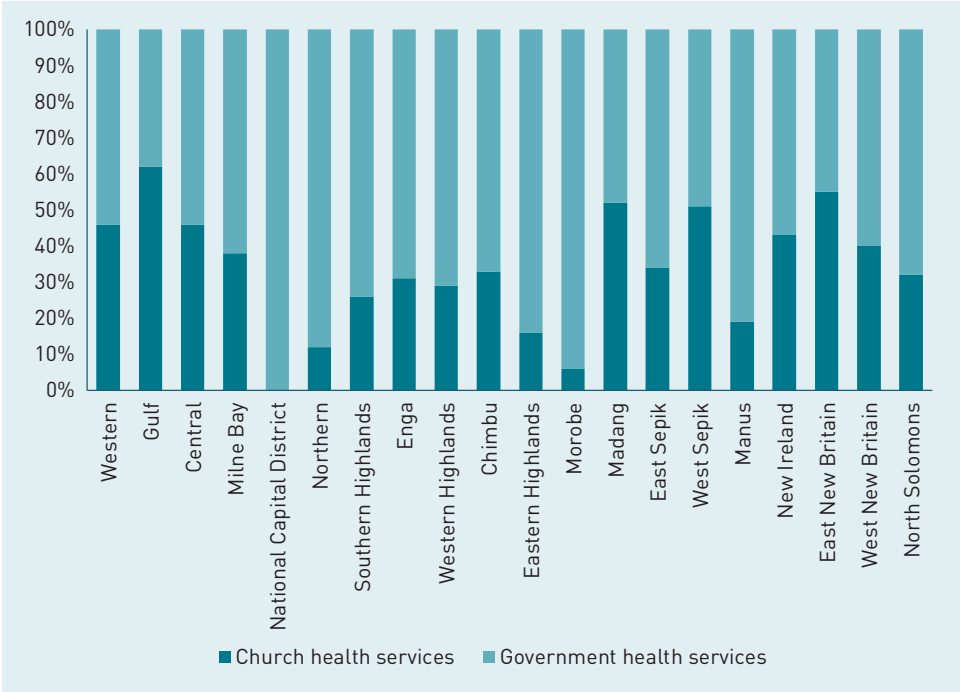
health system, as it involves locating critical health infrastructure and human resources much closer to where the population resides.

In support of this direction towards a more streamlined health referral system, the National Health Services Standards in Papua New Guinea stipulate key activities to ensure that patients understand and follow the referral pathways. These are that:

- levels 1–3 services display the distance to the nearest levels 4–7 services;
- services provided are consistent with the NDoH’s role delineation statement;
- at health services with a limited role, i.e. levels 1–4, the services available are displayed for the information of the community;
- road signs, internal directional signs, notice boards and helpful staff members assist people to locate services;
- notices inform the public of hours of operation for each section, applicable fee schedules, visiting hours etc.;
- there are signs or notices informing people how to access emergency services if the section closes for any period during the day. They state where to go or what to do, i.e. “Ring bell for service”, “Call (telephone number) for advice”, etc.; and
- there are local language notices where appropriate (Government of Papua New Guinea, 2011b).

The Standards also stipulate that the health service has an active programme of rural outreach, which may include radio consultation, radio ward rounds, health patrols, clinical visits, emergency response and referrals. Of course, as detailed elsewhere in this review, there are many geographical, cultural and institutional barriers to the smooth functioning of the health referral system in Papua New Guinea. One review of Church-based services found that obstetric complications and family planning services were two of the most common reasons for referral, but that referral chains were interrupted. It was found that the frequency of referral for these conditions ranges significantly between provinces (Fig. 5.1) (Mapira and Morgan, 2011).

Fig. 5.1 Supervised childbirth in health facilities as share of Government and Church health services, by province, 2009



Source: Mapira and Morgan, 2011:p.142

One of the familiar referral problems is bypassing of lower-level facilities, which leads to inefficiencies in management of the whole system. Reviewers of the health sector in 2015 observed the phenomenon of “citizens voting with their feet” and directly presenting at the provincial hospitals. This is thought to be because these have had a higher level of investment and have received significant infrastructure support in recent years (Carmichael et al., 2015). The same review observed that provinces with a higher performance for outpatient contacts have a “keen interest” in rural health services as supported through the PHA. The sector review also pinpoints some key success factors linked to higher utilization, which include the following:

- shared sense of vision between health leaders from the Central Government, provinces, districts, hospital and the governor;
- framework for implementation under the PHA structure;
- high levels of local government and political advocacy by Members of Parliament for health;
- strong alignment of health function grants with NHP priorities;
- genuine partnerships between Church and Government health services;

- skilled health managers and clinicians at the provincial level; and
- implementation of minimum standards and facility-based budgeting models.

In summary, there are significant gaps in the referral system related to geographical and institutional barriers to care outlined extensively throughout this review. In response to these system challenges, the NHP is proposing a raft of health system reforms to streamline the system. These include completing the integration of hospitals and rural health centres into a single PHA, scaling up the community health posts with expanded capacity to manage MCH services, and closely integrating planning and budgeting at the facility level (Government of Papua New Guinea, 2010b) (see *also* Chapters 2 and 3).

5.3 Primary/ambulatory care

5.3.1 *Settings and models of provision*

Papua New Guinea has a network of health-care facilities that provide a mix of inpatient and outpatient care. (Table 4.1 provides a summary of ambulatory care facilities across the country.) As discussed in detail in previous chapters, the hospitals (provincial and district) provide emergency and outpatient care and support to public health programmes. Rural health centres provide services, including management of chronic and acute conditions, basic surgical care, deliveries and paediatric care, and function as intermediary referral points between lower-level district facilities and district hospitals. Urban clinics provide the same services as health centres. Health subcentres are based only in rural areas, provide the same services as health centres, and are usually run by the churches. Aid posts deliver basic health care, including mother and child care and community-based health promotion. In remote areas beyond the aid post, or in areas where aid posts have closed, services are extended through outreach, patrols and through VHV networks.

5.3.2 *Primary care providers*

Papua New Guinea has over 12 000 HCWs, of whom a substantial proportion are made up of primary care providers who provide services at health centres, subcentres and aid posts. Staff at health centres and subcentres are generally better trained than those at aid posts, and include nurses, midwives and health extension officers. District and provincial hospitals provide basic outpatient services. Providing primary care cover is challenging in the country's context, given that Papua New Guinea has the lowest ratio of nurses/midwives-to-population in the region (see section 4.2) (World Health Organization, 2017b). Of the overall health workforce, 52% are CHWs (Morris and Somanathan, 2012), all of whom provide primary care. (see section 4.2).

5.3.3 *The range of services available*

The policy context for specification of the range of services available is outlined in the National Health Services Standards in PNG (Government of Papua New Guinea, 2011a). This role delineation involves a flexible interpretation of the core services to be provided based on the functional capacity of each facility (see section 5.2).

In response to service delivery gaps, the NHP is proposing a number of strategies (Government of Papua New Guinea, 2010b) to expand access to these services, which include:

- increasing the number of outreach services;
- improving the reliability of supply of medicines;
- improving the availability of operational funding through facility-based planning and budgeting;
- improving the skills and skills mix of PHC providers;
- establishing community health posts;
- integrating hospitals and rural health centres into a single PHA; and
- ensuring that specialists are available at all provincial hospitals by 2030.

5.3.4 *Geographical distribution of primary care facilities/practitioners and issues of inequity*

An essential value of the health system defined in the NHP is that of “Equity: Striving for an equitable health care that is independent from political decision making, and being fair in all our dealings, irrespective of age, gender, ethnicity, religion, and political affiliation” (Government of Papua New Guinea, 2010b). However, various assessments and evaluations have outlined the struggle nationally in allocating resources in such a manner as to be consistent with this value. Aid post closures and failure to align human resource numbers with population growth and international standards on staff-to-population ratios has resulted in significant inequities in access to services, including for priority programmes such as MCH and immunization. Inconsistency in allocation of resources is also reflected in large fluctuations in outpatient contacts at the subnational level.

Inequities in allocation of resources is reflected as well in inequities in coverage of interventions. A commonly cited indicator of coverage is facility-based supervised delivery rates. Only 17 of 44 districts (for which data are available) have facility-based supervised delivery rates that are more than 50% (National Department of Health, 2013a). In fact, delivery rates of close to or above 100% are occurring in some more urban centres (National Capital

District, Rabaul), indicating greater accessibility and availability of services in these locations, as well as suggesting that rural services are being bypassed by clients for better equipped and staffed urban facilities. Based on an assessment of health indicators nationally, the Joint Health Sector Review in 2015 concluded that inequalities are in fact worsening, with most of the health investment and service utilization taking place in provinces or in locations closer to provincial capitals (Carmichael et al., 2015).

The NHP recognizes the widespread problem of health inequities in Papua New Guinea and has for its main goal improved health coverage for both the urban and rural disadvantaged (Government of Papua New Guinea, 2011a). It is proposed that these inequities in access and utilization be corrected through several specific health policy and planning interventions, chief among which is the proposal to establish community health posts (National Department of Health, 2013f). The second main policy and planning intervention is a proposal to support integrated planning and budgeting at the facility level, as well as promotion of direct facility financing. Both strategies should help to address the chronic systemic problems of weak operational financing in peripheral facilities of the health system (see Chapter 3). Nevertheless, given the scope of the inequity challenge, the Joint Sector Review in 2015 recommended that PHAs develop the technical capacity to undertake equity analysis, and make resource allocation decisions based on the findings of such analyses (National Department of Health, 2016).

5.3.5 *Outpatient contacts*

The *Measure evaluation handbook* notes that, “The number of outpatient visits does not measure actual numbers of people utilizing services since individuals may make repeated visits. The volumes of visits at outpatient facilities do not serve as a coverage indicator because the population in need is not well defined. However, low rates are indicative of poor availability and quality of services. For example, several countries have demonstrated that outpatient department rates go up when barriers to using health services are removed. On the other hand, “higher than normal rates of outpatient visits may signify problems such as lack of available hospital beds or lack of trained staff or available commodities for providing appropriate care and treatment for clients who should actually be receiving inpatient care” (Measure Evaluation, 2018). Analysis of ambulatory care visits in Papua New Guinea confirms that the most common reasons for an ambulatory care visit is malaria (29%); skin disease (10.8%); simple cough (9.7%); pneumonia (7.7%); diarrhoea (4.4%); and other respiratory conditions (4.1%). Overall, these top six conditions leading to ambulatory care visits account for about

66% of all visits. The next largest category (accidents) accounts for an additional 3.4% of visits (World Bank, 2014b).

The rate of outpatient contacts in the health system has been a concern of health policy-makers and planners for several years. Background documents to the MTEF suggest a per capita contact rate per year of 1.4, of which 0.44 contacts consist of consultations for deliveries, antenatal care and immunizations. According to figures provided by the Joint Annual Sector Review in 2015, outpatient contacts per inhabitant dropped from over 1.5 contacts per inhabitant per year to 1.4 in 2011, after which it has remained static (National Department of Health, 2016). This is well below what would be expected for a normally functioning health system, which should expect between 2.5 and 3.5 contacts per inhabitant per year (Morris and Somanathan, 2012). Given the density of health professionals in urban areas, the contacts per inhabitant are likely to be much lower in rural areas, with one assessment from 2008 indicating contact rates for rural inhabitants of just 0.88 (in 2008) (Morris and Somanathan, 2012). Once again, the sector review attributes this low utilization rate in Papua New Guinea to the limited ability of the system to develop and retain a workforce in rural and remote areas, and the challenge of poor funding flow to peripheral facilities where most of the outpatient contacts are intended to take place (Carmichael et al., 2015).

5.4 Inpatient care

Medical specialists provide core clinical services at these the regional referral and provincial facilities (more details are at the beginning of this chapter). The district/rural hospitals provide services, including medical, surgical, obstetric, paediatric, trauma and 24-hour emergency care for both inpatients and outpatients (World Health Organization and National Department of Health, 2012).

The major causes of hospital admissions are for normal delivery (14.8%), TB (12.5%), accidents and injury (10.5%), pneumonia/acute respiratory infection (ARI) (9.1%), malaria and other vector-borne diseases (6.8%), obstetric and maternal conditions (5.2%), perinatal conditions (5.1%), and diarrhoea and enteric conditions (4.2%). Over two thirds of hospital days are accounted for by these top eight conditions (Government of Papua New Guinea, 2010b). As pointed out in the NDoH capacity assessment for maternal health services as a proxy of health system capacity, “remote rural areas, which contain large populations, are extremely poorly served” (National Department of Health, 2013d).

The Government of Papua New Guinea, as expressed through the MTDP and NHP, has an ambitious infrastructure plan to develop the health sector, with a focus on both the urban and rural disadvantaged. The NHP concurs with this focus upon infrastructure. Likewise, district hospital services will “gradually be introduced to most districts”, and will focus particularly on addressing the demand for more complex obstetric care at a more local level, in addition to routine clinical services, which will include general surgery, MCH, malaria, HIV/AIDS and TB diagnostics (Government of Papua New Guinea, 2011a).

Given the evidence of rural facilities being bypassed and health resources being concentrated in urban areas, the lack of integration between primary and secondary care providers is a major concern of health planners and policy-makers in the country. Several measures are being implemented in order to foster greater integration.

In terms of quality of health-care services, all health services can voluntarily apply to be accredited based on standards outlined in National Health Services Standards in Papua New Guinea (Government of Papua New Guinea, 2011b). Since the late 1990s, 14 provincial hospitals have been awarded for compliance with the standards, but no health centres, urban clinics or aid posts have been accredited (World Health Organization and National Department of Health, 2012). Volume 2 of the Standards details a system of accreditation of three kinds of surveys:

- an organization-wide survey (OWS) every 4 years;
- a periodic review 2 years after the OWS; and
- a mandatory quality standards review, which occurs when a health service fails to achieve 80% compliance with any of the mandatory quality standards (infection control, waste management, emergency and disaster preparedness and fire safety).

The Quality Standards for Infection Control, Waste Management, Emergency and Disaster Preparedness and Fire Safety published by the NDoH in 2011 are mandatory. These standards stipulate that there needs to be 80% compliance in each area to achieve accreditation (Government of Papua New Guinea, 2011b).

Objective 1.1 of the NHP states that there should be increased access to quality health services for the rural majority and the urban disadvantaged. The main aspect of quality examined in the NHP mostly relate to supply or availability of health-care services. Aspects of quality considered in strategy development include increased frequency of services, availability of services, improved operational funding, infrastructure development and improved human resources supply (Government of Papua New Guinea, 2010b).

5.5 Emergency care

The National Health Services Standards (Government of Papua New Guinea, 2011a) have set up a number of standards for emergency management, which apply to all health facility levels:

- Ensure that an emergency plan is provided and is rehearsed (for both internal and external disasters). Responses to such disasters include a component of cooperation with other bodies such as the police, National Disaster Response Unit and the Provincial Disaster Response Unit. There is an emergency plan (disaster plan) for external disasters (airport crash, bus crash, eruption, etc.) and internal disasters (water failure, building collapse, fire, etc.). The plans are known to staff and responses are practised annually.
- Quality assurance for emergency care is ensured – no one waits longer than 30 minutes to be assessed in an emergency department. A physical space is ensured for adequate emergency care.
- There are signs or notices informing people how to access emergency services if the section closes for any period during the day. They state where to go or what to do, i.e. “Ring bell for service, “Call (telephone number) for advice”, etc.
- Unavailability of service and contingency plans are made known to the public.
- The health service has an active programme of rural outreach, which may include radio consultation, radio ward rounds, health patrols, clinical visits, emergency response and referrals.
- There is a written policy that describes the triage process to be followed and staff are allocated to this duty. Effective implementation of the triage system is evident.
- Policies and position descriptions clearly set out authorities and responsibilities, i.e. who is responsible for admitting patients, prescribing drugs, ordering tests, initiating treatment in an emergency, etc.
- A stocked emergency trolley is available (including a list of critical supplies and equipment, and emergency generator and lighting).

In support of the new health system strategy, a community health post policy proposes that 24-hour emergency services be provided to the community (National Department of Health, 2013f).

Emergency is also classified in the context of the epidemiology and institutional capacity of Papua New Guinea. For example, a World Bank review of health workforce capacity highlighted significant gaps in

emergencies almost exclusively in the context of management of obstetric emergencies. The review points out that only a few doctors and a handful of nurses with postgraduate training in rural areas are available to deal with emergency obstetric care, although more than 5 million people live in rural areas. (Morris and Somanathan, 2012).

5.6 Rehabilitation/intermediate care, long-term care and palliative care

Palliative care needs are high in Papua New Guinea, due to the high burden of disease attributable to HIV and an already known burden of cancers. As of 2017, the country has no specific-purpose palliative care facility, but some staff is trained in palliative care and related services. A joint proposal between a Church-affiliated NGO (Catholic Health Services) and the Department of Health, with support from international donors, is under development (2017–2018) to establish the first palliative care centre in Port Moresby (Pettus, 2017). This facility will act as a National Centre for Palliative Care, as part of the funding will go towards the expansion of a support and referral network within the public health system to assist families in caring for their terminally ill relatives at home (PNG Industry News.net, 2017).

Limited information is available on rehabilitation and long-term care in the country. A review of rehabilitation services in 2004 indicated that the need for disability services was very high, but that no comprehensive picture was available of the extent of community-based rehabilitation services in the country (Shaw, 2004). These aspects of public health are not stated priorities of the NHP, due to the higher priority afforded to the extension of basic PHC services to the rural and urban disadvantaged populations.

5.7 Mental health care

In Papua New Guinea, due to shortages in health investment, there is a large treatment gap for mental health conditions, and patients experience high levels of stigma and discrimination and a wide range of human rights violations (Adu-Krow et al., 2013). A National Mental Health Programme was first established in 1962, and the first Laloki Psychiatric Hospital was established in 1967. The latter remains the only psychiatric hospital in Papua New Guinea with 80 beds, although there are psychiatric beds also in general hospitals, and mental health patients are also seen in outpatient departments. As with other medical specialties, there is a shortage of trained health professionals in this field, with just 0.09 psychiatrists per 100 000 population (Adu-Krow et al., 2013).

An assessment undertaken in 2011 reported that mental health services have deteriorated due to many of the common factors associated with weak health systems in this review – namely, leadership and governance, and insufficient investment in finances and HR at the district level and below. The number of newly trained psychiatrists is insufficient, with most graduate doctors being drawn to other specialties, and although there has been an increase in the number of graduate mental health nurses trained in mental health at the Faculty of Nursing at the University of Papua New Guinea (with an average of 10 mental health nurses completing their qualifications every year), most of the trained nurses are absorbed into the general medical disciplines in provincial hospitals. Information on mental health is not systematically collected (Adu-Krow et al., 2013). A recent review of mental health-care services found that most PHC doctors and nurses have received official in-service training on mental health within the past 5 years, and that, although guidelines and procedures for mental health care are not in place, procedures for referral of mental health patients between the various levels of the system have been stated (Adu-Krow et al., 2013).

Under Objective 7.4 of the NHP (reducing mortality and morbidity from NCDs), it is proposed that the Government will improve and expand the standards of mental health service delivery. No strategies are outlined in the Plan.

5.8 Dental care

No oral health surveys have been undertaken in Papua New Guinea, but anecdotal evidence suggests that tooth decay and gum disease continue to be major causes of dental disease. The most recent School Health Policy notes that oral health problems such as periodontal diseases and dental caries are common among school-age children (National Department of Health, 2015). There are high levels of trauma requiring complex oral surgery and an increasing number of patients with HIV/AIDS are presenting with serious oral health issues. Oral cancer is the most common cancer in the country due to smoking and chewing of betel quid (Crocombe et al., 2017).

Dentistry is not well developed in Papua New Guinea. In a population of over 6 million, there are only 30 trained dentists. One assessment indicates that the number of dental therapists is falling (35), and there are only 20 dental technicians in the country to make dentures. This assessment reports there is only one oral surgeon in the country (Crocombe et al., 2017). Oral health services such as education and screening are carried out only occasionally at schools (National Department of Health, 2015). Much of the ageing dental equipment requires replacement. From 1976 to 1983, there were two training

schools in dentistry – these were Port Moresby Dental College, which trained dental nurses and University of Papua New Guinea, which trained dentists. Due to low enrolment, all training was moved to the University. With Australian Aid funding, a dental school was relaunched in 2004 with two degrees – one of which was public health oriented, which led to a Bachelor of Oral Health, and the other was the Bachelor of Dental Science (Watters and Koestenbauer, 2011). The public health approach has historically relied on service directed primarily at children and adolescents for treating tooth decay.

In a similar vein to palliative and long-term care, dentistry has not been taken up as a higher-order public health priority, probably due to the significant burden of disease that is attributable to communicable diseases and MCH issues. The National Health Plan (Government of Papua New Guinea, 2010b), institutional capacity assessments (National Department of Health, 2013d) and mid-term health sector reviews (Carmichael et al., 2015) make no mention of the status of dentistry in the country. However, the National School Health Policy does state that “good oral health shall be promoted among all schoolchildren and free dental care services should be provided in all schools” (National Department of Health, 2015).

5.9 Complementary and alternative medicine (CAM) and traditional medicine

A 1999 national report indicated that 80% of the population used traditional medicine; the majority of the population use both traditional and allopathic medicine (World Health Organization, 2012a). There is a high level of acceptance of traditional medicine by doctors trained in conventional medicine, and traditional healers do not object to their patients seeking conventional medical treatment. There is limited information on the number of traditional medicine practitioners (which include *Marasin meri*, traditional birth attendants and VHVs) in Papua New Guinea, although it is known that they still exist and are consulted.

The national traditional medicines database lists 400 practitioners. There are currently no traditional medicine training or education programmes at college or university level, and no traditional medicine research institute in Papua New Guinea (World Health Organization, 2012a). Given the scope of current communicable disease control and MCH health issues, the development of a new traditional medicine policy or strategy is not identified as a public health priority in the most recent NHP.

5.10 Health services for specific populations

The populations identified in the NHP for special attention are the rural majority and urban disadvantaged. The most recent DHS shows that the Momase and Highlands regions are the most disadvantaged in terms of both health status and health access. Deaths of children under the age of 5 years are twice as common in the Highlands as in the Southern Region (Government of Papua New Guinea, 2010b; National Statistical Office, 2009). The NHP does not outline a specific strategy to reach these populations. Rather, the Plan emphasizes a “back-to-basics” health systems strengthening approach, built around revitalization of PHC and strengthened governance through the PHA framework. The Plan does, however, identify the need for “targeting investment” to the most disadvantaged populations of the country (Government of Papua New Guinea, 2010b). Priority strategies for reaching these groups include the following:

- increase the number of outreach services provided in rural areas and for the urban disadvantaged;
- improve the reliability of distribution and management of medical supplies;
- improve availability and use of funding for operational activities;
- increase funding for referral transport of patients from health posts and health centres; and
- establish community health posts with facilities and staff to deliver MCH services.

6 Principal health reforms

Chapter summary

Papua New Guinea has a long history of health planning and policy development. In the late 1990s, it took a lead to work with development partners for a SWAp process. Being committed to reaching the needs of the rural and remote majority and the urban disadvantaged, the NDoH has focused on improving the effectiveness, efficiency, accessibility and acceptability of health services and programmes. However, often whole-of-government processes have become a bottleneck in ensuring timely availability of financing at national and decentralized levels, accountability and transparency of expenditure of funding meant for health services, and addressing the geographical challenges posed for distribution of medical supplies, equipment and vaccines.

To address these whole-of-government issues, the NDoH has worked closely with the NEFC and legislative authorities to provide safeguards, guidance and support for improved decision-making and accountability frameworks in the complex decentralized governance and funding environment.

However, these reforms have still been only partially executed. The results of some of these reforms are not yet visible or evaluated, and therefore unable to inform scale up throughout the country. The reform package has been well defined in NDoH documents such as the Corporate Plan, the NHP, PHAA, National Standards for Health Services and the complementary NEFC minimum package of priority activities at district level.

The execution of these reforms remains a challenge and is patchy. Progress has been hampered in part by the unpredictable funding environment for health, a struggling medical logistics system, HRH shortages and maldistribution, the poor development indicators for the social determinants of health, growing population size, and the double burden of communicable and MCH problems with the increasing burden of NCDs. The “back-to-basics” approach is sensible and necessary. It is evidence based and informed by international guidelines, and so needs minimal innovation. But to attain universal and reliable coverage with these cost-effective public health

interventions requires adaptation to the local community and geographical circumstances, as well as sustained reliable resourcing.

The health sector must increase efficiency and continue to strengthen institutional capacity at all levels in this decentralized system. This needs to be done to provide the required physical, financial and human resources to effectively control and, in some cases, eliminate communicable diseases, address the poor maternal, neonatal and child health (MNCH) mortality and morbidity rates, and slow the pace of growth and longer-term impact of the NCD epidemic (through, at the least, prevention programmes). Only through ensuring the correct resourcing of the basic primary and essential public and secondary health services will the health rights of all of citizens of the nation be addressed.

6.1 Analysis of reforms

Many managers in the NDoH describe how Papua New Guinea is good at planning but poor in implementation. There is a long list of policies, plans and standards developed within the health sector to guide service delivery. Table 6.1 summarizes some of the major policy changes that have been developed in the past 10+ years.

Table 6.1 Major policy-related changes in Papua New Guinea, 2008–2017

Building block	Policy/related documents developed/executed by NDoH
Financing	Medium-Term Development Plan for projects and programmes (infrastructure, plants and equipment) (MTDP), 2011–2015
	Free Primary Health Care and Subsidized Specialist Services Policy, 2013
	Under development 2017: Development of a policy to support facility-level funding evaluation
Governance	The NDoH Corporate Plan 2013–2015, with associated development of business rules and internal governance committees including a performance monitoring committee
	Health Sector Partnership Policy, 2014
	Health Sector Gender Policy, 2014
Service delivery	Emergency Tuberculosis Operation in Papua New Guinea Code of Environmental Practice, 13 October 2016
	Tobacco Control Policy, 2015
	National Cancer Control Policy, 2015
	National Youth and Adolescents Health Policy, 2014
	Newborn Health Policy, 2014
	National Sexual and Reproductive Health Policy, 2014
	Integrated Management of Childhood Illnesses Policy, 2014
	PNG Community Health Post Policy, 2013
	National Mental Health Policy, 2013

Table 6.1 Major policy-related changes in Papua New Guinea, 2008–2017 (contd)

Building block	Policy/related documents developed/executed by NDoH
Human resources	Health Sector Human Resource Policy, 2013
	Health Workforce Enhancement Plan, 2013–2016 (also called “arrest plan”)
Medical logistics / Infrastructure	Medical Supplies Reform Plan, 2013 (includes roll-out of m-supply as logistics management information system tool)
	National Medicine Policy, 2014
	MTDP, 2011–2015 Health Infrastructure Programme
	NDoH Infrastructure Design Standards
	National Health Service Standards for Papua New Guinea, 2011–2020
Health information systems	Health Research Policy, 2012

Source: Compiled by authors

As the previous chapters have identified, there is some, though uneven, progress in some core health and demographic indicators. But these gains are unstable, with some performance indicators like the EPI declining, and some threatened by inadequacies in the levels and timing of provincial funding or delivery of medical supplies.

Although the role and responsibility of the NDoH is to provide guidance documents such as those listed in Table 6.1, it is a matter of concern that they are:

- unrealistic in scope and ambition, often designed beyond the technical, financial and HR capacity of the sector. Many in the NDoH described their concern that the National Standards for Health Services are overwhelming in detail and do not provide the type of technical advice required at the local levels. A good example is the Volume 2 detailed quality assurance survey process for all health facilities, requiring second- and fourth-yearly external survey team visits. A back-to-basics approach would be to use performance data as indicators of where some more detailed targeted assessment should be undertaken.
- a diversion from undertaking a real analysis of performance and local-level “troubleshooting”. A lot of “busy” time is taken by NDoH staff, consultations and technical advisers to develop these policies. However, while this is under way, provinces, districts and local-level governments require assistance to deliver the required basic health services. The health staff at various levels would like support to advocate for proper resourcing.
- developed without costing and benefit–cost analysis. This results in the aforementioned unrealistic scope. It means that the discipline of

prioritizing essential “back-to-basics” activities is often compromised as various groups “fight” for some share of the resources to ensure they have some budget, even if at ineffective levels.

- often developed in isolation from the other government sectors who are part of the critical path to success. Although the NEFC and NDoH have had a strong focus on basic health and education services for several years, annual reviews still identify the poor levels of commitment by provincial and local-level governments and Members of Parliament to these social services.

The capacity to execute changes when approved is a recurring bottleneck. As discussed in this review, the PHAA was developed as a concept in 2001, details of the legislation developed over 6 years, introduced in 2007 but by 2017 only 10 provinces (out of 22) had enacted it. The capacity assessment reviews (National Department of Health, 2013d) identify that some of this delay is due to some gaps in the leadership and management capacity in the NDoH, and that this remains a weak link in execution. Recruitment of new graduates into the Department was noted to have brought in “a fresh sense of dynamism and new skills sets to the department”. It noted that many of the key management positions were filled and that the Leadership and Organizational Development Programme, which many NDoH managers have completed, “has had a positive impact on NDoH in changing the organizational culture to some extent and building a more cohesive department” (National Department of Health, 2013d).

Maintaining this HR motivation and potential requires improvement in the management capacity of some of the HR people, supported by workforce planning, career pathways and improved work conditions. The review noted this as a “matter of urgency” (National Department of Health, 2013d) and provided several recommendations for achieving this improvement, a back-to-basics approach, including:

- training all HR branch staff in basic HR management competencies;
- training key branch staff in the critical functions of HR data collection, policy development and workforce planning;
- developing capacity in undertaking training needs analyses and conducting this to develop an NDoH training plan to address the most critical staff training needs for NHP implementation;
- implementing a graduate trainees development programme; and
- developing an NDoH HR strategic plan; ensuring all senior managers of the NDoH (24) complete a tailored management training programme customized to the HR management finance and planning context of the health sector and its requirements.

However, the political “lethargy” in supporting the roll-out of the whole-of-government system, and the unrealistic expectations that the PHAA would, on its own, improve health system performance, have made timely implementation difficult. For example, Treasury and the Department of Personnel Management have hampered the roll-out of the PHAA by delaying resolution of core finance and HR management issues linked to the restructuring in the provinces.

It is planned for all provinces to have introduced the reform by the end of 2018, but this is pending continued support from the Department of Personnel Management, Treasury, provincial governors and LLGs (Government of Papua New Guinea, 2013b). Once instituted in every province, the leadership and management capacity within the health sector and the capacity for supporting services such as finances, audit and public works to effectively support the governance and implementation of the NHP within the province will still need to be addressed. The Capacity Assessment in 2013 (National Department of Health, 2013d) noted, “It is widely acknowledged that the existing PHAs (the first 3) are amongst the strongest health leadership teams in the country”.

These bottlenecks in the external environment affect the critical path of most of the reforms. The unpredictable funding environment for health and delays in the release of funds continue to jeopardize outreach services, medical supply distribution, supervision and in-service training of health staff, and health promotion activities. These are a minimum set of priority activities required to achieve effective and equitable coverage of the “back-to-basics” health package. The dysfunction of the Central Supply and Tender Board in supporting effective and efficient procurement processes for the health (and other) sectors has often meant that basic PHC services and patient adherence to TB and HIV treatment regimens have been severely compromised. One example of this was brought to international attention in 2014 with the controversial awarding of the tender for medical supplies procurement to the highest priced and unqualified bidder (Callick and Asia Pacific Editor, 2014). This year (2018), a new bill and procurement policy is before the National Executive Council to revise the operations of the Central Supply and Tender Board (EMTV Online, 2018). It will be crucial to monitor and evaluate the implementation and performance of these reforms due to the critical dependency of the health sector on this Board.

There are other internal “bottlenecks” that affect the successful implementation of these health sector reforms. As discussed in Chapter 3, poor budget execution and compliance often result in slippage in schedules for infrastructure. This results in cost overruns, and the

downstream effects compromise the success of reforms dependent on this infrastructure, such as redevelopment of hospitals, building of community health posts or refurbishment of water and sanitation facilities to health centres and staff housing. The medical logistics system has gone through many reforms and many challenges, which have affected the ability to provide the right pharmaceutical supplies, vaccines and peripherals to the right place, at the right time in the right quality and condition. Without an efficient, reliable and cost-effective logistics system, basic health services that require items such as vaccines, antibiotics, peripherals such as gloves, needles and intravenous sets, no matter how universal the coverage, will not deliver the performance required or desired. As discussed in Chapter 4, the HRH shortages and maldistribution mean that the health sector is inefficient. Paying for facilities and their operation without staff to provide the services is inefficient. Losing the hard-earned trust of the community to sue the public health services is inefficient if they arrive and the staff are not available, not competent or have poor attitudes towards the clients. Having medical supplies sitting on shelves in health facilities without the staff who can use them is inefficient. However, addressing these HR issues is a remaining challenge, with an already limited HR production capacity and an inability to meet existing staffing levels, let alone address the population growth impacts on demand for services, the changing burden of diseases, and redressal of the losses of HR due to an ageing workforce, and internal and external migration of health workers.

As seen in Chapters 1 and 2 of the review, there are significant gaps in coverage and equity, resulting in a less-than-possible and desired health status for all citizens. So, although some gains have been made, and should be recognized, there are major gaps in coverage, and less-than-expected performance and health outcomes for the levels of investment to date. The UNDP in 2014 discussed how the country had not effectively and efficiently captured the “wealth from the resources revenue” for health and well-being of the population (United Nations Development Programme, 2014). This sentiment was also reflected in the report by Howes et al. (2014) of “A lost decade”, despite the reforms and investments in the sector between 2002 and 2012.

Although the NHIS could be and is being improved, there is ineffective use of the existing data at most levels of the health system to guide decision-making and investment in health. In Chapter 2, the often limited reference to and analysis of performance of the previous year to guide target-setting and prioritization in annual plans was discussed. Additionally, an analysis of why there are provincial differences in health system performance and outcomes should be analysed to identify “success” factors for those

provinces or districts that are “positive deviants” to inform implantation in the sector.

As discussed in Chapter 3 on Health financing, and the World Bank report of 2014 on “Assessment of health financing options” (World Bank, 2014b), the mobilization of financial resources through efficiency savings is the only viable solution to the health financing concerns in the short- to medium term. Concerted efforts need to be made by all levels of government and multiple sectors working together to execute existing reforms and policies to deliver cost-effective packages of health services. The back-to-basics approach should not only refer to the packages of services delivered, but also the reforms required in the basic building blocks of the health and whole-of-government system of financial and HR management, governance, leadership, and intersectoral coordination and collaboration.

6.2 Future developments

In taking office in 2017, the new Minister of Health, Sir Dr Temu OBE stated in his 100-day plan:

“The delivery of health services to Papua New Guineans is a high priority of the new Government ... Of particular importance at this time is to extend the reach of the Free Primary Healthcare Policy to as many people as possible and ensure that a minimum set of basic health services are accessible to all, regardless of geographic location, wealth or educational status. The over-arching theme of the Plan is a ‘back to basics’ approach and refocus attention and resources on the critical primary health care system; this is in line with the National Health Plan 2011–2020”.

The NHP 2011–2020 identifies three areas for improvement. These are:

- improving service delivery;
- strengthening partnerships and coordination with stakeholders; and
- strengthening health systems.

The focus of all of these areas for continued reform is to deliver better health outcomes through:

- transforming the service delivery system and referral model to maximize access and utilization of resources;
- strengthening health systems that support service delivery, including enabling a trained workforce and delivering key medical supplies and technologies;

- promoting and supporting increased community participation and ownership of health services; and
- promoting innovative partnerships with health stakeholders such as churches and the private sector to enable the above three to be achieved in the most efficient, effective, acceptable and affordable manner.

Table 6.2 summarizes the main thrusts of the reform agenda to achieve these three outcomes from the NHP 2011–2020. It should be noted that most of these are getting back to the basics of execution of existing reforms, plans and policies, sometimes with some minor modifications, often informed by lessons learnt from the multitude of sectoral reviews of the past decade. This is part of a back-to-basics approach and should be supported by all partners in the health sector and is what the Minister called for when discussing the reinvigation of the SWAp in the health sector. There are two major points to be made about this reform agenda:

- that no one reform can achieve the efficiency of and effectiveness in gains and therefore health outcomes for the health sector by itself. The interrelationships of these “building blocks” and of the various sectors and levels of government must be addressed; and
- the back-to-basics approach should also be the *mantra* when considering plans, policies, guidelines and reforms.

Table 6.2 Main thrusts of the reform agenda, National Health Plan 2011–2020

NHP areas for improvement	Planned reforms or adjustments	Review comments
Improving service delivery	Continue the roll-out of the community health post strategy	<p>There are concerns about the feasibility of national scale up of this strategy in terms of:</p> <ul style="list-style-type: none"> • affordability of this intervention; • limited evidence to date of the benefit–cost of the intervention; • capacity to produce the HR required to operate these posts; • provincial government commitment to the National Standards for Health Services. <p>This strategy is highly dependent on improved performance in HR management, financing and logistics support to achieve the proposed health outcomes and performance improvements planned.</p>

Table 6.2 Main thrusts of the reform agenda, National Health Plan 2011–2020 (contd)

NHP areas for improvement	Planned reforms or adjustments	Review comments
Strengthening partnerships and coordination with stakeholders	With the Government and development partners, develop a shared understanding and approach to sector and capacity development assistance and long-term sustainability and aid effectiveness through sectorwide approach (SWAp)-like mechanisms, building upon lessons learnt from previous experiences.	Need to ensure that lessons learnt from previous SWAp experiences are accounted for in the reinvigoration. Concerns around financial flows, inefficiency, lack of support from central agencies for enforcement of public service codes of conduct, transparency and accountability of the Central Supplies and Tenders Board (CSTB), for example, will still erode the utilization and effectiveness of the SWAp if not addressed. Much of this is outside the direct control of the health system.
	Finalize the roll-out of the PHAs and enabling activities.	The Provincial Health Authority Act (PHAA) provides a platform for improved service delivery and collaboration but does not guarantee improved health system performance. It addresses some aspects of inefficiency, but timely and adequate financial resources to undertake priority activities, good HR management systems and functioning medical supply systems are integral to performance.
Strengthening health systems	<u>Governance</u> : work with the Department of Provincial and Local-Level Governments (DPLGA) to support the alignment of the district development authorities with provincial and national health structures.	
	<u>Governance</u> : increase capacity-building for health leaders through management and leadership training to improve efficiency and promote good governance across the sector, supporting the National Department of Health (NDoH) corporate plan and structures.	As noted in the 2013 Capacity Assessment, these training programmes must be customized for the public service and health sector.
	<u>Governance</u> : support the development of a national population policy.	The development of a population policy has had mixed experiences in several countries. Many have good family planning programmes, community development and development planning without an explicit policy, and others cannot implement strategies without one. The development must be intersectoral and transdisciplinary – ensuring community and all levels of government ownership and commitment to the policy.

Table 6.2 Main thrusts of the reform agenda, National Health Plan 2011–2020 (contd)

NHP areas for improvement	Planned reforms or adjustments	Review comments
	<p><u>Financing</u>: work with National Economic and Fiscal Commission (NEFC) and other government departments to develop facility-based budgeting (FBB) – where facilities are set up with a budget covering all their costs, without necessarily handling the money directly. Review experiences to date.</p> <p><u>Financing</u>: improve the efficiency of health financing. It is proposed to take immediate steps to facilitate the payment of health functional grants directly to provincial health authorities (PHAs).</p>	<p>The concerns being raised about the actual capacity at local levels to manage and audit the finances are real. Many districts do not have strong public or private sector financial management structures and capacities. A back-to-basics approach may be needed in some locations, to ensure that the underlying problem of operational funds availability at health facility level is addressed, as the consequences of not addressing this problem are well known. Finding the right solution for different contexts and not delaying too long in addressing this issue is crucial if the country does not want another “lost decade” for service delivery (Howes et al., 2014).</p> <p>Commitment by Treasury, Finance and provincial administrations to the release of the full amount of these grants is crucial. Additionally, the NEFC has noted that the levels of the grants are conservative and regular cost of service adjustments may need to be made.</p> <p>In some locations, as in many African nations and parts of Asia, the role of “mobile money” may facilitate this process, although there remain several locations in Papua New Guinea with poor connectivity of information and communication technology (ICT).</p>
	<p><u>Health workforce</u>: implement the Health Sector Workforce Enhancement Plan to resolve the critical HR shortages and develop a long-term workforce development plan to address workforce challenges in the future.</p>	<p>Critical element of the reforms. Inadequate numbers of competent staff in the right locations and in the right numbers is a major hindrance to cost-effective services, universal health coverage, quality of care and efficiency. This informs all other HR reforms – <i>see below</i>.</p>

Table 6.2 Main thrusts of the reform agenda, National Health Plan 2011–2020 (contd)

NHP areas for improvement	Planned reforms or adjustments	Review comments
	<p><u>Health workforce</u>: continue the health workforce training capacity development.</p> <p><u>Health workforce</u>: review and strengthen pre- and in-service training capacities to meet immediate, medium- and longer-term HR needs.</p>	<p>The production capacity of the health sector is a bottleneck for this reform. The role of blended learning models using synchronized and unsynchronized online materials may be able to address some of this gap. There is also a need to continually improve the currency of pre-service training to align with the gaps in competency and knowledge that in-service training seeks to address. The crucial role of supportive supervision from higher levels of the system to lower-level facilities and staff is an efficient way of addressing some of this need – but is reliant upon the health function grants being on time and at adequate levels.</p>
	<p><u>Health workforce</u>: develop health management capacity at district, provincial and national levels to support public health and service delivery programmes.</p>	<p>Part of the above discussions. Need to be customized; micro-credentialed courses are important to consider to allow stacking of credentials as staff progresses along the career pathways.</p>
	<p><u>Health information systems (HIS)</u>: finalize roll-out of m-supply and reforms to the HIS.</p>	<p>Good-quality information available on time is critical for improving the efficiency of the system. However, the hardware and software are not the heart of the system. Ability of and commitment to using the information for decision-making and evaluation is crucial, and this “habit” needs to be embedded into all health staff and managers even while the roll-out occurs. It does not need to wait until the system is built. Ensuring that the specialist skills needed to manage this system are available is important.</p>
	<p><u>Health information systems</u>: review the role of e-health to support increased access to services.</p>	<p>Lessons learnt on sustainability of previous communication systems to support health service delivery, e.g. telephones and high frequency radio, should be accounted for in its design. E-health is a tool to support models of care and service standards – it is not a panacea that addresses all access, quality and coverage issues of the health sector.</p>

Table 6.2 Main thrusts of the reform agenda, National Health Plan 2011–2020 (contd)

NHP areas for improvement	Planned reforms or adjustments	Review comments
	<p><u>Revise public health laws:</u> to support the International Health Regulations (IHR), emerging and re-emerging infectious diseases, and the decentralized health system.</p>	<p>Important change that can be informed by reforms in neighbouring countries and assessments of IHR capacity being undertaken by WHO</p>
	<p><u>Medical supplies/infrastructure:</u> construct and rehabilitate all medical storage facilities (Area Medical Stores and Provincial Transit Medical Stores)</p>	<p>Transit points are part of an efficient and effective logistical system, but also have operational costs to run, maintain and staff them, and ensure security and good logistics management at the sites. The design of the overall logistics system needs to account for these recurrent costs, and local geographical and seasonal variations in accessibility (and disease burdens) to have the best minimum design required for the country. The health sector is not the only sector facing these logistical challenges – other public and private sector groups also face these. Partnerships may support a more efficient and effective approach and be in line with current global thinking on logistics systems.</p>
	<p><u>Medical supplies/infrastructure:</u> review and develop options for outsourcing procurement of medical drugs and consumables.</p>	<p>A critical analysis of the findings of various reviews about the major bottlenecks and deficiencies in the procurement process, within and external to the health sector, is required to both inform decisions about options, as well as the transparency, accountability and enforcement issues needed to ensure an efficient effective process. It is critically linked to a good information system, standards of care and staff commitments to these practices.</p>
	<p><u>Medical supplies/infrastructure:</u> continue the community health post, and hospital and health training rehabilitation/ refurbishment programme</p>	<p>The medium-term plans for this are under way. The lessons learnt and evaluation of outcomes and impact of the existing infrastructure programme should be part of the planning for continued roll-out. There are concerns about the affordability of the community health post roll-out. The 2013 Capacity Assessment made recommendations regarding building up the infrastructure management capacities in the sector and NDoH.</p>

Source: Compiled by authors

The Corporate Plan 2017–2020 elaborates as a mission to “Improve, transform, and provide quality health services through innovative approaches supporting primary health care and health system development and good governance at all levels”. The reality, in at least the short- to medium term, is that the actual timely and quality implementation of some basic PHC interventions will most likely improve the efficiency and effectiveness of the system more than innovation. The back-to-basics approach should continue to be a focus for the sector. Over the years, innovations, reforms and strategies have become the “outcome” focused upon rather than improvements in equity, health outcomes, financial protection and responsiveness. The reforms initiated over the past decade provide a firm foundation for the delivery of health services.

7 Assessment of the health system

Chapter summary

The Government of Papua New Guinea has a stated commitment to NDoH plans, policies and other documents to equity of access, affordability, quality of services and the right to health. However, Papua New Guinea's health-care system has delivered levels of PHC that are lower than expected or required, and below that of many of its regional neighbours. Combined with less-than-adequate performance on many of the indicators linked to the Millennium Development Goals (MDGs), which are also social determinants of health, the progress towards reducing the burden of infectious diseases and maternal and child deaths has in many areas plateaued. These modest improvements in health status are now being threatened by the rise of NCDs, which although not adequately measured at various levels of the system, reflect the NCD epidemics of other Pacific nations. The challenge for the health system is to respond to and address the continued need for improved outcomes for MNCH and infectious diseases, especially for the rural majority and underprivileged who remain underserved, while mounting an adequate response to slow the pace of growth of the NCD burden until the sector is resourced adequately to mount more holistic responses. These needs have been elaborated in the NHP 2011–2020, related policies and guidelines, and in proposed and active reform processes, but implementation has not yet achieved these desired outcomes and impacts. As discussed in the review, the complexity of planning, financing and management of the health services through a decentralized system, although being addressed, remains a stumbling block for impact.

While the health system currently provides a high degree of financial protection, and OOP expenditure accounts for only 10% of THE, the low levels of health facility utilization mean that the health outcomes desired cannot be reached. However, broader issues of the reliable release of finances to the health services creates many perverse performance issues. Inadequate and slow release of funds to health centres means that outreach patrols may not occur, jeopardizing, for example, EPI coverage; and may delay or even cause the cancellation of distribution of pharmaceuticals throughout the province. This is a major source of ineffectiveness and inefficiency in the health sector. Facilities and staff may be present but will have limited tools to provide the

required services. It may force clinics to charge user fees to meet operational costs, which can compromise the affordability and therefore accessibility of the services. Although not often stated as a major deterrent to accessing health services, this is not a routine indicator measured by the health system and the less-than-optimal utilization of PHC facilities suggests that there are barriers to access. Some districts and provinces perform better than others and demonstrate that more can be achieved even within this complex and often underfunded and under-resourced sector, even without achieving the levels of performance required to make an impact on the country's health burdens and needs.

7.1 Stated objectives of the health system

The NHP 2011–2020 states the vision is for “A healthy and prosperous nation that upholds human rights and our Christian and traditional values, and ensures affordable, accessible, equitable and quality health services for all citizens through the health service chain”.

This is translated into a mission to “Improve, transform, and provide quality health services through innovative approaches supporting primary health care and health system development and good governance at all levels” and a goal of “Strengthened primary health care for all, and improved service delivery for the rural majority and urban disadvantaged”.

The guiding strategy for the NDoH and the health sector is the NHP 2011–2020. This outlines a “back-to-basics” approach with the goal of “Strengthened primary health care for all and improved service delivery for the rural majority and urban disadvantaged”. The priorities under the NHP were further refined following the NHP Mid-Term Review in 2015.

7.2 Financial protection and equity in financing

Papua New Guinea has developed a broad social protection framework that includes the categories of child protection, national disaster and emergency services, disability support, and various social insurance programmes (Asian Development Bank, 2012). In support of the UHC goal and embedded within the overall NHP strategic framework, is the KRA of health systems strengthening, of which one major component area is health financing. The present reality is that the proportion of the population covered by social protection floors/systems is only 6.3% (2013). This is classified by the UN as low (United Nations Statistics Division, 2018). It highlights the vulnerability of the majority of citizens to “catastrophic” or at least severe income compromise if a major health event occurs.

The Government and health sector are cognizant of this situation. Several reforms undertaken and the work in collaboration with the NEFC have sought to address this risk. However, as discussed earlier in the review, the pace of these changes, the levels of commitment of provincial and other government stakeholders, and the leadership and management capacities within the health sector have limited the ability of the reforms to transform the sector to levels of performance and therefore the health outcomes required. The intent of public policy is to provide a universal package of services for PHC. However, as discussed in Chapters 4 and 5, the reach of services is limited by weak infrastructure, a health HR “crisis” (Morris and Somanathan, 2012) and inadequate levels and untimely availability of financial resources and medical supplies.

The total OOP expenditure on health care is estimated to be only 10% of the THE and private expenditure on health care is comparatively low in terms of health expenditure per capita (US\$ 109 PPP) and the share of the GDP for health (4%).

The NHP and health policy goals are stated to be to abolish user fees, expand health infrastructure, and address the critical shortage of HRH in rural and remote areas. Efforts to advance public financial management reforms are also a high development priority, particularly with regard to improving linkages between planning and budgeting to enhance the flow of funds to rural facilities and urban clinics. Models of resource allocation will also need to be developed and aligned with the decentralized planning system to ensure more equitable patterns of resource allocation across the country. All of these reforms rely upon timely flow of adequate financial resources to ensure their implementation as designed and for the outcomes desired.

Improving the efficiency of the sector is critical to financial protection of the population for health. The reality is, as noted in the World Bank (2014b) assessment of health financing options for Papua New Guinea, “health spending relative to GNI per capita and as a revenue share of GDP is low”. But it notes that “Continuing to rely on general revenue financing whilst mobilising additional resources through efficiency savings will be the most feasible and sustainable option for PNG”.

7.2.1 Financial protection

Papua New Guinea has relatively low OOP expenditure on health by international standards, at 10%. However, as noted in Chapter 3, given the relatively low utilization rates, there may be a significant degree of foregone care. Such limited use of services reduces OOP spending. In this situation, low OOP does not necessarily mean financial protection. Some studies in the country have

identified that health-care costs are cited as one of the main reasons the poor do not visit health facilities in the case of illness (Irava et al., 2015).

The Alotau Accords 1 and 2, NHP 2011–2020 and a policy related to user fees all state the Government’s intention to reduce OOP spending by introducing a fee-free basic and subsidized specialized health-care service that requires all facilities to stop charging user fees for primary care. However, these intentions, especially at primary care level, have been in place for many years, and are clearly stated in the NHAA 1997, for example. Health facilities can implement this policy only when they are guaranteed a review of the operational costs required to maintain services and the facility. Although the health function grant (see Chapter 3) and an additional amount of 20 million kina has been allocated to compensate facilities for the loss of user fees, as noted in 2017, “The persistent slow release of funding by central agencies and delays in channelling funds at the provincial level means that facilities do not receive the financial support required to function without user fees. This has prevented the successful elimination of user fees at primary public health facilities to date” (Hou et al., 2017).

Other issues pertaining to financial protection

The depth of coverage of curative and specialist health services (secondary and tertiary care) is limited in rural areas by both distance and costs of travel to the facility for services, and for patients and families to stay at those facilities during inpatient care. The Government and NDoH are considering the targeted role of telehealth (audio- and/or video-linked) to increase accessibility and therefore outcomes for people with, for example, oncology, cardiac rehabilitation and other needs, but this must be designed such that it is linked to an appropriate service delivery model with a skilled and responsive workforce, and maintenance of the telecommunications infrastructure, which has been a challenge in health sector budgeting in the past.

7.2.2 Equity in financing

In theory, all Papua New Guineans have universal entitlement to public health care. This is because the health system is funded through the Government and there is a policy commitment to UHC. However, there are substantial inequities in health access in the country, based on location, gender and socioeconomic status. The World Bank report (2014a) noted that:

- higher levels of education for mothers are linked to lower under-5 mortality rates of their children;
- IMR was higher for infants born to women with no education;

- IMR in urban areas is half that of infants in rural areas; and
- the richest income quintiles are far more likely to use public and private health facilities than the poor.

A review of the Sustainable Development Goal (SDG) indicators for Papua New Guinea demonstrates significant coverage gaps for MCH, malaria, TB and HIV programmes (Table 3.4). The MMR of 215 per 100 000 live births (United Nations Statistics Division, 2018) is high and is a proxy indicator of poor coverage of all health services.

The NHP 2011–2020 places as major platforms to address coverage the National Policy on Free Primary Health Care and Subsidized Specialised Care and strategies to increase the number of health facilities that are operational at ward level. The focus on the rural majority and urban poor explicitly defines the coverage gaps the Plan seeks to address. However, as discussed through the review, the financial, HR and logistical capacity to implement these is critical for these plans. Ensuring a specific focus on equity of coverage in the monitoring and evaluation of performance at all levels of the system will be required, using existing data collected through information systems studies and surveys. The role of sentinel sites as an efficient way to have a timely review of the achievement of these objectives should be seriously considered. It has been used for the malaria programme and been an invaluable tool for quick adjustments to the programme to meet defined objectives.

7.3 User experience and equity of access to health care

A major thrust of the NHP 2011–2020 is the rolling out of the CHP to increase accessibility to a PHC system (Government of Papua New Guinea, 2010b) and to increase the number of nurses, midwives and CHWs, and extend the reach of VHV networks. It is a premise behind the NHP that these strategies will support communities and individuals to take ownership of and be involved in the direction of their own and their families' health. The National Health Services Standards in Papua New Guinea state that each governing board, with community members as board members of a health facility, should document the rights and responsibilities of patients and have a system of handling complaints from patients, staff, suppliers and other clients, with a feedback loop to the board. These standards also highlight that information on the rights and responsibilities of patients/clients should be available to all patients, i.e. publicly displayed (Government of Papua New Guinea, 2011b). But monitoring and evaluation of these aspects of the standards is not routinely undertaken and data are not available on compliance or outcomes.

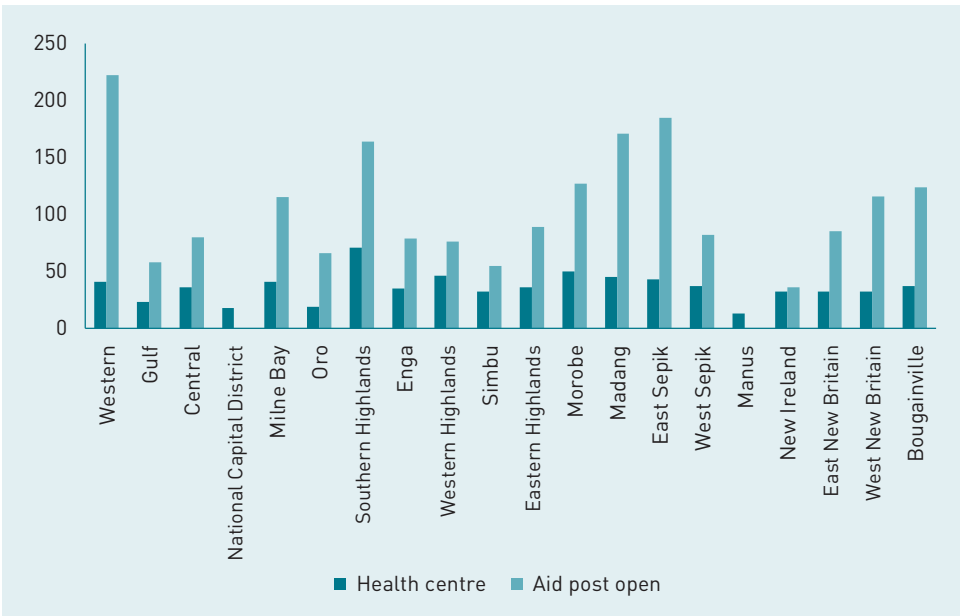
However, increased supply and standards documents do not necessarily create increased demand (and therefore utilization), if people are not aware

of a health problem and available services, or trust that the services provided will be available and acceptable when they go to the facilities. Strategies to support health literacy, community engagement, and participation and empowerment are required to support “demand” and are not clearly delineated in policies and programmes of the health sector.

There is very limited information available in the country and to health planners and managers on patient information, patient choice or community empowerment. The Ministerial Taskforce on Maternal Health (2009) noted a lack of confidence and trust in the existing health system and concerns about disrespectful care. Other studies, e.g. Howes et al. (2014), found that patients do not request support and are on the whole somewhat satisfied with the services if they attend.

Infrastructure. The distribution of health facilities varies across provinces, independent of population (Fig. 7.1). The constant problem of aid posts closing for a range of reasons, including financial support, but also mobility of some populations, and lack of broad community ownership undermines equity of access in many locations. Closure of aid posts has a major impact upon accessibility and the types of services available to the population, and especially negatively impacts upon rural and remote settings (Fig. 7.2).

Fig. 7.1 Distribution of health centres and aid posts (primary health care facilities) by province, Papua New Guinea, 2008



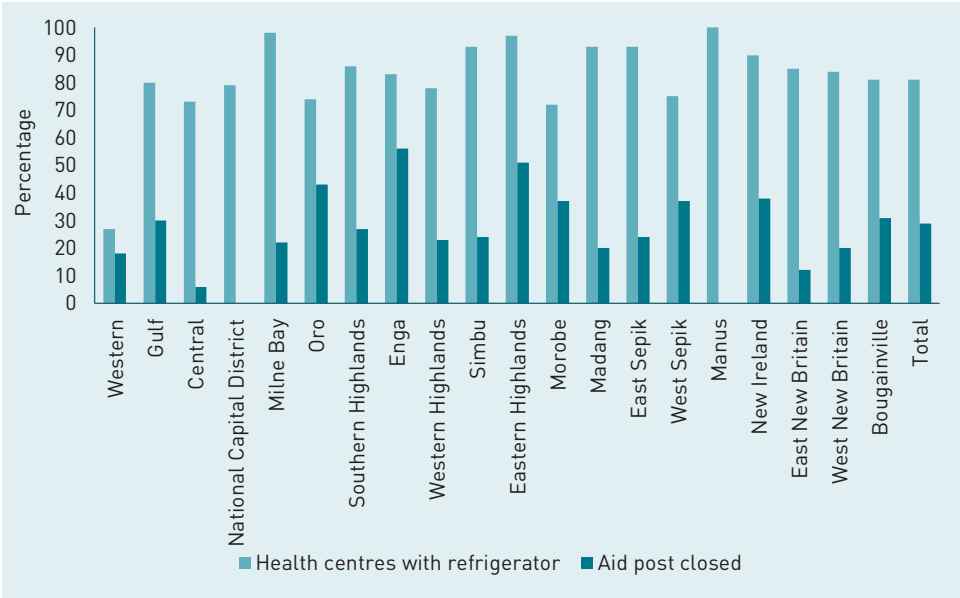
Source: Government of Papua New Guinea, 2010c:p.19

Medical and diagnostic equipment and drugs. The distribution and maintenance of operating capacity for and accessibility required to distribute medical and diagnostic equipment and communication infrastructure remains a major problem in the country (Fig. 7.2 shows the percentage of health facilities with an operating refrigerator as an example). The distribution of pharmaceutical and related peripherals has been a regular challenge in the health sector for several years. For example, in 2011, the NDoH reported that it was making a serious effort to confront the dysfunction that has plagued the country's medical supplies system for a decade or more, including efficiency and effectiveness of distribution, governance and corruption issues (ABC Radio Australia, 2011).

These gaps in access to the right drugs and equipment, in the right place, at the right time and in the right quantities and quality negatively affect the technical efficiency and effectiveness of the services. With the wide variations within and between provinces of availability of supplies, there is also an impact on equity of access to care. The NHP highlights the pharmaceutical and related logistics issues as a major priority for the forthcoming years. However, given the governance and corruption issues that the NDoH has identified within the pharmaceutical management systems, it will also need support and commitment by other sectors such as the legal sector and the Crime and Corruption Commission to support the reforms and their execution.

The growth in the budget for pharmaceuticals and related supplies has recently plateaued after some increase in the past few years. The funding provided now does not reach the levels required to adequately meet the needs of the sector. With the reduction in Global Fund support to malaria, HIV and TB drugs and the transitioning of GAVI support, adequately financing the vaccine, pharmaceutical and other supplies needed for the health sector will remain a major challenge. To secure the required health outcomes, assurance of an effective logistics system is needed to deliver the required medical supplies. The emergence of AMR for many infectious diseases, including for TB, could be in part attributable to problems in the supply chain. There is also a need to address irrational use of medicines both by providers and the community.

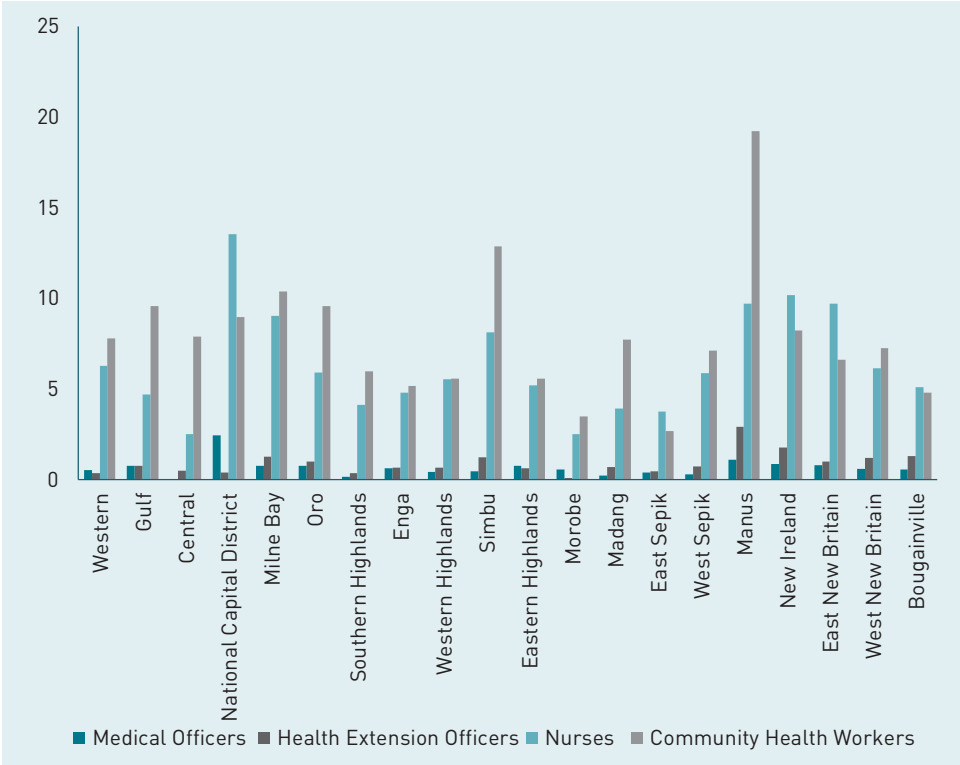
Fig. 7.2 Distribution of health centres with refrigerator and aid posts closed by province, Papua New Guinea, 2008



Source: Government of Papua New Guinea, 2010c:pp.18-19

Skilled health workers. There is maldistribution of health staff (doctors, nurses and midwives, HEOs and CHWs) across the country. Many provinces rely in the main upon CHWs, and therefore a limitation in the range of PHC services is available to their population (Fig. 7.3). The thrust of the CHP policy is to upgrade the skills of those staff and the number per post, to increase access to an essential PHC package of services. But the roll-out of this is slow and does not necessarily target the provinces most in need of improved health coverage or with the largest burden of disease.

Fig. 7.3 Health staff per 100 000 population, by province, Papua New Guinea, 2008



Source: Government of Papua New Guinea, 2010c

As discussed in Chapter 4, several studies have identified the size of the HRH gaps across categories of health professionals and locations. For example, a WHO study in 2006 estimated the present levels of shortages of health workers (doctors, nurses and midwives) and found that a country needed 2.3 health workers per 1000 population to provide sufficient care in a country. This equated to Papua New Guinea requiring a further 14 849 health workers to meet this minimum number by 2025 (Verboom et al., 2006) at the cost of at least another US\$ 10 per person per year in the health budget to meet these levels.

The capacity to produce an adequate number of health professionals of the right quality is also a bottleneck in addressing HR needs – and therefore equity of coverage. Although there has been a recent focus on increasing the numbers trained in the country, concerted efforts need to be made to increase the capacity to address outmigration, retirement of an ageing workforce and other factors to produce a quality workforce that would make a substantial impact upon health-care delivery and outcomes in the country.

The costs of this addressing the level of health human workforce need to be considered carefully.

Socioeconomic status. The 2009–2010 Household Income and Expenditure Survey (National Statistical Office, 2010) was conducted from July 2009 to December 2010 in 19 provinces of the country and includes interviews with 4191 households. It found large geographical disparities in poverty across the country. ADB noted that the rural nature of the country's poverty profile amplifies the health, economic and other development consequences of a lack of access to transport infrastructure within the country, which continues to be identified as a major driver of poverty, and the consequent health and other impacts. The average rural resident on the coastal area of Islands and Momase Region must walk 90 minutes to reach the nearest road, while in the Highlands Region the average time taken to walk to the nearest road is more than 4 hours (Asian Development Bank, 2016). The 2006 DHS did not undertake an analysis of income by any demographic or health indicators (National Statistical Office, 2009). It is important to have these levels of data and their analyses as a planning and evaluation tool for the equity of the health system to be more routinely monitored and should be considered as a HIS reform.

Gender. As noted in this review, the high MMR and the high levels of gender-based violence with limited services available to address the health and mental impact of the violence indicate a gendered difference in risks, vulnerabilities and health service needs. Similarly, the lower life expectancy for men, and higher incidence of other violence and injury as well as limited male reproductive health services reflect a similar gap in ensuring gender-appropriate services.

This is not a health sector issue alone but reflects the low levels of gender equality in Papua New Guinea. In 2014, the country was ranked 143rd out of 188 countries on the UN's Gender Inequality Index (United Nations Development Programme, 2017b). The NDoH has developed the National Health Sector Gender Policy (National Department of Health, 2014); however, no one person or section within the NDoH or lower levels of the health sector are identified as champions of this policy. NDoH managers involved in review consultations saw this as a risk to policy implementation.

Even with improved legislation and policy around gender issues, such as the *Lukautim Pikinini* Act (Government of Papua New Guinea, 2009), the inadequate capacity to uphold law and order make the laws largely ineffectual. An important step will be to ensure that gender-disaggregated

data are available and used for planning, monitoring and evaluation at all levels of the health system. This should be a major focus of HIS reforms.

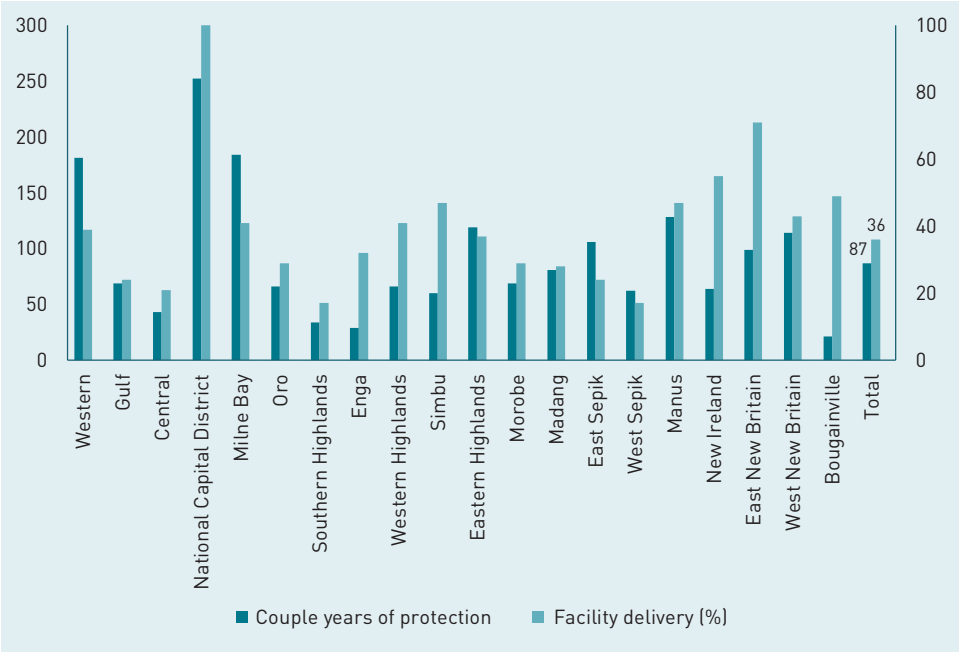
7.4 Health outcomes, health service outcomes and quality of care

7.4.1 Population health

As discussed in Chapter 1, Papua New Guinea has a PHC system that has been responsible for some improvements in health outcomes related to infectious diseases and maternal, child and infant mortality. However, the World Bank (2014a) noted that “the deterioration in health outcomes in recent decades in Papua New Guinea is widely recognised as a failure of health service delivery”. The country did not meet MDG targets 4a (a two third reduction in the under-5 mortality rate) and 5a (a three-quarter reduction in the MMR). An analysis of existing trends in health indicators reflects little if any improvement in many of them. Additionally, the health system must increase its NCD prevention activities and, in the medium term, increase the accessibility to services for managing NCD-related morbidity and mortality.

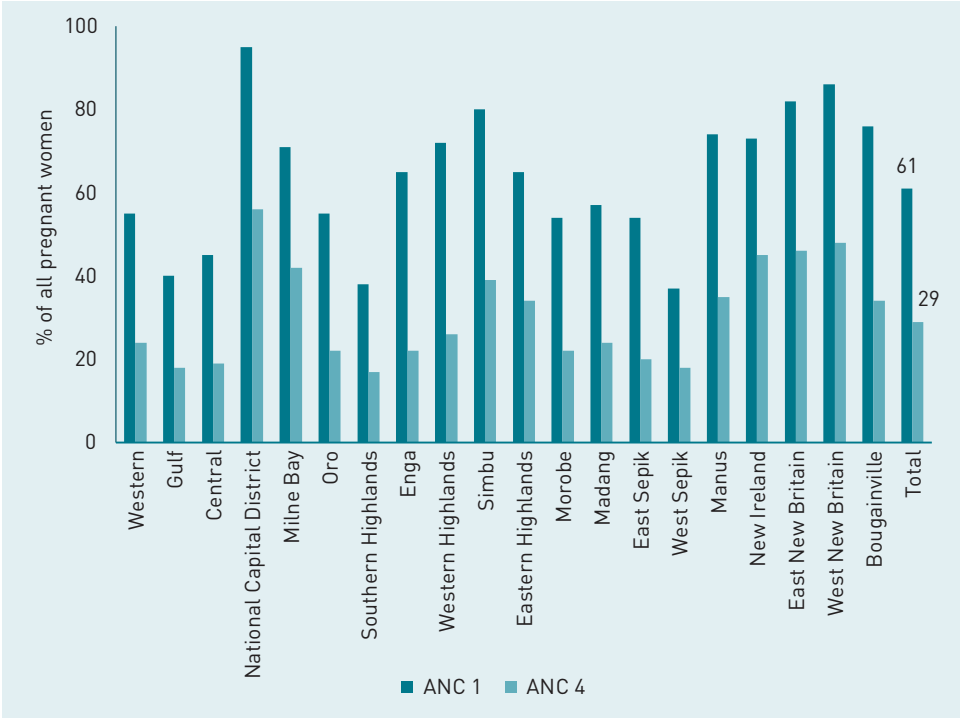
Maternal mortality ratio. The MMR is high and postpartum haemorrhage, which is arguably the most preventable cause of maternal death, is the leading cause of maternal mortality. The recommendations of the Ministerial Taskforce on maternal health remain relevant to the country and require continued investment in the health system, including family planning (Fig. 7.4 shows the low levels of family planning and provincial variations). However, the attainment of maternal health, as for many health outcomes, requires attention to and investment in the social determinants of health such as education, poverty and empowerment, as well as in infrastructure such as roads and communication systems. Ensuring the accessibility and acceptability of services, as well as community and individual women and couples’ reproductive health literacy are important elements that need to be addressed and accounted for. Useful indicators to monitor include the first and fourth antenatal visits and the change between those visits (Fig. 7.5), delivery in a health facility and again the change between ANC visit rates and delivery rates (Fig. 7.4 and 7.5).

Fig. 7.4 Couple years of protection (per 1000 women of childbearing age) and percentage of facility deliveries, by province, Papua New Guinea, average 2006–2008



Source: Government of Papua New Guinea, 2010c:pp.70, 73

Fig. 7.5 Antenatal visits (1st and 4th), by province, Papua New Guinea, 2008

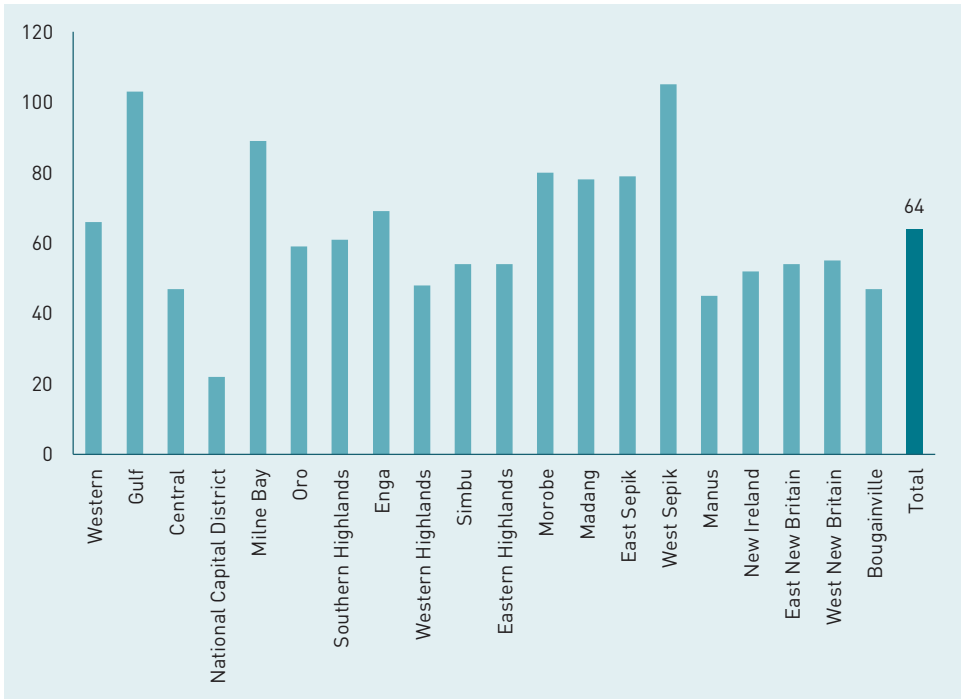


Source: Government of Papua New Guinea, 2010c:pp.74–75

Infant mortality rate. The IMR, although declining, remains high, with major variations between provinces (Fig. 7.6). The immunization programme has been a major contributor to improvements in infant and child mortality rates. However, the coverage of immunization, antenatal visits and skilled birth attendants remain low. Given existing trends, further improvements are difficult to foresee.

Social determinants of health play a role in improving the IMR, such as improved access to water and sanitation, and increased rates of female education. These are outlined as Government objectives in the Medium-Term Development Strategy, but must be resourced adequately and implemented equitably. The Government’s commitment to the SDGs and to the NHP, which include these outcomes, is the right platform, but whole-of-government, private sector, development partners, civil society and community commitment is essential.

Fig. 7.6 Infant mortality rate (per 1000 live births), by province, Papua New Guinea, 2000



Source: Government of Papua New Guinea, 2010c:p.6

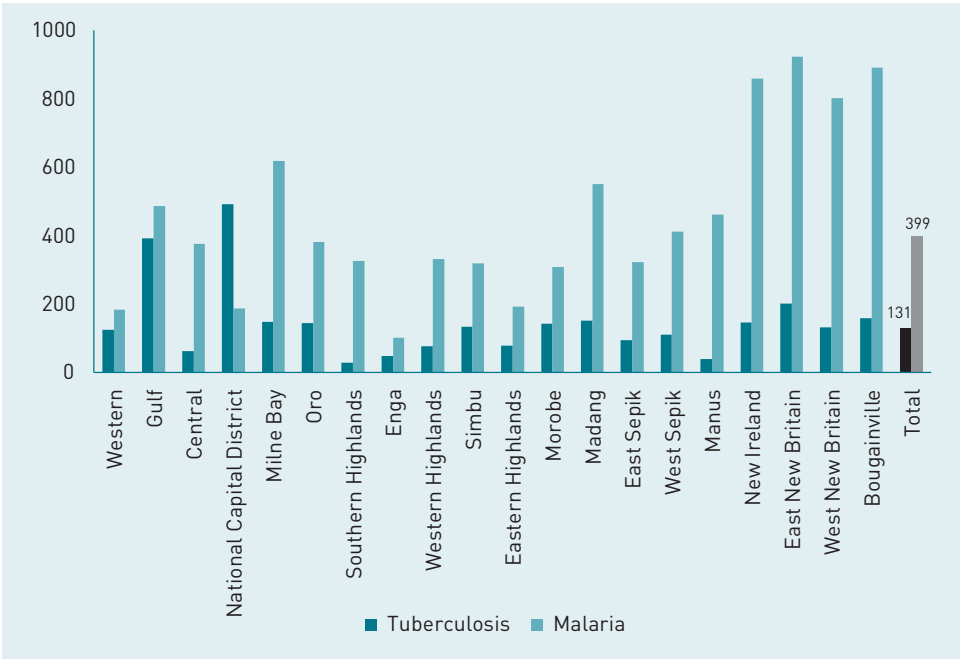
Malaria. Malaria remains a major health problem in the country, although the prevalence is declining in many parts of the country. As discussed in Chapter 5, progress has been achieved through major investments in malaria over the past decade. However, there is large geographical variation in prevalence (Fig. 7.7), with some provinces or districts entering the pre-elimination phase, while others remain highly endemic.

Concerns about the impact of climatic changes on malaria prevalence and distribution are also raised in the NHP and some studies have been conducted to set baselines for monitoring this concern. The Government has joined the Asia Pacific Leaders Malaria Alliance and pledged to eliminate malaria along with the other countries in the Asia Pacific region by 2030. It is likely that Papua New Guinea will be one of the last countries to reach this goal, given the high burden that remains and several of the health system problems that impact negatively upon the malaria control programme.

Tuberculosis. Papua New Guinea is one of the high-burden countries in the world for TB and also has very high levels of MDR- and XDR-TB (Fig. 7.7 shows provincial variations). It is the right strategy to continue rolling out the

DOTS programme. However, ensuring that prevention and early detection and treatment are available for the population is a major and ongoing challenge. The health system continues to struggle to maintain a logistics system and fully staffed health clinics. Without addressing these, the DOTS roll-out is on paper only. Monitoring drug resistance and any impact of urbanization, internal migration and comorbidities such as diabetes and HIV on the epidemiology of TB are important considerations for the health system.

Fig. 7.7 Admission rate (per 100 000 population) for TB and malaria, by province, Papua New Guinea, 2008



Source: Government of Papua New Guinea, 2010c:pp.85, 89

Cancer. The contribution of neoplasia to disability-adjusted life years (DALYs) has increased. In 1990, it was ranked 12th, while in 2016 it moved up to the 8th place (Fig. 1.5). However, the size of the problem and measuring outcomes from interventions is difficult with the poor-quality data available to the health sector. Contributing to this situation is the lack of routine collection of cancer data, poor diagnostic capabilities of the system and limited access to cancer services. Behavioural risk data (Table 1.6) suggest that the problem will increase. Unless the efforts under way to prevent common cancers are taken to scale and become universally available, cancers will remain and increase as a problem. They will, if unchecked, be a major and expensive draw-down upon health sector resources.

7.4.2 Health service outcomes and quality of care

As already discussed in this chapter, the poor levels of human resourcing, facility maintenance, availability of equipment and drugs/vaccines all point to problems of quality of care at all levels.

The data required to review the quality of services are not routinely collected in the HIS. Table 7.1 is a proxy way of reviewing outcomes and quality of care by looking at variations in death rates from a common presentation at admission, namely diarrhoea. Although other factors, such as the etiology of the diarrhoea and delays in presentation may also impact upon death rates, these data illustrate a wide variation in mortality among admitted patients even at this provincially disaggregated level.

Table 7.1 Diarrhoeal admission and death rates by province, Papua New Guinea, 2008

Province	Diarrhoeal admissions/100 000	Diarrhoeal deaths/100 000	% deaths to admissions
Western	156	6.1	4%
Gulf	257	5.2	2%
Central	108	2.6	2%
National Capital District	270	1.8	1%
Milne Bay	114	2.5	2%
Oro	105	2.9	3%
Southern Highlands	160	5.9	4%
Enga	190	6.3	3%
Western Highlands	241	11	5%
Simbu	189	4.8	3%
Eastern Highlands	110	6.3	6%
Morobe	60.8	5.3	9%
Madang	106	3.2	3%
East Sepik	81.4	3	4%
West Sepik	82.2	3.3	4%
Manus	143	3.2	2%
New Ireland	213	5.8	3%
East New Britain	191	4.2	2%
West New Britain	184	6.5	4%
Bougainville	193	4.7	2%
Total	151	5.1	3%

Source: Government of Papua New Guinea, 2010c:p.52

Limited data are currently available from which to determine the avoidable hospital admission rates for chronic conditions such as asthma, chronic obstructive pulmonary disease, congestive heart failure and hypertension. The NHP 2011–2020 (Vol. 2A) reports on admission data for chronic

respiratory disorders, cardiovascular diseases, and diabetes and other endocrine disorders (Table 7.2). This is an indicator that the NDoH and PHAs should review, as it can reflect poor efficiency and technical quality. The utility of these data will depend upon the planned improvements in the HIS, including hospital and civil registration and vital statistics.

Table 7.2 Hospital admissions and deaths (per 100 000) due to selected chronic diseases, Papua New Guinea, 2008

Classification	Admissions	Deaths
Chronic respiratory illnesses	74.7	5.1
Neurological disorders	22.8	1.78
Cardiovascular diseases	29.8	4.9
Diabetes and other endocrine disorders	13.2	1.07

Source: Government of Papua New Guinea, 2010c:p.26

There is also a paucity of data related to in-hospital mortality rates (deaths within 30 days of admission) for acute myocardial infarction, haemorrhagic stroke and ischaemic stroke.

As noted in Chapter 4, significant gaps in the quality of health care have been noted in recent surveys and research in the health sector. Closed facilities, facilities without running water and toilets, lack of a source of electricity for lighting and refrigeration, and limited if any attention in some locations to ongoing maintenance of facilities and equipment, all compromise the quality of and the ability to provide quality services.

7.5 Health system efficiency

7.5.1 Allocative efficiency

Strategies to improve resource allocations at the provincial and district levels such as the work by the NEFC and NDoH, and with development partners through refreshing the SWAp are reforms that are under way to improve allocative efficiency.

The Burden of Disease data (Fig. 1.5) suggest that greater focus is required on NCDs, injuries and cancer than on many of the infectious diseases. However, in considering the needs of the rural and remote majority, the NHP 2011–2020 identifies a primary need to redress the inequities in access to PHC in these settings as its first priority. The focus on prevention of NCDs and trying to halt the increasing trend in the incidence of NCDs is the main focus of the plan. Inadequate health information makes it hard to understand the dynamics of NCDs in Papua New Guinea. Improving the CRVS and HIS

in the country is important for providing better planning and monitoring and evaluation data, and better allocation of resources to areas of need in a more targeted manner.

7.5.2 *Technical efficiency*

Given the current economic scenarios for the country, and that increased fiscal space for health is unlikely, a strong focus is needed on improving the technical efficiency of its health programme and services. The back-to-basics approach is well suited to this task.

Technical efficiency gains could be made through the following strategies elaborated by the NHP 2011–2020 and related documents and policies.

1. ***Invest more in primary care and prevention and secondary prevention, especially in rural and remote areas.*** Strengthening and improving the quality of primary and secondary prevention, and PHC will increase both allocative and technical efficiency. Prevention is better than cure and a focus on prevention (primary and secondary), early diagnosis and treatment, delaying or truncating the duration of hospital admissions and related costs of patient transportation are sound strategies. Health literacy and community participation in health will assist in this strategy. Ensuring a well-defined referral process will also assist with this strategy and this may be supplemented by cost-effective complementary platforms such as e-health.
2. ***Implement the national standards for health services.*** Developed to maximize the efficiency and quality of health services, as well as guide investments and resourcing in the sector, all health facilities in Papua New Guinea should be supported and monitored to follow these standards. However, for provincial- and lower-level government authorities to understand and translate the complexity of these standards has been noted as a concern by NDoH managers. Support will be required to ensure adherence and commitment to these standards and being supported should be translated into adequate levels of resourcing.
3. ***Ensure that the implementation of the free health care and subsidized specialist health services policy*** is supported through appropriate levels of resourcing of the health sector, otherwise the operational costs for delivering services will remain underfinanced. If the level of financing for operations (patrols, distribution of medical supplies) is not adequate, the existing levels of expenditure on staff and infrastructure will not achieve health outcomes. This is a major concern for efficiency of the sector.

4. **Ensure that reforms in pharmaceutical and infrastructure procurement and management systems are executed** to support improvements in the quality of care and technical efficiency, and to reduce capital costs in the long term. This is not only a health sector responsibility. Reforms in CSTB and audit will be essential for support.
5. **Implement the health workforce plans** in the immediate- and longer term. This is required to support technical efficiency, quality of care of and universal access to services. Health workforce plans are complicated tools and need to be regularly monitored and adjusted to redress changes in migration, population dynamics, health burdens and treatment strategies, retirement and retention, and production capacities.
6. **Finalize and support the implementation and roll-out of the PHA** to ensure the governance framework and resourcing support for health services at all levels. This is not a panacea for all the “woes” of the health sector, but provides a foundation for improved efficiency of the sector, which assists in achieving the vision of universal coverage.

7.6 Transparency and accountability

7.6.1 Transparency

The Government of Papua New Guinea is committed to promoting improved accountability of district-level politicians for health sector performance. Several measures are proposed to support this approach, including an MCH scorecard, which is under trial, and presentation of health sector indicator data to all district politicians. Simplifying the presentation of the National Health Services Standards into checklists and managerial tools that can be more easily used by district managers and political leaders is one strategy to facilitate their commitment.

Accountability and transparency will also be promoted through the development of local-level planning and budgeting tools. These need to be informed by analysis of data from the HIS, m-supply and health workforce information systems. Issues of transparency are broader than the health sector alone as they affect all aspects of public governance (see section 1.3).

7.6.2 Transparency among donors

The health sector has been operating a SWAp for several years, engaged in by some but not all of the donors. Several reviews have identified the strengths as well as weaknesses of the existing arrangements, and the NDoH is planning to use the lessons learnt to reinvigorate the SWAp. McNee’s review (2012) of SWAp in the health sector, including in Papua New Guinea,

identified some approaches that may be considered in this reinvigoration of the health sector. In the review, he does note that being explicit about the theory of change for the SWAp to achieve explicit objectives must be developed. He suggested that:

- an iterative, incremental, politically informed approach to health policy/resource allocation should be taken, with less emphasis placed on the development of upfront, comprehensive sector policies and resource allocation frameworks;
- there should be recognition of and commitment to the primacy of government leadership in health system development (as a regulator, funder and one of a possible range of providers); but that government commitment to effective development outcomes is not a given and even if government commitment is present, there may be the need to progressively build government capacity without prematurely overloading the capacity;
- donor selectivity should be improved of what is supported and coordination of support and improved donor staffing practices; and
- coordinated production and use of performance information be used by government/partners to assess and calibrate improvement strategies.

7.6.3 Procurement

As noted previously in the review, procurement of infrastructure, major and minor equipment, pharmaceutical and other medical supplies has been a long-term problem for the health sector. Geographical issues, lack of road/rail/air infrastructure, limited construction capacity, lack of local manufacturers and poor exchange rates for the kina add to the complexity of the issues. Addressing the procurement and infrastructure needs for a health system aiming for universal coverage, finding adequate financing and partnerships to execute these plans, and ensuring financial and assets management have been identified as challenges to implementation. These need to be prioritized as strategies internal and external to the health sector to execute the NHP 2011–2020.

7.6.4 Accountability

Financial accountability. Several Government initiatives have been instituted in the past few years to improve financial accountability at all levels of the health and government systems. Findings such as those in the Auditor General's report on the 2012/2013 district audits of expenditure identify the depth and breadth of issues that must be addressed to secure adequate resourcing for the health sector. The report found ineffective and inefficient

application of DSIP funds and limited accountability of those charged with the responsibility to administer the funds (Auditor General's Office of Papua New Guinea, 2014). The 2015 IMF PEFA assessment rated the public financial management system of the country as poor (International Monetary Fund, 2015). This is a governance issue in the country that needs coordinated multisectoral efforts to implement and monitor financial accountability. Within the NDoH and health sector, problems with financial management, expenditure rates and some cases of proven corruption also occur. The consequences of this have included major changes in development partner support and modes of support, e.g. Global Fund changes in Principal Recipient and GAVI reviews; and ultimately reduction in the capacity to deliver universal health care.

7.6.5 Equity of access to health care

The main issue around equity of access to health services is geographical – the difficulty of providing adequate resources to the population spread across islands, mountains and coastal areas, and often at low population density. As this review has shown, although the Government's intent of UHC is well elaborated, the reality of resourcing in order to reach that goal is a major stumbling block – across the health sector, other government sectors and at local, provincial, regional and national levels.

8 Conclusions

The health system challenges in Papua New Guinea are formidable, such as the level of economic and infrastructure development, and the considerable difficulties in accessing services of the rural and remote majority. Although the country has achieved steady rates of economic growth, poverty rates remain high. Some key development indicators for mortality reduction, gender inequality and human development are all below regional expectations, and set a formidable task for the country to achieve the SDGs.

Although the country is undergoing an epidemiological and demographic transition with a consequent rise in the incidence of NCDs, it is the gaps in provision of basic MCH and communicable diseases that present the most pressing population health need. Substantial proportions of mothers still deliver their infants without professional care, and immunization rates remain at around 60%, with wide subnational variations and inevitable deadly and disabling outbreaks of vaccine-preventable diseases. Coverage of the MCH programme has stalled, and IMR and MMR are among the highest in the region. Some successes have occurred, e.g. reductions in malaria mortality and morbidity in some provinces that have achieved high coverage and outcomes. Lessons learnt from these successes should be incorporated into planning and implementation of the broad suite of plans and policies that are emblematic of the health sector.

The tight fiscal context and the prospect of ODA transition present unique financial challenges to the health sector. They demand higher levels of efficiency to achieve the desired goals of UHC with equity. A thorough analysis of financial options for the health sector identifies the efficiency option as the most feasible.

Efficiency gains are most likely to be achieved through investment in primary care services for the rural majority and the urban disadvantaged. This has been recognized in a policy sense in such documents as the Provincial Health Authority Framework, the new Free Primary Health Care and subsidized Specialist Care Policy, and the commitment of the Government to rebuild health-care infrastructure and upgrade workforce production numbers and skills.

Transparency and accountability of service provision in the decentralized context of Papua New Guinea will need to be advanced through closer linkages of planning and budgeting and financial flows. Some policy options such as direct facility financing and performance-based management practices (health contracting) are in discussion at the national level. A back-to-basics approach that fully accounts for contextual realities at the local levels should be extended to policy decisions.

Improved targeting and coordination of all sources of financing, as envisaged by the Government, will assist in maximizing the utilization and outcomes of finances available to the health sector. Revisiting the need for and potential reinvigoration of the SWAp in the health sector is mooted. Developing an explicit theory of change for the SWAp is recommended.

The shortage of qualified HRH in rural and remote areas is the most significant policy and planning priority. Labelled by many as a crisis, it is a major constraint, limiting access of the population to life-saving interventions. As illustrated throughout this review, the country does not compare favourably with regional countries or international standards with regard to HR production numbers and distribution. The proposed NHP strategy for “universal coverage with a minimum package of services (with equity)” presumes that there are adequate numbers of trained health-care staff. As most of the services are provided at the primary level of care, the strategic focus for HR development will need to be at the level that achieves the highest development impact for the lowest cost. The pace of production of these cadres remains a concern and will challenge achievement of the well-intentioned and focused NHP objectives.

These challenges support the case for a “back-to-basics approach”. This will entail investment in HRH and infrastructure across the country for improved PHC access, particularly in rural and remote areas. The back-to-basics approach will need to be reinforced by improved provincial and district health management. Critical to success will be the timely release of adequate financing and efficient use of those resources. Ensuring that the models of care defined in the national standards are implemented will support the transition towards universal coverage for a minimum package of primary care services.

There are indications that Papua New Guinea has made significant progress in policy and planning reform initiatives to support this back-to-basics approach. This includes the NHP 2011–2020 and the National Standards for Health Services. The challenge is to translate these policy commitments

into health actions and resource support in a decentralized and challenging geographical environment.

For such translation of policy into practice, systems will need to be put in place to designate clearer accountability and transparency of subnational management of health sector performance. The clarification of a PHA management framework provides a more streamlined approach for decentralized management of PHC, hospitals and the referral system.

It is possible for Papua New Guinea to improve health sector performance – coverage, efficiency, equity, health outcomes, and social and financial protection. Successes in some specific programmes and districts of the country show that despite the challenges detailed in this review, improvements can be made. It will be imperative for all partners and stakeholders in the health sector to remember to stick to the basics, contextualized to the local realities, and use data to inform implementation and decision-making.

9 Appendices

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9.2 Useful websites

Papua New Guinea National Department of Health
<http://www.health.gov.pg/>

Papua New Guinea Prime Minister's Office
<http://www.ipm.gov.pg/>

Papua New Guinea Department of Finance
www.finance.gov.pg

Papua New Guinea Department of Planning
<http://www.planning.gov.pg/index.php>

Papua New Guinea Department of Treasury
<http://www.treasury.gov.pg/>

World Bank at Papua New Guinea
<https://www.worldbank.org/en/country/png>

World Health Organization at Papua New Guinea
<http://www.wpro.who.int/papuanewguinea/en/>

Australian Government Department of Foreign Affairs and Trade Papua New Guinea pages
<http://dfat.gov.au/geo/papua-new-guinea/Pages/papua-new-guinea.aspx>

9.3 HiT methodology and production process

HiTs are produced by country experts in collaboration with an external editor and the Secretariat of the Asia Pacific Observatory based in the WHO Regional Office for South-East Asia in New Delhi, India.

HiTs are based on a template developed by the European Observatory on Health Systems and Policies that, revised periodically, provides detailed guidelines and specific questions, definitions, suggestions for data sources

and examples needed to compile reviews. While the template offers a comprehensive set of questions, it is intended to be used in a flexible way to allow authors and editors to adapt it to their particular national context. The template has been adapted for use in the Asia Pacific region and is available online at: <http://www.who.int/iris/handle/10665/208276>

Authors draw on multiple data sources for the compilation of HiTs, ranging from national statistics, national and regional policy documents to published literature. Data are drawn from information collected by national statistical bureaux and health ministries. Furthermore, international data sources may be incorporated, such as the World Development Indicators of the World Bank. In addition to the information and data provided by the country experts, WHO supplies quantitative data in the form of a set of standard comparative figures for each country, drawing on the Global Health Observatory (GHO) data and Global Health Expenditure Database. HiT authors are encouraged to discuss the data in the text in detail, including the standard figures prepared by the Observatory staff, especially if there are concerns about discrepancies between the data available from different sources.

The quality of HiTs is of real importance since they inform policy-making and meta-analysis. HiTs are subject to wide consultation throughout the writing and editing process, which involves multiple iterations. They are then subject to the following.

- A rigorous review process consisting of three stages. Initially, the text of the HiT is checked, reviewed and approved by the Asia Pacific Observatory Secretariat. It is then sent for review to at least three independent experts, and their comments and amendments are incorporated into the text, and modifications are made accordingly. The text is then submitted to the relevant ministry of health, or appropriate authority, and policy-makers within those bodies to check for factual errors.
- There are further efforts to ensure quality while the report is finalized that focus on copy-editing and proofreading.
- HiTs are widely disseminated (hard copies, electronic publication, translations and launches). The editor supports the authors throughout the production process and, in close consultation with the authors, ensures that all stages of the process are taken forward as effectively as possible.

9.4 About the authors

Dr John Grundy is a lecturer at the James Cook University (Cairns campus). He is a public health specialist who based himself in Phnom Penh, Cambodia for nearly 20 years, and from there worked regionally with a range of organizations, including UN agencies, NGOs, the World Bank and University of Melbourne. His main area of work is health systems strengthening, health policy and planning, and global immunization. The main countries of expertise include Mongolia, North Korea, Myanmar, Viet Nam, Cambodia and Timor-Leste. He acted as chair of the Independent Review Committee of the Global Alliance for Vaccines and Immunization (GAVI) in Geneva (2012–2014).

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ISBN-13

978 92 9022 674 1



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