Data Collection Survey on Health Sector

Country Report
Independent State of Papua New Guinea

October 2012

Japan International Cooperation Agency
(JICA)

KRI International Corp.

TAC International Inc.

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This report is prepared to support JICA's country operation in health through strategic programming. The contents, however, may need to be supplemented with the latest and more detailed information by the readers since the report is mainly based on literature review and not on field study, with the exception of some countries.

Foreword

Background

The current situation surrounding the health sector in developing countries has been changing, especially at the start of the 21st century. Based on the recommendations from the concept of "Macroeconomics and Health"[1], development assistance for health has greatly increased to accelerate efforts to achieve the Millennium Development Goals (MDGs) by 2015. The development assistance for health has risen sharply from USD 10.9 billion to USD 21.8 billion in 2007[2]. Moreover, development assistance was harmonized by the common framework developed at the three consequent high-level forums in Rome (2003), in Paris (2005) and in Accra (2008).

Regardless of such favorable environmental changes for the health sector in developing countries, the outcomes do not seem to reach the level of expectation in many countries. Many developing countries, particularly Sub-Saharan African countries, will not achieve some of their MDGs 4 (Reduce child mortality), 5 (Improve maternal health) and 6 (Combat HIV/AIDS, malaria and other diseases) by 2015. Therefore, while raising more money for health is crucial for lower-income countries striving to move closer to universal coverage[3]; "More Money for Health[4]", it is just as important to get the substantial health gains out of the resources available; "More Health for Money[5]". Efficiency is a measure of the quality and/or quantity of output of services for a given level of input, and improving efficiency should also be seen as a means of extending coverage for the same cost and the improved health outcomes.

Considering this situation surrounding the health sector in developing countries, in a recent movement of its development assistance work, JICA has been working on country-based analytical work. This consists of macro level and sector wide analytical work aiming to clarify JICA's aid direction in each country by looking at priority areas of concern and aid mapping. The purpose of the Data Collection Survey on Health Sector is to contribute to JICA's analytical work efforts. In the past, JICA's analytical efforts were concentrated on the project planning purpose, as a consequence, information gathered in such analytical works were naturally limited to be around the particular projects. It is therefore thought to be important for JICA to conduct a country-based health sector review to gather complete information and analyze the whole sector to learn about the situation of the country and identify high priority problems and issues to be tackled in the health system.

Objectives of the Study

The key to the formulation of a good project is having conducted thorough sector reviews. Good sector reviews and analyses help us to understand the health situation and its determinants, and the capacity for health project implementation in the countries. They also help us to contribute to the countries for identifying the feasible projects in the context of priorities and developing the necessary policies and strategic planning for the health service delivery. It is also necessary to conduct such health sector review studies on a regular basis in order to develop and implement effective and efficient health projects. Based on this concept, JICA decided to carry out the sector review studies of 23 selected countries. The objectives of the sector review are to give recommendations to JICA on the aid direction for the health sector in each country, and to improve strategic approaches and the efficiency of aid cooperation.

Structure of the Report

The health sector study country report consists of seven chapters. Chapter 1 is the summary of the socio-economic situation of each country. Chapter 2 is an analysis of the national health policy, strategic approaches, and plans. Chapter 3 describes the health situation of each country to show the priority health problems by using health information and data. Chapter 4 is an analysis of the health service delivery function of each country, while Chapter 5 is an analysis of other functions of the country's health system namely: human resources for health, health information systems, essential medical products and technologies including the health facilities, health financing, and leadership and governance. Chapter 6 is an analysis of the development partners' assistance and cooperation. Based on the above analysis, Chapter 7 provides recommendations to JICA on the strategic areas of cooperation and its approaches.

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[1] WHO announced "Macroeconomics and Health: Investing in Health for Economic Development" in December, 2000. This regards Health is an intrinsic human right as well as a central input to poverty reduction and socioeconomic development and the process helps place health at the centre of the broader development agenda in countries.

[2] Ravishankar N., Gubbins P. Cooley J.R., et. al; June 2009; Financing of global health: tracking development assistance for health from 1990 to 2007; the Lancet 373:2113-2132

[3] According to WHO, Universal coverage (UC) is defined as ensuring that all people have access to needed promotive, preventive, curative and rehabilitative health services, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship. (http://www.who.int/health_financing/universal_coverage_definition/en/index.html)

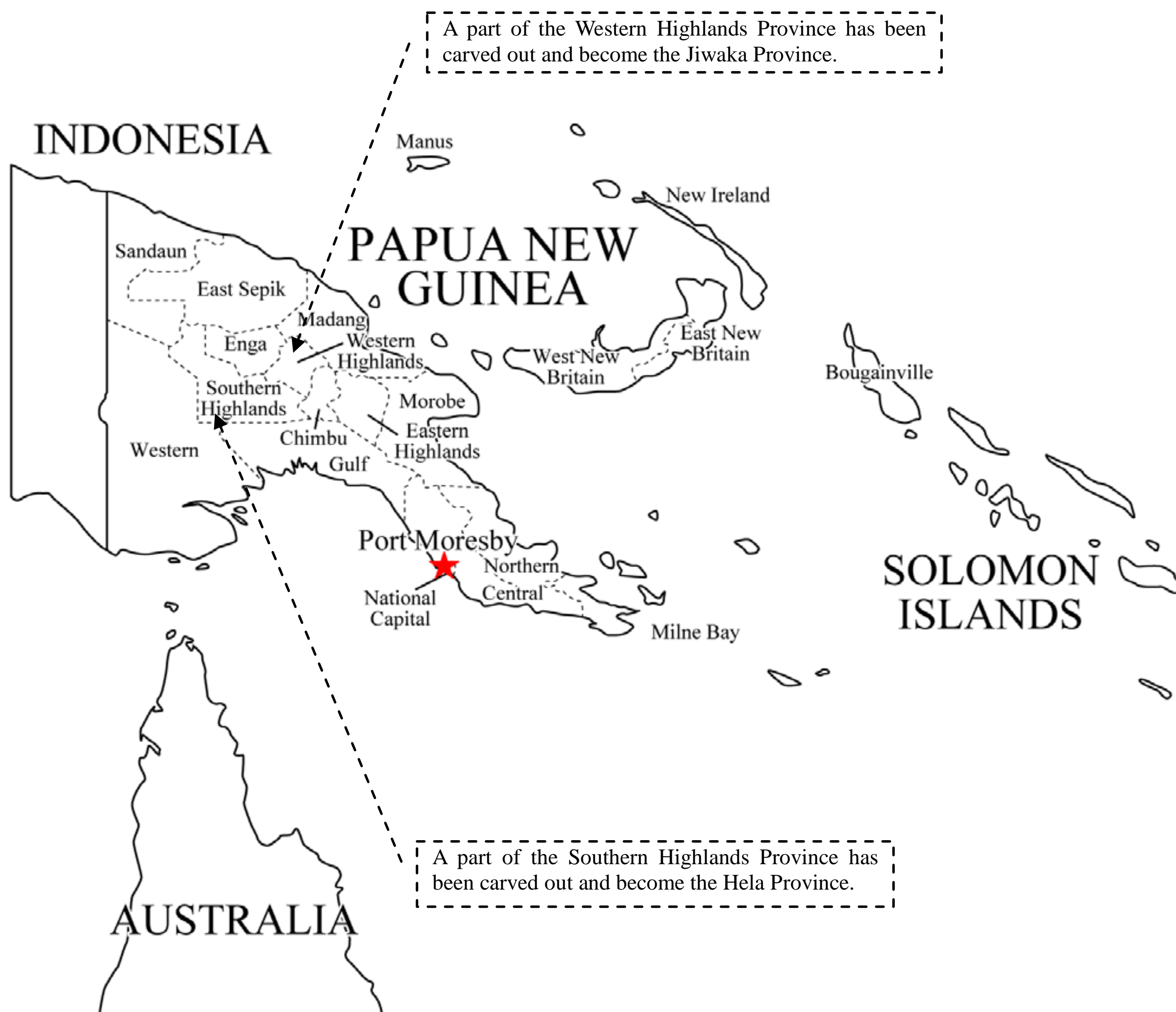
[4] In the World Health Report 2010 (WHO), the report advocates it with the following concrete three suggestions as the requirements; 1) Increase the efficiency of revenue collection, 2) Reprioritize government budgets, and 3) Innovative financing. As the forth suggestion, it advocates increasing development aid and making it work better for health.

[5] The World Health Report 2010 also suggests the needs of improving the efficacy in the health systems and eliminating the inefficiency/waste will enable the poor countries to improve the availability and quality of the services.

Abbreviation and Acronyms

ACT	Artemisinin-based Combination Therapy
ADB	Asian Development Bank
AMS	Area Medical Store
ARB	Autonomous Region of Bougainville
ARI	Acute Respiratory Infection
ART	Anti-retroviral Therapy
AusAID	Australian Agency for International Development
CHIPs	Country Health Information Profiles
CHP	Community Health Post
CHW	Community Health Worker
CMC	Church Medical Council
CMS	Central Medical Store
DAD PNG	Development Assistance Database Papua New Guinea
DEC	Diethylcarbamazine
DFF	Direct Facility Funding
DHS	Demographic and Health Survey
DOTS	Directly Observed Therapy Short-course
DPT	Diphtheria, Pertussis, Tetanus
DSP	Development Strategic Plan
EML	National Essential Medicines List
EPI	Expanded Programme on Immunization
EU	European Union
GDP	Gross Domestic Product
GII	Gender Inequality Index
GPELF	Global Programme to Eliminate Lymphatic Filariasis
HEO	Health Extension Officer
HIV	Human Immunodeficiency Virus
HRIS	Human Resource Information System
HSIP	Health Sector Improvement Program
HepB	Hepatitis B
Hib	Haemophilus influenza type B
ICT	Information and Communication Technology
IEC	Information Education and Communication
IMCI	Integrated Management of Childhood Illness
IMR	Institute of Medical Research
IMR	Infant Mortality Rate
IRS	Indoor Residual Spray
ITN	Insecticide-Treated Bed Net

JICA	Japan International Cooperation Agency
LLG	Local Level Government
LLIN	Long Lasting Insecticide-Treated Nets
LNG	Liquid Natural Gas
MDGs	Millennium Development Goals
MSB	Medical Supply Branch
MTDP	Mid-Term Development Plan
MTEF	Mid-Term Expenditure Framework
NAC	National AIDS Council
NACS	NAC Secretariat
NCD	Noncommunicable Disease
NDoH	National Department of Health
NGO	Non-Governmental Organization
NHIS	National Health Information System
NHP	National Health Plan
NHS	National HIV and AIDS Strategy
NMCPSP	National Malaria Control Programme Strategic Plan
NOL	New Organic Law (Organic Law on Provincial and Local Level Government)
PACS	Provincial AIDS Council
PHA	Provincial Health Authority
PHA Act	Provincial Health Authority Act
PHC	Primary Health Care
PNG	Papua New Guinea
PPP	Purchasing Power Parity
PSI	Population Service International
SBS	Sector Budget Support
SIA	Supplementary Immunization Activity
SWAps	Sector-Wide Approaches
TFR	Total Fertility Rate
UNDPA	United Nations Department of Political Affairs
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VHV	Village Health Volunteer
WHO	World Health Organization
WPRO	WHO Regional Office for Western Pacific



Notes: Boundary lines of the two new provinces that created in 2010 are not on the map[6, 7]

Source: http://www.freemap.jp/blankmap/

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6 It has been approved in the National Assembly to create the new two provinces carved out of the existing provinces in the Highland Regions by 2012 in time for national elections. (Sources: 1. National Health Plan 2011-2020、NDoH, 2010, 2. Australia Sunday Herald (http://news.smh.com.au/breaking-news-world/png-to-create-two-new-provinces-20090715-dkyh.html))

7 In the administrative, it is divided into National Capital District, Autonomous Region of Bougainville (ARB) and 20 provinces, 89 districts and 319 Local Level Governments (LLGs). Under the LLGs, there are 5,747 Wards in total.

Summary

1. In the Independent State of Papua New Guinea (PNG), communicable diseases and illness related to perinatal conditions are the major causes of death in health facilities (about 50% of deaths). Preventable communicable diseases (respiratory tract infection, diarrhea, meningitis, malaria, tuberculosis, and HIV/AIDS) still form the biggest challenge in the health sector. On the other hand, chronic lifestyle-related diseases such as diabetes, heart disease and cancer are beginning to be a problem in urban areas. Injuries due to violence and accidents are becoming another challenge in the health sector.

2. Infant and under-five mortality rates are very high at 47% and 61% and neonatal mortality rate accounts for 50% of infant mortality rate. The maternal mortality ratio is exceptionally high at 250 and is the worst among neighboring countries.

3. Prevalence of HIV tends to stay at 0.8%; however it has been increasing in some Regions. HIV positive rate is also increasing at antenatal care clinics in the capital. 91% of route of transmission is heterosexual, which requires a wide prevention and treatment among the general population. On the other hand the infection rate among high risk groups is very high. Malaria is spreading across the country. The number of reported new cases is decreasing but the number of deaths has risen. Drug resistant malaria also increased. Tuberculosis (TB) case detection rate is virtually constant but the number of deaths has risen. Multidrug resistance was confirmed and the prevention of its spread has now been put on the health agenda.

4. The improvement of childhood mortality rates and maternal mortality ratio has been small in the last 20 years, and neither are expected to reach the Millennium Development Goal (MDG) targets. The goal for universal access to HIV/AIDS treatment and care cannot be reached. There is no downward trend in malaria and TB incidence and mortality rates; however, they too are not expected to reach the MDG targets. There is no improvement in fatality rate of hospitalized pneumonia patients and incidence of diarrheal diseases under 5 children in the past 5 years.

5. There are many underlying factors for health issues mentioned above such as culture, lifestyle, gender and malnutrition. The living conditions and water and sanitation facilities are also important factors of the outbreak and expansion of infectious diseases such as pneumonia and diarrheal diseases. The proportion of population which can access safe drinking water and improved sanitation facilities remains low over the last 15 years.

6. The major reasons for the extremely limited improvement of health indicators over the past 20 years are low access to health services and low coverage of the health services. Access to health services is difficult in rural areas, not only due to geographical conditions but also due to delay in improvement of infrastructure. In addition to this, a weak health system, more specifically closure of aid posts, inadequate facilities and equipment, lack of drugs and medical supplies, insufficient human resources and lack of operational fund for primary health care (PHC) facilities causes low access and low coverage of health services. The weak health system also resulted in a low morale among health staff, which worsens the situation. Church health facilities, which provide 50% of PHC services, also have similar problems.

7. On the basis of these facts, the government, in its 2011 National Health Plan, declared good governance and improvement of health service delivery by strengthening health system. The authorities recognize that human resource development is their biggest challenge. Nevertheless, human resource policy and strategies and a long-term plan have not been developed. A study on human resource development was completed in 2011. A policy document with strategies based on this study is yet to be developed.

8. It is pointed out that the main reasons for the deterioration of the health system are a segmented policy-implementation link and network of PHC and hospital services caused by decentralization. After the transfer of authority from the central government to provinces and lower levels, the policy of the National Department of Health (NDoH) increasingly fails to be reflected in the budget and activities of local governments. It has also become unclear who exactly is responsible for the implementation of the policy and health service delivery. Hospitals became autonomous bodies, which resulted in further weakening of the health service network. The NDoH issued the “National Health Administration Act” in

1997 and "Minimum Standards for District Health Services" in 2001 for rebuilding the health administration and service network.

9. Health sector funds have not been sufficiently allocated to health facilities in provinces, causing deterioration of service delivery. A new fund flow by development partners has been discussed and with government efforts, the general expenditure budget for provinces has been increased. However more efficient fund allocation and fund flow mechanisms are needed.

10. The NDoH is making efforts to strengthen the health system through the establishment and rollout of Provincial Health Authorities (PHA) along with a PHA Act declared in 2008. The introduction of an integrated fund flow to provinces, integration of health services in the province, etc. has been planned. Pilot projects of PHA are ongoing in three provinces.

11. Sector reform is being carried out by the Sector-wide Approach (SWAps) in the health sector. Efficient fund allocation to provinces, districts and health facilities and fund flow mechanism have been reviewed and supported. The sector development will be driven by SWAps in the future. The health SWAps review of 2011 recommends the transition from a pool fund to sector budget support (SBS).

12. As per the direction of Japanese assistance, support for human resource development is considered to be the first priority in the health sector. Support for the training of health personnel and for the development of an integrated management system for human resources for health is needed.

13. In order to strengthen the PNG health system, support for the "various inputs" (training of human resources, drugs and medical supplies, vaccines, medical equipment and IT equipment) should be considered. Besides, support for development /establishment of management and information systems (facilities and equipment management system, procurement and supply management system of drugs and medical supplies, mechanisms of utilization of health information, etc.) is also recommended. Support for capacity building in system development, maintenance and updating of systems is needed too, particularly at local government levels including the PHA staff.

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Chapter 1 Country Situation

The Independent State of Papua New Guinea (hereafter called Papua New Guinea or PNG) is the one of the largest countries among the Pacific Islands, with the largest population and richest natural recourses [1]. The country however has not seen any improvement of its social development indicators in over two decades and lags behind even compared to poor neighboring countries [2]. The country is in danger of failing to reach almost all indicators of Millennium Development Goals (MDGs) by 2015 [3]. Table 1-1 shows the major social development indicators of Papua New Guinea.

Table 1-1 Major Social Indicators in Papua New Guinea

Indicators	PNG	Year	East Asia and the Pacific developing countries	Year
Population (thousands)	6,858	2010	1,961,558	2010
Population growth (annual %)	2.3	2010	0.7	2010
Life expectancy at birth (years)	62.4	2010	72.2	2010
GDP growth (annual %)	8.0	2010	9.7	2010
GDP per capita (US$)	1,382	2010	3,890	2010
Poverty gap at $1.25 a day (PPP) (%)	12.3	1996	3.4	2008
Total enrollment, primary (net %)	65.1	1990	94.4	2007
Literacy rate, adult total (% of people ages 15 and above)	60.1	2009	93.5	2009
Improved water source (% of population with access)	40.0	2010	89.9	2010
Improved sanitation facilities (% of population with access)	45.0	2010	65.5	2010
Human Development Index (rank of 187 countries)	153	2011	—	—
Gender Inequality Index (rank of 187 countries)	140	2011	—	—

Sources: 1. World Data Bank (Online 2012), WDI & GDF [4]
2. UNDP (2011) Human Development Report 2011 (UNDP) [5]

Geographically, biologically, ethnically and culturally, Papua New Guinea is one of the most diverse countries in the world. Around 800 languages are spoken, each language group having distinct tradition and culture and there are large socio-cultural differences between and within provinces. 87% of country’s population lives in rural areas widely scattered in islands, coastlines to mountains. These areas are not linked by roads so it is not easy to access [5]. Also a high Gender Inequality Index (GII) with a difficulty of access to universal education would hamper to the access to health services and changes in sexual behavior.

An economic growth since 2003, have achieved a positive growth by leading strong exports. On the other hand, 87% of country’s population depend on subsistence agriculture and fishing, however their double-structured between money economy in cities and subsistence economy in rural made it one of most poor countries. In addition it hoped that exporting liquid natural gas (LNG) by a large scale of LNG mining project would sure to bring a big impact to economy and an opportunity to develop a future economics.

There are many development challenges for Papua New Guinea. Among them translating strong macroeconomic performance and extractive industry revenues into a broad improvement in living standards and public services is the key challenge for PNG.

Chapter 2 Development Policies and Plans

2.1 National Development Policy

The Government of PNG in November 2009 announced its "National Vision 2050", in which it stated to strive to be among the top 50 countries in the Human Development Index by 2050. Based on that framework, a long term development strategy called "The Development Strategic Plan2010-2030 (DSP)" was developed. The "Mid-Term Development Plan 2010-2015 (MTDP)" was published to clarify specific plans in the priority areas.

The goal of DSP in terms of the health sector is "to achieve an efficient health system which can deliver an internationally acceptable standard of health services", and strategy for achieving the targets under this goal is a complete transformation of the health system. The DSP states that cross-cutting issues such as population and HIV/AIDS policies require efforts in other sectors besides health sector and coordination with various stakeholders in order "to achieve a population growth rate that is sustainable for society, the economy and the environment" and "to achieve a healthy population free from sexually transmissible infections and HIV/AIDS threats."

According to the MTDP, the government, in order to improve maternal and child health and to reduce the burden of communicable diseases in health sector, in the first five years will bring its Primary Health Care (PHC) "back to basics". This means the government will focus on the rehabilitation of health facilities including aid posts, the introduction of community health posts as a trial and improvement storage, procurement and distribution of drugs as well as vaccines and medical equipment. The activities will be supported by provincial health authority (PHA) reforms. In addition, it is planned to upgrade regional hospitals in four Regions to specialized hospitals. In order to implement these plans, securing human resources, especially physicians, nurses, and community health workers (CHW), is considered as crucial. Besides inadequate infrastructure and access to health facilities, the MTDP also points out the lack of quality monitoring data, cultural and traditional obstacles, and systematic as well as institutional capacity problems among implementing agencies as issues hamper interventions in HIV/AIDS. The MTDP insists that in regards to the population sector, communication, coordination and collaborations between sectors should be continuously enhanced for effective implementation.

2.2 Health Sector Development Plan

The "National Health Plan 2011-2020" (NHP), developed in 2010, has linked the national development vision, strategies and plans. The goal of NHP is "strengthened primary health care (PHC) for all and improved service delivery for the rural majority and urban disadvantaged". In order to achieve the goal, the health system requires a "back to basics" approach in the first ten years of the national vision. The keywords of development are "Primary Health Care (PHC)", "Health System" and "Good Governance."

The NHP's main target groups are the rural majority and urban disadvantaged. The top priority is service delivery through a strengthened PHC system, and the strategies for achieving NHP goal is strengthening of health system and governance. The biggest challenge in strengthening the health system is human resource

development, especially since there is no comprehensive sector policy for human resource for health. The NHP does not adequately incorporate a human resource development plan, neither the necessary fund resources. Table 2-1 shows Key Result Areas and Objectives of the NHP. The specific numerical targets are taken from the MTDP.

Table 2-1 Key Result Areas and Objectives of the National Health Plan (NHP) 2011-2020

Key Result Areas	Objectives
1. Improve Service Delivery	1-1. Increased access to quality health services for the rural majority and the urban disadvantaged 1-2. Rehabilitated and strengthened primary health care infrastructure and equipment 1-3. The right health professionals work in the right places, are motivated, and deliver right (quality) services 1-4. Hospital infrastructure is rehabilitated
2. Strengthen Partnerships and Coordination with Stakeholders	2-1. The National Public Private Partnerships Policy is implemented, and innovative and cost-effective options for delivering services introduced 2-2. Expanded partnerships with resource developers, private health care providers, churches, and NGOs in rural (remote) areas and urban settlements 2-3. The health sector works collaboratively with all stakeholders to expand the reach of quality health services 2-4. The health sector coordinates and monitors the implementation of the National Health Policy
3. Strengthen Health Systems and Governance	3-1. The health sector coordinates and monitors the implementation of the National Health Policy. 3-2. Quality workforce provided, capable of meeting the health needs into the future 3-3. Medical supply procurement and distribution services are efficient and accountable 3-4. The health sector proactively identifies and uses innovative and evolving ICT solutions and delivers accurate and timely information for planning and decision making 3-5. Improved leadership, governance, and management at all levels of the health system 3-6. Strengthen health sector management and system capacity across Papua New Guinea
4. Improve Child Survival	4-1. Increase coverage of childhood immunization in all provinces 4-2. Reduce case fatality rates for pneumonia in children through acceleration of roll-out of Integrated Management of Childhood Illnesses (IMCI) to all provinces. 4-3. Decrease neonatal deaths 4-4. Reduce malnutrition (moderate to high) in children under the age of five years
5. Improve Maternal Health	5-1. Increase family planning coverage 5-2. Increase the capacity of the health sector to provide safe and supervised deliveries 5-3. Improve access to emergency obstetric care (EOC) 5-4. Improve sexual and reproductive health for adolescents
6. Reduce the Burden of Communicable Diseases	6-1. Reduce malaria-related morbidity and mortality in Papua New Guinea 6-2. Control tuberculosis (TB) incidence by 2020, with a decline in cases of multi-drug resistant tuberculosis (MDR-TB) 6-3. Scale up prevention, treatment, care, and support for sexually transmitted infections (STIs) and HIV to meet universal access targets 6-4. Strengthen communicable disease surveillance and monitoring
7. Promote Healthy lifestyles	7-1. Increase health sector response to prevention of injuries, trauma, and violence with an impact on families and the community 7-2. Reduce the number of outbreaks of food and water-borne diseases 7-3. Increase individuals' and communities' involvement in their own health 7-4. Reduce morbidity and mortality from non-communicable diseases
8. Improve Preparedness for Disease Outbreaks and Emerging Population Health Issues	8-1. Increase capacity of the health sector to identify, monitor, and report on urgent and emerging health threats 8-2. Increase capacity of the Central Public Health Laboratory (CHPL) to provide services to meet urgent and emerging concerns 8-3. Improve capacity and preparedness of the health sector to address the impacts of climate change 8-4. Ensure the health sector works collaboratively to manage population health threats related to the growing resources boom

Source: NDoH (2010) National Health Plan 2011-2020, Vol.1 [6]

Table 2-2 Targets of the Mid-Term Development Plan (MTDP) 2011-2015

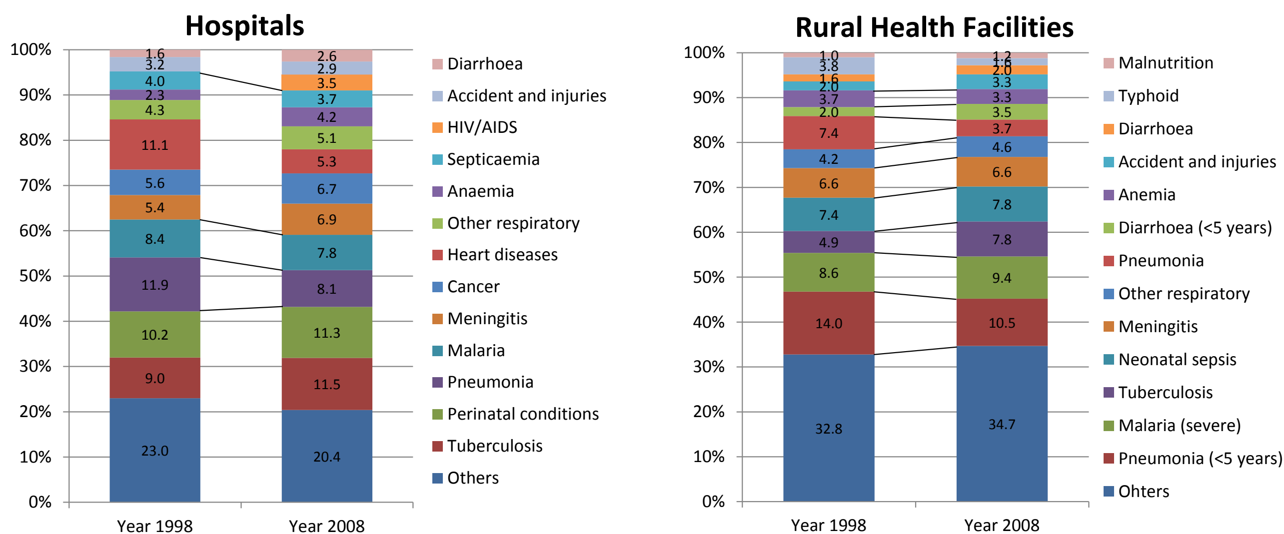
Indicators	Baseline	2015 Target	2020 Target
Life expectancy (years) (Males) (Females)	57	62.2 62.7	64.2 64.7
Infant mortality rate（per 1000 live births）	57	43	35
Under 5 mortality rate（per 1000 live births）	75	56	44
Maternal mortality ratio（per 100,000 live births）	733	500	360
Proportion of underweight children under 5 years of age	28	26	24
Incidence of malaria (cases per 1000 population)	230	210	190
Case fatality rate of pneumonia (children under five) (%)	3	2.9	2.7
Proportion of population with access to affordable essential drugs on a sustainable basis (%)	75	78	80
Prevalence rate of HIV (%)	0.96 (estimation)	＜0.9	＜0.5
Orphan children due to AIDS	5,995 (estimation)	4,000	3,000

Source: DoNP&M (2010) Papua New Guinea Medium Term Development Plan 2011-2015 [7]

Chapter 3 Health Status of the People

3.1 Overview

The comparison of the causes of mortality by facilities in 1998 and 2008 is shown in Figure 3-1. The causes of mortality in health facilities are pneumonia, communicable diseases (tuberculosis, malaria, etc.) and diseases related to perinatal infection are major causes in both hospital and PHC facility in 2008, and there is no large shift observed between 1998 and 2008.



Source: Ian Riley, Demography and the epidemiology of disease in Papua New Guinea, PNG Med. J. 2009 [8]

Figure 3-1 Leading Causes of Mortality in Hospitals and Rural Health Facilities

The percentage of cases of noncommunicable diseases (NCDs) is relatively small. The cases of injuries accounts for 8 % of total inpatients and 11 % of the total national burden of diseases of the nation. It is assumed that most cases are caused by accidents and violence; however background information is not well maintained [6]. Lifestyle related diseases such as diabetes mellitus, cardiovascular diseases and cancers are on the rise in urban areas and increasingly must be considered a problem[8] [6].

Table 3-1 Progress Towards Achievement of MDGs 4, 5 and 6 in the Health Sector

	Indicators	1990	2000	Latest（Year）		National Targets in 2015
4-1	Under 5 mortality rate (per 1,000 live births)	90	92	74	(2007)	56
4-2	Infant mortality rate (per 1,000 live births)	65	64	54	(2007)	43
4-3	1 year-old children immunized against measles (%)	67	62	58	(2010)	73
5-1	Maternal mortality ratio (per 100,000 live births)	340	290	733	(2006)	500 *[1]
5-2	Births attended by skilled health personnel (%)	53	41	40	(2009)	54
5-3	Contraceptive prevalence (% of women aged 15-49)	NA	NA	32	(2006)	40
5-4	Adolescent birth rate (births to women aged 15-19 per 1,000 women)	NA	72.8	64.9	(2009)	
5-5a	Antenatal care coverage (%), at least one visit	NA	NA	59	(2009)	70
5-5b	Antenatal care coverage (%), at least four visit	NA	NA	55	(2009)	(index is unset)

8 It is said that the increase of lifestyle-related diseases and cancers in urban areas are underestimated due to poor diagnostic facilities.

	Indicators	1990	2000	Latest（Year）		National Targets in 2015
5-6	Unmet need for family planning, total （% of married or union women aged 15-49）			27	(2006)	25
6-1a	HIV Prevalence (% of population aged 15-49)	0.01	0.12	0.07	(2009)	(under control)
6-1b	HIV Prevalence (% of population aged 15-24)	NA	0.4	0.9	(2009)	<0.9 (under control)
6-6a	Incidence of malaria (new cases per 1,000 population)	NA	NA	230	(2009)	210 (under control)
6-6b	Malaria death (per 100,000 population)	NA	NA	36	(2008)	
6-7a	Children under-5 sleeping under ITB*2 (%)	NA	NA	40	(2009)	90
6-8	Children under 5 with fever who are treated with anti-malarial drugs (%)	NA	NA	22	(2009)	80
6-9a	Incidence of tuberculosis (new cases per 100,000 population)	250	250	250	(2008)	(under control)
6-9b	Prevalence of tuberculosis (per 100,000 population)	523	306	337	(2009)	
6-9c	Tuberculosis death (per 100,000 population) (excluding HIV infected)	69	18	26	(2009)	
6-10a	Tuberculosis new sputum-positive case detection rate (%)*3	NA	NA	31	(2009)	60
6-10b	Rate of successfully treated sputum-positive tuberculosis cases (%)*3	NA	NA	64	(2008)	75

Note. *1. "500" is based on 733, the result of DHS 2006. The UN agencies use this figure of 250 since the survey method of DHS is not reliable. There is no possibility of achieving the international target of 85 set for the MDG.

*2. ITB: Insecticide-treated Bed nets

*3. Indicators for MDG of tuberculosis control are "new cases detected and patients successfully treated under DOTS". In Papua New Guinea, however, cases examined by sputum tests are counted not limited to the cases "under DOTS".

Sources: 1. Papua New Guinea Medium Term Development Plan 2011-2015, DoNP&M, 2010 [7]
2. United Nations, MDGs Indicators Database [9]
3. World Data Bank, HNP Stats [10]
4. UNICEF, ChildInfo [11]

According to 2008 World Bank Health Nutrition Population Statistics (HNP Stats), communicable diseases/perinatal conditions/malnutrition, NCDs and injuries are estimated to account for respectively 47.0%, 43.6% and 9.3% of total causes of death in East Asian and Pacific developing countries [10].

In PNG, during the past thirty years, the improvement of social development indicators has been limited. The second MDG progress survey report (2009) assessed that achievement of MDGs including health sector MDGs by 2015 would be difficult. As a result, national MDGs targets, which are more modest and feasible, are set separated from the international MDGs [3].

3.2 Maternal and Child Health

3.2.1 Maternal Health

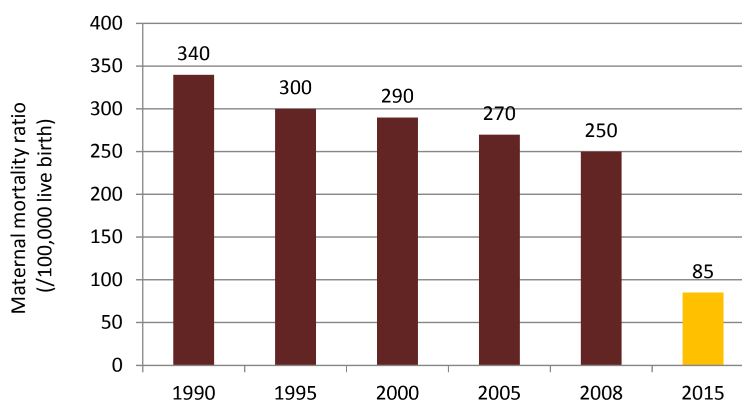
Maternal mortality ratio (MMR) varies according to different surveys and reports, but are all high compared to neighboring countries (Table 3-2) and improvement has been slow since 1990 (Figure 3-2). It is a far cry from achieving the international target of MDG (=85). MMR improvement is therefore a major concern for the National Department of Health (NDoH) and development partners. The demographic and health survey (DHS) in 2006 showed a MMR of 733, almost double of the statistics in the previous 1996 DHS. This

suggests that the situation has been getting worse, but this is not the case for all Regions.[9] There are large statistical differences between the Regions and there is a significant rural-urban gap. The MMR in Highland and Mommas Regions is the highest. It has also been determined that education and maternal health are closely related: the lower the mothers' education, the higher the MMR [12].

Table 3-2 Maternal Mortality Ratio (MMR) Comparison with Neighboring Countries

Country	MMR	(Year)
Papua New Guinea	250	(2008) [1]
Fiji	27.5	(2009) [2]
Samoa	3	(2005-2006) [2]
Solomon islands	103	(2007) [2]
Vanuatu	86	(2007) [2]
East Asia and Pacific developing countries	88.7	(2008) [3]

Sources: 1. Reproductive Health at a Glance: Papua New Guinea, the World Bank, April 2011 [13]
2. Country Health Information Profiles (CHIPs): Papua New Guinea, WHO, 2011 [2]
3. World Data Bank (Online 2012), WDI & GDF [4]



Source: Reproductive Health at a Glance: Papua New Guinea, the World Bank, April 2011 [13]

Figure 3-2 Trend in Maternal Mortality Ratio (1990-2008)

The burdens and risks during the perinatal period and delivering are strongly contributing to women's health status. However decline of a total fertility rate (TFR)[10] is slow compared to other developing countries. The DHS (2006) reported there was a big gap between actual number of children and that women wanted ("wanted TFR" is 3.0 and actual TFR 4.4) [12][14].

9 UN agencies use the estimated figure of 250, as the mentioned number is considered unreliable due to survey methods.

10 TFR is the sum of the age-specific-birth rates of women in their child-bearing age (usually 15-49). It is considered to be the average number of children that would be born to a woman over her lifetime.

Table 3-3 Trend in Total Fertility Rate (TFR) and Comparison with Neighboring Countries

Country ＼Year	1990[1]	1995[1]	1996[2]	2000[1]	2005[1]	2006[2]	2010[1]
Papua New Guinea	4.8	4.7	4.8	4.6	4.2	4.4	4.0

Country	TFR	(Year)
Papua New Guinea	4.0	(2010)[1]
Fiji	2.6	(2003)[3]
Samoa	4.2	(2006)[3]
Solomon	4.6	(2004-2007)[3]
Vanuatu	4.0	(2005-2010)[3]
East Asia and Pacific developing countries	1.8	(2010)[1]

Sources: 1. World Data Bank (Online 2012), WDI & GDF [4]
2. Ministerial Taskforce on Maternal Health in Papua New Guinea: Report, NDoH, May 2009 [15]
3. Country Health Information Profiles (CHIPs): Papua New Guinea, WHO, 2011 [2]

3.2.2 Child Health

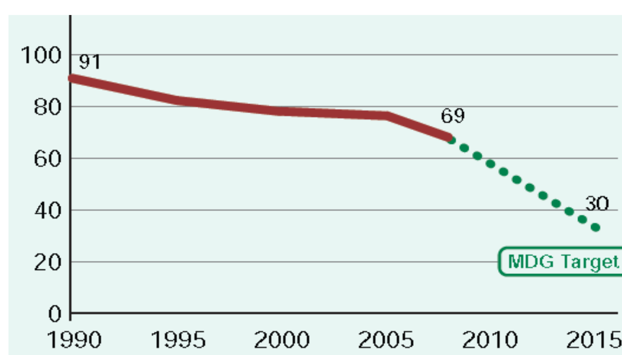
Both infant mortality rate (IMR) and under-5 mortality rate (U5MR) are declining gradually, however the improvement is very slow and the rates are very high compared to neighboring countries. The proportions of neonatal mortality in child mortality are high (accounting for 39% of U5MR and 50% of IMR). There is a big gap between urban and rural areas, Regions and mothers' education level. (Table 3-4, Figures 3-3 and 3-4).

Table 3-4 Trends in Childhood Mortality and Comparison with Neighboring Countries

Papua New Guinea	1990[1]	1995[1]	1996[2]	2000[1]	2005[1]	2006[2]	Latest year
Neonatal mortality rate (per 1000 live births)	30	28		27	25	29.1	23 (2010)[1]
IMR (per 1000 live births)	65.3	60.0	57	55.4	51.1	56.7	46.9 (2010)[1]
U5MR (per 1000 live births)	89.5	81.2		73.9	67.2	74.7	60.8 (2010)[1]

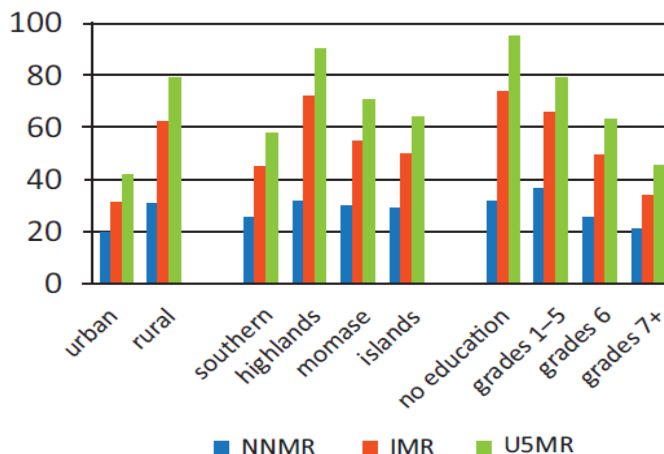
Country	Neonatal mortality rate	Latest year	IMR	Latest year	U5MR	Latest year
Papua New Guinea	29.1	(2006)[2]	46.9	(2010)[1]	60.8	(2010)[1]
Fiji	9.9	(2009)[3]	15.2	(2009)[3]	23.2	(2009)[3]
Samoa	4.2	(2002)[3]	9	(2009)[3]	15	(2009)[3]
Solomon	15	(2009)[3]	26	(2009)[3]	37	(2009)[3]
Vanuatu	30	(2006)[3]	27	(2008)[3]	31	(2008)[3]
East Asia and Pacific countries	NA		19.9	(2010)[1]	24.3	(2010)[1]

Sources: 1. WDI & GDF World Data Bank (Online 2012), WDI & GDF [4]
2. Ministerial Taskforce on Maternal Health in Papua New Guinea, Report", NDoH, 2009 [15]
3. Country Health Information Profiles (CHIPs): Papua New Guinea, WHO, 2011 [2]



Source: Countdown to 2015: Maternal, Newborn & Child Survival, Country Profile-Papua New Guinea, Mar. 2012 [16]

Figure 3-3 Trend in Under-five Mortality Rate

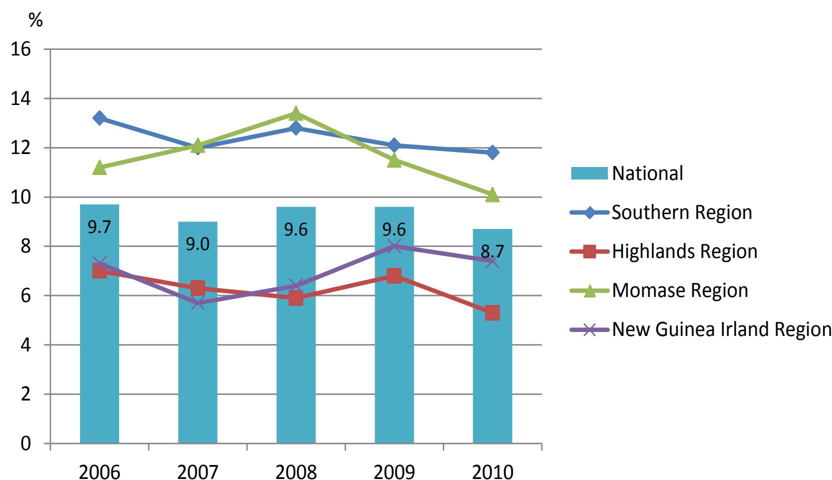


Source: National Health Plan 2011-2020, Vol.1, NDoH, 2010 [6]
(This table is made according to the data in DHS 2006)

Figure 3-4 Childhood Mortality by Rural-urban, Regions and Mother's Education

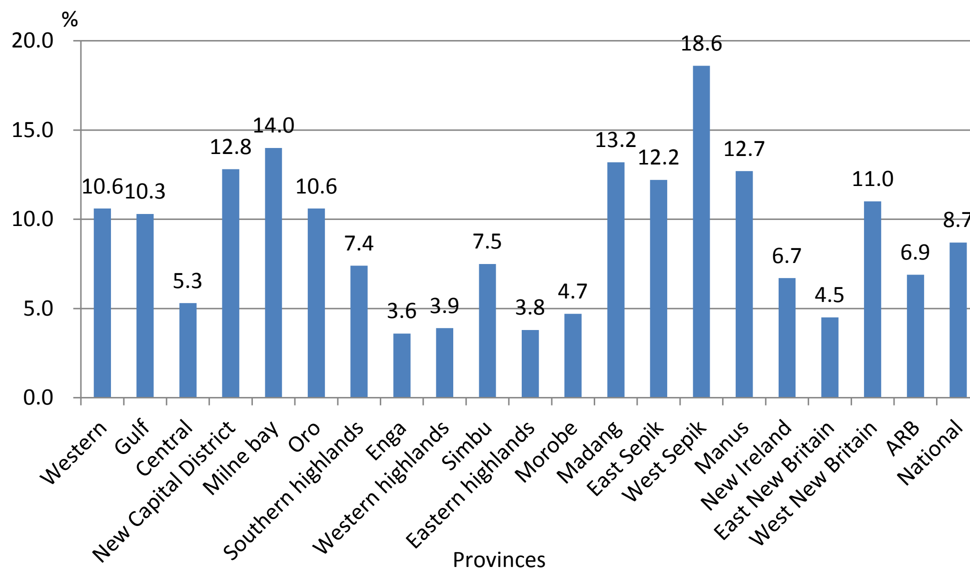
Acute respiratory infection, particularly pneumonia (23%), meningitis and septicemia (11%), malaria (7%), perinatal conditions (25%), low birth weight, birth asphyxia, sepsis and tuberculosis (4%), intestinal infection (5%) and AIDS are the most common causes of child deaths reported to the National Health Information System (NHIS). In the past ten years, the proportion of AIDS deaths has increased significantly. Malnutrition too is a major factor contributing to child death. In studies in Goroka province and in the capital moderate or severe malnutrition was an underlying factor in two-thirds of all child death. Sepsis is the most common cause of neonatal death which accounts for almost half of IMR. Many cases of the sepsis are caused by umbilical cord infection, which mostly occurs in rural areas [17].

Low birth weight (under 2500g) was 8.7% in 2010, higher than the average of East Asia and the Pacific developing countries (6%). In 2010 it was low compared to the past five years, however there is no trend of improvement. There is a large gap between the provinces, the highest being 18.6% and the lowest 3.6% (Figures 3-5 and 3-6) [18].



Source: 2011 Sector performance annual review, Assessment of sector performance 2006-2010, National report, NDoH [18]

Figure 3-5 Trend in Low Birth Weight (less than 2500g) (%) by Regions



Source: 2011 Sector Performance Annual Review - Assessment of Sector Performance 2006-2010, National Report, NDoH [18]

Figure 3-6 Low Birth Weight (less than 2500g) (%) by Provinces (2010)

3.2.3 Malnutrition

According to the National Nutrition Survey (2005), more than a half of children under 5 years suffer from some degree of malnourishment. Ratios of underweight, moderate or severe stunting, moderate or severe wasting are 18%, 44% and 5 % respectively [19]. The percentages of children with stunting and with wasting are particularly high in children aged 0-1, and higher in rural areas than in urban areas. Among the Regions, the percentage of malnourished children is highest in Momase Region. Serious malnutrition (marasmus and kwashiorkor) accounts for more than 5% of hospitalized pediatric patients [17].

According to the sector performance review in 2011, the percentage of underweight (fewer than 80% of the expected weight for age) children under 5 years has not improved in the last 5 years (29% in 2006 versus 28% in 2010). A big gap between provinces is also shown in the review.

3.3 Communicable Diseases

Malaria, skin diseases, cough, pneumonia, diarrhea and other respiratory diseases are the leading causes of morbidity (2007-2008). Malaria has been spreading nationwide and is now reported in all provinces. Regarding the causes of hospital admission, the most common cause is acute respiratory infection (ARI), in particular pneumonia, and the second is malaria. Diarrhea is a major cause of both outpatient visits and hospital admission. In 2009 a cholera outbreak was reported, which has not been seen for nearly 50 years in the country. Tuberculosis (TB) consumes 13% of hospital bed days, which is more than for any other illness with exception of obstetric cases. There are a number of issues such as increasing multi-drug resistant TB and co-existence of HIV, as well as warring level of defaulting from the treatment program. HIV has spread throughout the country and is mostly transmitted by heterosexual transmission. These communicable

diseases account for more than 54% of causes of deaths in PHC facilities[11]. Perinatal death accounts for 11% of causes of deaths in hospitals [6].

The government has achieved the national goal of eradication of leprosy (one case per 10,000 population) and declared the eradication of polio in 2000. However, the immunization rate is low and control of communicable diseases such as respiratory tract infection, diarrhea, meningitis, malaria, TB, HIV/AIDs, etc. is still the biggest challenge in the health sector.

3.3.1 HIV/AIDS

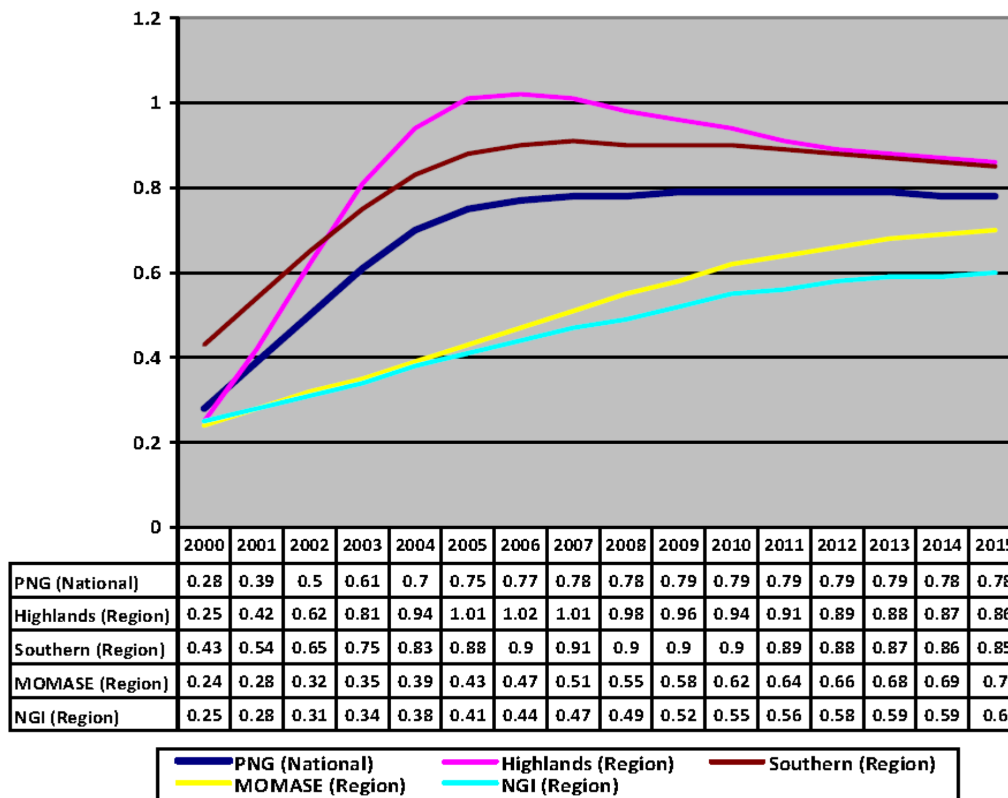
Since the first HIV positive case was reported in PNG in 1987, HIV prevalence has increased rapidly, both in urban and rural areas. In 2004 PNG was declared to have a generalized HIV/AIDS epidemic by WHO. In 2009 the number of HIV infections has more than doubled compared to 2001.

A study conducted in 2006 estimated that the number of HIV infections would be 500,000 and prevalence of HIV over 10% by 2025. However in 2011, according to a new model for estimating HIV prevalence, it was found that the epidemic in PNG is not like the one in African countries. The HIV prevalence in adults (15-49 years) at the national level remains unchanged with its peak at 0.8% in 2009 and was projected to remain at 0.8% in 2015 (Figure 3-7). According to the same study, people living with HIV was 31,421 (27,385～36,312), or about 5% of the total population, in 2010. Another study estimated the adult HIV prevalence to be 0.85% in 2010, and to be slightly increasing to 1.0% by 2015 [20].

Looking at the HIV prevalence by Regions, the disease is increasing rapidly in New Guinea Islands and Momase Regions (Figure 3-7). The HIV prevalence among women attending antenatal care in the capital’s general hospitals has also increasing rapidly. HIV prevalence among the 15-24 years old population, reflecting a trend of newly infected cases, also increased [18].

The major route of transmission is heterosexual transmission (91.1% of total in 2009), and the epidemic situation of HIV/AIDS is a generalized one. Therefore prevention and treatment among the general population is required. On the other hand the prevalence of HIV in high risk groups12 is very high: a small survey conducted in the capital city showed that a HIV positive rate is 17.8% among all sex workers and 19% among female sex workers, which indicates that a “concentrated” type of epidemic exists at the same time [20].

[11] Aid posts and health centers
[12] Female sex worker, male sex worker and men who have sex with men (MSM)



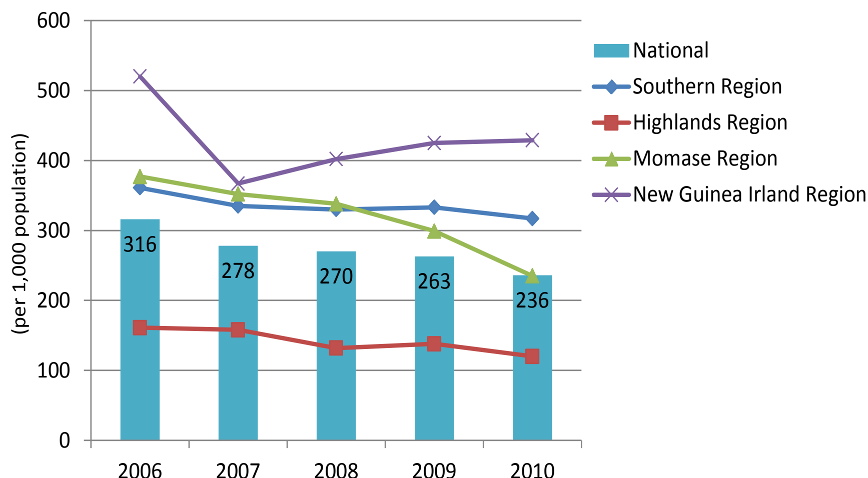
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
PNG (National)	0.28	0.39	0.5	0.61	0.7	0.75	0.77	0.78	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78
Highlands (Region)	0.25	0.42	0.62	0.81	0.94	1.01	1.02	1.01	0.98	0.96	0.94	0.91	0.89	0.88	0.87	0.86
Southern (Region)	0.43	0.54	0.65	0.75	0.83	0.88	0.9	0.91	0.9	0.9	0.9	0.89	0.88	0.87	0.86	0.85
MOMASE (Region)	0.24	0.28	0.32	0.35	0.39	0.43	0.47	0.51	0.55	0.58	0.62	0.64	0.66	0.68	0.69	0.7
NGI (Region)	0.25	0.28	0.31	0.34	0.38	0.41	0.44	0.47	0.49	0.52	0.55	0.56	0.58	0.59	0.59	0.6

Source: Global AIDS Report 2012, Country Progress Report, Papua New Guinea Jan. 2010 - Dec. 2011, Submitted on 30 Mar. 2012 [20]

Figure 3-7 Trends and Projection of HIV Prevalence (%) in Adults (15-49 years old) by Regions

3.3.2 Malaria

In PNG, malaria is the first leading cause of outpatient visits, the fourth leading cause of hospital admission and the third leading cause of deaths (2008). There are hyper endemic malaria areas, endemic malaria areas and epidemic malaria areas in the country, and malaria is seen even in Highland Regions that were malaria-free areas before. It affects all age groups, but is most lethal in children and with serious consequences in pregnancy. Although the incidence of malaria steadily declined in the past ten years by the malaria control program funded by the Global Fund [6], it is increasing in New Guinea Islands Region particularly in New Ireland province and West New Britain province since 2007 as shown in Figure 3-8 [18]. Drug resistant to first line treatment regimens for malaria has increased to such a level that the country must roll out a new Artemisinin-based combination therapy (ACT) based first line treatment protocol [21].

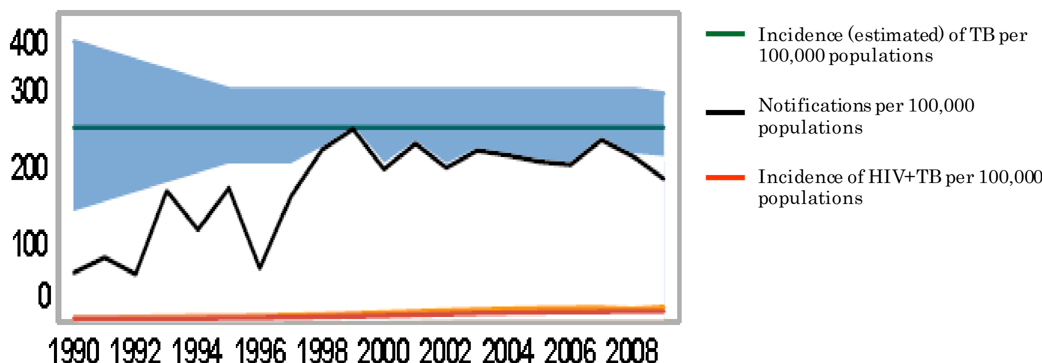


Note: The rate of diagnosed malaria in health centers/hospitals in the districts during the year, expressed as a ratio for every 1000 people in that district. Since the number is based upon clinical diagnosis, not RDT or microscopy, it may be over-diagnosed.
Source: 2011 Sector performance annual review, Assessment of sector performance 2006-2010, National Report, NDoH [18]

Figure 3-8 Trends in Malaria Incidence (per 1000 population) by Regions

3.3.3 Tuberculosis

Tuberculosis (TB) is the fourth leading cause of deaths in hospitalized patients and 7.9% of all hospital deaths are caused by TB in 2008. The number of deaths by TB reported by hospitals has been steadily increasing, from 427 in 2001 to 801 in 2008. According to WHO estimates, around 3,600 people die from TB every year [24].



Source: Tuberculosis Country Profile, Papua New Guinea, WHO, 2011 [23]

Figure 3-9 Trends in Tuberculosis (TB) Incidence and Notifications (per 100,000)

The numbers of newly notified TB cases are 10,688 (182 per 100,000 population) in 2009 and 12,637 (209 per 100,000 population) in 2010, and there is no rapid increase and decrease in the number after 2000 [18]. The estimated incidence of TB has not declined from 250 since 1990. Prevalence of TB (per 100,000 population) has fallen from 523 in 1990 to 306 in 2000, but since then a small increase has been observed (337 in 2009) (Figure 3-9) [9].

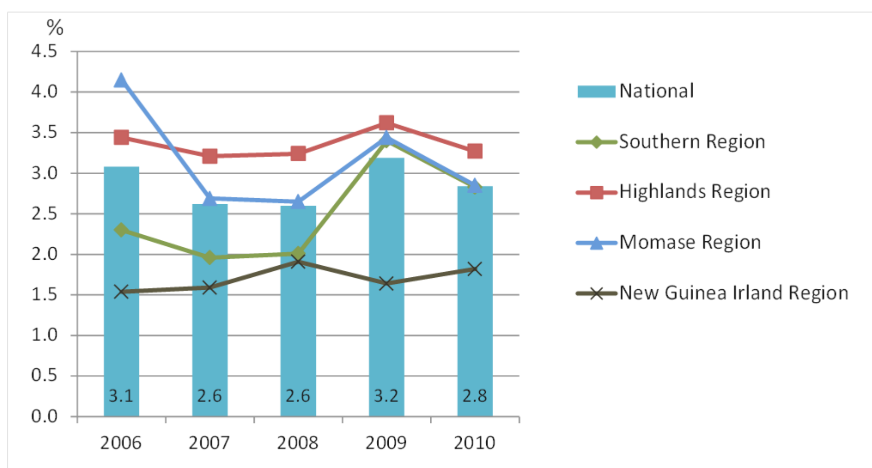
Geographically, one-fourth of new smear positive cases of TB have been reported in the National Capital District and the number is rapidly increasing. One of the reasons for this relatively high incidence is population inflow into the capital with newcomers settling in highly populated settlements with poor sanitary condition. Almost 30% of TB cases are reported amongst the under 15 age group, which indicates that an active transmission of TB is ongoing [24].

Spread of HIV infection made the population susceptible to infection with reduced immunity to TB increased and it made TB control more difficult. In 2009, 15% of TB patients were HIV-positive. More than 30 cases of multidrug-resistant TB have been confirmed from the fourth quarter of 2008 to June 2010. The expansion of the program against drug-resistant TB is required [24].

3.3.4 Respiratory Tract Infection (pneumonia) and Diarrheal Diseases

In PNG, pneumonia is the third leading cause of morbidity and the top leading cause of hospital admission. Especially pneumonia under 5 years is the first leading cause of death in hospitalised patients in rural health facilities.

The percentage of deaths caused by pneumonia among children under 5 years in health centers is 3.1% in 2006 and 2.8% in 2010, but there is no improvement trend. There are large regional differences; generally New Guinea Island Region shows low results (Figure 3-10). There are also large differences between provinces.



Source: 2011 Sector performance annual review, Assessment of sector performance 2006-2010, National report, NDoH [18]

Figure 3-10 Case Fatality Rate of Pneumonia in Children Under Five Years at Health Centers by Regions

Diarrheal disease accounts for a large percentage of disease in both outpatients and inpatients. The incidence in children under 5 years (per 1,000) shows an increased tendency in the period 2006 (186) to 2010 (276).

3.4 Other Health Issues

3.4.1 Lymphatic Filariasis

PNG is an endemic area for lymphatic filariasis. The Global Program to Eliminate Lymphatic Filariasis (GPELF) has been deployed in the endemic areas by WHO. It is known for its successful mass drug administration (MAS) which reduced incidence to less than 1 % in many countries in Oceania. However, in PNG, the program failed to achieve sufficient coverage in previous MAS, mainly due to a lack of financial and human resources[13] [25].

[13] JICA granted anthelminthics (diethylcarbamazine:DEC) and immuno-chromatographic test (ICT) kits as communicable disease control special equipment in 2000 and 2011. In 2012-14, JICA plans to grant ICT kits only.

3.4.2 Noncommunicable Diseases (NCDs)

In urban areas the incidence of NCDs are rising due to changes in life styles and eating habits. The health information and surveillance system of PNG however does not have correct data on NCDs, because of which a clear picture of NCDs is lacking. According to WHO estimates in 2008, deaths per 1000 by NCD is 11.1 for women and 9.1 for men. The deaths caused by NCDs are 44% of all total deaths, and the most common NCDs are cardiovascular diseases, diabetes and cancers (oral cancer, liver cancer and cervical cancer) [27].

3.4.3 Injury

Another major health concern in PNG are injuries, which account for 8% of total admissions and 11% of total burden of disease in the country. It is estimated that death by injury accounts for 9.3% of total deaths (2008). Many of them are considered to be related to road accidents and different forms of violence, but there is scarce information on causes and determinants of injuries [6]. It is suspected that there is a high incidence of gender-based violence in the country.

3.4.4 Hygiene and Environment

The residential environment (such as residential density and water and sanitation facilities) can be an important factor in the prevention and spread of infectious diseases. Poor living environment and sanitation are also important contributing factors to the health of vulnerable groups in urban poor areas [6].

The percentage of population with access to safe drinking water was 40% (urban 87%, rural 33%) in 2010. This means there is no improvement since 1990 when 41% had access to safe drinking water (urban 89%, rural 32%). The percentage of population with access to improved sanitation facilities is 45 % (urban 71%, rural 41%) in 2010 and has not increased over the past 20 years as well (47% in 1990, 46 % in 2000). The access levels are decreasing specially in urban areas [28].

Chapter 4 Health Services

4.1 Organization of Health Services and Delivery System

The general summary of health service delivery system in PNG is shown in Table 4-1. The health service delivery system is generally weak. It faces problems such a lack maintenance of facilities, closed aid posts, insufficiency and uneven distribution of human resources, lack of medicines and medical supplies, service network segmentation and lack of management capacity at provincial and district levels (see also Chapter 5).

Table 4-1 Health Service Delivery System in Public Sector

Administrative level (No.)	Type of facility*1	No. of facilities	Health personnel/ Supporter
Central /Regions (4)	University teaching hospital Regional hospitals	1 in capital 3 (public) + 4 (private, church)	doctors, nurses, other medical technicians
Provinces (22)	Provincial hospitals	19 1 in each province excluding capital province and newly established provinces	doctors, nurses, other medical technicians
Districts (89)	District hospitals		doctors, HEOs*2, nurses, other medical technicians
LLGs (284) Wards (5,747)	Urban clinics Health centers + sub-centers	52 687 (including the ones run by churches)	HEOs, nurses, community health workers (CHWs), laboratory technicians
	Aid post	2,740 (30% is closed)	aid post orderlies or community health workers (CHWs)
Communities	Outreach Home visit /home-based care		Peer educators, rural health aids, midwives/community midwives, village health volunteers (VHV), medicine women (Marasin Meri)

Note. *1. ➡ Flow of referral system. Health centers have facilities to hospitalize patients.

*2. HEO: Bachelor holders in Health Science in community health (4-year higher education). In 1960s, HEO was introduced as a substitute for medical assistants, and they contributed to PHC service delivery. Recently HEOs have been nurtured as a chief of health center but in many cases, they work merely as an administrative clerk.

Source: 1. NHP 2011-2020, Vol.1 [1], Vol.2 (Part B), Reference Data and National Health Profile, 2010 [29]
2. Strategic Di rections for Human Development in Papua New Guinea, the World Bank, 2007 [30]
3. 2011 Annual Health Sector Review, Assessment of sector performance 2006-2010, National Report [18]
4. Mandie-Filer, A, Bolger, J. and V. Hauck, Papua New Guinea's health sector - A review of capacity, change and performance issues. (ECDPM Discussion Paper 57F). ECDPM (the European Centre for Development Policy Management), 2004 [31]
5. Human resources for health in maternal, neonatal and reproductive health at community level: A Profile of Papua New Guinea, Human Resources for Health Knowledge Hub and Burnet Institute on behalf of the Women's and Children's Health Knowledge Hub, 2011 [32]

Many aid posts which are the frontline of primary health care (PHC) service have only one aid post orderly. About 30% of aid posts are closed. The reasons for this are not clear (most probably due to a lack of human resources, deterioration of facilities, and lack of medicines). This situation has not improved in the past five years [6] [29] [33].

According to the National Health Plan 2011-2020 (NHP), in order to strengthen the health system for service improvement, the government plans to reopen the closed aid posts by 2020 and at the same time partially

shift aid posts and sub-centers to community health posts (CHPs). Furthermore, it is envisioned that all aid posts are shifted to CHPs in the future (Figure 4-1)[14].

4.1.1 Health Service Delivery Institutions

Most of the health service delivery is carried out by the public sector. But in regard with health services in the rural areas, churches, by providing 50% of health services, play an important role as service provider. In some provinces even 80% of health services are provided by churches. According to 2004 data, 59% of health employees are engaged in provincial health services and 40% of them work in health institutions run by churches.

Table 4-2 Ratio of Health Services Provided by Churches

Health facilities (hospitals and health centers)	46%
Health services in rural areas	60%
Nursing schools	5 among 8 schools (62.5%)
Training schools for community health workers	All 14 schools
Center for voluntary counseling and test for HIV/AIDS	24 spots
Awareness raising program for HIV	nationwide

Source: Church Partnership Program Papua New Guinea, Case study report, September 2010 [34]

Church services have the same problems as those provided by the government does but their performance is better. People value church services more than those provided by public institutions, and their cost performance is better compared to the government ones. Churches receive financial resources from the government [6] [30].

Little information is available about private medical institutes and pharmacies. There are 76 government certified pharmacies [35].

4.1.2 Decentralization and Service Delivery

The roles and responsibilities of national government, provincial government and other local governments in health service delivery system are as follows:

Table 4-3 Roles and Responsibilities of Different Levels of the Health Sector

Administrative level	Role and responsibility	Planning
Central government/ National Department of Health	• Policy making, standard formulation • Technical guidance • Coordination with related institutions and ministries/departments • Monitoring and evaluation	• National health sector development plan • Five-year strategic implementation plan of the National Programs • Annual activity plan
Province	• Coordination with provincial level related institutions • Supervision of implementation of policies and planned activities	• Provincial development plan • Provincial five-year health sector implementation plan • Provincial annual activity plan
District/ Local Level Government (LLG)	• Implementation of policies and planned activities	• District annual activity plan

Source: National Health Plan 2011-2020, Vol.1, NDoH, 2010 [6]

[14] Recently, due to retirement, the aid post orderly has been gradually replaced with the community health worker (CHW). Three staff, a nurse, a CHW and an orderly are posted in the community health post (CHP).

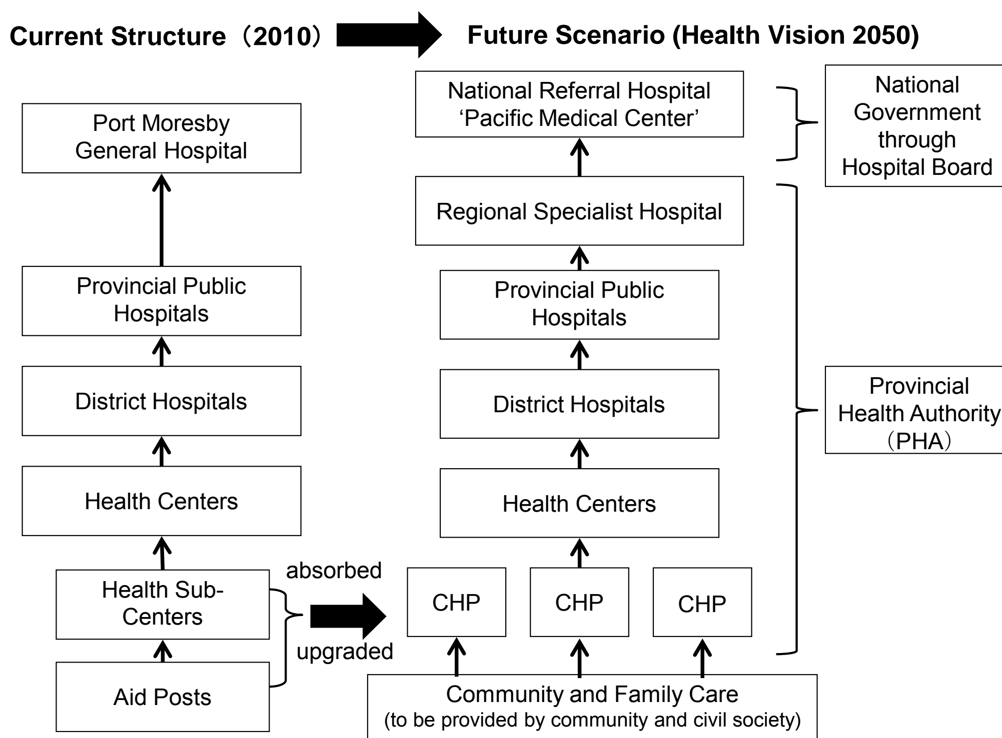
The decentralization policies which have been promoted from 1980s, particularly the Organic Law on Provincial and Local Level Government (commonly known as NOL) of 1995, played a big role in the collapse of the health sector. The policy-implementation link was broken and the management of public expenditure was transferred to provincial levels without a system to control and balance the budget to implement national policies. Hospitals have become autonomous organizations run by steering committees and the network between PHC service and hospital service has not been functioning sufficiently [31] [36].

In order to improve the situation, the National Department of Health (NDoH) issued the Provincial Health Authority Act (PHA Act) in 2008 and currently has been implementing pilot projects in three out of twenty provinces. The Act creates the right for province to create a single PHA responsible for management of entire health service delivery within the province. The current National Health Plan regards PHA development as a key strategy for improvement in governance to strengthen the health system. It has set a target of implementing PHA in five provinces by 2015 and nationwide by 2020 [6].

4.1.3 Referral System

Though there is not enough information available to analyze the PNG's referral systems, the system is not considered to be functioning well due to the followings: difficult geographical conditions hamper access to health facilities, inadequate infrastructure, transportation problems, poverty in rural areas, limited human resources for health and its inappropriate distribution, user fees which deter the poor to use services, weak health system and poor performance indicators in the health sector. The annual sector performance review of NDoH states in 2009 that the low ratio of delivery at hospitals is caused by the malfunctioning of referral system of obstetrics emergency. The information on referral cases is not maintained properly[15].

[15] In the sector performance annual review of NDoH, one of the output indicators is "rate of childbirth referred from rural health center to provincial hospital against the total number of delivery" but the data is not available.



Source: National Health Plan 2011-2020, Vol.1, NDoH, 2010 [6]

Figure 4-1 Current Referral System and Future Plan

4.2 Maternal, Newborn and Child Health (MNCH) Service

4.2.1 Objectives of Improvement of Maternal and Neonatal Health

According to the Mid-Term Development Plan 2011-2015 (MTDP) and the NHP, the sector program is being implemented with the following targets:

(1) To increase family planning coverage
(2) To increase the capacity of the health sector to provide safe and supervised deliveries
(3) To improve access to emergency obstetric care
(4) To improve sexual and reproductive health for adolescences
(The strategy to achieve the objectives and numerical targets are referred in tables 2-1 and 2-2)

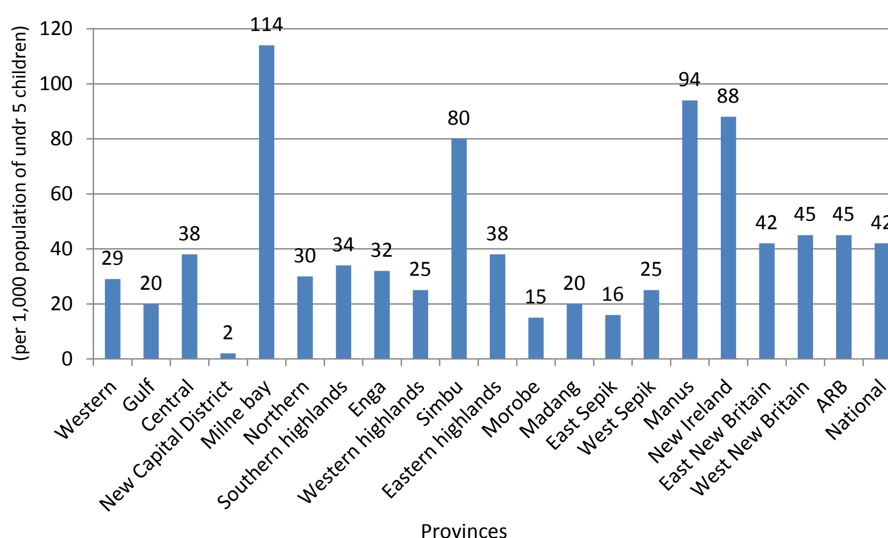
4.2.2 Maternal and Neonatal Health Service Coverage

As elaborated in Chapter 3, PNG's maternal mortality ratio (MMR) is very high and improvements are slow. The high ratio are attributed to low coverage of preventive services, and low level of access to and utilization of maternal care services (especially low percentage of institutional deliveries and births attended by skilled birth attendant), as is shown in Table 4-4 and Figures 4-2 and 4-3. This situation has not improved during past ten years. The service coverage and uilization of services differ greatly from province to province, which suggests that there are also different factors contributing to MMR by provinces.

Table 4-4 Coverage and Utilization of Maternal and Neonatal Health Services

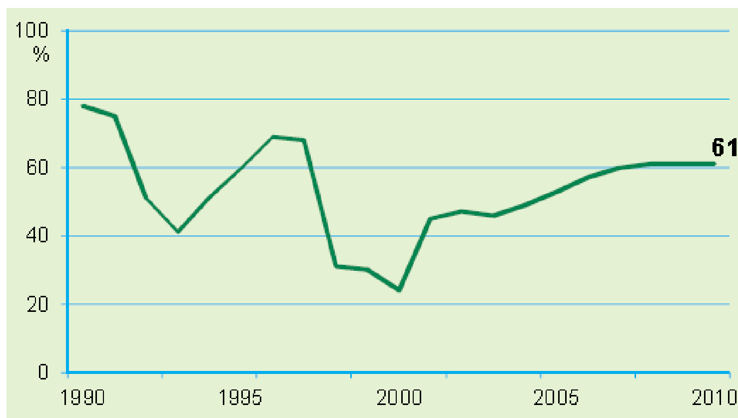
Services	DHS 1996	DHS 2006	NDoH annual health sector review (2010 and 2011)	East Asia & Pacific countries
Antenatal care coverage (at least one visit)	78% urban 95% rural 74%	79% urban 93% rural 76% (55% for more than 4 visits)	62% (2010) Big differences by province (42-96%) Decreasing trend in the past 5 years	91% (2010)
Coverage of antenatal care by medically trained personnel		79%	40% (2010) No tendency of increasing Decreasing in the past 5 years	
Proportion of birth attended by skilled birth attendants	53%	59% urban 88% rural 47%		56% (2009)
Proportion of birth at health facilities (health centers and hospital)		52% (Rate at government facilities is 37%, rate at church/private facilities is 15%)	40% (2010) Among them 4% at hospitals Big differences by provinces (17-85%) Horizontal trend in the past 5 years	

Source: The average of East Asia and the Pacific countries (only developing countries): World Data Bank (Online 2012), WDI & GDF [4]].



Note: NCD: National Capital District, ARB: Autonomous Region of Bougainville,
Source: 2011 Annual Health Sector Review, Assessment of sector performance 2006-2010, National Report [18]

Figure 4-2 Proportion of Births Attended by Skilled Birth Attendant at Provincial Health Facilities (health centers and hospitals)



Note: The average of WHO covering countries in the Pacific countries in 2010 was 81% (according to WHO Global Health Observatory)
Source: Country Profile, Papua New Guinea – Maternal, Newborn & Child Survival, UNICEF, Mar. 2012 [19]

Figure 4-3 Trend in Percentage of Newborns Vaccinated by Tetanus

A governmental working committee compiled a report of analysis and recommendations for decreasing antenatal mortality rate [15]. According to this report and National Health Plan, preventive services have not been sufficiently provided and accessed. This is not only caused by PNG's geographical situation, but also by the following factors: (1) low motivation among PHC staff; abusive attitude toward pregnant women, (2) abasement of people's trust in health service due to closure of PHC facilities, insanitary facilities and insufficient equipment, and lack of medicines (see Chapter 5), and (3) charging of fees by preventive health services. The lack of access to and use of preventive services plays a major role not only in maternal health but among PHC services as a whole including infant health face.

A lack of awareness of health risk and health management is further lowering access to health service. Especially in regards to childbirth, people in rural areas often believe that when they go to a health facility they have to undergo scary operations such as caesareans, perineum section and blood transfusions or that they will be exposed to infectious diseases.

The taskforce supports the stance that in order to reduce maternal mortality in PNG, addressing unmet needs for family planning services is the best strategy in terms of cost performance and feasibility. Although the knowledge on contraceptive measures is relatively high, unmet needs remain high as well (Table 4-5). Among married women who do not have intention to use family planning, 50.9% of women explained they cannot use the services due to lack of knowledge on contraceptives or places to buy, financial resources and/or access. This explains the difference between the ideal number of children and the actual number of children (wanted TFR in DHS 1996 was 3.9 and actual TFR is 4.8; in DHS 2006, those rates are 3.0 and 4.4), In fact, the difference between the two numbers has increased from 0.9 in DHS 1996 to 1.4 in DHS 2006.

Table 4-5 Contraceptive Knowledge and Use

Knowledge and use	DHS 1996 [1]	DHS 2006 [1]	Neighboring countries [2, 3]
Knowledge of modern contraceptive measures (among married women)	71.9 % urban 82.5%, rural 69.3%	80.8% urban 93.3%, rural 76.7%	
Knowledge of where to obtain modern contraceptive devices (among married women)	68.4%	72.9%	
Contraceptive prevalence rate (among married women age 15-49)	25.9% (modern methods only: 19. 9%) urban 35.8%, rural 23.5%	32.4% (modern methods only 24.4%) urban 44.1%, rural 30.5%	East Asia and the Pacific developing countries: 78% (2010)
Unmet needs (among married women age 15-49)	45.9%	43.9%	WHO West Pacific countries: 3.6% (2008)

Sources: 1. Family Planning in Papua New Guinea: Current status and prospects for re-positioning family planning in the development agenda [14]
2. World Data Bank (Online 2012), WDI & GDF [4]
3. Global Health Observatory (GHO), WHO [38]

4.2.3 Child Health

PNG's Child Health Policy 2009 is formulated to correspond with WHO/UNICEF's Regional Child Survival Strategy (Accelerated and Sustained Action towards MDG 4, WPRO[16], 2006). It sets health system strengthening as most important issue, and recommends, by order of priority, the following three components of health system to be seriously addressed: human resources, service delivery, and medical products and technology. A child health advisory committee has been established based on WHO regional strategy's advice. The committee conducts child health policy review, provision of new evidence and information, and proposes interventions to NDoH. Furthermore, a specific Child Health Plan 2009-2015 was formulated. The plan prioritizes the implementation of an essential package for child survival17, use of insecticide-treated bed nets (ITB) for malaria control, and deworming in children and pregnant women. It adds quality improvement of hospital care, HIV/AIDS prevention and treatment by anti-virus drugs, expansion of TB prevention and its treatment, promotion of family planning, adolescence health, and child protection, and a focus on specialized areas: heart diseases, child cancer and child operation.

In the child health area, we recently observed some good results such as polio eradication, achieving higher measles vaccine coverage through incorporating supplementary immunization activities (SIA) into routine EPI, publication of the standard treatment manual for child (8th edition), an increased number of pediatricians, capacity development of pediatricians for provincial health services, and so on. The standard treatment includes zinc as treatment for diarrhea, 6 monthly vitamin A supplementation to all children, and introduction of Hib vaccine. However, immunization coverage remains low and improvement of child mortality rate is slow. It is assumed that these are due to low coverage and low utilization of PHC services as is the case with maternal health services.

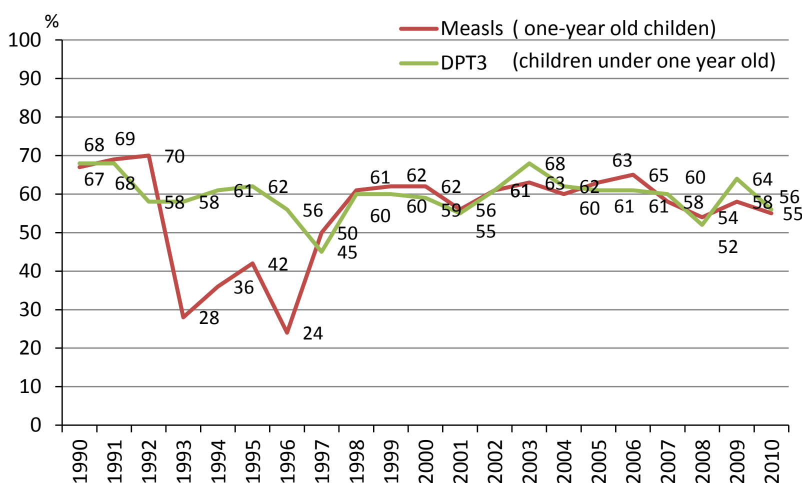
[16] WHO Regional Office for the Western Pacific
[17] It includes births attended by skilled birth attendant, postnatal care of the newborn, exclusive breast feeding and complementary feeding, micronutrient supplementation, EPI and integrated management of child illness (IMCI).

Table 4-6 Coverage and Utilization of Child Health Services

	Services	Before 2000	The latest year	East Asia and Pacific developing countries
Child growth	Exclusive breast feeding (within 6 month old baby)	59% (1996) [1]	56% (2006) [2]	26% （2010） [3]
	Vitamin A supplementation (child who received twice a year) (child of 6-59 month old)	7% (1996) [1]	14% (2006) [2]	
Immunization	Measles immunization coverage (one year old)	67% (1990) [4] 52% (2000) [4]	50% (2010) [5] *1 huge gap among provinces (27-78%) slightly decreasing trend in the past 5 years	95% (2010)[3]
	DPT immunization coverage (child who received 3 times) (under 1 year old)	68% (1990) [4] 59% (2000) [4]	53% (2010) [5] *2 huge difference among provinces (31-89%) more than 20 points decreased in two Regions (Momase and Highlands)	94% (2010)[3]
IMCI	having check-up of pneumonia child *3(under 5 year old)	75% (1996) [1]	63% [2](2006) *4 (urban 73%, rural 62%)	65% (2000-07)[7] (except China)
	Rate of having check-up of diarrhea child (health centers and hospitals) (under 5 year old per 1000)		179 (2009) [6] huge difference among provinces (55-249) slightly increasing in the past 5 years	

Note: *1. In the years SIA was conducted the results were high at 58% in 2006 and 57% in 2008.
*2. DPT-HepB-Hib (pentavalent) has been introduced in PNG since 2009
*3. Proportion of children under 5 with suspected pneumonia who are taken to proper health service provider.
*4. In the survey conducted in 2006, only data for children under 3 year are available.

Source: 1. Demographic and Health Survey (DHS) 1996, NDoH [39], 2. Demographic and Health Survey (DHS) 2006, NDoH [12]
3. World Data Bank (Online 2012), WDI & GDF [4], 4. ChildInfo, UNICEF [11]
5. 2011 Sector Performance Annual Review, NDoH [18], 6. 2010 Annual Health Sector Review, NDoH [33]
7. Global Health Observatory (GHO), WHO [38]



Source: Country Profile, Papua New Guinea – Maternal, Newborn & Child Survival, UNICEF, Mar. 2012 [19]

Figure 4-4 Trends in Immunization Coverage for Measles and DPT

A pilot project for promoting MDG and MDG Acceleration and implementation (MDGI) has been implemented since 2011 with the major target of lowering antenatal mortality rate and newborn/infant mortality rate [40].

4.3 Communicable Diseases Control

4.3.1 HIV/AIDS

HIV/AIDS has been taken care by the government and private sector as a sectoral cross cutting issue. National AIDS Council (NAC) and NAC Secretariat (NACS) were established as institutes to develop HIV/AIDS policies, to coordinate various programs, and promote and monitor program implementation. In each province a Provincial AIDS Council (PACS) composed of three positions such as coordinator, technical officer and monitoring evaluation officer was also set up.

NACS formulated a National HIV and AIDS Strategy 2011-2015 (NHS 2011-2015) and its implementation framework in 2010. In the areas of prevention, treatment and system strengthening, the followings are set as prioritized strategies [41]:

(1) Area of prevention
- Reduce the risks of HIV transmission
- Address factors that contribute to HIV vulnerability
- Create supportive and safe environments for HIV prevention

(2) Area of treatment and care
- Scale-up HIV counseling and testing
- Expand treatment, care and support services

(3) Area of system strengthening
- Information system strengthening
- Strengthening implementation environment for National HIV countermeasures
- Institutional human resource capacity development for implementation and coordination on national HIV/AIDS strategy

As described in Chapter 3, the HIV infection rate is high but since 2006 the upward trend continues at a less rapid rate and presently is estimated to be 0.9%. It is safe to conclude that HIV/AIDS measures have shown positive results. According to the country wise progress report in WHO World AIDS Report 2012 [20], the participation by citizens' society especially HIV transmitted and AIDS patients contributed to the improvement.

In 2010, not only NHS but also National Gender Equity Plan was also formulated. In 2011 anti-retroviral therapy (ART) was introduced for those infected whose HIV prompt CD4 exam[18] is below 350. The rate of administering ART for HIV transmitted and HIV positive pregnant women improved significantly as per Table 4-7.

Table 4-7 Proportion of Population with HIV Receiving Anti-retroviral Therapy (ART)

	2004	2007	2008	2009	2011
Proportion of population with serious HIV infection receiving ART [1]	3%	23%	66%	75%	82%
Proportion of HIV+ pregnant women receiving ART [2]	3%	4%	13%	16% (13-22)	

Source: 1. Global AIDS Report 2012, Country Progress Report – Papua New Guinea, 2012 [20]
2. 2004 -2008：Countdown to 2015, Papua New Guinea, 2010 Report [16]
3. 2011: World Data Bank (Online 2012), WDI & GDF [4]

[18] CD4：HIV infection leads to a progressive reduction in the number of T cells expressing CD4. Medical professionals refer to the CD4 count to decide when to begin treatment during HIV infection.

According to the Global Fund Result Report (2011) [42], there is a positive impact on two goals (decreasing rate of HIV incidence and universal access to ART) but a positive effect on the AIDS mortality is yet to be seen.

4.3.2 Malaria

PNG strengthened the National Malaria Control Program (NMCP) with the support from Global Fund in 2004. The NMCP in partnership with NDoH and organizations such as Rotary Club, Population Service International (PSI), Oil Search Health Fund and PNG Institute of Medical Research (IMR) implements the following activities: (1) Improvement of clinical treatment, (2) Vector control through insecticide-treated bed nets (ITBs) and indoor residual spraying (IRS), and (3) awareness-raising on malaria through information, education, and communication (IEC). In 2008, the National Malaria Control Program Strategic Plan 2009-2013 (NMCPSP) was formulated.

PNG introduced long lasting insecticide-treated net (LLIN) with the help of Global Fund since 2009 and extension of insecticide-treated nets (ITBs and LLINs) increased to 23 districts in 2009. Therefore, within these districts, the number of bed nets per household increased to 2.4. However, the percentage of children under 5 sleeping under bed nets is only 40%. The percentage of children under 5 with fever who are treated with appropriate anti-malaria drugs is only 22%.

4.3.3 Tuberculosis

PNG has been implementing a TB policy under the National Tuberculosis Program. This Program is based on the Stop Tuberculosis Strategy and was officially commenced in February 2012. The Development Strategic Plan (DSP)'s goal is to halve the infection and mortality rate of 1990 and the objectives are to reduce infections risks, to provide high quality treatment and care to TB infected patients, and maintain low levels of infection to drug resistance tuberculosis, especially multi-drug resistant TB.

The expansion of directly observed therapy short-course (DOTS) strategy implementation was delayed so it seems difficult to achieve the related MDG in 2015. The incidence of TB is said not to have changed significantly since 1990. The case detection rate went up from 65% in 2000 to 70% in 2010. The number of notified new patients continuously increased (from 10,520 cases in 2000 to 14,531 in 2010) while the number of patients dying in the hospital went up from 427 cases in 2001 to 801 cases in 2008. The treatment success rate of sputum positive patients increased from 63% in 2000 to 71% in 2009, but there is no improving trend as the rates fluctuate [26].

4.4 Access to Health Services

Access to health services in PNG is limited not only due to logistic difficulties. As shown in Chapter 4.2, there are many reasons why people have limited trust in health services. In rural areas women have fear the procedures such as episiotomy, blood transfusion, and so on.

Various indexes show limited access or accessibility, including the coverage of rural outreach clinics for children under 5, number of visits to health facilities per population, and rate of children who receives proper malaria treatment.

Chapter 5 Health System

5.1 Human Resources for Health (HRH)

5.1.1 The Number and Distribution of Workforce

Human resource development is a major issue in the country as it is one of the major causes creating problems in delivery of services in the health sector.

The number of health personnel per 10,000 population is significantly low compared to the neighboring countries as shown in Table 5-1. For example, the number of midwives is only 152 against 220,000 births per year. According to WHO there is a significant shortage of doctors, nurses and midwives. An estimated 600 nurses, 600 community health workers (CHW) and 100 midwives are needed to fill vacant posts [2].

In the National Human Resource Forum held in 2008, the followings were pointed out as issues in health sector of PNG [6]:

- Aging of workforce in the health sector: 50 years and above occupy more than 50% of the total workforce in all cadres
- Rapid loss of health workforce due to retirement
- Low quality, shortage and low wage of essential and crucial cadres such as nurses, midwives and CHWs
- Insufficient capacity of training facilities and schools

Table 5-1 Number of Employee in Health Sector*[1]

Cadre	Number	(year)	Ratio to 10,000 population	Neighboring countries (Ratio to 10,000 population)
Doctor*[1]	333 [1]	(2008)	0.49	Fiji 4.5 (2003), Samoa 2.7 (2005), Solomon 1.86 (2005)[3]
Dentistry personnel		(2008)	0.07 [3]	
Registered nurse	2,844 [1]	(2009)		
Registered midwife*[2]	567 [1]	(2009)		
Nurse + Midwife	3,159 [2]	(2008)	4.69	Fiji 19.8 (2003), Samoa 9.35 (2005), Solomon 14.5 (2005)[3]
Health extension officer (HEO)	409 [1]	(2009)		
Community Health Worker (CHW)	3,883 [1]	(2009)	5.8 [2]	Fiji 22.3, Samoa 27.4[2]
Aid post orderly	864 [1]	(2009)		
	1,521 [4]	(2008)		
Pharmacist*[3]	145 [5]	(2011)	0.22	
Dispensary assistant	19 [5]	(2011)		

Note: *1. Since in PNG has no accurate data regarding the health workforce, particularly of cadres working in rural areas, the figure varies per reports and reviews. According to source 1, the number of physicians is 727 (2011)
*2. The number of midwives who actually are working is 152 (according to source 1).
*3. The number of pharmacists working in public sector is 27 (according to source 1).
Sources: 1. Human resources for health in maternal, neonatal and reproductive health at community level: A profile of Papua New Guinea, Women's and Children's Health Knowledge Hub, 2011 [32] (Primary document is Health Sector Review 2001-2009, NDoH)
2. NHP 2011-2020, Vol. I, NDoH, 2010 [6]
3. WHO, Global Health Obsevatory (GHO) [38]
4. NHP2011-2020, Vol. IIb, NDoH, 2010 [29]
5. PNG Pharmaceutical Country Profile, NDoH, Jan.2012 [35]

An additional problem is that human resources are unevenly distributed. As shown in Table 5-2, the majority of doctors are stationed in the capital. In some provinces only one doctor is posted [29]. Regarding specialist, for example, pediatrician is posted in only five out of 20 provinces [15]. Generally provinces face a shortage of doctors [2]. According to the human resource department of the National Department of Health (NDoH), 30% of administrative posts are filled by technical staff. This means that trained experts in clinical and medical technology are not properly assigned to the required posts.

The medical services which cannot respond to the needs of people due to degraded facilities and shortage of drugs and medical supplies, promotes a decreased work spirit and morale among health personnel , which, in turn, leads to further degradation of health services [6].

Table 5-2 Distribution of Health Workforce (2004)*

Cadre	NDoH	Hospital	Provincial health service		Total	(% of total workforce)
			Province	Church		
Doctor/Dentist	287	198	11	39	535	4.3%
HEO	116	73	348	38	575	4.7%
Nurse	165	1,475	1,206	1,133	3,979	32.2%
Other health worker	87	238	80	34	439	3.6%
Medical Lab. and technical staff	40	126	30	58	254	2.1%
CHWs	70	1,158	2,673	1,457	5,358	43.4%
Public service in health	331	745	6	133	1,215	9.8%
Total	1,096	4,013	4,354	2,892	12,355	100.0%
(% of total workforce)	8.9%	32.5%	35.2%	23.4%	100.0%	

Note: *The data of 2004 is based on paid salary records, but many health personnel who are not on the records are working in public sector. Therefore it is thought that the numbers are lower than actual situation.

Source: Strategic Directions for Human Development in Papua New Guinea, the World Bank, 2007 [30]

Although in the past health human resource development has always been pointed out as an important issue in health strategies and plans, it has not been improved fundamentally. There is no integrated human resource development policy in the health sector. In 2011, the World Bank completed a survey on health workforce. The formulation of integrated health human resource development policy and strategy based on the study is awaited.

5.1.2 Production of Health Workforce

It is obvious that human resource is insufficient at every level, especially in rural areas. As Table 5-3 indicates, most institutions for training health personnel engaged in rural health services are run by churches. The exact imbalance in demand and supply in the health sector is not clear, however, it is clear that human resources are insufficient at all levels, especially in rural areas.

Table 5-3 Institutions for Pre-service Education and Training for Health Personnel

Cadre	Institution / organization	Length of study	No. of graduates
Doctor	University of PNG, Medical Department	6 years	Around 50 /year
Nurse	7 institutions (5 are run by churches)	3 years 3.5 years	128 (2008)
Postgraduate (maternity health)	University of PNG Pacific Adventist University University of Goroka Lutheran University Divine Word University	40 -52 weeks	22 (2008)
CHW	14 institutions (all are run by churches)	2 years	256 (2008)
HEO	Medical Technology University	4 years	Around 46 /year
Other medical technician	University of PNG, Medical Technology Dept.		

Source: Human resources for health in maternal, neonatal and reproductive health at community level: A profile of Papua New Guinea, Women's and Children's Health Knowledge Hub, 2011 [32]

5.1.3 Quality of Health Personnel

Though of the exact level of technical expertise and capability of health personnel is not known, it is assumed that training is necessary.

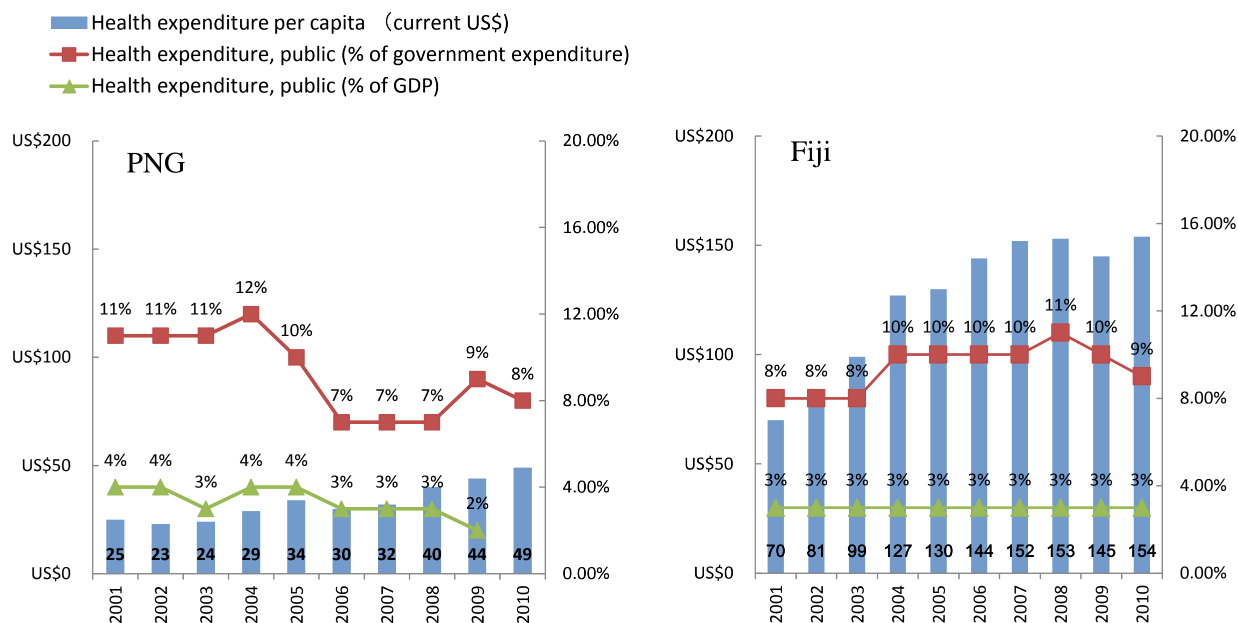
As mentioned in Chapter 3, it is reported that the morale of staff in PHC facilities is low and their attitude towards people, particularly to the poor, is very negative. This is caused by the fact that they cannot provide satisfactory health services due to the lack of administrative budget, deteriorated facilities and a lack of drugs and medical equipment. The staffs receive no support from the health department and professionals in hospitals, and their work is not appreciated.

On the other hand, many village health volunteers, including village midwives and other health workers, are involved in delivery and child health care. Many of them are supported by churches and NGOs but regulations or standards on services are lacking and so is accreditation of quality of services [17].

5.2 Health Financing

5.2.1 Situation of Health Financing

According to the National Health Plan 2011-2020 (NHP), actual health expenditure per capita did not increase during 2001-2006, the first half of the period of previous plan of 2001-2010. The government could not sufficiently finance the health plan. After 2008 per capita health expenditure has been increasing in accordance with economic growth. However, the per capita health expenditure of PNG greatly lags compared to that of Fiji behind (about half of the Fiji's per capita health expenditure), featuring the highest increase in health indicators among the Oceania countries (Figure 5-1).



Source: World Data Bank (Online 2012), WDI & GDF [4]

Figure 5-1 Trends in Per Capita Health Expenditure and Public Health Expenditure in PNG and Fiji

Table 5-4 shows the total national expenditure and health expenditure of 2012 as reported by the Ministry of Finance Per capita health expenditure shows an increase of 145 kina (approximately $71).[19, 20]

Table 5-4 Scale of National Budget and Health Budget in 2012 (million kina)

	National Budget	Compare to the previous year	Health budget	Compare to the previous year
Current expenditure	6,123.2	↑ 15%	712.5	↑ 8%
Development expenditure	4,437.1	↑ 13%	283.5	↓ 9%
Total	10,560.3	↑ 6%*	996.0	↑ 3%

Note: *Comparison of the total amount which the previous year budget is added with supplementary budget

Source: Department of Treasury (2012) National Budget 2012, Vol.1 [44]

The Australian Agency for International Development (AusAID) report on aids effectiveness lists insufficient financial resources, the fact that resources are not allocated for provinces, districts and the state of health facilities as the main obstacles for improvement of service delivery [31] [36] [37]. The budget allocation for materials and services for provinces, which are crucial for improved health services, has increased in 2012, which may reflect the government response to the issue. This provincial budget should be further allocated to districts and health facilities (health centers and aid posts) on a timely basis.

The proportion of individual (household) expenditure to the total health expenditure is relatively small at 16%, public expenditure is 76%, and external source is 24% [4]. The total public health expenditure was 925 million kina in 2010, 32.4% of which was from external resources (donors).

[19] It is necessary to note that comparisons are tricky since budgets may not have been completely disbursed. Therefore the actual expenditure could be less, especially in developing countries.

[20] The health budget includes the budget of the National Department of Health, the Hospital Management Services, the National AIDS Council, the Medical Research Center and provincial grant.

5.2.2 Sector Wide Approaches (SWAps) and Mid-Term Expenditure Framework (MTEF)

Health sector reform has been introduced in PNG and the government is trying to pursue effective and efficient funding and resource allocation under a single health sector development plan and a single health sector funding plan and strategy.

PNG has shifted to SWAps since 2004 with the support of AusAID. A MTEF and a pool fund were introduced to assign necessary funds for the sector, and to build a mechanism in which resources are allocated to prioritized issues and to the most required level, particularly provincial and districts levels and PHC facilities where fund is chronically lacking.

According to the NHP, the MTEF has helped reveal more about the nature of how the health sector is financed, clearly explained available resources and required budget to policy makers, and facilitated decision making. This is reflected in the fact that the expenditure of operational costs for rural health services has doubled between 2007 and 2010 (40 million kina in 2007 to 80 million kina in 2010). However, the NHP notes that financial resources are still not sufficiently allocated where they are most needed and disbursement remains slow.

The government supports the Directly Facility Funding (DFF), a direct funding mechanism for facilities supported by AusAID. Through this mechanism funds are put directly in the bank account of the facility.

5.2.3 User Charge at Health Facilities

According to the policy of the NDoH, the services related to maternal and neonatal health and domestic violence are free, but it is actually common to charge fee for services at public facilities as well as church facilities.

There are many cases in which service users are charged at PHC facilities in order to supplement shortage of management expense. The patients also have to purchase drugs and medical supplies due to shortage of them in health facilities. As a result, even though the charged amount is low (1 to 3 kina for outpatients, more for delivery and hospitalization), people feel "health service is costly". Especially for the poor, the expenses are an obstacle, to access health services. It also causes inequity in access to services [45].

5.3 Health Information Management System

PNG has two major health information systems: the National Health Information System (NHIS) and the National Discharge Information System. The previous complicated health information system of 1990s was simplified to a single sheet format in which all necessary information is filled out, and this made essential health information available at the national level. The data collected through the NHIS are also utilized as sector performance indicators. In addition, it is under consideration to establish a Human Resource Information System (HRIS) [46].

The health sector capacity is very limited in collecting and processing information on disease epidemics and outbreaks in terms of prompt reporting and responding, which is one of the issues raised in the NHP.

5.4 Health Infrastructure (facilities and equipment, and supply system of drugs and medical supplies)

5.4.1 Facilities and Equipment for Health Service Delivery

The type and the numbers of health service delivery facilities are as shown in Table 5-5.

The situation of health infrastructure in PNG has been deteriorating in the past decade. A total of 781 aid posts, which are frontline facilities for the provision of PHC services, were closed and the number of hospital beds decreased with 1,328 in the previous national health plan period, 2001-2010 [6]. In a report in 2010, closed aid posts account for 30% of the total (it varies from 49% to 93% according to province). In addition, only 50% of health facilities have water supply in the delivery room [18]. In the past five year (2006-2010), the situation has not improved much. Although the proportion of facilities which have radio and/or telephone is high, the ratio is decreasing year by year and in some provinces only half of the facilities have radio or telephone.

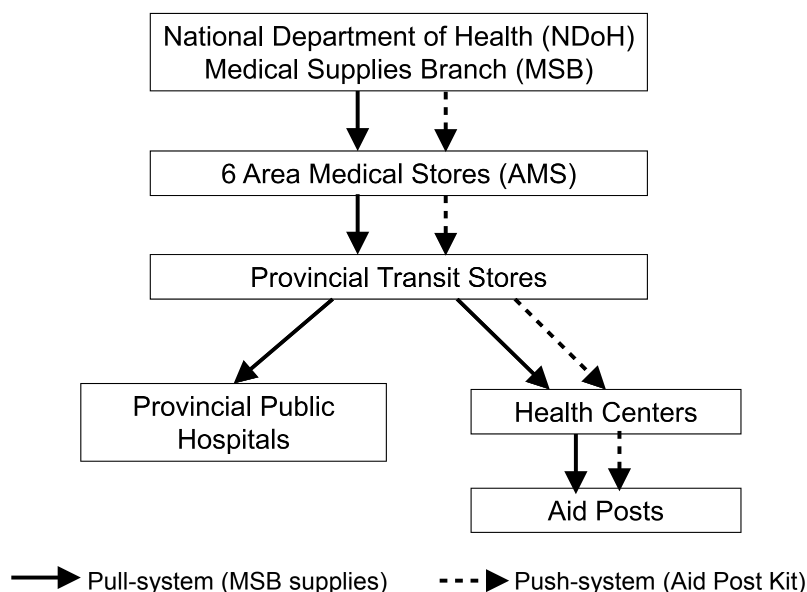
Table 5-5 Maintenance Status of Health Facilities

	2006	2007	2008	2009	2010
Proportion (%) of aid posts open					
Southern Region	76%	73%	77%	73%	73%
Highland Region	63%	62%	62%	60%	63%
Momase Region	66%	65%	70%	60%	71%
New Guinea Island Region	79%	77%	75%	75%	76%
Nationwide	70%	68%	71%	66%	70%
(lowest % and highest % of state data)	(34-93%)	(41-89%)	(44-94%)	(38-88%)	(49-93%)
Proportion (%) of health facilities that have running water to delivery room					
Southern Region	44%	44%	36%	40%	47%
Highland Region	47%	55%	43%	56%	56%
Momase Region	41%	53%	49%	67%	57%
New Guinea Island Region	36%	38%	33%	41%	37%
Nationwide	43%	48%	41%	52%	50%
(lowest % and highest % of state data)	(19-74%)	(22-63%)	(24-56%)	(31-89%)	(32-91%)
Proportion (%) of health facilities with functioning telephone and/or radio					
Southern Region	89%	83%	83%	76%	79%
Highland Region	75%	78%	73%	70%	66%
Momase Region	93%	93%	90%	91%	85%
New Guinea Island region	92%	95%	94%	91%	86%
Nationwide	87%	86%	84%	80%	78%
(lowest % and highest % of state data)	(63-100%)	(63-100%)	(57-100%)	(44-100%)	(49-100%)

Source: 2011 Annual Health Sector Review, Assessment of sector performance 2006-2011, National Report [18]

5.4.2 Drugs and Medical Supplies

Drugs and medical supplies are procured and distributed by a centralized system managed by the Medical Supply Branch (MSB). Besides the central medical store (CMS), there are six area medical stores (AMS) and twenty provincial transit stores. Supply to hospitals is only pull system upon request but kit system is introduced in aid posts and health center along with push system.



Note: This diagram is as of 2005
Source: Reproductive Health Commodity Security Status Assessment Report: Papua New Guinea, UNFPA, Oct. 2008 [47]

Figure 5-2 Supply Chain of Drugs and Medical Supplies

The National Essential Medicine List (EML) was updated in 2002 but the National Medicine Formulary has not been formulated.

The lack of drugs, contraceptives and other medical supplies remains a major challenge for the health sector. The shortages are more serious in health centers and aid posts. According to 2011 data [18], annually, on average during six months, essential medicines were not in stock for more than one week and during 8 months in some provinces. In the past five years, the situation has not improved and has rather been deteriorating (one reason may be due to termination of the AusAID project that supplied health center kits).

Table 5-6 Availability of Essential Medicines in Health Facilities

Region ＼Year	2006	2007	2008	2009	2010
Southern Region	59%	54%	47%	50%	49%
Highland Region	60%	56%	46%	41%	44%
Momase Region	53%	52%	45%	54%	51%
New Guinea Islands Region	57%	53%	44%	45%	46%
Nationwide (lowest % and highest % of state data)	57% (35-77%)	54% (34-75%)	46% (25-66%)	47% (29-67%)	47% (28-67%)

Note: 8 medicines and supplies set for the monitoring: Depo-Provera injection (family planning), elgometrine (maternal health), measles vaccine (immunization), ORS (diarrheal disease), oxygen, amoxicillin tablet (antibiotics), and baby book
Source: 2011 Annual Health Sector Review, Assessment of sector performance 2006-2011, National Report [18]

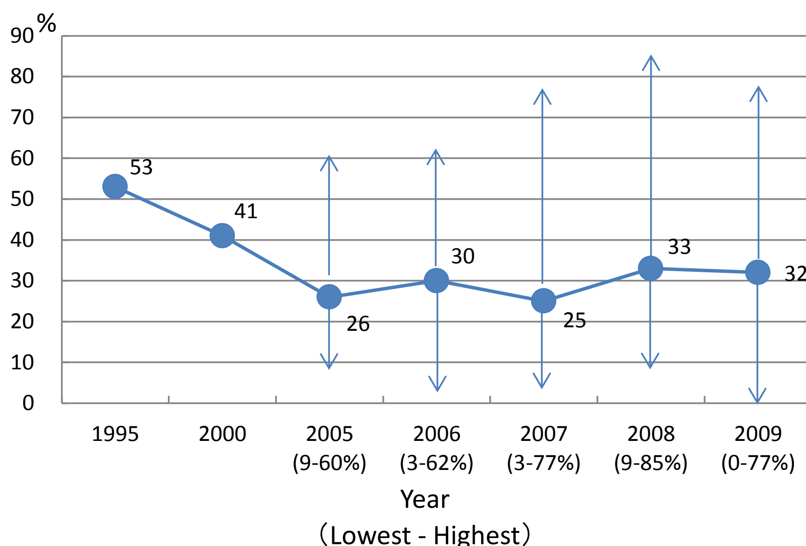
According to the NHP, the situation did not improve though health center kit was introduced in 2004 to supplement the routine supply chain [6]. The survey on contraceptives in 2004 revealed that there were excess stock in three AMSs, nevertheless, health centers and aid posts suffered from insufficient stock or shortage of contraceptives [47]. There may be a problem with logistic management in addition to insufficient amount of drugs and medical supplies due to lack of funds.

According to the NHP, the provincial transit stores lack adequate facility and space; poor storage facilities at rural health centers and aid posts hamper the safe keeping of drugs, vaccines and intravenous fluids. It is also pointed out that robbery and illegal transactions have been rampant [6]. Furthermore, corruption related to drugs and so forth seems widespread. A corruption case by higher officers in the NDoH was revealed in 2011 [48].

5.5 Governance and Management

As described in Chapter 4, decentralization of PNG created a big systematic problem in the health sector. The provincial health department is now responsible for the management of health facilities as well as the provision of guidance and supervision to health facilities within the province. Provincial hospitals are also responsible for providing technical guidance and supervision to health centers and aid posts. In reality however, the actual implementation rate is very low.

In the annual review of sector performance of the NDoH, the overall percentage of health centers which received supervisory visits from the provincial health department was as low as 60%, but the rates per province varied from 23 to 95%. The proportion of health centers which received supervisory visit by a doctor was only one-third of the total and varied from 0 to 77% (Figure 5-3). The situation has not been improved in the past five years. The provinces where the ratio of health centers receiving supervision and guidance is high tend to obtain a relatively higher sector performance score based on all indicators in the annual review [18][33].



Source: 1. Strategic Directions for Human Development in Papua New Guinea, The World Bank, 2007 [30]
2. 2010 Annual Health Sector Review, Assessment of Sector Performance 2005-2009, National Report [33]

Figure 5-3 Proportion of Health Centers that Received Supervisory Visit by Doctor

Chapter 6 Development Assistance and Partnership

6.1 Framework of Donor Coordination

6.1.1 Current Situation

The preparations of the sector-wide approach (SWAps) were promoted with support of the Australian Agency for International Development (AusAID) and the Asian Development Bank (ADB), the leading development agencies, as well as a Health Sector Improvement Program (HSIP) introduced with a pool fund system and Mid-Term Expenditure Framework (MTEF) in 2004. AusAID and the New Zealand Agency for International Development (NZAID) are the ones who actually contribute to the pool fund; however, other development partners such as WHO, UNFPA, UNICEF, and the ADB also support SWAps in health and the policies of PNG. They express their cooperative attitudes towards implementing their assistance by aligning with the government health sector plan[21] [1]. Unlike in many other developing countries where SWAps has been introduced, the World Bank is rarely directly involved in the PNG health sector. Furthermore, AusAID and NZAID do not commit all their health funds to the pool fund, but carry out traditional bilateral assistance simultaneously.

According to the National Health Plan and the aid effectiveness reviews by AusAID, the contribution to the improvement of health outcome indicators by the SWAps was found to be limited. The reasons for this include the fact that the amount of assistance from developing partners under the SWAps was decreased as a whole, absorption capacity of the PNG government was weak and financial allocations to provinces and districts were not sufficient [6] [36] [37].

Regarding the performance of the sector program, a sector performance review report based on set sector performance indicators is published by the National Department of Health (NDoH) every year. Also, an independent review report is produced separately.

The review of SWAps in the health sector was conducted in 2010, and various recommendations for improvements and amendments on SWAps arrangements were made based on the discussion among major stakeholders. The review strongly recommended the transfer from pool fund to sector budget support (SBS) [49].

6.1.2 Donor Coordination Meetings

A so-called “Health Sector Development Partners Meeting” has been held monthly, co-chaired by AusAID and WHO. The major participants are AusAID, NZAID, WHO, UNFPA, UNICEF, ADB, and World Bank, while other agencies such as JICA and NGOs also participate occasionally. The meeting intends to exchange information and opinions among development partners and to discuss issues and inputs for a “Health Sector Partnership Committee” with the government [50].

[21] After discussions on how to implement “Paris declaration on improvement of aid effectiveness”, the government of PNG and major donor countries/agencies signed “The PNG commitment on improvement of aid effectiveness” in July, 2008. Japan was actively involved in this process, and has promoted pragmatic and effective implementation.

The "Health Sector Partnership Committee" is headed by the secretary of the NDoH. It convenes quarterly with the members including the government agencies (NDoH, the National Economic and Financial Committee, the Department of Personnel Management, Department of National Planning and Monitoring, and so on), Church Medical Council (CMC) and all the development partners [50].

6.2 Activities of Major Development Partners

6.2.1 Current Status

A summary of the current status of assistance by major development partners is illustrated in Table 6-1. The detailed situation of each country and agency can be found in the donor's database (DAD-PNG) on the website of Department of National Planning and Monitoring [43].

Table 6-1 Summary of Current Situation of Assistance by Major Development Partners

Development partner	Country strategic plan and others	Main assistance field						
		Child health	Maternal health	Nutrition/ Hygiene	HIV/ AIDS	Malaria	TB	SWAps/ Sector reform
AusAID	Partnership memorandum for both countries (signed in Aug. 2008)	○	○	○	○	○	○	○
NZAID	Joint 10-year strategy 2008-18	○	○	○	○	○	○	○
EU	Country strategy paper 2008-13			○				
UN Team	Country program by UN 2008-12	○	○	○	○			
UNICEF		○		○	○			
UNFPA			○		○			
WHO	Country assistance strategy 2010-2015	○	○	○	○	○	○	
ADB	Country partnership strategy 2011-2015				○			
World Bank	CAS 2008-11	○	○	○	○	○	○	○

Sources: 1. PNG Department of National Planning and Monitoring Website DAD PNG (Development Assistance Database Papua New Guinea) [43]
2. AusAID Website Papua New Guinea [51]
3. Partnership for Development between the Government of Australia and the Government of Papua New Guinea, 2008 [52]
4. New Zealand Aid Programme Website [53]
5. New Zealand - Papua New Guinea Joint Commitment for Development [54]
6. EC EUROPEAID, Country Cooperation, Papua New Guinea [55]
7. Papua New Guinea-European Community Country Strategy Paper and National Indicative Programme for the period of 2008-2013, European Community [56]
8. EC Website: Country cooperation-PNG [57]
9. United Nations Papua New Guinea Website [58]
10. WHO country cooperation strategy Papua New Guinea 2010-2015, WHO, 2010 [59]
11. UNICEF Papua New Guinea Website/Activities [60]
12. UNFPA Asia and Pacific Region Website/Papua New Guinea at a glance [61]
13. ADB Country Partnership Strategy, Papua New Guinea 2011-2015, Aug.2010 [62]
14. ADB Papua New Guinea /Strategy [63]
15. ADB Papua New Guinea/ [64]
16. ADB Website /News [65]

Moreover, as Table 6-2 shows, PNG receives assistance from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) since 2004.

Table 6-2 Program Assistance to HIV/AIDS, Tuberculosis, and Malaria by GFATM

Type of assistance	Round	Title	Commence year	Agreed assistance amount US$	Responsible agencies to accept the fund
Malaria	R3	Community-based Malaria Prevention and Control in PNG – Nationwide Insecticide-Treated Nets (ITN) Distribution and Expansion of Confirmed Diagnosis and appropriate treatment of Malaria	2004	16,217,351	Department of Health
HIV/AIDS	R4	Scaling up HIV/AIDS prevention, care and treatment through an intensified multi-sectoral community based program in PNG	2005	17,552,150	Department of Health
Tuberculosis	R6	Expanding and Implementing the Stop TB Strategy in PNG	2007	19,193,202	Department of Health
Tuberculosis	R6	No Title	2007	7,436,502	World Vision (US)
Malaria	R8	Malaria Control in PNG: Scaling up for Impact	2007	20,949,246	Department of Health
Malaria	R8	Malaria Control in PNG: Scaling up for Impact	2007	6,373,170	International Population Service (PNG)
Malaria	R8	Malaria Control in PNG: Scaling up for Impact	2007	23,112,615	Rotary Club (PNG)
Malaria	R8	Malaria Control in PNG: Scaling up for Impact	2007		Oil Search Health Fund
HIV/ AIDS	R10	To maintain essential prevention, care and treatment services and expand and scale-up in priority provinces, with a particular focus on Prevention of Parent to Child Transmission (PPTCT) as an entry point	2007		Oil Search Health Fund

Source: GFATM, Country Grant Portfolio, 2012 [22]

6.2.2 Assistance by major development partners

(1) Australian Agency for International Development (AusAID)

AusAID is the biggest donor in the health sector, and has been actively promoting SWAps. It contributes funding to the pool fund, and provides technical assistance and support through NGOs as well. The support is provided to address improvement of service delivery at the sub-national level (provinces and districts) and importance of coordination of different administrative levels. AusAID also provides capacity building in developing, implementing and monitoring affordable plans by allocating technical officers within the national and provincial government system.

(2) New Zealand Government/New Zealand Agency for International Development (NZAID)

The New Zealand and PNG governments signed a “Joint Commitment for Development” in 2011, and it specifies agriculture, energy, basic health, scholarship/training, and Bougainville as five prioritized areas [53] [54]. New Zealand supports SWAps for health and contributes funding to the UNFPA reproductive health project.

(3) United Nations Agencies

1) UN Country Team

UN agencies introduced a UN country fund through a UN country team in 2009, and it supports the development the foundation of human capacities (in health, education, protection of children) and HIV/AIDS in health sector [58] [66].

2) World Health Organization (WHO)

WHO in PNG focuses on the following priority strategies: 1) Technical excellence for sustainable health outcomes, 2) Technical support to health systems strengthening, 3) Universal access to primary health care: supporting National Department of Health engagement with provinces and districts, and 4) Sector review, partnership and aid effectiveness. WHO further places importance on reproductive health. As a country program, it provides assistance to 1) health, nutrition, water and environment sanitation, 2) education, 3) children protection and 4) HIV/AIDS. Particularly regarding 4) HIV/AIDS, it leads development of nationwide implementation plan to prevent mother to child vertical transmission and supports trainings [60].

3) United Nations Population Fund (UNFPA)

Under the Asia-Pacific Program 2008-2013, UNFPA mainly supports and conducts activities for the improvement of reproductive health, education on population and family life, integration of planning for population and development, and gender-based violence [61].

(4) Asia Development Bank (ADB)

ADB has been supporting the health sector since 1980s, and promoting SWAps in the health sector with AusAID since 2000. ADB does not have an on-going project at the moment; however, a project on strengthening service supply on rural primary health (technical, grant and loan) is planned to be commenced.

6.3 Outline of Japanese Cooperation

Based on the assistance strategies expressed at the Pacific Islands Leaders Meeting (PALM) held once every three years since 1997 [26], Japan aims to assist in strengthening the foundation for sustainable economic development, in improving the basic social service, and countermeasures for environment protection/climate change. The important areas of cooperation are the following: 1) Strengthening the foundation for economic development – socio-economic infrastructure development/maintenance management, industrial/commercial development assistance, human resource development assistance, 2) Improving social services – assistance for the improvement of the educational functions, assistance for medical system improvement/communicable diseases countermeasures/human resource development in health sector, 3) Environment/climate change – preserving the environment and conducting climate change countermeasures.

For the health sector, Japan mainly supports the prevention of communicable diseases (Table 6-3).

Table 6-3 Recent Assistances in Health Sector by Japan

Grant/Loan

Fiscal Year/Duration		Name of Project	Amount of Assistance
FY 1999 - 2008, 2010	Grant	Provision of specific medical equipment for communicable diseases (EPI, measles/neonatal tetanus, mother and child health)	
FY 2003	Grant	Provision of specific medical equipment (support for rural major hospitals)	13,432 Thousand Yen
FY 2004	Grant	Provision of specific medical equipment (measles)	40,190 Thousand Yen
2010/04/01 - 2015/03/31	Grant	Provision of specific medical equipment for Pacific Program to eliminate Lymphatic Filariasis	
2009	Grassroots grant	Grassroots human security grant aid for “the project for expansion of Rumginae community health worker training school”	
2009	Emergency	Cholera	

Technical Cooperation

Length of Cooperation	Name of Project
2006/06 - 2009/03	Grassroots technical cooperation (JICA partnership program) for “the project for rural community development support (water supply, primary health care and others) in the Gulf Province”
2009/10/01 - 2012/03/31	Grassroots technical cooperation (responding emergency economic crisis – comprehensive) for “health improvement project by community people in East Sepic Province: Let’s protect lives and health of women and children by our hands”
2011/03 - 2011/12	Grassroots technical cooperation for “the project for improvement of Tentenga rural health center”
	Dispatch of volunteers (community development, community health, communicable diseases, drug supply management)

Sources: 1. Ministry of Foreign Affairs, Rolling Plan for Papua New Guinea (2010/08) [67]
2. Ministry of Foreign Affairs website: ODA, County /Regional Policy and Information [68]
3. JICA Website: Country Assistance [69]
4. JICA Knowledge Site [70]
5. PNG, Provision of Medical Special Equipment (Infectious Diseases/Mother and child health care), Equipment Plan Survey Report. JICA. 2006. [71]

Chapter 7 Priority Health Issues and Recommendations

7.1 Priority Health Issues

7.1.1 Issues in Health Condition

Although PNG achieved positive economic growth since 2003, this had not been reflected in the improvement of social services. Neonatal and childhood mortality rate and maternal mortality ratio are the worst among Pacific developing countries; moreover, the situation has not been ameliorated for the last ten years. The spread of communicable diseases such as malaria, tuberculosis, pneumonia/diarrhea creates a big disease burden for the nation. These issues were expected to be solved by simple and effective intervention through primary health care (PHC) approach; however, the health system has deteriorated in the last decade, further aggravated by the spread of HIV/AIDS.[22]

7.1.2 Backgrounds of High Neonatal and Childhood Mortality Rates and Maternal Mortality Ratio and the Spread of Communicable Diseases

The backgrounds of above mentioned rates include (see also Figure 7-1):

1) Cultural and socio-economic issues as well as malnutrition influencing the service demand side

2) Low service coverage and low quality of services influencing the service supply side

3) Low access to and utilization of health services influencing the demand side due to the above

The major causes for the low access to and utilization of health services include:

- inappropriate/delayed resource distribution
- fragmentation of health service network, segmented policy (national government) - implementation (local government) link
- weak health system featuring inadequate quantity and quality of human resources, lack of drugs and medical supplies, closed/mal-maintained health facilities
- inadequate software to enable functioning health system, including human resource information system, drug procurement and logistics management system, and PHC support and supervision/guiding system.

[22] Increase of HIV prevalence rate seems to be halted since 2008, which possibly indicates a positive impact of the HIV/AIDS control program.

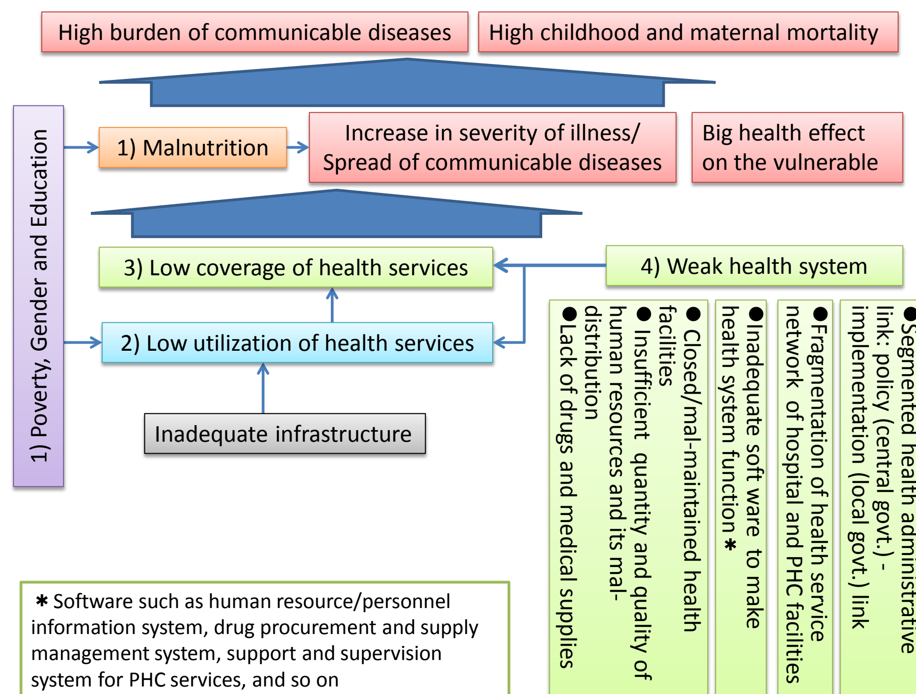


Figure 7-1 Background Factors for Issues in the Health Sector of PNG

(1) Poverty, Education and Gender[23]

Comparatively, the degrees of poverty and education in PNG are not as bad as those of African countries; however, in PNG there are gender issues that affect the health status of children and mothers. The poor nutritional status is also related to gender issues and is one of the underlying factors for high morbidity and mortality and increase in severity of illness in children and mothers. Also, the lack of women's economic power, limited access to economic activities, degree of education, and lack of decision making power hinder women in accessing health services and health information, and changing sexual behaviors. All these lead to a higher maternal mortality ratio and higher HIV transmission. Regarding childbirth particularly, there are various cultural restrictions or customs in each region/ethnicity that create a barrier in accessing health services.

Access to safe water and sanitary toilet facilities have not been improved for over ten years in rural areas. Even in urban areas, the living environment of poor population in urban settlement is devastating, causing high rates of respiratory communicable diseases and diarrheal diseases.

(2) Low Health Service Coverage and Use of Services

As mentioned in Chapter 4 and 5, the coverage of health services, particularly for PHC services, is low. The reasons include closure/lack of maintenance of PHC facilities, lack of drugs and medical supplies, lack of human resources, and decreasing morale and motivation of PHC staff. In addition, the access to PHC services is low because of the cost burden.

[23] Gender Inequality Index (GII) was 0.674 (ranked 140 among 173 countries in 2011) and it worsened from 0.661 in 1995.

As a result, the coverage of basic services has hardly improved, including basic services such as immunization, IMCI, antenatal and postnatal care, nutrition guidance and micronutrients supplementation, births attended by skilled health personnel and emergency obstetrics care and basic communicable disease prevention and treatment. Therefore, childhood and maternal mortality rates are high, and so is the burden of communicable diseases.

(3) Weak Health System and Governance

In PNG, there is an ongoing lack of human resources, facilities and medical equipment, drugs and medical supplies, medical technology. Also, the system does not sufficiently function to procure and supply the inputs in a planned manner, to allocate them properly to the places most needed, and to provide services. Ineffective distribution/usage also contributes to an overall lack of funds. The weakness of the health system in PNG is not only due to lack of hardware in each area but also due to lack of software (for example, effective resource flow system to provinces and districts, health service network between PHC facilities and hospitals, human resource/personnel information system, drug procurement and supply management system, health administrative coordination system between the central and the local governments, etc.).

Human resource development has been prioritized; however, human resource information has not been systematically collected, nor a comprehensive policy/strategy developed.

Regarding drugs and medical supplies, not only the total amount is in shortage, but also problems such as high procurement cost, corruption, a poor logistics system, and lack of capacity for drug management such as stock management exist.

Furthermore, because of devolution of power to provincial and district governments from the national government, the link between policy (the central government) and implementation (the local governments) has been broken. As a result proper distribution of budgets reflecting the policy does not take place at the provincial level, the situation is unclear about the responsible agency to supervise health service network for the province as a whole, and decreased coordination between PHC facilities and hospitals due to hospital autonomy, etc. All these factors lead to the deterioration of delivery of health services.

7.1.3 Efforts by the Government and Donors to Priority Issues and Future Challenges

(1) Efforts by the Government

The National Health Plan (NHP) specifies five prioritized areas to be tackled, namely child health, maternal health, communicable diseases, promotion of healthy life style, and epidemic and emerging health problems. In the first ten years of the Plan, improvement of PHC service delivery by strengthening the health system will be the first priority. Rather than increase the amount of funding, it is more important to effectively allocate the funds (the allocations of operational and management cost to provinces, districts and facilities).

As a specific effort to strengthening health system, the government plans for a single entity, a Provincial Health Authority (PHA), to manage and supervise all health services within the province. The PHA will re-establish the health system and service networks which have been fragmented. The pilot implementation of the PHA is described in the NHP and the Mid-Term Development Plan (MTDP). The NHP also intends to

re-open the closed aid posts and in a long run to integrate PHC service delivery facilities (by upgrading of aid posts and sub-centers to community health posts).

The NDoH already issued a "National Health Administration Act" in 1997 and "Minimum Standards for District Health Services" in 2001 for restructuring the health system. The effective implementation of these is challenging as well.

Regarding human resource development, being one of the priorities in the health sector, the World Bank has already completed a human resource development study. The government is expected to develop a human resource development policy and strategies based on the study.

(2) Promotion of SWAps and the Issues

The government of PNG is promoting health SWAps with the aim of implementation of an integrated health program under a single sector plan by single sector budget and financing plan. The issue is fund allocation to the local governments (provinces and districts) and health facilities. The funds are not being allocated to needy places at the right time, so that the actual expenditures have been much lower than the allocated budget.[24] The complicated fund flow and procedures create problems, and the decision making process of fund allocation should be reviewed. The SWAps has not produced expected results so far, and the review on health SWAps conducted in 2011 strongly recommends transferring the pool fund to sector budget support (SBS).

7.2 Recommendations

The Japanese government has been supporting Expanded Programme on Immunization (EPI) and control of communicable diseases through provision of vaccines, drugs and medical supplies and medical equipment in the health sector. It also supports an eradication program for Filariasis through the provision of drugs and test kits. Japan further provides funds to ADB for the health sector.

Communicable disease control is a major issue in the health sector. Since the lack of drugs and medical supplies can be a bottleneck for service provision, the Japanese Government provided support in this area. This support continues to be essential, particularly in the area other donors are not involved in. Furthermore, supporting the NDoH's efforts to strengthening the weak health system which is hindering service delivery is also needed. Since human resource development is a first requirement for strengthening the health system, support for this area is required.

7.2.1 Assistance for Strengthening Health System

In the assistance for the strengthening of the health system, both "software components" and "hardware components" need to be included.

(1) Assistance for Human Resource Development in the Health Sector

It is crucial to support human resource development in the health sector. A study on human resources for health by the World Bank was completed in 2011, and the development of a policy and plan for human

[24] Recently, financial budget allocations to provinces have been increased.

resources in the health sector based on the study is now expected. Therefore, it is timely to consider supporting this area. It is suggested to support human resource development= especially in the district health system and below the district level. Since Japan has experience in human resource development in different health areas, including maternal health, in various developing countries, it is considered feasible that Japan supports strengthening human resource development in local health systems. It is required to support not only colleges/schools for pre-service training but also in-service training.

In addition, in order to strengthen the system, it is also necessary to utilize trained human resources effectively and efficiently. In PNG, such a system is not well managed and the needs of such a system are very high.

In short, in order to supply qualified human resources responding to the needs, the establishment and management of a comprehensive human resource development system in the health sector is required and considered as an area of assistance. The areas of needs are: 1) human resource information system linking with payroll records, 2) deployment standards based on the needs of the services, 3) development of a long-term human resource development plan and improvement of institutes/schools to supply sufficient quality health personnel, 4) standards for in-service training for each cadre and its periodical revision, 5) capacity development of service providers in program implementation/operational management, financial management, monitoring and evaluation, etc., 6) supporting and supervisory system for health personnel working at PHC facilities, 7) Career development system, and 8) incentive system.

(2) Assistance for Establishment and Strengthening of Other Sub-systems for Health System Strengthening

A procurement and supply system of drugs and medical supplies: Supporting the provision of vaccines, drugs and medical equipment for improvement of maternal health and communicable disease control will be an important area of Japanese assistance in the future. It is also required to support the improvement of comprehensive drug procurement and supply system for effective and efficient utilisation of drugs in health services.

Information and maintenance system for health facilities and medical equipments: assistance for system establishment and maintenance of the system can be considered.

Health information utilisation mechanism: health indicators that are collected through current health information system help to review sector performance but only to certain degree. The establishment of a mechanism for information sharing and utilisation of the collected information is needed.

These systems should be also supported by good governance, by developing systems ensuring transparency, equity and accountability is important.

7.2.2 Assistance for Strengthening District Health System

A procurement and supply system of drugs and medical supplies: Supporting the provision of vaccines, drugs and medical equipment for improvement of maternal health and communicable disease control will be an important area of Japanese assistance in the future. It is also required to support the improvement of

comprehensive drug procurement and supply system for effective and efficient utilisation of drugs in health services.

Information and maintenance system for health facilities and medical equipments: assistance for system establishment and maintenance of the system can be considered.

Health information utilisation mechanism: health indicators that are collected through current health information system help to review sector performance but only to certain degree. The establishment of a mechanism for information sharing and how the utilisation of the collected information is needed.

These systems should be also supported by good governance, by developing systems ensuring transparency, equity and accountability is important.

ATTACHMENTS

Attachment 1: Major Health Indicators

Attachment 2: References

Attachment 1: Major Health Indicators (Independent State of Papua New Guinea)

Independent State of Papua New Guinea				MDGs	Sources	1990	2000	Latest	Latest year	Latest in Region	(Latest year)	Region
0 General Information	0.1 Demography	0.1.01	Population, total		WDI	4,157,654	5,378,824	6,858,000	2010	1,961,558,757	(2010)	East Asia & Pacific (developing only)
		0.1.02	Population growth (annual %)		WDI	2.5	2.6	2.3	2010	0.7	(2010)	East Asia & Pacific (developing only)
		0.1.03	Life expectancy at birth, total (years)		WDI	55.7	58.8	62.4	2010	72.2	(2010)	East Asia & Pacific (developing only)
		0.1.04	Birth rate, crude (per 1,000 people)		WDI	35.1	35.0	30.2	2010	14.2	(2010)	East Asia & Pacific (developing only)
		0.1.05	Death rate, crude (per 1,000 people)		WDI	10.5	9.2	7.6	2010	7.0	(2010)	East Asia & Pacific (developing only)
		0.1.06	Urban population (% of total)		WDI	15.0	13.2	12.5	2010	46.0	(2010)	East Asia & Pacific (developing only)
	0.2 Economic・Development Condition	0.2.01	GNI per capita, Atlas method (current US$)		WDI	820	620	1,300	2010	3,695.8	(2010)	East Asia & Pacific (developing only)
		0.2.02	GNI growth (annual %)		WDI	-2.9	-0.3	4.8	2004	10.0	(2010)	East Asia & Pacific (developing only)
		0.2.03	Total enrollment, primary (% net)	2.1	WDI	65.1				94.4	(2007)	East Asia & Pacific (developing only)
		0.2.04	Ratio of female to male primary enrollment (%)	3.1	WDI	83.6	86.3	89.2	2008	101.1	(2009)	East Asia & Pacific (developing only)
		0.2.05	Literacy rate, adult total (% of people ages 15 and above)		WDI		57.3	60.1	2009	93.5	(2009)	East Asia & Pacific (developing only)
		0.2.06	Human Development Index		HDR	0.32	0.54	0.47	2011	0.67	(2011)	East Asia & Pacific
		0.2.07	Human Development Index (rank)		HDR	116 / 160	133 / 173	153 / 187	2011			
		0.2.08	Poverty gap at $1.25 a day (PPP) (%)		WDI			12.3	1996	3.4	(2008)	East Asia & Pacific (developing only)
	0.3 Water and Sanitation	0.3.01	Improved water source (% of population with access)	7.8	HNP Stats	41	39	40	2010	89.9	(2010)	East Asia & Pacific (developing only)
		0.3.02	Improved sanitation facilities (% of population with access)	7.9	HNP Stats	47	46	45	2010	65.6	(2010)	East Asia & Pacific (developing only)
1 Health Status of People	1.1 Mortality and Morbidity	1.1.01	Age-standardized mortality rate by cause (per 100,000 population) - Communicable		GHO			373	2008	74	(2008)	Western Pacific
		1.1.02	Age-standardized mortality rate by cause (per 100,000 population) - Noncommunicable		GHO			748	2008	534	(2008)	Western Pacific
		1.1.03	Age-standardized mortality rate by cause (per 100,000 population) - Injuries		GHO			87	2008	64	(2008)	Western Pacific
		1.1.04	Cause of death, by communicable diseases and maternal, prenatal and nutrition conditions (% of total)		HNP Stats			47.0	2008	13.4	(2008)	East Asia & Pacific (developing only)
		1.1.05	Cause of death, by non-communicable diseases (% of total)		HNP Stats			43.6	2008	76.3	(2008)	East Asia & Pacific (developing only)
		1.1.06	Cause of death, by injury (% of total)		HNP Stats			9.3	2008	10.3	(2008)	East Asia & Pacific (developing only)
		1.1.07	Distribution of years of life lost by broader causes (%) - Communicable		GHO			62	2008	19	(2008)	Western Pacific
		1.1.08	Distribution of years of life lost by broader causes (%) - Noncommunicable		GHO			28	2008	63	(2008)	Western Pacific
		1.1.09	Distribution of years of life lost by broader causes (%) - Injuries		GHO			11	2008	18	(2008)	Western Pacific
	1.2 Maternal and Child Health	1.2.01	Maternal mortality ratio (modeled estimate, per 100,000 live births)	5.1	MDGs	340	290	250	2008	88.7	(2008)	East Asia & Pacific (developing only)
		1.2.02	Adolescent fertility rate (births per 1,000 women ages 15-19)	5.4	MDGs		72.8	63.9	2010	18.8	(2010)	East Asia & Pacific (developing only)
		1.2.03	Mortality rate, under-5 (per 1,000)	4.1	MDGs	89.5	73.9	60.8	2010	24.3	(2010)	East Asia & Pacific (developing only)
		1.2.04	Mortality rate, infant (per 1,000 live births)	4.2	MDGs	65.3	55.4	46.9	2010	19.9	(2010)	East Asia & Pacific (developing only)
		1.2.05	Low-birthweight babies (% of births)		HNP Stats			10.1	2005	6.4	(2010)	East Asia & Pacific (developing only)
		1.2.06	Fertility rate, total (birth per woman)		HNP Stats	4.8	4.5	4.0	2010	1.8	(2010)	East Asia & Pacific (developing only)
	1.3 Infectious Diseases	1.3.01	a) Prevalence of HIV, male (% ages 15-24)	6.1	MDGs			0.3	2009			
			b) Prevalence of HIV, female (% ages 15-24)	6.1	MDGs			0.8	2009			
		1.3.02	Notified cases of malaria per 100,000 population	6.6	MDGs Database			18,012	2008			
		1.3.03	a) Malaria death rate per 100,000 population, all ages	6.6	MDGs Database			36	2008	55	(2009)	Oceania
			b) Malaria death rate per 100,000 population, ages 0-4	6.6	MDGs Database			15	2008	163	(2009)	Oceania
		1.3.04	Tuberculosis prevalence rate per 100,000 population (mid-point)	6.9	MDGs Database	659	437	465	2010	258	(2009)	Oceania
		1.3.05	Incidence of tuberculosis (per 100,000 people)	6.9	MDGs	303	303	303	2010	123	(2010)	East Asia & Pacific (developing only)
		1.3.06	Tuberculosis death rate (per 100,000 people)	6.9	MDGs	78	37	43	2010	12	(2010)	East Asia & Pacific (developing only)
		1.3.07	Prevalence of HIV, total (% of population ages 15-49)		HNP Stats	0.1	0.4	0.9	2009	0.2	(2009)	East Asia & Pacific (developing only)
		1.3.08	AIDS estimated deaths (UNAIDS estimates)		HNP Stats	100	500	1,300	2009			
		1.3.09	HIV incidence rate, 15-49 years old, percentage (mid-point)		MDGs Database		0.12	0.07	2009	0.04	(2009)	South-Eastern Asia (including Oceania)
		1.3.10	Paritial Prioritization Score by the Global Fund (HIV)		GF			7	2012			
			Paritial Prioritization Score by the Global Fund (Malaria)		GF			7	2012			
			Paritial Prioritization Score by the Global Fund (TB)		GF			9	2012			
	1.4 Nutrition	1.4.01	Prevalence of wasting (% of children under 5)		HNP Stats			4.4	2005			
2 Service Delivery	2.1 Maternal and Child Health	2.1.01	Births attended by skilled health personnel, percentage	5.2	MDGs Database		41	53	2006	56.0	(2009)	Oceania
		2.1.02	Birth by caesarian section		GHO			4.7	2002	24.4	(2011)	Western Pacific
		2.1.03	Contraceptive prevalence (% of women ages 15-49)	5.3	MDGs			32.4	2006	77.0	(2010)	East Asia & Pacific (developing only)
		2.1.04	Pregnant women receiving prenatal care (%)	5.5	HNP Stats			78.8	2006	92.2	(2010)	East Asia & Pacific (developing only)
		2.1.05	Pregnant women receiving prenatal care of at least four visits (% of pregnant women)	5.5	HNP Stats			54.9	2006			
		2.1.06	Unmet need for family planning, total, percentage	5.6	MDGs Database							
		2.1.07	1-year-old children immunized against: Measles	4.3	Childinfo	67	62	55	2010	95	(2010)	East Asia and Pacific
		2.1.08	1-year-old children immunized against: Tuberculosis		Childinfo	92	81	79	2010	97	(2010)	East Asia and Pacific
		2.1.09	a) 1-year-old children immunized against: DPT (percentage of infants who received their first dose of diphtheria, pertussis and tetanus vaccine)		Childinfo	97	84	80	2010	96	(2010)	East Asia and Pacific
			b) 1-year-old children immunized against: DPT (percentage of infants who received three doses of diphtheria, pertussis and tetanus vaccine)		Childinfo	68	59	56	2010	94	(2010)	East Asia and Pacific
		2.1.10	1-year-old children immunized against: Polio		Childinfo	68	47	61	2010	96	(2010)	East Asia and Pacific
		2.1.11	Percentage of infants who received three doses of hepatitis B vaccine		Childinfo	20	57	56	2010	94	(2010)	East Asia and Pacific
	2.2 Infectious Diseases	2.2.01	Condom use with non regular partner, % adults (15-49), male	6.2	MDGs							

Attachment 1: Major Health Indicators (Independent State of Papua New Guinea)

Independent State of Papua New Guinea				MDGs	Sources	1990	2000	Latest	Latest year	Latest in Region	(Latest year)	Region
		2.2.02	Condom use with non regular partner, % adults (15-49), female	6.2	MDGs							
		2.2.03	Men 15-24 years old with comprehensive correct knowledge of HIV/AIDS, percentage	6.3	MDGs Database							
		2.2.04	Women 15-24 years old with comprehensive correct knowledge of HIV/AIDS, percentage	6.3	MDGs Database							
		2.2.05	Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years	6.4	MDGs Database							
		2.2.06	Use of insecticide-treated bed nets (% of under-5 population)	6.7	HNP Stats							
		2.2.07	Children under 5 with fever being treated with anti-malarial drugs, percentage	6.8	MDGs Database							
		2.2.08	Tuberculosis treatment success rate under DOTS, percentage	6.10	MDGs Database		63	64	2008	70	(2008)	Oceania
		2.2.09	Antiretroviral therapy coverage (% of people with advanced HIV infection)	6.5	MDGs			52.0	2009			
		2.2.10	People aged 15 years and over who received HIV testing and counselling, estimated number per 1,000 adult population		GHOr			39.5	2010			
		2.2.11	Testing and counselling facilities, estimated number per 100,000 adult population		GHOr			7.7	2010			
		2.2.12	Pregnant women tested for HIV, estimated coverage (%)		GHOr			24	2010			
		2.2.13	Percentage of HIV-infected pregnant women who received antiretroviral drugs to reduce the risk for mother-to-child transmission (Mid point)	6.5	MDGs Database			13	2009			
		2.2.14	Tuberculosis case detection rate (all forms)		HNP Stats	20.0	65.0	70.0	2010	76	(2010)	East Asia & Pacific (developing only)
		2.2.15	Tuberculosis treatment success rate (% of registered cases)	6.10	MDGs		63.0	72.0	2009	92	(2009)	East Asia & Pacific (developing only)
	2.3 Nutrition	2.3.01	Vitamin A supplementation coverage rate (% of children ages 6-59 months)		HNP Stats			14.0	2010			
		2.3.02	Consumption of iodized salt (% of households)		HNP Stats			91.9	2006	85.7	(2010)	East Asia & Pacific (developing only)
	2.4 Quality and Coverage	2.4.01	Estimate of health formal coverage		ILO					11.6		Countries of very high vulunerability
		2.4.02	Population not covered (%) due to financial resources deficit		ILO					85.8		Countries of very high vulunerability
		2.4.03	Population not covered (%) due to professional health staff dificit		ILO					74.6		Countries of very high vulunerability
3 Health System	3.1 Human Resources	3.1.01	Physicians (per 1,000 people)		HNP Stats	0.07	0.05	0.05	2008	1.2	(2010)	East Asia & Pacific (developing only)
		3.1.02	Midwives (per 1,000 people)		HNP Stats					0.04	(2002)	East Asia & Pacific (developing only)
		3.1.03	Nurses (per 1,000 people)		HNP Stats		0.53			1	(2001)	East Asia & Pacific (developing only)
		3.1.04	Dentistry personnel density (per 10,000 population)		GHO			0.07	2008	1	(2007)	Western Pacific
		3.1.05	Density of pharmaceutical personnel (per 10,000 population)		GHO					4.0	(2007)	Western Pacific
	3.2 Health Financing	3.2.01	Health expenditure, total (% of GDP)		HNP Stats		4.0	3.6	2010	4.8	(2010)	East Asia & Pacific (developing only)
		3.2.02	Health expenditure, public (% of total health expenditure)		HNP Stats		81.7	71.6	2010	53.4	(2010)	East Asia & Pacific (developing only)
		3.2.03	Health expenditure, private (%) of total health expenditure)		HNP Stats		18.3	28.5	2010	46.6	(2010)	East Asia & Pacific (developing only)
		3.2.04	Out-of-pocket health expenditure (% of private expenditure on health)		HNP Stats		56.1	55.9	2010	67.0	(2010)	East Asia & Pacific (developing only)
		3.2.05	Health expenditure, public (% of government expenditure)		HNP Stats		9.9	8.2	2010	9.3	(2004)	East Asia & Pacific (developing only)
		3.2.06	External resources for health (% of total expenditure on health)		HNP Stats		23.9	24.0	2010	0.4	(2010)	East Asia & Pacific (developing only)
		3.2.07	Social security expenditure on health as a percentage of general government expenditure on health		GHO			0.0	2009	68.6	(2009)	Western Pacific
		3.2.08	a) Health expenditure per capita (current US$)		HNP Stats		26.1	49.4	2010	182.8	(2010)	East Asia & Pacific (developing only)
			b) Per capita total expenditure on health (PPP int. $)		GHO		68	81	2009	614	(2009)	Western Pacific
		3.2.09	Per capita government expenditure on health at average exchange rate (US$)		GHO		21.0	29	2009	361	(2009)	Western Pacific
	3.3 Facilities, Equipments and Supplies	3.3.01	a) Median availability of selected generic medicines (%) - Public		GHO							
			b) Median availability of selected generic medicines (%) - Private		GHO							
		3.3.02	a) Median consumer price ratio of selected generic medicines - Public		GHO							
			b) Median consumer price ratio of selected generic medicines - Private		GHO							
		3.3.03	Hospital beds (per 1,000 population)		HNP Stats	4.0				3.9	(2009)	East Asia & Pacific (developing only)

WDI: World Development Indicators & Global Development Finance (http://databank.worldbank.org/ddp/home.do) (Accessed 07/2012)
HDR: Human Development Reports (http://hdr.undp.org/) (Accessed 07/2012)
HNP Stats: Health Nutrition and Population Statistics (http://databank.worldbank.org/ddp/home.do) (Accessed 07/2012)
GF: Global Fund eligibility list for 2012 funding channels, the Global Fund to Fight AIDS, Tuberculosis and Malaria (http://www.theglobalfund.org/en/application/applying/ecfp/) (Accessed 07/2012)
GHO: Global Health Observatory Country Statistics (http://www.who.int/gho/countries/en/) (Accessed 07/2012)
GHOr: Global Health Observatory Repository (http://apps.who.int/ghodata/) (Accessed 07/2012)
MDGs: Millennium Development Goals (http://databank.worldbank.org/ddp/home.do) (Accessed 07/2012)
MDG database: Millennium Development Goals Indicators (http://mdgs.un.org/unsd/mdg/) (Accessed 07/2012). Regional data is available on The Millennium Development Goals Report Statistical Annex 2011 (United Nations).
Childinfo: Childinfo UNICEF (http://www.childinfo.org/) (Accessed 07/2012)
ILO: World Social Security Report 2010/11: Providing coverage in times of crisis and beyond. International Labour Office Geneva: ILO 2010.

1.3.10 Partial Prioritization Score is composed of the income level score for the country and the disease burden score for the particular disease in the country. The minimum score is 3 and the maximum score is 12.

2.4.01 Estimate of health formal coverage is indicated as percentage of population covered by state, social, private, company-based, trade union, mutual and other health insurance scheme.

2.4.02 Population not covered (%) due to financial resources deficit (based on median value in low-vulnerability group of countries) uses the relative difference between the national health expenditure in international $ PPP (excluding out-of-pocket) and the median density observed in the country group with low levels of vulnerability as a benchmark for developing countries. The rate can be calculated using the following formula:

Per capita health expenditure not financed by private households' out-of-pocket payments (PPP in int. $) [A]
Population (in thousands) total [B]
Total health expenditure not financed by out of pocket in int. $ PPP (thousands) [C = A x B]
Population covered by total health expenditure not financed by out-of pocket if applying Benchmark* (thousands) [D = C ÷ Benchmark]**
Percentage of the population not covered due to financial resources deficit (%) [F = (B - D) ÷ B x 100]
*Benchmark: Total health expenditure not financed by out-of-pocket per capita = 350 international $ PPP.
**This formula was partially modified from the original in the source to suit an actual calculation.

2.4.03 Population not covered (%) due to professional health staff dificit uses as a proxy the relative difference between the density of health professionals in a given countries and its median value in countries with a low level of vulnerability. The rate can be calculated using the following formula:

Total of health professional staff [A = B + C]
Number of nursing and midwifery personnel [B]
Number of physicians [C]
Total population (in thousands) [D]
Number of health professional per 10,000 persons [F = A ÷ D x 10]
Total population covered if applying Benchmark* (thousands) [E = A ÷ Benchmark x 10]
Percentage of total population not covered due to health professional staff deficit [G = (D - E) ÷ D x100]
Benchmark: 40 professional health staff per 10,000 persons.

Attachment 2：References (Independent State of Papua New Guinea)

	TITLE	AUTHOR	URL	YEAR
1	ODA Country Databook 2011	Ministry of Foreign Affairs, Japan	http://www.mofa.go.jp/mofaj/gaiko/oda/shiryo/kuni/11_databook/pdfs/07-10.pdf	2011
2	Country Health Information Profiles (CHIPs): Papua New Guinea	WHO	http://www.wpro.who.int/countries/png/25PNGpro2011_finaldraft.pdf	2011
3	Millenium Development Goals and Papua New Guinea: PNG Progress	United Nations in PNG	http://www.un.org.pg/index.php?option=com_content&view=article&id=58&Itemid=24	2009
4	World Development Indicators (WDI) & Global Developemnt Finance (GDF) (database)	World Data Bank, the World Bank	http://databank.worldbank.org/ddp/home.do?Step=12&id=4&CNO=2	2011
5	Human Development Report 2011	UNDP		2011
6	National Health Plan 2011-2020, Vol.1 Policies and Strategies	NDoH (National Department of Health), PNG	http://www.wpro.who.int/countries/png/PNGNHP_Part1.pdf	Jun. 2010
7	Papua New Guinea Medium Term Development Plan 2011-2015	DoNP&M (Department of National Planning and Monitoring), PNG	http://www.treasury.gov.pg/html/publications/files/pub_files/2011/2011-2015.png.mtdp.pdf	Aug. 2010
8	Demography and the epidemiology of disease in Papua New Guinea	Ian Riley, PNG Med. J. 2009; 52(3-4): 83-59	http://www.pngimr.org.pg/png_med_journal/original%20articles%20-%20demography%20and%20epidemiology%20of%20disease%20-%20sept-dec%202009.pdf	2009
9	Millennium Development Goals Indicators (The official United Natioins site for the MDG indicators) database	United Nations	http://mdgs.un.org/unsd/mdg/Data.aspx	2012
10	HNP Stats (Health, Nutrition and Population Statisics) (database)	World Data Bank, the World Bank	http://databank.worldbank.org/ddp/home.do?Step=12&id=4&CNO=311	2012
11	ChildInfo: Monitoring the Situation of Children and Women. Statistics by Conutry	UNICEF	http://www.childinfo.org/country_list.php	
12	PNG Demographic and Health Survey 2006	National Statistical Office, PNG / ORC Macro		2009
13	Reproductive Health at a Glance: Papua New Guinea	The World Bank	http://siteresources.worldbank.org/INTPRH/Resources/376374-736328719/PNGhealth42211web.pdf	Apr. 2011
14	Family Planning in Papua New Guinea: Current Status and Prospects for Re-Positioning Family Planning in the Development Agenda	Geoffrey Hayers, in the UNFPA-ICOMP Regional Consultation on “Family Planning in Asia and the Pacific: Addressing the Challenge” held from 8-10 December 2010 in Bangkok		Dec. 2010
15	Ministerial Taskforce on Maternal Health in Papua New Guinea: Report	Ministerial Taskforce on Maternal Health in Papua New Guinea, NDoH, PNG	http://www.unfpa.org/sowmy/resources/docs/library/R149_DOH_PNGUINEA_2009_Ministerial_Taskforce_report_final_version_3.pdf	May 2009
16	Countdown to 2015: Maternal, Newborn & Child Survival, The 2012 Report	WHO / UNICEF	http://www.countdown2015mnch.org/documents/2012Report/2012-complete-no-profiles.pdf	2012

Attachment 2：References (Independent State of Papua New Guinea)

	TITLE	AUTHOR	URL	YEAR
17	Child Health Policy and Plan 2009-2020	NDoH, PNG	http://www.rch.org.au/emplibrary/cich/PNG_Child_Health_Policy_and_Plan_2009-2020.pdf	2008
18	2011 Sector Performance Annual Rreview, Assessment of Sector Performance 2006-2010, National Report, NDo H	NDoH, PNG	http://www.wpro.who.int/countries/png/ASR_report_2011.pdf	2011
19	Country Profile: Papua New Guinea, Maternal, Newborn and Child Survival	UNICEF	http://www.childinfo.org/files/maternal/DI%20Profile%20-%20Papua%20New%20Guinea.pdf	Nov. 2008
20	Global AIDS Report 2012, Country Progress Report, Papua New Guinea Jan.2010 - Dec.2011	National AIDS Council Secretariat, PNG	http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_PG_Narrative_Report.pdf	Mar. 2012
21	Malaria Control in Papua New Guinea Scaling for Impact	GFATM	http://portfolio.theglobalfund.org/en/Grant/Index/PNG-809-G04-M	2012
22	GFATM, Country Grant Portfolio	GFATM	http://portfolio.theglobalfund.org/en/Country/Index/PNG	May 2012
23	WHO Programms and Projects: Tuberculosis Country Profiles - Papua New Guinea	WHO	http://www.who.int/tb/country/data/profiles/en/index.html	2011
24	Tuberculosis in Papua New Guinea: Fact Sheet	Austlralian Doctors International	http://www.adi.org.au/upload/2011_TB%20Fact%20Sheet-PNG.pdf	2011
25	PacCARE Programme Review Group	The Global Alliance to Eliminate Lymphatic Filariasis (GAELF)	http://www.filariasis.org/pacelf_prg.html	2012
26	WHO Report: Global Tuberculosis Control 2011	WHO	http://whqlibdoc.who.int/publications/2011/9789241564380_eng.pdf	
27	Noncommunicable Diseases Country Profiles 2011	WHO	http://www.who.int/nmh/countries/png_en.pdf	2011
28	Progress on Drinking Water and Sanitation 2012	UNICEF / WHO	http://www.unicef.org/media/files/JMPreport2012.pdf	2012
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