

**PAPUA NEW GUINEA – Millennium Development Goals Second National Progress
Comprehensive Report for Papua New Guinea 2010**

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FOREWORD BY THE GOVERNMENT OF PAPUA NEW GUINEA

The year 2010 is the last year of implementing our country's Medium Term Development Strategy (MTDS) 2005-2010. We are currently in the process of preparing the Medium Term Development Plan (MTDP) 2011-2015. At this juncture, the second National Millennium Development Goals (MDGs) Comprehensive Report (MDGCR) has been prepared. This report is an important guide for the MTDP 2011-2015.

The MDGs are the basic development goals of any country. Therefore, the Government of Papua New Guinea (PNG) included PNG's 15 tailored MDG targets and 67 indicators into the MTDS 2005-2010. To date, the MDG targets and indicators are being reviewed and re-tailored in order to fully integrate them into the MTDP 2011-2015.

However, the MDGs need to be integrated not only into the national and sector plans, but also into the provincial and district plans. This will help sub-national governments attend to their provincial MDGs by making appropriate budget allocations and implementing and monitoring their respective plans.

Our reviews show that during the period 1990-2009, we were able to achieve some of the national MDG targets. However, we were unable to achieve any of the international targets.

One of the reasons for the low performance on the National MDGs is that some of our provinces are far behind others on MDG achievement. These provinces include West Sepik, Enga, Southern Highlands, Gulf and other provinces of the Highlands and Momase regions. Therefore, we need to make sure that these MDG 'hotspots' are taken care of in the MTDP.

We are mindful of our obligation to work towards achievement of the MDGs international targets which we committed ourselves to, at the United Nations in September 2000. We know that we can achieve the MDGs if we correctly plan, provide appropriate resources and implement relevant programmes to achieve them.

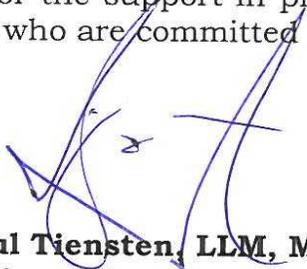
There are many international best practices which we can use to achieve the MDGs. Furthermore, single strategic interventions can affect several of the MDGs. For example, we can achieve many of the MDGs if we provide clean energy (electricity) in the rural areas. Electricity helps agro-processing, which leads to improvement in productivity and incomes of farmers (MDG 1); facilitates reading and writing in the evening and at night (MDG 2); reduces women's time for cooking, and the time saved could be used for women's empowerment (MDG 3); improves health as electricity becomes available in the nearby community health posts (MDGs 4, 5 and 6); improves the environment

with less carbon produced (MDG 7); and improves knowledge through radio broadcasts, TVs, computers and the Internet (MDG 8).

We are committed to strengthen both the demand and supply sides of the MDGs and to provide the needed services to our people. We are also committed to create policies and the legal environment that is conducive to attain the MDGs.

I acknowledged and thanked Dr Martin Bakker, UNDP Consultant who prepared the draft of this Report and the MDG Core Working Group, MDG Technical Working Committee and the MDG National Steering Committee who provided their inputs, comments and recommendations on the draft of this Report.

Finally, I would like to thank the United Nations Development Program (UNDP) in PNG for the support in preparing this report and all our other development partners who are committed to assisting PNG to attain the MDGs.



Hon. Paul Tiensten, LL.M, MP
Minister for National Planning and District Development

MESSAGE BY THE UNITED NATIONS

In September 2010, the United Nations General Assembly will review overall progress towards the achievement of the Millennium Development Goals (MDGs), one decade after their adoption at the United Nations Millennium Summit in September 2000. The MDGs are concrete and specific goals that 189 countries, including Papua New Guinea, have committed to achieving for their nations by 2015. The eight goals are enshrined in the Millennium Declaration, which provide the normative framework for the MDGs in terms of social justice, equity, freedom from violence and good governance.

Papua New Guinea, as an active Member State of the UN, incorporated the localized MDG targets and indicators in its Medium-Term Development Strategy 2005-2010. While economic growth has been robust in the past years, averaging 6% per annum since 2007, progress in achieving the MDGs has been mixed, reflecting overall slower than expected development gains in most sectors in the country. With only five years left until the 2015 deadline to achieve the Millennium Development Goals, it is critical for PNG to accelerate its progress both at the national and local levels.

As we reflect on the 10-year review of the MDGs, it is recognized that new and innovative strategies need to be identified in order to move forward more rapidly. We encourage the PNG Government to fully integrate the localized MDG targets and indicators in the new Five-year Medium Term Development Plan 2011-2015 and support its implementation with adequate budgetary allocations.

We are mindful that achieving the MDGs entails complex challenges. Nevertheless, we are optimistic that with strategic support from donor partners, civil society organizations and other stakeholders, coupled with political commitment and improved budgetary support, the PNG Government can meet its national targets and significantly improve progress towards meeting global targets. At the international level, UNDP – as scorekeeper and custodian of the MDGs – has spearheaded work on different fronts to catalyze change and promote an acceleration of progress towards the MDGs which PNG will be able to benefit from.

An international assessment undertaken by UNDP in over 50 countries shows that the MDGs can be achieved, even in the poorest and slowest performing countries if the following 8-point agenda is taken into consideration by national policy-makers:

- (i) Development is country-led and home-grown;
- (ii) Economic growth is inclusive;
- (iii) Public investment in social sectors are increased (health, education, water, sanitation, infrastructure, etc);
- (iv) Investment in women and girls is accelerated;
- (v) Adopt social protection and employment-focused programmes;
- (vi) Expand access to affordable energy services;
- (vii) Increase domestic resources for the MDGs; and
- (viii) Leverage global partnership to deliver on the MDGs.

At the country level, the United Nations, through the *Delivering as One* initiative, has undertaken significant changes in the structure and delivery of development policies and technical assistance over the past few years. Our *One UN Country Programme* is thus streamlined to promote the achievement of the MDGs. Furthermore, the United Nations is assisting the government and Civil Society Organizations (CSOs) to raise awareness of the MDGs at all levels and sectors of PNG society.

There is an urgent need to localize strategies to achieve the MDGs – particularly at the provincial and local government level. This involves adapting development strategies to local needs, taking into account local knowledge and making it relevant from a grass-roots perspective to empower communities and build local resilience. As we move forward to 2015, the UN will support the national government in this MDG localization project in four pilot provinces and will also support universities in Papua New Guinea to produce a skilled cadre of people trained in the MDGs and human development.

Best practices have shown that success in achieving the MDGs can only be ensured with the support of all actors: national and local authorities, development partners and civil society, including faith-based and non-government organizations. In terms of development outcomes, this means that sub-national processes, where public institutions, civil society and individuals

build networks for purposes of service delivery can promote and accelerate progress towards the achievement of the MDGs.

The United Nations encourages the Government of Papua New Guinea to continue to create the right policy climate for the promotion of sound local governance; a climate in which local authorities can plan, budget, implement and monitor their own local development activities. This is a key step in multiplying development efforts towards the achievement of national MDG targets. With the prospects of the Liquefied National Gas (LNG) project coming online in PNG in the next few years, we can look forward to an economically vibrant country, characterized by inclusive growth and more equitable human development. The net result will be a nation that lives up to its promise of a better life for its people in the next five years and beyond.



David McLachlan-Karr

UN Resident Coordinator, and
UNDP Resident Representative

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ALR	Adult Literacy Rate
ANC	Antenatal Clinic
APO	Aid Post Orderly
ARB	Autonomous Region of Bougainville
ARV	Anti Retroviral
ASDR	Age Specific Death Rate
ASFR	Age Specific Fertility Rate
CBR	Crude Birth Rate
CCDS	Climate Compatible Development Strategy
CDM	Clean Development Mechanism
CDR	Crude Death Rate
CEB	Children Ever Born
CEDAW	Convention on Elimination of all forms of Discrimination Against Women
CHP	Community Health Post
CHW	Community Health Worker
CITES	Convention on International Trade in Endangered Species
CMR	Child Mortality Rate
CPI	Consumer Price Index
CPR	Continuous Population Register
CRC	Convention on the Rights of the child
CRIS	Country Response Information System
CRR	Cohort Retention Rate
CRS	Civil Registration System
CSMT	Curriculum Standards Monitoring List
CSO	Civil Society Organization
CTI	Coral Triangle Initiative
CU	Census Unit
DACA	Data Availability, Completeness and Accuracy
DEC	Department of Environment and Conservation
DEFT	Design Effect
DfCD	Department for Community Development
DHS	Demographic and Health Survey
DLE	Department of Labor and Employment
DNPM	Department of National Planning and Monitoring
DOB	Date of birth
DOE	Department of Education
DOH	Department of Health
DPE	Department of Petroleum and Energy
DRVERS	Dual Record Vital Event Recording System
EA	Enumeration Area
ED	Enumeration District
EPA	Economic Partner Agreement
EPP	Estimation Projection Package
e_0	Average life expectancy at birth
EC	Economic Corridor

EMIS	Education Management Information System
ESCAP	Economic and Social Commission for Asia and the Pacific
ESEG	Environmentally Sustained Economic Growth
ESIP	Education Sector Improvement Programme
FA	Forest Authority
FBO	Faith Based Organization
FPA	Family Planning Association
FAO	Food and Agriculture Organization
FIBoS	Fiji Islands Bureau of Statistics
FIMS	Forest Inventory Mapping System
FMU	Forest Mapping Unit
GAP	Government Aid Post
GBV	Gender Based Violence
GEF	Global Environment Facility
GER	Gross Enrollment Rate
GFR	General Fertility Rate
GHG	Green House Gas
GIS	Geographic Information System
GNP	Gross National Product
GoPNG	Government of PNG
GRR	Gross Reproduction Rate
GST	General Standard Table
HDI	Human Development Index
HEO	Health Extension Officer
HPI	Human Poverty Index
HIES	Household Income and Expenditure Survey
HR	Highlands Region
ICLS	International Classification of Labour Force Statisticians
ICM	Integrated Coastal Management
IHS	Independent Household Survey
ILO	International Labour Organization
IMCI	Integrated Management of Childhood Illnesses
IMR	Infant Mortality Rate
INA	Institute of National Affairs
IR	Islands Region
IRG	Independent Review Group
KAP	Knowledge, Attitude and Practice (of family planning)
LBC	Last born child
LFPR	Labour Force Participation Rate
LMMA	Locally Managed Marine Areas
LSMS	Living Standards Measurement Survey
LLG	Local Level Government
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MCH	Mother and Child Health
MDG	Millennium Development Goal
MDGR	Millennium Development Goals Report
MDGSR	Millennium Development Goals Summary Report

MDGCR	Millennium Development Goals Comprehensive Report
MEA	Multilateral Environmental Agreement
MIS	Management Information System
MOMASE	Regional Name for the Northern Region (consisting of the provinces Morobe , Madang , East Sepik and West Sepik).
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MRA	Mineral Resources Authority
MRRS	Multi Round Retrospective Survey
MTDP	Medium-Term Development Plan
MTDS	Medium-Term Development Strategy
NA	Not Available
NAC	National AIDS Council
NACS	National AIDS Council Secretariat
NAP	National Action Plan
NARI	National Agriculture Research Institute
NBSAP	National Biodiversity Strategic Action Plan
NCD	National Capital District
NCWA	National Council of Women Act
NEC	National Executive Council
NHASP	National HIV/AIDS Support Programme
NRI	National Research Institute
NER	Net Enrollment Rate
NGO	Non Government Organization
NHIS	National Health Information System
NLAS	National Literacy Awareness Secretariat
NMR	Net-Migration Rate
NPD	Non Private Dwelling
NPP	National Population Policy
NPRS	National Poverty Reduction Strategy
NR	Northern Region (MOMASE Region)
NRR	Net Reproduction Rate
NS	National Statistician
NSO	National Statistical Office
NWP	National Women's Policy
OCCES	Office of Climate Change and Environmental Sustainability
ODA	Overseas Development Aid
OMR	Out-Migration Rate
PA	Protected Area
PEAN	PNG Education Advocacy Network
PD	Private dwelling
PDS	Provincial Data System
PES	Post Enumeration Survey
P _i	Average number of children ever born to women in age group i
PNG	Papua New Guinea
PNGDSP	PNG Development Strategic Plan
PNGFIA	PNG Forest Industries Association
PNGRIS	PNG Resource Information System

POPIN	Population Information System
PPP	Purchasing Power Parity
PPP	Public-Private Partnership
QEB	Quarterly Economic Bulletin
r	Annual Rate of Growth
REDD	Reduced Emissions from Deforestation and Degradation
RGO	Registrar General's Office
RMU	Resource Mapping Unit
RNI	Rate of Natural Increase
RNV	Rural Non Village (Sector)
SE	Sampling Error
SIA	Supplementary Immunization Activity
S_i	Average number of children surviving to women in age group i
SLM	Sustainable Land Management
SR	Southern Region
SRRS	Single Round Retrospective Survey
SRS	Sample Registration System
STIs	Sexually Transmitted Infections
TFR	Total Fertility Rate
TVET	Technical and Vocational Education Training
TWG	Technical Working Group
UA	Urban Area
UBE	Universal Basic Education
UBRT	Urban Boundary Revision Team
UHS	Urban Household Survey
U5MR	Under-Five Mortality Rate
UN	United Nations
UNCBD	United Nations Convention for Biological Diversity
UNCCC	United Nations Convention for Climate Change
UNCCD	United Nations Convention to Combat Desertification
UNCP	UN Country Programme
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly Special Meeting
UPNG	University of Papua New Guinea
VCT	Voluntary Counseling and Testing
VHV	Village Health Volunteer
WB	World Bank
WFS	World Fertility Survey
WHO	World Health Organization
WMA	Wild Life Management Area
WTO	World Trade Organisation
WSSD	World Summit on Sustainable Development
YLR	Youth Literacy Rate

GLOSSARY

Adolescent fertility: It refers to births (and pregnancies) of women under the age of 20 years.

Age-sex structure: The composition of a population as determined by the number or proportion of males and females in each age category. The age-sex structure of a population is the cumulative result of past trends in the three demographic processes fertility, mortality and migration. Information on the age-sex composition of a population is an essential prerequisite for the description and analysis of most types of demographic and socio-economic data.

Case Rate: This is the number of reported cases of a specific disease per 100,000 population during a given year.

Case Fatality Rate: This is the proportion of persons contracting a disease who die from that disease.

Census Unit: The smallest geographical unit used in data collection e.g. censuses and surveys in PNG. Census units should be the “building blocks” of all higher level geographical subdivisions.

Child Mortality Rate: The probability of dying between age 1 and 5 years.

Cohort: A group of persons who have undergone the same event during a particular period of time e.g. the 2000 birth cohort consists of all persons born in the year 2000.

Crude Birth Rate: The number of live births per 1,000 population in a given year.

Crude Death Rate: The number of deaths per 1,000 population in a given year.

Demographic characteristics: The size structure and distribution of a population. Demographic characteristics provide a picture of the population at a particular point in time.

Demographic processes: Fertility, mortality and migration. Demographic processes change the characteristics of a population over time.

Doubling Time: The number of years required for a population of an area to double in size, given the current rate of population growth.

Economic Corridor: A region in which government provides a well planned zoning

system, a comprehensive and effective network of transport and utilities, and quality education and health services.

Exponential Growth Rate: A growth rate applied to a quantity (i.e. a population) continuously. The exponential form of the growth rate is appropriate for populations since they grow (or decline) continuously in response to births, deaths, and migration.

Family planning: The conscious effort of couples to regulate the number and spacing of births. Family planning sometimes connotes the use of “birth control” to avoid pregnancy, but also includes efforts to induce pregnancy.

Fecundity: The physiological capacity of a woman, man, or couple to produce a live child. The opposite of fecundity is sterility.

Fertility: The actual reproductive performance of an individual, a couple, a group, or a population. The opposite of fertility is infertility.

Gini Coefficient: This coefficient measures the extent to which the distribution of income (or consumption) among individuals or households within a country deviates from a perfectly equal distribution. It lies between 0 and 1, where 0 means perfect equality and 1 means perfect inequality.

Headcount Index: The proportion of the population with a standard of living below the poverty line.

Incidence Rate: The number of new cases (the number of persons contracting a disease) as a proportion of the population at risk, per unit of time.

Infant Mortality Rate: The number of deaths to infants under one year of age in a given year per 1,000 live births in that year.

Lifetime fertility questions: Census/survey questions to women (usually of age 15 and over) on the number of children ever born alive to them as well as the number of these that are still alive and that are dead. Lifetime fertility as well as infant and child mortality is derived from the answers to the lifetime fertility questions.

Life expectancy: The average number of additional years a person would live if current mortality trends were to continue. The average life expectancy at birth is the average number of years a newborn child would live given continuation of current mortality trends.

Maternal health: The total wellbeing of women, but particularly during pregnancy, labour and childbirth.

Maternal Mortality Rate: The number of deaths to women due to pregnancy and childbirth complications per 100,000 live births in a given year.

Morbidity: The frequency of disease and illness in a population.

Neonatal Mortality Rate: The number of deaths to infants under 28 days of age in a given year per 1,000 live births in that year.

Parity: The number of children born alive to a woman.

Population Momentum: The tendency for population growth to continue beyond the time that replacement level of fertility has been achieved because of the relatively high concentration of people in the childbearing years.

Population Policy: Explicit or implicit measures instituted by a government to influence population characteristics (size, structure and distribution) and processes (fertility, mortality and migration).

Poverty Gap Index: The average over all people of the gaps between the standard of living of the poor. It provides a measure of the average depth of poverty. The mean over the population of the proportionate poverty gap is given by the distance of the poor below the poverty line, as proportion of the line. The non poor are counted as having a zero poverty gap.

Poverty Severity Index: This index takes into account the distribution of living standards of the poor. It is obtained by squaring the poverty gap index.

Prevalence Rate: The number of persons having a particular disease at a given point in time per population at risk.

Resource Mapping Unit: A spatial unit or polygon that is distinguished from its neighbors by one or more of six geographic variables or “physical resource attributes”. These variables are: landform, rock type, altitude¹, relief, inundation and mean annual rainfall.²

Rural Non-Village (RNV) Sector: Non-traditional locations in rural areas e.g. missions, schools, plantations, government stations and work camps. For statistical and census/survey purposes the RNV sector is a sub-sector of a Rural Sector

¹ There are five altitude classes each with a range of 600 m. Altitude also serves as a proxy for temperature.

² A 7th variable is “soil composition”. However, this variable has not been used to distinguish between RMUs. In the PNGRIS classification, each RMU has only one soil type. This is the dominant soil type of this RMU.

Sex Ratio: The number of males per 100 females in a population.

Theory: A coherent set of general principles used as principles of explanation or relationships of some observed phenomena, Theories allow for generalizations beyond individual facts.

Total Fertility Rate: The average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year.

Urbanization: Growth in the proportion of a population living in urban areas.

Young Population: A population with a relatively high proportion of children, adolescents and young adults, a low median age, and thus a high growth potential.



INTRODUCTION

INTRODUCTION

In 2000, the United Nations Millennium Declaration set eight goals designed to meet the challenges of the new Millennium. Leaders of 189 countries, including Papua New Guinea (PNG) signed this Declaration. The Millennium Development Goals (MDGs) are:

- (1) Eradicate extreme poverty and hunger***
- (2) Achieve universal primary education***
- (3) Promote gender equality and empowerment of women***
- (4) Reduce child mortality***
- (5) Improve maternal health***
- (6) Combat HIV/AIDS, malaria and other diseases***
- (7) Ensure environmental sustainability***
- (8) Develop a global partnership for development***

For each of these goals, one or more targets have been specified. Most but not all global targets have clear deadlines. Furthermore, a set of indicators has been identified for the monitoring of progress towards achieving these targets. The global goals and associated targets refer to anticipated change (progress) between MDG base year 1990 and 2015.

The signing of the United Nations Millennium Declaration comes with responsibilities. These refer to regular reporting on the status of the MDGs, awareness creation, advocacy and action. PNG produced and published its first Millennium Development Goals Report (MDGR) in 2004. Subsequently, the Government of PNG and the United Nations Development Programme (UNDP) developed a programme for MDG coordination and implementation. This programme has several components, which are:

- Awareness, advocacy, communication and training to develop capacity to integrate MDGs on policy, plans and budgets, and service delivery and utilization
- MDG localization
- Monitoring and evaluation

Five years after the publication of the inaugural MDGR, PNG has produced two progress reports on the MDGs viz. a Summary Report (MDGSR) and the present Comprehensive Report (MDGCR). As in 2004, both reports were produced under the leadership of the Department of National Planning and Monitoring (DNPM) in collaboration with other government departments, NGOs and institutions. Funding for this project was provided by the UNDP and several UN agencies provided technical advice.

Work on the MDGSR started in July 2009. The report was produced in accordance with the second UNDG Guidelines for MDG Country Reports. In December 2009, The MDGSR was endorsed by the MDG National Steering Committee and on 15th February 2010, it was launched jointly by the UNDP Administrator, Ms Helen Clark and the Minister for National Planning and District Development, Hon. Paul Tiensten, LLM, MP.

Work on the MDGCR also started in July 2009. The reasons for producing a more comprehensive account of the progress made towards achieving the MDGs include:

- a. For the implementation of the programme for MDG coordination and implementation, and other MDG related activities, in particular the effective monitoring of these activities, a more detailed account of the current situation and trend in the MDG indicators is required. Moreover, the challenges in achieving the MDGs must be discussed in more detail than was possible in the MDGSR. The same applies to good practices and interventions that are in place. In short, although the structure of the MDGCR is more or less the same as that of the MDGSR, the MDGSR only provides an overview whereas the MDGCR discusses all aspects of the MDGSR in detail. This is particularly important for implementation and monitoring of the MDGs at the sub-national level.
- b. In March 2010, the National Executive Council (NEC) endorsed the PNG Development Strategic Plan (PNGDSP) 2010-2030. Since, at the time of completion of the MDGSR, this plan had not yet been endorsed, the MDGSR only refers to this strategic plan in passing.. The PNGDSP guides sector strategies and plans that will be developed during the period 2010-2030. It also provides guidance for the MDGCR especially with respect to its long term targets.

The Department of National Planning and Monitoring (DNPM) has also started formulation of the Medium Term Development Plan (MTDP) 2011-2015. A first draft of this plan will be completed by the end of June 2010. As in 2004, when the Inaugural MDGR was produced, MDG concerns will be integrated as closely as possible into the new MTDP 2011-2015. The MDGCR therefore serves as one of the main resources for the formulation of the MTDP. This applies in particular to the MDG targets and indicators. In the meantime, the MDG Core Group and MDG Technical Working Group (TWG) have reviewed and re-tailored all national (tailored) MDG targets and indicators, formulated in 2004 and incorporated in the Medium-Term Development Strategy (MTDS) 2005-2010.³ This review and re-tailoring has taken into account:

- The long term targets and associated indicators of the PNGDSP 2010-2030
- The trend in MDG indicators since 1990
- The challenges that impede the achievement of the MDGs
- Policies and interventions addressing MDG concerns, that are presently in place and are envisaged

³ A detailed account of all re-tailored indicators can be found in the DACA Report on data availability, completeness and accuracy (DACA) for human development and MDG monitoring.

- Budget allocations earmarked for achieving the MDGs

The retailored MDG indicators were endorsed by the MDG National Steering Committee on 28th May 2010.

- c. The detailed information included in the MDGCR is needed to update PNGInfo, the database for human development and MDG monitoring in the DNPM.
- d. The MDGCR serves as an education and training tool for public servants and others, especially those engaged in policy, planning, monitoring and evaluation in regard to the MDGs. Moreover, the MDGCR is an important addition to the resource materials for a course on human development and the MDGs that will be introduced at the University of Papua New Guinea (UPNG).
- e. The MDGCR is an important resource document for the estimation of the resource requirements (costing) for each of the MDGs.
- f. Last but not least, the MDGCR is needed for the advocacy and awareness creation component of the UNDP funded programme for MDG coordination and implementation at the national and sub-national levels. Activities at the province and lower level should, as far as possible, be context specific. One reason for this is that performance in most MDG related areas is very different at the provincial and lower level. This applies in particular to MDG 2, 4 and 5. Challenges experienced at the provincial and lower level also vary widely. The awareness creation and advocacy programme of the MDGs at the provincial and lower level takes these differences into account. The localization programme currently in place at the provincial level is province specific and does not just present the “national average” picture portrayed in the MDGSR.

Work on the MDGCR started with the production of 13 MDG Discussion Papers. Most of these papers are MDG specific whilst others focus on wider MDG related issues. A list of these Discussion Papers has been attached as Appendix A . These papers were used as information papers during discussions by the MDG Core Group. This Core Group consists of members of the DNPM and the National Statistical Office (NSO). The results of discussions by MDG Core Group members were included in subsequent drafts of the MDGCR. These drafts were reviewed and amended by the MDG Technical Working Group (TWG). The TWG consists of representatives of relevant government departments, NGOs and institutions.

The 9th draft of the MDGCR was reviewed during a retreat on 6th and 7th November 2009. In addition to Core Group and TWG members, other representatives from government departments participated. The feedback during this retreat was incorporated in the 10th draft of the MDGCR. Members of the MDG National Steering Committee reviewed this draft during their meeting on 20th November 2009. The comments made by the committee were incorporated into the 11th draft and again reviewed by the MDG National Steering Committee in December 2009. During this review, members recommended that more work needed to be done in regard to MDG 7 and 8. Subsequently, it was also decided to rearrange the sections dealing with MDG specific constraints/challenges into five categories viz.:

- i. General
- ii. Legislation//policy/plans
- iii. Financial
- iv. Service delivery
- v. Monitoring

In the process, the constraints/challenges earlier endorsed by the MDG National Steering Committee were again reviewed.⁴ The Committee also instructed that, as in the 2004 Inaugural MDGR and the 2009 MDGSR, the MDGCR should stick to the concept “challenges” and not use concepts like “bottlenecks” which are often not understood or misunderstood by many people in PNG, especially if translated into the numerous local languages.

The present category “general challenges” focuses on those challenges that cannot easily be classified under the other four categories. They pay particular attention to social, cultural, demographic and other challenges already included in previous drafts. In many countries, and particularly in PNG, these challenges are often the crucial ones. In the MDGSR, this is for instance clear in the chapters on MDG 2, 3 and especially 6. The issues involved are often very sensitive, and what, after much deliberation, has finally been recorded in this report is often a compromise. There is no universal agreement on many of these sensitive issues. It needs to be stressed that the fact that these challenges are now discussed under the heading “general” does not mean that, after 2004 their importance has been diminished.

The crosscutting challenges should become priority areas in budget allocation. It proved to be difficult to establish the precise amount of resources that the PNG Development Budgets of the past have earmarked for addressing crosscutting challenges. Past Development Budgets have sought to address seven priority areas embedded in the Medium-Term Development Strategy (MTDS) 2005-2010. Unfortunately these budgets are often not specific enough for more detailed analysis. For instance, the achievement of the targets for MDG 4 and 5 will be indirectly impacted through the primary and preventive health programme of the Department of Health (DOH) but it is difficult to determine the amount of resources that has been allocated for the achievement of particular MDG 4 and 5 targets. It is even more difficult to establish to what extent past Development Budgets address the “determinants” of the MDG indicators.⁵ The Development Budgets only provide a picture of change in funding for broad MDG related categories. However, it is important to note that in the PNG Development Budgets of the past, inadequate funding has been earmarked for the social sector. Many of the activities in this sector are donor-funded. In the case of MDG 6, the contribution of donors has, for many years, been close to 90 percent.

In the final draft of the MDGCR, a section dealing with “good practices” was added under each of the MDGs. In discussions with stakeholders, it was sometimes argued that in cases where MDG indicators have, since 1990 not improved or improved only

⁴ These are the challenges identified between 2004 and 2009 and incorporated in draft no. 11 of the MDGCR.

⁵ Many determinants of the key indicator of MDG 4, the Infant Mortality Rate (IMR), have been identified. Unfortunately, it was only possible to establish a reasonably reliable trend for six of these determinants. Efforts to establish the amount of resources allocated towards each of these determinants have so far proved to be futile. (See under MDG 4).

marginally, there may not be any good practices. However, even in those cases where no improvement has been made at the national level, the disparity in performance at the lower level (e.g. provincial level) often tends to be very large. The available data indicates that this is particularly the case with regard to MDG 2, 3, 4 and 5 but probably also for all other MDGs. It has been attempted to identify what the more advanced provinces are doing whereas the same is not done in provinces that are lagging behind.⁶ In some cases it appears that very large inter-provincial differences may not so much be the result of good practices in “advanced” provinces but to additional challenges in provinces that are lagging behind. These additional challenges are often of a social or cultural nature, e.g. in the case of the provincial disparities in enrollment, retention and achievement in education. It has also been hypothesized that the differences in the level of education and literacy at the provincial and lower level are related to “duration of contact”, since one component of contact with the colonial powers was the introduction of formal education by the missionaries. At the provincial level, “duration of contact” is indeed positively correlated with level of education and literacy.⁷ However, other factors may play an equally important or more important role.

The MDGCR, like the MDGSR deals in a general way with the impact of new challenges for the MDGs. Examples of new challenges are the 2008-2010 global financial crisis, the food and fuel crisis and climate change. With regard to the global financial, food and fuel crises, it is widely believed that, in PNG, the impact on the MDGs may be not as severe as in many other countries. However, it is difficult to quantify to what extent individual MDGs have been affected by these crises. This is even more so in the case of climate change. As reported in the MDGSR, the PNG database concerning MDG 7 is incomplete and deficient. Consequently, it has not yet been possible to establish a trend for most of the MDG 7 indicators. So far, the discussion on the impact of climate change on MDGs is mainly based on conjecture.

The MDGCR is the result of an intensive consultation process with stakeholders in government, NGOs and institutions as well as individual stakeholders.

Part A of the MDGCR has the same structure as the introductory part of the MDGSR. It consists of three chapters, I to III. Chapter I present a more comprehensive political, geographic, demographic and socio-economic profile for PNG. Chapter II includes a detailed discussion of the challenges that the MDG National Steering Committee considers as the overarching and crosscutting ones. Chapter III explains why, in 2004, the government of PNG formulated its own national (tailored) targets as well as the indicators associated with these targets. These 2004 tailored targets and indicators were incorporated in the 2005-2010 MTDS. This chapter also addresses the rationale for re-tailoring these targets and indicators in 2010, in preparation for the formulation of the MTDP 2011-2015.

Part B of the MDGCR provides a detailed account of progress made towards achieving each of the individual MDGs. The final Part C summarizes the findings of this report and makes recommendations for the future. Part C also includes two summary tables in which progress towards achieving the MDGs is assessed, as well as an appraisal of the monitoring and evaluation system that is currently in place.

⁶ Progress and challenges with regard to the achievement of MDG 2 are very different in the provinces of the Highlands Region (especially Southern Highlands and Enga) compared to the provinces of the Islands Region and Milne Bay. Similarly, the differences in child mortality (MDG 4) between the provinces in the Islands Region and provinces like West Sepik and Gulf are very large. (See MDG 2)

⁷ Personal communication with W. Sampson, E. Butuna and others.

Finally, after completion of the MDGSR and the MDGCR, the DNPM decided that there is a need for a third MDG report. This third report of the MDG trilogy 2009-2010 deals with the incomplete and deficient database for human development and MDG monitoring and makes recommendations for improvement. Like the MDGCR, this third report is a multi-purpose report. It will be used for training purposes and includes a detailed description of the methodology employed in the measurement of the MDG indicators from data collected in recent censuses and surveys and by administrative data collection systems in PNG. Work on the report “Data Availability, Completeness and Accuracy for Human Development and MDG monitoring” (DACA) will be completed in June 2010. The DACA report also includes a detailed review of the retailored national targets and indicators.



PART A: GENERAL

1. PNG PROFILE AND DEVELOPMENT CONTEXT

1. Physical and environmental profile

The island of New Guinea (including the western part: Irian Jaya) is the second largest island in the world (second to Greenland). The eastern part of the island, Papua New Guinea (PNG) has a total landmass of approx. 463,000 km². This includes the large islands New Britain, New Ireland and Bougainville, as well as a large number of smaller islands. About 85 percent of the total landmass of PNG is on the main island. PNG's Exclusive Economic Zone (EEZ) is about 2,437,480 km² and the total length of the coastline is about 17,110 km. PNG shares international (sea) borders with Australia in the south, Solomon Islands in the east and Palau in the north. Moreover, it shares a (land) border with Indonesia in the west.

It is estimated that about 72 percent of PNG's total landmass is inhabited. The remainder consists of high mountain ranges, volcanoes, and swampy floodplains which all present their unique challenges. Topographically, PNG is one of the most rugged countries in the world.

PNG has vast natural resources, especially mineral, mainly gold and copper, petroleum and forestry. These natural resources are the foundation for the creation of wealth. Moreover, the country is home to many rare and endangered species of animals and plants. It has been estimated that about five percent of the total biodiversity of the world can be found in PNG. However, the physical environment is under increasing threat from a variety of factors such as certain agricultural practices (land clearing for commercial and traditional agriculture) as well as resource extraction projects such as mining and harvesting of timber. A large proportion of the total land area has now been modified by erosion. Furthermore, a large proportion of the entire land area is susceptible to strong or severe erosion or is permanently inundated or regularly flooded.

PNG's geographical location makes it vulnerable to natural disasters such as volcanic eruptions, tidal waves, floods caused by monsoon rains, prolonged dry spells, and so forth. Given the fact that the rural sector is not served by a well-developed infrastructure, especially transport and communication infrastructure, a large part of this sector is not easily accessible. This creates major problems for service delivery and the achievement of the MDGs.

In spite of extensive logging and land clearing for agricultural purposes (commercial as well as subsistence) it is believed that approximately two-thirds of PNG's total land area is still covered with natural (primary) forest. Furthermore, the country has a very broad range of ecosystems characterized by extraordinary bio-diversity. The country is home to many rare and endangered species of animals and plants. It has been estimated that about five percent of the total biodiversity on earth can be found in PNG.

PNG is by far the largest of all Pacific Island Countries (PIC) not only in terms of landmass but also in terms of population. Over two thirds of the population of the PICs is in PNG. Its projected population for 2010 of about 6.5 million people is dispersed widely across the country.

Map A presents a map of PNG and its main geographic sub-divisions. The country is geographically subdivided into four regions. Each of these four regions consists of a

number of provinces. For the purposes of this report, the National Capital District (NCD) is also considered as a province.

Map A: Papua New Guinea and its provinces



Southern Region (Papua)	Highlands Region	Northern Region (Momase)	Islands Region
Western	Eastern Highlands	Morobe	Manus
Gulf	Chimbu	Madang	New Ireland
Central	Western Highlands ¹	East Sepik	East New Britain
National Capital District (NCD)	Enga	West Sepik (Sandaun)	West New Britain
Milne Bay	Southern Highlands ²		ARB ³
Northern (Oro)			

Notes:

¹. In 2012, a new province, Jiwaka (carved out of the Western Highlands Province) will become officially functional

². In 2012, a new province Hela (carved out of the Southern Highlands Province) will become officially functional

³. ARB (Autonomous Region of Bougainville) is the former North Solomons Province.

2. Political profile

Compared to most countries in Africa, Asia and Latin America, PNG was colonized at a relatively late stage. In 1884, the Germans claimed sovereignty over the northeastern part of the mainland or what is now the Northern or MOMASE Region as well as the islands that now constitute the New Guinea Islands Region. Subsequently, in 1888 the British claimed the southeastern part of the mainland, which is now the Southern or Papuan Region. The two parts were governed as separate colonies: German New Guinea and British Papua.⁸ After World War I, both colonies were united as the Trust Territories of Papua and New Guinea under the Mandate of the League of Nations. Under the League of Nations, Australia assumed the administration of these Trust Territories. Australia's administration lasted until PNG gained Self-Government in 1973 and full political independence on 16th September 1975.

PNG is a parliamentary democracy based on the Westminster model. It has three Arms of Government, namely, the Legislative Arm (National Parliament headed by the Speaker), the Executive Arm (the National Executive Council headed by the Prime Minister who is also the Chief Executive of the National Government), and the Judiciary Arm (headed by the Chief Justice). These three arms of Government primarily act as checks and balance mechanisms against each other. As a member of the Commonwealth, the Head of the Independent State of PNG is the Queen of England, represented by the Governor General. The Governor General is elected by the National Parliament for a five-year term.

The current single chamber parliament has 109 members with one representative from each of the nineteen provinces and the NCD. There are 89 open constituencies. Every five years the political leaders are elected at the two tiers of government: national, provincial and local level government (LLG). The government cannot be changed for the first 18 months after assuming power.

PNG has a large number of political parties. These parties act as vehicles for the dissemination of government policy decisions to the wider community and to convey public feedback to the political leaders in the National Parliament. Political decisions are made within the legal framework of the National Constitution and related By-Laws and Acts of Parliament. Due to the smallness of most parties, successive governments since Independence have been formed by a coalition of a large number of parties. The National Parliament elects the Prime Minister. Provinces have considerable autonomy, but rely largely on the national government for funding. Until recently PNG's coalition governments proved to be rather unstable. However, since the enactment of the "Bill on Political Parties" governance has stabilized.

PNG has a very complex and costly decentralized system of government. At the sub-national level, there are three levels of administration viz. at the province, district and LLG level. The country is divided into 89 districts and 319 LLGs.

⁸ The western part of the main island was part of the Dutch colonial empire of the East Indies. Since 1962, this is the Indonesian Province of Irian Jaya.

3. Demographic profile

The most recent census in PNG was conducted in 2000. At that time, the total population was about 5.2 million persons. Since the 1970s, the population has been growing at a rate of more than 2 percent per year. In 2010, the population is estimated at about 6.5 million. The present growth rate is almost certainly at least 2.3 percent per year but may be higher.⁹ Since the 1990s, the level of fertility has decreased at a slow pace. In 2010, the level of fertility remains at a relatively high level. As a result, PNG's population has a very broad-based age-sex structure with close to 40 per cent of the population under the age of 15. This implies a very high youth dependency ratio, a high child-woman ratio and a low median age.¹⁰

Since the 1960s, PNG's population doubled approximately once every 30 years. Pressure on the available resources has increased accordingly. The continuing high population growth rate makes it increasingly more difficult to achieve sustainable development. Furthermore, since the population is very young, it has a high potential for further growth. The high population momentum implies that PNG will have to continue to earmark a large proportion of its GDP for demographic investment (in health, education and employment creation). This implies that only limited resources will be available for other aspects of development and for the implementation of policies aimed at achieving the MDGs.

PNG's population is dispersed widely across the country. Significant parts of the country, especially large areas of wetland (e.g. in Western, Gulf, East and West Sepik Provinces) have a very low population density of only 1 to 2 persons per km². This makes it difficult to achieve economies of scale in service delivery. Population density is the highest in the rural sector of the Highlands Region.¹¹

Analysis of the national censuses and some nationwide surveys such as the 1996 and 2006 Demographic and Health Surveys (DHS) indicate that the fast decline in mortality during the 1970s did not continue after 1980. There are many reasons for the relative lack of progress in the mortality transition. Because of its implications for human development and achievement of the MDGs, the slow-down in the mortality transition since the 1980s requires more attention than it has received so far. This report pays, under MDG 4, some attention to PNG's mortality transition. However, the slowing down of the mortality transition is not restricted to early childhood mortality. The adult mortality transition has stagnated more than the early childhood mortality transition. A likely reason for this is the increasing incidence of lifestyle

⁹ The Rate of Natural Increase (RNI), (which is the difference between the birth and death rate) for the citizen population, estimated indirectly from 2000 census fertility and mortality data is 2.3 % per year. Since the citizen population is relatively little affected by international migration, its rate of growth and rate of natural increase must be approximately the same.

¹⁰ The Dependency Ratio (DPR) is the ratio of the economically dependent part of the population to the productive part. The DPR is rather arbitrarily defined as the ratio of the elderly (those 65 years and over) plus the young (those under 15 years of age) to the population in the "working ages" (those 15-64 years of age). In the Youth Dependency Ratio, the numerator is restricted to the "young" whereas in the Old Age Dependency Ratio (ADR), the numerator is restricted to the "old".

The Child-Woman Ratio is the number of children under the age of five years old per 1,000 women aged 15-44 years. This is a crude measure of fertility, based on the age structure of the population. It is often used when more specific fertility information is not available.

The Median Age is the age which divides a population into two numerically equal groups. Half of the population is younger and half is older than this age.

¹¹ Population density is particularly high in the altitude range 1,200-1,500 m.

diseases, especially for the urban population. Unfortunately, the issue of lifestyle diseases is not addressed by any of the MDGs. However, in PNG, the increasing incidence of lifestyle diseases is a matter of growing concern.

In sum, PNG's mortality transition may be leveling off at a level that is far too high. This level corresponds with a national average life expectancy at birth between 55 and 60 years. Moreover, the difference in the level of mortality at the sub-national level (e.g. between the provinces and between the rural and urban sector), which, since the 1970s has remained very large, will remain significant in the foreseeable future.

The fertility transition is also progressing at a relatively slow pace. The Total Fertility Rate (TFR) for the total population, which, in 1980 was 5.4, reached the level of 4.6 in 2000. The most recent estimate of the TFR based on the 2006 DHS is 4.2. In other words, the level of fertility remains high. As in the case of mortality, the difference between the level of fertility at the provincial level and between the rural and urban sector remains significant. In 1980, provinces in the Islands Region had very high TFRs, compared to those in the neighboring Solomon Islands.¹² However, after 1980, fertility decreased significantly in the Islands Region. Presently, it is approximately the same as in the Northern (MOMASE) Region.¹³

In 1980, the level of fertility was, for reasons that are almost certainly not related to family planning or reproductive health, by far the lowest in the provinces of the Highlands Region. However, after 1980, fertility decrease in this region has been minimal.

In conclusion, the available information suggests that since MDG base year 1990, there has only been a marginal improvement in some of the key demographic indices. Differences between the level of fertility and mortality at the provincial level and the rural and urban sector remain very large. The key indices of mortality and fertility at the national, regional and provincial levels are presented and discussed under the appropriate sections on the MDGs.

International migration of the citizen population of PNG is low. However, internal migration from rural to urban areas (urbanization) and to rural-non-villages (RNVs) is significant. Nevertheless, PNG's urban sector remains relatively small. In 2000, only 13 percent of the population was urban. However, this must be considered as a minimum estimate since the boundaries of PNG's urban areas (UAs) have not been changed since the 1980 National Population Census. The urban boundaries need to be re-delineated urgently and should be in place before the commencement of the field operation of the next Census.

¹² In 1980, all provinces in the Islands Region except Manus had TFR's higher than 6. West New Britain even had a TFR of 7. (Bakker, 1986b).

¹³ In 2000, the TFR in all provinces of the Islands Region, except West New Britain was close to 5. West New Britain is the province with the highest level of fertility. The average for the Islands Region in 2000 was 5.2, the same as for the MOMASE Region.

4. Economic profile and development planning

4.1. The “enclave economies” in the years after Independence

At the time of Independence, PNG's economy was characterized by primary production in agriculture, forestry and fisheries. Gradually the generation of income from minerals, especially gold and copper, and petroleum became the dominant factor of the economy. However, the mineral boom of the 1980's has mainly created what has been referred to as “enclave economies”. In 2010, the economy is still based on natural resource production and it has become increasingly more dualistic in nature. Although the income generated from minerals and petroleum and the contribution of aid, per capita GDP is relatively high, the income inequality in the country remains to be relatively high¹⁴.

4.2. From 1990-2003: A period of prolonged contraction

Between MDG base year 1990 and 2003 the economy benefited greatly from several major mining and petroleum projects. However, PNG's development progress during the period was relatively slow and uneven. Nevertheless, the economy recorded an average GDP growth of 3.1 percent. The growth was negative in 1990, 1995 and 1997. The less satisfactory performance of the economy was partly due to the fact that growth in sectors other than the mining and petroleum sector (agriculture, industry and services) was sluggish. This was particularly serious in the case of agriculture, the sector in which the majority of rural people are engaged.

Furthermore, the budget during the years 1990-2003, with the exception of 1996 and 1997, showed a deficit. During this unstable and volatile period the population growth rate far outstripped the economic growth rate. As a result per capita growth decreased and there was widespread evidence of deterioration in service delivery especially in the relatively inaccessible parts of the rural sector. Furthermore, in spite of the increasing cost of living, salaries changed very little.¹⁵ This contributed to a static or possibly worsening poverty situation, particularly in large parts of the urban sector, occupied by squatters.

Although there is an urban informal sector, this sector is not well developed and coordinated. The urban sector is also a sanctuary for unemployed and underemployed persons residing mainly in the numerous squatter areas. It is therefore widely believed that living standards for a significant proportion of Papua New Guineans declined during the initial 13 years of the first MDG cycle 1990-2015.¹⁶

The reasons for economic stagnation in the 1990s are complex. Contributing factors are both external and internal in nature. The former include a worldwide economic depression, the negative development in commodity prices and unfavorable trade conditions. Generally, the impact of globalization has not always been beneficial.

¹⁴ Gini coefficient was 0.51 in 1996, according to an independent survey.

¹⁵ In this respect, it is important to note that, since 1971, no Household Income and Expenditure Survey (HIES) has been carried out. Consequently, since that time it has not been possible to rebase the Consumer Price Index (CPI) properly. This has contributed to the outdated wage structure.

¹⁶ Comparison of poverty data from the 1986 Urban Household Survey and the Independent Household Survey carried out in 1996 suggests that, at least for the NCD, the poverty situation did not change. The LSMS/HIES that is presently being conducted will provide an update of the poverty situation. However, the results of this survey will be released by 2011.

Internal factors include a series of inappropriate policy regimes, macro-economic and fiscal mismanagement, the civil war in Bougainville (1989-1999), a series of devastating national disasters especially the eruption of the Vulcan and Tavurvur volcanoes which destroyed the town of Rabaul and some severe droughts.

In conclusion, the 1990s were characterized by macro-economic instability, stagnation and increasing unemployment that contributed to law and order problems, especially in the urban sector. Moreover, the distribution of the benefits of economic development was unequal.

4.3. “The paradox of plenty” in the new millennium¹⁷.

Since 2003, the economy has experienced five years of consecutive growth. For 2007, growth in GDP was 6.2 percent and in 2008, 6.6 percent. A preliminary (budget) forecast for 2009 is 6 percent.¹⁸ The decrease compared to the previous year is predominantly due to the impact of the global financial crisis. Nevertheless, in 2009, GDP has been forecasted as more than USD 8 billion. About 80 percent of the post-2003 economic growth was due to the mining and petroleum sectors.¹⁹ It is expected that PNG’s abundant mineral and petroleum resources will remain the foundation for wealth creation in the foreseeable future. Moreover, assuming that PNG’s land, seas and forests are wisely managed, the resources from these sectors will remain abundant, long after the mineral and petroleum wealth has been depleted.

There are several reasons for PNG’s economic recovery after 2003. These include the adoption of sound macroeconomic policies, fiscal discipline and an increase in commodity prices. For instance, in 2008, the total value of exports amounted to PGK15.4 billion, or 71 percent of the GDP. In comparison, exports were only 59 percent of GDP in 2003.²⁰ Consequently, after 2003, (with the exception of 2008) the national budget has shown a surplus. Moreover, during the period since 2003, inflation fell sharply from 14.7 percent in 2003 to 3.0 percent in 2007.

With the turmoil in the global financial markets in 2008-2009 now easing, it is expected that, given political and economic stability, a prudent public investment strategy, fiscal surpluses, improved productivity and efficiency, low levels of debt, low inflation and low interest rates, GDP will continue to grow at a high rate.

The improvement in the economy has enabled the government to reduce debt levels from 71 percent of GDP in 2004 to 35 percent of GDP in 2007.²¹ Since the population growth rate during this period averaged about 2.3 percent per year, per capita GDP also increased significantly.

One of the major challenges the country is facing is often referred to as “the paradox of plenty”. Experience in many countries has shown that resource based development seldom changes these countries into prosperous ones in a broader sense. In most cases, there has been relatively little transfer of economic gains into investment in the sectors that provide the best opportunity for equal distribution of

¹⁷ Juan Pablo Perez Alfonzo, the founder of OPEC, once referred to oil as the “devil’s excrement”. See: The National, 13 November 2009:10. (Article on “Understanding the “resource curse” by Dennis Badi.

¹⁸ The HDR 2007-2008 gives a GDP per capita of USD840, corresponding with USD2,563 in purchasing power parity (PPP).

¹⁹ During the post 2003 period, about 80 percent of export revenue was in the mining, oil and gas sectors

²⁰ It must be stressed that the contribution of the subsistence sector is very inadequately incorporated in the accounts of the national product.

²¹ See also the section on debt under MDG 8

these gains.²² In the case of PNG, approximately 90 percent of the country's labour force is engaged in agriculture, fisheries and forestry. The best chance of achieving the MDGs is investment in these sectors. This will undoubtedly also lead to improvements in the social sector, particularly in health and education. The main challenge for PNG is to avoid the "resource curse" and to foster "pro-poor" development.

Although, since 2004, the economy has been on a path of recovery, serious challenges remain. Firstly, the recovery has not yet been translated into human resource development, improved service delivery or reduced poverty. In other words, it has not yet fostered equitable growth and an improvement in the welfare and quality of life of the population. Secondly, the base of the economy remains narrow with the emphasis on natural resources extraction. This base needs to be widened. Thirdly, it is not certain how and to what extent internal factors like the impact of the HIV/AIDS epidemic and the law and order situation will affect the economy in the near future.

4.4. Land situation and ownership

PNG's most important resource (apart from its people) is its land. Using the criteria of the Department of Agriculture and Livestock (DAL), it has been estimated that about 15 percent of all land can be considered as cultivable land. Presently only 4 percent is used for commercial agricultural production. Much of this land is located in the Highlands Region in the altitude range 1,200-1,500 m.

Generally, it is assumed that PNG's agricultural potential for cash crops remains under-utilized. However, it needs to be stressed that much of the fertile agricultural land is presently used for subsistence agriculture. Furthermore, considering PNG's high rate of population growth, the land area used for subsistence production will undoubtedly increase significantly in the near future. There is considerable scope for further expansion of commercial agricultural production. Currently, the commercial production of crops is, far less productive than in other countries. With improvements in technical knowledge and productivity, further increase in output may be expected.

The National Constitution guarantees traditional ownership of land. Compulsory acquisition of land is provided for under national land laws. These laws have, however, rarely been applied. As a result, approximately 97 percent of all land in PNG is still communally owned. PNG's system of land and resource ownership is unique and land rights vary throughout the country. Land is mainly held by clans, however there is emerging fragmentation within clan groups where individual families are demanding to be recognized as separate landowners despite being members of the same clan.²³ Furthermore, land can be inherited along either paternal or maternal lines. The land systems are flexible, allowing for combination of ownership, user rights and allocation rights through social relationships by peaceful or violent means.

This land tenure system implies that most forms of economic activity by non-owners can only be sustained through partnership with the traditional landowner(s). In practice, land disputes are common and the use of compensation claims often hinder

²² In many cases, the main beneficiaries of resource based "development" are a small group of people in positions of power and their close supporters.

²³ FAO, 2009:5

development and investment that require the use of land. As a result, development plans for the near future envisage that a significant proportion of customary owned land needs to be placed under formal administration.

A crucial prerequisite for future development in the agricultural and industrial sector is the “unlocking” of land. Failure to do so will endanger the implementation of future development plans e.g. those envisaged under the PNGDSP 2010-2030 and Vision 2050.

4.5. Labour force

Most of the economically active males and females in PNG are engaged in the subsistence sector. In fact, due to widespread female participation in subsistence activities, female labour force participation rates are higher than in other countries of the South Pacific Region. Engagement of both males and females in the cash economy remains low, especially in the rural sector. There is also underemployment in both rural and urban areas. Unemployment in urban areas has an adverse impact on the law and order situation.

Because of the broadly distributed access to the natural resource base, the basic needs of most people are still met but this contributes little to per capita real growth. Agriculture has the potential to absorb new labour force entrants but this implies that the technical know-how of rural dwellers as well as the social status of agricultural employment is raised.

4.6. Development planning

During the first decade after independence the Government’s philosophy with regards to development and planning could be summarized as “State leading the growth of income as a means for development”. After 1985, this philosophy changed to “State facilitating the growth of income as a means for development”. All development strategies and plans since that time have been formulated within the latter framework.

During the first part of the MDG cycle 1990-2015, development planning in PNG was dominated by the annual budget process. Since 1997, with the introduction of the first Medium-Term Development Strategy (MTDS) 1997-2002, short term budget-driven planning changed to medium term planning. Although this approach led to more cohesive and consistent planning, it was still far from ideal. For instance, the MTDS 1997-2002 lacked an overall economic development framework. From the point of view of the MDGs, the present MTDS for the period 2005-2010 is particularly important because the national targets and indicators of this MTDS were adopted in the inaugural MDGR. The monitoring of the MDGs for the period 2004-2009 is once again carried out within the context of the present MTDS 2005-2010.

5. Socio - cultural profile

PNG is not only one of the most bio-diverse countries in the world; its socio-cultural profile is even more diverse. For instance, more than 800 distinct languages are spoken. Throughout history, distinctive cultures and attitudes of self-sustenance have been developed and shaped by the high dependence that Papua New Guineans have on the natural environment. The complex development process in PNG mainly involves protecting and maintaining the harmony that exists between the people and the natural environment. In recent times, development pressures and globalization have had an impact on the social life and traditional culture of Papua New Guineans.

PNG's modernization progresses slowly with over 87 percent of the population still living in villages or isolated rural communities while only 13 percent live in urban areas. Since 1980, this percentage has not changed very much. While social organization and culture have changed under the impact of missionary activity, education, and the spread of government control, a large proportion of the rural population continues to live a virtually autonomous existence with little influence being felt from the urban communities. Even if urbanization from now onwards increases at a steady pace, PNG will, in the foreseeable future, largely remain a rural society. Nevertheless, population movement, particularly from rural to urban areas has created a landless class of migrants living in squatter settlements in and around urban areas, first and foremost the NCD but also in other major urban areas such as Lae, Madang, Goroka, Mount Hagen and Wewak.

Maintaining a sustainable rural livelihood requires not only physical but also social resources. Three key elements of PNG's social environment are the traditional land tenure system, the "wantok" system and the churches in combination with community-based groups for women and youths. As already mentioned, within PNG's land tenure system, both clans and individuals can own land. This ensures that most people have access to the means of production for subsistence living and in many cases to some form of cash income. The "wantok" system is PNG's safety net, whereby family and clan members are required to support each other. Because of modern-type developments and the increasing burden of support, the "wantok" system is now under pressure, especially in the urban areas.

The extensive church/community group network provides around 50 percent of all health and education services in the rural sector. Recently the government has increased funding for the churches and community groups to improve service delivery. The church/community group network also provides employment opportunities.

Many consider PNG's very diverse socio-cultural profile as an impediment for development. Others argue that, in the future, it may become one of the country's main strengths.

II. CROSSCUTTING CHALLENGES FOR THE ACHIEVEMENT OF THE MDGs

1. General

The inaugural MDGR was produced and published in 2004. It concluded that PNG is not on track with any of the MDGs. The 2004 MDG National Steering Committee, at the recommendation of the MDG Technical Working Group, identified many fundamental weaknesses in PNG society which caused the lack of progress. It was realized that these challenges should be placed in national perspective and that they should be prioritized. During the preparation phase for the inaugural MDGR, this resulted in the adoption of an initial set of five crosscutting challenges that had seriously impeded the achievement of all MDGs. These five overarching challenges were included in the inaugural MDGR of 2004.

In 2006, the initial set of crosscutting challenges was reviewed.²⁴ It was concluded that the five initial crosscutting challenges will remain equally important in the foreseeable future. However, it was decided that the scope of some of the initial crosscutting challenges should be broadened whereas others should be rephrased. In addition, several other fundamental challenges were considered. Three of these were also seen as crosscutting challenges for the achievement of the MDGs and they were added to the initial list, bringing the total to eight.

In preparation for the MDGSR in 2009, the crosscutting themes were once again reviewed and a ninth one, “Low level of education and literacy” was added. The present updated list of crosscutting challenges was endorsed by the 5th meeting of the MDG National Steering Committee in 2009.

2. Crosscutting challenges

This section provides a brief summary and discussion of those crosscutting challenges which the 2009 MDG National Steering Committee considered as being major impediments for the achievement of all MDGs.

A. HIV/AIDS epidemic

In 2004, the MDG National Steering Committee placed the HIV/AIDS epidemic at the top of the list of crosscutting challenges for the achievement of all MDGs. The 2009 MDG National Steering Committee recognized that if the present HIV incidence rates continue, it is unlikely that any of the MDGs will be achieved in the foreseeable future, and certainly not by 2015.²⁵ The impact of the HIV/AIDS epidemic on the achievement of the other MDGs is discussed in the chapter on MDG 6.

²⁴ This review was in preparation for the formulation of the United Nations Country Programme (UNCP) for the planning cycle 2008-2012

²⁵ The 2004 MDG Technical Working Group studied the impact of HIV/AIDS on all MDGs in Uganda. The reason for choosing this country was that its HIV/AIDS policy had been used as a model for PNG. Moreover, before the HIV/AIDS epidemic started, many basic demographic and socio-economic indices of the two countries were very similar. The study showed that, in Uganda, in spite of the fact that this country was considered as a relative success story in the fight against HIV/AIDS, virtually all MDG indicators had worsened

B. Population, resources, environment and development²⁶

During the last 40 years, the population growth rate in PNG has remained at a high level of more than 2 percent per year.²⁷ This high rate is a result of the continuing high level of fertility. An annual growth rate of 2.3 percent per year implies that PNG's population doubles every 30 years. This has enormous resource implications.

Because of the high level of fertility, the age-sex structure of the population remains broad at the base, with about 40 percent below the age of 15. Consequently, youth dependency is very high. The broad based age-sex structure implies a high built-in potential for further population growth in the near future (population momentum).

As long as the population continues to grow at a high rate of more than 2 percent per year, and its age-sex structure remains as broad-based as it presently is, a large proportion of the country's available resources will need to be used for demographic investment e.g. service delivery (especially in health and education) and job creation. Efficient demographic investment is further exacerbated by the fact that the population is widely dispersed over a very large land area in one of the most rugged and diverse countries in the world. Population density in some parts of the rural sector (e.g. in Western Province) is so low that effective and economically viable service delivery becomes extremely difficult.

In the meantime, the rate of economic growth in the recent past has been lower than the population growth rate. Under these circumstances it is difficult to meet the very demanding global as well as national targets of all MDGs. Economic growth has to be higher than population growth in order to achieve an improvement in human resource development per capita.

The National Population Policy (NPP) 2000-2010, considers the present discrepancy between the population and economic growth rate as a major stumbling block for national development.²⁸ The NPP emphasizes the implications of large family size at the macro (national) and micro (household) level. It seeks to create the right environment for sustainable population growth linked to resource availability.

During the formulation of the inaugural MDGR in 2004 there was no universal agreement that PNG's high population growth rate should be considered as a crosscutting challenge for the achievement of all MDGs. Some, especially "anti-Malthusian" macro-economists, argued that, considering PNG's large unused land area and abundance of natural resources, there is considerable scope for further population growth. It is thought that a reasonably high population growth rate would lead to an optimal use of resources and to economies of scale. In other words, the

²⁶ A summary of the demographic characteristics (size, growth, structure and distribution) of the population of PNG, as well as a discussion of the demographic processes (fertility, mortality and migration) that have led to the present demographic situation are detailed in Chapter I-3.

²⁷ In 2010, there is a wide range in the estimates of the population growth rate in PNG. These estimates range from 2.3 % to a very high 3.5 % per year. The real rate is almost certainly close to 2.3 % per year. The reasons are as follows. Firstly, the rate of natural increase (birth rate minus death rate) independently estimated from 2000 Census data is 2.3 % per year. Secondly, international migration (of citizens) is still at a very low level. It may therefore be assumed that the present growth rate of the citizen population remains about 2.3 % or possibly slightly higher. The uncertainty with regard to the exact rate at which the population has been growing has led to problems with the forecasting of future requirements in the area of service delivery for instance in the area of health and education.

²⁸ PNG's National Population Policy 2000-2010 encourages integrated population and development planning. It focuses on poverty eradication, sustained economic growth in the context of sustainable development, sustainable patterns of consumption and production, food security and human resource development.

present high rate of population growth was seen as beneficial for economic development. Moreover, it was argued that technological development in the future would be able to solve the problems which are often thought as being associated with a fast growing population, especially the threats to environmental sustainability. In 2010, the difference of opinion on this issue is more or less the same as in 2004.

In spite of the lack of agreement concerning the precise nature of the relationship between population and development, it was felt that the large average household and family size in PNG is an impediment for future development. It cannot be expected that households and families engaged in the subsistence sector and with little or no access to the most basic services can contribute optimally to the development of the country. It was realized that, since MDG base year 1990, service delivery has not been able to keep up with the growing population. For these reasons the discrepancy between economic and population growth was added to the list of crosscutting challenges. It was, however realized that there is a considerable overlap between this particular crosscutting challenge and several others, particularly deficient service delivery, which includes the delivery of reproductive health care.

C. Lack of good governance

In 2004, the MDG National Steering Committee decided to include “political instability and law and order” as a crosscutting challenge for the achievement of all MDGs. During the review of this crosscutting challenge in 2006, its scope was broadened to “lack of good governance”.

Good governance is a crucial prerequisite for achieving all MDGs. However, PNG has been facing many governance related challenges. The following are just a few of the most frequently cited.

Firstly, the political party system in PNG is characterized by alignment with tribal or regional interests. Some political parties are unstable with temporary alliances or without a distinctive political ideology. Under these conditions, there is often relatively little focus on national goals and ambitions. This leads to fragile and volatile governance and fledgling institutions. Lack of good governance often leads to law and order problems, corruption and a lack of investor confidence.

Secondly, although it is generally recognized that the Organic Law is, in principle, a good law since it promotes empowerment of the people, members of the MDG National Steering Committee also considered several weaknesses of this law. In particular, it was thought that this law had in many ways negatively impacted the achievement of the MDGs, especially those related to adequate and efficient service delivery (on health and education) and the reduction of poverty.²⁹ The capacity building that should have accompanied the implementation of the Organic Law has often been lacking.

Thirdly, there are presently 28 ministries and over 140 government departments and agencies at the national level. Furthermore, many of the departments are duplicated at the provincial and district levels. This very extensive structure of governance is very complicated and costly. Given PNG’s extreme cultural diversity, a more simplified structure of governance may not be feasible. However, simplification of the present structure would most likely result in more effective governance and a significant increase in the Development Budget.

²⁹ The introduction of the educational reforms coincided with the introduction of the Organic Law.

Fourthly, several stakeholders thought that the predominant impact of the extractive industry on the economy led to outsider influence on PNG's decision-making process.

Concerns were also raised about the possible consequences of granting full autonomy to Bougainville. There are already some indications that other provinces (e.g. New Ireland) consider the case of Bougainville as precedence. Regionalism can potentially lead to disintegration of the country.

In 2009, the MDG National Steering Committee considered good governance as a basic prerequisite for future development. One aspect of good governance, the supply of security, internal stability and law and order is still considered as one of the largest impediments for the achievement of the MDGs. It was therefore agreed that "lack of good governance" should be maintained as one of the crosscutting challenges for the remainder of the first MDG cycle 1990-2015.³⁰

D. Deficient service delivery

PNG's infrastructure is poorly developed. The road network in particular is limited and the situation is exacerbated because of limited road maintenance. In addition, many airstrips have been closed. As a result, a large part of the rural sector remains relatively inaccessible. This implies that a significant proportion of the rural population does not have access to basic services such as health, education, safe drinking water and modern sanitation. It is therefore not surprising that the inaugural MDGR of 2004 concluded that not much progress had been made towards achieving the MDGs and especially those that depend on efficient service delivery.

After 2004, in spite of significant economic growth, service delivery has not notably improved. It appears that, in PNG, the link between economic growth and enhanced service delivery, particularly in the case of health and education is not strong. Judging from the proportion of Aid Posts that are functioning, basic health care delivery has further deteriorated in recent years. The improvement of service delivery is clearly one of the overarching challenges the country is facing.

E. Poverty of opportunity

The UN Millennium Development Declaration has a strong poverty focus.³¹ During the discussions on the inaugural MDGR of 2004, poverty was therefore considered as one of the crosscutting challenges. However, the 2004 MDG National Steering Committee did not endorse this. One reason is that the UNDG targets and indicators concerning "poverty" look at this concept in a somewhat different way than most people in the South Pacific Region, including PNG. The MDG concept "income poverty" and the way this concept has been operationalised, is considered by many as inappropriate or even offensive. It is widely believed, that abject poverty as exists in many developing countries, does not exist in PNG. This view has a long history, going back to the early days of European contact. Early "visitors" often depicted the

³⁰ Since 2000, due to the introduction of the Political Parties Bill, PNG has experienced improved political stability. This has led to a decrease in votes of no-confidence, and subsequently to significantly more stable governance.

³¹ More paragraphs of this declaration are devoted to development and poverty than to other high priority issues for the UN like peace, security and disarmament, protection of the environment, human rights, democracy, good governance, etc.

people of the South Pacific as living in a situation of “subsistence affluence”.³² Even if this assessment is based on reality the situation now is very different from that in pre and early contact days.

Whatever the case may be, many people in the region do not feel at ease with international norms and definitions with regard to poverty and hunger and concepts like “poverty line” that come with it. It is felt that poverty should be defined in a much broader sense. For instance, in the case of PNG, it is believed that special circumstances like the distributive “wantok” system, economic and environmental vulnerabilities, inadequate infrastructure, isolation and lack of access to markets and basic services, limited access to services, marginalization of women and poor housing should be taken into account when defining poverty. This has been labeled “poverty of opportunity”. This concept is strongly linked with vulnerability, and lack of choices.

From the above, it follows logically that there is little confidence in the validity and reliability of the global indicators that have been selected to monitor poverty and hunger.³³ An indicator like “proportion of population below \$1 (PPP) per day” as proposed by the UNDG is widely considered as irrelevant to the situation in the South Pacific.

During the 2006 review of the crosscutting challenges, the concept “poverty of opportunity” was added to the list of overarching and cross-cutting challenges. This broader concept of poverty has also been incorporated in the PNG Development Strategic Plan (PNGDSP) 2010-2030 and will be included in the Medium-Term Development Plan 2011-2015. The National Population Policy (NPP) has also adopted this concept of poverty. In short, eradication of this kind of poverty is now widely considered as an overarching challenge. One reason for elevating “poverty of opportunity” to the list of overarching challenges is that it was strongly felt by all stakeholders that the first seven MDGs mutually reinforce each other and that all of them are directed at the alleviation of poverty in the broadest sense. Consequently, since poverty is multi-faceted, it needs to be addressed in a collaborative way. It requires a joint response by government and development partners.³⁴

During the 2009 review, it was agreed that “poverty of opportunity” should keep its position as one of the crosscutting challenges for the achievement of all MDGs.

F. Gender culture and gender disparity

After much debate, the 2004 MDG National Steering Committee concluded that gender disparity in many areas like health, morbidity, mortality and education was less than often assumed. More recent information, e.g. from the 2006 DHS suggests that this is still the case. However, members of the MDG National Steering Committee agreed that gender inequality is a severe threat for future development in PNG, especially since PNG’s gender culture places women in a disadvantaged position. This applies in particular to gender based violence (rape and spousal abuse). The 2004 MDG National Steering Committee agreed that this poses a serious

³² Nowadays, this concept still survives as “self-subsistence abundance.”

³³ The 1996 Independent Household Survey (IHS) estimated that 30 percent of PNG’s population is below the lower poverty line. This is considered by many as an entirely unrealistic estimate.

³⁴ The definition of human poverty in the Human Development Report of the UNDP does not only include targets with regard to poverty and hunger but targets concerning primary education, gender equality in education, child mortality, access to safe drinking water and access to improved sanitation as well. This illustrates the interdependency of MDG 1 with all other MDGs.

challenge for the achievement of all MDGs. In particular, it was emphasized that the gender culture in PNG is one of the key factors driving the HIV/AIDS epidemic. This has now officially been recognized in the National Gender Policy and Plan on HIV and AIDS 2006-2011. In 2004, “gender culture and gender disparity” was therefore added to the list of crosscutting challenges. The 2009 MDG National Steering Committee decided that it should keep this position.

G. Climate change, environmental degradation and sustainable livelihoods

The list of crosscutting challenges identified so far mainly relate to MDG 1 to 6. The challenges faced in ensuring environmental sustainability (MDG 7) are now also widely considered as crosscutting. In spite of the fact that the importance of environmental sustainability has been entrenched in the 4th National Goal of the Constitution, this has not always been the case.³⁵ One reason is that the linkages between climate change, environmental degradation and MDGs 1 to 6 are not well understood. Moreover, concepts related to climate change, environmental degradation and sustainability tend to be complex. In PNG, there is a shortage of experts in these areas. As a result, although few people doubt that there is a serious danger of climate change and environmental degradation, many do not consider this as one of the main crosscutting challenges for the MDGs. In this regard, the situation is however changing rapidly.

For a better understanding of the crosscutting impact of climate change and environmental degradation on MDGs 1 to 6, it has been linked with sustainable livelihoods. Since the 1990's, wealth creation in PNG has been founded on the country's very rich natural resource base. In the process the nature of the economy has become increasingly more dualistic. The natural resource based export economy e.g. mining, petroleum products and logging tends to have a large environmental impact and supports only a small proportion of the people of PNG. The companies involved in these extractive industries are often the main beneficiaries. The relative lack of employment opportunities created by these industries (little down-stream processing) implies that they do not make a major contribution to the sustainable livelihoods of the people of PNG.³⁶

In PNG, several government departments, NGOs and institutions are involved in different aspects of sustainable development, the improvement of sustainable livelihoods and environmental issues. An effective response to the challenges of climate change and environmental degradation requires a well-coordinated and holistic approach under the umbrella of a lead department. For sustainable livelihoods, the lead department is the DNPM and for environmental issues, the Department of Environment and Conservation (DEC). However, the coordinating role of the DEC needs to be clearly defined and significantly strengthened.

The government has ratified a large number of multilateral environmental agreements (MEA). All these MEAs come with obligations. Implementation of most MEAs is extremely costly and the resources, financial as well human, for this are rarely available. Consequently, the implementation rate of the MEAs is very low.

³⁵ This 4th goal is: “For Papua New Guinea’s natural resources and environment to be conserved and used for collective benefit of us all and be replenished for the benefit of future generations.”

³⁶ Since income generation sometimes seems to have a higher priority than improving the livelihood of the people as well as the achievement of environmental sustainability, there is a real danger that in its dealings with outsiders, the position of government could at times be compromised

H. Spatial disparity

Disparity in development at the sub-national level in PNG (e.g. the provinces) is large, particularly when compared to other countries in the South Pacific Region. This applies first and foremost to health, morbidity and mortality. For instance, in 1971, the infant mortality rate (IMR) in Gulf Province was almost 200 per thousand whereas this rate in all provinces of the Islands Region was well below 100 per thousand. Moreover in that year, the difference in life expectancy at birth between the high and low mortality provinces was extreme. In Gulf Province this key index of mortality was less than 30 years whereas in most provinces of the Islands Region, people lived on average around 45 years.

Although mortality decreased significantly in the 1970s, the enormous disparity between the provinces has remained. For instance, the IMR in Gulf and West Sepik in 2000 was still more than 100 per thousand, whereas the IMR in the NCD was only slightly more than 20 per thousand. In that year, the average life expectancy at birth in Gulf and West Sepik had increased to 46 years but in the meantime, this index for the NCD and most provinces in the Islands Region had increased to almost 60 years. Internal disparities of this magnitude constitute an enormous impediment for development.

Disparity in education and literacy at the provincial level also remains large, with the Highlands provinces, particularly Southern Highlands and Enga lagging far behind the coastal and islands provinces. The same applies to employment rates in the modern sector. The case of Southern Highlands in particular, illustrates the paradox that is PNG. Here we have an oil and gas rich province making an enormous contribution to PNG's GNP whereas many of its human development indices (especially the ones related to education and literacy) are the lowest in the country.

Since key indices of health, morbidity, mortality, education, literacy and paid employment are usually closely correlated with the level of overall development in a country, the spatial disparity in these indices suggests that there is also a large disparity in the level of development between the provinces of PNG. This problem has been allowed to exist for at least 35 years. One of the contributing factors is that government as well as development partners have consistently favored those provinces that are the most advanced and developed. Although there are some policies and strategies in place that draw attention to the problem of spatial disparity, the reality is that so far mainly lip service has been paid to addressing the huge disparities between the provinces.³⁷

In conclusion, to date, little if anything has been achieved with regard to closing the demographic and socio-economic gaps between provinces. As long as these disparities exist, it will be difficult to achieve any of the MDGs. Even if progress is made in some of the advanced provinces, the national average indicators will be dragged down by the poor performance in the provinces that are lagging behind.³⁸ It is expected that the implementation of the PNGDSP 2010-2030 will make a contribution towards narrowing the gaps between PNG's geographic subdivisions.

³⁷ Interventions by government as well as donors have mainly focused on parts of the country (provinces or parts of provinces) that are deemed to be the relatively high achievers.

³⁸ Disparity within some provinces is also enormous by any standard. The best example of this is probably East New Britain. Available information (e.g., from the censuses since 1980) suggests that in many respects the Gazelle Peninsula is one of the most advanced areas of the country whereas the rest of the province has been left behind.

I. Low level of formal education and literacy

During the formulation phase of the inaugural MDGR in 2004, as well as during the 2006 review, the low level of education and literacy in PNG was considered as one of the crosscutting challenges for the achievement of all MDGs. It was also argued that although the challenges for achieving the MDG 2 target of universal primary education (UPE) by 2015 are enormous, the main bottleneck for future development is related to capacity constraints in the public and private sector. The latter is mainly the result of the low level of tertiary and vocational training. As a result, the 2009 MDG National Steering Committee decided to add “low level of formal education and literacy” to the list of crosscutting challenges. This crosscutting challenge encompasses education at all levels from primary to tertiary as well as adult education, vocational training and special needs education.

3. Crosscutting challenges for future consideration

This section discusses a number of challenges that have been considered for inclusion on the list of overarching and crosscutting challenges for the MDGs but have, so far, not been endorsed by the MDG National Steering Committee.

3.1. Non-existent or deficient legislation, policy and plans

The issue of lack of appropriate legislation, policies and plans in PNG has been discussed on many occasions. However, in 2010, PNG has its Vision 2050 and its PNGDSP 2010-2030. These overarching plans define the roadmap between 2010 and 2050. In addition, the Medium-Term Development Strategy (MTDS) 2005-2010 will soon be replaced by the Medium-Term Development Plan 2011-2015. Finally, PNG has a comprehensive National Population Policy (NPP) covering the period 2000-2010. This policy is presently under review and will be replaced by a new policy covering the period 2011-2020. Furthermore, government departments have their own sectoral policies and plans. Most of these are reviewed on a regular basis.

However, there is a lack of policies and plans in certain areas, especially with regard to MDG 1. For instance, the National Poverty Reduction Strategy (NPRS), formulated in the 1990s has never been endorsed by the National Executive Council (NEC). Furthermore, there is still a lack of appropriate policy in several areas related to MDG 7, e.g. a comprehensive marine policy. Moreover, plans at the provincial and especially the district and LLG level are often non-existent. If these lower level plans exist there is seldom any MDG input in these plans. There is clearly a great need for a more aggressive awareness creation and advocacy campaign at the sub-national level.

Presently, the consensus seems to be that, although there are shortcomings in legislation and policy formulation in certain areas, particularly at the sub-national level, the problem in PNG is not so much the absence or deficiency of legislation, policies and plans but the lack of implementation. This applies in particular to the Organic Law. In all consultations for the MDGSR and MDGCR in 2009 and 2010, the serious problems with the implementation of the Organic Law were cited as one of most serious challenges for the achievement of the MDGs.

3.2. Financial constraints

PNG is a resource rich country. Compared to most developing countries it can be considered as rich. Meanwhile, its population is relatively small and the majority of the economically active population is engaged in subsistence activities. Only a small proportion of the labour force is engaged in money raising activities (wage and salary earners and self-employed). Consequently, PNG's tax base is small. In considering financial constraints, it must also be mentioned that PNG receives significant support from its development partners. For instance, the financing of activities devised to reduce the impact of HIV/AIDS is almost entirely donor-driven.

In spite of PNG's abundance of natural resources, there is, in 2010 still a significant discrepancy between the rich and the poor on per capita GDP and most human development indicators, including the MDG indicators. For example, PNG's Gini Coefficient indicates a high level of inequality (See MDG 1). Although, financial constraints are undoubtedly severe in some areas e.g. the implementation of educational and health plans, these constraints cannot be considered as a crosscutting challenge for all MDGs.

The most frequently cited financial problem in PNG is related to the lack of good management. Furthermore, it is argued that money earmarked for certain programmes or projects is often not spent according to plan. Misallocation of funds is widespread, accountability is poor and the misappropriation of funds and corruption is endemic. Most importantly, economic growth has not been converted into human development (See the next Section 3.3)

3.3. Conversion of economic growth into human development

As mentioned before, the 1990s were characterized by macro-economic instability, stagnation and increasing unemployment that contributed to law and order problems, especially in the urban sector. Moreover, the distribution of benefits of economic development was very unequal.³⁹ However, since 2004, the economy has been on a path of recovery. Moreover, it appears that PNG has been far less affected by the global financial crisis in 2008 and 2009 than most countries. Reasons for this include good fiscal policies, an overall increase in commodity prices and the fact that most Papua New Guineans depend on subsistence agriculture for their livelihoods. Furthermore, governance in PNG, in recent years, has stabilized.

In spite of these positive developments in the economic and political situation, serious challenges remain. Firstly and most importantly, the level of human development and especially the delivery of basic services have not noticeably improved as a result of the recovery. In other words, the recovery has not fostered more equitable growth and has not led to significant improvement in the welfare and quality of life of the population. Secondly, the base of the economy remains narrow with the emphasis on natural resources extraction. Thirdly, it is not certain how and to what extent internal factors like the impact of the HIV/AIDS epidemic and the law and order situation will affect the economy in the near future.

The main concern remains whether considering the present economic and political structure, it may be expected that in the future, the economic and political gains will

³⁹ The Gini Coefficient measured from the 1996 Independent Household Survey is a very high 0.51. It remained virtually unchanged since the 1970s (0.50). A more recent estimate of this index is not available.

be translated into human resource development, improved service delivery and reduced poverty.

3.4. Extreme cultural diversity

The debate so far has mainly focused on the gradual break-down of the “wantok” system in PNG. It was realized that, although the wantok system is in principle the safety net in PNG, it can also hinder development. The wantok system is seen by some as a challenge for the achievement of the MDGs whereas others consider it as a potential strength.

3.5. The poor database for monitoring of the MDGs

PNG’s database at the national level is poor and at the sub-national level often almost non-existent. A proper framework for data collection, processing, analysis, dissemination and utilization at all levels is not in place. The poor database frequently leads to the formulation of policies and plans that are not based on reliable evidence.⁴⁰

Progress towards achieving the MDGs cannot properly be monitored without a complete, up to date and accurate database. Some members of the 2009 MDG Technical Working Group (TWG) have therefore recommended adding PNG’s weak database as another crosscutting challenge that acts as an impediment for the achievement of all MDGs. Others argue that although the weak database creates severe problems for the monitoring of the MDGs, it does not belong in a list of crosscutting challenges for the achievement of the MDGs.

4. Final comments

The 2010 MDG National Steering Committee emphasizes that achievement of all MDGs will depend on the extent to which the crosscutting challenges are addressed in the years to come. Consequently, during the remaining six years of the first MDG cycle 1990-2015, they should receive maximum attention and support, particularly budgetary support. Failing to do so will mean that by 2015, the achievement of the global MDG targets will be further endangered.

⁴⁰ With regard to the MDGs, the database for the monitoring of MDG 6 and 7 in particular is very weak

III. GLOBAL AND NATIONAL TARGETS AND INDICATORS

1. Targets

Most policy makers and planners in PNG consider the global MDG targets as aspirational targets. The committee that reviewed the global targets in 2003-2004 concluded that, for practical purposes and especially for planning and monitoring in PNG, it would be more meaningful to develop a set of national “tailored” targets, adapted to the local context and addressing the national priorities laid down in the development plans. These “tailored targets” should be based on a broad consensus between all national stakeholders.

National targets for planning purposes have some basic prerequisites. These prerequisites are:

- Be clear and unambiguous
- Be realistic and achievable considering
 - The present situation and recent trends
 - Policy and plans that are in place
 - Budget allocations
- Have a clearly defined timeframe
- Be based on a comprehensive consultative screening process including all major stakeholders. This is necessary to achieve consistency and alignment between the targets in the overarching national policies and plans and those in sectoral strategies and plans.

Consequently, in 2003-2004, in preparation for the Medium-Term Development Strategy (MTDS) 2005-2010, the DNPM, in collaboration with relevant line departments and NGOs formulated national targets for all MDGs. The resulting “tailored” national targets were adopted and incorporated into the MTDS 2005-2010, as well as in the inaugural MDGR of 2004.

Many global as well as national targets set in 2003-2004 are vague. This applies in particular to some of the MDG 6, 7 and 8 targets. Moreover, many of these targets appear to be unrealistic considering trends since 1990. This impedes planning and monitoring. In particular, the vagueness and lack of realism of some targets makes it difficult to arrive at realistic estimates of the cost of achieving these MDGs. The unrealistic targets, for instance with regard to early childhood mortality, life expectancy and the level and pattern of fertility leads to the formulation of unrealistic population projections. The population projection used by planners should be based on the medium scenario representing established government policy and clear unambiguous targets, represented in the National Population Policy. When policies are not well aligned and targets are vague, the formulation of population projections based on these policies and targets, becomes a mere technical exercise.

In 2010, the national targets for the MDGs included in the 2005-2010 MTDS were re-tailored. The re-tailored targets take into account the trends since 1990 and the

fact that the first five years of the implementation of the PNGDSP will be used to put the enablers in place.

2. Indicators

Because of the dearth of complete and reliable data in PNG, many of the global indicators remain un-measurable. Consequently, the MTDS 2005-2010 did not only adopt a set of national tailored targets but also national tailored indicators associated with these targets. These national tailored indicators have, as far as was possible, been used for the monitoring of the MDGs in the inaugural MDGR of 2004 and also in the MDGSR.

The basic requirements for the national indicators are:

- They must be clear, precise and unambiguous
- Complete and accurate data must be available for monitoring
- Data must preferably be available for at least two points in time between 1990 and 2010.⁴¹
- If no data is available from a reliable national source, information should not be taken from an international database or from an international website that does not obtain its data from a reliable source in PNG. In these cases, it should be stated that reliable data is not available (NA).⁴²
- Under all circumstances a quantified national indicator should be accompanied by a reference to a reliable source within PNG.

During the first few months of 2010, the tailored national indicators of 2004 have also been reviewed and re-tailored. The re-tailored indicators were endorsed by the MDG National Steering Committee on May 28th 2010. These indicators are discussed in detail in the already mentioned third MDG report that deals with “Data Availability, Completeness and Accuracy” (DACA) as well as the methodology used in deriving these indicators from the basic data.

The re-tailored national indicators will be incorporated in the Medium Term Development Plan 2011-2015.

⁴¹ Although measurements at two points in time do not constitute a trend, these two measurements will at least provide some idea as to the direction of change.

⁴² Much information on PNG included in international databases and websites is not based on measurement but on imputation and projections. It often does not represent the real situation in PNG.



PART B:
***THE MDGs IN PAPUA
NEW GUINEA:
PROGRESS MADE
BETWEEN 1990 AND
2010 AND TARGETS FOR
2015***

PREAMBLE

The chapters concerning MDG 1 to 7 have all been subdivided into six sub-sections. These are:

i. Database and monitoring

This section presents a brief overview of the data that is presently available for monitoring of the MDG. This is covered in far more detail in the 3rd MDG report on data availability, completeness and accuracy (DACA) for human development and MDG monitoring in PNG.

ii. Situation analysis and trends

Using information that is considered to be reasonably complete and reliable (from Section i), a comprehensive assessment is made of the present situation of the MDG and the trend since MDG base year 1990.

iii. Global and national targets and indicators

The tailored national targets and indicators that were adopted in 2004 and included in the MTDS 2005-2010, are reviewed. The final part of this section assesses to what extent the global and national target(s) of the MDG have been achieved.

iv. MDG specific challenges

This section discusses the MDG specific challenges PNG is facing in its attempts to achieve the MDG. As already mentioned, the initial list of challenges for each of the MDGs was compiled in 2004. Since then, the list has been regularly updated. In 2009-2010, all MDG specific challenges were re-arranged under four headings viz.:

- Legislation/Policy/Plans
- Financial
- Service delivery
- Monitoring

All other challenges that do not fall under one of the above categories (e.g. cultural and demographic challenges) are discussed under the heading “General”.

The last additions and changes to the list of specific challenges were made after the “DNPM Workshop on Localizing the MDGs in the Regions and Provinces”, held on May 21st and 22nd in Port Moresby. The feedback from the participants of this workshop has been included.

v. Good practices

In this section, good practices that have contributed to progress in achieving the MDG are identified.

vi. Interventions

Present and planned future national interventions required to achieve the MDG are reviewed in this section.

A separate chapter of Part B is devoted to a discussion on MDG 8. It deals with the enabling international environment for developing countries to achieve MDG 1 to 7.

I. MDG 1: ERADICATE EXTREME POVERTY AND HUNGER

Most people of the South Pacific Region, including PNG, consider the MDG concept of poverty and especially its target to “reduce by half the proportion of people whose income is less than USD1 per day”, as largely irrelevant. As explained in Part A, PNG has replaced the MDG concept of poverty with the broader concept of “poverty of opportunity”. This PNG specific concept refers to vulnerability, lack of opportunities, choices and access to services. It is also believed that special circumstances like the distributive “wantok” system, economic and environmental vulnerabilities and many other factors should be taken into account when defining poverty in PNG. Finally, it is felt that poverty in PNG should be considered in the context of an abundance of food. It is believed that a relative lack or even absence of money income does not necessarily lead to poverty and hunger.

In spite of this change of focus with regard to poverty, it is important that the monetary element of MDG 1 is not completely lost. A large proportion of the variation in the income of the poor in developing countries can be explained by differences in the level of income per capita. The importance of income as an explanatory variable of poverty is still recognized in the 2005-2010 MTDS, which has maintained one monetary target and four associated monetary indicators.

1. Database and monitoring

In PNG, information that can be used for the monitoring of MDG 1 is relatively scarce. The potential data sources are:

- Service (administrative) statistics
- Censuses
- Surveys

This section includes a brief assessment of the contribution of these three data collection systems to the monitoring of MDG 1 in PNG. A more detailed discussion can be found in the DACA report on human development and MDG monitoring.

1.1. Service statistics

Service statistics related to poverty and hunger are incomplete and in many cases non-existent. The latter applies for instance to statistics with regard to food production in the subsistence sector. This information should be collected by the Department of Agriculture and Livestock (DAL). Unfortunately, this is not the case.

1.2. Censuses

Censuses in PNG have collected some information from which proxy indices related to poverty of opportunity can be estimated. In this report, use has been made of census data concerning education and literacy, labour force, employment and unemployment. Furthermore, a particularly important index related to development and poverty is the average life expectancy at birth (e_0). In most countries, this key

mortality index is closely related to several socio-economic indices, including poverty indices.⁴³ Since 1971, this index has been indirectly estimated from census data.⁴⁴

The two most recent censuses were conducted in 1990 and 2000. Information on poverty of opportunity, derived from these two censuses was included in the inaugural MDGR in 2004. Since the next census has been scheduled for July 2011, no new census data concerning poverty of opportunity could be included in the analysis in this report.

1.3. Surveys

For the monitoring of progress towards achievement of MDG 1, specialized socio-economic surveys are particularly important. The MDG report on data availability, completeness and accuracy (DACA) for human development and MDG monitoring includes a comprehensive analysis of the various types of surveys that have been conducted in PNG and their contribution to human development and MDG monitoring. The following is a brief summary of the findings.

- Poverty Survey

Information concerning poverty is available from the Independent Household Survey (IHS) carried out in 1996.⁴⁵ In the inaugural MDGR of 2004, this information has been used for the monitoring of the poverty component of MDG 1. The findings are in this chapter. Unfortunately, after 1996, there has not been a follow-up of the 1996 IHS.

- Household Income and Expenditure Survey (HIES).

PNG is presently engaged in the field operation of its first HIES since independence. The scope of this survey has been extended to include elements of living standards and poverty. The field operation of this survey will continue until December 2010. Consequently, data from this survey is not available for the poverty analysis in this report.

- Agricultural Survey

One of the national targets for MDG 1 set in 2004 refers to agricultural production in the commercial as well as the subsistence sector. Unfortunately, the most recent Agricultural Survey was conducted in the 1960s. No recent information on subsistence production for the entire country is therefore available for the analysis in this report.

- Nutrition Survey

A National Micronutrient Survey was carried out in 2005. This survey included anthropometric measurements of children under the age of five. From this information indices concerning stunting and wasting as well as

⁴³ The average life expectancy at birth is amongst others one of the key components of the Human Development Index (HDI) of the UN DP. In the 2007-2008 Human Development Report, PNG rated 145 out of 177 countries on the HDI.

⁴⁴ Unfortunately the basic tables concerning mortality derived from the 2006 DHS have not yet been made available. Consequently, average life expectancies at birth could not yet be estimated from 2006 DHS data.

⁴⁵ This survey was conducted by the Institute of National Affairs (INA)

underweight and overweight children have been derived. In this report, these “proxy” indices have been used for the monitoring of the hunger component of MDG 1.

- Demographic and Health Survey (DHS)

A comprehensive DHS was carried out in 1996 and again in 2006. Both surveys collected a wealth of information for the monitoring of “poverty of opportunity”, such as data on health, mortality, fertility, education and literacy. In this report, maximal use has been made of proxy indices derived from this data for the monitoring of MDG 1.

In conclusion, since 1996, no new information is available on poverty in income (consumption). The trend in poverty in this report has been monitored using census and survey data representing “poverty of opportunity”.

2. Situation analysis and trends

2.1. MDG poverty base line

As mentioned above, during the drafting of the inaugural MDGR in 2004, most data for the monitoring of the poverty component of MDG 1 was derived from the 1996 IHS. Table I-1 provides a brief summary of the key poverty indices that have been estimated from this survey. Estimates are available for PNG as well as its four regions, the Southern Region (SR), Highlands Region (HR), Northern Region (NR) or Momase Region and the Islands Region (IR). The sample size for the National Capital District (NCD) was increased to enable the estimation of separate poverty indices for the NCD.

This information has been used to establish a MDG baseline for the monitoring of the poverty component of MDG 1.

Table I-1: Selected key poverty indices in 1996.

Poverty index	PNG	SR	HR	NR	IR	NCD
Gini Coefficient	0.51	-	-	-	-	-
Poverty line (kina)						
-Upper	461	547	464	314	479	1,016
-Lower	399	496	390	280	424	779
-Food	302	391	288	218	326	543
% below poverty line						
-Headcount index	30.2	30.0	26.0	38.8	29.8	16.3
-Poverty gap	9.1	9.8	8.0	11.2	9.3	3.8
-Poverty severity index	3.9	4.3	3.4	5.0	3.8	1.4

Source: Derived from 1996 IHS

The trend in these indicators prior to the 1996 IHS cannot be established with much confidence. However, due to the fact that the 1996 IHS sample for the NCD was enlarged, it is possible to compare some of the results of the Urban Household

Survey (UHS) carried out in 1985-1987 in the NCD with those of the 1996 IHS.⁴⁶ A complicating factor for this comparison is that the two surveys used different methods of data collection. However, in 1996, this problem was adequately addressed by adapting the methodology for the NCD.⁴⁷

A comparison of the results of the two surveys indicates that, between 1986 and 1996, the headcount index for the NCD increased slightly from 19.4 to 23.1, when measured at the lower poverty line. However, this index decreased slightly from 33.3 to 29.5 between these two years when measured at the upper poverty line. The differences are not statistically significant. “Therefore, the most reasonable conclusion is that there has been no change in the incidence of poverty in Port Moresby between 1986 and 1996”.⁴⁸

It is not statistically valid to extrapolate this conclusion for the NCD to the country as a whole. However, as mentioned above, trends in poverty (and development) are usually highly correlated with trends in other variables like average life expectancy at birth. Reasonable estimates of the average life expectancy at birth in PNG at the national and provincial level are available since 1971. During the above reference period, these estimates of the average life expectancy have marginally improved. Consequently, it is likely that the level of poverty during this period followed more or less the same trend.

2.2. Monitoring of MDG 1 in 2010

For the monitoring of the poverty component of MDG 1 in 2010, a different approach is required. In the absence of more recent data, the indicators in Table I-1, referring to poverty of income cannot be quantified. Moreover, no recent information for the direct measurement of the hunger component of MDG 1 is available since the DAL conducted its last Agricultural Survey in the 1960s.

Monitoring of MDG 1 in this report is therefore based on indices of poverty of opportunity, derived from other data sources. The analysis mainly focuses on proxy indices, estimated from 1996 and 2006 DHS data. In 2010, these surveys are the main source of information for the assessment of progress made towards achieving MDG 1 (as well as several other MDGs).

2.2.1. Poverty in employment/unemployment

Table I-2 presents the Labour Force Participation Rates (%), Employment Rates (%) and Unemployment Rates (%) for the population aged 10 and over as well as for the population aged 15-24 by sex derived from 2000 Census data.⁴⁹

⁴⁶ The 1985-87 UHS was never completed and no results have officially been published. Fieldwork in the NCD had, however been completed before the survey was cancelled. See also Section 4.1.

⁴⁷ The 1985-87 UHS used the (14 days) diary method whereas the 1996 Household Survey used a recall method, where one person gave a report on the whole household’s consumption for the period between the first and the second visit (in most cases 14 days). In order to avoid bias in the comparison of the NCD data as much as possible, half of the selected households were surveyed with the recall method and the other half with the diary method. The 1996 diary survey was modeled on the 1985-87 UHS. (World Bank, 1997:109)

⁴⁸ World Bank, 1997:116.

⁴⁹ The Labour Force Participation Rate (LFPR) is obtained by dividing the number of persons age x and over in the labour force divided by the total number of persons age x and over, expressed as a percentage. Most countries take age 15 as the cut-off point but PNG has so far used age 10. The labor force (economically active population) consists of the employed and the unemployed.

The Employment Rate is defined as those employed as a percentage of those in the labour force.

Table I-2: Labour Force Participation Rates (%), Employment Rates (%) and Unemployment Rates (%) by age and sex for the total population according to the ICLS and ILO labour force definitions in 2000.

Labour Force Definition	Age	LFPR Rate (%)			Employment Rate (%)			Unemployment Rate (%)		
		P	M	F	P	M	F	P	M	F
ICLS	10+	65.4	66.1	64.6	97.2	95.7	98.7	2.8	4.3	1.3
	15-24	60.1	58.5	61.5	94.7	92.3	97.2	5.3	7.7	2.8
ILO	10+	70.3	71.7	68.9	90.3	88.2	92.6	9.7	11.8	7.4
	15-24	65.9	65.7	66.0	86.4	82.6	90.5	13.6	17.4	9.5

Source: Derived from 2000 Census data

These rates have been calculated according to the definition recommended by the International Classification of Labour Force Statisticians (ICLS) as well as the definition used by the International Labour Organization (ILO).⁵⁰ The following comments provide a picture of the characteristics of PNG's labour force derived from census data.

Firstly, the unemployment rates for males and especially those for females in 2000 are fairly low according to the ICLS definition but they are significantly higher according to the ILO definition. Moreover, as expected, the unemployment rates for young females 15-24 and especially males of that age group are much higher than the overall unemployment rates for females and males. This is particularly the case for the population residing in the urban sector of PNG.

In conclusion, serious "poverty of employment" exists in the urban sector and it is especially acute for the young census respondents aged 15-24. Furthermore, a more detailed analysis reveals that most of these young unemployed people have little or no formal education.

Secondly, in 2000, only a very small percentage (5.3 percent) of all employed women had a wage job. The comparable figure for men is 15.2 percent. Furthermore, during the 1990s there has been some decrease in the proportion (%) of wage earners amongst the employed women as well as men. This is shown in Table I-3.

Table I-3: Proportion (%) of the employed by sex who are wage earners in 1990 and 2000.

Sex	Proportion (%) of employed who are wage earners	
	1990 Census	2000 Census
Both Sexes	14.7	10.4
Males	20.9	15.2
Females	6.2	5.3

Source: Derived from 2000 Census data

The Unemployment Rate is defined as those unemployed as a percentage of those in the labour force. It is therefore the complement of the Employment Rate.

⁵⁰ The difference between the two approaches is mainly that the unemployed under the ICLS definition include those who during the reference period did not work but were actively looking for work. A very large number of activities are accepted as evidence that a person was looking for work. Under the ILO definition, a person is unemployed if he/she did not work during the reference period, did not actively look for work but was available for work. This is a much wider definition of unemployment.

Thirdly, 2000 Census results also indicate that the majority of women and men in the rural sector are engaged in agriculture and/or fishing for subsistence (household consumption). According to the ICLS labour force and employment definition used in PNG, these women and men are economically active and employed. Since a large proportion of the labour force is engaged in subsistence activities, female as well as male labour force participation rates in PNG are high. Users of the labour force and employment data derived from censuses in PNG frequently misunderstand and misinterpret this data.

Fourthly, labour force participation, employment and unemployment rates at the regional and provincial level (not shown here) vary significantly.⁵¹ As expected, the five provinces in the Highlands Region have the highest female as well as male labour force participation rates. In this region, the labour force participation rates (according to the ICLS definition) are well over 70 percent. As expected, in 2000, the lowest labour force participation rate was those for females in the NCD viz. only 32.6 percent. This is a reflection of the fact that, during the 2000 Census, a large proportion of women in the NCD have been classified as home worker. Under the ICLS definition, they are not included in the labour force.

Table I-4: Labour Force Participation Rates (%), Employment Rates (%) and Unemployment Rates (%) by age and sex for the NCD, according to the ICLS and ILO labour force definitions in 2000.

Labour Force Definition	Age	LFPR Rate (%)			Employment Rate (%)			Unemployment Rate (%)		
		P	M	F	P	M	F	P	M	F
ICLS	10+	46.4	57.7	32.6	82.0	79.5	87.5	18.0	20.5	12.5
	15-24	37.2	43.4	30.1	65.7	59.8	75.3	34.3	40.2	24.7
ILO	10+	52.2	64.6	37.6	72.6	71.1	75.9	27.4	28.9	24.1
	15-24	43.2	49.9	34.9	56.5	51.3	65.0	43.5	48.7	35.0

Source: Derived from 2000 Census data

Fifthly, the labour force, employment and unemployment rates for the NCD merit some further comment. These rates are presented in Table I-4. The figures in this table hammer the message home that the unemployment rates for females and especially for males are very high once they are removed from their rural environment. For the young females 15-24, the unemployment situation in the NCD is bad and for the young males, it is even worse.

Sixthly, censuses do not collect any information on labour under-utilization and under-employment. However, the 1985/87 Urban Household Survey (UHS) included a section on employment, unemployment and under-employment.⁵² Unfortunately, as mentioned, due to financial and other constraints, the field operation of this survey was discontinued half-way, and no results of this survey have been published. Nevertheless, some unpublished information for those urban areas where the fieldwork had been completed, has been analysed. This applies in particular to under-utilization of labour in the NCD. It appears that in the NCD, unemployment as

⁵¹ For a regional and provincial level comparison of labour force and employment rates, see the Comprehensive Report underpinning the inaugural MDGR of 2004. This report is kept at the DNPM.

⁵² This refers to underemployment by income, hours of work and mismatch of skills.

well as under-employment in the period 1985-1987 was very high, especially for males. At the time, most of the under-employed were never married, young people with little education.⁵³.

Last but not least, there is no reason to believe that, after 2000, the labour force, employment, unemployment and underemployment situation in PNG has changed significantly.

2.2.2. Poverty as lack of food security and malnutrition

In PNG, most members of the labour force are engaged in subsistence activities. Consequently, it is important to monitor MDG 1 by means of indices that represent agricultural (commercial as well as subsistence) production. This was recognized in the 2005-2010 MTDS. This MTDS adopted the following national target related to agricultural production:

“Increase by 2015, commercial agricultural production by 10 percent and subsistence agricultural production by 34 percent”.

Unfortunately, reliable and up to date information for the monitoring of agricultural production in the subsistence sector is lacking.

The 2003-2004 task force that formulated the national indicators included in the 2005-2010 MTDS decided to use proxy indicators for the monitoring of the hunger component of MDG 1. These indicators relate to nutrition and malnutrition. These indicators are important since in most of the countries growth is faltering and malnutrition are frequent health problems.

The NHIS does provide some information related to nutrition. It published the following information for the years 1999 to 2008, reproduced in Table I-5. This information refers to children under age 5 *who attended clinics* and weighed less than 80 % of that expected for their age (weight for age or WFA).

It appears that in PNG during the period 1999-2008, childhood malnutrition did not change very much. As usual, disparities at the provincial level (not shown) are large with Milne Bay, Gulf, and West Sepik rating worst (around 40 percent) and the NCD and most of the Highland provinces rating best (below 20 percent). For an interpretation of this data, it must be taken into account that a comparison of the provincial figures on malnutrition (and this applies to all other NHIS data as well) is affected by differences in the completeness of reporting.

Table I-5: Information on “weight for age” for PNG between 1999 and 2003

Year	<80% WFA	Year	<80% WFA
1999	25	2004	29
2000	25	2005	30
2001	27	2006	28
2002	27	2007	27
2003	27	2008	26

Source: NHIS

⁵³ Popoitai, 1995

The NHIS data also suggests that the most important form of malnutrition is protein-energy malnutrition.⁵⁴ This affects children as well as adults.

The NHIS, through its outreach capacity and facility-based clinics also collects information on severe malnutrition amongst children using “weight for age” (WFA) as the indicator. It appears that for children included in the NHIS dataset, severe malnutrition marginally decreased from 1.8 percent in 2005 to 1.2 percent in 2008. In that year, severe malnutrition was most common in Gulf, Central, West Sepik and Madang. Users are reminded that Gulf and West Sepik are the provinces with by far the highest level of early childhood mortality.

The NHIS also collects information on underweight children. It defines underweight as less than 80 % weight for age (WFA). Since 2004, the proportion of children with “less than 80% WFA has marginally decreased. However, in 2008, 24 percent of children still fall in this category.

Finally, the NHIS data with regards to low birth weight of children whose birth was supervised, indicates that in 2008, about 10 percent of new-born infants were underweight. This means that these children weighed less than 2,500 grams at the time of birth. This figure is not very different from the ones measured earlier. Low birth weight of new-born children reflects the health and nutrition of the mother during pregnancy. It reduces the child’s probability of surviving during infancy. Users are again reminded that all NHIS data is affected by an urban/institution bias.

More detailed information on the prevalence of stunting and wasting of children aged 6 to 60 months is provided by the 2005 National Micronutrient Survey. However, this information is based on a relatively small sample of the population. Stunting and wasting is measured by the indices “height for age” (HFA) and “weight for height” (WFH) respectively. This survey also provides information on under as well as overweight children. For this, the indices “weight for age” (WFA) and “body mass for age” (BMFA) are used. All measurements in this section are based on the WHO standards of 2005.

⁵⁴ Protein consumption in 1998 was 55 grams per person per day. The 1999 Health Information Survey (HIS) indicated that 1 percent of total deaths resulted from malnutrition.

A summary of this information is presented in Table I-6.

Table I-6: Prevalence (%) of stunting, wasting, underweight and overweight children 6 to 60 months old by sex, region and geographic sector in 2005.

Population	HFA (Stunting)	WFH (Wasting)	WFA (Underweight)	BMFA (Overweight)
Total	43.9	4.5	18.1	3.9
-Males	47.4	4.9	21.0	3.9
-Females	39.6	4.0	14.6	4.0
Region				
-SCR	30.8	3.3	17.1	2.8
-HR	46.3	1.5	7.2	1.0
-NCR	52.0	8.2	31.9	7.5
-HR	40.3	5.0	15.0	4.6
Sector				
-Rural	47.9	5.0	19.5	4.1
-Urban	27.8	2.4	12.3	3.0

Source: 2005 Micronutrients Survey

(a) Stunting

- It appears that the most serious nutritional problem for children aged 6 to 60 months is stunting. According to the new WHO criteria, almost half of the children in that age group are stunted with male children more so than female children. However, the survey results also indicate that the majority of these children are only moderately and not severely stunted.
- The region that is by far most affected by stunting is the Northern (Momase) Region. Moreover rural children are far more affected than urban children.
- The age pattern of stunting is peculiar. Children aged 6 to 11 months are relatively little affected, but there is a large increase in stunting for children aged 12 to 23 months. For children of two years and above, stunting remains more or less at the level of the one year old. It has been suggested that this unusual pattern may be due to cessation of breastfeeding when children reach the age of one.

(b) Wasting

- Contrary to stunting, wasting and especially severe wasting is not common in PNG and it is only very marginally higher for male than for female children.
- Wasting is most common in the Northern Region whereas the Highlands Region has a very low prevalence of wasting.

(c) Under weight

- A significant proportion of PNG children are underweight but very few of these are severely underweight. The prevalence amongst male children is higher than for female children.

- As expected, the problem of underweight children is also concentrated in the Northern Region. The problem is greater for male than for female children.
- The prevalence of being underweight is spread out fairly evenly from aged 6 months to 60 months.

(d) Overweight

- The prevalence of PNG children to be overweight is slightly higher than in the WHO standard population and the proportion of overweight male children is slightly higher than that of female children.
- As expected, the Highlands Region has the highest and the Northern Region the lowest prevalence of overweight children. Urban children are slightly more affected than rural children.
- Children under the age of two have a low prevalence of being overweight.

2.2.3. Other economic indices

Commentators on MDG 1 indicators have suggested a host of other economic proxy indices for the monitoring of poverty and hunger. Examples are agricultural productivity, market access, agricultural prices and many others. Unfortunately, nationwide information to quantify these indices is not yet available. In the near future, the conduct of a comprehensive nationwide Agricultural Survey should receive the highest priority.

2.3. Social indices

2.3.1. Poverty in education and literacy

The results from the 1996 IHS indicate that education and literacy are highly correlated with poverty.⁵⁵ Education and literacy indices can therefore be used as proxy indices of poverty. The Department of Education (DOE) data on access and retention at the primary level suggests that, since 1990, the educational situation in PNG has only marginally improved. The same applies to youth literacy (See MDG 2).

2.3.2. Poverty in longevity

In the 1970s, the population of PNG experienced rapid mortality decline. However, since 1980, the mortality transition has slowed down significantly. This probably applies in particular to the mortality transition of adults. Overall mortality is most conveniently expressed by means of the average life expectancy at birth (e_0).

⁵⁵ This survey shows for instance that for households headed by a person with no formal education or little formal education, poverty rates are much higher than the national average whereas households headed by a person who completed some form of higher education is much lower than the national average. People living in a household headed by a person with no formal education constitute more than 50 percent of the poor. This underlines the importance and significance of education in the move to address poverty in PNG.

This indicator is a major component of the Human Development Index (HDI) and is also an important proxy index of poverty. Change in the average life expectancy at various ages since the 1970s is presented in Table I-7.

Table I-7: Average life expectancy at birth at various ages (years) for the total population by sex, indirectly estimated from censuses and surveys

Indicator	Sex	1971 C.	1980 C.	1990 C.	1996 DHS¹	2000 C.
Average life expectancy at birth	P	40.4	49.6	51.7	54.0	54.2
	M	39.6	48.8	52.2	54.6	53.7
	F	41.1	50.7	51.4	53.5	54.8
Average life expectancy at age 1	P	-	52.5	55.3	-	57.0
	M	-	51.8	56.2	-	56.5
	F	-	53.2	54.6	-	57.4
Average life expectancy at age 5	P	-	50.8	54.5	-	54.4
	M	-	50.2	55.5	-	54.1
	F	-	51.5	53.6	-	54.7
Average life expectancy at age 25	P	31.5	34.6	38.0	-	37.9
	M	31.2	34.2	39.0	-	37.7
	F	31.7	35.1	37.1	-	38.1
Average life expectancy at age 45	P	-	19.9	22.6	-	22.2
	M	-	19.7	23.5	-	22.1
	F	-	20.2	21.8	-	22.3
Average life expectancy at age 65	P	-	8.3	9.7	-	9.2
	M	-	8.2	10.3	-	9.2
	F	-	8.3	9.2	-	9.2

Source: 1971 and 1980: Bakker, 1986. 2000: NSO, 2003

Note: ¹The 2006 DHS information required for the estimation of the missing indicators has not been published

Table I-8 presents the change in average life expectancy at the provincial level since the 1970s. The information in this table suggests that the difference in the level of mortality at the provincial level was very large in the past and that this has not changed since the 1970s.

Table I-8: Average life expectancies at birth (years) at the regional and provincial level indirectly derived from census data.

Geographic Subdivisions	1971	1980	2000	Geographic Subdivisions	1971	1980	2000
Papua New Guinea	40.4	49.6	54.2				
• Rural	-	48.7	53.0				
• Urban	-	55.0	59.6				
Southern Region	40.3	52.1	55.4	Northern Region	38.4	47.7	50.7
• Western	38.5	47.7	54.3	• Morobe	42.7	50.9	51.7
• Gulf	29.1	47.3	46.4	• Madang	40.2	50.7	51.1
• Central¹	43.7	51.3	56.4	• East Sepik	32.8	49.3	52.2
• NCD*	43.7	56.7	59.2	• West Sepik	36.5	42.1	46.0
• Milne B.	43.0	57.1	54.1				
• Northern	42.3	49.2	54.5				
Highlands Region	41.0	49.7	55.3	Islands Region	46.0	54.1	57.8
• Southern H.	36.8	43.8	55.2	• Manus	43.7	51.8	58.6
• Enga²	40.5	47.1	52.5	• New Ireland	45.9	52.7	57.9
• Western H.	40.5	51.9	56.2	• East N. Brit.	47.1	52.8	57.1
• Chimbu	43.3	50.2	56.8	• West N. Brit.	44.3	51.3	56.7
• Eastern H.	44.3	53.1	55.4	• ARB	46.9	59.6	59.6

Source: 1971 and 1980: Bakker, 1986, 2000: NSO, 2003

Notes: ¹ In 1971, NCD was part of Central Province.

² In 1971, Enga was part of Western Highlands

2.4. Household facilities

It may safely be assumed that households/families living in a house with a floor made of earth, sand or palm/bamboo, without electricity, piped water supply and flush toilet are not well off. Table I-6 presents information on the presence or absence of these household facilities in 1996 and 2006.

Households that do not have access to piped water into their house or yard most commonly get their water from a river/stream or spring. The proportion of households that gets its water from a river/stream or spring has increased from 53.3 percent in 1996 to 60.2 percent in 2006. Furthermore, most households that do not have their own flush toilet, most commonly use a traditional pit (69.1 percent in 1996 and 69.5 percent in 2006). The most common floor material of houses in PNG is palm/bamboo (48.9 percent in 1996 and 46.2 percent in 2006).

A composite index, constructed from the four indices in Table I-9, indicates that during the period 1996-2006, the situation with regard to the above household facilities slightly deteriorated.⁵⁶ However, the index for the rural sector has marginally improved. This improvement is mainly due to the fact that the number of rural households with electricity has doubled during the interval. In spite of this improvement, the proportion of rural households with electricity remains low.

⁵⁶ The four elements of the composite household facilities index (shown in the bottom row of Table I-7) have each been given a weight of 1

Table I-9: Household facilities by geographic sector in 1996 and 2006

Household facilities	1996			2006		
	Total	Rural	Urban	Total	Rural	Urban
Electricity	12.3	3.2	59.2	12.4	6.5	61.3
Piped water into house or yard	12.9	3.6	60.5	9.1	3.2	57.7
Own flush toilet	9.1	1.5	47.9	5.3	1.1	39.5
Modern floor material*	27.2	16.0	84.9	22.9	16.9	72.6
Composite household facilities index	24.1	16.6	62.6	22.6	18.4	57.2

Note: * Houses with a floor of wood planks, polished wood, vinyl strips, ceramic tiles or cement

Source: 1996 and 2006 DHS

The composite household facilities index for the urban sector has deteriorated since 1996. One important contributing factor is undoubtedly that the migration from the rural to the urban sector (added to an already high rate of natural increase), has not been accompanied by a comparable increase in the number of houses and an improvement in household facilities in the urban sector.⁵⁷ In the urban sector, since 1996, the situation regarding three of the four elements of the composite household facilities index has deteriorated significantly.

The present situation for the urban sector is almost certainly worse than indicated by the figures in Table I-9. The reason is that, the boundaries of many urban areas in 2010 are very conservative. The last time that these boundaries were delineated was prior to the 1980 census. In the meantime, urban type settlements have in many cases expanded far beyond these boundaries. A significant proportion of the in-migrants of the peri-urban areas of cities and towns must be considered as urban dwellers but they are not yet officially recognized as such. It is essential that, in the preparation phase of the 2011 census all urban boundaries are reviewed and re-delineated, based on a set of unambiguous urban criteria.⁵⁸

Finally, the average household size has changed significantly over time. The most recent figures are from the 2000 census. In that year, the average household size was 5.4 persons (5.3 persons in the rural sector and 6.5 persons in the urban sector). This index provides a measure of overcrowding.⁵⁹

⁵⁷ The mean number of persons per sleeping room in the urban sector increased from 2.8 in 1996 to 3.4 in 2006.

⁵⁸ The five criteria for the delineation of urban areas in Fiji can possibly be used as a guideline. See FIBOS, 1996.

⁵⁹ The 1990 and 2000 Censuses also provide information about the average number of persons per room, whereas the 1996 and 2006 DHS measure the average number of persons per sleeping room. In many countries these are also considered as measures of overcrowding. However, in the case of PNG where communal living is common, this index is seen as an important one.

	1996 DHS			2006 DHS		
	Total	Rural	Urban	Total	Rural	Urban
Less than 3 persons per sleeping room	59.0	58.7	60.5	63.5	64.5	54.7

3. Global and national targets and indicators

3.1. Global targets and indicators

In 2009, the three global targets associated with MDG 1, formulated by the UNDG are:

Target 1A Halve between 1990 and 2015, the proportion of people whose income is less than one US dollar per day.⁶⁰

The associated global indicators are:

- 1.1. Proportion of population below USD1 (PPP) per day
- 1.2. Poverty gap ratio
- 1.3. Share of poorest quintile in national consumption

Target 1B Achieve full and productive employment and decent work for all, including women and young people.

The associated global indicators are:

- 1.4. Growth rate of GDP per person employed
- 1.5. Employment-to-population ratio
- 1.6. Proportion of employed people living below USD1 (PPP) per day
- 1.7. Proportion of own-account and contributing family workers in total employment

Target 1C Halve between 1990 and 2015, the proportion of people who suffer from hunger.

The associated global indicators are:

- 1.8. Prevalence of underweight children under five years of age
- 1.9. Proportion of population below minimum level of dietary energy consumption

In the absence of data from a comprehensive LSMS or HIES it is not possible to monitor the monetary aspects of the global targets. The NSO is presently engaged in a HIES. The results of this survey will only be available in 2011.

Generally, in countries like PNG, where the majority of the labour force is engaged in subsistence activities, it is difficult to make a reasonable estimate of the GDP as well as the proportion of people (or the employed) living below USD1 (PPP) per day.

3.2. National targets and indicators

Because of the dissatisfaction with the global targets (and indicators) of MDG 1, the DNPM decided in 2003, that the MTDS 2005-2010 should include a set of realistic and achievable national (tailored) targets associated with MDG 1. Two national targets were formulated and included in the MTDS. These targets were also adopted in the inaugural MDGR. These national targets are:

⁶⁰ This is USD1 per day PPP

MTDS Target 1 Decrease by 2015, the proportion of people below the lower poverty line by 10 percent (using the 1996 national average figure of 30 percent as the benchmark figure).

The associated national indicators are:

- 1 Percentage of people below the lower poverty line (using the headcount method)
- 2 Poverty gap ratio (incidence x depth of poverty)
- 3 Share (%) of poorest quintile in national consumption
- 4 Gini coefficient

MTDS Target 2 Increase by 2015, commercial agricultural production by 10 percent and subsistence agricultural production by 34 percent

The associated national indicators are:

- 5 Underweight births as a percentage of total births
- 6 Percentage of underweight children under five years of age
- 7 Percentage of people below minimum level of dietary energy consumption
- 8 Percentage of total deaths associated with malnutrition
9. Percentage of children under age 5 with height-for-age z score below minus 2
10. Percentage of children under age 5 with weight-for-age z score below minus 2

The proposed re-tailored targets and indicators are discussed in the DACA report on human development and the MDGs.

3.3. Progress towards achieving MDG 1

Due to lack of information after 1996, recent trends in income and consumption poverty as well as food security cannot be established in 2010. Progress towards achieving MDG 1, has been measured using indices that can be considered as being closely associated with “poverty of opportunity”. The results indicate that since MDG base year 1990, the combined impact of all these proxy indices has led to, at best, a marginal improvement in the poverty situation. Nevertheless, with regard to the global targets of MDG 1, PNG is off track. With only six years left of the first MDG cycle 1990-2015, none of the three global targets of MDG 1 can be achieved before the deadline 2015.

It is less clear to what extent PNG has achieved its national poverty and hunger targets incorporated in the MTDS 2005-2010. Although Global Target No. 1A has been rejected as inappropriate for PNG, its national replacement still relates to poverty of income and not to poverty of opportunity. However, National (MTDS) Target No. 1 is more realistic than its global counterpart. It only envisages a modest decrease of 10 percent in poverty by 2015.

Progress towards achieving National Target No. 1 has been measured by means of indicators that are associated with the concept “poverty of opportunity”. The analysis in Section 2 suggests that the combined impact of all these proxy indices may have

led to a small improvement in the poverty situation of about 5 to 10 percent. This decrease is approximately the same improvement as that envisaged by the 2005-2010 MTDS. It is also interesting to note that a recent study estimates that poverty since 2003 has decreased by 8.8 percent, driven entirely by the non-mining sector.⁶¹

Table I-10 compares the trend in the proportion of the population below the poverty line with the national poverty target. It appears that this modest national target remains achievable by 2015. In other words, in 2010, PNG appears to be on track with this national target. The trend in the proportion of the population below the lower poverty line between MDG base year 1990 and 2010 is also shown in Figure I-1.

Finally, the continuing very high Gini Coefficient is an indication that economic growth (growth in GDP) and increase in income does not necessarily translate into development in which the citizens of the country share equally. Furthermore, the Gini Coefficient measured in the 1970s (0.50) is almost the same as the one derived from the 1996 IHS (0.51). It is unlikely that this index has changed dramatically since 1996. In conclusion, income inequality in the past was high and it remains high.

There is even more uncertainty with regard to progress made towards achievement of National Target No. 2. This target refers to agricultural production. In spite of the fact that the minerals and petroleum industry has become the leading contributor to PNG's GDP, agriculture remains the economic backbone of the country.⁶² The majority of the labour force in PNG is still engaged in subsistence agriculture. It is therefore appropriate that the MTDS includes a target that is related to agricultural production. Moreover, the National Agricultural Policy also focuses on improved performance in the agricultural sector as a way to reduce poverty and hunger.

Table I-10: Progress between 1990 and 2010 towards achieving the national poverty target

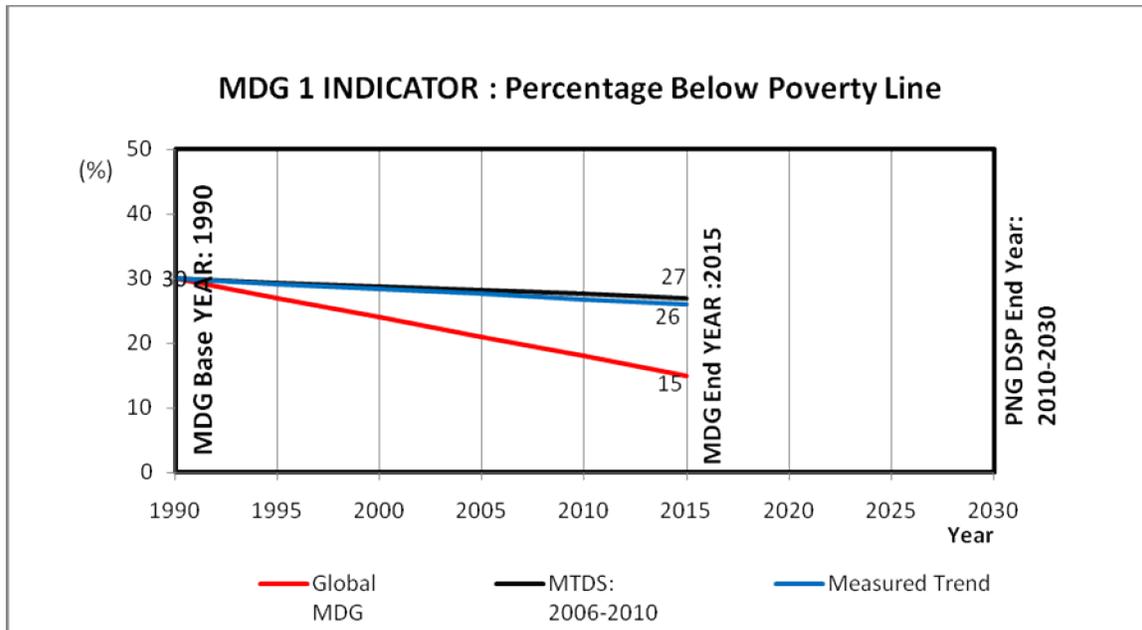
National Indicators	Most recent measure			Projected to ¹			National Target 2015
	Value	Year	Source/Comments	1990	2010	2015	
Percent below poverty line	30.2	1996	1996 IHS. Using lower poverty line and headcount measure	30.0	28.0	27.0	27.0
Poverty gap ratio	9.1	1996	1996 IHS. Incidence x depth of poverty	9.0	9.0	9.0	8.0
Share (%) poorest quintile	4.5	1996	1996 HIS. Relating to national consumption	4.5	4.5	4.5	4.0
Gini Coefficient	0.51	1996	1996 HIS	0.50	0.50	0.50	0.46

Note: ¹ Projected according to "no change scenario"

⁶¹ Chandy, 2009:5

⁶² In 2009, it is estimated that agriculture contributes 25 percent to PNG's GDP whereas it supports 85 percent of the population.

Figure I-1: Trend in the proportion of the population below the lower poverty line Between MDG base year 1990 and 2010 compared to global MDG and 2005-2010 MTDS targets.



It has been argued that the component of National Target No. 2 dealing with subsistence production is far too optimistic. However, a 34 percent increase in subsistence production between 2003 and 2015 only tries to ensure that subsistence production keeps up with population growth.

The six national indicators associated with National Target No 2 are not very well aligned with this target. They do not measure agricultural production. Instead, they refer to the nutritional status of the population. Data for the establishment of a trend for four of the indicators is presently not available. The information that is available is summarized in Table I-11. It suggests stagnation in nutritional status.

There is an urgent need for information that can be used to monitor progress with regard to National Target No 2 in a more satisfactory manner. The conduct of a comprehensive Agricultural Survey in the near future should receive the highest priority

Table I-11: Progress between 1990 and 2010 towards achieving the national hunger target

National Indicator	Most recent measure			Projected ¹			National Target 2015
	Value	Year	Source/Comments	1990	2010	2015	
Underweight births (% of total births)	10.0	2008	NHIS. This applies to supervised deliveries only	10.0	10.0	10.0	9.0
Underweight children < age 5 (%)	24.0	2008	NHIS. This applies to supervised deliveries only	-	22.0	17.0	None
Persons (%) below min. level dietary cons.	N.A.	-	-	-	-	-	None
Total deaths associated with malnutrition (%)	N.A.	-	-	-	-	-	None
Children < age 5 with HFA z-score < -2	36.3	2005	Micro Nutrition. Survey. HFA is height-for-age	-	-	-	None
Children < age 5 with WFA z-score < -2	26.4	2005	Micro Nutrition. Survey. WFA is weight-for-age		-	-	None

Note: ¹ Projected according to “no change scenario”

4. MDG 1 specific challenges

The achievement of MDG 1 is affected by all the crosscutting challenges detailed in Part A, Chapter II. Moreover, the MDG National Steering Committee has identified “poverty of opportunity” as one of the crosscutting challenges affecting the achievement of all other MDGs (See Part A, Chapter II-2E). This section only deals with MDG 1 specific challenges.

4.1. General

Economic growth is a necessary condition for poverty and hunger reduction but it is not the only one. Reduction of poverty and hunger requires a multi-faceted response that includes a variety of socio-economic and political interventions. This integrated approach has been embedded in the Vision 2050, the PNG Development Strategic Plan 2010-2030 and in other national as well as sectoral strategies and plans. Although national policies and plans usually state that they have adopted a “pro-poor” approach this is not always made explicit. Moreover, the implementation of policies and plans with a “pro-poor” focus is not always pro-poor.

Correlation between poverty and hunger and most other MDGs in PNG is high. For instance this is the case with the level of formal education and literacy (See MDG 2). There is a strong inverse correlation between formal education and poverty (See MDG

2).⁶³ Correlation between HIV/AIDS and poverty and hunger is also high. As in many countries, the HIV/AIDS epidemic in PNG affects in particular those in the age group 15-34. This has already led to a significant loss of productive capacity (See MDG 6). It is likely that this trend will continue in the near future but it is hoped that the loss will not be as extensive as in several of the hardest hit countries in Africa.⁶⁴ HIV/AIDS must be considered as an increasingly more important challenge that will affect the achievement of MDG 1. Furthermore, apart from losing the income of HIV/AIDS patients, their treatment and care affects the life of all household members including their income earning capability. The increase in poverty particularly affects female members of the household since they are usually left with the care of family members that have been infected (See MDG 3).

Finally, the 2006 DHS provides information on housing conditions and availability of basic facilities. This information suggests that availability of basic facilities remains limited, especially in the rural sector. For instance, in spite of an abundance of fresh water in PNG, a large proportion of the population is forced to use unsafe water supply.⁶⁵ The result is a high incidence of waterborne diseases such as diarrhea and dysentery. Moreover, the proportion of households without access to modern sanitation is limited, especially in the rural sector (see MDG 7). These are all indicators that are directly or indirectly linked with poverty.

4.2. Legislation/policy

PNG's initial response to the UN Millennium Declaration was to draft a comprehensive National Poverty Reduction Strategy (NPRS) for the period 2004-2020. This strategy was based on the National Constitution as well as the "Kumul 2020" vision statement. However since the NPRS strategy had a rather narrow focus on income poverty, it was not endorsed by the National Executive Council (NEC). Lack of appropriate policies and plans with regard to MDG 1 is probably more serious than for any of the other MDGs. A new and much broader policy with a much stronger focus on poverty of opportunity should be formulated as soon as possible.

4.3. Financial

Dependency on donor assistance remains important. Furthermore, debt servicing absorbs a significant part of the national income. These are major challenges for the achievement of MDG 1 (as well as all other MDGs). Other MDG 1 related challenges include the low level of employment in the modern (money-earning) sector whereas unemployment and underemployment in the urban sector remains high. Consequently, for most households, the level of (money) income is low. Furthermore, for most households with money income, this income must often be spread out over a large number of household members.

Since a large proportion of male and female members of the labour force are engaged in subsistence activities, most rural households have a significant level of income in

⁶³ This is amongst others clear from the information on poverty and education/literacy collected in the 1996 IHS. This interrelationship needs further research e.g. based on data from a literacy survey that has recently been carried out in the NCD and in New Ireland Province.

⁶⁴ Reports from some of the hardest hit countries in Africa, suggest that economic growth has decreased very significantly and labour force productivity by probably as much as 50 percent.

⁶⁵ In 2006, only 9.1 percent of the households had access to piped water into their household or yard. This includes 57.7 percent of the urban households and only 3.2 percent of the rural households.

kind.⁶⁶ Unemployment in the urban sector is especially a problem for the young and vulnerable age group (15–24 years).⁶⁷ Productive employment in the rural and informal urban sector needs to be improved drastically. This will address unemployment and under-employment problems and hence poverty.

Furthermore, productivity in the agriculture and livestock, fishery and forestry sectors is low and needs to be raised. Improvement requires knowledge transfer, technology, access to bank loans to buy inputs and to enhance investment, improvement of rural-urban transport linkages, and reasonable pricing of rural products and services.

Low productivity is partly the result of low capacity. Capacity building of people in the rural and urban informal sector will lead to the creation of productive employment and will help address the problem of unemployment, underemployment and poverty.⁶⁸ Capacity building should also improve productivity in the agriculture, livestock, fishery and forestry sectors through extension services and appropriate inputs, credit and marketing services.

4.4. Service delivery

Access to markets, goods and services and electrification in the rural sector is limited. This is a prerequisite for setting up cottage (micro) small and medium sized agro-processing facilities, other industries and business enterprises. The access to telephone, fax and internet in the rural sector is also limited. Improvements will lead to more efficient communication and to an increase in income.

Linkage between rural areas and urban centers by means of an efficient transport system remains poor. This exacerbates the sale of products produced in the rural areas and the purchasing of goods and services needed in the rural areas.

Access to health services is also poor. As argued in the analysis in Section 2, this is an important determinant of poverty. For a variety of reasons (very difficult terrain, inadequate road network and other transport and communication problems), health facilities and services are inadequate, particularly in a large part of the rural sector.⁶⁹ Moreover, in 2010, a large proportion of all Government Aid Posts (GAP) are either non-existent or not operational (see MDG 4 and 5). Consequently, for many rural people, there is little or no access to the most basic health services. In addition, in those areas where health facilities are available and accessible, there are usually a high number of patients per health worker. Poverty related to health remains severe.

4.5. Monitoring

As shown in Section 1 and 2, the monitoring of progress towards achieving MDG 1 in PNG is far from straightforward. No recent nationwide information on income and

⁶⁶ The proportion of women with principal activity “home worker” is low in the rural sector. All censuses since 1966 confirm this. This implies that most rural women were and still are engaged in subsistence activities and not with home duties including looking after children

⁶⁷ This is supported by urban employment and unemployment figures derived from the 1990 and 2000 censuses. Furthermore, the Urban Household Survey in the NCD shows that under-employment (by income, time and mismatch of skills) is very high in NCD.

⁶⁸ This can amongst others be done through the establishment of cottage (micro) small and medium size agro-processing facilities and other businesses.

⁶⁹ Road access to many villages and clan areas has deteriorated in the recent past. As a result, for many rural people a visit to the nearest basic healthcare facility is very time consuming.

consumption poverty is available. Although the National Statistical Office (NSO) is presently in the process of conducting a HIES, the results will become available in 2011. Consequently, in this report, proxy indices, mainly derived from the 1996 and 2006 DHS have been used for the monitoring of MDG 1.

There is a need to identify the poor in PNG more accurately using precisely defined criteria not only related to income and consumption but also to poverty of opportunity. Since disparity in poverty and hunger at the sub-national level is probably as extensive as in the case of MDG 2 and 4, future surveys should attempt to estimate poverty and hunger indices that are statistically valid at the provincial level. Because of operational and financial constraints, this has so far not been the case.⁷⁰

A special mention should again be made of the fact that, in the absence of data from an Agricultural Survey, National Target No 2 concerned with subsistence agricultural production can at present not be monitored. The last Agricultural Survey was carried out in the 1960s. Indices related to nutrition and anthropometric measurements have been used for the monitoring of the hunger component of MDG 1.

Monitoring of the different elements of MDG 1 is discussed in more detail in the DACA Report on human development and the MDGs.

5. Good practices

As in the case of several other MDGs, e.g. MDG 2, good practices with regard to MDG 1 are mainly found at the micro level. Some examples of good sustainable agricultural practices include:

- Rice growing and processing at the community level in the Karamui area. This is a good example of import substitution and savings at the community level.
- The successful wheat growing and processing project in Tambul, Western Highlands Province.
- The healthy vegetarian diet of the Okapa in the Kuru Mountain area of Eastern Highlands Province.

6. Interventions

6.1. Supporting international environment

The United Nations Millennium Declaration pays special attention to development and poverty eradication. It considers the eradication of extreme poverty and hunger as the first goal for the new millennium. The Declaration devotes more paragraphs to development and poverty than to any other high priority issue such as peace, security and disarmament, protection of the environment, human rights, democracy and good governance. Following this Declaration, the World Summit on Sustainable Development (WSSD) in 2002 in Johannesburg, re-emphasized the importance of poverty reduction. It used a broad definition of poverty but focused on the physical

⁷⁰ The 1996 IHS provided estimates that are valid at the national and regional level. Similarly, estimates from the HIES that is presently being conducted will be restricted to the national and regional level.

and environmental aspects of poverty including access to basic services including water, renewable energy, sanitation, housing and seeking accountability by all parties to mitigate environmental concerns and loss (See also MDG 7).

6.2. National interventions

As already mentioned, PNG formulated a National Poverty Reduction Strategy (NPRS) for the period 2004-2020. Unfortunately, this policy had a narrow focus and it was not endorsed by the NEC. However, several of the ideas behind the NPRS as well as some of its targets and indicators, were incorporated into the 2005-2010 MTDS and hence also into the inaugural MDGR of 2004.

The government's views concerning the reduction of poverty and hunger were expressed in its development objectives. The top priority objectives in the 2005-2010 MTDS include:

- Good governance
- Export driven growth
- Rural development

It was expected that a combination of these three key objectives would lead to economic recovery and growth and hence to improvement in the living standards and quality of life of Papua New Guineans in urban as well as rural areas. It will be noted that the focus of these three objectives concentrates more on income than on the reduction of "poverty of opportunity". The latter is mainly covered under rural development.

During the period between 2010 and 2030, the guideline for the government's development aspirations will be the PNGDSP. This plan will drive and coordinate PNG's sectoral policies and plans. Poverty reduction is implied in the focus areas of the PNGDSP 2010-2030. It is expected that the implementation of the PNGDSP will contribute significantly towards the reduction of poverty and hunger.

Future interventions in the near future will include:

- Improvement of the road network and river/sea transport systems to link rural areas with urban centers for access to markets and goods and services.
- In cooperation with the private sector, the provision of efficient communication services in rural areas.
- Provision of electricity in rural areas.

All these interventions are part of the implementation of the PNGDSP 2010-2030. This plan intends to create, between 2010 and 2030, ten Economic Corridors (EC) all connected by road. Communication services and electricity supply are crucial elements of this network.

II. MDG 2: ACHIEVE UNIVERSAL PRIMARY EDUCATION

Achievement of Universal Basic Education (UBE) is one of the top priorities of the PNG government. According to MDG 2, universal primary education (UPE) should be achieved worldwide in 2015. In other words, by 2015 all children should complete a full course of primary schooling. This is probably the most demanding global MDG target. In 2010, many countries, including PNG are still far away from achieving this goal.

In PNG, achievement of MDG 2 is intricately linked with the educational reforms introduced in the 1990s. The following includes a brief summary of the main characteristics of these reforms. The restructuring of the educational system started, in 1990/91, with an Educational Sector Review.⁷¹ Its objective was to identify the problems in the old educational system and to develop strategies to rectify these problems.⁷² The Review identified several shortcomings of the pre-reform educational structure, for example:

- i. Very low level of retention at the primary level.
- ii. Very low transition rate at post grade 6 and grade 10 levels.⁷³
- iii. Irrelevant curriculum.
- iv. Weak management and administration.
- v. Decline in resource allocations combined with a high unit cost.

The Review concluded that it would be difficult if not impossible to achieve universal basic education in PNG within the pre-reform educational structure. It recommended for the entire education system from pre-primary to upper secondary level to be restructured.

The restructuring started with the approval of the Education Amendment Act in 1995. The main characteristics of the new structure include:

- Conversion of the pre-reform (6 – 4 –2) structure to the following new structure:
 - Three elementary (Prep, E1, E2)
 - Six primary (Grade 3 to 8)
 - Four secondary (Grade 9 to 12)

Note: This implies that grade 1 and 2 of the old primary school as well as grade 7 and 8 of the old secondary school to be phased out.

- The introduction of an Elementary School component in the educational system. This can be considered as the main feature of the educational reforms. The Elementary School consists of one year preparatory and two

⁷¹ This review was undertaken with support from UNDP and UNESCO

⁷² The pre-reform structure consisted of six primary, four lower secondary and two upper secondary classes

⁷³ The transition from grade 6 to grade 7 and from grade 10 to 11 was considered as some of the crucial bottlenecks of the pre-reform system.

years elementary education for children aged 6 to 8 years.⁷⁴ This component of the education system is largely village/settlement based and feeds into the Primary School system.⁷⁵

Primary School in the new structure starts with grade 3 (at age 9) and lasts six years (grade 3 to 8). This implies that grade 7 and 8, which were part of the old secondary school system had to be phased out and become part of primary education.

- Secondary School under the new structure consists of 4 years (grade 9 to 12).
- A strong vocational element has been built in at all levels of education.
- A new exam schedule. The old grade 6 examinations have been replaced by grade 8 examinations.

At the time of its introduction, it was assumed that this new structure would lead to:

- Much wider access to elementary education at age 6.
- Drastic improvement in the completion of primary education. It was hoped that, ultimately all children would complete nine years of basic education.
- Improvement in gender inequality in enrolment, retention and achievement.

The introduction of Elementary Schools was seen as critical to the success of the new educational structure. It was also assumed that the introduction of the Elementary School component would gradually solve the problem of over-age entry into Primary School.

Implementation of the educational reforms started in the mid-1990s and should have been completed by 2004 although there are still many primary schools that have Grade 1 and 2 classes.⁷⁶

1. Database and monitoring

The data sources for monitoring of MDG 2 include:

- Service (administrative) statistics of the Department of Education (DOE)
- Censuses and surveys

⁷⁴ The Elementary School is sometimes referred to as the Central School. Elementary Schools are often located somewhere near the center of a group of small villages/hamlets. The Elementary Schools in the restructured education system have evolved from the experiences of the Tok Ples Pre Skuls (TPPS). The success of these TPPS's was closely related to the extent of community involvement.

⁷⁵ Before the restructuring the eligible age for Community School was 7-9 years. Census results show that in reality, children up to twelve years and sometimes even older were enrolled in grade 1.

⁷⁶ It will be noted that the start of the introduction of the educational reforms coincided with the introduction of the Organic Law on Provincial and Local Government. Under this law, the provinces are responsible for the implementation of the reforms in primary and secondary education (with the exception of curriculum development).

A detailed assessment of these data sources in the context of MDG 2 monitoring in PNG can be found in the DACA report for human development and MDG monitoring. The following is only a brief summary.

1.1. Service statistics

Service statistics of the DOE are restricted to the “at-school” population. Until recently, the DOE routinely collected information on school enrolment and staffing. Enrollment and retention rates and other relevant indicators were calculated from this data. The DOE also measured how much children had learned during their time at school.

Since 2007, the DOE has changed its method of collecting data. It now collects data from all educational institutions through an Annual School Census. The data from the School Censuses now forms the basis for monitoring of MDG 2. The ongoing educational reforms are a complicating factor in the monitoring of access, retention and achievement in education between 1990 and 2010.

1.2. Censuses and surveys

Censuses in PNG provide age and sex specific information concerning school attendance at a particular point in time (census night). These census based attendance ratios may well represent a more realistic picture of the real educational situation in the country than the enrolment figures of the DOE. The census is not a suitable data collection system for information on retention.

The census collects information on the level of formal education completed by all respondents and not only the “at school” population. This data is cross-classified with many other census variables such as age, sex, labour force participation, employment and unemployment. Indirect estimates of literacy are also derived from census data. This is explained in Section 2. Moreover, recently, a literacy survey has, been conducted in three provinces.⁷⁷

2. Situation analysis and trends

This section includes an assessment of three major aspects of education viz.:

- i. Access to school (enrollment) measured by means of enrollment ratios.
- ii. Completion of a certain level of formal education measured by means of cohort retention ratios.
- iii. Achievement (quality). For the at-school population this can be done by means of students’ performance as measured in exams. For the not-at school population, literacy rates are used.

2.1. Access

In the 2004 inaugural MDGR, the Gross Enrollment Ratio (GER), and not the Net Enrollment Ratio (NER) was used to monitor access to school. NERs were not available at the time. Moreover, there was and still is a large age disparity among

⁷⁷ The surveys in the NCD, New Ireland and Chimbu were conducted by the Papua New Guinea Education Advocacy Network (PEAN).

primary school pupils in all classes.⁷⁸ For reasons of comparability, the GERs are again used in the present assessment of access to school.

Table II-1 presents the GERs starting from MDG base year 1990 to 2007 by sex, as reported by the service statistics of the DOE.⁷⁹

Table II-1: Gross Enrollment Ratios (%) by sex at the primary level between 1990 and 2007

Year	Persons	Males	Females	Year	Persons	Males	Females
1990	66.3	68.1	64.2	2003	77.3	80.9	73.4
1995	75.1	75.9	74.1	2004	78.4	81.9	74.5
2000	79.3	82.4	75.7	2005	76.8	80.9	72.3
2001	73.3	78.6	72.2	2006	77.3	81.4	72.9
2002	76.0	80.9	72.8	2007	74.4	78.2	70.2

Source: Service Statistics DOE, 1990, 1995, 2000-2007.

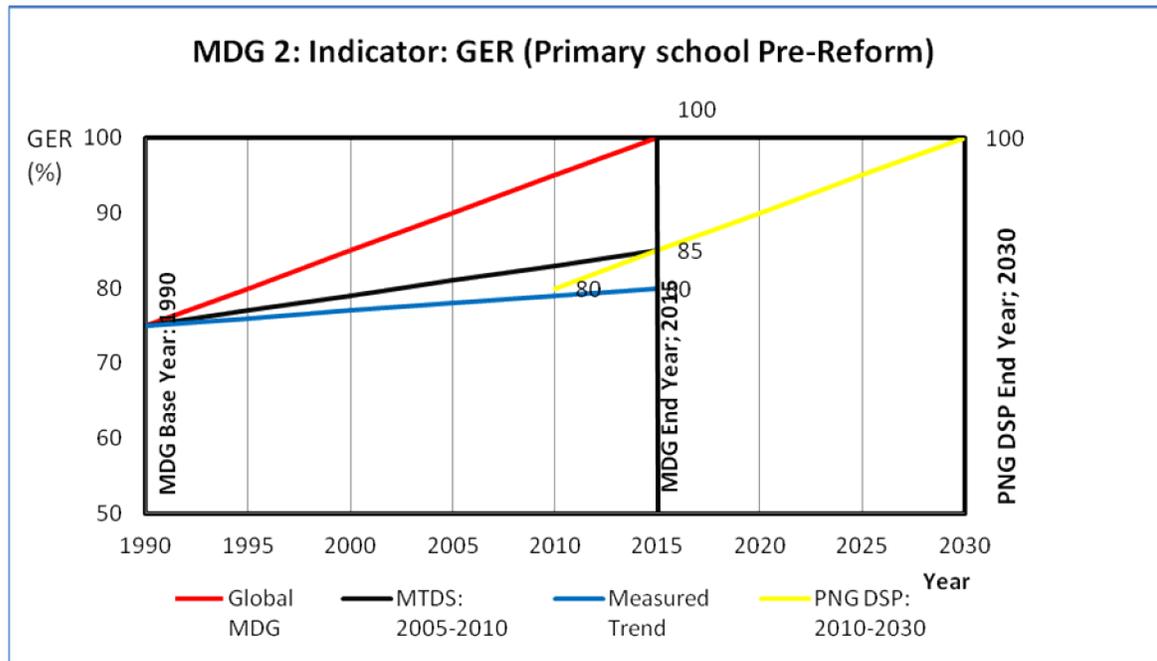
The GERs in this table refer to enrolment in grade 1 of the pre-reform system. The figures suggest that, since 1990, access to school (as measured by the GER) has marginally improved. It appears that so far, the educational reforms have not yet led to a significant improvement in enrollment at the primary level. The trend in the GER between MDG base year and 2010 is presented in Figure II-1. The trend is compared to the global MDG and 2005-2010 MTDS targets.

Moreover, since measurement in education started, primary school enrollment has always been characterized by large disparities at the provincial and lower level. In 2000, the provinces with the lowest GER were Southern Highlands (56.5 percent), Enga (69.1 percent and Madang (75.2 percent) whereas the highest GERs were found in the five provinces of the Islands Region. Ten years earlier, in MDG base year 1990, provincial disparities were very similar. In 2007, gross enrollment in Southern Highlands, Gulf, Oro, Madang, West Sepik and Enga is significantly lower than the national average of 74.4 percent, whereas gross enrollment in the provinces of the Islands Region and in Milne Bay is significantly above this national average. Most of the low achievers in enrolment amongst the provinces are those that have been lagging behind in other areas as well. Quite surprisingly, the GER in the NCD in 2007 is only very marginally above the national average. This is undoubtedly a result of the low level of enrollment amongst the population of the numerous squatter settlements of the NCD.

⁷⁸ The figures show a very wide age disparity among primary school pupils. In 1990, a very large number of children outside the 7 – 12 year age group were enrolled in grade 1 to 6. In fact, less than 25 % of the pupils in grade 1 were 7 years old. A significant proportion of pupils in grade 1 was even 12 years old or more. Under these circumstances, the net enrolment rate does not give a very good picture of access to school. This is the reason why the net enrolment rate was not used.

⁷⁹ The enrolment data from the DOE for grade 1 through grade 6 (irrespective of age) have been used as the numerator and the population aged 7-12 years as the denominator.

Figure II-1: Trend in gross enrollment between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



2.2. Retention

Completion of primary school (of the old structure: grade 1-6), as measured by cohort retention ratios (CRR) is presented in Table II-2. Information is provided for different cohorts of children since 1985, which completed grade 6.

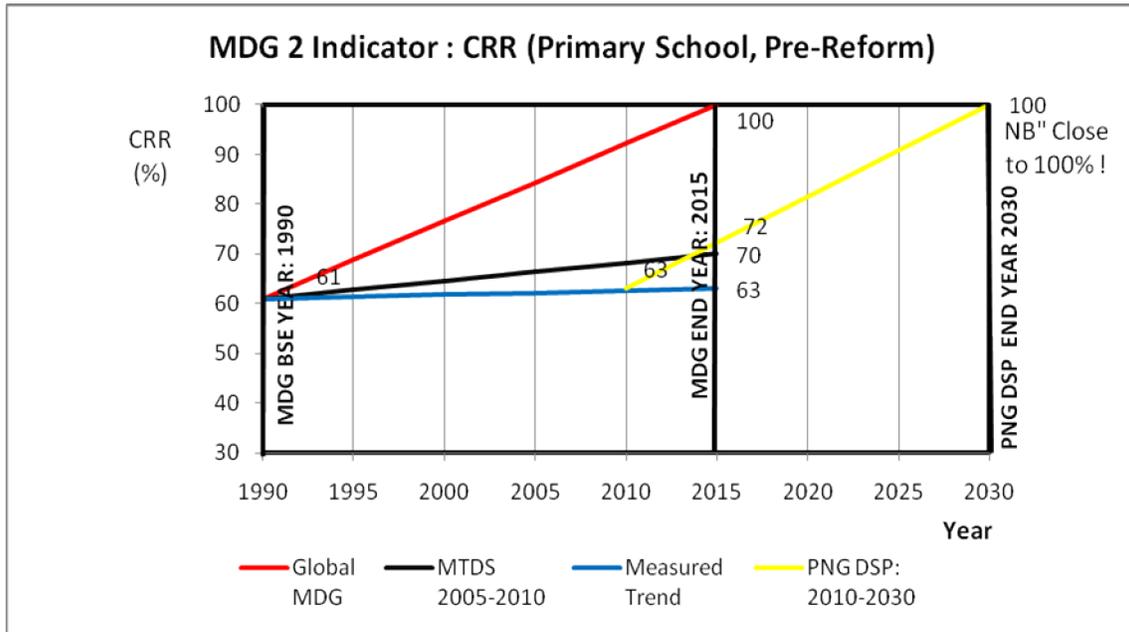
Table II-2: Cohort Retention Ratios (%) by sex at the primary level for different cohorts since 1985.

Cohort	Persons	Males	Females	Cohort	Persons	Males	Females
1985-1990	57.7	58.7	56.6	1998-2003	51.4	52.7	49.8
1990-1995	62.9	63.9	61.6	1999-2004	54.7	56.1	53.2
1995-2000	56.0	57.4	54.3	2000-2005	61.5	62.8	60.0
1996-2001	55.8	56.9	54.6	2001-2006	64.4	67.0	61.3
1997-2002	56.2	58.1	54.0	2002-2007	61.8	64.3	58.9

Source: Source: Service Statistics DOE, 1985-2007

All CRRs in Table II-2 have again been measured in terms of the pre-reform system. The data suggests that the national average CRRs remain low. Moreover, since MDG base year 1990, CRRs have not much improved, in spite of the educational reforms that have taken place. They are still hovering around the 60 percent mark. In Figure II-2, the trend in the CRR between MDG base year 1990 and 2010 is compared to the global and 2005-2010 MTDS targets. The PNGDSP target for 2030 is also shown.

Figure II-2: Trend in retention at the primary level between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



Source: DNPM, 2010

As in the case of enrollment, the national average CRR is dragged down by the generally very high drop-out and poor attendance rates in the provinces of the Highlands Region. Since these provinces have a relatively large population their impact on the national average figures is significant. It has been known for a long time that there are large differences in the level of retention (and enrolment) at the provincial level. It appears that the educational reforms have, so far not been able to address these challenges.

2.3. Achievement

Achievement in education can be measured in several ways e.g. student performance and level of literacy.

2.3.1. Student performance

With the introduction of the education reforms, the DOE started replacing grade 6 exams with grade 8 exams. In 2010, all provinces use the grade 8 examination. For the assessment of standards, the new Curriculum Standards Monitoring Test (CMST) is used.

The most recent student performance results for grade 8 that are available (those for 2006) indicate that students in most provinces scored, on average less than 40 percent on their numeracy, literacy and general skills tests. Unfortunately, a trend cannot yet be established.

2.3.2. Literacy

Literate people are defined as those who can, with understanding, both read and write a short, simple statement related to their every-day life. The level of literacy can be considered as a measure of educational achievement. Unfortunately, PNG has never conducted a nationwide literacy survey. However, the level of youth as well as adult literacy has been measured indirectly from all censuses. These estimates are based on information concerning the highest level of education completed by all census respondents. Next, it has been assumed that those who have at least completed a particular grade are literate. This cut-off point, based on census, is “at least completed class 3”. Many other countries in the South Pacific Region that have so far been unable to conduct a literacy survey use the same cut-off point. The choice of cut-off point has sometimes been criticized since it is felt that it overestimates the level of literacy in the country. If, in future, the bar is put higher, e.g. at class 4 or 5, all census and survey based literacy rates should be re-estimated. Moreover, in that case, comparability with other countries in the South Pacific Region that have also adopted class 3 as the cut-off point will be lost.

In Table II-3, youth as well as adult literacy rates derived from 1990 and 2000 census data are compared. The youth literacy rate (YLR) refers to the age group 15-24 and the Adult Literacy Rate (ALR) to the age group 15 and over.

**Table II-3: Indirect youth and adult literacy rates (%)
by sex in 1990 and 2000.**

Indirect literacy measure	Sex	1990	2000
Youth Literacy Rate	P	60.6	61.7
	M	66.6	64.4
	F	53.9	58.9
Adult Literacy Ratio	P	40.8	49.2
	M	46.3	55.2
	F	34.7	43.9

Source: Indirectly derived from 1990 and 2000 Census data regarding the highest grade completed by respondents, using a cut-off point of grade 3.

The figures suggest that, after 1990, youth literacy has improved marginally. This is in agreement with the enrollment and retention ratios for that period.

On the other hand, adult literacy has improved significantly during the same period. This is largely the result of the fact that during this period many elderly persons with little or no formal education have passed away and have been replaced by young people who have completed at least grade 3.

Table II-4 presents literacy at the provincial level in 2000. Generally, the literacy rates in this table must, with the exception of those for the provinces in the Islands Region and some in the Southern Coastal Region be considered as low. As expected, disparities at the provincial level are again large. Of particular concern are the very low YLRs in the provinces in the Highlands Region, especially Southern Highlands and Enga. They reflect the low enrolment but even more the very low retention rates in these provinces.

It will also be noted that gender disparity in literacy is significant in most provinces (See also MDG 3). All rates in Table II-4, with the exception of the YLRs in Milne Bay, Manus, East New Britain and Autonomous Region of Bougainville are higher for males than for females. In many cases, the differences are significantly more than 10 per cent.

In conclusion:

- The level of youth as well as adult literacy at the provincial level varies widely.
- The national YLR hardly improved between 1990 and 2000. The YLR for males actually deteriorated during this decade whereas the YLR for females improved. These conclusions are consistent with the DOE enrolment and retention rates for the period 1990 – 2000.
- In the Highlands Region literacy is far lower than the national average. The Southern Highlands and Enga in particular have a very low level of literacy.
- In the Northern Region literacy is close to the national average.
- In the Southern Region literacy is much higher than the national average.
- In the Islands Region literacy is very much higher than the national average.

In addition to the census based literacy ratios, some information on literacy is also available from a literacy survey that has recently been conducted in three provinces viz.: NCD, New Ireland and Chimbu. These surveys were carried out by the PNG Education Advocacy Network (PEAN). The results suggest that the level of literacy in these provinces is significantly lower than the indirect estimates derived from censuses. It will be realized that, since these surveys included a comprehensive literacy test of all persons selected in the sample, they should provide almost certainly a more reliable picture of the true level of literacy than that suggested by the figures in Table II-3 and 4. These figures therefore confirm that the present indirect measurement of literacy from census data does indeed lead to over-estimation of literacy.

Table II-4: Indirect youth and adult literacy rates (%) by sex at the regional and provincial level in 2000.

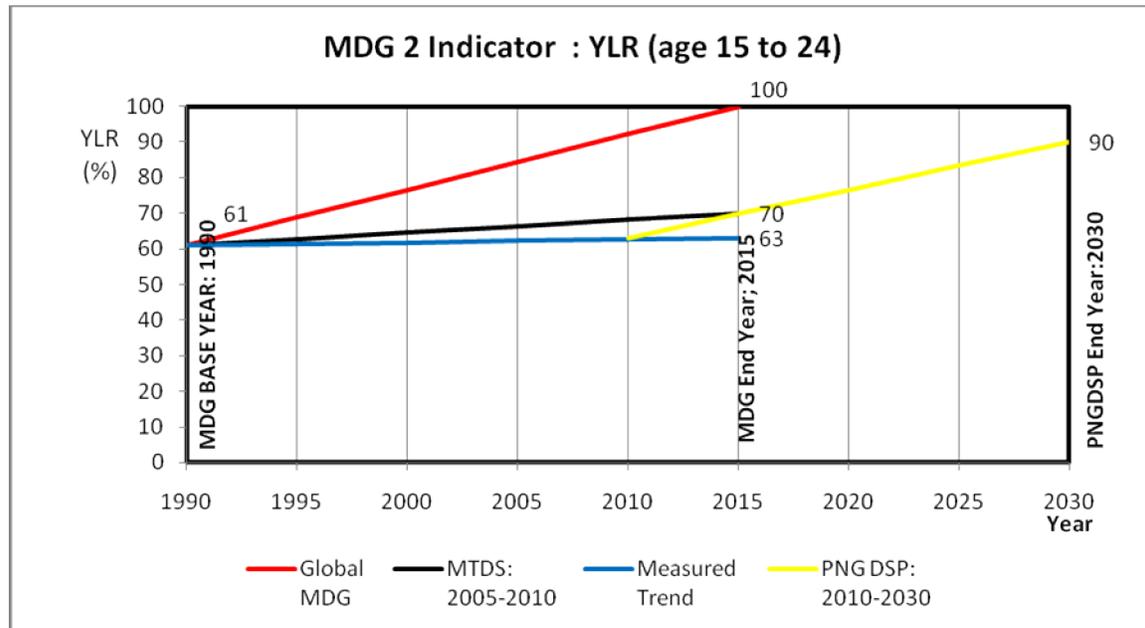
Province	Youths			Adults		
	P	M	F	P	M	F
Papua New Guinea	61.7	64.4	58.9	49.2	55.2	42.9
Southern Region						
Western	78.7	81.3	76.0	64.3	70.6	57.9
Gulf	59.7	64.7	54.5	52.8	60.4	44.9
Central	72.0	74.4	69.4	63.2	68.4	57.7
NCD	86.5	87.6	85.3	80.5	83.6	76.7
Milne Bay	76.6	76.1	77.2	64.2	66.8	61.4
Northern	71.0	72.2	69.6	64.8	69.7	59.3
Highlands Region						
Southern Highlands	34.1	36.6	31.3	24.4	29.4	19.4
Enga	39.4	42.9	35.4	25.6	31.5	19.5
Western Highlands	51.4	54.8	47.9	33.6	40.3	26.9
Chimbu	54.4	59.6	49.0	33.2	40.9	25.2
Eastern Highlands	51.4	55.6	47.1	34.6	42.0	27.1
Northern Region						
Morobe	66.9	70.2	63.3	53.1	60.4	45.4
Madang	65.2	69.0	61.3	53.4	60.3	46.5
East Sepik	66.9	69.9	63.9	51.2	59.5	43.4
West Sepik	60.4	65.1	55.4	47.8	56.1	39.2
Islands Region						
Manus	92.6	92.1	93.0	85.8	88.9	82.5
New Ireland	82.4	82.8	82.0	74.7	76.0	73.2
East New Britain	86.0	86.0	86.0	78.5	79.3	77.6
West New Britain	78.6	80.4	76.7	70.5	73.9	66.4
ARB	71.4	70.2	72.6	72.3	74.3	70.2

Source: Indirectly derived from 1990 and 2000 Census data regarding the highest grade completed by respondents, using a cut-off point of grade 3.

Moreover, in interpreting the survey figures for these three provinces, it should be kept in mind that the literacy rates for the NCD and New Ireland should not be considered as typical of the overall literacy situation in PNG. The level of literacy in these two provinces is significantly higher than the national average.

Figure II-3 shows the measured trend in youth literacy between MDG base year 1990 and 2010 and compares this to the global MDG and 2005-2010 MTDS targets. The PNGDSP target for 2030 is also shown.

Figure II-3: Trend in youth literacy between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



Source: DNPM, 2010

2.4. Comparison of census school attendance rates with enrolment rates

In this section, the school attendance rates derived from the national censuses since 1980 and the enrolment figures of the DOE are compared. The comparison suggests that the gap between the two datasets is significant and, in 1980 in some provinces as large as 30 per cent.⁸⁰ In other words, a large number of children who, according to DOE enrolment data are enrolled at the beginning of the school year do not attend school (at least not during the one-week reference period prior to the census). Apart from the different measurement techniques used by the DOE and the census, there may be at least two other reasons that contribute to the discrepancies. These are:

- Under-enumeration of the at-school population during the censuses. It is, however unlikely that this was a very significant factor in the case of the 1980 and 2000 censuses.
- Enrolment records of the DOE may not have been kept up to date during the school year. Children, after being enrolled may have dropped out for a variety of reasons and these dropouts may not have been fully accounted for in the official DOE records.

Not surprisingly, the provinces where the difference between the census attendance rates and the enrolment rates of the DOE tend to be largest are those where the DOE retention rates as well as the census literacy rates are lowest, that is, in the provinces of the Highlands Region.

⁸⁰ Comparison between census school attendance rates and DOE enrolment rates after the 1980 census suggested that many children who were enrolled at the beginning of the school year had dropped out as a result of a large variety of factors. The main reason in the Highlands Region, where discrepancies were by far the largest, was the law and order situation (e.g. tribal fighting).

3. Targets and indicators

3.1. Global targets and indicators

The UNDG formulated one global target with regard to MDG 2. This target is:

Target 2A Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

The associated global indicators are:

- 2.1 Net enrolment ratio in primary education
- 2.2 Proportion of pupils starting grade 1 who reach last grade of primary (Cohort Retention Ratio)
- 2.3. Literacy rate of 15-24 year olds, women and men (Youth Literacy Rate)

Target 2A refers to completion of a full course of primary schooling. In PNG, in the pre-reform system this is grade 6 and in the restructured system grade 8.

3.2. National targets and indicators

The MTDS 2005-2010 set three national targets for 2015.

MTDS Target 3 Achieve, by 2015, a Gross Enrollment Ratio (GER) of 85 percent at the primary level.

The associated national indicator is:

- 11 Gross Enrollment Rate (%) in grade 1 (Pre-reform structure)

MTDS Target 4 Achieve, by 2015, a Cohort Retention Ratio (CRR) of 70 percent at the primary level.

The associated national indicator is:

- 12 Cohort Retention Rate (CRR) between grade 1 and grade 6 (Pre-reform structure)

MTDS Target 6 Achieve, by 2015, a Youth Literacy Ratio (YLR) of 70 percent.

The associated national indicator is:

- 13 Youth Literacy Rate (age 15-24) (%)

An additional literacy indicator adopted by the MTDS is:

- 14 Adult Literacy Rate (over age 15) (%)

Note: One reason for adding the adult literacy indicator is that it is a key component of the Human Development Index (HDI).

Progress towards achieving MDG 2 will, until the time that the educational system has completely changed to the new structure, be measured within the context of the pre-reform system.

Finally, the national targets and indicators are presently under review. This is part of the preparations for the formulation of the Medium-Term Development Plan (MTDP) 2011-2015. The proposed re-tailored MDG 2 targets and indicators are discussed in the DACA report on human development and the MDGs.

3.3 Progress towards achieving MDG 2

Results from the early censuses in 1966 and 1971 indicate that the level of school attendance and literacy in pre-independence PNG was very low. However, by 1980, significant improvement had been made. Unfortunately, it appears that the improvement in enrollment and retention has leveled off after 1980.⁸¹ The Education Reform Programme initiated in the 1990s was a direct result of the stagnation in the level of enrolment, retention and literacy.

The analysis in the previous sections suggests that the results of the restructuring of the educational system have, to date, fallen short of expectations. They have not yet led to significant improvement in enrollment, retention and literacy. A possible reason for the lack of progress is that the introduction of the educational reform programme is still behind scheduled and should have been completed by 2004. It could also be argued that the benefits to be gained from the reform process will only be recognized in the long term.

Table II-5: Progress between 1990 and 2010 towards achieving national targets for MDG 2

National Indicator	Most recent measure			Projected ¹			National Target 2015
	Value	Year	Source/Comments	1990	2009	2015	
Gross Enrollment Ratio (%)	74.4	2007	SS-DOE. This is GER at primary level	74.0	79.0	80.0	85.0
Cohort Retention Ratio (%)	61.8	2002-2007 cohort	SS-DOE. This is CRR at primary level	62.0	59.0	60.0	70.0
Youth Literacy Ratio (%)	61.7	2000	2000 Census. This is an indirectly measured YLR for youths age 15-24	61.0	63.0	63.0	70.0
Adult Literacy Ratio (%)	49.2	2000	2000 Census. This is an indirectly measured ALR for adults age 15 and over.	41.0	58.0	65.0	N.A.

Note: ¹Projected according to “No Change Scenario”

In conclusion, given the current situation and continuation of recent trends in primary education, PNG will not be able to achieve the global targets of MDG 2 in the remaining six years of the initial MDG cycle 1990-2015.

⁸¹ Mortality since the 1960’s followed a similar trend. Significant progress was made in the 1970’s but after that the mortality transition started to level off.

In Table II-5, progress made towards achieving the three national targets (3, 4 and 5), associated with MDG 2 is summarized. All projected figures are based on a “no-change” scenario. In other words, it is assumed that pre-2010 annual rates of change based on available data will continue until 2015. This is not necessarily a correct assumption. However, the projected figures indicate whether or not PNG is on track, assuming continuation of trends experienced in the recent past.

If progress towards achieving MDG 2 is measured against the national (MTDS) targets, it appears that PNG is slightly lagging behind in access to school, retention and youth literacy. Furthermore, for reasons already mentioned, PNG has made significant progress with regards to adult literacy. The MTDS 2005-2010 has not set a national target for adult literacy.

4. MDG 2 specific challenges

The achievement of MDG 2 will, to a very large extent, depend on the success of the interventions that are in place and will be put in place to address the crosscutting challenges detailed in Part A, Chapter II. Furthermore, in 2009, after much discussion, the MDG National Steering Committee added “low level of formal education and literacy” as one of the crosscutting challenges affecting the achievement of all MDGs (see Part A, Chapter II-2I). Members of the Committee realized that the level of education and literacy is strongly correlated with improved economic performance, poverty reduction, reduced morbidity and mortality (including maternal mortality and HIV/AIDS infection), fertility decline and also with improved awareness of environmental issues. This section only deals with MDG 2 specific challenges that have been identified since 2004.

4.1. General

Since work on the inaugural MDGR started in 2004, the list of MDG 2 specific challenges has grown steadily. Many of these challenges are only marginally or not at all related to defective or non-existing legislation, policies and plans or to financial constraints. They are briefly discussed in this section.

Many of the MDG 2 specific challenges are related to teacher and student indiscipline. They require behavioral change. Firstly, there are many complaints about poor teacher attendance, attitude and performance, especially in the rural sector where basic amenities and performance monitoring are often lacking. In addition, there are many reports of teachers arriving late to take up postings.

Secondly, negative pupil behavior such as peer group pressure and bullying is frequently reported.

Thirdly, there is often a lack of parental support and community responsibility towards education. This remains an important factor contributing to the low enrollment, retention and achievement rates, especially in the Highlands Region.

Overall, access to school and retention is more favorable for boys than for girls, especially in the Highlands Region. This is not only due to economic factors but also to social and cultural factors. There are still instances of girls marrying at a very young age. This has a negative impact on the retention and the achievement rates of girls. Those who drop out at an early stage are likely to lose their literacy skills.

Absenteeism and the loss of actual school time in PNG is a serious issue. The DOE is still developing an effective monitoring system. A recent payroll cleansing exercise has gone some way towards improving the payroll. However, many problems remain.

Access, retention and achievement in education are also negatively affected by the HIV/AIDS epidemic. The epidemic affects the achievement of MDG 2 in several ways. For instance:

- More children, especially those in the most vulnerable groups drop out of school to look after relatives suffering from HIV/AIDS. Illness of children as well as stigma and discrimination leads to further erosion of enrolment, retention and achievement rates. The available evidence suggests that this affects girls more than boys since they carry the “burden of care”. Consequently, it is expected that in the coming years the Gender Parity Index (GPI) of the school going population will drop (see MDG 3).
- Families with parents who are infected will find it increasingly more difficult to pay school fees and other costs associated with the education of their children. In the case of orphaned children, the situation is even more difficult.
- The number of teachers may be reduced because of illness and absenteeism.

There is misunderstanding regarding the language policy in the elementary schools. The medium of instruction is determined by the community and the language used should be the language of the community. Many critics consider the use of the local “tok ples” in these schools as a matter of concern and even argue that the output of these schools consists of children literate in “tok ples” and illiterate in English.⁸²

4.2. Legislation/policy

Legislation, policy and plans regarding education are in place.⁸³ Implementation leaves much to be desired. The educational reforms, introduced in 1993, which should have been completed in 2004 are still ongoing. More seriously, in 2010, there is no universal agreement that these reforms will lead to improvement in education. Although the educational reforms may have been successful in some areas, they have not yet been able to deliver on the promise of improving the low retention rates. Many believe that the pre-reform system is preferable to the current system.

The Universal Basic Education (UBE) Plan presents a large number of “in-school” as well as “out-of-school” factors that have a negative impact on the achievement of the existing policies and plans.⁸⁴ Attempts by the DOE to address these challenges have largely been ineffective.

Another example is the HIV/AIDS National Strategic Plan, 2006-2010. This plan addresses the incorporation of HIV/AIDS and related subjects like alcohol and drug abuse into the curriculum at the primary schools. The DOE collaborates with churches and NGOs to implement this plan. However, resistance towards a more comprehensive and explicit sexuality education remains.

⁸² English is the main language of administration and education

⁸³ For a list of policies and plans, supporting MDG 2, see Section 6.2.

⁸⁴ The “in-school” factors are those linked to school and education system policy and practices. The “out-of-school” factors are those linked to parents and the community. (NEC, 2009:16-18).

4.3. Financial

Achieving UBE by 2015 would demand substantive investment by both government and development partners. The UBE Plan 2010-2019 identifies a total cumulative funding gap between 2009 and 2015 of K 4.6 billion. This is a reflection of the high cost of education service delivery compounded with increased student enrollment. Closing the funding gap is beyond the sustainable funding capabilities of the recurrent budget of the DOE. Financial assistance by development partners, though substantial, is insufficient to achieve UBE by 2015. Reports on the implementation status of programmes/projects should improve their assessment of compliance issues.

Decentralized government adds to the challenges for sound financial management. For instance, lack of clarity concerning roles and responsibilities of Provincial Administrations under the Organic Law results in poor prioritization and management of resources. At the school level, funding comes from multiple sources, and financial management is hampered when funding from local level governments (LLGs), provincial governments or the DOE does not arrive in a timely or consistent manner.

The introduction of elementary schools is a crucial component of the Educational Reforms. The introduction of these schools has significant infrastructure, expansion and human resource implications. Even though the Elementary Schools are considered cost effective, the introduction of these schools is costly. Budgetary allocation for this has been insufficient.

In many schools, there is a lack of adequate school infrastructure such as classrooms and teachers' accommodation as well as access to water and sanitation. There is also a lack of education materials. Furthermore, many teachers are not adequately trained and resourced (teacher training and materials supply) to implement the new curriculum. Furthermore, inspections and curriculum delivery strategies are also not effectively resourced and supported. The above factors have a negative impact on student as well as teacher attitude, attendance and performance, especially in rural areas, where basic amenities and performance monitoring are lacking (see Section 4.1. above). Insufficient funding is not the only cause of the above challenges but it plays an important role.

At the household/family level, school fees and other financial barriers remain a major contributing factor to the low enrollment, retention and achievement rates in PNG. It is a well known fact that many parents, especially those who depend for their livelihood entirely on subsistence activities, find it very difficult to pay even a nominal school fee. As a result, many children are either not enrolled in school or drop out before completing a full basic education. This applies even more to secondary and tertiary education than to elementary and primary education. The situation has deteriorated because of the HIV/AIDS epidemic. In this respect, it also must be mentioned that since the 1980's, there has been relatively little increase in paid employment opportunities. This has a negative impact on people's perception of formal education.

Furthermore, in PNG, it is difficult to intervene in the education process due to a low institutional capacity and public expenditure constraints. This has amongst others become clear during the ongoing implementation of the educational reforms.

There is evidence that, there is a high correlation between poverty in a broad sense and education and literacy. The Independent Household Survey (IHS) carried out in

1996 indicates that for households headed by a person with no formal education or little formal education, poverty rates are far above the national average whereas for households headed by a person who completed some form of higher education, poverty rates are much lower than the national average. People living in a household headed by a person with no formal education constituted more than 50 percent of the poor. Consequently, challenges affecting the achievement of MDG 2 also impact on the achievement of MDG 1.

In the future, the cost of education will increase significantly. The high rate of population growth and broad-based age-sex structure has significant implications for future school enrollment, retention and achievement. If it is assumed that the population growth rate will remain at its present high level and that there will not be any improvement in enrollment and retention ratios in the near future, the number of teachers and schools still needs to be doubled by 2040, in order to keep up with the rapidly growing numbers. In the past, demographic investment in education has not been able to keep up with the high population growth rate. Not enough new teachers could be trained and not enough new classrooms could be built. Moreover, while the educational system is expanding to meet increasing demands of a growing population, there is growing concern over the quality of education.

In conclusion, the objective of the DOE is to absorb all those who reach age 6 into the school system, and to improve retention rates and the quality of education. The ultimate goal is to achieve UBE, preferably by 2015. For this, a dramatic increase in financial as well as human resources is required. Additional resources will also be required to clear the existing backlog in enrolment and once this has been achieved, for further improvement. In recent years, the economy has improved significantly and will undoubtedly continue to improve in the near future. A large proportion of the additional resources that will become available from the LNG project should be used for demographic investment in the education sector.

4.4. Service delivery

Under the education reforms that commenced in 1993, tremendous pressure has been put on the education system. The new highly decentralized system of service delivery characterized by shared powers and functions and involving many implementing partners has led to unclear demarcation of these shared powers, responsibilities and functions, poor administrative capacity and inadequate financing. The interface between national and sub-national levels is weak. The DOE has little control over management and quality of education in the provinces, districts and LLGs.

Moreover, the inaccessibility of many educational institutions in remote areas of PNG remains a serious challenge. Many children reaching the school entry age cannot be enrolled in a school within a reasonable distance from their home.⁸⁵ Moreover, the teacher/pupil ratio in many schools, particularly in the urban areas has increased above what is desirable. All this has an impact on retention and achievement rates. Other factors exacerbate the problems, such as the fact that it is difficult to post teachers to schools in the more inaccessible parts of the country.

Finally, law and order problems including tribal fights continue to affect enrollment, retention and achievement. The same applies to natural disasters.

⁸⁵ Children often have to travel for more than one hour to reach the nearest primary school. This is especially the case in the rural areas of some provinces where the population lives in small remote communities.

4.5. Monitoring

The DOE has a well established Education Management Information System (EMIS) that has greatly improved the department's monitoring capacity. The main element of EMIS is the annual school census. A major innovation in 2009 has been the introduction of the Education Information Communication Technology. This will enable more accurate and complete data collection, compilation and analysis. This will greatly improve education planning and monitoring. The DOE requires significant support for carrying out the annual school census, maintaining the EMIS and to assess progress.

Monitoring of enrollment, retention and achievement is discussed in more detail in the DACA report for monitoring of human development and the MDGs.

5. Good practices

As shown under challenges in the previous section, UBE in PNG has the problem of providing access to educational opportunities for as many school age children as possible and to enable them to complete their basic education. Unfortunately, many children do not have easy access to schools because a school may not be within easy reach from where the children live. Furthermore, many children in PNG may have access to a school within reasonable distance from their home but the school fee often makes it impossible for parents to enroll their children and to keep them in school.

In PNG, there are examples of communities solving the above problems. These examples are localized situations and they are not representative of PNG as a whole. Nevertheless, it is important to report and publicize these cases since they are examples of good practices with regard to MDG 2. The following good practices refer to schools and communities in Simbu Province. It is relevant to have examples from a Highlands province since the analysis in Section 2 has made it abundantly clear that challenges concerning MDG 2 are far more severe in the provinces of this region than in the islands and coastal provinces.

A school in the Mount Wilhelm area recognized that many parents in their community could not afford the school fees of their children. The community realized that when students complete school, the community is assisted with their community or social obligations such as a contribution towards bride price or compensation for loss of lives. Those who complete school and have formal jobs tend to contribute significantly more than those who have no means as a result of not completing school. The community decided that they would contribute food, live pigs and other items of value in addition to cash. With the money the school received for these "gifts in kind" it could meet its expenses. This example of a community's initiative to assist the school to enable children to complete their basic education is a good example of a good practice that could be emulated by other communities.

Another school in Simbu, (Prenorkwa Primary School) received government subsidy, which was to be used to refund the parents' school fee component. However, the parents decided to forfeit their refund, and this enabled the school board to purchase the much needed textbooks and other essentials. This contributed greatly to the quality of education that the children received.

Another good practice is the initiative taken by the OHE to provide scholarships for academically meritorious female students to places in universities and colleges in PNG.⁸⁶ However, dormitory facilities for selected female students at these educational institutions are insufficient. The University of Goroka in the Eastern Highlands Province converted one of the male students' dormitories to accommodate the increased female intake at the expense of the male students. While the female students received increased dormitory places, the male students had to find alternative accommodation. This is a good example of affirmative action to help increase female students' participation and access to higher education. This particular example can also be considered as a good practice for MDG 2 and even more for MDG 3, especially in the Highlands Region.

Similar practices undoubtedly take place in many other communities in PNG. However, since they are not reported or publicized, they remain unknown. Initiatives like the ones mentioned above should be widely publicized and more importantly, where appropriate emulated.

Finally, at the macro level, the most important improvement in the educational system since MDG base year 1990 has been in monitoring.

6.0 Interventions

6.1 Supporting international environment

The DOE continues to enjoy very close relations with all of its donor partners and with the introduction of the Education Sector Improvement Program is moving toward the introduction of a Sector Wide Approach to the financing of education and, in particular, the UBE Plan. The ESIP Steering Committee boasts wide representation from all stakeholders. Aside from the donors there are representatives from the provinces, churches, wider civil society and parents.

6.2 National interventions

The achievement of MDG 2 in PNG is supported by several strategies, policies and plans. These include:

- PNG Development Strategic Plan (PNGDSP) 2010-2030 and the Medium Term Development Plan (MTDPs) 2011-2015
- National Population Policy (NPP)
- National Education Plan 2005-2014
- Universal Basic Education Plan 2009-2018. This plan has recently been endorsed by the NEC. The implementation will be funded with AUSAID assistance. The UBE plan supports the Government's Vision 2050.
- Education Sector Improvement Programme (ESIP). This programme concentrates on access to school, improvement of teachers' capacity and infrastructure. It will start in 2010.
- National School Subsidy Policy. This policy focuses on improvement of access to basic education e.g. by subsidizing of school fees and on infrastructure

⁸⁶ The OHE distinguishes the higher performing students from lower performing student using HECAS system.

- National Literacy Awareness Secretariat (NLAS) under the Office of Library and Archives of the Department of Education. This secretariat focuses on improvement of adult literacy.
- UNESCO-PNG Capacity Building in Education for All (EFA). This programme aims to accelerate efforts to achieve UBE in PNG.
- The Department for Community Development (DfCD) is involved in several initiatives to improve non-formal education and adult literacy.
- National Disability Policy 2010-2012

In addition to these there are also a number of cross cutting issues such as management at all levels, remoteness, special education, gender and HIV/AIDS.

The major interventions to be made through the implementation of the Universal Basic Education Plan 2009-2018 are outlined below:

a. Access

- In order that all children can enter elementary prep at the age of 6 years there needs to be an expansion of elementary schools. An average of 346 new elementary classes will have to be established each year until 2013 in order for the target to be reached.
- Increasing numbers of children passing through elementary schools will result in larger numbers in the primary schools. There will be a need to build around 4,300 primary school classrooms during the period of this plan to accommodate all of the children. This equates to about five in each district each year.
- In order that teachers are attracted to teach in schools in all parts of the country a primary school teacher housing program will be implemented to ensure that the number of houses is equivalent to 70 percent of the number of teachers. A total of 7,700 will be constructed during the plan period. This equates to about nine in each district each year.
- As a result of only 6 year old children being admitted there will be a significant number of older children who will not have had the opportunity to enroll. Alternative strategies for providing for this group of young Papua New Guineans with an opportunity for a basic education will be developed.

b. Retention

- The imposition of school fees is one of the key barriers to children completing their basic education. School fees will be gradually reduced so that from 2012 there will be no fees paid by children entering elementary prep and this will be extended through the grades on an annual basis. In addition to these grants to schools to cover operational costs it is also recognized that there will be local solutions to problems relating to retention. Grants will be made to schools to implement strategies as outlined in their School Learning Improvement Plans in order to improve retention in their schools.
- Advocacy and awareness, through a nationally coordinated UBE Communications Strategy, which is also in place, so that parents understand their responsibilities and those of the community at large in the education of their children.
- An adequate water supply and sufficient toilets are often quoted as reasons for children, particularly girls, dropping out of school. There will need to be a

large number of toilets constructed – about 270 in each district – in order to satisfy a ratio of 1 toilet for every 25 children.

c. Quality

- The provision of a quality teacher education system that will produce the number of teachers required over the plan period. The process of institutionalizing elementary teacher education will be continued so that new elementary school teachers will do a one year college based course.
- As important as pre-service education is professional development of teachers so that they have the skills and the knowledge to be able to teach the new curriculum.
- One of the key factors in the provision of a quality education is for the children to have adequate access to textbooks. A program of book supply will be initiated and a process developed to ensure that there will be a consistent re-supply of books as per the Department of Education textbook policy.
- There will be a library development program to ensure that all schools, both urban and rural, have an adequate range of books for children to use to supplement the work that is going on in the classroom.
- A process for regular maintenance of all school buildings and the upgrading of existing bush material classrooms should be implemented through the LLGs and based on the School Learning Improvement Plans.

Finally, in response to the need for technically skilled manpower in the country, the UBE also stresses the importance of Technical Vocational Education Training (TVET). The following applies to management and implementation:

- Management and financial training for head teachers. It is important that head teachers are provided with the skills to plan for their schools and then to implement these plans. They must be able to run their institutions in an effective and transparent manner
- Technical and planning support for District Education Administrators and Standards Officers to allow them to monitor the implementation of the program at the school level.
- Support for the provincial and national education authorities

III. MDG 3: PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

In this chapter on the promotion of gender equality and empowerment of women, the concepts of sex and gender are used. Sex refers to biological characteristics. It identifies the biological difference between women and men.

Gender is defined as the various characteristics assigned to women and men by the society in which they live. It refers to the socially differentiated roles, characteristics and expectations attributed by culture to women and men. This concept recognizes the fact that women and men behave differently not only because of their biological sex but also because of what their society or community has taught them about how women and men are supposed to behave. On the other hand, gender can be considered as the primary organizing principle of all human societies. Gender equality implies that women and men have equal value, equal rights and equal opportunities. MDG 3 deals with the promotion of gender equality and empowerment of women.⁸⁷

The inaugural MDGR of 2004 concluded that there are many gender issues in PNG. Gender issues arise whenever the conditions and opportunities and roles for women and men are different. The inaugural MDGR also concluded that, in PNG gender inequality in education, employment, morbidity and mortality is not as extreme as often assumed. However, in other areas, gender inequality was considered to be serious. This applies first and foremost to gender based violence (GBV). As a result, in 2004 the MDG National Steering Committee considered “gender culture and gender disparity” as one of the crosscutting challenges for all MDGs as well as a serious impediment for future development.

The 2009 MDG National Steering Committee decided to maintain “gender culture and gender disparity” as one of the most serious and overarching challenges the country is facing. Consequently, in order to make progress towards achieving the MDGs it is essential that all possible efforts are made to eliminate gender disparity and to promote the empowerment of women, particularly since gender disparity and particularly GBV fuels the HIV/AIDS epidemic.

1. Database and monitoring

The main sources of gender specific data in PNG include:

- Service (administrative) statistics of several government departments
- Censuses
- Surveys.

A comprehensive assessment of these three data sources in the PNG context can be found in the DACA report for human development and MDG monitoring. This section is restricted to a brief summary.

⁸⁷ Gender equity refers to the fair treatment of women and men

1.1. Service statistics

Virtually all service statistics collected in PNG tend to be age and sex specific. However, as already mentioned, most systems of service statistics are incomplete and the data is often severely biased. These shortcomings equally apply to data for females and males. Nevertheless, some systems of service statistics provide reasonably reliable information on the gender situation and trends.

Since MDG 3 mainly focuses on gender disparity in the area of education, it is fortunate that the system of service statistics of the Department of Education (DOE) is more complete and reliable than that of other departments. This system collects data concerning the “at-school” population. From this data, sex-specific gross and net enrolment; retention rates and achievement ratios can be derived. These ratios have been used in the analysis in Section 2.⁸⁸

The UNDG has not set targets for gender specific health, morbidity and mortality. In PNG, with its very high level of morbidity and mortality, including maternal mortality, it is important that an assessment of gender disparity includes an assessment of sex-specific health, morbidity and mortality rates. Consequently, Section 2 contains an analysis of several gender specific indices derived from data from the National Health Information System (NHIS).

In the case of the NHIS, several data collections are mainly concerned with females. Examples include statistics on reproductive health, antenatal clinic visits, supervised delivery and maternal mortality.

1.2. Censuses

Censuses provide a wealth of basic sex-specific demographic and socio-economic information. Since the census covers the entire population, census data (especially information concerning labour force participation, employment and unemployment) is particularly important for MDG 3 monitoring. The frustration with this data is often related to the statistical concept of “home worker” or “home duties”. This is discussed in detail in the above mentioned DACA report on data availability, completeness and accuracy.

1.3. Surveys

Several surveys that have been carried out in PNG are rich sources of information regarding females. This applies in particular to the 1996 and 2006 DHS. In these two surveys, the main questionnaire was for Women. It collected very detailed health, morbidity, mortality, fertility, family planning and other information from all women aged 15-49 in the sample households. Very extensive use has been made of this data in the analysis in this report.

⁸⁸ Since 2007, this information has been collected in the Annual School Census

1.4 Summary

Although there is much scope for improvement of the MDG 3 database, this database is by far not as limited as that for the monitoring of MDG 1, 6 and 7. Nevertheless, many complaints have been made about the lack of sex disaggregation in PNG's database. Although the lack of data concerning gender equality and empowerment of women is frustrating, many complaints are not entirely justified. Census and survey data as well as data from registration systems is, in virtually all cases, equally available for females and males. The main problem with these databases is that they provide limited information for females as well as males. Moreover, in PNG, data concerning females is often more reliable than data concerning males.⁸⁹

Finally, the Department for Community Development is in the process of establishing its own gender specific database. This will undoubtedly lead to further improvement in the availability, completeness and accuracy of gender specific data.

2. Situation analysis and trends

The situation analysis in this section looks at gender disparity in several areas viz. education, literacy, mortality, employment and political representation.

2.1. Gender disparity in education and literacy

2.1.1. Gross Enrollment Ratios

Table III-1 presents the Gross Enrolment Rates (GER) by sex at the primary level (pre-reform structure) between 1990 and 2006. The corresponding gender parity indices (GPI) are also shown. The information suggests that boys have better access to primary school than girls but the difference is not as large as is often thought. Furthermore, the introduction of the educational reforms has not led to improvement in the Gender Parity Index (GPI). Since the start of educational reforms in the 1990s, some improvement in enrolment for boys has occurred. For girls, the improvement has been less pronounced. As a result, since MDG base year 1990, the GPI concerning primary school enrollment has slightly decreased. (See also Figure III-1).

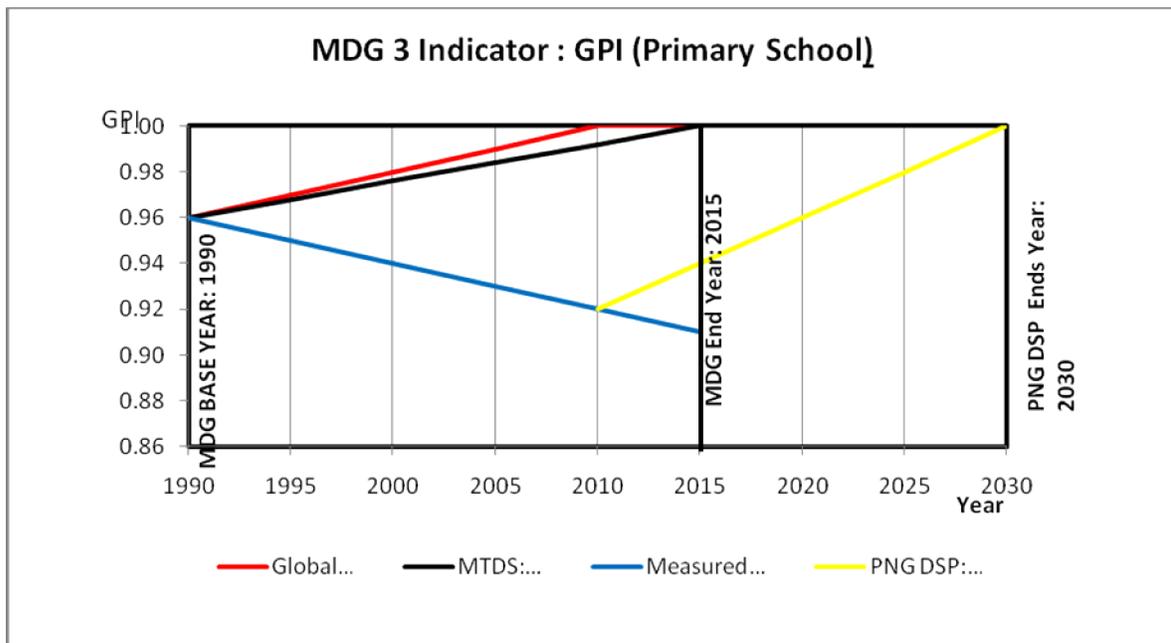
⁸⁹ This applies in particular to data concerning demographic processes (fertility, mortality and migration). Most data on fertility (ASFRs, TFRs, reproduction rates and other fertility related indices) is only available for females. Moreover data on marital status, mortality and probably also migration for females appears to be less affected by biases than that for males.

Table III-1: Gender parity indices of gross enrollment at the primary level between 1990 and 2007

Year	Persons	Males	Females	GPI
1990	66.3	68.1	64.2	0.94
1995	75.1	75.9	74.1	0.98
2000	79.3	82.4	75.7	0.92
2001	75.6	78.6	72.2	0.92
2002	77.1	80.9	72.8	0.90
2003	77.3	80.9	73.4	0.91
2004	78.4	81.9	74.5	0.91
2005	76.8	80.9	72.3	0.89
2006	77.3	81.4	72.9	0.90
2007	74.4	78.2	70.2	0.90

Source: Service statistics DOE 1990, 1995, 2000-2007

Figure III-1: Trend in gender parity in youth literacy between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



Source: DNPM, 2010

In comparison to disparity in enrollment at the national level, disparity at the provincial level (not shown here) is large.⁹⁰ Female GERs in several provinces of the Islands Region (Manus, New Ireland and East New Britain) are higher than those for males. This also applies to the NCD and Milne Bay. Generally in the provinces of the Southern and Islands Regions there is relatively little gender disparity as far as primary school enrolment is concerned. However, in the provinces of the Northern (MOMASE) and Highlands Regions, there is very significant gender disparity in enrollment at the primary level.⁹¹

Figure III-1 compares the measured GPI since 1990 with the global and national targets in the MTDS 2005-2010. According to the PNGDSP 2010-2030, inequality in primary school enrollment should be the same for female and male children in 2030.

2.1.2. Cohort Retention Ratios

Table III-2 presents Cohort Retention Ratios (CRR) by sex at the primary level (pre-reform structure) for different cohorts since the 1990s. The table also includes the corresponding GPIs. The CRRs in this table suggest that, since MDG base year 1990, there has been slow progress with regard to retention at the primary level. For those children completing primary school between 2000 and 2004, the CRR has actually dropped again below the 60 percent mark, which is the level where the CRR was ten years earlier. This is in spite of the educational reforms introduced in the 1990s. Gender disparity as measured by the GPI, is less than generally assumed, at least at primary level.

Table III-2: Gender parity indices of cohort retention at the primary level for different cohorts between 1990 and 2007

Cohort	Persons	Males	Females	GPI
1985-1990	57.7	58.7	56.6	0.96
1990-1995	62.9	63.9	61.6	0.96
1995-2000	56.0	57.4	54.3	0.95
1996-2001	55.8	56.9	54.6	0.96
1997-2002	56.2	58.1	54.0	0.93
1998-2003	51.4	52.7	49.8	0.95
1999-2004	54.7	56.1	53.2	0.95
2000-2005	61.5	62.8	60.0	0.95
2001-2006	64.4	67.0	61.3	0.91
2002-2007	61.8	64.3	58.9	0.92

Source: Service statistics of the DOE 1985-2007

As expected, spatial disparity (at the provincial level) is again large. By far the lowest CRRs are measured in the provinces of the Highlands Region. Provincial disparities in CRRs are even larger than in the case of the GERs. Male and female CRRs in the provinces of the Islands and Northern Region are very similar. In the Southern

⁹⁰ Detailed information on enrollment, retention and literacy at the regional and provincial level can be found in the Comprehensive Report underpinning the inaugural MDGR of 2004.

⁹¹ In 2000, the provinces with the lowest GER were Southern Highlands (52.2 %), Enga (60.7 %), Gulf (61.9 %) and East Sepik (64.1 %). As expected, the highest GERs were found in the five provinces of the Islands Region and in the Southern Coastal Region (except Gulf and Oro). Ten years earlier, in 1990, provincial disparities were very similar.

Region, they are actually higher for female than for male children. The picture at the national level is, skewed by the extremely low female CRRs in all provinces of the Highlands Region.⁹²

Introduction of compulsory free education at the elementary and primary level will undoubtedly lead to progress towards achieving MDG 3. However, free compulsory elementary education was introduced only in 2009. At this stage, the DOE refers to subsidized education and not to free education at primary level.

2.1.3. Literacy Ratios

Most educational performance indicators for girls are somewhat worse than those for boys. This applies in particular to gender specific literacy rates. However, there is once again enormous variation at the provincial level. The highest achievers among the provinces are not surprisingly the provinces of the Islands Region (especially Manus, East New Britain and North Solomon Provinces) and Milne Bay Province.

Table III-3 presents the national youth (age 15-24) and adult (age ≥ 15) literacy rates (YLR and ALR) in 1990 and 2000. These indicators have been indirectly derived from census data concerning the highest grade completed by census respondents, using a cut-off point of class 3. (See MDG 2).

Table III-3: Gender parity indices of youth and adult literacy in 1990 and 2000.

Literacy Ratio	1990				2000			
	P	M	F	GPI	P	M	F	GPI
Youth Literacy Ratio (%)	60.6	66.6	53.9	0.81	61.7	64.4	58.9	0.91
Adult Literacy Ratio (%)	40.8	46.3	34.7	0.75	49.2	55.2	43.9	0.80

Source: Derived indirectly from 1990 and 2000 Census data on highest grade completed.

The literacy ratios for males are still significantly higher than those for females. However, the most interesting information provided by Table III-3 is that the YLR for females increased significantly between 1990 and 2000, whereas that for males decreased somewhat during the same period. As a result, in 2000, the YLR for males is only marginally higher for males than for females. This trend has resulted in a significant improvement in the GPI for youth literacy during the interval. Continuation of this trend will mean that gender inequality with regard to youth literacy will soon become a thing of the past. However, the way in which equity is achieved should have been through improvement in youth literacy rate for both sexes. As expected, the level of adult literacy is still much lower than that of youth literacy. However, contrary to youth literacy, literacy of adults has significantly improved for females as well as for males.

A positive sign for the future is that in most provinces, the GPI for youth literacy (not shown here) has improved significantly. In 2000, in some provinces of the Islands Region (Manus, ARB and East New Britain) as well as in Milne Bay, the GPI with regard to youth literacy reached a value of 1.0 or more, indicating that these

⁹² In 2000, the provinces with a CRR far lower than the national average are once again the five provinces in the Highlands Region and also Gulf Province. It has been known for a long time that many children in these provinces drop out of primary school for a large variety of reasons.

provinces have achieved equity or more than equity in youth literacy. The provinces in the Southern Region, with the notable exception of Gulf Province, have also experienced relatively little gender disparity in youth literacy. Problems of gender inequality in youth literacy are clearly concentrated in the provinces of the Highlands Region.

The GPIs for adult literacy at the provincial level vary far more than those for youth literacy. Gender disparity in adult literacy is extremely high in those provinces where the level of education is lowest such as the provinces of the Highlands Region. There is little or no gender disparity in adult literacy in the provinces of the Islands Region, NCD and Milne Bay.

Finally, it should be reiterated that PNG was one of the 25 countries in the world that was selected for participation in the UNICEF initiative to accelerate girls' education (AGE). This initiative aimed at a ten percent improvement in enrolment and retention in primary schools for girls by 2007. The AGE programme focused on six provinces. This project would have been more effective if it had been extended to those provinces with the poorest performance in gender disparity in education, especially Southern Highlands and Enga.

2.2. Gender disparity in mortality

2.2.1. Early childhood mortality

Table III-4 presents several indices of early childhood mortality by sex, estimated from the 1996 and 2006 DHS. All indices indicate that survival chances during early childhood are more favorable for female than for male children. However, it appears that the decline in early childhood mortality during the 1996-2006 interval has benefited male children more than female children. Between 1996 and 2006, female children seem to have lost some ground compared to their male counterparts.

Table III-4: Gender parity indices of early childhood mortality and its components in 1996 and 2006 .

Early Childhood Mortality Indices (‰)	1996 DHS				2006 DHS			
	P	M	F	GPI	P	M	F	GPI
Neonatal Mortality Rate	35	37	33	0.89	29	29	29	1.00
Post Neonatal Mort. Rate	43	46	39	0.85	29	30	28	0.93
Infant Mortality Rate	77	82	72	0.88	58	60	57	0.95
Child Mortality Rate	25	28	21	0.75	17	18	15	0.83
Under 5 Mortality Rate	100	108	91	0.85	74	77	71	0.92

Source: Derived indirectly from 1996 and 2006 DHS

The same picture of somewhat lower female than male mortality in early childhood is confirmed by all censuses since 1971. Infant mortality rates (‰) by sex estimated from all censuses since 1971 are presented in Table III-5:

Table III-5: Change in the Infant Mortality Rate (‰) by sex since 1971.

Census Year	Infant Mortality Rate (‰)		
	P	M	F
1971	134	142	125
1980	72	78	76
1990	82	88	76
2000	64	67	61

Source: 1971 and 1980: Bakker, 1986a;
1990: Hayes, 1996; NSO, 1997; 2000: NSO, 2003.

2.2.2. Longevity

Longevity is measured by means of a key mortality index, the average life expectancy at birth (e_0). In most countries the risk of dying for males at all ages is higher than for females of the same age. The relatively few countries where the opposite is the case are usually characterized by:

- A very high level of overall mortality
- A very high level of fertility
- A very low level of health care
- A very large proportion of women engaged in subsistence activities.

In the past, it was often thought that these conditions applied to several countries in the South Pacific Region, but particularly PNG and the Solomon Islands. Recent censuses and surveys in PNG (as well as the Solomon Islands) do, however suggest that, at the national level, gender disparity with regards mortality is only very marginal. Moreover, in PNG since the 1970s, mortality of infants and children has in virtually all provinces always been somewhat lower for female children than for male children.

Table III-6 presents a picture of gender disparity in longevity in PNG. It presents female and male average life expectancies at birth and at age 25. Average life expectancy at age 25 may be considered as an index of adult mortality. All indices in Table III-6 have been derived indirectly from censuses since 1971 and the 1996 DHS.

The trend in life expectancy is not as consistent as the trend in early childhood mortality. In this respect, it needs to be mentioned that the methodology used for the estimation of adult mortality, (especially for males) is less robust than the methodology used for the estimation of infant and child mortality.⁹³ However, in spite of some uncertainties about the methodology used, it appears that the difference in mortality for adult females and males is only marginal.

In conclusion, since 1971, there has been very little difference between the average life expectancy of females and males. In most developed countries, female life

⁹³ This is discussed in detail in the DACA report on human development and MDG monitoring.

expectancies at birth tend to be significantly higher than those for males. Relatively speaking, it appears therefore that females in PNG are lagging behind.

Table III-6: Change in the average life expectancy at birth and at age 25 (years) by sex since 1971.

Year	Average life expectancy at birth (in years)			Average life expectancy at age 25 (in years)		
	P	M	F	P	M	F
1971 Census	40.4	39.6	41.1	31.5	31.2	31.7
1980 Census	49.6	48.7	50.7	34.6	34.2	35.1
1990 Census	51.7	52.2	51.4	38.0	39.0	37.1
1996 DHS¹	54.0	54.6	53.5	-	-	-
2000 Census	54.2	53.7	54.8	37.9	37.7	38.1

Source 1971 and 1980: Bakker, 1986a; 1990: Hayes, 1996; 1996: NSO, 1997; 2000: NSO, 2003.

Note 1: Unfortunately, the basic mortality tables from the 2006 DHS, required for the estimation of the average life expectancy at age 25 were not available at the time of writing.

2.2.3. Maternal mortality

The Maternal Mortality Ratio (MMR) is considered as a key index of the level of development in a country.⁹⁴ The NHIS has so far not been able to provide reasonably accurate estimates of this crucial health and development index. As will be explained under MDG 5, it has been attempted to estimate the MMR indirectly using data from the 1996 and 2006 DHS. The results have added to the confusion with regard to the maternal mortality situation in the country.⁹⁵ There is, however, little doubt that the level of maternal mortality in PNG is one of the highest in the entire Asia-Pacific Region and that this rate has changed only marginally in the recent past. As long as women in PNG do not receive antenatal support and give birth “in the village” (only attended by a female relative), the maternal mortality situation will not improve significantly any time soon. This problem needs to be addressed urgently.

In connection with MDG 3, it needs to be stressed that the MMR should be considered as an important indicator of gender disparity and inequity. Consequently the high level of maternal mortality in PNG must be interpreted as another important indicator that confirms the relatively low status of women in PNG.

2.2.4. HIV/AIDS

HIV/AIDS information in PNG is more incomplete and fragmented than other data produced by the NHIS. However, from the available data it is clear that the HIV epidemic affects females more than males (See MDG 6). Gender inequality is considered as a key factor in the vulnerability to the epidemic.

⁹⁴ The Maternal Mortality Ratio (MMR) is the number of deaths to women due to pregnancy and childbirth complications per 100,000 live births in a given year. (See MDG 5)

⁹⁵ For a detailed discussion of this, see Bakker, 2009.

Some ways in which the epidemic exacerbates the burdens on women include the following:

- The economic security of women (and children) will decrease when household income drops because of infection of the income earners. This leads to a decline in the nutritional status of all household members but especially the poorest women. In the meantime, an increasingly heavier demand is made on women, especially those engaged in the subsistence sector.
- It is likely that women will be forced to take on greater burdens of caring for HIV/AIDS infected persons than men.
- HIV infected fathers/mothers are often inclined to keep girls out of school before they consider keeping boys out of school.

These and other factors affect the achievement of gender equality and empowerment of women.

2.3. Fertility and reproductive health

The situation analysis concerning MDG 3 should include a reference to the continuing high level of fertility in PNG and the factors contributing to this. The Total Fertility Rate (TFR) may have decreased during the last few decades but, to date, this rate remains significantly higher than 4.0.⁹⁶ Provinces that still have a TFR of 5.0 or more include all provinces in the Islands Region, except Manus as well as several provinces in the Northern and Southern Regions. On the other hand, the provinces in the Highlands Region have a TFR less than the national average. A more complete overview of the level of fertility at the regional and provincial level since the 1980s can be found under MDG 5.

Not only the level but also the pattern of fertility is a risk factor for females as well as their newborn children. PNG's age-specific fertility schedule shows that a relatively large proportion of births occur outside the 20-34 age range of women. This includes many teenage pregnancies. Outside the 20-34 age range, morbidity and mortality risks for mothers and their children are higher than average.

Furthermore, the 1996 and 2006 DHS suggests that spacing of births remains inadequate, whereas antenatal clinic (ANC) attendance is low and home delivery without medical personnel in attendance is high. This leads to a high proportion of complications during delivery. These are additional risk factors for women as well as their new-born children. These and related issues are discussed in detail under MDG 5.

All the above factors point at a relatively low level of reproductive health care, implying greater health risks and less education, employment and other opportunities for women.

⁹⁶ The Total Fertility Rate is the average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year.

2.4. Gender disparity in labour force participation, employment and unemployment

Although some information on this is available from the 2006 DHS, the 2000 Census is a far richer source. This section provides a brief summary of gender specific labour force information derived from this census. Table III-7 includes the following indices for the population 10 and over as well as for youths aged 15-24 by sex.⁹⁷

- Labour Force Participation Rates (%)
- Employment Rates (%)
- Unemployment Rates (%)

The rates have been calculated according to the definitions of the International Classification of Labour Force Statisticians (ICLS) as well as those of the International Labour Organization (ILO).⁹⁸

The information in Table III-7 suggests that the level of labour force participation as well as employment for females as well as males is high. Moreover, the corresponding GPIs are often slightly more than 1.0. This is because female labour force participation and employment rates in the rural sector are high, especially in the five provinces of the Highlands Region. The women (as well as men) in this sector are engaged in agriculture and/or fishing for subsistence (household consumption). According to the definitions used, they are therefore economically active and employed.

Table III-7: Gender parity indices for labour force participation, employment and unemployment by age in 2000 according to the ICLS and ILO labour force definitions.

Age Group	LF Participation Rate (%)				Employment Rate (%)				Unemployment Rate (%)			
	P	M	F	GPI	P	M	F	GPI	P	M	F	GPI
According to ICLS Definitions												
10+	65.4	66.1	64.6	0.98	97.2	95.7	98.7	1.03	2.8	4.3	1.3	0.30
15-24	60.1	58.5	61.5	1.05	94.7	92.3	97.2	1.05	5.3	7.7	2.8	0.36
According to ILO definitions												
10+	70.3	71.7	68.9	0.96	90.3	88.2	92.6	1.05	9.7	11.8	7.4	0.63
15-24	65.9	65.7	66.0	1.00	86.4	82.6	90.5	1.10	13.6	17.4	9.5	0.55

Source: Derived from 2000 Census data on economic activity

⁹⁷ The age cut-off point for labour force questions in censuses in PNG is not the age of 15 (as recommended by the ICLS) but age 10.

⁹⁸ The main difference between the ICLS and the ILO classification of the labour force is that the unemployed under the ICLS definition include those who during the reference period did not work but were actively looking for work. A very large number of activities are accepted as evidence that a person was actively looking for work. Under the ILO definition, a person is unemployed if he/she did not work during the reference period, did not actively look for work but was *available* for work. This is therefore a much wider definition of unemployment. The Labour Force Participation Rate (LFPR) is obtained by dividing the number of persons age x and over in the labour force divided by the total number of persons age x and over, expressed as a percentage. Most countries take age 15 as the cut-off point but PNG has so far used age 10.

The Employment Rate is defined as those employed as a percentage of those in the labour force.

The Unemployment Rate is defined as those unemployed as a percentage of those in the labour force. It is therefore the complement of the Employment Rate.

The picture would be very different if the information in Table III-7 were restricted to those in paid employment. In 2000, only a very small percentage (5.3 %) of all employed women had a wage job (compared to 15.2 percent for men). During the 1990s, there has been a slight decrease in the proportion (%) of wage earners amongst the employed women as well as men. This is shown in the following summary table, Table III-8:

Table III-8: Gender parity indices of wage earners 1990 and 2000

Year	Persons (%)	Males (%)	Females (%)	GPI
1990	14.7	20.9	6.2	0.30
2000	10.4	15.2	5.3	0.35

Source: Derived from 1990 and 2000 Census data on economic activity

The GPIs for wage employment indicate that although wage employment for males is low, for females it is even lower. However, during the 1990-2000 intercensal period, gender disparity in paid employment has slightly decreased. Moreover, according to the ICLS definition of unemployment, the unemployment rates for males and especially for females are low. According to the ILO definition, they are of course much higher. This applies in particular to the unemployment rates for young male respondents aged 15-24.

Once again, there are large differences in the labour force situation at the sub-national level. Using the ICLS definition, the five provinces in the Highlands Region have the highest female as well as male LFPRs (more than 70 percent). This is the result of large scale engagement in the subsistence sector. In all provinces outside the Highlands Region, the LFPRs are significantly lower. The NCD has by far the lowest LFPRs and that applies in particular to females (only 32.6 percent). This is a reflection of the fact that most women in the NCD are home workers. According to the definition used, they are not part of the labour force.

Since the NCD stands out as an area where labour force problems are concentrated, the following Table III-9 presents the same information (as in Table III-7) for the population of the NCD. The Table shows that, although the unemployment rates for females are very high, those for males are even higher. Once again, this applies in particular to young females and males in the age group 15-24.

Finally, little is known about gender differentials in labour under-utilization and under-employment in PNG. The only information available has been collected in the 1985/87 Urban Household Survey (UHS). This refers to information on under-employment by:

- Income
- Hours of work
- Mismatch of skills

The field operation of the 1985-1987 UHS was never completed. The results based on partial data (for those urban areas where the field operation was completed) have not

been published. Fortunately, the data on under-employment for the NCD (as well as Lae) has been analyzed.⁹⁹ It appears that in the NCD, not only significantly more males than females were unemployed but the same also applies to under-employment. Most of the under-employed are never married, young males with little or no formal education. This study did not only analyse the level and pattern of under-employment but it also identified the characteristics of under-utilization and the factors associated with labour under-utilization in PNG. It made policy recommendations as well as recommendations for future research.

Table III-9: Gender parity indices for labour force participation, employment and unemployment by age in 2000 for the NCD according to the ICLS and ILO labour force definitions

Age Group	LF Participation Rate (%)				Employment Rate (%)				Unemployment Rate (%)			
	P	M	F	GPI	P	M	F	GPI	P	M	F	GPI
According to ICLS Definitions												
10+	46.4	57.7	32.6	0.57	82.0	79.5	87.5	1.10	18.0	20.5	12.5	0.61
15-24	37.2	43.4	30.1	0.69	65.7	59.8	75.3	1.26	34.3	40.2	24.7	0.61
According to ILO definitions												
10+	52.5	64.6	37.6	0.58	72.6	71.1	75.9	1.07	27.4	28.9	24.1	0.83
15-24	43.2	49.9	34.9	0.70	56.5	51.3	65.0	1.27	43.5	48.7	35.0	0.72

Source: Derived from 2000 Census data on economic activity

2.5. Gender based violence

In 2010, it is not possible to measure gender based violence (GBV) and the trend in GBV since 1990 reliably and consistently. In spite of this, it is almost universally agreed that GBV is widespread in PNG and that the situation has worsened since 1990. According to the Law Reform Commission, about two thirds of all married women in PNG suffer violence inflicted by their husbands. Moreover, this Commission notes that 67 percent of rural men believe that it is all right for a husband to hit his wife. Furthermore, gang rape and rape in conjunction with tribal fighting is common.

Even if it is assumed that the fragmented statistics on GBV overstate the situation in PNG as a whole, there is little doubt that GBV is one of the most serious impediments for the achievement of MDG 3 as well as all other MDGs. In particular, it should be reiterated that GBV must be considered as a major contributor to the low level of maternal health and the high level of maternal mortality in PNG. Moreover it is a major factor fuelling the HIV/AIDS epidemic. It is therefore appropriate that the MDG National Steering Committee in 2004 and 2009 endorsed “gender culture and gender inequality” as one of the crosscutting challenges that PNG faces in achieving all MDGs.

2.6. Gender disparity in political representation

Since the early 1980s, women in PNG have contested in the national elections. They were strongly supported by Women’s organizations in the country. Moreover, prior

⁹⁹ Popoitai, 1995.

and during the 2002 General Elections, the Department for Community Development (DfCD), in collaboration with the National Council of Women (NCW), PNG Women in Politics (PNGWIP) and the Council of Churches carried out joint election campaigns. Although over time, the number of women candidates in national elections has increased, very few of them have so far been successful. In 2010, the national level parliament of 109 members has only one female representative. This has been the case for more than 10 years. As a result, with regard to female political participation, PNG is presently ranked as the 132nd country (out of a total of 138 countries).¹⁰⁰

Many reasons for this result have been suggested. The most crucial ones are probably the relative lack of political education and training for women and the paucity of funds required for the proper conduct of an election campaign. In this connection, it should be mentioned that the consultation process in PNG is very expensive because of its complex decentralized system of government and its extreme diversity in culture, tradition and language.

At the sub-national level, female political representation is somewhat more favorable. The Organic Law and Administrative Laws on Provincial and Local Level Government (LLG) have a provision for nominated seats for women in the LLGs (rural as well as urban) and in the Provincial Assemblies. A number of women councilors have been elected in the last election using the LPV system of voting.¹⁰¹ However, at the provincial level, most of the allocated seats have not yet been filled.¹⁰² Out of the 20 provinces, only eight have female representatives at the Provincial Assembly level.

In conclusion, the representation of women at all levels of government, but particularly at the national level remains limited. Although since the 1960s, women's opportunities in the areas of education and employment have improved, this has had very little impact on their position as decision makers.

3. Targets and indicators

3.1. Global targets and indicators

The United Nations Development Group (UNDG) formulated one global target with regards MDG 3. This target is:

Target 3A Eliminate gender disparity in primary and secondary education preferably by 2005, and in all levels of education no later than 2015

The associated global indicators are:

- 3.1. Ratios of girls to boys in primary, secondary and tertiary education
- 3.2. Share of women in wage employment in the non-agricultural sector
- 3.3. Proportion of seats held by women in national parliament

Target 3A refers to the pre-reform educational system.

¹⁰⁰ IPU, 2008. Women in National Parliaments

¹⁰¹ Altogether 12,330 seats are now available at the sub-national level (provinces, districts and LLG's).

¹⁰² Manus Province is an exception with all its seats filled, viz. one nominated at the Provincial Assembly level, one at the urban LLG, two each for 12 rural LLGs and two at each of the Ward levels.

3.2. National targets and indicators

The MTDS 2005-2010 has one national target for 2015.

MTDS Target 7 Eliminate gender disparity at the primary and lower secondary level by 2015 and at the upper secondary level and above by 2030.

The associated national indicators are:

15. Sex ratio of students in primary, secondary and tertiary education
16. Sex ratio of literate 15-24 year old persons
17. Sex ratio of literate adults (over age 15)
18. Percentage of persons aged 10 and over in wage employment in the non-agricultural sector that are women¹⁰³
19. Percentage of persons aged 10 and over with money income from any source that are women
20. Percentage of seats held by women in national parliament

The national MDG 3 targets and indicators are presently under review. This is part of the preliminary work for the formulation of the Medium-Term Development Plan 2011-2015. The proposed re-tailored MDG 3 targets and indicators are discussed in the DACA report on human development and the MDGs.

3.3. Progress towards achieving MDG 3

The analysis in Section 2 confirms the findings of the inaugural MDGR of 2004. These are that, although gender differentials in education, labour force participation, health, morbidity and mortality in PNG exist, the gender gap is in many respects not as wide as often assumed. In particular, it appears that gender disparity in these areas is by far not as extensive as spatial disparity. The differences between the provinces are enormous by any standard. Nevertheless, the analysis in Section 2 suggests that Global Target 3A will not be achieved by 2015.

Progress towards achievement of the National (MTDS) Target no. 7, related to education is shown in Table III-10.

¹⁰³ The 2004 MDG TWG observed that it would be preferable to use the definition of employment adopted in the International Classification of Labor Force Statisticians (ICLS). This would better acknowledge the female contribution to the national product through their involvement in the traditional agricultural sector. It goes without saying that, in the case of PNG, this portrays a completely different picture of the contribution of women to the economy.

Table III-10: Progress between 1990 and 2010 towards achieving the national target for gender equality in education and literacy

National Indicator	Most recent measure			Projected ¹			National Target 2015
	Value	Year	Source/Comments	1990	2010	2015	
GPI of students in primary education	0.90	2007	SS-DOE	0.96	0.90	0.90	1.0
GPI of literate 15-24 old persons	0.91	2000	2000 Census	0.81	0.91	0.98	NA
GPI of literate adults ≥ age 15	0.80	2000	2000 Census	0.75	0.85	0.88	NA

Note: ¹Projected according to a “No-Change Scenario”.

²These national targets are not 2015 targets but PNGDSP targets for 2030

The education and literacy trend since 1990, depicted in this table requires further clarification.

Firstly, in PNG, the most basic problem with regard to education and literacy is low enrolment, retention and achievement rates for all children, girls as well as boys.

Secondly, since MDG base year 1990, the GPI for primary school enrollment has slightly decreased. It should, however be kept in mind that the gender differential enrollment in the provinces of the Highlands Region is mainly responsible for this. It is possible that the slight deterioration in the national GPI can at least partly be explained by the sex differential impact of the HIV/AIDS epidemic in the Highlands Region. This would be the case if parents infected with HIV would be more inclined to keep their female children out of school than their male children.

Thirdly, since 1990, the GPIs related to youth as well as adult literacy have improved. Users are reminded again that the bar for literacy used in censuses and surveys in PNG has been placed at a relatively low level viz. “at least completed class 3.” Since 1990, the gap between female and male youth literacy rates has narrowed. Continuation of this trend means that the disparity in adult literacy should gradually disappear. However, the slight decrease in the GPI for primary school enrollment suggests that this process may stall in the near future. Furthermore, in this connection, it is also important to point out that the gap in youth literacy between girls and boys has recently narrowed as a result of the decreasing youth literacy rate for boys.

Fourthly, because of the much larger gender disparity in education in the past, the level of adult literacy for males is significantly higher than that for females, particularly in the Highlands Region.

Considering the additional challenge of the HIV/AIDS epidemic, it is unlikely that the gap in education and literacy will be closed in the near future. In fact, due to the impact of HIV/AIDS, the post-1990 trend in literacy may well be reversed in the coming years.

Some gender disparity in the area of health, morbidity and mortality also exists. However, it will be noted that, since 1971, male infant and child mortality has, in virtually all provinces, always been somewhat higher than female infant and child

mortality. Furthermore, gender disparity in adult mortality appears to be marginal although it is possible (because of the very high level of maternal mortality) that mortality of females in the reproductive age range is higher than that of males in the same age range. Finally, overall mortality, measured by means of the life expectancy at birth has, since 1971, been almost the same for females and males. Since in most developed countries females live on average about four years longer than males, females in PNG are still lagging behind.

It is likely that in the future, indices of sex differential mortality for adults will increasingly be affected by lifestyle disease. The limited data available from the NHIS suggests that males are more affected by lifestyle disease than females. This is in agreement with the situation in most countries in the South Pacific Region. A continuation of this trend may change the gender balance in mortality to the advantage of the females. However, once again, this is not a desirable way of reducing gender inequality.

A first glance at the labour force participation and employment rates for females and males suggests that gender disparity in this area is also not as large as is often assumed. However, on closer scrutiny, it appears that the situation is not straightforward. In PNG, in accordance with the ICLS definition, all persons (females as well as males) engaged in the subsistence sector have been included in the category employed. As a result, female labour force participation and employment rates in PNG are very high (for instance compared to those in the central and eastern part of the Pacific). On the other hand, gender disparity in paid employment is significant. However, this does not mean that the proportion of males in paid employment is high and that of females low. Rather, the main problem is that the proportion for males is very low and that for females even lower.

An area of gender disparity where (compared to most countries in the world) PNG rates particularly poor is that of political representation. In 2010, female representation in the National Parliament is only 0.9 percent.

Although not much hard evidence is available, there is little doubt that by far the worst examples of gender disparity in PNG can be found in the socio-cultural area, especially gender based violence (GBV). This is the reason why the 2004 and 2009 MDG National Steering Committee has placed gender culture and gender disparity on the list of crosscutting challenges affecting the achievement of all MDGs. There is no hard evidence that, since 1990, progress has been made towards reducing GBV. Circumstantial evidence suggests that the situation has worsened. Finally, the continuing high level of maternal mortality in PNG must be considered as evidence of significant gender disparity.

In conclusion, in the remaining six years of the first MDG cycle 1990-2015, the global as well as national targets for MDG 3 will almost certainly not be achieved. Moreover, it appears that, so far, there is relatively little understanding for the crosscutting nature of gender culture and gender disparity and of their impact on the achievement of all MDGs.

4. MDG 3 specific challenges

As in the case of all other MDGs, the achievement of MDG 3 will largely depend on the emphasis the government places on addressing the crosscutting challenges detailed in Part A, Chapter II. Furthermore, the MDG National Steering Committee

has identified “gender culture and gender disparity” as one of the crosscutting challenges affecting the achievement of all MDGs (See Part A, Chapter II-2F). The discussion in this section is restricted to MDG 3 specific challenges only.

4.1. General

In Section 2 and 3, it was shown that the disparity in education, health and mortality for females and males in PNG is not as large as often assumed. However, gender culture and gender disparity have rightly been recognized as one of the crosscutting challenges that have an impact on the achievement of all MDGs. With the onset of the HIV/AIDS epidemic, this impact has increased.

Firstly, PNG’s continuing high level of fertility is often cited as a challenge hampering the achievement of MDG 3. Although it is true that between 1980 and 2006, the Total Fertility Rate (TFR) decreased from 5.4 to 4.6 this rate remains much higher than that of virtually all other countries in the South Pacific Region.¹⁰⁴ This applies in particular to the rural sector of PNG. Variation in the level of fertility at the provincial level is large.¹⁰⁵

Secondly, as emphasized in Section 2, not only the level but also the pattern of fertility in PNG is a risk factor for females (as well as their newborn children). The age-specific fertility schedule in PNG derived from the 2006 DHS shows that women continue to have a large proportion of their births outside the 20-34 age range, where morbidity and mortality risks for mother (and new-born child) are significantly higher. The large proportion of births to women in the age group 15-19 is particularly worrying. Furthermore, the 1996 as well as the 2006 DHS suggests inadequate spacing of births. These factors imply higher than average risks of morbidity and mortality as well as less education, employment and other opportunities for women.

Thirdly, and related to the above, all challenges listed under MDG 5 (maternal health) are also challenges for MDG 3. This includes the relatively low level of reproductive healthcare, high risk fertility behavior including a high proportion of unplanned and teenage pregnancies and a low level of antenatal clinic attendance and supervised delivery. This results in a high level of maternal morbidity and mortality. The above factors do not only endanger the health of mothers but also that of their children. The high level of maternal mortality in particular, must be considered as a clear indication of widespread gender disparity in PNG.

Fourthly, marriage of girls below the age of 15 is still common, particularly in the Highlands Region.¹⁰⁶ This is an impediment not only for achieving MDG 3 but also for all other MDGs particularly MDG 2, 4 and 5.

Fifthly, for reasons already mentioned in Section 2, there are many ways in which the HIV/AIDS epidemic negatively affects the achievement of gender equality and empowerment of women. The most important ones are reiterated below:

¹⁰⁴ The Total Fertility Rate is the average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. The 2006 DHS estimated the rural TFR as 4.5 and in the urban TFR as 3.6.

¹⁰⁵ Provinces that, in 2009, still have a TFR that is higher and in some cases much higher than the national average include most of those of the Islands, Southern and Northern Regions. On the other hand, since the 1970s, the provinces in the Highlands Region always had and still have a TFR significantly below the national average. Many reasons for this have been suggested but it is likely that the lower level of fertility in this region is at least partly caused by a high level of infertility as a result of a high incidence of STIs.

¹⁰⁶ PNG’s Civil Registration System (CRS) is still in its infancy and this includes marriage registration. Improvement of registration will enhance the empowerment of women.

- The GPI of the school going population will become lower when family resources become more limited due to HIV/AIDS infection of the father and/or mother. Parents may be inclined to keep girls out of school before they consider keeping boys out of school.
- Women will take on a greater burden of caring for HIV/AIDS family members than men.
- Economic security of women (and children) decreases when household income drops because of infection of the income earners. An increasingly heavier demand will be made on women engaged in subsistence agriculture.
- Discrimination of pregnant women who are HIV/AIDS positive.
- Girls are further disadvantaged by domestic chores.

Interventions require improved legislation and financing. However, as in the case of MDG 2, there are social and cultural aspects to most of the challenges mentioned above. These require first of all behavioral change. However, behavioral change is difficult as long as the level of formal education and literacy in PNG remains as low as it is. Moreover, gender inequality in education may well increase in the near future, due to the impact of the HIV/AIDS epidemic.

The analysis in Section 2 clearly suggests that there is little doubt that the most serious threat for the achievement of MDG 3 in PNG is the very high incidence of gender-based violence (GBV). Although many laws, policies and plans address GBV, these laws are rarely enforced. In practice, GBV is often equated with “disciplinary and corrective measures”. This is often seen as an internal family matter. The payment of bride price also plays a role in violence against women. A key challenge for the achievement of MDG 3 is to educate men about their attitude and responsibilities towards women and about shared responsibility. Without behavioral change, all efforts to address MDG 3 will remain marginal at best.

Finally, the low level of political representation in PNG is a major challenge for the achievement of MDG 3. In this connection it is also relevant that, in PNG, there is a strong belief in the separation of church and state. Church organizations do not always fully support women’s rights, e.g. in politics.

4.2. Legislation/policy

PNG is a signatory to many international conventions and declarations related to the promotion of gender equality and the empowerment of women. Most of PNG’s laws and policies with regard to MDG 3 are based on these international conventions and declarations. It appears that, as in the case of MDG 2, there is no lack of legislation, policies and plans with regard to MDG 3. A comprehensive overview of MDG 3 related legislation, policies and plans can be found in Section 6.2.

Once again, legislative and policy bottlenecks are mainly related to the implementation of the numerous policies and plans that are in place, and related to this, the lack of political commitment. It appears that, over the years, support has not always kept up with the requirements of the international conventions and declarations and the national policies and plans. This applies first of all to political commitment. Moreover, it is often felt that implementation is the sole responsibility

of the Office for Development of Women (ODW) in the Department for Community Development (DfCD). As a result, the implementation rate is low.

4.3. Financial

Funding for MDG 3 related activities is low. About 80 percent of all projects devised to promote gender equality and empowerment of women that have been endorsed by the NEC have not been funded. Moreover, no funding is available for a gender disaggregated database in ODW.

Furthermore, the national budget does not adequately reflect women's needs in health, education, employment and other areas. Some time ago, the Commonwealth Secretariat suggested the inception of a Management Information System (MIS) to address the issues of budget expenditure wherever possible with a gender breakdown for all government agencies. In this connection, an audit/stock take of gender responsive budgeting is urgently needed.

The low level of money income (especially in the rural sector) and the high level of unemployment and underemployment (in the urban sector) are other impediments for achieving gender equality and empowerment of women.¹⁰⁷ Women dominate the small urban informal sector. In order to expand this sector and to improve the livelihood of many urban dwellers the informal sector needs strengthening.

On average, economic disparity and insecurity affects females more than males.

4.4. Service delivery

Service delivery is an integral part of the Integrated Community Development Policy (ICDP) of 2007. Service delivery is seriously hampered by frequent change in management and limited manpower. At the provincial level, there is only a staff of three, responsible for service delivery. All of them have many other responsibilities within the Provincial Government.

4.5. Monitoring

Many complaints have been made about the lack of sex disaggregation in PNG's database. As mentioned in Section 1, these complaints are not entirely justified. Census and survey data as well as data from registration systems is in virtually all cases specified and available by sex. The main problem is that there is a lack of data for males as well as females.

In conclusion, although there is much scope for the improvement of the database required for the monitoring of MDG 3, this database is not as limited and defective as that for the monitoring of MDG 1, 6 and 7. This is discussed in more detail in the DACA report on the monitoring of human development and the MDGs.

¹⁰⁷ In the rural sector, the proportion of women whose principal activity is "home worker" is low. Most rural women were and still are engaged in subsistence activities for household consumption.

5. Good practices

Firstly, an area of gender disparity where, compared to most countries in the world, PNG rates particularly poor, is that of the political representation. However, this will probably change dramatically in the near future. During the National Leaders Summit in Lae in August 2009, the Governors proposed to create one seat per province in the National Parliament that can only be contested by women. This is referred to as the Temporary Special Measure (TSM) resolution. If this resolution is endorsed by Parliament, the next Parliament will have at least 22 women MPs, representing 22 provinces. However for this to be implemented, legislative and constitutional changes need to be made.¹⁰⁸ This also means that the Organic Law on National and Local Level Government Elections needs to be amended in order to create the new electorates. These electorates will also be used for the regional and provincial elections.¹⁰⁹

Secondly, the DfCD conducts regular in-house training for PNGINFO. So far, the DfCD is the only department that conducts this training on a regular basis. This good example needs to be followed by other departments.

Thirdly, of all government departments, the DfCD has by far the highest proportion of female managers in senior positions. In 2010, this proportion is 60 percent. Once again, this good example needs to be followed not only by other government departments but also by the private sector.

Fourthly, PNG's private sector has introduced an annual "Pride of Women Award" as well as specific awards for women in agriculture, women in mining and others.

Finally, PNG's Population Media Centre (PMC) is in the process of developing radio serial dramas totaling 208 episodes over a period of two years. These dramas will raise awareness and encourage citizen participation in the promotion and delivery of the MDGs and will hopefully accelerate the achievement of the MDGs. Since this innovative approach focuses on attitude and behavior change, the programme is of particular importance for the achievement of MDG 3 and MDG 6.

6. Interventions

6.1. Supporting international environment

PNG is a signatory to many international conventions and declarations related to MDG 3. However, the most important ones are probably the Convention of all forms of Discrimination against Women (CEDAW) and the Declaration on the Elimination of Violence against Women (DEVAW). All conventions and declarations emphasize the importance of gender mainstreaming. This refers to any effort to ensure that women's concerns are not treated as separate issues, but are reflected in national strategic development policies and plans and public investment intervention plans.¹¹⁰ In PNG

¹⁰⁸ It requires amendment of Section 101 of the Constitution to increase the number of seat in Parliament and to restrict 22 of them to women.

¹⁰⁹ This was decided during the National Leaders' Conference, held in Lae from 12 to 14 August 2009. A legal team has been contracted by UNDP to work on the legislation aspects of an "Organic Law on Gender Equality" that will cover the three tiers of government, namely local Level Government (LLG), Provincial Government and National Government

¹¹⁰ Gender mainstreaming refers to the process of assessing the implications for women and men of any planned action including legislation, policies, plans, programs and projects. It is an approach to development that looks at

the rationale for gender mainstreaming is embedded in the National Constitution and Five National Goals and Directive Principles call for equality and participation. Without gender mainstreaming, the role of women in development will not improve. Gender mainstreaming will not only lead to improvement of the MDG 3 indicators but to the improvement of all MDG indicators.

6.2. National interventions

Many national interventions are related to the implementation of CEDAW. After the Beijing Conference in 1995, focal points for gender were established in many government departments. These focal points, however, have not always received the substantive support that they need. In 2008, the DfCD set up a high level core committee on CEDAW, to fast-track the implementation of this convention.¹¹¹ With this initiative, a better sense of partnership between all stakeholders has been fostered. Moreover, a larger reference group was organized to ensure broad-based sectoral input into the national CEDAW Report. Both groups need to be strengthened.

Furthermore, several policies actively promote gender equality and the empowerment of women. The most important ones are listed below:

- Integrated Community Development Policy (ICDP, 2007)
National Women's Policy (NWP, 1995). (This policy has been reviewed in 2009 and will be considered for endorsement by the NEC in April 2010).
- National Council of Women Act (NCWA)
- Corporate Plan (During the most recent amendment, this plan has been aligned with Vision 2050).
- Annual Operation Plan
- Other strategies and plans include the gender and HIV strategy, gender equity in education, gender equality and women's empowerment policy, the organic law on gender equality and the establishment of the office for the development of women with the mandate to address many of the areas covered by MDG 3.

Moreover, if funding is made available, a central sex disaggregated database is expected to be established in 2010.

Furthermore, an Informal Sector Policy presently awaits approval by Cabinet. Endorsement of this policy will lead to extension and enhancement of this sector, and in doing so supplement the income of many urban households. The results of a Market Survey supported by UNIFEM will provide information that will lead to further improvement of the livelihood of many households dependent on the informal sector to meet the rising cost of living.

Since many gender issues are health and education related, all interventions listed under the health and education related MDGs will also improve gender equality and the empowerment of women. This applies in particular to the proposed introduction of Community Health Posts (CHPs) throughout the rural sector of PNG. The introduction of CHPs with its professional medical staff of 3, including a trained and

relationships between women and men in their access to and control over resources, decision-making, benefits and rewards in society. It is a strategy to ensure that the concerns of gender equality are considered in the mainstream.

¹¹¹ Membership of this Committee consists of the DNPM (Chair), DfCD (co-chair), DJAG and DFA.

experienced midwife will lead to improved maternal health and a decrease in maternal mortality. As mentioned before, the high level of maternal mortality is one of the clearest indications that gender inequality in PNG is significant.

One of the intervention programmes that addressed inequality in the education and literacy of girls and boys is the UNICEF sponsored AGE programme. During the period 2003-2007, six provinces were targeted, viz. Western Highlands, Chimbu, Eastern Highlands, Morobe, Madang and East Sepik. The reason for the selection of these provinces was that they were perceived as the most disadvantaged with regards education and literacy.¹¹² The selection was based on four education indicators viz. enrolment rate, retention rate, examination performance and literacy rates. However, an assessment of these four indicators at the provincial level suggest that although the female (as well as male) education situation in these six provinces is far from ideal, they are not the most disadvantaged ones.¹¹³ The most disadvantaged provinces in education remain Southern Highlands and Enga. However, due to the law and order situation in these provinces, the AGE programme was not included in these provinces. .¹¹⁴.

It should be mentioned that the DfCD is in the process of improving the Civil Registration System. The improvement of birth registration, which started in 2004, has been decentralized to the provinces. Database offices have been established at this level. Improved official registration especially the registration of marriage and divorce will enhance the empowerment of women.

As repeatedly stressed, PNG performs particularly poor in female political representation. The interventions in this area are discussed under “good practice” (see Section 5).

Interventions with regard to gender based violence should receive special attention. These interventions will undoubtedly be coordinated in the National Strategy on GBV 2010-2015. This policy is multi-sectoral in nature and it is supported by AUSAID. UNDP is running Gender Awareness training on GBV for police officers.

Finally, in order to promote gender equality, PNG has introduced a system of Village Courts.¹¹⁵ There are presently 1,400 Village Courts, many of them in the remote areas of PNG. Village Court officials are all respected community leaders.¹¹⁶ The Village Courts draw heavily on customs that have been in place for many

¹¹² AGE Committee Port Moresby, March 2004. “*Accelerating Girls’ Education (AGE) in Papua New Guinea*”, Plan of Action, p.5.

¹¹³ UNICEF, 2003. “*Accelerating Girls’ Education in Papua New Guinea*”. A Report on the Proceedings of the National Symposium in Madang., 28-29 April 2003:4-7

¹¹⁴ The Northern (Momase) Region includes one of the most disadvantaged provinces in PNG (though not in the first place in the area of education) viz. West Sepik. This province has not been included either. On the other hand, Morobe Province, which was part of the programme, is not one of the most disadvantaged provinces. Its performance on all four education indicators is above or close to the national average. To a less extent, this also applies to Madang, which has also been included. Finally, Gulf Province, which is one of the most disadvantaged provinces in PNG as far as most development indicators (including education) is concerned, has also been excluded. It seems that the reason for exclusion is that this province is not very densely populated. Inclusion of this province would probably have made the AGE programme less cost-effective.

¹¹⁵ This section dealing with the Village Courts has been derived from an address by the Executive Director Village Courts and Land Mediation Secretariat of the Department of Justice and Attorney General presented to an Expert Group Meeting on the Organic Law on Gender Equality. (18 and 19 November 2009)

¹¹⁶ The Village Courts operate under the Village Courts Act of 1989 and the Regulations of 1975. Since 1995, when the Organic Law on Provincial and Local Level Governments was introduced the day-to-day administration of Village Courts rests with the provinces.

generations. However, they also examine how customs need to be changed to protect women and to promote their role as leaders in the community. The Village Courts have incorporated new beliefs, values and practices which respect all adults and children and reject the use of violence and discrimination. It encourages communities and individuals to resolve issues between them respectfully and constructively. In particular, the Village Courts emphasize the importance of treating women fairly and treating family and sexual violence as serious crimes.

IV. MDG 4: REDUCE CHILD MORTALITY

Mortality is one of the three demographic processes that changes the size and structure of a population. MDG 4 deals with early childhood mortality. The global target for MDG 4 is to “reduce by two thirds, between 1990 and 2015, the under-five mortality rate”. This target is very demanding, especially for developing countries like PNG that are severely affected by the HIV/AIDS epidemic and where access to basic health services is limited.

MDG 4 does not only deal with early childhood mortality but also with some important determinants of early childhood mortality for instance immunization.

1. Data base and monitoring

Effective monitoring of early childhood mortality is not only important in its own right. The trend in the early childhood mortality indices of a particular population (together with other key mortality indices like the average life expectancy at birth and the maternal mortality ratio) is closely correlated with the trend in the overall health and development situation of that population. Consequently, in the absence of reliable data on development, these key indices of mortality are frequently used as proxy indicators of development. The most obvious example is the use of the average life expectancy at birth (e_0) as one of the three components of the UN Human Development Index (HDI).

The main data sources for the monitoring of MDG 4 (as well as MDG 5 and 6) include:

- Civil Registration System (CRS)
- National Health Information System
- Censuses
- Surveys

The availability, completeness and accuracy of mortality data is discussed in detail in the DACA report for the monitoring of human development and the MDGs. This section provides only a brief summary of the data situation with regard to MDG 4.

1.1. Civil Registration System

The mortality situation and trend in most countries is continuously monitored using the death statistics by age and sex provided by the Civil Registration System (CRS) of these countries. Death registration by the CRS is not only important for policy, planning and monitoring purposes but also for legal/administrative purposes.

However, PNG’s CRS remains incomplete. Therefore, at the moment, the CRS statistics cannot meaningfully be used for the monitoring of mortality.¹¹⁷ It needs to

¹¹⁷ In this regard, it needs to be realized that the CRS is not a statistical system but a legal/administrative system that provides information on demographic processes as a byproduct.

be substantially improved to achieve a reasonable level of completeness and accuracy of data.

1.2. Service statistics

The National Health Information System (NHIS) of the Department of Health (DOH) routinely collects information on morbidity, mortality, cause of death, fertility, reproductive health and family planning and immunization. This information is based on records completed by medical officials. In PNG, the NHIS mainly covers deaths that occur in health institutions. Most rural deaths remain unreported. As a result, NHIS data has a very strong urban and institutional bias. NHIS data has therefore only sparingly been used in the analysis in Section 2.

1.3. Censuses and surveys

Censuses collect data that refer to a fixed point in time.¹¹⁸ Under normal circumstances, when the CRS and NHIS provide complete and accurate data, there is no need to collect basic mortality (and fertility) information by means of alternative data collection systems. However, since the above primary systems for the collection of statistics concerning the events death (and birth) are incomplete and deficient, censuses in PNG have, since 1971, also been used to collect retrospective information from which mortality (and fertility) can be estimated indirectly.¹¹⁹ The 1996 and 2006 DHS also collected this information. In addition, these surveys have collected a wealth of information on several determinants of early childhood mortality.

The results of the 2000 census indicate that a complete (full coverage) census provides reasonably accurate indirect estimates of mortality, including early childhood mortality at the sub-national level e.g. the provinces. The surveys, on the other hand, based on a sample of the population usually do not provide these estimates at the provincial or lower level. For instance, because of the large margins of error of provincial estimates derived from the 2006 DHS, this survey cannot be considered as a major source of information at this level.¹²⁰ This applies in particular to mortality estimates, since they require a survey with a very large sample size.

1.4. Summary

In PNG, indicators of early childhood mortality have been indirectly derived from retrospective data collected in censuses and surveys since the 1970s. So far, the primary sources of mortality data, the CRS and NHIS have only played a minor role in the monitoring of the mortality situation and trend.

Censuses do not collect information from which it is possible to estimate determinants of mortality. This information has been collected by the DHS 1996 and 2006.

¹¹⁸ Data referring to a fixed point in time are stock statistics. Flow statistics refer to change during a period of time. Censuses are not ideal for the collection of flow statistics.

¹¹⁹ All censuses (as well as some surveys) conducted since 1971 included the so-called lifetime fertility questions. From this information, early childhood mortality indices have been estimated indirectly. These questions, the forms of bias in retrospective data and the methodology for deriving MDG indicators from this data is detailed in the DACA report on human development and the MDGs.

¹²⁰ Since the size of the 1996 DHS sample was only half of that in 2006, the margins of error on the 1996 DHS estimates are even significantly larger. The 1996 and 2006 DHS Report do not include any estimates of early childhood mortality at the provincial level.

Finally, although the database for the monitoring of MDG 4 is far from ideal, it is more complete and probably more reliable than that of all other MDGs with the possible exception of MDG 2. The analysis in Section 2 is mainly based on census and survey data.

2. Situation analysis and trends

2.1. Early childhood mortality

The most important indices of early childhood mortality are the infant mortality rate (IMR), the child mortality rate (CMR) and mortality under the age of five (U5MR). Furthermore, mortality in the first year of life is subdivided into neonatal mortality (in the first month) and post-neonatal mortality (in the following 11 months).

Table IV-1 presents the national average estimates of early childhood mortality derived from all censuses since 1971 as well as from the 1996 and 2006 DHS. Furthermore, IMRs at the regional and provincial level derived from the 1971, 1980 and 2000 censuses are presented in Table IV-2.

The sequence of the early childhood mortality rates in Table IV-1 is not entirely consistent. Nevertheless, these rates suggest that during the 1970s, the early childhood mortality situation in PNG improved significantly. Subsequently, the mortality transition appears to have slowed down. In 2010, many children still die in the first five years of life. Mortality is particularly high for newborn babies dying from delivery complications, peri-natal conditions or due to unsupervised deliveries and absence of incubators (see: neonatal mortality). The rates in Table IV-1 and Table IV-2 should be considered as minimum estimates.

Differences in the level of early childhood mortality within the country (provinces) and between the rural and urban sector are large. Since 1971, the gap in early childhood mortality between the frontrunners (mainly the provinces in the Islands Region and the NCD) and those lagging far behind (particularly West Sepik and Gulf) has always been large. Furthermore, in 1980, infant and child mortality rates in the rural sector were about 80 per cent higher than in the urban sector. In 2000, the gap increased to about 140 per cent. There are not many countries in the world where differences in mortality between the main geographic subdivisions are as large as in PNG.

Compared to other countries in the South Pacific Region, early childhood mortality in PNG is very high. In the 1980s, the IMR of most countries in the central and eastern part of the South Pacific Region had already decreased to 20 to 30 per thousand. During the last two decades, the gap between PNG and most of these countries has further widened.

Table IV-1: Indices of early childhood mortality by sex indirectly derived from censuses and surveys since 1971.

Index of early childhood mortality	Sex	1971 Census	1980 Census	1990 Census	1996 DHS	2000 Census	2006 DHS
IMR (‰)	P	134	72	82	73	64	57
	M	142	78	88	-	67	-
	F	125	66	76	-	61	-
CMR(‰)	P	-	43	51	-	24	19
	M	-	43	52	-	26	-
	F	-	41	51	-	21	-
U5MR(‰)	P	-	115	133	-	88	75
	M	-	121	140	-	93	-
	F	-	107	127	-	83	-

Source: 1971 and 1980 Censuses; Bakker, 1986. 1990 Census; Hayes, 1996;2000 Censuses; NSO, 2003. 1996 DHS; NSO, 1997. 2006 DHS; NSO, 2009

Table IV-2: Infant Mortality Rates (‰) at the regional and provincial level derived from censuses since 1971.

Geographic Subdivisions	1971	1980	2000	Geographic Subdivisions	1971	1980	2000
Papua New Guinea	134	72	64				
• Rural	-	79	69				
• Urban	-	44	29				
Southern Region	108	58	58	Northern Region			
• Western	129	83	66	• Morobe	123	62	80
• Gulf	191	71	103	• Madang	122	62	78
• Central	85*	59	47	• East Sepik	183	94	79
• NCD	85*	35	22	• West Sepik	143	104	105
• Milne B.	98	50	69				
• Northern	94	67	59				
Highlands Region	151	85	57	Islands Region	81	52	52
• Southern H.	159	116	61	• Manus	86	55	45
• Enga	153 [@]	91	69	• New Ireland	74	62	52
• Western H.	153 [@]	81	48	• East N. Brit.	77	57	54
• Chimbu	149	87	54	• West N. Brit.	88	60	55
• Eastern H.	141	55	54	• ARB	83	33	47

Source: 1971 and 1980: Bakker, 1986. 2000: NSO, 2003

Notes: * In 1971, NCD was part of Central Province.

@ In 1971, Enga was part of Western Highlands

Table IV-3 presents a more detailed picture of change in mortality within the first year of life. This is expressed by means of the neonatal mortality rate defined as mortality in the first month of life and post-neonatal mortality which is mortality in the remaining 11 months of the first year of life. Within the first year of life, mortality is particularly high for newborn babies dying from delivery complications, perinatal conditions or due to unsupervised delivery and absence of incubators. It will be noted that, in 2006, mortality in the first month of life is as high as mortality in the next 11 months. It also needs to be emphasized that the importance of ANC attendance, supervised delivery and proper care during birth and in the period immediately after birth is necessary for improving both maternal and neonatal health.

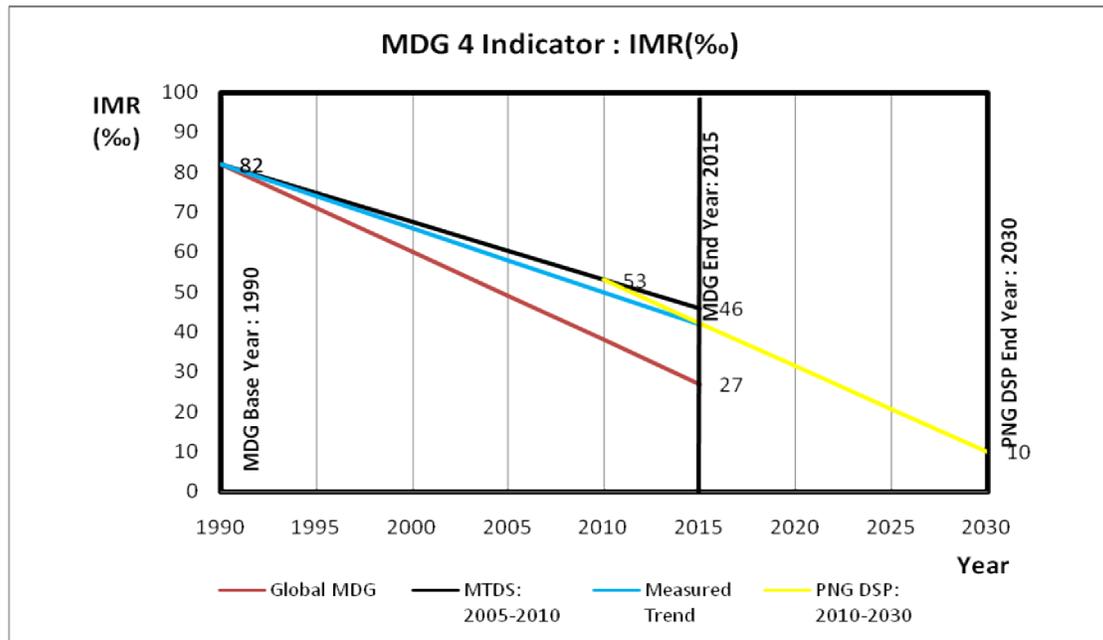
Table IV-3: Neonatal and post-neonatal mortality rates by sex in 1996 and 2006.

Components of Infant Mortality (‰)	1996 DHS			2006 DHS		
	P	M	F	P	M	F
Neonatal Mortality Rate	35	37	33	29	29	29
Post Neonatal Mort. Rate	43	46	39	29	30	28
Infant Mortality Rate	77	82	72	58	60	57

Source: 1996 and 2006 DHS

The trend in early childhood mortality between MDG base year 1990 and 2010 has been depicted in Figure IV-1. This trend is compared to the global and 2005-2010 MTDS targets. The decline in early childhood mortality in PNG since 1990 has not been as fast as the decline in the 1970s. Many reasons have been put forward for the slowing down of the mortality transition. Suffice to say most of these reasons are based on speculation since little hard evidence exists. The National Population Policy (NPP) 2000-2010 recognizes the dearth of information concerning the determinants of the mortality transition in PNG. It emphasizes the importance of further research with regard to the reasons for the slow-down in the mortality transition. Knowledge of this is of crucial importance for policymakers and planners. The NPP calls for the identification of the specific circumstances and underlying causes of the stagnation in the mortality transition.

Figure IV-1: Trend in infant mortality between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets



Source: DNPM, 2009

The Pediatric Society of PNG believes that the improvement in the early childhood mortality situation after 1996 is due to the following factors:

- The adoption by the PNG Child Health Services of a strategic approach to coordinate the child health system and strengthen existing child health programs.
- The introduction of new initiatives including those for improving prevention and management of pneumonia, bed-nets for prevention of malaria and Vitamin A supplementation.
- The improvement in vaccination coverage for all vaccine preventable childhood diseases.
- The major increase in the number of Child Health Specialists (Pediatricians) leading child health programs in the provinces and districts.

Moreover, the slight improvement in the level of education and literacy of women has probably also made a contribution to the recent decrease in early childhood mortality. In this respect, it should be mentioned that there usually is a strong relationship between the level of education and literacy of mothers and the level of mortality of their children, especially in early childhood.

Finally, the mortality pattern in PNG is characterized by a high mortality slope. This means that, compared to a standard pattern, infant and child mortality in PNG is relatively low and adult mortality relatively high. PNG has this in common with most countries in the South Pacific Region. One reason for this may be that in these countries, health and other services e.g. mother and Child Health Care (MCH) and

reproductive health are relatively better and/or more accessible for infants and children than for adults. Furthermore, health departments in these countries tend to have outreach facilities for infants and children whereas for adults, these services are limited or even non-existent. This is the case in PNG.

2.2. Determinants of early childhood mortality

In preparation for this report, trends in the following determinants of early childhood mortality have been considered:

- High risk fertility behavior
 - Age at first birth
 - Adolescent fertility
 - Birth interval
- Health care during pregnancy and childbirth
 - Antenatal care (ANC)
 - Type of antenatal care
 - Number of antenatal visits
 - Delivery
 - Place of delivery
 - Assistance during delivery
- Infant feeding practices
 - Prevalence of breastfeeding
 - Present breastfeeding situation
 - Median duration of breastfeeding
- Immunization
- Acute respiratory infection (ARI) and fever
- Diarrhea

The above selection of determinants of early childhood mortality has only been restricted by availability of reliable data. Some of the above determinants like high risk fertility behavior, health care during pregnancy and childbirth are discussed in detail under MDG 5. For the purposes of MDG 4, infant feeding practices and immunization (of children under age 1) against various diseases and infections, are particularly important. These are discussed in the following sections.

2.3. Infant feeding practices

In the mortality analysis of all censuses since 1971, the almost universal practice of breastfeeding in PNG was considered as one of the main reasons why infant mortality in the country is not higher than it is. It has also been hypothesized that the almost universal practice of breastfeeding is a major contributing factor to the rather high “mortality slope” in PNG. Furthermore, prolonged breastfeeding is also one of the important determinants of fertility since it has a widening effect on the birth interval.¹²¹

¹²¹ Prolonged breastfeeding prolongs the duration of postpartum amenorrhea as well.

Because of its importance as a determinant of early childhood morbidity and mortality, several aspects of breastfeeding are discussed in detail in the following subsections. In all these subsections, the situation in 2006 is compared to that in 1996.

- Prevalence of breastfeeding

Table IV-4A, presents the proportion (%) of children born in the three years before the 1996 and 2006 DHS, who were ever breastfed.

The information in this table confirms that, although there has been a marginal decline in breastfeeding in PNG (mainly due to some decline in the Islands and Northern Regions), breastfeeding in PNG can still be considered as almost universal. This applies to women in the rural as well as urban sector. The level of education of women does not seem to play any role in women's decision to breastfeed.

Table IV-4A: Breastfeeding status by geographic sector, region and educational achievement of mother and sex of child in the three years before the 1996 and 2006 DHS.

Characteristics of mother (1)	Ever breastfed (%)		
	1996 DHS (2)	2006 DHS (3)	Change (%) (3)-(2) (4)
Total	97.0	96.1	-0.9
-Males	97.2	96.2	-1.0
-Females	96.7	96.1	-0.6
Geographic Sector			
-Rural	97.2	96.6	-0.6
-Urban	96.1	93.7	-2.4
Region			
-Southern	96.8	96.1	-0.7
-Highlands	96.4	97.8	1.4
-Northern	97.2	95.2	-2.0
-Islands	98.2	94.4	-3.8
Educational achievement			
-No education	96.8	96.4	-0.4
-Grades 1-5	96.5	97.0	0.5
-Grade 6	97.9	96.3	-1.6
-Grade 7+	96.2	95.3	-0.9

Source: Derived from 1996 and 2006 DHS

- Present breastfeeding situation

Table IV-4B presents a picture of the present breastfeeding status by age of child as reported during the 1996 and 2006 DHS. Once again, the figures suggest a marginal decline.

Table IV-4B: Breastfeeding status by age of child (for periods in months) in the three years before the 1996 and 2006 DHS.

Breastfeeding status	0-1	2-3	4-5	6-11	12-23	24-35
Children born in the three years before the 1996 DHS						
Breastfed: Total	100.0	100.0	99.0	96.2	81.0	39.4
-Exclusive	87.7	62.6	34.4	16.3	3.9	0.8
-Breast and plain water	3.1	3.3	3.1	3.5	0.9	0.3
-Breast and supplement	9.2	34.1	61.5	76.3	76.2	38.4
Not breastfed	-	-	1.0	3.8	19.0	60.6
Children born in the three years before the 2006 DHS						
Breastfed: Total	96.9	95.8	95.5	94.4	80.6	43.7
-Exclusive	79.8	57.7	35.4	14.9	5.9	1.9
-Breast and plain water	2.5	5.0	3.2	4.1	1.9	0.9
-Breast and supplement	14.6	33.1	56.9	75.4	72.8	40.9
Not breastfed	3.1	4.2	4.5	5.6	19.4	56.3

Source: Derived from 1996 and 2006 DHS

- Median duration of breastfeeding

This is shown in Table IV-4C. The median duration of “any breastfeeding” has slightly increased whereas the median duration of exclusive breastfeeding has slightly decreased. The duration of “any breastfeeding” is by far the longest in the Highlands Region.

Table IV-4C: Median duration of breastfeeding (months) by geographic sector, region and educational achievement of mother and sex of child in the three years before the 1996 and 2006 DHS.

Characteristics of mother	Any breastfeeding			Exclusive breastfeeding		
	1996 (%) (2)	2006 (%) (3)	Change (3)-(2) (4)	1996 (%) (5)	2006 (%) (6)	Change (6)-(5) (7)
Total	25.4	26.0	0.6	3.3	3.2	-0.1
-Males	25.3	26.4	1.1	3.9	3.4	-0.5
- Females	25.4	25.5	0.1	2.5	3.0	0.5
Geographic Sector						
-Rural	25.8	26.6	0.8	3.6	3.3	-0.3
-Urban	20.4	23.5	3.1	2.2	2.8	0.6
Region						
-Southern	22.5	24.3	1.8	3.4	4.1	0.7
-Highlands	30.0	29.6	-0.4	2.3	2.5	0.2
-Northern	25.2	27.4	2.2	4.6	1.8	-2.8
-Islands	20.9	22.7	1.8	3.5	4.2	0.7
Educational achievement						
-No education	29.4	28.4	-1.0	3.3	2.7	-0.6
-Grades 1-5	24.4	27.5	3.1	3.7	4.2	0.5
-Grade 6	25.4	26.5	1.1	3.8	3.7	-0.1
-Grade 7+	20.7	21.7	1.0	2.3	2.5	0.2

Source: Derived from 1996 and 2006 DHS

2.4. Immunization

Next to breastfeeding, immunization of children against various diseases and infections is an important intervention to reduce early childhood mortality. This is recognized under MDG 4. PNG has a high incidence of tuberculosis, diphtheria, pertussis, tetanus, polio and measles. Many of these diseases and infections but particularly measles and pertussis remain the most deadly diseases, contributing to the high level of morbidity and mortality in early childhood

However, the routine immunization programme of DOH has not been able to keep up with the continuously increasing demands for immunization. Consequently, the department has embarked on an ambitious “Supplementary Immunization Activity” (SIA), promoted by the World Health Organization (WHO). This immunization programme is repeated every two years. The last round was completed in 2008 and the next one will take place in 2010.¹²² In the process, most of the post-vaccination problems of this programme have been resolved due to improved management. Moreover the “cold-chain” problems have also markedly improved. The WHO recommends that all children should receive the following vaccines before their first birthday.

- One dose of BCG vaccine against tuberculosis
- Three doses of DPT vaccine against diphtheria, pertussis and tetanus
- Four doses of polio vaccine
- One dose of measles vaccine

All vaccinations must be recorded on a health card that is given to the parents. During a DHS, this health card must be produced by women in the sample households. Consequently the data on immunization is probably of higher quality than most mortality and morbidity related data in PNG.¹²³

Immunization against pneumonia should also be mentioned. Pneumonia is a very serious but preventable disease that receives relatively little attention. This disease is therefore sometimes referred to as the “forgotten killer”. Pneumonia is the leading cause of death in children under 12 months and second only to malaria in children under the age of 5. The main strategies of the DOH to reduce death from pneumonia are the promotion of public health measures such as good hygiene practices, maintaining a nutritious diet and reducing overcrowding in houses. Moreover three vaccines are available. Two of these, the pneumococcal vaccines are expensive and as a result they are not yet available for routine immunization.

In this section, the change in immunization coverage between 1996 and 2006 for children aged 12 to 23 months is discussed. This includes differential coverage by sex, region and geographic sector.

2.4.1. Immunization coverage by sex

Table IV-5A presents in column (3) and (4), the immunization coverage (%) in 1996 and 2006, respectively. The information applies to children aged 12 to 23 months by

¹²² SIA partners of the DOH are AUSAID, WHO, JICA and UNICEF. SIA covers common preventable diseases that should already have been eradicated, such as measles, polio etc. In 2001-2002, there was a sporadic measles outbreak in Milne Bay, Gulf and Morobe.

¹²³ However, this only applies to immunization during the early childhood years. Immunization later in life is often discontinued.

sex and is presented for five types of vaccines viz. BCG, polio, DPT, hepatitis and measles. Column (5) shows the relative change (%) over the ten-year period and column (6) the average rate of change per annum during this period. Finally, column (7) indicates projected coverage in 2015 for each of the vaccines, if it is assumed that coverage will continue to change at the same rate as during the period 1996-2006.

The following comments refer to the information in Table IV-5A:

- In 1996 as well as in 2006, BCG vaccination coverage was by far the highest (approximately 90 percent). However, BCG vaccination is also the only one of the five types of vaccination for which coverage has decreased marginally during the 1996-2006 period. In this respect, it should be mentioned that BCG should not be given to babies who are known to be infected with the HIV virus in order to avoid BCG induced TB. This type of TB is very hard to treat.
- Coverage of vaccination for polio, DPT, hepatitis and measles has improved during this ten-year period, but far more so in the case of polio and DPT than for hepatitis and measles.
- In 2006, coverage for all five types of immunization is higher for female children than for male children. This is particularly so for polio, DPT and hepatitis. The figures for 1996 do not show this gender difference. The reason(s) for the greater vaccination coverage for female children than for male children in 2006 is (are) unclear.
- If the 1996-2006 trend in immunization continues, coverage for BCG, DPT and measles will, by 2015, reach a level of 80 percent or more. Vaccination for polio and hepatitis will be lagging slightly behind, with coverage of less than 80 percent.

Table IV-5A: Vaccination coverage (%) among children aged 12-23 months by sex in 1996 and 2006 by type of vaccine.

Vaccination (1)	Sex (2)	Coverage (%)		Change 1996-2006		Projected coverage in 2015 (%) (7)
		1996 (3)	2006 (4)	Rel.(%) (5)	r (%) (6)	
BCG	P	90.7	89.5	-1.3	-0.1	88.4
	M	89.4	89.0	-0.4	-0.0	88.6
	F	92.1	90.1	-2.0	-0.2	88.3
Polio (4)	P	46.5	58.2	25.2	2.2	71.2
	M	46.7	56.1	20.1	1.8	66.2
	F	46.2	61.0	32.0	2.8	78.3
DPT (3)	P	46.5	66.8	43.7	3.6	92.5
	M	46.7	64.6	38.3	3.2	86.5
	F	46.2	69.3	50.0	4.1	99.8
Hepatitis	P	57.4	64.5	12.4	1.2	71.6
	M	56.8	62.0	9.2	0.9	67.1
	F	58.1	67.7	16.5	1.5	77.7
Measles	P	75.6	81.5	7.8	0.8	87.2
	M	74.8	80.9	8.2	0.8	86.8
	F	76.6	82.3	7.4	0.7	87.8

Source: Derived from 1996 and 2006 DHS

2.4.2. Immunization coverage by region

The data in Table IV-5B presents immunization coverage by region. The data suggests that for all types of immunization, the Northern Region is left behind.

Table IV-5B: Regional vaccination coverage (%) among children aged 12-23 months by type of vaccine in 1996 and 2006.

Vaccination (1)	Region (2)	Coverage (%)		Change 1996-2006		Projected coverage in 2015 (%) (7)
		1996 (3)	2006 (4)	Rel.(%) (5)	r (%) (6)	
BCG	SR	93.4	92.6	-0.9	-0.1	91.9
	HR	90.7	91.7	1.1	0.1	92.6
	NR	86.9	82.2	-5.4	-0.6	78.2
	IR	93.7	94.2	0.5	0.1	94.7
Polio (4)	SR	49.5	65.2	31.8	2.8	83.5
	HR	45.8	55.6	21.4	1.9	66.2
	NR	41.8	49.2	17.7	1.6	57.0
	IR	52.6	69.6	32.3	2.8	89.6
DPT (3)	SR	49.5	72.7	46.9	3.8	100.0
	HR	45.8	66.9	46.1	3.8	94.1
	NR	41.8	55.4	32.5	2.8	71.4
	IR	52.6	77.8	47.9	3.9	100.0
Hepatitis	SR	64.3	74.1	15.2	1.4	84.2
	HR	49.1	65.2	32.8	2.8	84.2
	NR	55.9	51.6	-7.7	-0.9	48.0
	IR	66.3	73.9	11.5	1.1	81.5
Measles	SR	82.4	83.0	0.7	0.1	83.5
	HR	70.8	85.1	20.2	1.8	100.0
	NR	69.0	72.2	4.6	0.5	75.2
	IR	88.4	88.9	0.5	0.1	89.4

Source: Derived from 1996 and 2006 DHS

2.4.3. Immunization coverage by geographic sector

The data in Table IV-5C confirms the previous findings that coverage of immunization in the urban sector is more complete than in the rural sector.

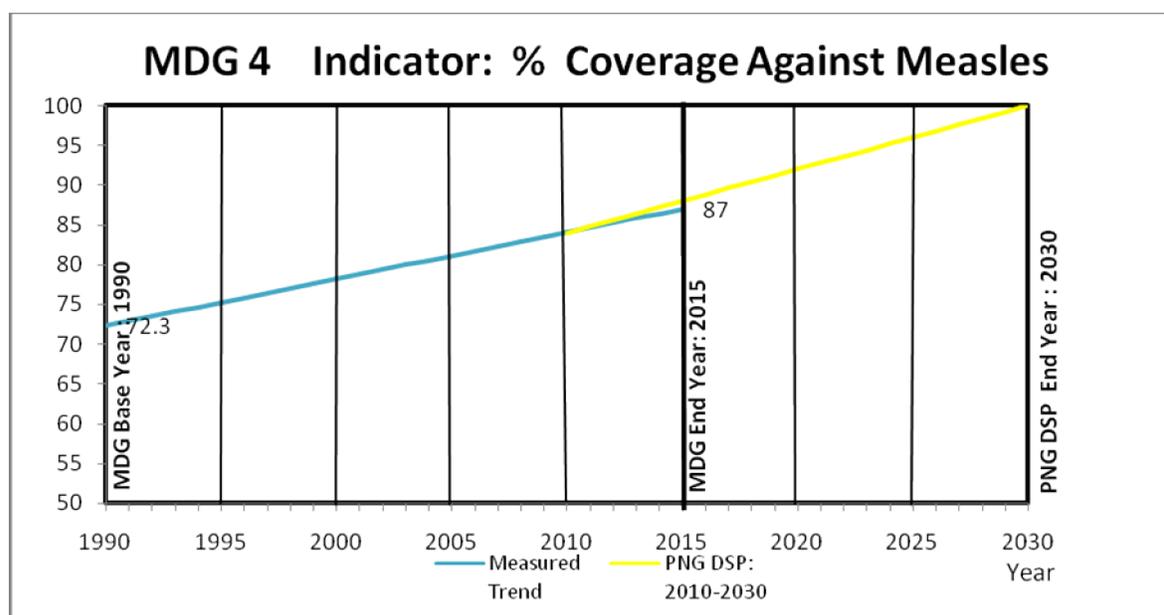
Finally, the trend in immunization against measles since MDG base year 1990 is shown in Figure IV-2. The UNDG has not set a global target for immunization against measles. The 2005-2010 MTDS also did not set a target. However, the PNGDSP 2010-2030 assumes that by 2030 all children will be immunized against measles.

Table IV-5C: Vaccination coverage (%) among children aged 12-23 months by type of vaccine for the geographic sectors in 1996 and 2006.

Vaccination (1)	Geography Sector (2)	Coverage (%)		Change 1996-2006		Projected coverage in 2015 (%) (7)
		1996 (3)	2006 (4)	Rel.(%) (5)	r (%) (6)	
BCG	Rural	89.1	88.3	-0.9	-0.1	87.6
	Urban	98.3	97.2	-1.1	-0.1	96.2
Polio (4)	Rural	40.5	55.8	37.8	3.2	74.5
	Urban	75.6	72.9	-3.6	-0.4	70.6
DPT (3)	Rural	40.5	64.8	60.0	4.7	98.9
	Urban	75.6	79.1	4.6	0.5	82.4
Hepatitis	Rural	52.6	63.1	20.0	1.8	74.3
	Urban	80.7	73.4	-9.0	-0.9	67.4
Measles	Rural	71.7	80.3	12.0	1.1	88.9
	Urban	95.0	88.7	-6.6	-0.7	83.4

Source: Derived from 1996 and 2006 DHS

Figure IV-2: Trend in immunization against measles between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets



Source: DNPM, 2009

2.4.4. Correlation between immunization coverage and infant mortality

Due to the size of the sample, the 2006 DHS, however does not allow the measurement of statistically meaningful indices of immunization coverage at the provincial level. Consequently, using DHS data, it is not possible to establish to what extent immunization coverage is correlated with infant mortality. Correlation between these two variables can, however be established using NHIS data on immunization. The analysis is restricted to immunization against measles and TA (3rd dose) for children under the age of 1.

The basic NHIS data on these two types of immunization at the provincial level suggests that the differences in coverage between the provinces are significant. Moreover, the provincial IMRs indirectly estimated from the 2000 census also show a very large level of variability between the provinces.

The results of the correlation between immunization coverage (X) and the IMR (Y) can be found in Table IV-5D. This exercise shows that, as expected, immunization coverage is indeed negatively correlated with the level of infant mortality. However, the correlation coefficients are not as high as might be expected.¹²⁴ It can however be noted that exclusion of the Autonomous Region of Bougainville (ARB) from the analysis results in a significantly higher correlation coefficient, particularly in the case of TA (3rd dose). The most likely reason for this is that immunization coverage in this province in 2000 was still very much affected by the aftermath of the civil war. The mortality analysis of 2000 census data suggests that the IMR of the ARB, which was the lowest of all provinces in 1980, has, at least until 2000, been less affected than is commonly thought.

Table IV-5D: Correlation between coverage of TA (3rd dose) and measles immunization and infant mortality in 2000.

Parameter	Corr. of coverage. measles vaccination (X) and IMR (Y)	Corr. of coverage. TA vaccination (X) and IMR (Y)
Average X	62.4	62.4
Standard deviation (s)	19.7	19.7
Average Y	54.2	60.1
Standard deviation (s)	13.5	22.2
Y intercept	72.0	93.8
Slope	-0.29	-0.54
Correlation coeff. (all provinces)	-0.42	-0.48
Correlation. coeff. (minus ARB)	-0.49	-0.60

It is also interesting to note that, at the time, some provinces, but particularly Gulf and West Sepik had achieved very low levels of immunization. These are the two provinces, which, since the 1970s, have had the highest level of early childhood mortality and the lowest life expectancy. On the other hand, the level of immunization in the provinces of the Islands Region (except the ARB) in 2000 was much higher than the national average of 53 per cent.¹²⁵ All this supports the view

¹²⁴ A large number of children in PNG still die from measles. However, this exercise suggests that TA immunization is more closely correlated with infant mortality than immunization against measles. TA immunization is, however not a MDG indicator. It also needs to be mentioned that at the time, the drop-out rate between the 1st and 3rd dose of TA was very significant. (For most years between 1990 and 2002 the drop-out rate was close to 30 %)

¹²⁵ Coverage of immunization (%) in PNG between 1995 and 2003 is presented in the following overview:

Imm. Cov. (%)	1995	1996	1997	1998	1999	2000	2001	2002	2003
Measles	42	45	41	51	53	53	48	53	53
TA (3 rd dose)	61	57	46	61	60	59	55	61	68

Source: DOH, 2002, pp. 22-23 and DOH, 2004b, Table 10 and 11.

that immunization coverage and early childhood mortality are probably somewhat higher correlated than the correlation coefficients as shown in Table IV-II-5D.

2.4.5. Final comment

Although 2006 DHS results show that immunization coverage has improved since 1996, coverage can be further improved if the following problems are addressed:

- Delay in vaccine supplies due to law and order problems and poor management of health facilities.
- Further improvement of the cold-chain.

3. Targets and indicators

3.1. Global target and indicators

The United Nations Development Group (UNDG) formulated one very demanding global target with regards to MDG 4. This target is:

Target 4A Reduce by two thirds, between 1990 and 2015, the under five mortality rate

The associated global indicators are:

- 4.1. Under-five mortality rate (U5MR) (‰)
- 4.2. Infant mortality rate (IMR) (‰)
- 4.3. Proportion of one-year old immunized against measles

3.2. National targets and indicators

The 2005-2010 MTDS has formulated two national targets for 2015.

MTDS Target 8 Reduce the infant mortality rate to 44 per thousand by 2015.

The associated national indicator is:

21. Infant Mortality Rate (‰)

MTDS Target 9 Reduce the under five mortality rate to 72 per thousand by 2015

The associated national indicator is:

22. Under Five Mortality Rate (per 1000 live births)

Moreover, the MTDS has formulated two additional indicators associated with early childhood mortality, viz.:

23. Percentage of 1-year old children immunized against measles
24. Percentage of 1-year old children immunized with Triple Antigen (3rd dose) per year

National indicators 23 and 24 are not directly related to the national targets. However, since immunization is a major determinant of early childhood mortality

these indicators are essential for the monitoring of MDG 4. According to 2008 NHIS data, 60 percent of all children under age 1 had received their measles and TA (3rd dose) vaccination.

The national MDG 4 targets and indicators have been reviewed. The proposed re-tailored targets and indicators are discussed in the DACA report on human development and the MDGs. This is part of the preparations for the formulation of the Medium-Term Development Plan 2011-2015.

3.3. Progress towards achieving MDG 4

The analysis in Section 2 indicates that, since MDG base year 1990, there has been a slow progress towards achieving MDG 4. It also concludes that, after the major advances made in the 1970s, the mortality transition has slowed down significantly. The global target for MDG 4 implies that, by 2015, the IMR in PNG has to be reduced to a level of slightly over 20 per thousand. Only six years are left before the first MDG cycle 1990-2015 comes to an end. Considering the present level of early childhood mortality and recent trends it can be concluded that, by 2015, this global target will not be achieved.

The two national (tailored) MDG 4 targets, incorporated in the 2005-2010 MTDS are more realistic than the global target. Table IV-6 shows the progress that has been made towards achieving these national targets. It appears that, in 2010, the national target concerning mortality under the age of five has already been achieved. Moreover, given continuation of present trends, the IMR in 2015 will be very close to the national target. The 2005-2010 MTDS however, has not set any national target for immunization.

Table IV-6: Progress between 1990 and 2010 towards achieving the national targets for early childhood mortality.

National Indicator	Most recent measure			Projected (no change)			Target 2015
	Value	Year	Source/Comments	1990	2010	2015	
Infant Mortality Rate (‰)	57	2006	2006 DHS. This is a minimum estimate	-	53	46	44
Under 5 Mortality Rate (‰)	75	2006	2006 DHS. This is a minimum estimate	-	70	61	72
% of 1 year children immunized against measles per year	61.0	2008	NHIS. 2008 is a SIA year	45	62	69	-
% of 1 year children immunized with Triple Antigen (3rd dose) per year	61.0	2008	NHIS. 2008 is a SIA year	66	61	59	-
Coverage of measles immunization (%)	81.5	2006	2006 DHS. This coverage among children aged 12-23 months old	72	83	87	-

The gaps between the infant and child mortality rates at the sub-national level (e.g. the provinces) have remained as large as they were in the 1970s. During the last 40

years, the enormous differences in mortality between the provinces have repeatedly been stressed. However, if any action has been taken to address this problem, it is not obvious from the results. All interventions (if any) seem to have failed. In 2010, the gap between the more advanced provinces and the ones that are lagging behind remains as large as ever. If the extreme spatial disparity is not addressed, further significant improvement in the mortality situation in PNG is unlikely.

In conclusion, it appears that, since MDG base year 1990, progress towards achieving MDG 4 has been very slow. In official reports, this lack of progress is sometimes obscured by averaging the substantial progress made in the 1970s over the entire period 1970-2010. In reality, substantial progress was mainly concentrated in the first ten years of this 40-year period.

4. MDG 4 specific challenges

All crosscutting challenges, identified by the MDG National Steering Committee and detailed in Part A, Chapter II, affect the achievement of MDG 4. This section only deals with MDG 4 specific challenges.

4.1. General

As in the case of MDG 2 and 3, there are many challenges associated with the achievement of MDG 4 that are only partly related to absent or deficient health legislation, policies and plans or to financial constraints and deficient service delivery. For instance, the high level of fertility, and the pattern of fertility (e.g. births outside the age-range 20-34, teenage pregnancy and inadequate spacing of births) are important challenges for the achievement of MDG 4 (as well as MDG 5).

Furthermore, the gradual erosion of the extended family support network increasingly affects infant and child mortality. Apart from improved legislation and service delivery this challenge requires behavioral change.

Many infants and young children in PNG die from HIV/AIDS and HIV/AIDS related diseases that weaken the immune system e.g. malaria, pneumonia and tuberculosis. The HIV/AIDS epidemic makes it increasingly more difficult to meet the very demanding global target for MDG 4.

Regression analysis based on census and survey data since the 1980s indicates that there is a strong negative correlation between the level of education and literacy of mothers and mortality of their infants and children.

4.2. Legislation/Policy

Some of the bottlenecks in the area of legislation and policy include:

- The formulation of new policies, acts and regulations concerning aspects of MDG 4 (as well as MDG 5) is time consuming.
- The review of some of the existing policies, plans and regulations is overdue.
- There is no overall National Child Health Policy and Plan to guide the implementers at provincial, district and facility level.

Nevertheless, as in the case of MDG 2 and 3, the formulation and review of policies and plans with regard to MDG 4, is less of a challenge than the implementation of these policies and plans. The implementation and policing of certain public health acts and regulations by health authorities as well as partner agencies within and outside of the health sector can only be rated as poor. This affects children's health and well-being. A contributing factor for the poor performance is also that the disciplinary system to hold officers at all levels of governance accountable for poor performance (including not meeting the proposed targets) is weak.

The decentralized government system is widely cited as a serious challenge for the achievement of MDG 4. It is believed that the decentralization of government roles and responsibilities and financing under the Organic Law has compromised the quality and functionality of PNG's health services. The Organic Law needs urgent review and overhaul.

National policy and health plans do not seem to be well aligned. For instance, in the PNGDSP 2010-2030 construction of health facilities in the economic corridors is emphasized. The plans of the DOH for improvement in health care focus on basic health care at the Community Health Post (CHP) level (See Section 6.2).

4.3. Financial

The budget for the health sector is limited. Moreover, funds available for the sector and in particular for the child health programs are poorly prioritized. There is no evidence-based strategic implementation budget identifying all the costs for child health to guide the government and funding agencies. This makes it difficult for policy-makers at the political level to make financial commitment to Child Health Programs. Furthermore, because of financial constraints (as well as problems with accessibility) the supply of medical supplies, drugs, equipment, and other consumables at the point of delivery is insufficient, especially at the GAP level. As a result, primary health care in a large part of the rural sector has become close to non-existent. Meeting the health challenges is also hampered by lack of funding for NGOs, which are actively involved in activities at the grassroots level.

Widespread economic disparity and insecurity is a challenge for the achievement of MDG 4. Generally, there is a high negative correlation between engagement of women in the money earning sector and the level of infant and child mortality of their children.¹²⁶ Furthermore, in many extended families in PNG, the available income has to be spread out over a large number of members.

As shown in Section 2, differences in early childhood mortality at the provincial level remain very large. The spatial disparity is partly related to differences in inaccessibility but also due to allocation of funds. Since 1971, when the enormous differences in childhood mortality at the provincial level were first identified, nothing has been achieved in closing the gaps at the sub-national level. MDG 4 related activities; including those of donor agencies have consistently favored the more "advanced" provinces. This has exacerbated disparity between the provinces. In order to reduce childhood mortality spatial disparity needs to be addressed urgently.

Finally, the capacity in terms of human resource management is not adequate.

¹²⁶ During censuses and surveys, many rural women with children reported that they are mainly engaged in subsistence activities, and not in home duties including looking after children. This may be an additional risk factor for child survival in PNG.

- The work force of the DOH is aging. Replacement of the aging work force is not timely.
- Considering the rapidly growing population, staff ceilings needs to be reviewed.

There is a limited output from training institutions to meet the demands.

In conclusion, due to financial constraints as well as lack of proper prioritization of available funds and mismanagement, the effectiveness of government interventions with regard to MDG 4 is limited.

4.4. Service Delivery

Road access to many villages and clan areas is either non-existent or has deteriorated in the recent past. A visit to the nearest health centre often requires many hours, if not days of travel. More importantly, many GAPS in the rural sector have ceased to operate altogether. In addition, infrastructure and human resource capacity at every level of service delivery is poor. There is often inadequate management of supplies (drugs, equipment and test kits).

Protection against malaria and prompt effective treatment is often not available for many people including pregnant women. Malaria tends to be an important co-factor of infant morbidity and mortality.

Whenever basic health services are available, there is usually a low health worker/population ratio. This applies to all four types of health worker in PNG.¹²⁷ Moreover, many service providers do not implement planned activities.

Access to basic services like water and proper sanitation is often lacking, especially in the rural sector. The 2006 DHS data once again confirms that, in spite of the abundance of fresh water, a very large proportion of the population in PNG is forced to use an unsafe water supply. Contaminated water is a common cause of malaria, diarrhea and dysentery and therefore of infant and child morbidity and mortality. The DOH estimates that improved water supply could lead to a reduction of up to 40 percent of diarrhea mortality.

Regression analysis based on 1980 census data shows that, in the urban sector, there is a high correlation between the level of infant and child mortality and dwelling type. Moreover, infant and child mortality is particularly high for households residing in squatter and other low-class urban Census Units (CU).¹²⁸ It is likely that in recent times the situation has worsened. Access to basic services appears to be limited in squatter settlements.

Finally, law and order problems accompanied by vandalism limits the access to services.

The above challenges severely reduce the access to primary health care at the community level. This makes it difficult to achieve MDG 4.

¹²⁷ In PNG there are four types of health workers viz. doctors, Health Extension officers (HEO), nurses and Community Health Workers (CHW). In the early 1990's the Aid Post Orderlies (APO) were replaced by CHW's.

¹²⁸ Bakker, 1987.

4.5. Monitoring

In PNG, due to data collection, conceptual and methodological problems, monitoring of MDG 4 is not always straightforward. Nevertheless, the problems related to mortality measurement tend to be less serious than in the case of the other demographic processes: fertility and migration. Some of the reasons for this are briefly discussed below.

- Mortality concepts

Mortality concepts are in many ways more straightforward than concepts related to other demographic (and socio-economic) phenomena. For instance, there is no uncertainty about the population “at risk of undergoing the event death”. This is the entire population, or in the case of child mortality, the entire population under the age of five. However, there are significant operational problems with some mortality concepts, especially in censuses and surveys where mortality information is collected retrospectively from respondents. This applies in particular to the concepts of live birth, still birth and maternal death.

- Probability of dying

For every individual member of the population, death occurs once and only once. Moreover, at any age x , the probability of dying, denoted q_x is the complement of the probability of surviving at that age, p_x . The fact that there are only two options “to be or not to be” simplifies the estimation of mortality indices. This is not the case in fertility and migration measurement.

- Choice

In the case of the event death (contrary to birth and migration), human choice plays a rather insignificant role. This further simplifies the monitoring of mortality.

In conclusion, as explained in Section 1, it is not yet possible to obtain statistically meaningful mortality indices from PNG’s CRS and NHIS. All basic mortality indices used for monitoring of early childhood mortality in PNG are indirect estimates based on census/survey data. Although the database for the monitoring of the mortality situation and trends is far from ideal, it is more complete and probably more reliable than that of all other MDGs. This cannot be said about other aspects of MDG 4 where monitoring is weak with a lot of loopholes in the monitoring system. Timeliness of the data also remains a big problem.

Finally, considering the trend in early childhood mortality in PNG since MDG base year 1990, the global MDG 4 target is too high. Setting unrealistic targets and unachievable performance indicators is counterproductive. For effective planning and monitoring it is imperative that realistic and achievable targets be set. National MDG 4 targets for 2015 that are in agreement with the re-tailored MDG targets, will be set in the MTDP 2011-2015 (See DACA report for human development and MDG monitoring).

5. Good practices

Firstly, PNG's comprehensive Child Health Policy (NCHP) for the period 2009-2020 complements the overall National Health Plan and Medium Term Development Framework 2011-2020. In addition a costed Strategic Implementation Plan (2009 – 2020) is in place. These are important prerequisites for the achievement of MDG 4.

As shown in Section 2, disparity in MDG 4 related indicators at the sub-national level (e.g. the provinces) is enormous. Although much of the disparity can be explained by differences in support, access to services and other constraints there are additional, often human factors why some provinces and districts perform reasonably well and others don't. Some of these include:

- Political support and commitment.
- Good communication and understanding among the leaders at the different levels of governance and FBOs, NGOs, Development Partners, private sector and other line agencies and sectors.
- Good leadership at administration and management levels.
- Good community involvement and participation. In the more advanced provinces and districts, there is often good social mobilization and advocacy.
- Effective prioritization of limited financial and other resources.
- Commitment and dedication of the workforce despite resource constraints.
- Child Health Specialists in the provinces taking an active and leadership role in promoting and supporting all child health programs that addresses both curative and public child health issues.
- Good support and advice from child health professional bodies such as Paediatric Society of PNG and Child Health Technical Advisory Committee at the national level.

6. Interventions

6.1. Supporting international environment

PNG is a signatory to the Convention on the Rights of the Child (CRC) and the International Conference on Population and Development (ICPD).

6.2. National interventions

Under the NHP 2011-2020, the DOH intends to replace the government owned Aid Posts with Community Health Posts (CHP). It is expected that these community owned health facilities will perform better since they will have staff of three trained health workers specialized in delivery care, reproductive health and MCH issues, immunization, and advocacy (health education and community awareness). It is envisaged that the CHP concept will go through a trial period in a few provinces before it is rolled out to the remaining provinces.

It is expected that these CHPs, in collaboration with the continuing outreach services of the DOH (through the Health Centres) will significantly improve the health, morbidity and mortality situation in the rural sector, especially in the most inaccessible parts of this sector. However, it is unlikely that the results of these improvements will become visible during the remaining years of the first MDG cycle 1990-2015.

The key national interventions concerning early childhood mortality are safe motherhood, neonatal care, breastfeeding and complementary feeding, micronutrient supplementation and the Expanded Program on Immunization (EPI). These and other interventions are detailed in PNG's National Child Health Policy (NCHP) for the period 2009-2020. This policy complements the overall National Health Plan and Medium Term Development Framework 2011-2020, the successor of the National Health Plan (NHP) 2001-2010.¹²⁹

The NCHP concentrates on the child health component of the overall NHP 2011-2020. It aims at keeping all children healthy from the moment of birth to the age of five. In order to achieve this, it details a number of program areas. The interventions detailed under these program areas will facilitate the achievement of MDG 4. The most important program areas with regard to the achievement of MDG 4 are listed below:

- Integrated management of childhood illnesses (IMCI)

The IMCI provides an effective strategy for training primary health workers in clinical management of common illnesses in children.

- Expanded program of immunization

The analysis in Section 2 indicates that immunization (together with breastfeeding) has prevented many deaths in early childhood. The routine immunization programme of the DOH is supported by a "Supplementary Immunization Activity" (SIA). The SIA partners of the DOH include AUSAID, WHO, JICA and UNICEF. SIA covers common preventable diseases that should already have been eradicated, such as measles and polio. Presently, the SIA is carried out every two years. The last round was completed in 2008 and the next one will take place in 2010. In the process, most of the post-vaccination problems of this programme have been resolved due to improved management. Moreover the "cold-chain" problems have also markedly improved.

Under the new NHP, the SIA will continue and gradually be incorporated in the routine immunization programme of the department. The CHPs that the DOH wants to establish throughout the rural sector will play an important role in the expansion of the immunization programme.

¹²⁹ The CHP is supported by very extensive legislation. Some of these include the National Health Administration Act of 1997, the Organic Law on Provincial and Local Government, the Provincial Health Authorities Act 2007, the Christian Health Services Act and the National AIDS Council (Amendment) Act 2007. Moreover other government departments have also adopted legislation relevant for child health such as the Adoption Law, the Child Welfare Act and the Education law for primary school education.

- Standard treatment and clinical guidelines

These are detailed in the Standard Treatment Book (STB). The STB includes all child health recommendations that are available and used by health workers.

- Neonatal care

In Table IV-3, it was shown that neonatal mortality constitutes approximately 50 percent of infant mortality. Moreover, about 2 in 3 of these neonatal deaths are associated with high risk pregnancy, labour and delivery. Since unsupervised delivery and neonatal sepsis account for the majority of neonatal deaths, the DOH intends to increase its activities in these areas. For instance, one of the three staff members of the future Community Health Posts (CHP) will be a midwife with at least six months of competency based training and certification in midwifery. In addition, the department plans to enhance ANC attendance and its safe motherhood programs.

- Breastfeeding, nutrition and micronutrients

Under MDG 1, it was shown that the rates of child malnutrition in PNG are high and contribute to early childhood mortality. Two thirds of all child deaths are associated with moderate or severe malnutrition. The NCHP promotes exclusive breastfeeding from birth up to six months and supplementary feeding from six months onwards.

- Quality improvement in hospital care

- Pneumonia¹³⁰

In the analysis in Section 2, it was mentioned that acute lower respiratory infection (ARI) is probably the most common cause of serious illness and death in children in PNG and that pneumonia is the most common cause of ARI. It accounts for 30 to 40 percent of all hospitalizations. The future CHPs will include immunization services for pneumonia and also introduce a conjugate vaccine against streptococcus pneumoniae, which is the most important bacterial cause of pneumonia. Once again, promotion of exclusive breastfeeding is also part of the anti-pneumonia strategy.

- Malaria

About 7 percent of early childhood mortality is due to malaria. The NHP contains detailed plans for the reduction of malaria.

- Tuberculosis

TB is another major cause of morbidity and mortality in early childhood. Childhood TB has a high community transmission rate and it presents a large burden of disease. Its association with HIV/AIDS will be discussed under MDG 6.

¹³⁰ Pneumonia, as well as TB and malaria are diseases closely associated with HIV/AIDS. These opportunistic diseases are discussed in detail under MDG 6.

- Child protection in social services

A matter of major concern is the large number of children at risk of neglect and abuse. These include many orphans, adopted infants, displaced children and children living in squatter settlement areas in and near urban areas. In the recent past, the situation has worsened because of the increase in the number of orphans due to HIV/AIDS. The CHP concentrates on improved reporting and documentation of children at risk of child abuse and neglect, using an improved surveillance system. It also offers improved preventative and treatment services for these children.

The future success of the above interventions will to a large extent depend on the establishment of the above mentioned system of Community Health Posts (CHP) throughout the rural sector. As mentioned earlier, the system of Government Aid Posts (GAP), manned by one person (the Aid Post Orderly) has deteriorated over time. At present, a very large proportion of these Aid Posts are, due to a variety of problems, not operational. These problems include: financial constraints, lack of well trained staff, land ownership issues, damage and theft. The lack of access to the most basic health services by a large proportion of the rural population is probably the main reason why the level of morbidity and mortality in PNG remains as high as it is.

Finally, the future role of non-state actors (NGOs, FBOs/churches and private sector etc.) in service delivery needs to be considered. At present, close to 50 percent of health (and educational) facilities are run by FBOs/churches. Without their contribution the health (and education) situation in the country would undoubtedly be far worse.¹³¹ In the coming years, the government intends to improve basic health care delivery further through church-state partnerships, especially in the most isolated parts of the country. Partnering with the private sector is also considered, e.g. in the area of infrastructure.

¹³¹ However, it needs to be realized that the reach of non-state actors, particularly many NGOs tends to be limited. Moreover by supporting non-state actors, government services may further deteriorate. If non-state actors discontinue their services (i.e. after the closure of a mine) government services will have to fill the gap.

V. MDG 5: IMPROVE MATERNAL HEALTH

Maternal health refers to the total wellbeing of women but particularly during pregnancy, labour and childbirth. Since MDG base year 1990, many developing countries have made little progress in improving the health conditions of childbearing women.¹³² Maternal mortality has remained high.¹³³ PNG is one of the countries with a very high level of maternal mortality.

A large proportion of maternal deaths and illnesses are the result of preventable complications of pregnancy and childbirth.¹³⁴ The WHO call to member countries in 1986, to pay more attention to reducing their high level of maternal mortality as well as the high level of disability and illness resulting from pregnancy and childbirth, was therefore certainly timely in the case of PNG.

1. Data base and monitoring

The main data sources for MDG 5 are the same as those for MDG 4:

- Civil Registration System (CRS)
- National Health Information System (NHIS)
- Censuses
- Surveys

Moreover, as in the case of MDG 4, the CRS and the medical records of the NHIS should be, but are not, the primary sources of information concerning maternal health, morbidity and mortality. This section only provides a brief summary of the performance of the MDG 5 database. A more detailed assessment can be found in the DACA report on human development and MDG monitoring.

1.1. Civil Registration System

The death statistics of the CRS should provide a continuous base for the monitoring of maternal mortality. However, most deaths in PNG are not officially recorded by the CRS. Moreover in the case of death certificates of women in the reproductive age range, it is often not clear whether or not the death was due to pregnancy or childbirth. The CRS statistics on cause of death therefore provide a very incomplete and biased picture of maternal death in PNG. To date, CRS statistics cannot meaningfully be used for the monitoring of maternal mortality. This will undoubtedly remain so in the foreseeable future.

¹³² In 2004, the year that the Inaugural MDGR for PNG was produced, the UNFPA estimated that in the decade after the International Conference on Population and Development (ICPD) in Cairo, virtually no progress had been made towards improving maternal health. It was estimated that, in 2004, more than half a million women still died in childbirth each year. In addition to that, about 18 million women were left each year either disabled or chronically ill because of illnesses incurred during maternity.

¹³³ This is the conclusion of a study conducted in 169 countries to review progress since the 1994 ICPD in Cairo. This study reveals that about 40 % of women in developing countries give birth without any medical assistance.

¹³⁴ More precisely, the WHO defines maternal death as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any causes related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.” (WHO, 1997:20).

1.2. National Health Information System

Information on maternal health and mortality is recorded by medical personnel in hospitals and health centres. The information is forwarded on a regular basis to the DOH and incorporated in the NHIS. MDG 5 related indices, including the key index, Maternal Mortality Ratio (MMR) are derived from this data.¹³⁵ Coverage of the NHIS statistics on maternal health and mortality remains very incomplete especially for the rural population. As a result, the NHIS based indices represent an urban and institution biased picture of progress made towards achieving MDG 5. The NHIS based indices must be considered as serious under-estimates of the maternal health, morbidity and mortality situation in the country.¹³⁶

1.3. Surveys

In the absence of complete and reliable estimates of maternal health, morbidity and mortality from the NHIS, a last resort is to collect this information in a Demographic and Health Survey (DHS). In the case of PNG, a maternal mortality module was included in the 1996 and 2006 DHS. The questions in this module were designed in such a way that it would be possible to estimate the MMR indirectly from the data, using the so-called “Sisterhood Method”. This method is only applied in those cases where there is no alternative source of data on maternal death. There are very serious discrepancies in the MMR estimates based on 1996 and 2006 DHS data (See Section 2).

In PNG, the DHS remains the main data source for the estimation of determinants of maternal death e.g. high risk behavior, antenatal attendance, supervised delivery and others.

1.4. Censuses

Questions concerning maternal mortality have been included on the 2010 Census Interview Schedule. However, it cannot be expected that in a census interview situation that this approach will lead to very reliable results. During a census, all information for household members is often provided by one senior member, usually the head of household or his/her spouse.

1.5. Summary

To date, all attempts to measure progress towards achieving MDG 5 in PNG remain unsatisfactory. In the absence of complete and accurate information from the CRS and the NHIS, the only alternative is to estimate relevant indices from survey information. This is particularly difficult in the case of maternal mortality. The estimation of a key index like the MMR by means of the sisterhood method using data collected in a survey is far from ideal.

Finally, all data collecting methods concerning maternal mortality rely on accurate reporting of the cause of death. In PNG, statistics on cause of death are notoriously deficient. Even medical practitioners often classify cause of death incorrectly.

¹³⁵ The MMR is defined as the annual number of deaths of women from pregnancy and childbirth-related causes per 100,000 live births. More precisely, the WHO defines maternal death as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any causes related to pregnancy or its management but not from accidental or incidental causes.” (WHO, 1997:20)

¹³⁶ For instance, in census year 2000, only 212 maternal deaths were recorded nationwide. This is probably not more than about 30 per cent of all maternal deaths that occurred in that year.

2. Situation analysis and trends

2.0 Maternal Mortality

Until recently in PNG, little was known about the level, pattern and trend in maternal health in general and maternal morbidity and mortality in particular. Circumstantial evidence from small scale studies (often health institution based) suggest, however, that maternal mortality remained at a very high level, especially when compared to neighboring countries in the South Pacific Region. The 1986 WHO call to member countries to pay more attention to reducing their high level of maternal mortality as well as the high level of disability and illness resulting from pregnancy and childbirth was therefore certainly timely in the case of PNG. The WHO also recommended that member countries should attempt to produce more reliable estimates of maternal mortality, but especially the Maternal Mortality Ratio (MMR).

The MMR is a complex index and tends to be rather unpredictable. Nevertheless, the MMR is considered as a key index of the maternal health situation in a country. Moreover the MMR, like the average life expectancy at birth (e_0) and the Infant Mortality Rate (IMR), is seen as a crucial indicator of the overall health and development status of the country. As such, it is one of the crucial MDG indices.

In spite of the above recommendations by the WHO and the efforts that have been made ever since, many developing countries seem to have progressed only marginally in eradicating death amongst childbearing women.¹³⁷ The situation is particularly serious in the poorest developing countries where pregnant women lack proper medical care.¹³⁸ Virtually all these deaths and illnesses are preventable complications of pregnancy and childbirth. The monitoring of maternal mortality by means of the MMR has not noticeably improved in most countries. This also applies to PNG.

In 2010, the knowledge of maternal health and particularly maternal mortality remains very limited in PNG. As mentioned in Section 1, in the absence of complete and accurate information from the CRS and the NHIS, the only alternative is to derive indices like the MMR by means of the “sisterhood method” from data collected in a survey. This approach was adopted during the 1996 Demographic and Health Survey (DHS) in PNG. However, the indirect version of this method, which was used in PNG, provides an estimate of the MMR for a time approximately twelve years before the survey in which the data was collected. In other words, the MMR based on the 1996 DHS refers to 1984. This is a point in time which is six years before the baseline year for the MDGs, 1990. The same maternal mortality module that was included in the 2006 DHS.¹³⁹ The MMR estimated from the maternal mortality data in 2006 DHS therefore, refers to 1994.

At this stage, it must be mentioned that the methodology used for the indirect estimation of the MMR from survey data is not very robust. Firstly, indirect estimation of demographic indices from retrospective data almost invariably leads to

¹³⁷ In 2004, the year that the Inaugural MDGR for PNG was produced, the UNFPA estimated that in the decade after the International Conference on Population and Development (ICPD) in Cairo, virtually no progress had been made towards improving maternal health. It was estimated that, in 2004, more than half a million women still died in childbirth each year. In addition to that, about 18 million women were left each year either disabled or chronically ill because of illnesses incurred during maternity.

¹³⁸ This is the conclusion of a study conducted in 169 countries to review progress since the 1994 ICPD in Cairo. This study reveals that about 40 % of women in developing countries give birth without any medical assistance. The figures for PNG can be found in Section III of this paper.

¹³⁹ In 2006 the number of sample households included in the DHS was doubled, compared to 1996 (from 5,000 households to 10,000 households).

under-estimates, especially in the case of mortality.¹⁴⁰ Secondly, in the case of indirect measurement of maternal mortality in a survey that uses the sisterhood method, there are additional reasons to believe that the estimated MMRs are minimum estimates. Some of these reasons include that reporting is done by proxy respondents who may not be completely in the picture with regard to the cause of death of a sister, especially if this death occurred a long time ago. Moreover, these respondents may feel that there is shame attached to the maternal death of a sister, especially in cases where this deceased sister was very young and unmarried, and even more so if her death was related to abortion or HIV/AIDS.

In sum, even under the most favorable circumstances, the MMR is often biased in unpredictable ways. Moreover, if measured indirectly by means of the sisterhood method in a survey, the MMR is not a current estimate. It refers to the maternal health and mortality situation 12 years before the survey. “For these reasons, sisterhood studies cannot be used to monitor changes in maternal mortality nor to assess the impact of safe motherhood programmes in the short term.”¹⁴¹

One may therefore ask why PNG continues to resort to such questionable methodology as the sisterhood method for the measurement of an important health, mortality and development indicator like the MMR. The simple answer is that there is, at the moment, no feasible alternative. Since it cannot reasonably be expected that PNG’s CRS will start producing complete and reliable statistics in the foreseeable future, the ball is clearly in the court of the NHIS. In this regard, prospects are, however not very promising since recent NHIS estimates are even more urban/institution biased than they were in MDG base year 1990.

It was hoped that the 2006 DHS would at least provide a clear indication of progress made towards achieving MDG 5 during the period 1984-1994. This is not the case. The analysis based on 1996 and 2006 DHS data concerning maternal mortality has yielded very different estimates of the MMR. The MMR estimated from the 1996 DHS (referring to 1984) was 370 per 100,000 live births whereas the MMR estimated from the 2006 DHS (referring to 1994) is 733 per thousand live births. These figures suggest that maternal mortality almost doubled during the ten-year period. Once again, these astounding results should be considered in the light of the global target set by the UNDG concerning maternal mortality, which is to reduce the MMR by 75 percent between base year 1990 and target year 2015.

The trend in the MMR based on the 1996 and 2006 DHS has raised quite a few eyebrows the more so since the analysis based on 1980, 1990 and 2000 census data indicates that overall mortality of females in the reproductive age range (and that of their new-born children) has marginally decreased during this period. One would expect some correlation between the trend in maternal mortality and overall female mortality in the reproductive age range 15 to 49. This is not at all the case.

The 2006 DHS Report does not offer any “explanation” for the enormous increase in maternal mortality during the ten-year period 1984-1994. This issue has been analyzed in more detail in the DACA report on human development and MDG monitoring. The provisional conclusion is that although the quality of the maternal mortality data from both surveys is probably not very high, it is likely that the MMR estimated from the 2006 DHS is more reliable than the one estimated from the 1996

¹⁴⁰ For instance, estimates of infant and child mortality indirectly derived from census/survey lifetime fertility questions in PNG censuses and demographic surveys, must be considered as minimum estimates since women tend to be more inclined to omit dead children than children that are still alive from their lifetime fertility reports.

¹⁴¹ WHO, 1997:8

DHS. Consequently it is assumed that the MMR of 733 per 100,000 live births represents the maternal mortality situation at the start of the MDG cycle 1990-2015.

In spite of the uncertainty about the precise level of maternal mortality in PNG, there is little doubt that each year a very large number of women die from complications during pregnancy and childbirth. Of the reported maternal deaths, most occur in the 24-48 hours surrounding delivery.¹⁴² The most common cause of these maternal deaths remains obstetric hemorrhage. Unsafe abortion also poses a great risk for maternal mortality. Moreover, many maternal deaths in PNG are malaria and HIV related. According to the DOH, between 88 and 98 percent of maternal deaths are preventable.

Furthermore, based on NHIS data, it is estimated that about 15 percent of antenatal women develop complications and an additional 15 percent of pregnant women develop some complication in labour or delivery. Another 15 percent experience some problem during the post-partum period of 6 weeks.

Finally, in 2010, a large proportion of all pregnant women do not attend an antenatal clinic and supervised delivery remains low (see the following sections). Consequently, many women die from complications before, during and after delivery such as miscarriages, breech, transverse, bleeding, retained placenta and other complications. The relatively high proportion of unplanned and teenage pregnancies further increases the risk of maternal death. The number of deaths due to abortions carried out in unsanitary conditions is not known.

The trend after 1994, based on 2006 DHS indices related to maternal health such as high risk fertility behavior, antenatal care, supervised delivery, contraceptive prevalence and need for family planning services, is discussed in the following sections.

2.1. High risk fertility behavior

The MDGs are concerned with fertility in as far as it affects maternal health and mortality. Surprisingly, the list of global and national MDG indicators does not include a measure of the level of fertility. However, for MDG monitoring, and especially monitoring of MDG 5, it is important to take into account the change in the level (as well as the pattern) of fertility. The most convenient index of the fertility level is the total fertility rate (TFR). Change in the TFR at the regional and provincial level between 1980 and 2006 is depicted in Table V-1.

¹⁴² Maternal deaths occur on average in

- 2 hours from post-partum hemorrhage
- 12 hours from ante-partum hemorrhage
- 2-4 days from obstructed labour
- 6-10 days from puerperal sepsis

Table V-1: Total Fertility Rates at the regional and provincial level derived from the 1980 and 2000 Censuses and the 2006 DHS.¹

Geographic Subdivisions	1980 Cen.	2000 Cen.	2006 DHS	Geographic Subdivisions	1980 Cen.	2000 Cen.	2006 DHS
Papua New Guinea	5.4	4.6	4.4				
• Rural	5.4	4.7	4.5				
• Urban	5.1	3.8	3.6				
Southern Region	5.7	4.7	4.5	Northern Region	5.6	5.2	5.0
• Western	5.4	5.6	-	• Morobe	5.4	4.6	-
• Gulf	5.4	5.6	-	• Madang	5.9	5.6	-
• Central	5.8	4.9	-	• East Sepik	5.8	5.4	-
• NCD*	5.0	3.5	-	• West Sepik	5.5	5.6	-
• Milne B.	5.9	4.8	-				
• Northern	6.0	5.5	-				
Highlands Region	4.8	4.4	3.9	Islands Region	6.3	5.2	4.6
• Southern H.	5.0	4.5	-	• Manus	5.3	4.6	-
• Enga[@]	4.9	4.2	-	• New Ireland	6.2	5.4	-
• Western H.	4.8	4.3	-	• East N. Brit.	6.0	5.0	-
• Chimbu	4.3	3.9	-	• West N. Brit.	7.0	5.6	-
• Eastern H.	4.7	4.4	-	• ARB	6.6	5.1	-

Source: 1980 Bakker, 1986b. 2000: NSO, 2003. 2006: 2006 DHS

Note: ¹ Due to the sample size of the 2006 DHS, the sampling errors of the TFRs at the provincial level are too large for a meaningful interpretation.

The TFRs in this table indicate that, although the fertility transition started in the 1980s, progress so far has been relatively slow, particularly in the Northern Region. However, the significant gaps between the level of fertility at the regional and provincial level have narrowed. However, in 2010, the level of fertility in most provinces remains high. This has an impact not only on maternal health and mortality but also on the survival chance of their children.

There is a strong correlation between the characteristics and fertility behavior of women and the probability of survival of their children. There is convincing evidence from many countries that women with the following characteristics are at a greater than average risk of dying during pregnancy or childbirth:

- Women who give birth outside the age range 20-34.
- Women who give birth within 24 months after the birth of a previous child. In other words, the birth interval is less than 24 months.¹⁴³
- Births to high parity women. These are women who have already four or more children when they give birth.

Once again, the risk of dying is not only greater for women with these characteristic but also for their children. Consequently, the above three factors also need to be considered under MDG 4.

¹⁴³ Birth interval is the interval between the births of two siblings.

It has always been assumed that the above risk factors make an important contribution to the high maternal as well as early childhood mortality rates in PNG. With regard to early childhood mortality, there is some evidence going back to the 1980 Census. A differential mortality analysis based on data from this census indicated that there is a correlation between certain socio-economic characteristics of mothers and the death of their children in early childhood. For instance, it is shown that children born to women in one or more of the following categories have a higher than average risk of dying in early childhood.

- Women with no formal education or a very low level of formal education.
- Women with no money income.
- Women belonging to certain religions.
- Women classified as non-migrants.

As expected, early childhood mortality is also strongly correlated with the type of dwelling the family occupies as well as the Census Unit (CU) type where the dwelling is located.¹⁴⁴

Fortunately, since the results of the 1996 DHS became available, more is known about the relationship between early childhood mortality and age of mother, birth spacing and birth order. Since the 2006 DHS provides the same information, an assessment can be made on how high-risk fertility behavior has changed between 1996 and 2006.

2.1.1. Age of mother at first birth

The age of the mother at first birth is an important indicator because of its relationship to several demographic and socio-economic factors. For instance, in many countries, a delay in the first birth is an important determinant of the fertility transition in the country. This index also has important consequences for education, health and maternal and early childhood mortality.

Table V-2A compares the median age at first birth for mothers 25-49 years by geographic sector, region and level of education of mother in 1996 and 2006. The data shows that there has been a very marginal decrease in the age of mother at the time of her first birth. This equally applies to women in all four regions as well as for those in the rural and urban sector. As expected, the only group of women that is not affected by this marginal decrease is made up of the better educated ones (those who completed at least class 7).

¹⁴⁴ Bakker, 1986a:16-31.

Table V-2A: Median age at first birth (years) by geographic sector, region and educational achievement of mothers aged 25-49 in 1996 and 2006.

Characteristics of mother	1996 DHS	2006 DHS	Change (%)
(1)	(2)	(3)	(3)-(2)
			(4)
Total	21.0	20.8	-0.2
Geographic Sector			
-Rural	21.1	20.9	-0.2
-Urban	20.9	20.8	-0.1
Region			
-Southern	20.7	20.6	-0.1
-Highlands	20.9	20.7	-0.2
-Northern	21.6	21.3	-0.3
-Islands	21.0	20.9	-0.1
Educational achievement			
-No education	21.0	20.7	-0.3
-Class 1-5	20.8	20.5	-0.3
-Class 6	21.1	20.8	-0.3
-Class 7+	21.5	21.5	0.0

Source: Derived from 1996 and 2006 DHS

2.1.2. Adolescent fertility

Adolescent fertility refers to births (and pregnancies) of women under the age of 20. In other words, it refers to teenage pregnancy and motherhood. However, since in both the 1996 and 2006 DHS, information was collected from women aged 15 – 49, the concept of adolescent fertility in this paper is restricted to women in the age group 15-19.

Table V-2B presents the proportion of women aged 15-19 who, at the time of the 1996 and 2006 DHS were already mothers or pregnant with their first child. The information is provided by geographic sector, region and level of education. Columns (2) and (6) refer to women pregnant with first child whereas the “total” columns (4) and (7) refer to all women who had, in 1996 and 2006, started childbearing.

The following comments refer to the information in Table V-2B:

- Although in 1996 as well as 2006, the proportion of women 15-19 that had started childbearing is very high, there has, at least at the national level, been a marginal improvement.
- The improvement is, however, entirely due to improvement in the Islands Region and Northern Coastal Region, whereas the situation in the Southern Coastal Region and in the Highlands Region has deteriorated.
- As expected, the slight improvement mainly occurred in the urban sector.

Table V-2B: Proportion (%) of women aged 15-19 who in 1996 and 2006 were mothers or pregnant with their first child by geographic sector, region and educational achievement.

Characteristics of women (1)	1996 DHS			2006 DHS			Change (Total) (7)-(4) (8)
	Mothers (%) (2)	Pregnant (%) (3)	Total (%) (4)	Mothers (%) (5)	Pregnant (%) (6)	Total (%) (7)	
Total	11.1	2.7	13.8	10.4	2.5	12.9	-0.9
Geographic sector							
-Rural	10.6	3.3	13.9	10.6	3.0	13.7	-0.2
-Urban	12.9	1.0	13.8	9.0	3.5	12.5	-1.3
Region							
-Southern	14.4	1.2	15.6	12.7	4.1	16.8	1.2
-Highlands	8.2	4.3	12.4	9.6	4.1	13.7	1.3
-Northern	11.4	3.0	14.3	10.5	2.5	12.8	-1.5
-Islands	10.7	1.8	12.5	9.4	0.7	9.7	-2.8
Education							
-No educ.	17.9	5.1	23.1	16.8	3.6	20.8	-2.3
-Class 1-5	9.0	1.3	10.3	9.6	3.3	13.0	2.7
-Class 6	12.1	3.9	16.0	10.9	2.3	13.2	-2.8
-Class 7+	11.1	2.7	13.8	8.4	2.8	11.2	-2.6

Source: Derived from 1996 and 2006 DHS

The pattern of childbearing of these very young women 15-19 by level of education is not what many would expect. The situation has improved for women with no education at all and for those who have at least completed class 6. For women who have completed class 1 to 5, the situation has deteriorated. However this seemingly odd result is in line with findings from a fertility analysis based on 1980 census data that showed that women over the age of 15 with no formal education at all and those with secondary and tertiary level of education had a significantly lower level of fertility than those with a small amount of formal education (not completed primary school). For women with a higher level of education, this result is expected since many of them had (in 1980) probably been exposed to Mother and Child Health (MCH) and family planning activities. This was probably not the case for women with no education and those with very little education. The difference in the fertility behavior of these two sub-groups of women may be that the majority of women with no education at all had stayed in the traditional environment where they were born (and remained exposed to traditional taboos all their life) whereas a significant proportion of those with a bit of education had been exposed to modern influences including more risky fertility behavior.¹⁴⁵

2.1.3. Birth interval

A short birth interval (especially a birth interval that is shorter than 24 months) is another important determinant of morbidity and mortality for mothers as well as their children. This is partly related to the fact that a short birth interval leads to a shorter period of breastfeeding and often also to otherwise poorer nourishment. A

¹⁴⁵ Bakker, 1986b:86-89

short birth interval is an equally important determinant of early childhood mortality (See MDG 4).

Table V-2C provides information regarding short birth interval (less than 24 months) since previous birth for non-first births in the five year period before the 1996 and 2006 DHS. The information is presented by geographic sector, region and educational achievement of mothers.

Between 1996 and 2006, the proportion of women who had a child within 24 months from the previous birth, has marginally increased. The proportion in the rural sector is significantly higher than that in the urban sector. Moreover, since the inter-survey increase is far more significant in the urban sector than in the rural sector, the gap between the two geographic sectors has increased. Once again, one reason for this may be that the fertility behavior of traditional rural women is still more controlled by customs and traditions. Another contributing factor may be that, although breastfeeding of young children is still almost universal in PNG, the proportion of “ever-breastfed” children in the rural sector is higher than that in the urban sector. Moreover, the two surveys also indicate that rural women breastfeed longer than urban women.

2.1.4 Summary

Women in PNG facing a higher than average risk of maternal morbidity and mortality include those:

- At extremes of the reproductive age range. More specifically, this refers to women who give birth outside the age range 20-34.
- Who have had more than 4 pregnancies.
- With a birth interval of less than two years.
- Who are sick from anemia, cardiac disease, TB and HIV.

Table V-2C: Short birth interval (less than 24 months) since previous birth for non- first first births in the five year period before the 1996 and 2006 DHS by geographic sector region and educational achievement of mothers.

Characteristics of women (1)	No. of months since previous birth (1996 DHS)			No. of months since previous birth (2006 DHS)			Change (Total) (7)-(4) (8)
	7-17 months (%) (2)	18-23 months (%) (3)	< 24 months (%) (4)	7-17 months (%) (5)	18-23 months (%) (6)	< 24 months (%) (7)	
Total	10.0	15.1	25.1	12.9	13.7	26.6	1.5
Geographic Sector							
-Rural	10.0	14.7	24.7	12.6	13.3	25.9	1.2
-Urban	9.9	17.4	27.3	15.2	16.5	31.7	4.4
Region							
-Southern	10.1	15.3	25.4	13.4	15.6	29.0	3.6
-Highlands	9.5	13.9	23.4	11.4	10.8	22.2	-1.2
-Northern	10.7	16.3	27.0	14.5	13.8	28.3	1.3
-Islands	9.4	15.5	24.9	13.0	17.7	30.7	-5.8
Education							
-No educ.	9.9	14.8	24.7	12.8	11.5	24.3	-0.4
-Class 1-5	10.4	14.9	25.3	14.1	13.7	27.8	2.5
-Class 6	10.0	14.7	24.7	11.7	15.2	26.9	2.2
-Class 7+	9.8	17.5	27.3	13.7	16.7	30.4	3.1

Source: Derived from 1996 and 2006 DHS

2.2 Antenatal care (ANC)

The NHIS provides some information on ANC attendance. Moreover, important indicators of antenatal care, for which information is available from both the 1996 and 2006 DHS include:

- Type of antenatal care during pregnancy,
- Number of antenatal visits and timing of the first antenatal visit,

During both surveys, this information was collected from all women in the reproductive age range (15-49) who had one or more live birth in the five years preceding the survey.

2.2.1 ANC attendance information from the NHIS

Table V-3A presents the percentage of pregnant women attending an antenatal clinic (ANC) in the years 1995 to 2008. In addition, it also shows the proportion of supervised deliveries in health facilities or by a trained village attendant during the same years.

Table V-3A: Proportion (%) of pregnant women attending an antenatal clinic and proportion (%) of deliveries in health facilities between 1995 and 2008.

Year	ANC attendance (%)	Supervised Delivery (%)
1995	68	42
1996	58	28
1997	61	41
1998	63	41
1999	60	40
2000	58	41
2001	54	38
2002	55	38
2003	56	37
2004	58	38
2005	59	37
2006	58	38
2007	59	37
2008	60	39

Source: NHIS 1995-2008

Between 1995 and 2003, the proportion of pregnant women attending an ANC has slightly decreased. Disparity at the provincial level is once again large. In 2008, the provinces with antenatal clinic attendance higher than the national average of 60 percent include the NCD, Western, Milne Bay, Madang and all provinces of the Islands Region. The provincial figures are to some extent biased due to the fact that ANC attendance is recorded by province of attendance and not by province of usual residence.¹⁴⁶ Nevertheless, the antenatal clinic attendance figures for the provinces are obviously closely correlated with the provincial IMRs.

2.2.2 Type of antenatal care

ANC data collected during the 1996 and 2006 DHS is more reliable than that provided by the NHIS. The survey data on antenatal care is summarized and compared in Table V-3B. During these surveys, women in the reproductive age range (15-49) provided information on antenatal care providers during pregnancy in the three years before the survey.

¹⁴⁶ Much information in PNG is affected by the same bias, e.g. the birth and death registration data from the CRS and the HIV/AIDS data of the NHIS and National AIDS Council Secretariat (NACS) (See MDG 6). This information tabulated by province of recording conveys the wrong message and it tends to undermine the confidence of users in these indices

Table V-3B: Antenatal service providers during pregnancy in the three years preceding the 1996 and 2006 DHS by geographic sector.

Antenatal service providers during pregnancy ¹	1996 DHS			2006 DHS		
	Total (%)	Rural (%)	Urban (%)	Total (%)	Rural (%)	Urban (%)
All pregnancies	100.0	100.0	100.0	100.0	100.0	100.0
Trained medical personnel	77.5	73.7	94.8	79.3	77.0	93.6
-Doctor	10.3	6.3	28.3	10.7	6.5	36.7
-Nurse ²	67.2	67.4	66.5	66.8	68.4	56.7
-Midwife	-	-	-	1.3	1.5	0.0
-VHV ³	-	-	-	0.5	0.6	0.2
Traditional Birth Attendant	0.9	0.9	0.5	0.6	0.7	0.4
Female relative	-	-	-	1.2	1.4	0.4
Other	1.6	1.9	-	0.7	0.8	0.4
No one and not reported	20.0	23.5	4.7	18.0	20.0	5.4

Source: 1996: NSO, 1997, 2006, 2009: NSO

Notes: ¹ Some respondents reported more than one type of antenatal service. In these cases, the service provider with the highest qualification has been included in this table.

² In the 1996 DHS Report, nurses and midwives are lumped together

³ VHV is Trained Village Health Volunteer

The following comments refer to the information in Table V-3B. Between 1996 and 2006:

- Antenatal care provided by trained medical personnel has marginally increased in the rural sector and marginally decreased in the urban sector.
- In a large majority of all cases where antenatal care is provided by trained medical personnel, the service provider is a nurse.
- The figures for the rural sector in 1996 and 2006 are very similar. However, in the urban sector, there has been a marked shift from nurses to doctors.
- The proportion of cases where no antenatal care is provided has decreased marginally but remains high, especially in the rural sector.

Overall, the data in Table V-3A presents a picture of marginal improvement. It is therefore likely that the impact of the type of antenatal care on early childhood mortality during the inter-survey period has also been marginal.

2.2.3. Number of antenatal care visits

Another important indicator of antenatal care is the number of antenatal visits made during pregnancy. Infants, born to mothers who sought regular antenatal care during the entire period of pregnancy until delivery, tend to have a lower than average risk of dying in early childhood.

Table V-3C presents an overview of the number of antenatal care visits in the three years before the 1996 and 2006 DHS. In 2006, the median number of visits of those who sought antenatal care during the reference period is 4.0. This is the number, presently recommended by the DOH in PNG. Between 1996 and 2006, the median number of visits decreased from 5.1 to 4.0.

Table V-3C: Antenatal care visits during pregnancy in the three years before the 1996 and 2007 DHS.

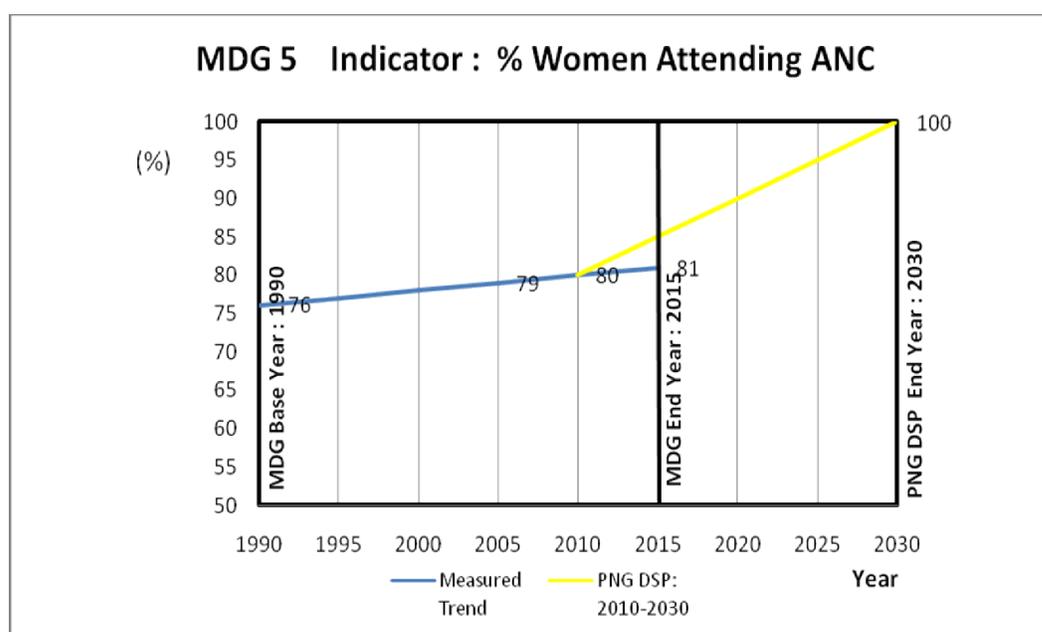
Number of ANC visits	1996 DHS (%)	2006 DHS (%)
Total	100.0	100.0
None	20.0	16.2
1 visit	4.7	3.8
2-3 visits	18.8	15.3
4+ visits	48.9	54.9
Don't know	7.5	9.7
Median number of visits	5.1	4.0

Source: Derived from 1996 and 2006 DHS

The WHO recommends 12 ANC visits. The proportion with four or more visits has indeed increased between 1996 and 2006 but this has not led to an increase in the median number of visits.

Finally, the trend in antenatal care since MDG base year 1990 is depicted in Figure V-1. Since 1990, the provision of antenatal care has improved only marginally. Consequently, it is unlikely that, during this period the impact of this factor on early childhood mortality has been significant.

Figure V-1: Trend in antenatal clinic attendance between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



Source: DNPM, 2009

2.3 Supervised delivery

Some information is once again available from the NHIS. The proportion of deliveries that, according to NHIS data, occurred in a health facility is presented in Table V-3A. It suggests that supervised delivery decreased slightly during the period 1995 – 2008. In 2008, only 39 percent of all pregnant women gave birth in hospitals and health centres with medical personnel in attendance. In that year, the provinces that scored higher than the national average are the NCD, Western, Milne Bay and all provinces in the Islands Region.

The majority of pregnant women gave birth without any medical supervision. Moreover, even in many rural health facilities there is often a lack of properly trained midwives. Because of the urban/institution bias in the NHIS data, this information should once again be considered with the necessary caution.

Important and probably more reliable indicators of delivery, for which information is available from both the 1996 and 2006 DHS include:

- Place of delivery.
- Assistance during delivery.

During both surveys, this information was collected from all women in the reproductive age range (15-49) who had one or more live birth in the five years preceding the survey.

2.3.1 Place of delivery

The place of delivery (and its level of medical attention and hygiene) is another determinant of maternal and infant death. The information derived from the 1996 and 2006 DHS is presented in Table V-4A. It will be noted that in this particular case, the 2006 DHS provides significantly more detailed information than the 1996 DHS.

Once again, the available information suggests that relatively little has changed during the inter-survey period. Consequently, it is unlikely that its impact on death during infancy has changed significantly. The figures also indicate that the rural-urban gap between the proportions of women giving birth in a health facility remains large.

Table V-4A: Place of delivery of live births in the three year period preceding the 1996 and 2006 DHS by geographic sector.

Place of Delivery	1996 DHS			2006 DHS		
	Total (%)	Rural (%)	Urban (%)	Total (%)	Rural (%)	Urban (%)
All places	100.0	100.0	100.0	100.0	100.0	100.0
All health facilities	51.0	42.9	87.4	51.8	45.9	88.5
• Health facilities government	-	-	-	36.6	29.8	79.5
-Hospital	-	-	-	25.5	17.8	74.3
-Health Center	-	-	-	10.5	11.4	4.8
-Aid post	-	-	-	0.6	0.6	0.4
• Health facilities church	-	-	-	14.2	15.5	5.4
-Hospital	-	-	-	3.6	3.7	2.3
-Health Center	-	-	-	10.3	11.4	2.9
-Aid post	-	-	-	0.3	0.4	0.2
Private Practitioners	-	-	-	1.0	0.6	3.6
Delivery at home¹	47.4	55.4	11.8	45.7	51.4	10.0
Other	1.6	1.8	0.8	2.5	2.7	1.6

Source: 1996: NSO, 1997

2006: NSO, 2009

Note: ¹ In 2006, delivery at home includes a small number of deliveries at another home

2.3.2. Assistance during delivery

Change in assistance during delivery during the 1996-2006 inter-survey period (shown in Table V-4B) should be closely correlated with place of delivery. Indeed, the data points are once again at relative stagnation.

There is one issue that needs further clarification. According to popular belief, assistance during delivery in the rural sector of PNG is often provided by traditional birth attendants (TBA). However, the data suggests that TBAs provide these services in only a relatively small proportion of rural births. The main provider of assistance during delivery in the rural sector remains a female relative. Somewhat surprisingly, the female relative even continues to play a significant role during deliveries in the urban sector. The TBA is not an official medical designation. It is not clear, how one gets this status and whether the same criteria are applied throughout the country. It is possible that, in the reports of survey respondents, there is considerable overlap between the concepts of TBA and female relative.

The trend in supervised delivery between MDG base year 1990 and 2010 is shown in Figure V-2. Once again, although during this period supervised delivery has marginally improved, the overall picture is again one of stagnation. According to the PNGDSP 2010-20150, the situation will change drastically during the next 20 years. The plan states that by 2030, all births in PNG will be supervised by qualified medical staff.

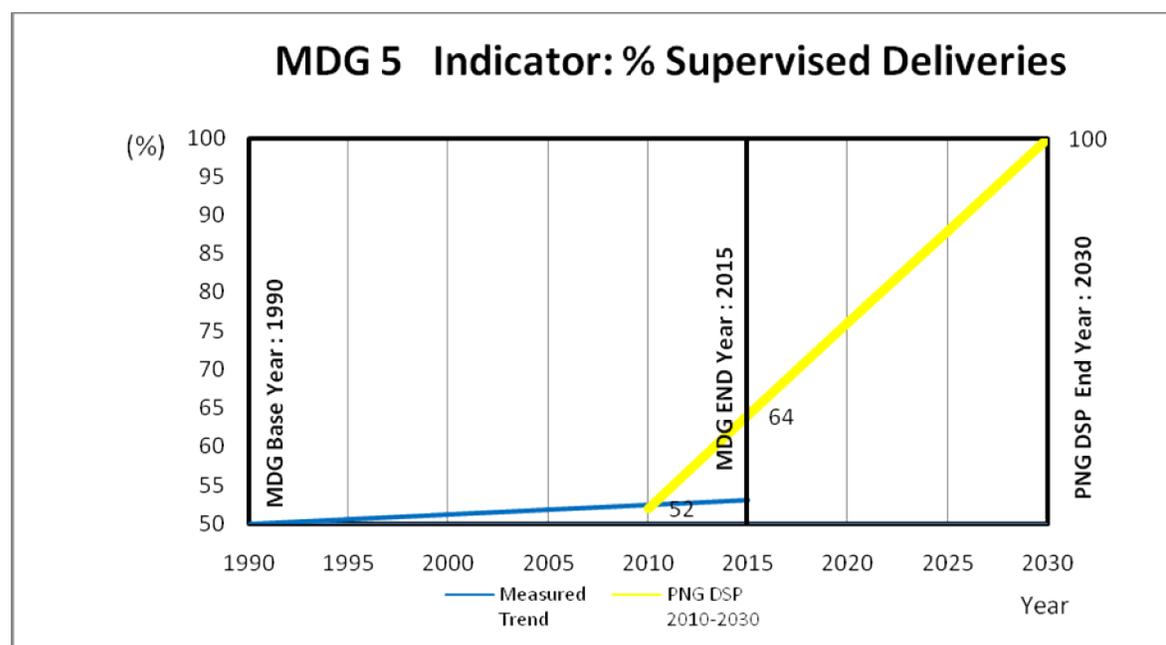
Table V-4B: Assistance during delivery of live births in the three year period before the 1996 and 2006 DHS by geographic sector

Assistance during delivery	1996 DHS			2006 DHS		
	Total (%)	Rural (%)	Urban (%)	Total (%)	Rural (%)	Urban (%)
All births	100.0	100.0	100.0	100.0	100.0	100.0
Trained medical personnel	55.1	45.0	89.5	54.0	48.6	88.5
-Doctor	6.0	3.1	18.8	8.8	5.1	32.4
-Nurse	47.2	41.9	70.7	40.4	39.0	49.6
-Midwife ¹	-	-	-	3.8	3.4	6.1
-Trained VHV	-	-	-	1.0	1.1	0.4
Traditional Birth Attendant	4.4	5.3	0.8	4.2	4.9	0.4
Female relative	26.0	30.5	6.0	28.5	32.0	6.2
Other	6.2	7.2	1.8	4.5	4.8	2.0
No one and not reported	10.2	12.0	1.8	8.8	9.8	2.8

Source: 1996: NSO, 1997, 2006: NSO, 2009

Note: ¹ In the 1996 DHS Report, nurses and midwives are lumped together

Figure V-2: Trend in supervised delivery between MDG base year 1990 and compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



Source: DNPM, 2009

2.4 Other variables related to maternal health

Initially, the UNDG formulated only one target associated with MDG 5. This target focused on maternal mortality. Recently, a second target referring to reproductive health has been added. The indicators associated with this additional target do not

only refer to antenatal coverage but also to contraceptive prevalence, unmet need for family planning and adolescent fertility. Adolescent fertility has already been covered in a previous section. Contraceptive prevalence and unmet need for family planning are briefly discussed in the following sub-sections.

2.4.1 Contraceptive prevalence

The proportion of women and men, aged 15-49 by marital status using any family planning method or any modern family planning method is presented in Table V-5. However, the information for men is only available from the 2006 DHS.

The results indicate that, although contraceptive prevalence has increased between 1996 and 2006, it remains low for females and only marginally higher for males.

Table V-5: Proportion (%) of women and men aged 15-49 by marital status and use of family planning in 1996 and 2006 and projected to 1990 and 2010.

Category	Any method				Any modern method			
	1996 (%)	2006 (%)	Projected		1996 (%)	2006 (%)	Projected	
			1990 (%)	2010 (%)			1990 (%)	2010 (%)
All women	19.8	24.1	17.6	25.6	14.8	17.9	13.2	19.0
Currently married women	25.9	32.4	22.6	34.7	19.6	24.3	17.2	25.9
All men	-	27.5	-	-	-	19.0	-	-
Currently married men	-	38.5	-	-	-	25.5	-	-

Source: 1996 and 2006 DHS data from 1996 and 2006 DHS

2.4.2. Need for family planning services

This information is available from the 1996 and 2006 DHS but only for currently married persons age 15-49. Moreover, in 1996, the information is only available for females. The information is presented in Table V-6. Overall, between 1996 and 2006, the unmet need for family planning has slightly decreased.

Table V-6: Proportion (%) of currently married women and men with unmet need for family planning services in 1996 and 2006 and projected to 1990, 2010 and 2015

Geographic Sector	Sex	1996 (%)	2006 (%)	Projected		
				1990 (%)	2010 (%)	2015 (%)
All Sectors	F	29.3	27.4	30.5	26.9	25.8
	M	-	19.8	-	-	-
Rural Sector	F	30.7	27.2	33.0	26.2	24.4
	M	-	20.7	-	-	-
Urban Sector	F	23.4	24.6	22.7	25.0	25.7
	M	-	17.3	-	-	-

Source: 1996 and 2006 data from the DHSs in those two years

2.5 Trend in maternal mortality

The maternal mortality rate (MMR) is the most important indicator for the monitoring of progress towards MDG 5. However, little hard evidence is available as to the present and actual level in maternal mortality. As already mentioned, it is very unlikely that the enormous increase in maternal mortality between 1984 and 1994, suggested by the 1996 and 2006 DHS data, represents the real maternal mortality trend during that period. In the previous sections, it was shown that all other evidence such as indices of maternal health like risky fertility behavior, antenatal attendance and supervised delivery suggest that, since 1990, there has, at best, been some marginal improvement with regard to maternal mortality. Moreover, it might be expected that there is at least some correlation between maternal mortality and overall female mortality in the reproductive age range 15-49. However the overall risk of mortality of females in this age range, indicated by female life tables generated from 1980, 1990 and 2000 census data shows no correlation whatsoever with the MMRs estimated from the 1996 and 2006 DHS. The trend in overall female mortality as indicated by these life tables is reasonably consistent.

It is likely that the 2006 DHS provides a more reliable picture of the level of maternal mortality in 1994 than the 1996 DHS of the level of maternal mortality in 1984.¹⁴⁷ In other words, the higher and more recent estimate (referring to 1994) is most likely the more reliable estimate. For reasons already mentioned, the most reasonable solution with regard to the monitoring of maternal mortality at this stage is to use the 2006 DHS estimate of the MMR (referring to 1994) as the MDG 5 baseline figure for 1990. This is far from ideal, but this baseline figure is almost certainly closer to the truth than the 1984 estimate (based on the 1996 DHS) and projected to 1990.

Finally, since the proxy indices of maternal health and mortality, used in this report indicate that there was, at best, some limited improvement in these indices, it seems reasonable to assume that the same applies to the MMR.

2.6 Concluding comment

The level of maternal health in PNG remains very low and the level of maternal morbidity and mortality are very high. Attempts have been made by government, in collaboration with development partners to address the situation. It seems that these interventions have not led to noticeable results. This has implications for future interventions. This is discussed in Section 6.

3. Targets and indicators

3.1. Global target and indicators

The United Nations Development Group (UNDG) formulated two very demanding global targets with regards MDG 5. These targets are:

Target 5A Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

The associated global indicators are:

1.5. Maternal Mortality Ratio (per 100,000 live born children)

¹⁴⁷ This is discussed in the DACA report on human development and MDG monitoring.

- 1.6. Proportion (%) of births attended by skilled health personnel

Target 5 B. Achieve, by 2015, universal access to reproductive health

The associated global indicators are:

- 1.7. Contraceptive prevalence rate
- 1.8. Adolescent birth rate
- 1.9. Antenatal care coverage (at least one visit and at least four visits)
- 1.10. Unmet need for family planning

3.2. National targets and indicators

The 2005-2010 MTDS includes only one target for MDG 5 viz.:

MTDS Target 10 Decrease the maternal mortality ratio to 274 per 100,000 live births by 2015.

The associated national indicators are:

25. Maternal Mortality Ratio per 100,000 live births per year.
26. Percentage of pregnant women attending antenatal clinics.
27. Percentage of births attended by skilled health personnel including village birth attendants.

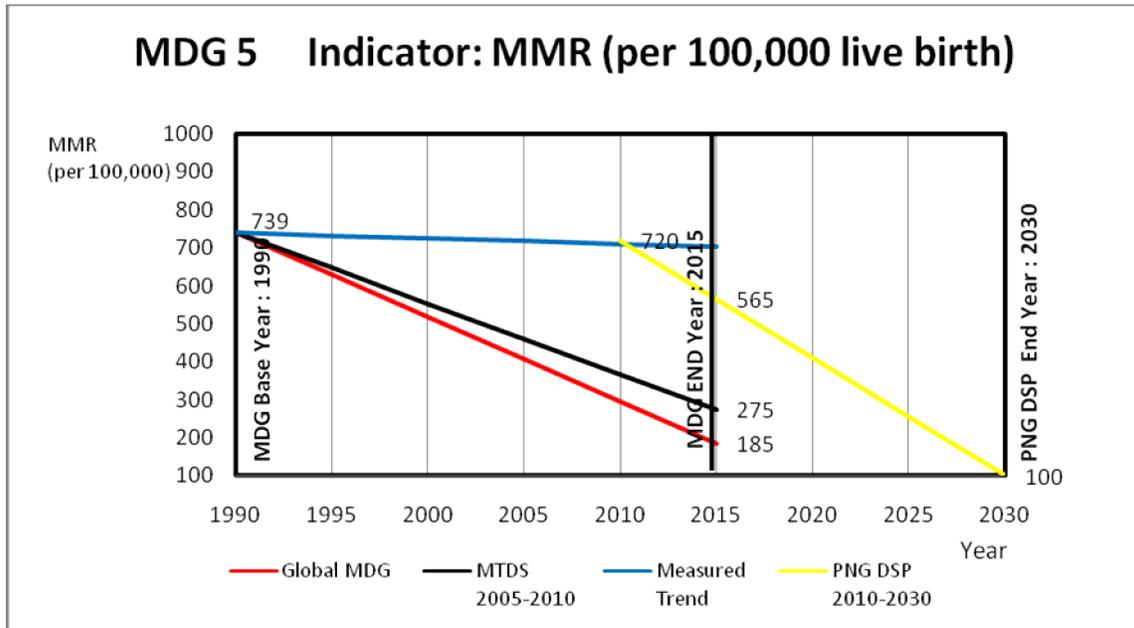
The DNPM, in collaboration with stakeholders, is in the process of reviewing the national MDG 5 targets and indicators. The proposed re-tailored targets and indicators are discussed in the DACA report on human development and the MDGs. This is part of the preparations for the formulation of the Medium-Term Development Plan 2011-2015.

3.3. Progress towards achieving MDG 5

The global target for the MMR implies that, by 2015, this indicator needs to be reduced by three quarters. The analysis in Section 2 suggests that, considering the trend in maternal mortality since 1990, this target is entirely unrealistic. The trend in the MMR between 1990 and 2009 that is now considered as the most likely one is depicted in Figure V-3. The “anchor” in this graph is the MMR for 1994 (estimated from the 2006 DHS). It is to be noted that, no estimate of the MMR referring to a more recent date is available. Consequently, the trend in maternal mortality since 1994 has been derived by analyzing the trend in some important determinants of maternal mortality, viz. high risk fertility behavior, antenatal care and supervised delivery.

Progress towards achievement of the national (2010-2015 MTDS) target is depicted in Table V-6 and in Figure V-3. In spite of the great uncertainties about the precise level of maternal mortality, there is little doubt that maternal mortality in PNG remains very high. PNG has made little progress towards achieving the global as well as national MMR targets.

Figure V-3: Trend in maternal mortality between MDG base year 1990 and 2010 compared to global MDG, 2005-2010 MTDS and 2010-2030 PNGDSP targets.



Source: DNPM, 2009

Global Target 5B envisages that by 2015, universal access to reproductive health should be achieved. According to data derived from the 1996 and 2006 DHS, the contraceptive prevalence rate as well as antenatal coverage remains low whereas the adolescent birthrate as well as the unmet need for family planning remains high.

The 2005-2010 MTDS did not formulate any national targets with regard to ANC attendance and supervised delivery. However, the results of the 1996 and 2006 DHS indicate that a very large proportion of pregnant women do not attend antenatal clinics and continue to deliver their babies at home without the support of trained medical personnel.

Finally, it needs to be stressed that the high level of maternal mortality in PNG must be considered as additional evidence of significant gender disparity and inequity (See MDG 3). Progress between 1990 and 2010 towards achieving the national targets for MDG 5 is presented in Table V-7.

Table V-7: Progress made between 1990 and 2010 towards achieving the national targets for MDG 5.

National Indicator	Most recent measure			Projected (no change)			Nation. Target 2015
	Value	Year	Source/ Comments	1990	2010	2015	
Maternal Mortality Ratio (per 100,000 live births)	733	1994	2006 DHS	739	711	703	274
% of pregnant women attending ANC's	79.3	2006	2006 DHS	76	80	81	No MTDS Target
% of births attended by skilled health personnel	51.8	2006	2006 DHS	50	52	53	No MTDS Target

4. MDG 5 specific challenges

In Section 2 and 3, it has been shown that PNG's record with regard to maternal health, morbidity and mortality is very disappointing. Although a case has been made to do this, the MDG National Steering Committee has not identified maternal health, morbidity and mortality as one of the crosscutting challenges affecting all MDGs. The crosscutting challenges, identified between 2004 and 2009, have been detailed in Part A, Chapter II. This section deals with MDG 5 specific challenges only.

4.1. General

As in the case of the MDGs already discussed, many challenges with regard to MDG 5 are only partly, or in some cases, not at all related to absent or deficient legislation, policies and plans or to financial constraints and related factors. Some of these are discussed in this section.

Firstly, social and cultural challenges play an equally important role in the case of MDG 5 as they do in the case of MDG 3. For instance, attempts to improve maternal health and to decrease maternal morbidity and mortality are hampered by the low level of education and literacy of females (as well as males for that matter). As shown in Section 2, this applies in particular to the provinces of the Highlands Region, most notably Southern Highlands and Enga. There is a strong correlation between the level of education and literacy of mothers and their risk of dying during pregnancy or childbirth. As already mentioned under MDG 2, social and cultural factors are important challenges for the achievement of a reasonable level of education and literacy, especially in the Highlands Region.

Secondly, although the official statistics in recent years provide insufficient support for this, many girls still marry, get pregnant and give birth at a young age.¹⁴⁸

¹⁴⁸ In reports of recent censuses and surveys, all cases of married females and males under the age of 15 have been edited. In this respect, it is also important that the CRS has registered only a small proportion of all marriages. Many marriages in PNG are common law marriages. De-facto unions are also common.

Although economic factors play a role in this, social and cultural factors are at least as important. It is believed that this problem mainly exists in the patrilineal societies of the Highlands Region. It affects all aspects of life for these young girls/mothers and must be considered as a high risk factor with regard to maternal morbidity and mortality (as well as early childhood mortality).

Thirdly, as already mentioned under MDG 3, the continuing high level, as well as the pattern of fertility, are important factors contributing to the current maternal health, morbidity and mortality situation. The determinants of fertility in PNG include, apart from economic factors, several social and cultural factors. Giving birth to a large number of children, especially if this is outside the age range 20-34 and without medical supervision is an important determinant of maternal morbidity and mortality.¹⁴⁹ Furthermore, unplanned pregnancy, teenage pregnancy and inadequate spacing of children are common. Once again, reasons for this are often social and cultural in nature.

The available data on HIV/AIDS, though very incomplete, suggests that women in the reproductive age span (15-49) and particularly those in the peak age groups of fertility (20-34) have a very high infection rate (See MDG 6). Although the social background of the infected women is not reported, circumstantial evidence suggests that infections are disproportionately concentrated among the poor and illiterate women in these age groups.

4.2. Legislation/policy

Several policies and plans with regard to MDG 5 are in place (See Section 6.2). A Sexual and Reproductive Health Policy has recently been formulated but has not yet been endorsed. The Strategic Action Plan still needs to be costed and endorsed. Moreover, the Family Planning Policy has recently been devised.

The key problem is again one of implementation of the policies and plans (see MDG 4). As already mentioned, a major challenge is that the decentralized health system has led to poor management and performance. In the provinces, districts and LLGs, the national policies/guidelines are often not available since they have not been disseminated to the health facilities. If available, they are often not implemented. Accountability of staff is weak and, within the current structure, it is difficult to take disciplinary action.

4.3. Financial

Criteria for budget allocation are lacking and health sector funding priorities are not evidence based. Moreover, there are often delays in releasing funds for implementation of MDG 5 related activities. Considering the large problems the health sector is facing in improving maternal health and reducing the very high level of maternal morbidity and mortality, budgetary provisions seem to be insufficient. Generally, the national budget does not adequately reflect women's health needs.

Although financial constraints is an important reason with regard to PNG's performance on MDG 5, it must also be mentioned that funding support from development partners is often not completely used. Moreover, funds are used for unplanned activities or misused. There is a general lack of financial accountability and corruption by service providers and this often results in planned activities not

¹⁴⁹ Women in the 15-19 age group are twice as likely to die in childbirth as those in the 20-34 age range.

being implemented. Many of these problems are related to decentralization (discussed under 4.2).

Moreover, the low level of money income (especially in the rural sector) and widespread economic disparity and insecurity are additional factors as to why limited progress is being made in reducing morbidity and mortality, including maternal morbidity and mortality.

4.4. Access to services

All factors mentioned under MDG 4 also apply to MDG 5. These are:

- Poor infrastructure.
- Absence or closure of the most basic health services (GAPs) in a large part of the rural sector.
- Protection against malaria and prompt effective treatment is often not available for many people including pregnant women. Malaria tends to be an important co-factor of maternal (as well as infant) morbidity and mortality.
- Poor human resource capacity at every level of service delivery points.
- Inadequate management of supplies (drugs, equipment and test kits).
- Low health worker/population ratio¹⁵⁰.
- Corruption by service providers resulting in planned activities not being implemented.
- Lack of proper sanitation and safe water supply for many households especially rural households.
- Law and order problems hindering service provision and vandalism or stealing of equipment from facilities.

Furthermore, reproductive health care and family planning is non-existent or not very effective in large parts of the rural sector. A comparison of 1996 and 2006 DHS results confirms that interventions concerning spacing of children and other risk-reducing behavior remain ineffective. Contraceptives are not readily available for a large proportion of women.¹⁵¹ Improvement in the reproductive health situation of the country and better access to family planning services could prevent many maternal (as well as infant and child) illnesses and deaths.

4.5. Monitoring

The database for monitoring MDG 5 remains poor and this applies in particular to the NHIS. All information provided by this system has an urban/institutional bias. Furthermore, reporting by all levels of health care providers to the NHIS is often inconsistent. There is a lack of monitoring and evaluation of staff and staff are often

¹⁵⁰ For doctors it is 0.05 per thousand population and for nurses 0.5 per thousand population.

¹⁵¹ The PNG Family Planning Association (FPA) is not very active and receives no government funding.

inadequately trained. Due to lack of adequate funding, there are few monitoring and evaluation visits to facilities, especially those in the rural sector.

Because of the biases in the NHIS data, the system provides a misleading picture of the problems that exist in PNG with regard to maternal health, morbidity and mortality.

In Section 2, MMRs estimated indirectly from DHS data were discussed. It is likely that, due to the lack of robustness of the methodology that has been used, these MMRs are also biased. To date, there is no alternative for this methodology. A detailed discussion of this can be found in the forthcoming DACA report.

As in the case of MDG 4, it is felt that, in the PNG situation, the global targets with regard to MDG 5 are unrealistic. It is imperative that more realistic targets are set. Presently, the national targets in the MTDS 2006-2010 are being reviewed. More realistic MDG 5 targets for 2015 have already been proposed. This is detailed in the forthcoming DACA report.

5. Good practices

As in the case of MDG 4, most policies and plans with regard to MDG 5 are in place. This is an important prerequisite for the achievement of MDG5.

Many of the good practices listed under MDG 4 also refer to MDG 5. There is political support and commitment for many MDG 5 related activities and there is communication and understanding among the leaders at the different levels of governance and FBOs, NGOs, Development Partners, private sector and other line agencies and sectors. As in the case of MDG 4, it is difficult to translate the good intentions into practice, particularly since many of these intentions require behavioral change.

The DOH is very well aware of what should be considered as good practices. However, due to the above challenges, there are few examples of good practices being in place. The assessment is impeded by the very limited and biased data base concerning MDG 5. Moreover, contrary to MDG 4, estimates that are available only apply to the national level. Although it is felt that some provinces, districts and LLGs perform better than others this cannot be supported with hard evidence.

6. Interventions

In spite of all the uncertainty with regard to the exact level of and trends in maternal mortality, there is little doubt that, compared to most countries in the Asia-Pacific Region, the level of maternal health in PNG remains low and the level of maternal morbidity and mortality very high. Maternal health should be addressed with a range of comprehensive primary health and clinical services before, during and after childbirth. The most important services include:

- Family planning services.
- Maternal health education and health promotion.
- Screening, including antenatal care.
- Supervised delivery.

Since most maternal deaths occur in the 24 to 48 hours surrounding delivery, interventions during this period will be the most effective ones.

As already mentioned under MDG 4, the DOH is in the process of formulating its third National Health Plan for the period 2011-2020. One of the focus areas of this plan is to improve maternal health and to reduce maternal mortality. The proposed introduction of a system of Community Health Posts and improved partnerships i.e. between church and state, are not only considered as major interventions with regards the achievement of MDG 4 but they are equally important in the case of MDG 5.

It also needs to be mentioned that the improvement of maternal health and the reduction of maternal mortality is one of the focus areas of the present National Population Policy (NPP).

Most interventions to turn around the current status of maternal health in PNG are detailed in 2009 publication by the Ministerial Task Force on Maternal Health in Papua New Guinea. The Task Force examined nine thematic areas:

- (1) Cultural, social and community factors.
- (2) Health systems factors.
- (3) Government policies and female education.
- (4) Population and resource matching for sustainability.
- (5) Evidence based interventions in maternal health.
- (6) Training and labour force issues.
- (7) Budget and financing.
- (8) Gender and poverty issues.
- (9) HIV and other chronic disease issues.

Important interventions that are being considered include:

- Improvement of the dysfunctional health system

Many attempts have been made by government, in collaboration with development partners to improve the dysfunctional health system. It seems that these interventions have not led to much progress, especially in the rural sector. This has implications for future interventions.

It has been realized for quite some time that the improvement of the health care delivery system, especially in large parts of the rural sector should be the cornerstone of future interventions. With regard to maternal health, this refers in particular to improvements in the health care programme during pregnancy and delivery. However, it is unlikely that major improvements can be made through the

deteriorating system of government owned Aid Posts.¹⁵² Consequently, the DOH has now devised an ambitious plan to exchange its network of Aid Posts by Community owned Health Posts (CHP). In addition to improved health care during pregnancy and childbirth, this new approach will probably also lead to a reduction in the present high risk fertility behavior.

A trial period of the CHP system in five provinces will probably start in the near future. If these trials are successful, the new system will be introduced in all provinces.¹⁵³ Consequently, it is expected that the results of this approach will become visible after 2015.

It is expected that the CHPs in combination with the ongoing outreach capacity of the DOH (through the Health Centres) will improve healthcare delivery, including the health care programme during pregnancy and childbirth in the rural sector. It needs to be reiterated that the staff of each CHP will include persons specialized in midwifery, reproductive health, immunization and advocacy (health education and community awareness). In addition to improved health care during pregnancy and childbirth, the CHP approach will probably also lead to a reduction in the present high risk fertility behavior.

- Strengthening of voluntary family planning

Family planning as part of an effective reproductive health programme is seen as a primary intervention for the improvement of maternal health and the reduction of maternal mortality

- Increase in supervised delivery

The improvement in supervised delivery is a key element of the future CHPs. It requires the development of a cadre of community midwives.

- Comprehensive obstetric care
- Universal free education for girls

The role of education in improving maternal health and reducing maternal mortality is a very important one. Moreover, sex and reproductive health subjects should be included in the school curriculum.

¹⁵² The system of government Aid Posts, manned by one person (the Aid Post Orderly) has deteriorated over time. At present, a very large proportion of these Aid Posts is not operational anymore, due to a variety of problems such as financial constraints, lack of well trained staff, land ownership issues, damage, theft etc. etc.

¹⁵³ The envisaged health care delivery system at the lowest level will consist of a total of about 6,000 Community Health Posts.

VI. MDG 6: COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES

The first case of HIV/AIDS in PNG was recorded in 1987. Since that time the disease has progressed rapidly and in 2002, the antenatal clinic (ANC) of Port Moresby General Hospital reported that more than 1 percent of its clients were HIV positive. Based on this finding, PNG was declared the fourth country in the Asia-Pacific Region, after Thailand, Cambodia and Myanmar, to have a generalized HIV epidemic.¹⁵⁴ This means that all sectors of the population are potentially at risk of:

- Becoming infected themselves
- Having to cope with the consequences of members of their family and community and of the country's workforce becoming infected

In 2004, the MDG National Steering Committee declared that it considers the HIV/AIDS epidemic as the single most important impediment for the achievement of all MDGs. The Committee also stressed that this epidemic strikes at the heart of development. Since 2004, the impact of the epidemic has increased. Consequently, the 2009 MDG National Steering Committee decided that the HIV/AIDS epidemic should once again be placed at the top of its list of cross-cutting challenges for the achievement of the MDGs. This will undoubtedly remain so during the remaining six years of the first MDG cycle 1990-2015 and most likely also in the period after that. Consequently, for the achievement of PNG's overarching policies and plans in the near future such as the PNG Development Strategic Plan (PNGDSP) 2010-2030, the Medium-Term Development Plan (MTDP) 2011-2015, the National Population Policy (NPP) 2010-2020 as well as the objectives of all sectoral strategies and plans, the impact of the HIV/AIDS epidemic should be considered as the most crucial challenge. The impact of the HIV/AIDS epidemic should also be built into the assumptions of future population projections.

In 2010, MDG 6 is the most difficult one to deal with. There are many reasons for this. Some of these are listed below:

- HIV/AIDS (as in most countries in the South Pacific Region) is considered as a very sensitive issue. Poor understanding of HIV transmission contributes to fear and stigmatization of people living with HIV/AIDS.
- Opinions concerning the threat of HIV/AIDS in PNG differ widely. They range from considering it as the most important one the country is facing to complacency.
- In spite of the comprehensive HIV/AIDS policies and plans that have been adopted, incorporation of the objectives of these policies and plans into the overarching national policies and plans as well as the sectoral plans remains very inadequate.

¹⁵⁴ UN/USAID, 2002:10. The other types of epidemics are:

- Concentrated epidemic (concentration in specific sub-groups of the population)
- Low level epidemic

1. Data base and monitoring

Already in the early 1990s, it was decided that all aspects of HIV/AIDS should be effectively tracked through regular monitoring and evaluation mechanisms. However, for various reasons, especially the very limited number of test sites, the HIV/AIDS data base remained incomplete. Once the HIV infection reached epidemic proportions, efforts increased to improve the monitoring and evaluation system. As a result, this became the 7th focal area in the National Strategic Plan 2006-2010.

In 2010, monitoring of MDG 6 is mainly based on data collected by three data collection systems. These are:

- Surveillance system
- Nationwide surveys like the 1996 and 2006 Demographic and Health Surveys (DHS)
- Small scale behavioral surveillance surveys.

A detailed discussion of the performance of these systems can be found in the DACA report on human development and MDG monitoring. This section is restricted to a brief summary of the performance of these data sources.

1.1. Surveillance system

In the 1990s, a HIV epidemiological surveillance system was established in the DOH.¹⁵⁵ In 1999, this system was transferred to the National AIDS Council Secretariat (NACS). The NACS (in collaboration with the DOH) published HIV/AIDS information on a quarterly basis. Until recently, this was the only nationwide source of information on HIV/AIDS in PNG.

However, the data collection, processing, analysis and monitoring capacity of the NACS was and is limited. Consequently, the coverage of the system and the quality of the collected data remained poor. This was partly due to the very limited number of test sites. In addition, delays in testing were very significant. The entire testing procedure often took as long as 3 to 6 months before results became available.¹⁵⁶ Furthermore, synchronization of the efforts of the NACS and the DOH were ineffective.

Attempts to improve the surveillance system were suggested in the National Strategic Plan (NSP) 2006-2010 for HIV/AIDS. The 3rd focal area of the NSP refers to the establishment of an effective and efficient surveillance system that will provide accurate measurement and understanding of the growth and other characteristics of the HIV epidemic in PNG. This has led to the formulation of a National Surveillance Plan, including a work plan detailing clear lines of responsibility and accountability.¹⁵⁷ Furthermore, the Universal Access Monitoring Framework included in the First National Surveillance Plan 2007-2010 coordinates the collection of data concerning HIV/AIDS. It provides the guidelines for data management and specifies

¹⁵⁵ With support from the WHO

¹⁵⁶ See also UN/USAID, 2002, p.22.

¹⁵⁷ Aggleton, P. et al., 2008:3

the indicators that need to be measured. Data is collected from a variety of surveillance sites viz. HIV, ANC, STI, VCT and behavioral surveillance sites.¹⁵⁸

Presently, monitoring of HIV/AIDS is once again the responsibility of the DOH within the recently established “Disease Control Branch”. This branch publishes HIV/AIDS information in its Estimation Reports on the HIV epidemic.¹⁵⁹ The Information System that is presently used is the 2009 version of the Country Response Information System (CRIS). CRIS has an improved estimation capacity.

It is widely believed that the most reliable information on HIV/AIDS available in PNG is that collected by the antenatal clinics (ANC). In this respect, it needs to be mentioned that, until recently, all ANC patients were tested for HIV/AIDS. Nowadays, consent is required. However, the large majority of ANC clients (up to 95 percent) agree to testing, especially in the larger test sites in major urban areas. This was probably due to the fear of breaches of confidentiality and stigma. The level of consent is somewhat lower at the smaller test sites which was probably due to the fear. Data collected from STI and TB patients as well as that from blood donors in PNG is almost certainly less reliable than that from ANC clients.¹⁶⁰

A special type of monitoring system is the sentinel sero-surveillance system. This system tracks HIV infection in certain populations (often the population of certain institutions) using blood testing. These institutions provide access to populations that are either of particular interest from the point of view of HIV/AIDS infection or they are representative of a larger population. The most common examples are STI and TB clinics.

Since 2004, when the inaugural MDGR was published, the number of test sites for HIV/AIDS has increased dramatically from 4 in 2004 to 201 in 2008. The number of tests conducted has increased from 1,407 in 2004 to 120,607 in 2008.¹⁶¹ In spite of the large increase in the number of test sites as well as the number of tests conducted, anecdotal evidence suggests that a significant proportion of persons infected with HIV are not tested and recorded. Some indication of this may be that, according to the 2009 Estimation Report, 93 percent of all HIV cases in 2008 were reported in only 8 of the 20 provinces.¹⁶² Furthermore, testing is still mainly restricted to women attending ANCs, blood donors and high-risk groups.¹⁶³

In conclusion, it may be safely assumed that the coverage of the surveillance system of the DOH remains incomplete. In order to get a more “realistic” picture of the number of HIV/AIDS cases, a multiplier of about 5 or more has frequently been applied. Although it is certain that the real number of HIV cases is higher than the recorded number, it is impossible to determine a realistic multiplier.

Finally, MDG 6 does not only deal with HIV/AIDS but also with other diseases that are closely associated with HIV/AIDS. These include first of all TB and pneumonia. These opportunistic diseases, as well as malaria, which all weaken the immune system, are also monitored as closely as possible. Many deaths in PNG caused by

¹⁵⁸ VCT is Voluntary Counseling and Testing

¹⁵⁹ The most recent report, covering the HIV/AIDS situation until the end of 2008, was published in October 2009.

¹⁶⁰ UNAIDS, UNICEF and WHO, 2002.

¹⁶¹ NDOH, 2009:11

¹⁶² These provinces are NCD (40 %), Western Highlands (17 %), Eastern Highlands (15 %), Enga (7 %), Morobe (7 %), Southern Highlands (5 %), Chimbu (2.5 %), Madang (2 %)

¹⁶³ Apart from very serious underreporting the HIV/AIDS dataset may also be affected by some double reporting. This happens when a person who has been identified as infected at one clinic goes to another clinic for confirmation but under another name.

these diseases have HIV/AIDS as the underlying cause. For obvious reasons this antecedent cause is often not recorded on the death certificate. Consequently, these cases do not appear as AIDS cases in the cause of death statistics of the CRS or the NHIS.

The data in the Estimation Reports is specified by sex, age, province of detection and province of origin and mode of transmission. The quality of this data remains deficient. This is detailed in the following sections.

- Data by age and sex

HIV/AIDS recording is characterized by a large number of cases with age not stated. For instance, for 44.6 percent of the 5,084 new HIV infections reported in 2008, the age of the infected person has not been recorded.¹⁶⁴ For instance, 68 cases (or 1.3 percent) of the infected persons' sex were not been recorded. The incomplete knowledge of these central variables is particularly worrying for policy makers and planners. The reason is that the impact of HIV/AIDS on virtually all demographic, socio-economic and other parameters is age and sex specific. Examples are fertility, mortality, migration, education, labour force participation, employment etc. Without precise HIV/AIDS data specified by age and sex, it becomes difficult to carry out meaningful analysis. Moreover, for the production of realistic population and sectoral projections that have been adjusted for the impact of HIV/AIDS it is imperative that HIV/AIDS data is available by age and sex of the infected persons.

In order to produce an age-sex structure of HIV/AIDS infected persons, the only practical option at this stage is to assume that the distribution of the cases with age and/or sex not reported is the same as for those with known age and sex. The bias introduced by this assumption is not known, but it is unlikely that this bias is far from negligible.

- Data by geographic subdivisions

In the Estimation Reports, data on HIV/AIDS infection is specified by province of detection and province of origin. Information on the province of detection and province of origin of HIV/AIDS infected persons is very useful for some users. It appears that, since the province of detection is the province where the test site is located, the province of detection is not recorded in a significant number of cases. Of the 28,294 cases recorded since 1987, the province of detection is not known for 4.5 percent of these cases. This is another clear indication of the relatively low quality of the HIV/AIDS data.

As expected, recording of data by province of origin is far more imprecise than recording by province of detection. For 45 percent of the 5,084 cases reported in 2008, the province of origin is unknown.

For effective policy making and planning, it is imperative that HIV/AIDS data (like most demographic, epidemiological, socio-economic and other data), is specified by usual place of residence. This information is not recorded. As long as the usual place of residence of HIV/AIDS infected persons is not known, not only HIV/AIDS monitoring but also counseling, care and treatment of HIV/AIDS patients will remain inadequate even if coverage of the surveillance system becomes complete.

¹⁶⁴ For males 46.9 percent and for females 43.2 percent.

The availability of data on HIV/AIDS infection by usual place of residence is also a prerequisite for the production of population projections at the sub-national level. For practical purposes, the only option in this report is to assume that the province of detection is the same as the province of usual residence. This is often not the case.

- Data by mode of transmission

As expected, the mode of transmission is not recorded for a large number of HIV infected persons. For instance, in 2008, the mode of transmission is not known for 51.4 percent of all cases. Although this is an improvement compared to previous years, it is clear that at this stage it is not possible to draw firm conclusions from the very incomplete data by mode of transmission.

- Data by other characteristics

Some other characteristics of HIV/AIDS patients are also recorded however, this information is not published. For policy makers and planners, the following basic demographic and socio-economic data (in addition to the above) is of crucial importance:

- i. Household and family composition
- ii. Marital status
- iii. School attendance
- iv. Educational attainment
- v. Labour force characteristics
- vi. Religious affiliation etc.

- Summary

In 2010, in spite of the drastic increase in the number of test sites in recent years, monitoring of the HIV/AIDS epidemic in PNG through the surveillance system remains limited. The picture of the HIV/AIDS situation and trend remains incomplete and biased. One important reason for the limited coverage of the surveillance system is undoubtedly the prevailing stigma and discrimination of people living with HIV/AIDS. Consequently many people with HIV/AIDS are reluctant to identify themselves.

In 2010, a clear monitoring and evaluation system of HIV/AIDS is in place. It validates the data before it is entered into the data base. Consequently, it may be expected that coverage of HIV reporting by PNG's surveillance system will further improve in the future. With regard to the quality of the data, the surveillance system will become a more useful tool for monitoring of the HIV/AIDS epidemic, if the information collected is presented in a format that it is not only optimally useful for those involved in counseling, care and treatment but also for policy makers and planners in health, education, labour force and employment. This implies first of all that all data should be presented by age, sex and usual place of residence.

1.2. Nationwide surveys

The 1996 and 2006 Demographic and Health Survey (DHS) included a module on HIV/AIDS. However, the collected information is restricted to knowledge and attitude.¹⁶⁵

1.3. Integrated behavioral surveillance surveys

The 4th focal area of the NSP 2006-2010 is research in social and behavioral change. Surveys on social and behavioral change are concerned with behavior that puts people at risk of HIV transmission. These surveys involve the collection of information from respondents concerning their sexual attitudes, drug injection and other risky behavior. Many of these surveys are restricted to groups with “high-risk behavior”. This implies that it is assumed that high risk behavior is contained within that particular group.¹⁶⁶ In PNG this is often not the case. The information collected in these surveys should complement epidemiological and other information and lead to the development of strategies for behavioral change.

The first surveys of this kind were carried out in the 1990s. An early research project conducted in 1998 was concerned with certain high-risk groups such as sex workers in Port Moresby and Lae. Moreover, in 1999, research was carried out amongst the members of the Defense Force.¹⁶⁷ A comprehensive review of the results from the surveys can be found in the UNGASS 2008 Country Progress Report.

It has been suggested that all future behavioral surveillance surveys should include a question for all respondents aged 15 and over about whether or not they know their HIV/AIDS status.

2. Situation analysis and trends

The first part of Section 2 deals with HIV/AIDS and the second part with certain opportunistic diseases, associated with HIV/AIDS, especially TB, pneumonia and malaria.

HIV/AIDS

2.1. Change in incidence and prevalence since 1987

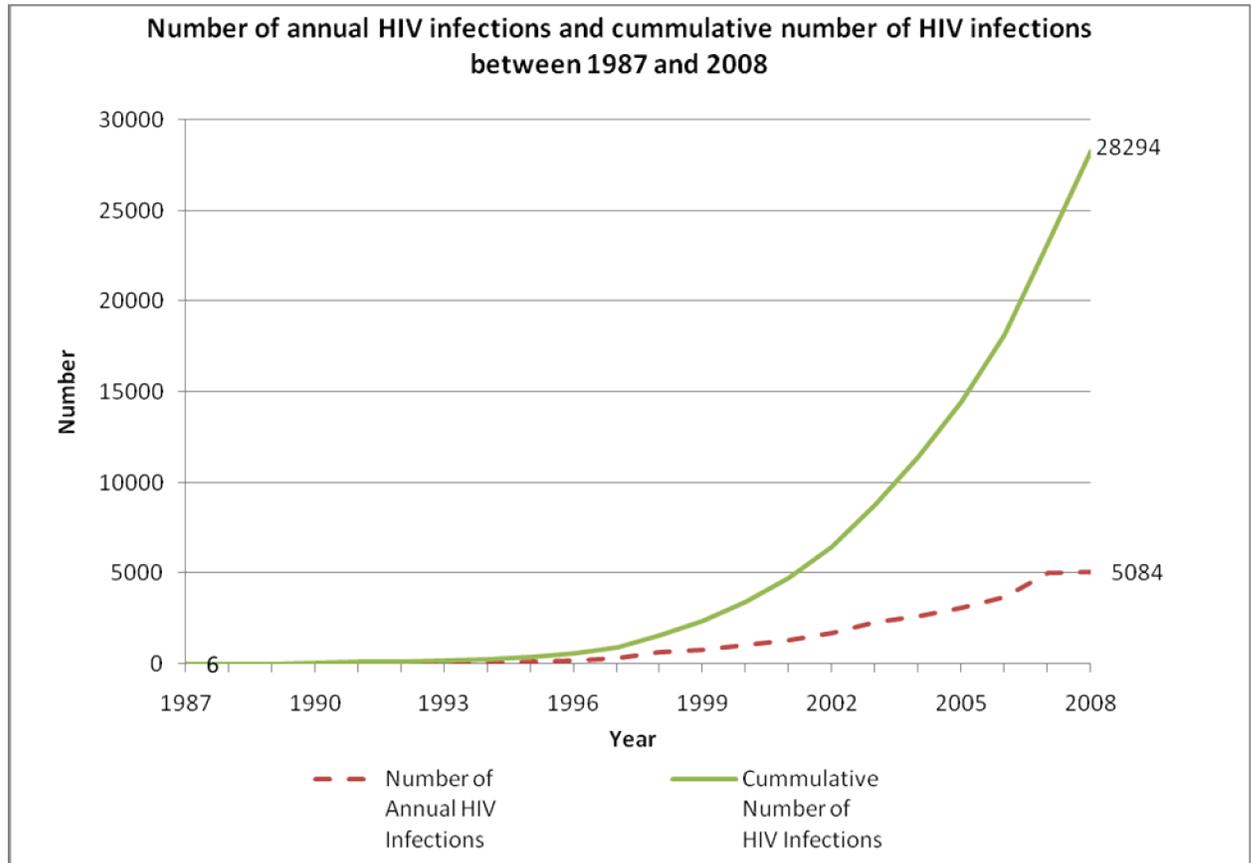
Figure VI-1 presents the increase in the number of recorded HIV infections since the first case was detected in 1987. It suggests that HIV infection has increased exponentially.

¹⁶⁵ During the preparatory phase of the 2006 DHS, it was suggested that persons selected in the sample of this survey should be tested for HIV/AIDS on a voluntary basis. The ethical as well as the practical and financial implications of this were considered. It was decided that it would not be feasible to add this element to the survey.

¹⁶⁶ Moreover these surveys are often restricted to a certain age group or to males or females.

¹⁶⁷ Jenkins, C. 2002:21 (unpublished),

Figure VI-1: Increase in the number of HIV infections and cumulative number of HIV infections between 1987 and 2008



Source: NACS, 2008

Table VI-1 presents the absolute and relative (%) change in the cumulative number of HIV infections since 1987. These figures are according to the most recent Estimation Report (NACS, 2008). Compared to previous reports, the figures have slightly changed. This is the result of the fact that the estimation techniques applied to the basic data have improved.

Also, Table VI-1 shows the average rate of change (r) per year, during selected time intervals between 1987 and 2008 and the corresponding doubling time (d) in years. The doubling time is defined as the number of years it will take for the population of HIV/AIDS infected persons to double in size, assuming that the present trend will continue into the future.

The information in Table VI-1 suggests that, during the 1990s, HIV/AIDS in PNG was still in its infancy. Since the late 1990s, the average annual rate of change (r) in HIV infection (column (7)) started to decrease. Consequently, since that time the doubling time (d), given in column (8) has increased. It will, however be realized that the r values in Table VI-1 do not only represent average change per year during the specified interval but that these rates are also affected by change in the level of completeness of detection (coverage). Since the number of test sites has increased drastically in recent years, coverage has improved. The rates of increase in Table VI-1

should therefore be considered with caution. They will only represent the true picture of change in HIV infection if coverage remained relatively unchanged.

The above comment that the average rate of change per year in HIV infection may have reached a peak at the beginning of the 3rd millennium should not lead to complacency. The significant increase in all other HIV indicators suggests that there is not the slightest room for complacency.

Table VI-1: Absolute and relative (%) increase in reported cumulative number of HIV/AIDS infections for selected intervals (n) during the period 1987-2008 as well as the average annual rate of increase (r in %) for these intervals

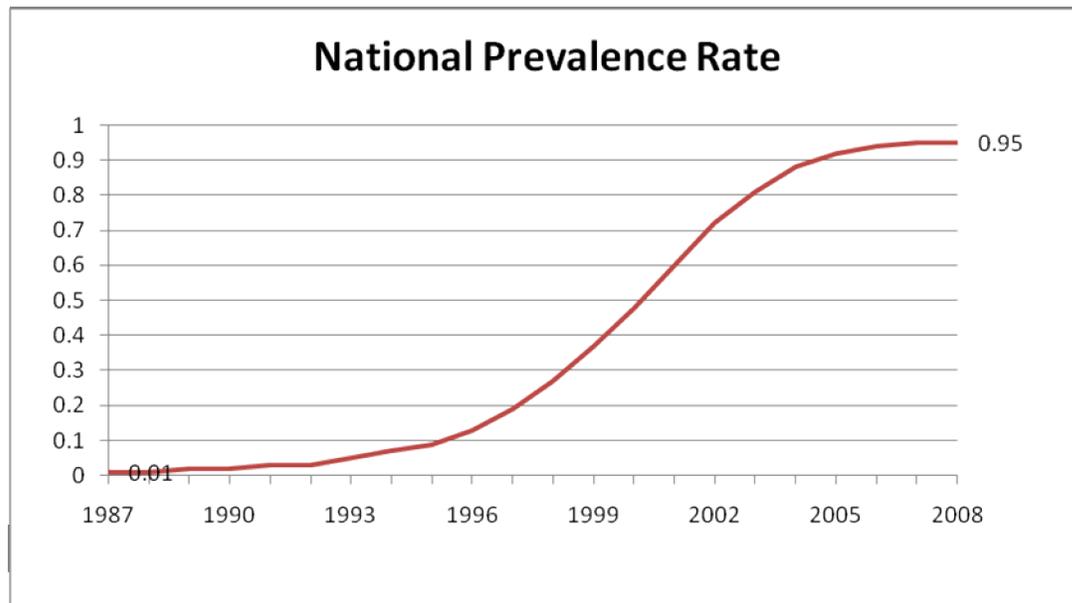
Period End P ₁ – End P ₂	N (yrs)	Cumulative Nr		Change during period			d (yrs)
		P ₁	P ₂	Abs. (nr)	Rel. (%)	Rate (r) (%)	
1987-1990	3	6	73	67	1116.7	83.3	0.8
1990-1992	2	73	138	65	89.0	31.8	2.1
1992-1994	2	138	252	114	82.6	30.1	2.3
1994-1996	2	252	570	318	126.2	40.8	1.7
1996-1998	2	570	1,579	1,009	177.0	51.0	1.4
1998-2000	2	1,579	3,444	1,865	118.1	34.7	2.0
2000-2002	2	3,444	6,471	3,027	87.9	31.5	2.2
2002-2004	2	6,471	11,424	4,953	76.5	28.4	2.4
2004-2005	1	11,424	14,499	3,075	26.9	23.8	2.9
2005-2006	1	14,499	18,172	3,673	25.3	22.6	3.1
2006-2007	1	18,172	23,210	5,038	27.7	24.5	2.8
2007-2008	1	23,210	28,294	5,084	21.9	19.8	3.5

Source: Derived from DOH, 2009:3

In order to get a more comprehensive picture of HIV/AIDS infection in PNG, the recorded numbers in Table VI-1 need to be converted into rates such as the incidence and prevalence rate. The change in the national prevalence rate (%) between 1987 and 2008 is presented in Figure VI-2. Until 2006, the national prevalence rate has steadily increased but this rate has leveled off after that year. Moreover, there is a significant difference in HIV/AIDS infection between the four regions. This is further discussed in the section dealing with spatial differences.

The crucial question remains how realistic the basic data in Table VI-1 (number of recorded infections) is, on which the analysis and conclusions are based. Several attempts have been made to arrive at a more realistic estimate of the incidence and prevalence of HIV infections. The most important attempts are probably those of the National Consensus Workshops organized by the National AIDS Council Secretariat (NACS). These workshops, convened since 2000, were amongst others tasked with reviewing the completeness and accuracy of the available basic data. Furthermore, several development partners like the World Bank, AUSAID and the ADB have, on several occasions, made their own estimates of coverage and quality of HIV data.

Figure VI-2: Change in the national HIV/AIDS prevalence rate between 1987 and 2008



Source: NACS, 2008

The National Consensus Workshop held in 2000 estimated that the total number of HIV/AIDS cases was between 10,000 and 15,000. If this estimate represents the true prevalence of HIV/AIDS, this implies that, at the time only approximately 20 percent of all cases of HIV/AIDS were detected and recorded.

An even more pessimistic estimate has been made in 2004 by a combined World Bank/AUSAID/ADB mission. This mission estimated that in the same year (2000), the number of HIV infected persons was very significantly higher than the estimate made by the National Consensus Workshop, viz. between 25,000 and 85,000.¹⁶⁸ Several other attempts resulted in other estimates of a multiplier. The discrepancy between the various estimates of coverage is enormous.

The underlying assumptions of all these estimates of a multiplier are not clear. However, since it was believed that the ANC data were the most reliable at the time, it is likely that much weight was given to this data. In this respect it needs to be reiterated that until recently, all women visiting an ANC were tested for HIV/AIDS.

Whatever the case may be, early in the new millennium, based on the records of a limited number of ANCs, it was concluded that HIV/AIDS infection amongst women visiting these clinics had reached a level of more than 1 per cent and was possibly approaching 3 per cent.¹⁶⁹ This implies that that HIV infection had reached epidemic proportions.¹⁷⁰ It was also suggested that “the evidence in PNG was pointing to an African social-epidemiological pattern”.¹⁷¹

¹⁶⁸ World Bank/AusAid/ADB, 2004. Control of HIV/AIDS in Papua New Guinea. p.2.

¹⁶⁹ In 1998, 0.15 percent of mothers in the ante-natal clinic in Port Moresby General Hospital were tested positive for HIV/AIDS. The prevalence rate rose to 0.3percent in 1999 and to 1.3 percent in 2004. Sero conversion amongst 15 to 24 year olds was even higher. (DOH, 2004).

¹⁷⁰ UN/USAID, 2002:10.

¹⁷¹ Ibid.:11.

Some commentators now believe that the early estimates of HIV prevalence based on the records from a small number of ANCs may have over-estimated the HIV infection rate. On the other hand, there are several other reasons why it was assumed that HIV/AIDS infection had indeed reached epidemic proportions. Firstly, the proportion of hospital patients suffering (and dying) from illnesses that are often associated with HIV/AIDS increased rapidly, especially in the case of TB.¹⁷² Secondly, the infection rate amongst female sex workers and STI patients in several parts of the country with reasonable testing facilities, especially in the NCD and in the Highlands Region was high.¹⁷³

2.2. Differentials

This section considers the most basic characteristics of persons infected with HIV/AIDS. This applies to the age-sex structure and the spatial distribution of HIV/AIDS cases.

2.2.1. Age and sex

So far, the records of a large number of persons infected with HIV/AIDS do not include their age. In many cases, even sex is not recorded. For cases with unrecorded age and sex only the case number is known. The incomplete knowledge of the central variables, age and sex, is particularly worrying for policy makers and planners since the impact of HIV/AIDS on virtually all demographic, socio-economic and other parameters is age and sex specific.

In 2008, almost 93 percent of all new HIV infections with recorded age were adults (over the age of 15). A large proportion of these adults are in the "working" and "reproductive" age range 15-49. However, over the years, the proportion of adults has decreased marginally, due to the fact that vertical infection (from mother to child) has increased.¹⁷⁴

The proportional (%) age-sex distribution (in broad age-groups) of new HIV/AIDS cases recorded in 2008 is presented in Table VI-2.

Table VI-2: Proportional (%) age-sex distribution of recorded HIV/AIDS infections in 2008

Age group	Persons	Males	Females
Total	100.0	38.2	61.8
0-14	4.0	1.8	2.2
15-59	94.5	35.3	59.2
60 and over	1.5	1.1	0.4
15-49	90.1	31.9	58.2
20-34	58.8	17.0	41.8

Source: Derived from DOH, 2009:4

¹⁷² In the Port Moresby General Hospital, TB patients occupy now 30 % of all the beds. 20 % of inpatients with TB have tested positive for HIV. (ibid.)

¹⁷³ Furthermore, several small scale surveys conducted in the NCD suggest that the prevalence rate amongst female sex workers may be as high as 17 percent and amongst STI patients 7 percent. (UN/USAID, 2002:11).

¹⁷⁴ In 2003, the proportion of infected adults was 96 percent and the proportion of infected children 4 percent.

The first three age groups in this table are the components of the dependency ratio. In this ratio, as defined in PNG, the age groups 0-14 (youth) and 60 and over (old age) constitute the “dependent” population whereas the age group 15-59 represents the potential “working” population. Furthermore, the age group 15-49 is the reproductive age span whereas the age group 20-34 consists of the three age groups where fertility is highest (peak fertility).

The sex ratio (defined as the number of males per 100 females) of those with recorded sex is only 72.3. This should not be interpreted as the sex ratio of all persons infected with HIV/AIDS. The fact that a significant proportion of all HIV cases are detected in ANCs implies that more females than males are tested.

In the following, it has, for the sake of simplification, been assumed that the age-sex distribution of those with age and sex not recorded is the same as for those with age and sex recorded. It is not certain whether this as a valid assumption. However, in PNG, there is no evidence that omission of age from the records of HIV/AIDS patients is an age-specific bias.

The age distribution of cases in the age range of the potential labour force for PNG (15 to 59) follows a very similar pattern as that of the labour force participation rates derived from the 1990 and 2000 censuses. It may therefore be concluded that, given continuation of present trends, HIV/AIDS will have an increasingly devastating impact on labour force participation and employment in PNG. HIV/AIDS mainly affects people in the most productive period of their life. Consequently, as already noted, it strikes at the heart of development.

There is a very significant difference in the proportion of infected males and females in the age range 15-49. In this age group, the infection rate for women is far higher than that for men. This is even more so for females and males in the age group 20-34. This age group consists of the three five-year age groups of peak fertility (20-24, 25-29 and 30-34) (see last two rows of Table VI-2). In fact, the distribution of females with HIV/AIDS in the reproductive age range is very similar to the pattern of age specific fertility in PNG. Since heterosexual transmission is the main mode of HIV transmission in PNG, it may be expected that the age pattern of HIV infection will increasingly affect the level as well as the pattern of fertility.

It is important that the above conclusions are taken into account in the official population and sectoral (e.g. labour force) projections of PNG. The next round of projections for the period 2010 – 2030, using the 2010 census population as the base population, should incorporate the expected impact of the HIV epidemic on the underlying mortality, fertility and migration assumptions of these projections.

2.2.2. Spatial differences

Spatial differences refer to differences by geographic level and geographic sector. The geographic levels in PNG are national, region, province, district, LLG and ward. For planning purposes, the province is of particular importance, since planning and decision making capacity at the sub-national level is concentrated at this level.

The geographic sectors are the rural and urban sector. However, since the 1966 census, the rural sector has been subdivided into two sub-sectors viz. the rural village sector and the rural-non-village (RNV) sector. The population of the rural village sector is mainly living in traditional villages or clan areas and they are mainly engaged in subsistence agriculture. On the other hand, RNVs are areas located

within the rural village sector where people are engaged in economic activities that are not typical for this sector. RNVs are mine sites, work camps, large plantations, government stations, forestry stations, agricultural stations and mission stations. For the monitoring of HIV/AIDS, most of these RNVs and the surrounding area are of particular importance.

Until recently, due to the limited number of test sites and incomplete and inaccurate recording, little was known about the spatial distribution of HIV/AIDS. A large proportion of all cases were detected in a few urban centres, mainly the NCD. Consequently, the published figures by province of detection suggested that HIV infection was concentrated in those provinces with a test site but particularly in the NCD. This obviously portrayed a very misleading picture of the spatial distribution of HIV infection. For instance, many users of the data interpreted the figures as indicating that the NCD had by far the highest infection rate and did not realize that many people from other provinces especially Central Province, who were tested in the NCD were included in the NCD figures.

- Geographic level

In 2010, HIV/AIDS cases are recorded by province of origin and by province of detection. It is likely that in most, but certainly not all cases, the province of origin is the same as the province of birth. Unfortunately, the province of origin is not recorded in a very large number of cases. In 2008, this was still so for 45 percent of all cases. The available data does, however clearly indicate that a very large proportion of all HIV/AIDS infected males as well as females originates from the five provinces of the Highlands Region (77 percent). Outside the Highlands Region, the provinces of origin that are most frequently recorded are Central, Morobe, East Sepik and Gulf. Quite interestingly, for those who consider the NCD as their province of origin, the level of infection is relatively low. In the NCD, 93 percent of all recorded cases originate from only 9 of the 20 provinces.

The province of detection is the province where the test site is located. In many cases, this is not the province of usual residence. As expected, the province of detection is recorded in most cases. As already mentioned, for policy makers and planners and particularly those responsible for counseling and treatment of HIV/AIDS patients, knowledge of the usual place of residence of patients is far more useful than information by place of detection and place of origin. It is usually assumed that the province of detection is the same as the province of usual residence but this assumption is almost certainly incorrect in a large number of cases.

The proportional (%) distribution of confirmed HIV infections in 2008 by region and province of detection is depicted in Figure VI-3.

The population size of the 20 provinces of PNG is very different. In order to compare the prevalence of HIV/AIDS infection at the provincial level, the numbers and percentages of infected persons have been converted into rates. It appears that, since 2000, the Southern Region has always had the highest rate of infection. Prevalence of HIV/AIDS in the Highlands Region is close to that in the Southern Region. In 2003, in these two regions, the prevalence rate exceeded 1 percent. However, in the two remaining regions, HIV/AIDS infection is significantly lower. Moreover, in 2008 their prevalence rate has not yet reached 1 percent. In the Northern Region, the prevalence rate has, in the period 2001-2008 not changed very much. This may be

partly a result of the fact that all four provinces in this region contain large areas that are relatively inaccessible.

- Geographic sector

In the surveillance reports on HIV/AIDS, no distinction has so far been made between infected persons with a rural and urban place of residence. In spite of the lack of data, it is widely assumed that a disproportionate number of all HIV/AIDS cases are urban residents. The main reason for this assumption is that, at least in the past, virtually all cases were detected in an urban test site. Urbanization was and still is considered as a major factor contributing to the fast spread of HIV/AIDS. However, the level of urbanization in PNG is still low compared to that of most countries.¹⁷⁵

Moreover, it has been known for a long time that, with regard to all sexually transmitted infections (STI), the RNV sector in PNG is a high-risk sector.¹⁷⁶ Because of the strong correlation between STIs and HIV/AIDS, it is assumed that a disproportionate number of persons with HIV/AIDS get infected in and around these economic enclaves of PNG such as mine sites, work camps and plantations that make up PNG's RNV Sector.¹⁷⁷ It is also often assumed that the relatively high prevalence rate of HIV in Western Highlands (or more generally along the Highlands Highway) with its large number of RNVs (plantations) is the result of work-related short term migration from the surrounding rural area.¹⁷⁸

In this connection, it is also important to note that the PNGDSP 2010-2030 has introduced ten "economic corridors" (EC). In the future, all ECs will be connected by road. It may be expected that, unless drastic action is taken from the outset, these ECs, like the present RNVs will also become high-risk areas for STIs and HIV/AIDS.

2.3. Mode of transmission

In recent years reporting on "HIV mode of transmission" has marginally improved. However, in more than 50 percent of all reported cases of HIV infection, the mode of transmission is still not recorded. In order to produce a distribution of all cases by mode of transmission, the only option is once again to assume that the distribution of cases with mode of transmission unknown is the same as that for cases where this information is available. In this case, this assumption is almost certainly also incorrect. The available data on mode of transmission in 2008, is presented in Figure VI-3.

One important reason for the ambiguous quality of the "mode of transition" statistics is undoubtedly that health workers are often uncomfortable asking their HIV

¹⁷⁵ At the time of the 2000 census, the urban population was only 13.2 percent of the total population. This is, however a minimum estimate. The boundaries of the urban areas in PNG should be revised before the next census in 2010, using a consistent set of criteria.

¹⁷⁶ It will be noted that the report by the combined World Bank/AUSAID/ADB Mission in January 2004, makes reference to enclave extractive developments such as mines, logging and fisheries. This is, however only one, albeit a very important component of the RNV Sector. From the point of view of HIV/AIDS infection, the plantation sector may be an equally important component.

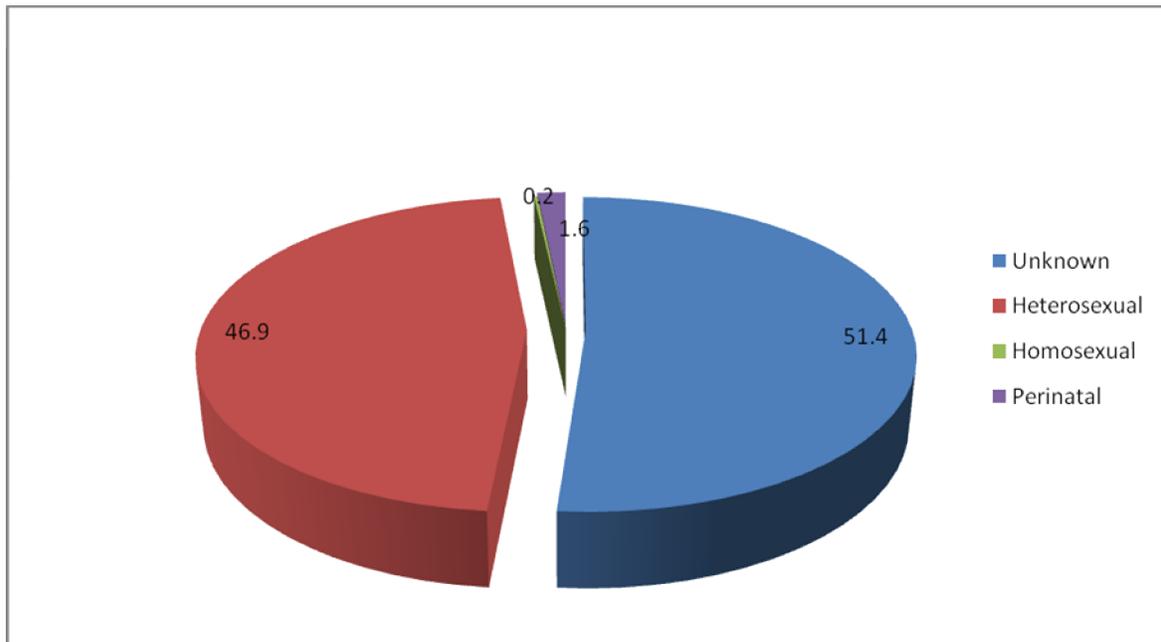
¹⁷⁷ In this respect it should be pointed out that, from the point of view of demographic and socio-economic research, the RNV Sector has, in the past, proved to be a very powerful analytical tool. This undoubtedly also applies to epidemiological and particularly HIV/AIDS research.

¹⁷⁸ Already since the early 1990s, several mining companies have been proactive with HIV/AIDS and sexual health programs for their workforce. (UN/USAID, 2002:19).

patients about the mode of transmission.¹⁷⁹ More specifically, it may be expected that homosexual transmission is underrepresented in Figure VI-3. Collecting information about mode of transmission will probably remain very sensitive in the future. Data on “mode of transmission” is unlikely to reach a high level of accuracy in the foreseeable future.

In recent years, perinatal exposure (mother to child transmission at birth and through breastfeeding) has become a more important mode of transmission in PNG. According to the available data, this has, after heterosexual transmission, become the second most important mode of transmission.

Figure VI-3: Proportion of HIV/AIDS by mode of transmission in 2008



Source: DNPM, 2009

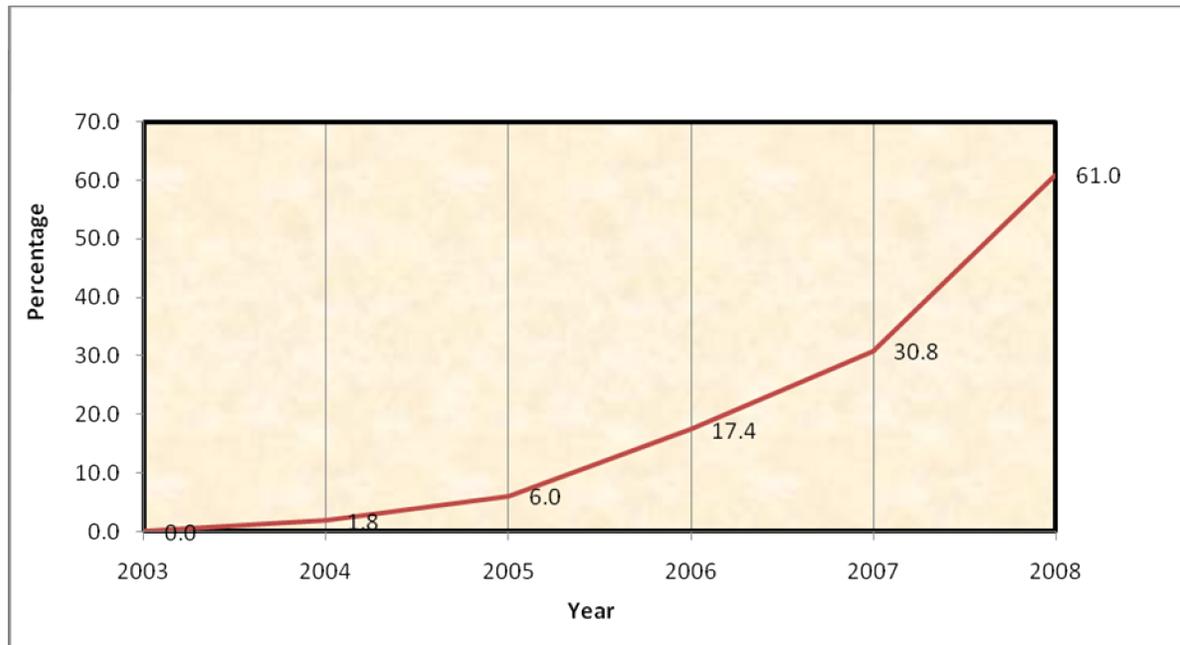
2.4. Treatment

The ART program started in 2004. Since then, it has steadily been expanded and by the end of 2008, 19 percent of health facilities offered ART. By that time, 5,195 patients had been put on ART since treatment started. However, it has been estimated that in 2008, close to 9,000 persons infected with HIV/AIDS were in need of ART. The increase in the ART coverage rate is shown in Figure VI-4.

Recently, there have been suggestions in the press that funding of the ART programme, which relies heavily on donor funding, may be reduced. If this happens, it would be a disastrous development.

¹⁷⁹ NDOH, 2009:8

Figure VI-4: Change in ART coverage rates between 2003 and 2008



Source: DNPM, 2009

2.5. Knowledge and attitude

Table VI-3 presents the change in knowledge about HIV/AIDS between 1996 and 2006 for females aged 15-49. The information is based on 1996 and 2006 DHS data. The 2006 DHS also included a male module on HIV/AIDS. The table includes the main source of information.

The following comments apply to the information in Table VI-3.

- Between 1996 and 2006, there has been a significant increase in the knowledge of HIV/AIDS and this applies to all categories of respondents.
- In 2006, the level of knowledge for all categories of respondents is higher for males than for females.
- As expected urban respondents are significantly more knowledgeable about HIV/AIDS than rural respondents.
- The level of knowledge is highest in the Islands and Highlands Regions and lowest in the Northern Region.
- The level of knowledge increases with the level of formal education.

For the rural population, health workers are the main source of information on HIV/AIDS whereas for the urban population it is the radio. However for the never married and those with a very low level of education the main source of information is friends and relatives. This is especially so in the Highlands Region.

Table VI-3: Knowledge of HIV/AIDS and main source of knowledge in 1996 and 2006 by characteristics of respondents aged 15-49

Characteristics	Females know about AIDS (1996)		Females know about AIDS (2006)		Males know about AIDS (2006)	
	%	Main source	%	Main source	%	Main source
Total	64.6	Health worker	87.2	Health worker	94.6	Health worker
• Rural	61.6	Health worker	85.5	Health worker	93.8	Health worker
• Urban	76.1	Radio	96.2	Radio	98.4	Radio
Geographic level (Regions)						
Southern Region	58.9	Radio	81.6	Health worker	93.0	Health worker
Highlands Region	74.3	Friends/relatives	93.8	Friends/relatives	97.8	Health worker
Northern Region	50.4	Health worker	77.5	Health worker	89.9	Radio
Islands Region	81.2	Health worker	93.8	Health worker	96.7	Radio
Current Marital Status						
Never Married	64.3	Friends/relatives	86.5	Friends/relatives	95.0	Radio
Currently Married	64.5	Health worker	87.2	Health worker	94.3	Health worker
Formerly Married	66.9	Health worker	89.8	Friends/relatives	94.7	Health worker
Level of Education						
No education	54.4	Friends/relatives	79.6	Friends/relatives	86.9	Friends/relatives
Grade 1 to 5	60.9	Friends/relatives	83.1	Friends/relatives	92.1	Friends/relatives
Grade 6	66.2	Health worker	88.8	Health worker	95.2	Health worker
Grade 7+	89.4	Health worker	96.8	Health worker	99.1	Radio

Source: 1996: NSO, 1997:119.
2006: NSO, 2009:145-146

The next Table VI-4 presents the response to the 1996 and 2006 DHS question about knowledge on how to avoid HIV/AIDS. Only the most common answers are included in this table.

Table VI-4: Persons who know about HIV/AIDS by knowledge of ways to avoid HIV/AIDS (%) in 1996 and in 2006.

Ways to avoid HIV/AIDS	1996	2006	
	Females	Females	Males
(1) One sex partner	61.3	57.6	63.4
(2) Avoid sex with prostitutes	44.0	24.7	31.4
(3) Use condom	19.3	35.2	49.0
(4) Abstain from sex	4.6	10.3	10.4
(5) No way to avoid HIV/AIDS	10.3	26.6	18.6

Source: NSO, 1996 DHS, 2006 DHS

Although the proportion of respondents who consider condoms as a way to avoid HIV/AIDS remains low, there has been a remarkable increase between 1996 and 2006. Furthermore there has been some increase in the proportion of respondents who consider abstaining from sex as a way to avoid HIV/AIDS. Similarly, there has been a significant increase in the proportion of respondents who think that there is no way to avoid HIV/AIDS.

Finally, the proportion of respondents who think that a healthy person can have HIV/AIDS has between 1996 and 2006 increased from 69.3 percent to 77.7 percent whereas a very significant proportion of all respondents (more than 80 percent) in 1996 as well as 2006 think that AIDS is “almost always” a fatal disease. Furthermore, the proportion of respondents who think that they have no risk at all of getting HIV/AIDS has decreased from 72.8 percent to 61.8 percent.

2.6. Research studies: Links between GBV and HIV infection

Many studies in PNG have emphasized the very important links between gender based violence (GBV) and HIV infection.¹⁸⁰ These studies indicate that three forms of GBV are linked to increased risk of HIV infection. These are:

- Child sexual abuse.
- Domestic violence (Physical violence from an intimate partner).
- Marital rape (Sexual violence from an intimate partner).

2.6.1. Child sexual abuse

In these studies 28 percent of women had been sexually abused as children. Moreover, women who had been sexually abused as children were twice more likely to test positive for HIV than women who had not been sexually abused in childhood. Most abusers were male family members. Most victims of child sex abuse remained silent about the abuse.

2.6.2. Domestic violence

In these studies, 58 percent of the women experienced physical violence from an intimate partner. Women with a physically abusive intimate partner have higher rates of HIV and STIs than women whose intimate partners are not physically abusive. Moreover women who experienced financial abuse were four times more likely to exchange sex for money and goods.

2.6.3. Marital rape

In these studies, 45 percent of the women reported sexual abuse by their intimate partner. Moreover, women with a sexually abusive partner are twice as likely to be HIV positive as women whose partners are not sexually abusive. It is also more common for women to experience forced sex in intimate relationships than to be raped outside of marriage or a relationship.

2.6.4. Other HIV related research

There is a large number of research studies with regard to the nature and impact of the HIV/AIDS epidemic and the effectiveness of the response. Fortunately, the studies carried out in 2007 and 2008 have been synthesized for common findings.¹⁸¹ In this section it is not feasible to summarize all these findings but the most

¹⁸⁰ A comprehensive overview can be in a 2008 study by Lewis, Maruia, Mills and Walker, funded through NACS, with AusAID support. This section is mainly based on the findings of the report

¹⁸¹ King, E. and T. Lupiwa, Undated.

important ones are discussed in Section 4 (MDG 6 specific challenges). Users are referred to the original sources.

2.7. UNGASS Report

The UNGASS 2008 Country Progress Report presents additional information on the HIV/AIDS situation and trend in PNG.¹⁸² It provides information on 16 of the 24 UNGASS indicators with regard to HIV/AIDS. Of the UNGASS indicators, the impact indicators are of particular relevance for HIV/AIDS monitoring in PNG. The published values of 16 of the UNGASS indicators in 2008, confirm that PNG is not on track with its efforts to achieve MDG 6. The 2nd UNGASS Report covering the period 2008 and 2009 will be published soon.

According to the UNGASS Report, there is no alignment between the UNGASS indicators and the national indicators included in the MTDS 2005-2010 and the proposed national indicators for the MTDP 2011-2015. Furthermore, much of the UNGASS information is not part of the NHIS database. It is based on small scale surveys and not representative of the entire country.¹⁸³ To become more useful for policy making, planning and monitoring, the UNGASS indicators, should be localized and aligned with national policies and plans.

2.8. Summary

The annual rate of increase of HIV/AIDS infections in PNG halted around 2000, but this does not apply to the annual number of persons infected and the incidence and prevalence rate. Judging from the trend in recorded cases between 1987 and 2008, the PNG epidemic may, compared to several of the worst hit countries in sub-Saharan Africa, still be at a relatively early stage of development.

In this respect, it should be mentioned that the course of the HIV/AIDS epidemic in Uganda may be of some relevance to PNG. In the early 1990s, PNG and Uganda were at about the same stage of their mortality transition. However, due to HIV/AIDS, mortality in Uganda increased from the late 1990s onwards. Many other demographic and socio-economic indices deteriorated during this period as well, e.g. school enrolment and retention rates. This happened in spite of the fact that Uganda reputedly waged one of the world's most successful battles against the spread of HIV/AIDS. It is also important to note that, initially, PNG used the same standard HIV/AIDS model as Uganda.¹⁸⁴

Finally, many studies that have been conducted in PNG emphasize the close relationship between gender inequality and in particular gender based violence (GBV) and HIV infection. There is no reasonable doubt that GBV is one of the key factors driving the HIV/AIDS epidemic in PNG. Women and girls suffer the most from the impact of HIV and AIDS. Reversing the course of the epidemic will depend, to a significant degree on the empowerment of women.

¹⁸² UNGASS is the United Nations General Assembly Special Session. The UNGASS Declaration of 2001 to which PNG is a signatory, requires comprehensive reporting on the HIV/AIDS situation. PNG produced its first UNGASS Report in 2008 and is presently in the process of formulating its second report.

¹⁸³ For many of the UNGASS indicators the numerator cannot precisely be measured. Moreover, the denominator is often also unknown.

¹⁸⁴ UN/USAID, 2003:17.

OPPORTUNISTIC INFECTIONS

These are infections that invade the body when the immune system is weakened by the HIV virus. The most important ones include TB, pneumonia and cancers like kaposi sarcoma. This section focuses on two of these opportunistic infections, TB and pneumonia. In addition, it discusses malaria since this is also an important co-factor of HIV/AIDS. According to the available cause of death statistics, all three are major causes of death in PNG and are often closely associated with HIV/AIDS.¹⁸⁵. Under normal circumstances, these diseases are highly preventable and/or curable.

2.9. TB

TB has a very high community transmission rate and consequently it has a high disease burden. In recent years, childhood TB represented more than 30 percent of all TB cases treated in PNG. Moreover, TB contributes significantly to the high level of mortality at early childhood. Through its very close association with HIV/AIDS, the incidence of death from TB will almost certainly increase in the years to come.¹⁸⁶

2.10. Pneumonia: “The forgotten killer”¹⁸⁷

Pneumonia is a very serious disease.¹⁸⁸ In PNG, it is the leading cause of death (followed by malaria). According to the published figures, between 1995 and 2001, there has been a marginal decline in the death rate from this illness from about 20 per 100,000 to about 17 per 100,000. The Highlands and Northern Regions are most affected. The above rates are almost certainly under-estimates since surveillance systems are inadequate. Children in particular are affected.¹⁸⁹ For children under 12 months, pneumonia is the leading cause of death. In children under 5, pneumonia as cause of death is only second to malaria.

At this point in time, pneumonia represents (after malaria) the second highest burden of disease in the country.¹⁹⁰ In PNG, these two diseases also bring most people to a health facility. Some risk factors for pneumonia are poor hygiene, poor nutrition, overcrowding and environmental pollution. According to 1996 and 2006 DHS data, the first three plays an important role in PNG.

Pneumonia is a preventable disease. The most important strategy used in PNG is vaccination (see also the immunization section under MDG 4). It is likely that the

¹⁸⁵ The cause of death distribution of those for whom this information had been recorded in the 1999 Health Information Survey is as follows:

pneumonia	16%	malaria	12%
tuberculosis	7%	meningitis	5%
heart diseases	5%	cancer	4%
diarrhea, anemia and typhoid		each	3 %

¹⁸⁶ In 2003, TB patients occupied 30 % of all the beds in the Port Moresby General Hospital and 20 % of the TB inpatients were positive for HIV. (DOH, 2004, p. 21)

¹⁸⁷ The National, 13 Nov 2009:6

¹⁸⁸ Pneumonia is caused by viruses, bacteria and parasites. The most common cause of pneumonia in PNG are two bacteria, the pneumococcus and haemophilus.

¹⁸⁹ All children with cough and fast breathing must be treated with antibiotics at an outpatient department.

¹⁹⁰ In this respect, it should also be mentioned that acute lower respiratory infection (ARI) is the most common cause of serious illness and death amongst children in PNG. Pneumonia is the most common cause of ARI. ARI cases account for 30 to 40 percent of all hospitalizations. The new Child Health Plan contains a comprehensive strategy to address pneumonia.

death rate from pneumonia will increase again in the near future because of its association with HIV/AIDS.

Some reasons why the death rate due to pneumonia is much higher than necessary include:

- Late admission (often because of inaccessibility of aid posts and health centres)
- Deterioration of infrastructure
- Staff incompetence in diagnosing and treating pneumonia
- Drug and oxygen shortages and problems with the supply of diagnostic reagents
- Non-functioning X-ray machines
- Lack of proper maintenance of equipment

2.11. Malaria

Malaria is endemic in all coastal provinces of PNG. NHIS information on deaths from malaria is incomplete. However, there is no doubt that the average number of recorded deaths per year from malaria remains high. In fact, malaria and HIV/AIDS are now the leading causes of death in PNG. Amongst the recorded deaths alone, deaths from malaria average between 600 and 700 per year.¹⁹¹ This is mainly from cerebral malaria. However, it needs to be realized that these deaths are only the tip of the iceberg. There is some evidence that, since 1995, the death rate from malaria, based on recorded cases may have decreased very marginally from 14 to slightly below 13 per 100,000. However, once again, this is based on recorded deaths only.

The NHIS data shows that there is a significant variability in death from malaria at the provincial level. The most affected provinces are New Ireland, West New Britain, Milne Bay, Manus and Morobe. However, this may in part be due to more complete reporting in these provinces. It should also be mentioned that the Highlands provinces are now also affected by malaria.

Because of the urban/institutional bias in the NHIS data, it is believed that malaria rates derived from this source underestimate the threat from malaria. Many people dying from malaria, especially in the inaccessible parts of the rural sector with little or no access to health facilities are not included in the NHIS cause of death statistics. Furthermore, as in the case of pneumonia, the death rate from malaria may well rise again in the future, because of its close association with HIV/AIDS. At this point in time, malaria poses by far the highest disease burden in PNG.

The interventions recommended in the National Health Policy (NHP) 2001-2010 to reduce the incidence of malaria include vector control, personal protection and availability of effective treatment. However, so far, it has been very difficult to monitor the malaria control programme. Consequently, the 2006 DHS included for the first time a malaria prevention module. This module includes specific questions

¹⁹¹ Furthermore, it is believed that about 7 percent of mortality in children under the age of five is from malaria.

on the ownership of mosquito nets, treatment status of mosquito nets, how mosquito nets are obtained and when, users of mosquito nets, frequency of use, place of repair and treatment of mosquito nets, accessibility and reason for use and non-use of mosquito nets. Table VI-5 presents an overview of ownership of treated and untreated mosquito nets.

Table VI-5: Household ownership of mosquito nets (%) by household characteristics

Household Characteristics	Treated mosquito net	Untreated mosquito net	No mosquito Net
Total	32.9	25.5	49.0
• Rural	32.4	24.5	50.4
• Urban	37.3	34.5	37.5
Region			
• Southern	48.0	38.0	26.4
• Highlands	13.1	6.7	81.2
• Northern	29.7	50.7	30.6
• Islands	77.5	19.6	16.8

Source: NSO, 2009:28

Judging from the very high proportion of households without mosquito nets, and the high proportion of households with untreated mosquito nets, there is significant scope for improvement especially in the Northern and Southern Regions. Moreover, in only 59.9 percent of all households with mosquito nets, everybody in the household uses a net. It appears that mothers and children are the best protected.¹⁹² The most frequently cited reasons for using a mosquito net are prevention of mosquito bites (77.4 percent) and protection against malaria (67.8 percent).¹⁹³

The main reasons why households do not have mosquito nets are that they are not available in the area and that they are too costly.¹⁹⁴ Moreover, most households that have mosquito nets were given the nets by the DOH (41.9 percent) or they bought it from a private dealer (38.8 percent).¹⁹⁵

From all households with mosquito nets, the majority (79.3 percent) does not know a place where their nets can be treated.¹⁹⁶ Moreover, 45.6 of all households with mosquito nets reported that their nets were damaged.¹⁹⁷

2.12. Concluding comment

The burden of disease from opportunistic infections in PNG is high. A large number of years of healthy life are being lost because of these diseases. The DOH notes that more than 50 percent of the above three diseases can be prevented through cost effective interventions like immunization and inexpensive antibiotics (in the case of pneumonia).

¹⁹² NSO, 2009:33

¹⁹³ Ibid:35

¹⁹⁴ Ibid:29

¹⁹⁵ Ibid:30

¹⁹⁶ Ibid:32

¹⁹⁷ Ibid: 33

3. Targets and indicators

3.1 Global targets and indicators

The UNDG formulated three targets associated with MDG 6. The official list of the global targets and indicators, effective 15 January 2009 is as follows:

Target 6A Have halted by 2015 and begun to reverse the spread of HIV/AIDS.

The associated global indicators are:

- 6.1. HIV prevalence among population aged 15-24 years
- 6.2. Condom use at last high-risk sex
- 6.3. Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS
- 6.4. Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years

Target 6B Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it.

The associated global indicator is:

- 6.5. Proportion of population with advanced HIV infection with access to antiretroviral drugs

Target 6C Have halted, by 2015 and begun to reverse the incidence of malaria and other major diseases.

The associated global indicators are:

- 6.6. Incidence and death rates associated with malaria
- 6.7. Proportion of children under 5 sleeping under insecticide-treated bed nets and proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs
- 6.8. Incidence, prevalence and death rates associated with tuberculosis
- 6.9. Proportion of tuberculosis cases detected and cured under directly observed treatment short course

Contrary to most global targets associated with MDG 1 to 5, the above three targets for MDG 6 are vague. Moreover, the list of global indicators appears to be rather odd. For instance, even the most common indicators like the overall incidence rate and prevalence rate of HIV/AIDS are not included on the list of global MDG indicators

3.2 National targets and indicators

In preparation for the 2005-2010 MTDS, the following two national targets with associated indicators were set for MDG 6:

MTDS Target 11 Have controlled by 2015 and stabilized the spread of HIV/AIDS by 2020.

The associated national indicators are:

28. Incidence rate of HIV/AIDS per 1,000 per year by sex
29. Prevalence rate (%) of HIV/AIDS by sex
30. Prevalence rate (%) of HIV/AIDS for persons aged 15-49 by sex
31. Case fatality rate (%) of AIDS by sex

32. Prevalence rate (%) of HIV/AIDS for 15-24 year old pregnant women
33. Number of children under age 15 orphaned by HIV/AIDS per year

MTDS Target 12 Have controlled by 2015, and either stabilized or reversed the incidence of pneumonia, malaria and other major diseases by 2020.

The associated national indicators for pneumonia, TB and malaria are: Indicators 28-31

Like the global targets, both national targets also lack precision. It is not clear what should be halted by 2015, the annual increase in numbers, the annual rate of increase of infections, the incidence rate, the prevalence rate, the case fatality rate or something else. This vagueness is undoubtedly partly the result of the fact that, in spite of improvements in recent years, the data base for MDG 6 remains incomplete. Consequently, it remains unclear at exactly what rate HIV infection has increased between 1987 and 2009. The present trend is basically a projection. Under these circumstances it is difficult to establish meaningful targets for the future.¹⁹⁸ Furthermore, the present data base does not allow precise measurement of several national indicators.

Monitoring under the umbrella of the United Nations General Assembly Special Session (UNGASS) on HIV/AIDS in 2001 should be mentioned.¹⁹⁹ Every two years, all countries that are signatory to the UNGASS Declaration have the obligation to produce a progress report on the monitoring of process and on HIV/AIDS policy and interventions in their country. The UNGASS Declaration has identified 24 indicators on which countries need to report. These indicators are classified into three categories, viz.

- National progress indicators
- Knowledge and behavior indicators
- Impact indicators

PNG, at the initiative and with the support of WHO and UNAIDS, has produced its first UNGASS Country Report in 2008.²⁰⁰ In this report, PNG managed, after wide consultation, to report on 16 of the 24 UNGASS indicators. However, most of the quantified indicators are not based on complete and accurate data and should be considered as very rough estimates at best. In most cases, the numerator as well as the denominator of the UNGASS rates is not precisely known. In conclusion, it appears that many of these UNGASS indicators can at this stage not yet reliably be estimated.

¹⁹⁸ The MTDS targets were devised as part of the consultations regarding the National Poverty Reduction Strategy (NPRS) which was never adopted. The reference to 2020 is the result of this linkage with the NPRS.

¹⁹⁹ The 2001 UNGASS declaration was adopted by 189 UN member states, including PNG

²⁰⁰ In order to facilitate the production of the 2008 country report, a Country Response Information System (CRIS) was established.

As part of the formulation of the MTDP 2011-2015, the national MDG 6 indicators have been reviewed and retailored. These retailored indicators are discussed in the DACA report on human development and the MDGs.

3.3 Progress towards achieving MDG 6

In 2010, there is no sign that the incidence of HIV/AIDS and associated opportunistic diseases will be halted let alone be reversed any time soon. With only six years left of the initial MDG cycle 1990-2015, it appears that the global as well as national HIV/AIDS targets are out of reach. This also applies to the targets concerning the opportunistic diseases associated with HIV/AIDS. However, since major progress has been made in the area of treatment, it is expected that mortality due to HIV/AIDS may slow down.

4. MDG 6 specific challenges

In 2004, the MDG National Steering Committee placed the HIV/AIDS epidemic at the top of its list of crosscutting challenges for all MDGs (see Part A, Chapter II-2A). It kept this position during the 2006 and 2009 reviews. Between now and 2015, all available resources should be used to counter the HIV/AIDS epidemic since any future advances made in the area of poverty reduction, health and education may well be overtaken by the impact of this epidemic.

This section focuses on MDG 6 specific challenges. The rapid spread of HIV/AIDS in PNG is caused by many factors ranging from individual risk behavior to wider socio-economic, cultural and political factors. During the preparation phase of the inaugural MDGR in 2004, a large number of these factors were identified. In 2006 and in 2009, it was concluded that all challenges that existed in 2004 still exist in 2009. Many new challenges have been added, especially challenges that require behavioral change. By now, the list is so long that it is impossible in this report to discuss or even mention all of them. This section discusses only a few of the most obvious challenges. There is a very comprehensive literature on these challenges and users are referred to this literature.

The challenges listed in this section should not be given the same weight. Generally, an effective response to a challenge becomes difficult, expensive, fragmented and disorganized when a very large number of contributing factors are all considered of equal importance and given the same high priority. In order to become more useful for those actively involved in HIV/AIDS counseling, advocacy, care and treatment it is imperative that the list of challenges is prioritized. So far, it has not been possible to do this.

4.1 General

As mentioned in Section 2, a large number of studies related to the nature and impact of the HIV/AIDS epidemic have been carried out in PNG. The studies carried out in 2007 and 2008 have been synthesized for common findings. Most of these common findings represent very serious challenges for the achievement of not only MDG 6 but all other MDGs as well.

In this report, it is not feasible to discuss all the challenges in detail. However, many of the central themes in these studies, identified by the authors refer to the impact of tradition, culture, customs and norms on the HIV/AIDS epidemic. In particular, the

impact of violence, especially gender-based violence (GBV) can only be described as devastating. Moreover, there is a high incidence of high-risk behavior such as unsafe sex, widespread multiple partner sex and a drop in single partner sex and abstinence.²⁰¹ This is exacerbated by patterns of male sexual behavior including a high incidence of rape,, incest and sexual assault. This behavior is often accompanied by alcohol and drug abuse. A combination of all these factors presents ideal conditions for the rapid spread of HIV, especially amongst women.²⁰² For a summary of all these challenges, users are referred to the relevant literature but particularly the “Systematic Literature Review of HIV and AIDS Research in Papua New Guinea 2007-2008” by King and Lupiwa and the studies cited by them.

The existence of all these sensitive challenges is often denied or ignored. In the meantime, the above challenges are undoubtedly the most difficult ones to address since they require behavioral change. Even if optimal legislation and policy was in place and financial constraints were non-existent, PNG would probably still have a HIV/AIDS epidemic, unless behavioral problems are addressed more effectively. This is why the National Strategic Plan (NSP) 2006-2010 emphasizes that not only the socio-economic determinants of the spread of HIV should be addressed with vigor but also the cultural ones.²⁰³

Behavioral change cannot be achieved without empowerment of women (see MDG 3). Rapid social change increasingly affects gender relations. In its turn, this increases the vulnerability of women with regard to HIV infection.

In PNG, behavioral change can also not be achieved without support from the churches. In this respect, it should be mentioned that “concerns about morality and Christian values are repeatedly confounded with public health matters, to the detriment of both the churches and the health establishments. Because churches provide approximately 51 percent of all health services, the issue is a severe one...”²⁰⁴

Complacency remains a great problem. One result of this is that several opportunities that offered themselves at the early stages of the epidemic have not been utilized. For instance, it is generally recognized that “the implementation of adequate interventions for sex workers at the early stages of the epidemic can delay a generalized epidemic”. In PNG this has not happened as there was no prioritization of vulnerable populations”.²⁰⁵ These and related factors such as lack of transparency and accountability make an efficient multi-sectoral response to the HIV/AIDS epidemic very difficult.

The impact of the low level of education and literacy should once again be emphasized. This contributes to the lack of awareness and poor understanding of HIV transmission. This in turn leads to fear and stigmatization of people living with HIV and to marginalization, discrimination, social exclusion and rejection by the family, the community and the workplace.²⁰⁶ Interventions to address these social and cultural challenges are very problematic. For instance, since HIV infection affects people at a younger and younger age, it is essential that all schools incorporate HIV/AIDS awareness in the community life subjects at the primary level. Postponing this to the secondary level implies that many of those who drop out after

²⁰¹ UN/USAID, 2002:10

²⁰² Ibid: 10-11.

²⁰³ NACS, 2006:i.

²⁰⁴ UN/USAID, 2002:26.

²⁰⁵ Ibid: 14

²⁰⁶ NHASP, 2003:13.

the primary level will probably remain ignorant with regard to HIV/AIDS. As in most countries in the region it proves to be very difficult to introduce effective HIV/AIDS education into the school curriculum, especially at the primary level.

Finally, in PNG, rural-urban migration but also work related (often seasonal) migration to rural non-villages (RNVs) is an important factor in the spread of HIV/AIDS, particularly in the Highlands Region. The planned “economic corridors” (EC) under the PNGDSP 2010-20130, may also become high-risk areas unless HIV/AIDS interventions are part of the ECs right from the start.

4.2 Legislation/policy

PNG has formulated and adopted several comprehensive policies and plans in order to combat HIV/AIDS. In March 2000, AUSAID announced that K100m would be provided for a National HIV/AIDS Support Project 2000-2005 (NHASP) to complement the NACS and ensure implementation of the second HIV/AIDS Medium-Term Plan. This plan is based on a standard international model, which has amongst others been adopted in Uganda.²⁰⁷

As in the case of all other MDGs, implementation has not kept up with the formulation of policies and plans. Lack of political leadership and coordination and widespread complacency at all levels leads to ineffective interventions.²⁰⁸

4.3 Financial

Complacency with regard to the HIV/AIDS threat at the decision making level also becomes clear from the national budget allocation to HIV/AIDS. So far, very limited national resources have been made available for this. Dependency on support by donor agencies is almost complete. They provide approximately 90 percent of all resources.²⁰⁹ In spite of the large scale donor assistance, PNG’s interventions with regard to the HIV/AIDS epidemic have so far not been very effective.²¹⁰

At the household and family level the financial consequences of the HIV/AIDS epidemic are severe. HIV/AIDS leads to loss of income and limited employment opportunities, particularly in the modern sector. This in turn, leads to increase in poverty, economic disparity and insecurity and a high level of dependency. This does not only affect the HIV/AIDS sufferers but their entire family/household, especially its female members. The persons most affected are probably the illiterate and under-educated unemployed youths in the vulnerable age group 15-24, especially those in the urban sector.²¹¹ In the largest urban centers, impoverishment has for many already led to a life of crime, and in the case of young girls, to a life of prostitution.

²⁰⁷ UN/USAID, 2002:15-17

²⁰⁸ One example of unsatisfactory coordination is the lack of synchronization between the DOH and the NACS.

²⁰⁹ Most funding is provided by AUSAID with also some funding from the EU and the UN. Furthermore, the Global Fund has provided a grant of US\$ 29 million for care and treatment.

²¹⁰ Compared to most countries with a HIV/AIDS epidemic, large scale donor funding has been made available for the fight against HIV/AIDS. The HIV/AIDS campaign in PNG probably spends more money per capita than most countries with a HIV/AIDS epidemic.

²¹¹ This is supported by urban employment and unemployment figures derived from the 1990 and 2000 census as well as from the 1986 UHS information on under-employment (by income, time and mismatch of skills) in the NCD.

4.4 Service delivery

As shown in the previous sections, service delivery has improved significantly in recent years. However, many problems remain. The role of health officials in preventing HIV infection as well as in the care for HIV patients remains inadequate. Access to condoms remains limited since they are very scantily distributed, especially in most of the rural sector. This is not only important in the combat against HIV/AIDS but also in the combat against sexually transmitted diseases (STIs) The incidence of STIs is high for both low- and high-risk individuals and it is an important co-factor of HIV transmission.²¹²

Law and order problems (tribal fighting and crime) aggravate the HIV/AIDS situation in PNG. These problems affect the limited access to basic services. Lack of accessibility to basic services increases the risk of HIV infection and even more to treatment and counseling after infection.

4.5 Monitoring

As shown in Section 1, the HIV/AIDS surveillance system and data management has improved in recent years. Nevertheless, a large proportion of HIV/AIDS infections remain unreported. Furthermore, the usual place of residence of HIV infected persons is not recorded. In these cases, contact tracing becomes even more difficult. This also contributes to ineffective care, counseling and treatment.

Monitoring of the HIV/AIDS epidemic is discussed in more detail in the forthcoming DACA report.

5. Good practices

Firstly, few countries with a HIV/AIDS epidemic have conducted more integrated surveillance surveys than PNG. Moreover, a comprehensive literature review has been carried out that has identified the central themes in the HIV/AIDS literature related to the nature and impact of the epidemic as well as the effectiveness of the national response. As a result, in PNG probably more is known about the drivers of the epidemic than in most countries with a HIV/AIDS epidemic. Furthermore, the findings of the review have been incorporated in the NSP 2011-2015.

Secondly, monitoring of the incidence and prevalence of HIV/AIDS has improved drastically since 2004, when the Inaugural MDGR was published. The number of test sites has increased dramatically and provincial monitoring teams are now in place. With the publication of the 2008 STI, HIV and AIDS Annual Surveillance Report monitoring has also become more effective. Furthermore dissemination has also been improved through the conduct of regular workshops.

Finally, the initiative by PNG's Population Media Centre (PMC), which was mentioned as a good practice under MDG 3 is equally important for MDG 6. The PMC is in the process of developing radio serial dramas of 208 episodes covering a period of two years. These dramas will raise awareness and encourage citizen participation in promotion and delivery of the MDGs and will hopefully accelerate the achievement of the MDGs. Since this innovative approach focuses on attitude and behavior change,

²¹²Ibid:25

the programme is of particular importance for the achievement of MDG 6 and MDG 3.

6. Interventions

The long and varied list of challenges with regard to the HIV/AIDS epidemic hammers the message home that an integrated response towards the HIV threat is imperative.

6.1 Supporting international environment

The UN General Assembly Special Session on HIV/AIDS (UNGASS) is the focal international framework that governs all UN activities with regard to HIV/AIDS. As mentioned, UNGASS has developed 30 specific targets, which have been categorized into 11 broad areas.²¹³ PNG is a signatory of the UNGASS declaration.

PNG is also a signatory to a number of international conventions and agreements that highlight HIV and AIDS as a major issue that needs to be addressed. A list of these conventions and treaties includes:

- International Conference on Population and Development (ICPD), 1994
- International Conference on Women, 2000
- International Conference on Gender Equality, Development and Peace for the twenty-first century
- World Summit for Social Development and Beyond

Interventions concerning prevention, testing, counseling, treatment and care are further guided by the Global Directions of 2005.

So far, PNG's Development Partners have provided approximately 90 percent of all the resources for the fight against HIV/AIDS. Most of the financial support comes from AUSAID. Furthermore, the Global Fund has provided a grant of US\$ 29 million for care and treatment. Significant financial support is provided by several other donors, e.g. the EU and the UN.

6.2 National interventions

The national response to the epidemic was formally launched in 1997. In that year the government established, by an Act of Parliament, the National AIDS Council (NAC). The NAC is a multi-sectoral committee with membership from government departments, the Council of Churches, the National Council of Women, the Chamber of Commerce, NGOs and people living with HIV/AIDS. The mandate of this committee is to facilitate and coordinate a comprehensive multi-sectoral response to the HIV epidemic. The NAC has five working advisory committees.²¹⁴ Moreover 20 Provincial AIDS Committees (PAC) have also been established.

²¹³ NHHASP, 2003:4-5.

²¹⁴ These working committees focus on behavior change, medical expert advice, legal and ethical advice, research and sectoral response.

The technical arm of the NAC is the National AIDS Council Secretariat (NACS). This is a multi-sectoral statutory body.²¹⁵ The multi-sectoral approach of the NACS towards intervention implies that all concerned departments, agencies, organizations and other stakeholders should be actively involved in the response against the threat of HIV/AIDS.

The first national plan with regard to HIV/AIDS was the National HIV/AIDS Medium Term Plan covering the period 1998-2002. This plan was the basis of all activities in the combat against HIV/AIDS. AUSAID, EU and UN agencies were the main development partners supporting the implementation of this plan. During the review of this plan in 2002, it was recommended that a new national plan should be developed as soon as possible.

The planning process leading to the present NSP covering the period 2006-2010, started with a workshop in 2003. One of its outcomes was the establishment of a HIV/AIDS Steering Committee. The NSP 2006-2010 has seven focal areas viz.:

- Treatment, counseling, care and support
- Education and prevention
- Epidemiology and surveillance
- Social and behavioral change research
- Leadership, partnership and coordination
- Family and community support
- Monitoring and evaluation

These focal areas provide the broad strategic framework for an integrated national response to the HIV/AIDS epidemic. They form the enabling environment for effective HIV implementation of the NSP. An annual planning exercise for the implementation of the NSP is undertaken each year. Moreover, since 2007, an Independent Review Group (IRG) reviews the national response to the HIV/AIDS epidemic on an annual basis. The IRG reviews the performance of planned activities against NSP objectives and reports to the NAC.²¹⁶ The most recent review, carried out in August-September 2008, concluded that five of the eight priorities identified during the previous review in September 2007, had been achieved.²¹⁷

Presently, the NACS is in the process of preparing its National HIV Strategy for the period 2011-2015. This multi-sectoral strategy will address prevention, treatment, care and support, gender, leadership and vulnerable groups. There will be an increased focus on testing and more accurate and timely data.

²¹⁵ The 1993 National AIDS Council proposal recommended the establishment of a statutory body with an independent chair and non-official membership. This proposal was not accepted. In 1997, the Ugandan model was accepted in stead. The present council has the Secretary for Health as ex-officio chair and membership consists of 14 departmental heads and representative from business, churches, voluntary organizations and women. The Minister of Health appoints the Director of the NAC Secretariat (NACS) on the recommendation of the Council. (UN/USAID, 2002 16).

²¹⁶ So far, the IRG has undertaken three reviews. The most recent review is that of August/September 2008.

²¹⁷ Aggleton, P. et al, 2008:3.

Finally, it needs to be stressed that the NSP for HIV/AIDS falls within the overall policy directives of government. A comprehensive list of all agencies involved in HIV/AIDS control activities in PNG, their main programmes as well the available budget and time period can be found in a report by the combined World Bank/AusAID/ADB Mission in 2004. The same applies to PNG's response to the HIV/AIDS epidemic.²¹⁸ More in particular, the NSP 2006-2010 has been embedded in several national policies and strategies. This is particularly important in the case of two overarching national policies viz.

- MTDS 2006-2010
- National Population Policy 2000-2010

It is generally recognized that gender inequality and the special health risks women face i.e. as a result of sexual violence place them at a very high risk of HIV infection. Consequently, in 2006, the NAC commissioned a National Gender Policy (NGP) on HIV/AIDS covering the period 2006-2010. This is a companion document to the NSP. The NGP recognizes that gender is the key factor shaping both the epidemic and the response to it. In other words, it uses a gendered approach to the HIV/AIDS epidemic. The NSP and the NGP jointly comprise the "one national HIV/AIDS plan of action".

Furthermore, in August 2003, the government enacted a "HIV/AIDS Management and Prevention Act".²¹⁹ This act deals with, amongst other things:

- Discrimination and other unlawful acts
- Testing, Counseling, Reporting and Confidentiality
- Persons creating a risk to others

It mainly deals with human rights aspects of HIV/AIDS. However, it contains a section on reporting but this section is now completely out of date.²²⁰ Finally, the act does not deal with treatment. It urgently needs amendment.

Finally, in 2004, it was envisaged that the 2nd National Human Development Report (NHDR) would focus on HIV/AIDS. Unfortunately, it was not yet possible to produce this 2nd NHDR.

²¹⁸ World Bank/AusAID/ADB, 2004. Control of HIV/AIDS in Papua New Guinea. Annex 4 and 5 respectively. Furthermore, during the UN General Assembly Special Session (UNGASS) on HIV/AIDS in 2001, a HIV/AIDS Fund, now known as the Global Fund to Fight AIDS, Tuberculosis and Malaria was established.

²¹⁹ Independent State of Papua New Guinea, 2003.

²²⁰ With regards reporting, the act states that "A person who performs a confirmatory test which produces a positive result shall, as soon as practicable, send to the Database Manager – a report in a form approved by the Database Manager." Unfortunately, the exact nature of this "information" has not been specified. This is left to the discretion of the Database Manager. (Ibid:12)

VII. MDG7: ENSURE ENVIRONMENTAL SUSTAINABILITY

At the start of this chapter on environmental sustainability, a few general comments need to be made. Firstly, an assessment of PNG's performance with regard to PNG's progress towards achieving MDG 7 should begin with a geographic and environmental profile. This profile has already been included in Chapter I of Part A.

Secondly, over the years, the PNG government has signed and ratified a large number of multilateral environmental agreements (MEA).²²¹ These MEAs come with obligations, including reporting obligations. The most important of these MEAs are:

- The UN Convention on bio-diversity (UNCBD)
- The UN Convention to combat desertification (and land degradation) (UNCCD)
- The UN Convention on climate change (UNCCC)

In this chapter, these crucial conventions receive special attention. However, they are only discussed in the PNG context.

Thirdly, in recent years, PNG has become a major international player in the area of environment and sustainable livelihoods. This applies in particular to climate change and REDD.

1. Data base and monitoring

The main sources of information related to the monitoring of MDG 7 include:

- Service (administrative) statistics from a large number of government departments and institutions
- Maps, aerial photographs and more recently, Landsat TM imagery
- Surveys

This section only provides a brief summary of the performance of these data collection systems. A more comprehensive discussion can be found in the DACA report on human development and MDG monitoring.

1.1. Service statistics

Monitoring of the many components of MDG 7 should ideally be based on the continuous collection of specialized service statistics on all aspects of MDG 7 by departments and institutions such as the Department of Environment and Conservation (DEC), the Department of Agriculture and Livestock (DAL), PNG's Forestry Authority (PNG FA), the Department of Lands and Physical Planning and the Department of Petroleum and Energy (DPE) and many others. The DEC, as the central agency, is responsible for the coordination of data collection, processing, analysis, management and dissemination by the different departments and agencies.

²²¹ In 2009, PNG is signatory to more than 50 MEAs.

In 2010, the MDG 7 database remains scattered and fragmented and therefore incomplete and of poor quality.

In addition, the MDG 7 database has many other shortcomings. The most important of these is that even if measurement is reasonably accurate, the interpretation of the results often leads to very different conclusions. This is because MDG 7 related concepts are often defined in different ways. A good example is the concept “primary or natural forest”. Furthermore, many of the estimated MDG 7 indicators are “footloose” in the sense that they are unverifiable. For many MDG 7 indicators in PNG for which information has been published internationally, the source of this information cannot be traced within the country.

The 2004 MDG National Steering Committee realized that the MDG 7 data base should be improved drastically and urgently. It recommended establishing a MDG 7 Task Force responsible for the coordination, collection, validation, management and dissemination of all MDG 7 related data. The central agency concerning the environment, the DEC was recommended to chair this Task Force with membership from departments and institutions that contribute or should contribute to this database. However, in 2010, little progress has been made.

1.2. Maps

1.2.1. PNG Resource Information System (PNGRIS)

This database, housed in the DAL, goes back to the 1970s when it was attempted to determine the potential for sustainable smallholder agriculture by means of a survey. PNGRIS uses Resource Mapping Units (RMU) based on six variables. It distinguishes 4,566 RMUs.

1.2.2. Forest Inventory Mapping System (FIMS)

Contrary to PNGRIS’ focus on smallholder cash cropping, the objective of PNG’s Forest Inventory Mapping System (FIMS) is to assess the potential for sustainable commercial forestry operations. It is therefore hosted by the PNG FA and not by the DAL. The FIMS baseline consists of a re-analysis of the PNGRIS land use and forest resource maps and on Landsat TM imagery obtained at a scale of 1:250,000, supplemented by rapid ground and air surveys.

The RMUs on the FIMS maps in 1973 were primarily covered by natural vegetation, were subdivided into approximately 14,000 Forest Mapping Units (FMU). This mapping exercise led to the conclusion that, in 1973 the potential productive forest area had already significantly been reduced.

The information has been condensed on two baseline maps of agricultural land uses and forest resources drawn at a scale of 1: 1,000,000. FIMS has assessed the change in forest coverage and land use intensity between 1973 and 1996.

1.3. Household Surveys

Since MDG base year 1990, several surveys have collected information that is relevant for the monitoring of certain aspects of MDG 7. This applies in particular to the two Demographic and Health Surveys (DHS) that were conducted in 1996 and 2006 respectively. One of the components of these two surveys was a household schedule. This schedule included a module on household amenities and services and

access to these services. This household level information, especially the response to the questions regarding fresh water supply and sanitation is of crucial importance for MDG 7 monitoring in PNG, the more so since these are the only aspects of MDG 7 that can reliably be measured at more than one point in time.

1.4. Summary

The data base for the monitoring of MDG 7 is incomplete, fragmented and unorganized. As a result, MDG 7 monitoring remains limited and inadequate. Although PNG has signed a large number of MEAs, it does not have the capacity to collect and analyse most of the data required for effective monitoring of these MEAs. Moreover, a large number of methodological issues remain that make it difficult to develop a comprehensive and accurate database for MDG 7 monitoring. To date, the most reliable MDG 7 related data is that on access to basic services such as water and sanitation.

2. Situation analysis and trends

In this section, it is not feasible to conduct a situation analysis of all aspects of MDG 7 and the implementation of all MEAs that PNG has ratified over the years. Measurable indicators for most of the MEAs are not available. The assessment in this section mainly focuses on the three most important MEAs also known as the Rio Conventions.

These are:

- United Nations Convention to Combat Desertification (UNCCD)
- United Nations Convention for Bio-Diversity (UNCBD)
- United Nations Convention for Climate Change (UNCCC)

There are close linkages and synergies between these three conventions.

Moreover, special sections discuss PNG's forests and forestry, the mining and petroleum sector, energy use, emission of greenhouse gasses (GHG) and ozone depleting CFCs and access to basic services such as fresh water and modern sanitation.

Table VII-1 provides a basic overview of some key environmental indices in PNG. The following comments refer to the information contained in this table.

- The table includes many MDG 7 related indicators proposed in the UNDG Guidelines as well as most of the national indicators adopted in PNG's MTDS 2006-2010.
- The numerous open spaces in this table illustrate that for most of the MEA and MDG 7 indicators, no nationwide information is presently available. Moreover, several of the figures included in the table are not based on measurement but on imputation or a projection.
- In most cases a particular indicator can only be quantified at one point in time and the establishment of a trend is therefore not possible.

- Some of the indicators, e.g. “proportion of land area covered by forest”, “land area protected to maintain biological diversity” and “cultivable land” can and have been defined in different ways. As a result, there is often a wide variety of estimates using different definitions. Some are not much more than hear-say “estimates”.

In conclusion, little of the information in Table VII-1 can be considered as complete and its reliability is often questionable. Consequently, all conclusions arrived at in the situational analysis in this section should be interpreted with the necessary caution.

Table VII-1: Selected indicators for the monitoring of MDG 7

Indicator	Unit	Value in Year		
		1990	2000	2009
Land Area				
1. Total land area	Km ²	460,100	460,100	460,100
2. Coastline	Km	17,110	17,110	17,110
3. Coastal mangrove system	Ha	150,000	NA	NA
4. Cultivable land	%	NA	15	NA
5. Land degradation susceptibility				
5.1. Strong/severe erosion	%	NA	20	NA
Permanently inundated or regularly flooded	%	NA	21	NA
6. Protected to maintain biodiversity ¹	Km ²	NA	15,868	17,599
7. Rehab. to ensure biodiversity (mines)	Ha	71	444	6,550
8. Agricultural exports				
8.1. Proportion of all exports ²	%	18	17	19
8.2. Value as % of total GDP ³	%	9	25	25
Sea Area				
1. Total sea area	Km ²	3,120,000	3,120,000	3,120,000
2. Coral reefs	Km ²	40,000	40,000	40,000
3. Protected to maintain biodiversity	Km ²	NA	4.0	14.8
Primary (Natural) Forest				
1. Proportion of total land area	%	65		64
2. Depletion due to logging (year)	%	0.5	≈1 ⁴	≈1 ⁵
3. Reforestation	%	≤1.0	52,000	62,000
Energy				
1. GDP per unit of energy use	/\$1,GDP, PPP			123 ⁶
2. Hhs using wood as primary source ⁷	m ³	5,500,000	5,500,000	5,500,000
Emission of GHGs				
1. Carbon dioxide ⁸	Mt CO ₂	50-60	70-80	80-100
2. Methane ⁹	Gg	4		
3. Nitrous Oxide ⁹	Gg	12		
Ozone depleting CFCs				
1. Consumption of CFCs in 2008 ¹⁰	ODP tons		48	-1.6

Source: Baseline data, if available is from the Comprehensive Report on the MDGs in PNG, that was produced in 2004. (Unpublished). More recent data is from DEC, 2010; Table 3.

Notes: ¹ Mineral Resource Authority

² BPNG Quarterly Economic Bulletin, Dec. 1995, Table 9.5, S33; BPNG Quarterly Economic Bulletin, Dec. 2000, Table 9.5. S31; BPNG Quarterly Economic Bulletin, June 2009, Table 8.4, S42 (Forecast)

³ BPNG Quarterly Economic Bulletin, Dec. 1995

⁴ Average rate 2004-2006. {McKinsey, March 2010 (based on Shearman, 2008)}

⁵ Average rate 2007-2009. {McKinsey, March 2010 (based on Shearman, 2008)}

⁶ Power sector only. It includes hydropower and excludes transport. (McKinsey, March, 2010)

⁷ Fuel wood consumption by households and other consumers. <http://data.un.org/Browse.aspx?d=EDATA>

⁸ Very approximately based on Shearman et al. (2008, 2009): 80-100,000 MT CO₂

⁹ These are "guess estimates". These emissions must be very low because of limited cattle, rice paddy and fertilizer use.

¹⁰ EC, 2010: Table 14

2.1. Assessment of the implementation of the UNCCD

2.1.1. General

The original UNCCD focused on desertification in Africa.²²² The more recent version of the UNCCD also covers many areas that are relevant for PNG such as “land degradation in arid, semi-arid and sub-humid areas”. The PNG government ratified the UNCCD in December 2000. The convention came into force in March 2001.

The UNCCD is the only MEA that targets developing countries. It focuses on four thematic areas. These are:

- Causes of land degradation
- Sustainable land management
- Climate change
- Drought.

All four thematic areas are highly relevant for PNG.

PNG has undertaken several steps to put the enabling framework for the implementation of UNCCD in place. Land degradation and its management are incorporated in several national strategies and plans e.g. the Organic Law, the MTDS 2005-2010, the 2001-2010 National Population Policy (NPP) and the Land Act and Forestry Act and its amendments. In addition, several reports and studies dealing with land degradation have been produced.

2.1.2. PNG’s National Action Plan

The objectives and guidelines for implementation of the UNCCD can be found in the Global Strategic Plan of 2008-2018. Countries that have ratified the UNCCD are obliged to translate this global plan into their own National Action Plan (NAP). So far, due to a variety of factors, but particularly capacity constraints, PNG has not yet produced its NAP. In the meantime, several countries in the South Pacific Region have already formulated their NAP. Fiji’s NAP may be the most relevant for PNG.²²³

PNG has, however developed a Sustainable Land Management (SLM) Project. This is a capacity building project with its operational focal point in the DEC. It is expected that this project will facilitate the formulation of a National Action Plan in the near future.

Apart from DEC, several other government departments (e.g. Lands and Physical Planning and the PNG FA) as well as other stakeholders should be involved in the formulation and implementation of the NAP. The DEC has engaged a specialist in sustainable land management. This specialist will assist with the review of the SLM project and the development of the NAP.

²²² 2006 was the International Year of deserts and desertification.

²²³ Furthermore, the NAP (2004-2010) of the Philippines may also serve as a guideline for the formulation of a NAP in PNG

The future NAP should provide a baseline for an effective response to prevent further land degradation. This implies that the NAP should:

- Identify the root cause(s) of land degradation

Because of the large variation in the extent of land degradation between the geographic subdivisions of the country (e.g. the provinces), the main land degradation issues should be identified not only at the national but also at the sub-national level.

- Link land degradation with the UNCBD and the UNCCC
- Focus on sustainable livelihoods.

Since the majority of the rural people of PNG continue to rely on subsistence farming for their livelihood, food security may increasingly be endangered in the future.

- Specify the interventions that are required to address the various problems.

The NAP should provide clear guidelines on how land degradation can be restricted. This includes guidelines for the mitigation of the effects of droughts. It should also clearly indicate the roles and responsibilities of the different stakeholders.

- Be a tool for the coordination and dissemination of knowledge

This applies for instance to new knowledge and methodologies for sustainable land management e.g. the improvement of farming technology.

- Include a national framework for monitoring and assessment.

The NAP should include a set of indicators for the monitoring of land degradation that are measurable in PNG.

2.1.3. Cultivable and cultivated land

The published figures concerning PNG's land (as well as sea) area differ significantly. The figures given below are the most frequently cited ones:²²⁴

- Total land area Approx. 460,100 km². The total landmass of PNG's mainland is approx. 85 percent of the total land area.
- Total length of the coastline Approx. 17,110 km.
- Total sea area Approx. 3,120,000 km²
- Exclusive Economic Zone (EEZ) Approx. 2,437,480 km²

Variability in the data concerning land use is even greater. This applies to cultivable land as well as cultivated land.

²²⁴ Different and sometimes very different figures appear in international fact sheets, websites etc

The DAL defines cultivable land as:

“land that is subjected to tillage practices purposely for growing crops”. This definition includes land areas located in a range of environmental (geographical) settings and positions within a varying landscape or landscapes.²²⁵

The department has established the criteria for cultivable land in PNG. These are:

- Areas below 2,600 m above sea level. At altitudes of more than 2,600 m above sea level, crops cannot be grown productively.
- Areas with a gradient of less than 30 degrees. Machinery can be used in areas with a gradient up to 15° and hand-held tools in areas with a gradient between 15° and 30°. In areas with a gradient above 30° the risk of erosion is high.
- Areas that are not seasonally or periodically flooded (tidal flooding waterlogged areas and permanently inundated areas). Inundation must at least cover 90 percent of an area to make it uncultivable.

In spite of the absence of recent data on cultivable land in PNG it is often assumed that cultivable land in PNG covers approximately 15 percent of the total land area. Much of this cultivable land is presently not accessible by road. Other recent estimates differ significantly. For instance, the National Strategic Plan 2010-2050 assumes that, potentially, 200,000 km² of PNG's land area can be used for agricultural purposes. It is unlikely that this estimate is based on the criteria established by the DAL. At present, only about 10,000 km² is being used for commercial agriculture.

Cultivated land in PNG is defined as:

“All land where there is evidence of a relatively recent cultivation history as indicated by the presence of anthropogenous vegetation.”

The different types of cultivated land are distinguished by reference to the degree of land use intensity. The boundaries of the patches of cultivated land are not contiguous with those of RMUs since land use is not one of the variables used for distinguishing between the RMUs. Finally, uncultivated land includes grassland, sago groves and savanna woodland. Empty spaces are forested areas that are currently not used for food crop production. However, these areas are widely used for hunting and gathering.

The DAL has developed a classification of land use intensity. This classification is presented in Table VII-2. Unfortunately, the last time that the department was able to classify the entire land area of PNG using this classification was in 1973. The 1973 data is also presented in Table VII-2. In 2010, this data is completely out of date and mainly of historical value. In order to improve the monitoring of the land use aspects of MDG 7, it is essential that the information in Table VII-2 is updated as soon as possible. The collection of reliable data on land use intensity will require ground truthing. It is unlikely that, in the foreseeable future this can be done by means of remote sensing alone.

²²⁵ DAL, 2004.

The DAL clearly faces enormous data collection problems. In this connection it is important to reiterate that the most recent Agricultural Survey was conducted in the 1960s. The situation is exacerbated by institutional constraints. A particularly serious constraint is that the extension work of the department in the provinces has largely collapsed. Furthermore, after the introduction of the Organic Law, coordination at the national level has almost ceased to exist.

Table VII-2: Land use intensity classes and areas in 1973

Land use intensity class	Area (km ²)
1. Extremely low intensity, purely subsistence agriculture	26,946
2. Very low intensity, purely subsistence agriculture	32,121
3. Low intensity, subsistence and cash crops	35,115
4. Moderate, subsistence and cash crops	15,291
5. High intensity, subsistence and smallholders	6,237
6. Very high intensity, subsistence and block holders	1,711
7. Town, mines and commercial agriculture	2,881
8. Other non-agricultural land use	22,465
Total	142,767

Source: PNGRIS, 1973

2.1.4. Land degradation and food security

The UNCCD defines land degradation as:

“reduction or loss of the biological or economic productivity and complexity of rain fed crop land, or large pasture, forest and woodlands, resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns such as:

- Soil erosion caused by wind and/or water
- Deterioration of physical, biological, chemical and economic properties of soil
- Long term loss of natural vegetation

In 2002, when land degradation became a focal area for the Global Environment Facility (GEF) the UNCCD definition was summarized as:

“Any form of deterioration of the natural potential of land that affects ecosystem integrity either in terms of reducing its sustainable ecological productivity or in terms of its native biological richness and maintenance of resilience”²²⁶

²²⁶ Operational Program (OP) 15 (Beijing 2002)

The UNCCD has four strategic objectives viz.

- To improve the living conditions of affected populations
- To improve the condition of affected ecosystems
- To generate global benefits through effective implementation of the UNCCD
- To mobilize resources to support the implementation of the convention through building effective partnerships between national and international actors

For each of these four strategic objectives, a number of expected impacts have been formulated. Moreover a set of indicators has been identified for the monitoring of progress towards achievement of the strategic objectives.

In PNG, there is even less agreement on the causes of land degradation than there is on land use. The PNG Forest Industries Association (PNGFIA) believes that the main cause of land degradation is not commercial logging but subsistence agriculture. Furthermore, it is believed that subsistence agriculture as well as small scale agriculture and exploitation of forest resources for firewood (cooking and heating) have increased with the high population growth rate.

As mentioned in Chapter I of Part A, during the last four decades, the population of PNG has been growing at an average annual rate of at least 2.3 percent. This implies that the population has doubled and is still doubling every 30 years. Since for its livelihood, the majority of the population continues to rely on subsistence activities, especially subsistence farming, the demand for land for subsistence food production has also increased dramatically. To what extent the increase in the demand for land for subsistence purposes has led to deforestation of primary (natural) forest is not clear.

Others believe that commercial logging is the main contributor to forest and land degradation. It is argued that so far, the extension of agricultural land for subsistence purposes has been mainly into secondary forests (land that has been farmed previously) or grassland and that, nowadays, subsistence farming is rarely extended to areas covered by primary forest. Furthermore, the adoption of more productive food crops and varieties as well as intensification of land uses have led to increased food production.²²⁷ This will be further discussed in the section dealing with forests and forestry.

In conclusion, there is disagreement concerning the relative contribution of the main drivers of land and forest degradation. In the meantime, there is little doubt that land degradation, irrespective of its cause, has become a major problem for securing sustainable livelihoods. It also seems reasonable to assume that the combined force of the drivers negatively affects the level of food security in many parts of the rural sector.

²²⁷ Bourke, 2009:1

Food security is not only threatened by land degradation. Other threats include:

- Rapidly increasing food and fuel prices
- Consumption of low quality imported food, especially in the urban sector. It is expected that PNG's urban population will increase drastically in the next few decades.²²⁸
- Decrease in bio-diversity
- Decrease in crop variety
- Decrease in traditional knowledge due to migration, urbanization and other factors

Finally, it has been estimated that the total land area of PNG, susceptible to strong or severe erosion is approximately 94,000 km². This amounts to about 20 percent of the total land area of PNG. Furthermore, another 20 percent of the total land area is estimated as either permanently inundated or regularly flooded.

The differences in erosion and flooding at the provincial level are very large. However, the quality of the provincial level data is not high. For instance, in 2004, the DAL reported that in several provinces 0 percent of the land area is susceptible to severe erosion. These provinces were: Chimbu, Enga, Western Highlands, New Ireland, West New Britain and North Solomon.²²⁹ It is possible that in the DAL statistics, non-availability of data has been represented as 0 percent.

With regard to inundation and flooding the provinces that are most affected are East Sepik (48.7 percent), Western (35.7 percent) and Gulf (35.5 percent). The only provinces that are not affected by inundation and flooding are Chimbu and Eastern Highlands.²³⁰

2.1.5. Agricultural production and exports

At the time of Independence, the contribution of the agricultural sector to GDP was high. In 1977 it was 36 percent. However, since Independence this contribution has decreased significantly. The decline is in proportion to the increase in mineral exports. The contribution of agriculture to GDP since 2001 is shown in Table VII-3.

Table VII-3: Contribution (%) of the agricultural sector to GDP since 2001.

Year	Percent of GDP	Year	Percent of GDP
2001	13	2005	19
2002	17	2006	13
2003	18	2007	16
2004	20	2008	19

²²⁸ In this respect, it should be reiterated that the level of urbanization in PNG is presently significantly underestimated. Since the 1980 Census, the urban boundaries have not changed. It is likely that significant areas close to the present urban boundaries that have over the years become urbanized (in many cases squatter settlements) will be incorporated in the urban sector prior to the 2010 Census.

²²⁹ DAL, 2004.

²³⁰ Ibid.

It appears that during the last eight years, the contribution of agriculture to the GDP has increased again, albeit marginally. However, over the last five years major agricultural exports have shown positive growth in terms of export volume and value. Average foreign exchange earned from agriculture between 2004 and 2008 was 1.5 billion. Except for tea, annual export revenue for all commodities has increased due to increased export volume and consistently high world market prices. Palm oil and coffee have consistently been the highest export earners followed by cocoa and copra oil.

As a result of the increase in agricultural activity, especially in oil palm, the contribution of agriculture to GDP may well rise again to the level of the 1970s. The current increase is, however overshadowed by the boom in the LNG industry. For this reason it is probably not reflected in the most recent Quarterly Economic Bulletins.²³¹

PNG's tree-crop sub-sector is almost exclusively export oriented.²³² Most tree crops are grown by either smallholder farmers or on plantations and estates. With the exception of oil palm and tea, most plantation crops experienced a decline in production in the 1990s.

The agriculture sector will continue to absorb a large proportion of rural entrants in the labour force. Most of them will be engaged in the subsistence sector.

2.2. Assessment of the implementation of the UNCBD

2.2.1. General

PNG signed the UNCBD in 1992 and the treaty was ratified in 1993. The government subsequently developed a National Biodiversity Strategic Action Plan (NBSAP). This convention and the NBSAP have been introduced to conserve bio-diversity and promote the sustainable use of bio-diversity. Once again, there are many linkages and synergies between the UNCBD and the other two major conventions, the UNCCD and the UNCCC. The UNCBD and the NBSAP are concerned with all living organisms e.g. viruses and bacteria, fungi, plants and animals.

2.2.2. Maintenance of bio-diversity: land area

In 2010, PNG is still one of the most bio-diverse countries in the world. For instance, an estimated 76 percent of all coral reef species and 85 percent of all fish species are still present in PNG. However, bio-diversity is increasingly under threat. Some of the most important reasons include:

- The high rate of population growth and the increasing demands of this population for poverty reduction, development and modernity.
- Resource extraction
- Climate change
- Natural disasters. PNG's geographical location makes it vulnerable to natural disasters such as frequent volcanic eruptions, earthquakes and

²³¹ Hunt, 2009.

²³² It is primarily based on coffee, cocoa, coconut, oil palm, tea and rubber.

tsunamis, floods caused by monsoon rain, prolonged droughts and frosts in the Highlands Region.

In 2000, it was estimated that the amount of land set aside for biological diversity was 1,602,771 ha. This amounts to less than 4 percent of the total land area. Furthermore, a recent estimate of the land area that has been rehabilitated to ensure biodiversity is only 444 ha. This is mainly land at former mine sites.

PNG is considering expanding the national system of protected areas. In the NBSAP, it is expected that, by 2010, 10 percent of the total land area should be protected. To date, this target has not been achieved. However, currently about 4.5 percent has already been gazette.

One possible intervention under the ESEG policy framework is the commitment to large landscape scale demonstration projects such as protected areas through public-private partnership models to ensure that the new strategies are adopted. Effective management of these projects may however be hampered by the fact that about 97 percent of all land is traditionally owned.

Finally, bio prospecting is frequently considered as a future source of income for many Papua New Guineans. Future income from this source will probably remain modest.

2.2.3. Maintenance of bio-diversity: sea area

PNG's sea area covers 3,120,000 km². There is an additional 40,000 km² of coral reefs. According to the worst case scenario with regard to climate change and sea level rise, coral reef growth may stop in 2060. Degradation of the marine environment is clearly of major importance in a country like PNG where the livelihoods and food security of many people depend on it. For instance, it is estimated that 70 to 90 percent of animal protein in PNG is provided by fish. Further major extension of fisheries is, however, unlikely since the sea around PNG is at this stage already over-fished.

In 2010, there are twelve protected areas that contain marine ecosystems. Of the total area of 3,600 km², about 25 percent is marine. These marine protected areas (MPA) are threatened by over fishing, destructive fishing methods and sedimentation pollution. According to some sources, fishing is presently still below optimum exploitation levels. It is assumed that, by 2050, about 20 percent of PNG's formally employed will be engaged in the fisheries sector.²³³ The NBSAP recommends that by 2012, 10 percent of all marine areas should be protected. In 2010, this target appears to be unrealistic.

Scientists have identified a coral triangle area covering all parts of the exclusive zones of six countries: the Philippines, Malaysia (Sabah), Indonesia (Central and Eastern), Timor-Leste, Papua new Guinea and the Solomon Islands (CT6 countries). The Coral Triangle is the epicenter of marine life abundance and diversity on the planet.

The Coral Triangle area contains 500 or more species of coral, it has more than 600 coral species in some areas (more than 75 percent of all known coral species), 53 percent of the world's coral reefs, 3,000 fish species and the greatest extent of

²³³ National Strategic Plan, 2009:41

mangrove forest of any region in the world. The biological resources of the Coral Triangle directly sustain the lives of over 120 million people living within this area, and benefit millions more worldwide.

These marine biological resources are threatened by a range of risk factors such as overfishing, destructive fishing practices, population growth and climate change. All the CT6 governments have taken important steps toward addressing threats to marine and coastal resources. However, the current response to these threats remains insufficient. Additional commitments and action are urgently needed.

In order to respond to this urgent problem, a new Coral Triangle Initiative (CTI), involving strengthened collaboration among governments of the region could help ensure the effective conservation and sustainable use of marine and coastal natural resources in the Coral Triangle region. Such an initiative could significantly improve human welfare, conserve the region's extraordinary biological diversity, and ensure a continuing flow of goods and services for future generations.

Finally, in PNG, an ever increasing number of rare insects, birds and animals are endangered. In the meantime, after 1998, official funding for maintaining PNG's wealth of biodiversity has decreased by 60 percent. In this respect, it should also be mentioned that PNG does not have a proper system of nature reserves. The conservation of biodiversity must largely be achieved through the establishment of protected areas. However, the landowners (or clans) keep the right to access and use these protected areas. The DEC is exploring the "Payment for Ecosystem Services" to enhance the protection and conservation of biodiversity. This is discussed in detail in the NBSAP.

2.3. Assessment of the implementation of the UNCCC

PNG is a signatory to and has ratified the UNCCC. Its response to the challenges of climate change have been led by the DEC and the PNG FA. The core components of an environment sustainable framework include water, biodiversity, soil, air and carbon. The DEC is responsible for all bio-diversity assessment in the country. Furthermore, the Government established an Office of Climate Change and Environment Sustainability (OCCES) in 2008. OCCES, in close collaboration with DEC and PNG FA is, amongst others, responsible for all matters related to carbon trading. It advises on forests that can be used for carbon trading under REDD (reduced emissions from deforestation and degradation) or under CDM (clean development mechanism). The "cap and trade" agreement entails that developed countries pay developing countries for the reduction of their industrialization programs and promote reforestation. This programme has been designed to reduce carbon dioxide emissions globally along with some other greenhouse gasses. A recent estimate is that around \$20 billion a year will be needed to halve carbon emissions from deforestation. Moreover, it is estimated that the future overall costs of climate change could range from 5 percent to over 20 percent of global GDP per year.

So far a Pacific framework has been used as the basis for monitoring and assessment of the UNCCC requirements. This framework is not ideal for the monitoring of all the effects of climate change in PNG. However, recently, the Ministry of Forests has formulated a "Forestry and Climate Change Framework for Action 2009-2015", that outlines the broad priorities and the strategic platform for policy and decision makers at all levels.

Reliable information with regard to the effects of climate change in PNG is scarce. Effects of global warming do have an impact on PNG. The most recent DEC figures suggest that the average temperature may have increased by 1° C over the last 50 years. Furthermore, the majority of global climate models and PNG research institutions suggest that PNG will become warmer than it is today. Consequently, it will be more vulnerable to climate change with the increased intensity and frequency of events like precipitation, cyclones droughts and floods.²³⁴ According to the worst case scenario, between now and 2100, temperatures may rise by another 1.8 – 6.4°C, with a 75 percent probability that the increase will amount to at least 2°C. An increase in seawater temperature to 34°C will result in increased acidification and a degradation of critical habitats in PNG.

Finally, the PNG government believes that, in order to halt deforestation in developing countries, industrialized countries should do more than pay for carbon credits. It challenges the industrialized nations to re-draft their economic theories and re-model global markets for a sustainable future.

2.4. Forests and the forestry sector

2.4.1. General

The fourth goal of PNG's Constitution is the cornerstone for forestry policies, which is "to ensure that the forest resources of the country are used and replenished for the collective benefit of all Papua New Guineans now and for future generations." The main objectives of the Forestry Policy are:

- Management and protection of the nation's forest resources as a renewable natural asset
- Utilization of the nation's forest resources to achieve economic growth, employment creation, greater Papua New Guinean participation in industry and increased viable onshore processing.²³⁵

Forests have always played an important role in the livelihoods of the people of PNG. They have provided a source of food, fruits and nuts, building materials, medicinal plants, habitats for refuge and many other services.²³⁶

In the section on the assessment of the implementation of the UNCCD, many references have already been made to forests and the forestry sector. In 2010 worldwide, PNG has the second largest area that is still covered with rainforest. The rainforest will remain of crucial importance for the future livelihood of the people of PNG. In this section, forests and the forestry sector are therefore discussed in somewhat more detail.

PNG is a signatory to several MEAs related to natural forests and the extraction of timber. This includes all three Rio conventions, the UNCCD, UNCBD and the UNCCC and its associated Kyoto Protocol. Unfortunately, PNG has not yet developed a national strategy or plan for its forests. It is likely that the drafting of a National

²³⁴ Ministry of Forests, 2009:1-2.

²³⁵ Ministry of Forests, 2009:6

²³⁶ FAO, 2009:5

Action Plan on Forests will be the next in line after the formulation of a National Action Plan on land degradation.

2.4.2. The drivers and the rate of deforestation

The most important drivers of deforestation in PNG include:

- Unsustainable logging
- Commercial and subsistence agriculture
- Mining and petroleum exploration and extraction
- Infrastructure and urban development
- Fuel wood collection
- Natural disasters (e.g. bushfires)

The PNG government has some control over most of these drivers e.g. through codes of practice and licensing. However, it has little or no control over subsistence agriculture.

During the last five decades, the population of PNG has been growing at a rapid rate and the demands on PNG's land and forests have increased accordingly. Moreover, since World War II, PNG's forests have increasingly been exploited for their products, especially timber. This has become a major source of revenue for the government and the people of PNG as well as for the timber industry. Forests have become one of the important earners of foreign exchange. Moreover the forestry sector provides direct employment to over 10,000 people.

It is very difficult to monitor the loss of forest in PNG. The database of the PNG FA is incomplete and out of date.²³⁷ The Agricultural Survey conducted in 1962, as well as the already mentioned 1975 land use survey provide some information but this information is now mainly of historical importance. Unfortunately no reliable information concerning the conversion of forest for agricultural use is available. In this respect, it is important to note that the remote sensing and mapping capability of the PNG FA is limited and the cost of surveys prohibitive.

In addition to data collection problems, there are serious problems with the definitions of concepts related to forests and forestry. The confusion starts already with the uncertainty of how forests should be defined. The definition formulated by the FAO is probably the most widely used. The FAO defines a forest as:

“Land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ.”²³⁸

²³⁷ Some of the most recent estimates have been summarized in a study by the FAO (2009). However, most of these estimates are not based on precise measurement.

²³⁸ Schoene et al., 2007:5

However, the definition is not universally accepted. Another frequently used definition of a forest is simply “an area with touching or overlapping crowns”.²³⁹ In PNG, the different players in the area of forests and the forestry sector do not always use the same definition. For these and other reasons, it is therefore not surprising that there is often total disagreement on even the most basic statistics concerning forest coverage and forest depletion or degradation. There is probably no aspect of MDG 7 where the confusion is greater than in this area. Since the PNG FA has adopted the FAO definitions, these are the ones used in this report. Based on these definitions, it has been estimated that, before the onset of commercial logging at the beginning of the 20th century, about 46 million ha in PNG was covered with primary or natural forest.

The first scientific estimates of forested areas in PNG are based on the already mentioned PNG Resource Information System (PNGRIS). This system was developed in the early 1970s. According to PNGRIS, in the early 1970s, the “total gross forest area” was 330,650 km². This amounts to 71.2 percent of PNG’s total land area of 464,100 km². However, at the time, part of the “total gross forest area” had already been disturbed. The main reason was shifting cultivation. Consequently not the entire area of 330,650 km² should be considered as primary forest. Furthermore, “other natural landscapes” included 86,050 km² (18.6 percent of the total land area). This leaves 47,400 km² or 10.2 percent of the total land area. This land was designated as “areas of significant land use”.²⁴⁰

Furthermore, it was estimated that at the time (early 1970s) about 13 million ha of the original 46 million ha of primary forest had to some extent been degraded. If this is a reasonably accurate estimate of forest depletion, this implies that before 1975, almost 30 percent of PNG’s forests had already to some extent been degraded. The 1975 figure of primary forest cover of 33 million ha is still widely quoted in national as well as international sources. However, the very misleading impression is often given that this is a recent estimate and not an estimate referring to 1975. The most recent estimates of PNGs resource base refer to 2009. These figures are presented in Table VII-4.

**Table VII-4: Areas assigned to PNGRIS land use intensity classes in 1973
(in million ha)**

PNGRIS land use intensity class	Area in million ha
Total land area	46.284
a. Forests	29.437
• Protection	1.200
• Production	15.000
- Remaining unacquired	3.000
- Acquired	12.000
• Reserved	13.237
b. Inland water bodies	0.998
c. Grassland and savannah	3.241
d. Other wooded land	4.474
e. Other land uses	8.134

Source: Ministry of Forests, 2009: 4 (Figure 1)

²³⁹ Hammermaster and Saunders, 1995:7

²⁴⁰ Mc Alpine and Quigly, 1998.

The PNG FA assumes that, in 2009, about 29 million ha of primary forests remains. However, there is no consensus concerning the reliability of this estimate. For instance, there are very serious discrepancies between the figures reported by the PNG FA and figures quoted by other national as well as international sources. A particularly misleading figure is that quoted by Earth Trends 2001 World Resources Institute, which suggests that 96.0 percent of the total land area of PNG is still covered with “original” forest

If the above 2009 estimate of about 29 million ha of remaining forests is correct, this implies that between 1975 and 2009 four million hectares were lost. There is no disagreement that the loss of natural forest is the result of a combination of the above drivers of deforestation. However, there is total disagreement to what extent each of the drivers has contributed to this loss.

If it is assumed that the loss of some four million hectares between 1973 and 2009 is correct, the average annual rate of forest depletion can be calculated (see Table VII-5). This results in an average rate of forest loss between 1975 and 2010 of about -0.4 percent per year. This estimate is approximately the same as the one made in 2005 by the FAO Forest Resource Assessment (FRA). Other estimates are much higher.²⁴¹

Most of the loss associated with logging probably occurred in the 1980s and particularly in the 1990s when “rogue” logging was more common than it is today. The sharp increase in the 1990s was due to the change in the Forestry Act. After this change, large forest areas were acquired under the Forest Management Agreement (FMA) concept. The acquisition of forest concessions has declined since 2000. It should however be stressed that the figures and rates of forest loss in Table VII-5 may not be much more than approximations. Consequently, this data should be used with extreme caution, since it is by no means universally accepted.

Table VII-5: Absolute and relative (%) change in primary forest coverage during the 1900-1975 and 1975-2010 period

Period	Primary forest coverage				Rate of forest degradation			
	F ₁		F ₂		Absolute (mill. ha)	Relative. (%)	r (%) ¹	h ² (yrs)
	mill. Ha	%	mill. ha	%				
1900-1973	46	100	33	72	-13	-28	-0.5	152
1973-2009	33	70	29	63	-4	-12	-0.4	193

Notes: ¹ The average annual rate of loss of primary forest per year (r) has been estimated from

$$r = (\ln F_2/F_1)/n$$

where

F₁ is Area (in millions of ha) covered with primary forest at the start of the reference period

F₂ is Area (in millions of ha) remaining at the end of this period

n is The length of the reference period between F₁ and F₂ (in years)

Furthermore, in this table, h is the “halving time” (in years) or the number of years it would take, given continuation of the average annual rate of decrease in the same row, for the area covered by primary forest” to be halved.

² h (in years) has been calculated from:

$$h = \ln 2/r,$$

where r is expressed per unit

²⁴¹ Shearman et al, 2008

It should also be mentioned that parts of the forested areas that were lost due to logging, were probably in reality selectively logged. In this respect it is important to mention that, since 1991, selective logging has been the only form of logging permitted in the newer timber concessions that have been secured under Forest Management Agreements (FMA) with landowners.²⁴² This means that only a limited number of trees can be felled. In other words, it is probably more correct to say that the selectively deforested area has mainly been degraded in terms of biodiversity.

In order to manage forest resources on a sustainable basis, all new timber concessions acquired by the State are for 50 years. This is intended to ensure that there is a second crop after the first 35 years of operation.²⁴³ The effectiveness of these arrangements is not yet clear. It depends largely on compliance by the timber industry to the existing laws and regulations. It is clear that PNG FA does not have the financial and human resources to police the large forest area of PNG effectively. It may be assumed that much unwarranted destruction remains undetected. "Destruction of residual tree crops and the unwarranted damaging of soils and saplings through large disturbance are some factors that will affect sustainability."²⁴⁴

Given continuation of the estimated average rate of forest loss of – 0.4 percent per year during the period 1975-2010, it would take almost 200 years to halve the area covered by forest. In other words, according to this "no-change" scenario, forest cover would decrease from 29 million ha in 2004 to 14.5 million ha at the end of the 22nd century. However, this projection, based on a "no-change scenario" may be too pessimistic for the following reasons:

- In 2010, there are more safeguards in place against indiscriminate logging than in the 1980s and 1990s. Because of all the new regulations, rogue logging that occurred in the last decades of the 20th century has now become more difficult.
- Future logging will probably increasingly take place in remote and more difficult terrain that is less accessible, especially by heavy machinery. The increasing operational costs due to logging in more difficult locations will further slow down deforestation due to logging. This is already obvious in the Highlands Region because of the physical nature of the terrain in this region.
- PNG supports the cause of Reduced Emissions from Deforestation (RED) the Reduced Emissions from Deforestation and Degradation (REDD). It has become part of a "Coalition of Rainforest Nations". These nations have come together as a force in the UN's Convention on Climate Change (UNCCC). It may be expected that this initiative will reduce the rate of deforestation and degradation even further.
- It is expected that reforestation (which was less than 1 percent per year in the 1990s) will gradually increase to about 3 percent per year. Not only is it expected that the denominator of the re-forestation rate (the total area of primary forest logged in one year) will decrease, but the numerator, the area reforested has increased and will probably increase further in the near future to at least 2,000 – 3,000 ha per year.²⁴⁵ Once PNG's reforestation plan has

²⁴² FAO, 2009:13

²⁴³ Ibid:13

²⁴⁴ Ibid:6

²⁴⁵ It is estimated that between 1957 and 1996, 55,000 ha of de-forested land has been rehabilitated.

been implemented, there will be an increase in the area of forest. Moreover afforestation will probably become more common in the future.

However, based on recent trends, the area of primary forest is projected to decline in the near future. Firstly, as a result of the rapidly increasing population, future losses will undoubtedly be caused by forest conversion to commercial agriculture and shifting cultivation. The loss of forest due to agriculture may not be as extensive as often assumed. In this connection, it is also relevant that in many cases the fallow period has been reduced significantly from 25-30 years in the past to less than 10 years at present. It is also possible that land clearing in the future will increasingly be extended to areas that are more vulnerable to erosion of the topsoil and rapid depletion of soil nutrients.

Secondly, with regard to commercial logging, most of the forest concessions have already been logged. Furthermore, due to the selective nature of logging, some forest cover will still be maintained except in those areas where large-scale conversion will take place in order to cater for agricultural plantations. Finally, once the reforestation policy is fully implemented, this will further arrest the decline in forest cover.

Nevertheless, many challenges for PNG's primary forests and the forestry sector lie ahead. The PNG FA has summarized what it considers as today's biggest threats. These are:²⁴⁶

- The rapidly growing population. It should be stressed again that this is not a universally accepted view.
- The National Agricultural Plan. If this plan is fully implemented, it will include a very significant conversion of forest land to agricultural land. Once again, there is no agreement on this. However, there is little doubt that the implementation of the National Agricultural Plan will create conflicts in land use.
- The influx of potential investors in bio-fuel projects
- The growing trade-off of forests for infrastructure development

It should also be reiterated that the loss of forest could be reduced significantly if the PNG FA was in a better position to enforce the existing legislation. Due to its limited funding and manpower, it is very difficult to manage PNG's extensive forest area effectively.

2.4.3. Conclusions

Firstly, although there is no disagreement concerning the drivers of deforestation in PNG, the contribution of the different drivers remains a matter of debate.

Secondly, it has been argued by some that more natural forest is, and will be, degraded because of agricultural use (mainly subsistence) rather than as a result of logging. Because of the high population growth rate of the rural population and the large proportion of this population dependent for their livelihood on subsistence farming, it is believed that forest clearing to maintain traditional agricultural systems (slash and burn) will remain significant in the foreseeable future. However, others

²⁴⁶ Ibid:6

argue that most primary forest close to villages and clan areas has already been cleared, and after use, has reverted to secondary forest. Consequently, in the future, subsistence farming will increasingly use land under secondary forest and not primary forest. Consequently, for them the high population growth rate and consequently the large increase in subsistence farming is not considered as contributing significantly to the degradation of primary forests. In spite of the lack of hard evidence, it is believed that about 200,000 ha of forest is cleared annually for subsistence agriculture.

Thirdly, there is some evidence that in 2010, the rate of forest degradation associated with logging has decreased compared to the peak logging years of the 1980s and 1990s. However, recent estimates of the loss of forest still range from 120,000 to 200,000 hectares per year. For various reasons already discussed, the rate of degradation due to logging will, from now onwards probably further decrease. Problems remain with acquiring land for reforestation. This may change when landowners become more aware of the benefits that can be reaped from carbon trading.

Fourthly, there is little doubt that the forestry sector will continue to make a significant contribution to the economy. The export of timber will remain an important component of this contribution. For instance, between 2005 and 2007, the forestry sector generated approximately K 405 million to K 568 million to the national product, largely from the export of logs. Between 2005 and 2007, the sector grew by 13.8 percent, 21.3 percent in 2006 and 15.6 percent in 2007. Moreover, according to Vision 2050, the forestry sector is expected to make a significantly bigger contribution to the economy in the future. This plan projects that the forestry sector will contribute US\$ 28 billion to the economy by 2050. However, how this can be achieved with the legal and other restrictions on logging that are now in place, is not quite clear. For instance, a ban on “round log export” will come into effect this year. It is expected that this will lead to more onshore processing and value adding. This will only be possible if the Government provides incentives and enabling conditions.²⁴⁷

Fifthly, the PNG FA has estimated that forests in PNG absorb some 3.3 billion tons of carbon dioxide annually but this is probably also not much more than a “guess estimate”.

Last but not least, most people in PNG consider the total or partial removal of natural forest as one of the most significant environmental challenges PNG is facing. The importance of the maintenance of PNG’s primary forests for the future development of PNG cannot be overestimated. It is hoped that the primary forests will still be there once the minerals, oil and gas deposits have been exploited.

2.5. Mining²⁴⁸

The mining (and petroleum) sectors have become the main contributors to PNG’s GDP. In 2008, export income and taxation revenue contributed about 65 percent of GDP. The mining sector is dominated by gold and copper mines. In 2008, PNG had many goldmines (Porgera, Lihir, Tolukuma, Kainantu, Sinivit and Simberi and one copper mine in Ok Tedi. In addition there were many small scale mines.²⁴⁹

²⁴⁷ Ibid:6

²⁴⁸ The information concerning the mining sector has, unless otherwise stated, been provided by Mr S. Nicholls

²⁴⁹ These are mainly small scale alluvial gold mines, especially in Morobe Province

Presently, there are four major mines under development viz. Ramu-Nickel (nickel and cobalt), Hidden Valley Mine (gold), Frieda River Gold and Solwara 1 Deep Sea Mining Project. The first two are near completion and production will start soon. Furthermore, a feasibility study is presently carried out concerning the Frieda River Gold (a world-class copper-gold prospect in the upper Sepik) and the Solwara 1 Deep Sea Mining project.

For the last 80 years, the mining sector has been an important driver of development in PNG. However, several aspects of the developments in the mining sector are of great concern to the government. The most important of these are:

- Waste management

Waste refers to solid, liquid and hazardous waste. Mining activities in PNG produce vast amounts of waste products. Unfortunately, the lack of appropriate legislation and policies, infrastructure and both human and financial resources have led to poor waste management and disposal practices. Downstream catchment areas have been degraded and coastal and offshore waters have been polluted.

Untreated tailing disposal from the mines have a negative impact on both freshwater and coastal marine environments affecting ecosystems and public health. They also affect large expanses of land.²⁵⁰ Furthermore, awareness on the importance of proper waste management in the urban areas is low.

- Downstream sedimentation

Downstream sedimentation alters river morphology and raises river bed levels. This leads to more frequent and longer-lasting inundation and deposition of mine derived sediments along riversides and levees. This affects riverside villages and gardens and river resources used by the local communities.

- Riverine tailings discharge

This affects aquatic and riverside ecosystems and the subsistence economy, water supply and livelihood of the local communities.

- Acid mine drainage

The problems are similar to those caused by riverine tailings discharge.

- Deep-Sea Tailings Placement

There are risks of upwelling carrying contaminants into the euphotic zone and food chain.

- Rehabilitation

Most environment permits require ongoing land stabilization and rehabilitation at least five years before mining operations cease. The implementation of these requirements leaves much to be desired. Since most

²⁵⁰ PNG, 2000, p. 35.

mines are still in operation, the enforcement of these regulations will become increasingly important in the near future.

In conclusion, the environmental impact of mining is massive. In 2010, some of the worst examples of disastrous environmental and social impact caused by mining can be found in PNG. This applies in particular to the Bougainville Panguna Copper Mine and the Ok Tedi Mine, which have been referred to as “global disasters”. Both mining ventures did, however, not fall under the Environmental Planning Act (of 1978). In PNG, severe impacts to the environment often occur at all stages in the mining cycle. These stages are exploration, construction, operation, closure and post-closure. Until recently, the World Bank has assessed PNG’s environmental track record as poor.²⁵¹ However, with the introduction of LNG and seabed mining, the government, through its ESG agenda, will introduce measures that will lead to cleaner extraction of resources.

2.6. Petroleum.²⁵²

In PNG, the history of petroleum exploration and extraction is much shorter. The Hides Field in Southern Highlands Province (SHP) commenced production in 1991.²⁵³ Next, in 1992, oil production started in Kutubu in SHP (Chevron). This was followed by Gobe in 1998, Moran in 2005 and Mananda in 2006. In the late 1990s, the first oil refinery was built by InterOil. It commenced production in the early 2000s. Exploration is ongoing and major natural gas discoveries have been made in Southern Highlands, Gulf and Western provinces. The SHP Gasfield is now being developed by Exxon Mobile. The petroleum sector has a much lower environmental impact than mining.

The DPE has published some information with regards the annual sales of petroleum products, but most of this information is dated and mainly of historical value.²⁵⁴ In 1973, 602.9 mega liters of petroleum products were sold and by 1982, this had increased to 730.3 mega liters, an increase of 2.1 percent per year. It will be noted that this annual increase is slightly lower than the population growth rate at that time. Unfortunately, recent information is more limited. It is difficult to establish a clear and unambiguous recent trend.

The DPE has also published some information concerning petroleum imports. Most of this information is also dated. During the period 1984 to 1990, petroleum imports decreased from 759.8 mega liters to 717.20 mega liter. This is a decrease of approximately 1 percent per year.²⁵⁵ A new series of information starts in 1997 but this information has been classified as unreliable.²⁵⁶ Once again establishing a clear recent trend is difficult.

²⁵¹ World Bank, 2002, p. 18.

²⁵² Most information in this section concerning the petroleum sector has, unless otherwise stated, been provided by Mr S. Nicholls

²⁵³ It supplies gas to the Hides Power Station which provides the power for the Porgera gold mine.

²⁵⁴ DPE, 2004, Table 1.

²⁵⁵ Ibid, Table 2.

²⁵⁶ GEF/UNDP/SPREP, 2004:19

Energy use

2.6.1. General

Several MEAs are concerned with energy use. This is also a major concern under MDG 7. Nevertheless, in 2010, PNG has not yet formulated a National Energy Policy. One reason for this is once again that data concerning energy use is scarce, and if available, not always complete and reliable. However, the Department of Petroleum and Energy (DPE) has established its Energy Database, and this will increasingly lead to more reliable information on energy use. Response from some of the major stakeholders to data requests by the DPE is, however often disappointing, especially from a few major consumers like the transport sector.

The DPE estimates that raw information is available covering more than 50 percent of energy use. A Household Energy Survey of limited scope was (with World Bank support) carried out in 1997. This provides some additional but very much dated information. Furthermore, this survey was restricted to NCD, Central and Oro. The survey information concerning the NCD and to a less extent also Central province cannot be considered as representative of PNG as a whole.

PNG has a (draft) National Energy Policy (2006), a (draft) Rural Electrification Policy (2006) and an Electricity Industry Policy (2008).

2.6.2. Electricity

Some information on electricity generation and electricity sales is available. This information has been collected by PNG Power (formerly Elcom), which is the only mandatory distributor and retailer of electricity in PNG.²⁵⁷

In 1993, a total of 624 gigawatt(GWh) were generated and by 2003, this had increased to 781 GWh. This is an increase of 2.5 percent per year, which is again about the same as the population growth rate for that period. The projected figure for 2012 is 901 GWh. It will be noted that the annual rate of increase is significantly below the population growth rate.

With regard to power sales, it should also be kept in mind that, in 2010, information is still largely limited to the urban sector. Population change in the urban sector of PNG between 1966 and 2000 is presented in Table VII-6. Increase in the urban population is the result of three factors, natural increase, rural to urban migration and incorporation. The boundaries of the urban areas in PNG were delineated prior to the 1980 census. Since that time they have remained unchanged in spite of the fact that there are now large concentrations of people (often squatters) just outside the boundaries of several urban areas who should be considered urban. This means that prior to the 2010 Census the boundaries of these urban areas should be revisited and if necessary changed. The urban population for the years 1990 and 2000 in Table VII-6 should be considered as low estimates.

²⁵⁷ Ibid, 24, Table 2.9. One GWh is one million Watt. Power generation is from all sources, including hydro, heavy diesel, light diesel, gas turbine etc. In 1993, 69 % was hydro generated but it is expected that this figure will drop to 58 % by 2012.

Table VII-6: Population by geographic sector, enumerated at the time of the censuses since 1966 and the level of urbanization in the census years.

Census Year	Population (No.)			% Urban
	Total	Rural	Urban	
1966	2,184,986	2,056,940	128,046	5.9
1971	2,489,935	2,213,617	276,318	11.1
1980	3,010,727	2,617,596	393,131	13.1
1990	3,607,954	3,053,203	554,751	15.4
2000	5,190,786	4,504,485	686,301	13.2

Source: Derived from census data in the indicated years

Total sales in MDG base year 1990 amounted to 533 gigawatt-hours (GWh) which corresponds with 961 watt per capita.²⁵⁸ In 2000, sales had increased to 687.6 GWh, which amounts to 1,002 watt per capita. The average increase in total usage per year during the last decade of the 20th century was therefore 2.5 percent. Total sales in MDG base year 1990 amounted to 533 gigawatt-hours (GWh) which corresponds with 961 watt per capita.²⁵⁹ In 2000, sales had increased to 687.6 GWh, which amounts to 1,002 watt per capita. The average increase in total usage per year during the last decade of the 20th century was therefore 2.5 percent.

If the current trend continues until 2015, total electricity sales per year would increase to slightly over 1,000 GWh. Under this no-change scenario, per capita electricity use would almost certainly drop since it is likely that the boundary of several urban areas will be extended before the 2010 census.

2.6.3. Energy use in the rural sector: Firewood consumption

Relatively little is known about energy use in the rural sector of PNG. However, the 1997 Household Energy Use Survey provides some information. This survey estimated information on consumption/use of several categories of energy.²⁶⁰ The results indicate that the majority of rural households neither had access to nor used electricity, LPG, charcoal, solar hot water heaters and portable AC/DC generators.²⁶¹ Rural households mainly used firewood, kerosene, batteries and fuel (for transportation). Other energy sources were close to irrelevant for rural households.

The MDG indicator “percentage of households using wood as primary energy source” is an important one in PNG. In 2004, it was therefore decided to include this indicator in the set of national indicators for MDG 7. Unfortunately, this indicator can, at this stage not be quantified. However, it is clear that, at the time of the 1997 Household Energy Use Survey, the majority of rural households were using firewood as the primary energy source (primarily for open fire cooking).²⁶² Since close to 20 percent of the total population is either residing in an urban area or Rural-Non-

²⁵⁸ Ibid, Table 5.

²⁵⁹ Ibid, Table 5.

²⁶⁰ These energy sources include: electricity, charcoal, kerosene, LPG, firewood, solar (hot water heater), batteries, portable AC/DC generators, transport fuel.

²⁶¹ It is not clear how rural-non-villages (RNV's) were treated in this survey. They were most likely excluded from the sampling frame or replaced if selected.

²⁶² Secondary uses of firewood is smoking fish/meat, mumu (hot stone cooking), heating water, lightning and repelling mosquitoes. (DPE, 2004)

Village (RNV), the proportion of PNG households using wood as the primary energy source in 2010 may be 80 percent or more.

Survey results also showed that during the period 1994-1997, firewood consumption hardly changed. More precise information with regard to this important indicator should preferably be collected during the next census scheduled for 2010.

With the information that is presently available it is not possible to establish a clear trend in firewood consumption during the post-1990 period. The limited information available does, however suggest that after 1990, increase in the rate of firewood use has been below the population growth rate. However, this is not the case in the Highlands Region, where a large proportion of PNG's population is living. In this region, firewood is not only used for cooking but also for heating.

In 2010, utilization of forest resources as a source of energy is already running into problems.²⁶³ At this stage, it is important to note that the available information suggests that those households using firewood as the primary energy source usually do not plant trees for future firewood needs. This needs to be changed drastically, especially in the Highlands Region. In the future, it is expected that more rotation trees (in tree farms and woodlots) will be grown in this region to meet the increasing demand for fuel wood.

In conclusion, in 2010, the energy data base remains incomplete. It is expected that, in time the situation will improve. Unfortunately, the key MDG 7 indicator "GDP per unit of energy use", which is a measure of energy efficiency, cannot yet be estimated with much confidence. It is expected that a large proportion of PNG's future energy requirements will be met by hydro electricity.

2.7. Green house gas emissions

The earliest information concerning greenhouse gas (GHG) emissions that is available dates from 1994. The data in Table VII-1 refers to three types of GHG emissions viz.:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)

However, the data in this table probably under-estimates the real GHG emissions in 1994. For instance, it does not cover all six categories of emissions but only four: energy, industrial processes, land use and agriculture. The other two categories are emissions from solvents and other product use. At the time the methodology for measuring these emissions was not available. It took the DEC three years to collect and compile the 1994 information on GHG emissions. Unfortunately, with the exception of CO₂ emissions, a time series of GHGs is not yet available.

Finally, the Office of Climate Change and Environment Sustainability (OCCES) has developed a GHG Inventory. This is part of the Second National Communication under the UNCCC. The inventory has the year 2000 as the baseline. The data has not yet been endorsed.

²⁶³ FAO, 2009:6.

In conclusion, whatever the reliability of the data on GHG emissions, it is clear that in the mid-1990s, GHG emissions per capita were still insignificant. In 2010, PNG's contribution to the global emission of green house gasses is smaller than those of most countries. Although, there has undoubtedly been an increase since 1994, GHG emission in PNG can still be considered as very low. PNG will however be increasingly affected by the impact of climate change resulting from global warming due to increased GHG concentrations in the atmosphere.²⁶⁴

2.8. Water

2.8.1. General²⁶⁵

Rainfall in PNG is high. The steep topography generates high rates of runoff in the upper and middle catchment areas. PNG has four world class rivers, the Fly, Sepik, Purari and Kikori.²⁶⁶ These and other rivers served and still serve as the transport corridors into the interior. Rivers defined the early development of PNG.

In recent decades, resource developments especially in the mining sector have placed enormous pressure on PNG's water resources. These pressures include direct and indirect environmental impacts. Direct impacts include waste discharges, increased siltation and contamination from surface run-off, water abstractions and disruptions to flows e.g. through hydro power. Indirect impacts refer to increasing demand and use by the growing rural population, changes in subsistence practices and others.

PNG's natural waters are protected by the Environment Act of 2000. However, in practice, this protection is limited to the regulation of the activities of industrial and development projects. Effective water resource management is impeded by capacity and logistical constraints.

Total renewable water resources include river flows, groundwater flows from rainfall, as well as river flows from the Indonesian part of New Guinea Island. In spite of the above restrictions, the total renewable water resources available per person in PNG (170,258 m³ in 1999) are much higher than in most countries. In 1999, the world average was only 8,240 m³ per person.²⁶⁷

2.8.2. Access to water

Some administrative information on the access and use of water is available but it is mainly restricted to the urban sector. However information concerning the use of safe drinking water for a representative sample of all households in PNG has been collected in the 1996 and 2006 Demographic and Health Survey (DHS). This information is required to monitor MTDS target 15. Table VII-7 presents the proportion (%) of households that, in 1996 and in 2006 had access to safe drinking water.

²⁶⁴ Rt Honourable Sir Mekere Morauta. (PNG, 2000:i). Due to its proximity to the equator, PNG is heavily influenced by excess heating.

²⁶⁵ Most information in this section has been provided by Mr. S. Nicholls

²⁶⁶ These are rivers with more than 1,000 m³/s average annual flow.

²⁶⁷ World Development Indicators Database

Table VII-7: Households with access to safe (piped) water supply (%) by geographic sector¹

Households (%) with access to safe (piped) water supply	Value		
	1996	2006	2010 (projection.) ²
Total	18.8	16.4	15.7
Rural	8.5	9.9	10.4
Urban	71.7	70.0	69.5

Source: Derived from 1996 and 2006 DHS

Note: ¹ Safe drinking water in this table has been defined as water piped to the household or to the neighborhood.

² The figures for 2010 have been projected based on a “no-change” scenario.

The information in this table shows that the sources of drinking water are very different for rural and urban PNG. About 70 percent of the rural households use drinking water from a spring, river, stream, pond, lake or dam. On the other hand, more than 70 percent of the urban households have access to piped water. In 2010, the proportion of urban households with access to a safe water supply is about 7 times higher than in the case of rural households. However, it will be noted that, during the 10-year interval between the 1996 and 2006 DHS the proportion of rural households with a safe water supply has slightly improved, whereas for urban households the opposite is the case. It should, however be kept in mind that “source of drinking water” is a clustered variable. Information regarding “households with sustainable access to a safe water supply” should preferably be collected in future censuses.

In conclusion, in spite of the fact that PNG has one of the highest stocks of fresh water per capita in the world, a large proportion of the population does not have access to a safe water supply.²⁶⁸ Given the continuing high population growth rate, a high level of land degradation, deforestation, subsequent erosion and pollution of rivers through disposal of mining sediments, agricultural and urban wastes, the proportion of people using contaminated water may increase. At this stage, PNG has already a high incidence of water-related diseases like diarrhea.

2.9. Sanitation

As in the case of safe drinking water, the main source of information on sanitation in PNG is the 1996 and 2006 DHS. The data in Table VII-8 once again suggests that the situation with regards sanitation is very different for rural and urban households. It appears that almost 80 percent of the rural households are still using a traditional pit toilet. Moreover, a significant proportion of rural households do not have any toilet facilities at all. On the other hand, a large proportion of urban households has its own or a shared flush toilet. However, for urban households, this proportion has drastically decreased during the ten-year interval between the two surveys. This is undoubtedly partly a result of the large increase in the urban population and in particular the urban squatter population. It is clear that the city/town authorities in PNG have not been able to keep up with the demands for modern sanitation facilities. Since sanitation is once again a clustered variable, a question on sanitation

²⁶⁸ It has been estimated that PNG still has about 170,000 m³ of fresh water per person.

facilities should preferably be included on the questionnaire of the next census in 2010.

Table VII-8: Households with access to improved sanitation (%) by geographic sector.

Households (%) with access to improved sanitation ¹	Value		
	1996	2006	2010 (projection.) ²
Total	11.6	6.8	5.8
Rural	2.5	1.8	1.6
Urban	58.3	46.7	43.7

Source: Derived from 1996 and 2006 DHS

Notes: ¹ Improved sanitation refers to own or shared flush toilet

² The figures for 2010 have been projected based on a “no-change” scenario

2.10. Concluding comments

The data base for the monitoring of MDG 7 in PNG is incomplete, deficient and more often than not inconsistent. From the available data, it is rarely possible to establish a trend for a particular indicator with some confidence. As a result, the analysis in this section is very general in nature and poses more questions than it provides answers. In order to make the monitoring of MDG 7 more meaningful in the future, drastic improvements in data collection, analysis, management and coordination need to be made. Since so many different departments and agencies are involved in the collection and management of MDG 7 related data, their efforts need to be better coordinated. The obvious department to do this is the DEC.

DEC’s new strategic initiative relates to achievement of better integration of environmental policies with the Government’s socio-economic policy decision making framework to support its environmentally sustainable economic growth agenda. This reform will result in a shift from a technical department to a policy oriented department, committed to the implementation of two major global environmental policy initiatives: MDG 7 and REDD (Reduced Emissions from Deforestation and Degradation). However, progress with regards to MDG 7 and REDD needs to be monitored effectively. Without major improvement in DEC’s database, as well as improvements in technical expertise in the area of monitoring, this will not be possible.

Finally, PNG’s abundant natural resources are not only the base for wealth creation; this resource base also constitutes the main challenge for environmental sustainable development and livelihoods. Because of this and PNG’s extraordinary bio-diversity, the country needs a multi-faceted and holistic approach if it wants to achieve the demanding targets of MDG 7.

3. Targets and indicators

3.1 Global targets and indicators

Initially, the United Nations Development Group (UNDG) formulated three targets associated with MDG 7 but recently a fourth one was added. The official list of global targets and indicators concerning MDG 7, effective 15 January 2009 is as follows:

Target 7A Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.

The associated global indicators are:

- 7.1. Proportion of land covered by forest
- 7.2. CO₂ emissions, total, per capita and per \$1 GDP (PPP), and consumption of ozone depleting substances
- 7.3. Proportion of fish stocks within safe biological limits
- 7.4. Proportion of total water resources used

Target 7B Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss.

The associated global indicators are:

- 7.5. Proportion of terrestrial and marine areas protected
- 7.6. Proportion of species threatened with extinction

Target 7C Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

The associated global indicators are:

- 7.7. Proportion of population using an improved drinking water source
- 7.8. Proportion of population using an improved sanitation facility

Target 7D By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers.

The associated global indicator is:

- 7.9. Proportion of urban population living in slums²⁶⁹

Of the four global targets, three relate to the Rio Conventions. Two global targets, viz. 7A and 7D are general and imprecise. Target 7A in particular, rather vaguely suggests that the principles of sustainable development laid down in all the signed and ratified conventions, protocols and treaties should be integrated into country policies and programmes and that the loss of environmental resources should be reversed. Targets referring to “reversing the loss of environmental resources” and “achieving a significant change” do not present a very clear message to policy makers and planners. They should be translated into something tangible. Moreover, target 11 is addressed at the international community. In the PNG context, it should

²⁶⁹ The actual proportion of people living in slums is measured by a proxy, represented by the urban population living in households with at least one of the four characteristics:

- Lack of access to improved water supply
- Lack of access to improved sanitation
- Three or more persons per room
- Dwellings made of non-durable material

address the lives of the people living in squatter settlements instead of those living in slums.

3.2 National targets and indicators

In preparation for the 2005-2010 MTDS, the following four national targets with associated indicators were set for MDG 7:

MTDS Target 13 Implement the principles of sustainable development through sector specific programs by 2010 and no later than 2015.

The associated national indicators are:

- Ind. 34 Percentage of land area covered by primary forest
- Ind. 35 Primary forest depletion rate (%) per year
- Ind. 36 Reforestation rate (%) per year
- Ind. 37 Percentage of land area protected to maintain biological diversity
- Ind. 38 Percentage of marine area protected to maintain biological diversity
- Ind. 39 Percentage of land area rehabilitated to ensure biodiversity (mines)
- Ind. 40 GDP per unit of energy use (as proxy for energy efficiency)
- Ind. 41 Carbon dioxide emissions (per capita)

MTDS Target 14 By 2020, increase commercial use of land and natural resources through improvements in environmentally friendly technologies and methods of production.

The associated national indicators are:

- Ind. 42 Percentage of land used for commercial purposes
- Ind. 43 Percentage of cultivable land used for agricultural production
- Ind. 44 Agricultural exports as a percentage of all exports
- Ind. 45 Value of agricultural exports as a % of total GDP
- Ind. 46 Value of non-agriculture exports as a % of GDP
- Ind. 47 Percentage of commercial operations using sustainable practices

MTDS Target 15 Increase to 60 % the number of households with access to safe water by 2010 and to 85 % by 2020 (as per definition from DOH)

The associated national indicators are:

- Ind. 48 Percentage of districts that have implemented a water policy
- Ind. 49 Total meters of operating water pipes
- Ind. 50 Total number of water pumps (down to the districts level)
- Ind. 51 Litres of water supplied to users
- Ind. 52 Percentage of households with sustainable access to safe water source
- Ind. 53 Percentage of households connected directly to safe water supply (pipe/tank)

MTDS Target 16 By 2020, to have achieved a significant improvement in the lives of disadvantaged and vulnerable groups in urban areas.

The associated national indicators are:

- Ind. 54 Rural to urban net migration (%)

Ind. 55	Percentage of households with access to electricity, safe water and sanitation, health and education services by geographic sector, as well as by census unit (CU) type.
Ind. 56	Unemployment rate (%) by geographic sector and by sex
Ind. 57	Urban crime rate (%) including prostitution and drug trafficking
Ind. 58	Rate of urban/peri-urban households with access to secure tenure
Ind. 59	Percentage of population classified as vulnerable or disadvantaged by geographic sector
Ind. 60	Percentage of households using wood as the primary energy source by geographic sector

All national targets, with the exception of target 15, are also vague and imprecise. Furthermore, in the inaugural MDGR in 2004, many of the national indicators could not reliably be quantified. This is still the case in 2010.

3.3 New set of DEC indicators

The DEC is engaged in an ongoing review of the MDG 7 indicators. This review is expected to produce more refined, relevant and measurable indicators of environmental sustainability. Moreover, overlapping indicators should be eliminated.

In this respect it needs to be mentioned that the DNPM, in collaboration with stakeholders is in the process of formulating a Medium-Term Development Plan for the period 2011-2015. A review of the national MDG targets and indicators is part of this process. With regard to MDG 7, the review is once again a very complicated process. The proposed re-tailored MDG 7 targets and indicators are discussed in the forthcoming DACA report on human development and the MDGs.

3.4 Progress towards achieving MDG 7

The analysis in Section 2 is mainly concerned with some MEAs especially the three Rio Conventions viz. the UNCCD, the UNCBD and the UNCCC. These are the most crucial ones for PNG. Due to the lack of complete and reliable data, the analysis in Section 2 has produced limited results. With exception of the few MDG 7 indicators that can be derived from the 1996 and 2006 DHS, it is still not possible to establish a reliable trend for any of the other global or national indicators with much confidence. Consequently statements referring to the worsening or improvement of MDG 7 indicators are mainly based on perception and are not evidence based.

A special mention should be made of MTDS Target 13: "Implement the principles of sustainable development through sector specific programs by 2010 and no later than 2015." In 2010, no national policy or action plan has been developed for most of the MEAs and this includes the UNCCD and the UNCCC. The existence of such a policy/plan is a basic prerequisite for the implementation of the objectives of these MEAs.

The impression exists, but this is not more than an impression, that little, if any progress has been made towards achieving MDG 7.

4. MDG 7 specific challenges

All crosscutting challenges identified by the MDG National Steering Committee between 2004 and 2009 have an impact on the achievement of MDG 7 (see Part A, Chapter II). Furthermore, during the 2006 review, the MDG National Steering Committee has added “climate change, environmental degradation and sustainable livelihood” as one of the crosscutting challenges for all MDGs (see Part A, Chapter II-2G). The discussion in this section is restricted to MDG 7 specific challenges.

4.1 General

Firstly, a new government initiative refers to achieving “Environmentally Sustainable Economic Growth” (ESEG). Unfortunately, many stakeholders still lack an understanding of the relationships between economic growth and environmental sustainability. Reasons include the weak institutional framework and capacity constraints. Lack of technical expertise affects in particular the monitoring and evaluation capacity of these departments.

Secondly, the negative impact of the high rate of population growth on the environment, especially on land degradation has already been highlighted. During the last four decades, the population growth rate has remained at a high level of significantly more than 2 percent per year. This implies that the population has been, and still is, doubling about every 30 years. Because of present demographic trends, the annual growth will probably not decline very drastically in the near future. It may therefore be expected that demographic investment and the pressure of population on the available natural as well as human resources will increase significantly in the coming years. It has been estimated that, given continuation of population growth at its present rate and continuation of current farming practices, all arable land in PNG will have to be used to meet the food demands of the growing population by 2025.²⁷⁰ In the long term, it may therefore be expected that a continuing high population growth rate will outstrip the capacity of the land to support adequate subsistence food production. Not only will the pressure on land increase but also the pressure on wildlife and marine resources. In conclusion, unless the rate of population growth will decrease drastically in the near future, it will become increasingly more difficult to sustain rural livelihoods.

Thirdly, migration from the traditional rural sector to urban areas and RNVs has already endangered access to adequate water resources and overloaded the existing waste disposal systems in the urban areas.

Fourthly, commitment to formal education in PNG is low. As a result, the level of literacy also remains low.²⁷¹ In the meantime, a reasonably high level of education and literacy is a prerequisite for environmental sustainability. It is also felt by some that the present formal education system does not prepare children for rural life since it undermines continued sustainable rural livelihood skills and practices.

Fifthly, the direct linkages between the HIV/AIDS epidemic and environmental degradation may not be immediately clear. There are, however many environmental factors that will indirectly be affected by the HIV/AIDS epidemic.

²⁷⁰ Govt of PNG and UNDP, 1999, p. 57.

²⁷¹ Cohort Retention Rates in PNG at the primary level are very low, especially in the provinces of the Highlands Region.

Finally, traditional social systems like the wantok system are being eroded. An increasingly larger proportion of the population is abandoning rural livelihood skills. This has a negative impact on the achievement of MDG 7. Most of those abandoning their rural environment can at this stage not be absorbed by the modern economic sector.

4.2 Legislation/policy

Although DEC has started mainstreaming environmental sustainability through various national and donor funded initiatives, such as the ESEG initiative and the Climate-Compatible Development Strategy (national initiatives) and the Sustainable Land Management Project (co-funded PNG – UNDP GEF), mainstreaming environmental sustainability is still at an early stage of implementation. The MDG7 process cuts across sectoral lines and the traditional demarcations of sectoral line agencies in government. This sectoral overlap blurs the demarcation of responsibility and accountability between line agencies. Reporting on MDG7 and the mainstreaming of environmental sustainability would benefit from conducting a more rigorous accountability analysis to the following issues:

- The identification whether existing sectoral policies and laws are appropriate and practicable to sectoral responsibilities and capacities amongst line agencies
- Whether policy, legal and institutional frameworks include practicable and effective environmental objectives that are linked to MDG7 indicators
- In the light of the above, the most appropriate agencies and most efficient means for the collection of specific primary data should be identified.
- Where appropriate agencies cannot be identified based on sectoral responsibilities and/or capacities, consideration should be given to identifying surrogate measures or proxy data sets to indicate performance.

DEC's development of the ESEG policy initiative over the coming months will include an analysis of the key issues affecting the achievement of environmental sustainability in PNG including the policy, legal and institutional frameworks that affect the collection, collation, analysis and interpretation of MDG7 data and the achievement of MDG7 targets. However this will inevitably take time, given the number of line agencies and other stakeholders that will need to be involved at both national and sub-national levels.

National Action Plans for several MEAs that have been ratified by PNG Government, including some of the most crucial ones have in many cases not yet been formulated. For instance, the fact that, so far, it has not yet been possible to formulate a National Land-Use Plan must be considered as a major policy failure. This and other failures to formulate appropriate policies and plans are partly due to the fact that there is relatively little technical expertise in the departments that are responsible for formulating these policies and plans.

Finally, it may seem inappropriate to list the UN Law of the Sea under the legislative challenges that PNG is facing. However, this law overrides national legislation and several areas of conflict need to be resolved.

4.3 Financial

Most key players face significant financial constraints in implementing MDG7. For instance the high cost of conducting agricultural outreach/extension programs and collecting land use data means that several indicators under National Target 14 of the MTDS cannot be accurately measured or verified at the present time. These include indicator 43 “Percentage of land used for agricultural production” and indicator 47 “Percentage of commercial operations using sustainable practices”.

Likewise at the provincial and district levels of government, budget constraints are frequently cited as constraints on infrastructure and service delivery and monitoring of infrastructure development and service performance (see Section 4.4). The high costs of transport, in particular road maintenance costs, are a significant constraint on infrastructure development (such as rural water supplies and improved sanitation) and service delivery and the monitoring of infrastructure and service performance at the provincial and district levels.

4.4 Service delivery

PNG has limited transport infrastructure. Many remote areas are only accessible by small river craft (lowlands) or overland trail (highlands). In many rural areas the lack of roads or 4WD access poses immense logistical and cost difficulties in gaining access to the area. This is a major constraint on service delivery, including health, education and agricultural outreach programs. Many District Centers, which are the regional hubs of government in rural areas, are only served by 4WD road or track from the provincial capital, and often have very few access roads or tracks. These roads and tracks tend to be in very bad condition.

The above has an impact on the implementation of environmentally sustainable development and the achievement of MDG 7 targets. The delivery of infrastructure services (such as piped water supplies), awareness outreach and extension training programs throughout rural PNG remains an enormous challenge. These same challenges are also imposed on any “on-the-ground” sampling or data collection that government agencies may attempt (see following section on monitoring).

4.5 Monitoring

The database for monitoring of MDG 7 is weak, fragmented and unorganized. Some data is collected by a large number of government departments and agencies but to date, it has not yet been possible to combine all the relevant information in one database. Information sharing and coordination needs to be improved urgently. The very deficient database, in combination with methodological issues and inconsistencies in defining basic concepts, makes it difficult to monitor progress towards achieving MDG 7 effectively.

A Memorandum of Understanding (MOU) for the coordination of MDG related information in the PNGINFO database of the DNPM has been signed by the relevant departments. Unfortunately, due to the weak linkages between the different contributing departments and agencies, the MDG 7 component of this database remains very limited. As already mentioned, the sectoral overlap blurs the demarcation of responsibility and accountability of line agencies. Although some of the data can be collected by remote sensing technology, this still requires “ground-truthing” to confirm and validate the interpretation of the aerial or satellite imagery used in the remote sensing, and this is subject to the same logistic and costing constraints described above. This inevitably results in a scaling down of “ground-truthing”. This inevitably affects the accuracy of the derived data. However, since the

resolution and interpretation of remote sensing data rapidly evolves, and agencies build up their in-house interpretive skills and expertise, the dependence on extensive “ground-truthing” is expected to decline.

DEC is currently, with donor-funded assistance, identifying and developing its Geographic Information System (GIS) and remote sensing technologies capacity with hardware and software upgrades, and extensive skills’ training for technical staff. Technical assistance is initially focused on specific “project” areas which will serve as “pilot areas” for a national GIS and remote sensing capacity. Other agencies and organizations within PNG are also progressing along this path, providing opportunities for synergies, but at the same time requiring constructive collaboration between all the players to realize these potential synergies and avoid unnecessary duplication.

The collation and interpretation of different data sets from different agencies may be compromised by differences in data reporting criteria or by differences in the data sampling methodologies. It is important that the different agencies and other organizations involved in national and sub-national monitoring reach consensus on the data protocols and data reporting criteria to ensure data remains compatible and the potential synergies are realized.

Many of the National MDG7 indicators, particularly those relating to MTDS Target 15 (increase to 60 percent the number of households with access to safe water by 2010 and to 85 percent by 2020, as per definition from DOH) and MTDS Target 16 (By 2020, to have achieved a significant improvement in the lives of disadvantaged and vulnerable groups in urban areas) require collection and collation of “on-the-ground” survey data at the sub-national level. Even in urban areas, where a significant proportion of the population reside in “in-formal” settlements, obtaining representative and accurate samples from “on-the-ground” surveys poses significant logistical challenges. In rural areas (only applies to MTDS Target 15) these challenges are further exacerbated by the logistical difficulties and high costs involved in reaching many of the more remote districts and remote and inaccessible areas of those districts’ hinterland.

The identification of current MDG 7 data shortfalls, such as data gaps and incongruities, suggests that at least in the short-term, the identification of surrogate measures or proxy data sets to indicate MDG7 performance may offer a more immediate and effective solution to MDG7 reporting constraints experienced in the current round of MDG7 reporting.

5. Good practices

The limited information concerning MDG 7 that is available refers to PNG as a whole. From this data, it is not possible to identify differences in performance at the sub-national level as has been done in the case of other MDGs, especially MDG 2 and 4.

6. Interventions

6.1 Multilateral Environmental Agreements

The supporting environment for MDG 7 at the international level appears to be strong. In 2009, PNG is a signatory to more than 50 Multilateral Environmental

Agreements (MEAs). These MEAs, covering PNG's land and sea area as well as its airspace, are concerned with areas as diverse as combating climate change and protection of biodiversity to sustainable use of resources and contamination of the environment by hazardous chemicals. However, the signature should be more than an expression of interest. After signing of a MEA, countries are expected, after approval of their legislature, to ratify it. This implies that the treaty's principles and obligations should be translated into national law.

Table VII-9 presents a summary of the MEAs that have been signed by PNG. Most of these have been ratified as well.²⁷² This table indicates that PNG is a signatory to most environment related conventions, protocols and treaties that are presently in existence. However, it is likely that many of these treaties have been signed without fully recognizing their obligations. PNG is certainly not alone in this. In the meantime, the implementation of the MEAs that PNG has signed is of crucial importance for the achievement of sustainable development.

For the implementation of the MEAs, funding can be obtained from the Global Environment Facility (GEF). This is, however only the case when projects designed to achieve certain goals, meet the prerequisites. Moreover, funding is performance based. In PNG, the GEF through the UNDP, offers small grants (up to US\$ 50,000) for eligible environmental projects in five main areas, viz.

- Bio diversity
- Climate change
- Land degradation
- Persistent organic pollutants
- Water pollution in international waters

So far, this program has not been very successful. It is presently undergoing a major restructure.

²⁷² These have been modified from: Environmental Treaties and Resource Indicators (ENTRI) at <http://sedac.ciesin.org/entri/>

Table VII-9: Overview of multilateral environmental agreements (MEA) to which PNG is a signatory

	Title of Convention	Signature	Accession, Ratification, Entry into Force
Climate Change	Vienna Convention for the Protection of the Ozone Layer		27 Oct 92 (Acc), 27 Jan 93 (F)
	Montreal Protocol on Substances that deplete the Ozone Layer		27 Oct 92 (Acc), 25 Jan 93 (F)
	Amendment to the Montreal Protocol		02 Aug 93
	Framework Convention on Climate Change (UNFCCC)	13 Jun 92	16 Mar 93 (Rat), 31 Mar 94 (F)
	Kyoto Protocol to the UNFCCC	22 Mar 99	28 Mar 02 (Rat)
Biodiversity and Natural Resources	International Plant Protection Convention		01 Jun 76 (Acc)
	International Plant Protection Convention (Revised Text)		13 Nov 91
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)		12 Dec 75 (Acc), 11 Mar 76 (F)
	Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)		16 Jul 93 (F)
	Protocol to amend the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)		16 Mar 93 (F)
	Convention on Biological Diversity (CBD)	13 Jun 92	16 Mar 93 (Rat)
	International Tropical Timber Agreement	28 Aug 95	28 Aug 95
	Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks	04 Dec 95	11 Dec 01 (F)
	Convention Concerning the Protection of the World Cultural and Natural Heritage (WHC)		08 Jul 97 (Acc)
	Convention to Combat Desertification (CCD)		06 Dec 00 (acc), 06 Mar 01 (F)
	Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea)	05 Nov 87	22 Aug 90 (F)
	Plant Protection Agreement for the Asia and Pacific Region		01 Jun 76 (Acc)
	Convention on Conservation of Nature in the South Pacific (Apia)	12 Jun 76	
Chemicals, Hazardous Wastes, and Pollution	Stockholm Convention on Persistent Organic Pollutants (POPs)	23 May 01	
	Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel)		01 Sep 95 (Acc) 30 Nov 95 (F)
	International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties		12 Mar 80 (Acc), 10 Jun 80 (F)
	International Convention for the Prevention of Pollution from Ships as modified by the Protocol of 1978 (MARPOL)		25 Oct 93 (Acc), 25 Jan 94 (F)
	International Convention on Civil Liability for Oil Pollution Damage (CLC 69)		12 Mar 80 (Acc), 10 Jun 80 (F)
	Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage (CLC Prot 92)		23 Jan 01 (Acc), 23 Jan 02 (F)
	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LDC)		10 Mar 80 (Acc), 09 Apr 80 (F)
	Protocol for the Prevention of Pollution of the South Pacific Region by Dumping	03 Nov 87	18 Aug 90 (F)
	Protocol concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region	03 Nov 87	18 Aug 90 (F)
	Protocol for the Prevention of Pollution of the South Pacific Region by Dumping	03 Nov 87	18 Aug 90 (F)
	Protocol concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region	03 Nov 87	18 Aug 90 (F)
Rattadam Convention on Prior Informed Consent on Chemicals in International Trade			

6.2 National interventions

The Government of PNG through the DEC, actively promotes as one of its initiatives, the concept of and need for achieving “Environmentally Sustainable Economic Growth” (ESEG). This initiative aims to strengthen the use of economic instruments and strategies for assisting industry and people to manage their environment sustainably whilst maintaining economic growth.²⁷³ ESEG has some priority areas for policy in water, biodiversity and land as well as renewable and non-renewable resources by:

- Ensuring that ESEG is incorporated into overarching national policies and plans,
- Supporting an integrated land-use planning process through the Sustainable Land Management project,
- Supporting ESEG in the conservation of forest areas and the protection of high biodiversity areas,
- Promoting ESEG in the area of climate change mitigation particularly on the Reduced Emissions from Deforestation and Degradation (REDD) initiative.

Furthermore, PNG’s responses so far through the ESEG policy framework include:

- Attempts to develop an integrated land-use planning process for the improvement of the coordination of land-use decisions across National and Provincial governments and better management of the pressures on the environment. So far, a National Land Use Policy has not yet been developed.
- Strengthened environment regulation underpinned by more rigorous standards.
- Focus on improving information on the state of the environment to better inform policy makers and the broader public of the health of the environment.
- Development of new and innovative renewable resource industry strategies that reduce impact on the environment whilst increasing returns to the private sector and landowners.
- Commitment to large landscape scale demonstration projects through public-private partnership models to ensure the new strategies are adopted.
- Organizational reform of the DEC to align its functions with the new policy approach.

PNG has also developed a “Forestry and Climate Change Framework for Action 2009-2015. This framework outlines the broad priorities for the government and provides a strategic platform for use by policy and decision makers as well as for the development and strengthening of partnerships for implementation of national, provincial and community activities. This framework is consistent with the MTDS

²⁷³ Between 27 April and 1 May 2009, the DEC organized a workshop on ESEG that was designed to improve awareness and understanding of the role of economic tools and techniques in addressing key policy issues relating to the environment, natural resources and economic development in PNG.

2005-2010, the Kyoto Protocol, the Johannesburg Plan of Implementation and the subsequent work programme of the UN Commission on Sustainable Development. This framework is also consistent with MDG requirements.²⁷⁴

In PNG, the following government departments and institutions are concerned with environmental and sustainable livelihood issues:

- Department of Environment and Conservation (DEC)
- PNG Forest Authority (PNG FA). The FA was established in 1993.
- Department of Agriculture and Livestock (DAL). The National Agricultural Quarantine and Inspection Authority (NAQIA) operate under DAL.
- Department of Mining
- Department of Petroleum and Energy
- Department of Lands and Physical Planning
- National Fisheries Authority (NFA)

Many other government departments and institutions also play a role in environmental protection and sustainability in PNG such as:

- Department of Works
- Department of Education
- Department of Health
- Department of Commerce and Industry
- Department of Mineral Policy and Geohazards Management
- Department of Transport
- Department of Labour and Industrial Relations
- Department of Foreign Affairs and Immigration
- Department of Housing and Urban Development
- Department of Tourism
- National Disaster Office
- Water Board etc.

There are several national and sectoral policies, plans and acts in place that support PNG's activities in achieving MDG 7. Some of these include:

- Medium Term Development Strategy (MTDS) 2005-2010. This strategy will soon be replaced by the Medium-Term Development Plan 2011-2015
- National Population Policy (NPP) 2001-2010. This policy will soon be replaced by a policy for the period 2011-2020
- Environment Act (2000). This act has recently been amended. This act replaces three pieces of legislation viz.:
 - Environment Planning Act (1978)
 - Environment Contamination Act (1978)
 - Water Resources Act (1982)
- Forestry (amended) Act 1991
- Forestry (amended) Act for 2000, 2005
- National Forest Plan
- National Forestry Development Guidelines
- National Reforestation Development Program
- Logging Code of Practice (LOC)

²⁷⁴ Ministry of Forests, 2009:1

- Fisheries Management Act (1998)
- Water Resources Act (1982)

However, as mentioned in Section 2, several key policies and action plans are still missing, e.g. those related to the UNCCD and the UNCCC.

It should also be mentioned that “sustainable rural livelihood” was chosen as the central theme of PNG’s 1998 Human Development Report. In choosing this subject, it was recognized that most rural people in PNG meet their basic needs through subsistence activities.

Some reference should be made to the “Milne Bay Community-based coastal and marine conservation project”.²⁷⁵ Unfortunately, the implementation of this project was discontinued due to funding problems. Several elements of this project can, however be considered as a blueprint for the achievement of MDG 7. These elements are:

- It was implemented in Milne Bay Province where biological diversity is of global significance. Moreover a large proportion of its population depends on marine resources. The national environment of Milne Bay is therefore vulnerable to exploitation and over-harvesting. The project attempted to strike a balance between protecting the environment and conservation on the one hand and sustainable use of the available resources by the community on the other. Generally, the emphasis of the project was on people rather than on nature.
- It was the only environment related project that had a long-term horizon and it was committed to make a lasting impact on environmental sustainability.²⁷⁶
- It represented an integrated, multi-sectoral approach to environmental sustainability. Furthermore, it attempted to enhance the delivery of basic services like health, education, housing and water supply.
- It was community-based since it was realized that without optimal community involvement, there cannot be any protection of the environment and conservation in PNG.²⁷⁷

Unfortunately, the implementation as well as the monitoring of progress was very difficult and problematic. It was expected that this project would produce new opportunities to improve environment related monitoring and evaluation capability in PNG.

In conclusion, the government emphasizes the proper management of both social and natural capital to meet the essential needs of today without compromising the needs of future generations. PNG’s capital stock needs to be safeguarded but this capital should also be transformed into human capital especially in the form of education and health services. Real development will only occur when the benefits of PNG’s natural capital are shared by the entire population.

²⁷⁵ The project recognized that the marine and coastal strips in PNG are linked. Project activities cannot stop at the high water mark.

²⁷⁶ It covers a period of ten years and will continue until 2014.

²⁷⁷ Customary landowners own most of the land in PNG. Without their full support the project goals cannot be achieved.

VIII. MDG 8: DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT

1. Preamble

In the “Global Deal” of the Monterrey International Conference on Financing for Development, it was recognized that MDG 1 to 7 are primarily the responsibility of individual countries. MDG 8 deals with the responsibility of OECD countries to provide an “enabling international environment” for developing countries to achieve MDG 1 to 7. MDG 8 is about joint responsibility for expanded partnership between advanced and developing countries. MDG 8 is also about mutual accountability. Government at all levels as well as bilateral and multilateral institutions must be held accountable for how their actions affect the achievement of the MDGs.

The “Global Deal” involves a wide range of issues. The most important ones include:

- Official Development Assistance (ODA)
- Development of strategies for foreign aid coordination and management to optimize foreign aid (donor “harmonization”)
- Debt burden and debt service²⁷⁸ and debt forgiveness²⁷⁹.
- Lack of policy on aid/debt coordination and management.
- Terms of trade²⁸⁰, barriers to export and increasing market access, as well as underdeveloped export oriented sectors.
- Net inflows of foreign direct investment²⁸¹
- Fair pricing of commodities
- Employment, particularly of youths
- Access to information and communication technologies
- Intellectual property rights etc. etc.

To date, many countries including PNG have not been able to include a fully articulated progress report on the status of MDG 8. In 2004, during the preparation phase of PNG’s inaugural Millennium Development Goals Report (MDGR), the MDG National Steering Committee recommended deferring a complete coverage of MDG 8 to the 2nd generation report in 2009.

The reasons behind this recommendation included:

- Time limitations
- MDG 8 had not yet been localized

²⁷⁸ The total debt service is the sum of principal repayments and interest actually paid in foreign currency, goods or services on long-term debt (having a maturity of more than one year), interest paid on short-term debt and repayments to the IMF.

²⁷⁹ Gross bilateral debt forgiveness is the forgiveness of bilateral debts of developing countries with the support of official funds of donor countries, whether owed to public or private creditors. Offsetting entries for official development assistance principal are not subtracted.

²⁸⁰ Terms of trade is the ratio of the export price index to the import price index measured relative to a base year. A value of more than 100 means that the price of exports has risen relative to the price of imports.

²⁸¹ These include net inflows of investment to acquire a lasting management interest (10 % or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital and short-term capital.

- Several national (MTDS) targets, especially those with regards to MDG 6 and 7 are (similar to their global counterparts) vague and ambiguous. These targets need to be replaced by precise ones relating to a fixed time frame, before their resource implications can be properly determined.
- The methodology for forecasting the resource implications for achieving the MDGs was still a rather imprecise art.²⁸²
- Many MDG indicators could not reliably be quantified.

In PNG's inaugural MDGR, the section on MDG 8 is therefore not much more than an official statement recognizing the centrality of MDG 8. However, it stressed the importance of localization of MDG 8. In other words, it was realized that without external financing, the scope and complexity of achieving the MDGs would be beyond the capacity of the country.

In order to be better prepared for full coverage of all aspects of MDG 8 in the 2nd MDGR, the 2004 MDG Steering Committee recommended that a special Task Force (consisting of members of the DNPM, the Department of Finance, and the Ministry of Foreign Affairs and Trade and development partners) should be established. This Task Force would amongst others be responsible for the continuous monitoring of MDG 8. The input concerning MDG 8 in the 2nd MDGR should be based on broad and inclusive consultations of this Task Force with stakeholders.

To date, some progress has been made but, unfortunately, not in the area of monitoring and evaluation of MDG 8. Consequently the section on MDG 8 in the MDG Summary Report (MDGSR) that was launched in February 2010 was once again very general in nature. Since February 2010 no further progress has been made. For the sake of completeness, the following sections on MDG 8, included in the MDGSR have been reproduced in the present comprehensive report.

1.1 Important MDG 8 related issues identified in 2004

In spite of the problems with the articulation of MDG 8 in 2004, the 2004 MDG Technical Working Group (TWG) identified several issues that were considered to be of crucial importance for the development of an effective partnership for development in PNG. Some of these are equally important in 2010 and need therefore to be reconsidered.

- Official Development Assistance (ODA)

ODA or foreign aid constitutes a large proportion of all public financial resources available for the support and facilitation of the Government's internal achievement of all MDGs and in particular MDG 6 and 7.²⁸³ This implies that if development partners decide to withdraw support, the efforts that are being made will most likely collapse. However, excessive donor dependency may undermine the achievement of the MDGs. ODA prior to 1998 was a combination of tied and untied aid. That

²⁸² In 2004, very few countries had attempted to estimate the financial implications of the achievement of the various MDGs. However, the cost estimates in these countries fluctuated widely depending on the methodology that has been chosen.

²⁸³ In 2004, activities related to MDG 6 were almost entirely (96 %) externally funded. Government contribution towards achieving MDG 7 (Environmental sustainability) was also very limited

changed in 1999 when Australia, the largest donor partner gradually migrated to tied aid. PNG's ODA is all tied aid delivered through different mechanism.

- Debt

Prior to 2004, PNG's debt burden increased steadily. In 2004, the debt burden had reached a high level of about 71 percent of GDP. This substantial level of debt absorbed much of the limited public budget. Many considered this as the most important impediment for development and as the most important challenge with regards to the achievement of the MDGs since relatively few resources were left to improve health, education and other services and to halt environmental degradation. On average, between 1990 and 2004, the growth of debt was significantly higher than economic growth.

After 2004, the improvement in the economy enabled the government to reduce debt levels from 71 percent of GDP in 2004 to 35 percent of GDP in 2007. Moreover, since the growth in GDP during this period was far higher than the population growth rate of about 2.3 percent per year, per capita GDP also increased significantly. In other words, in a period of just five years, the government has achieved a far more sustainable debt position.

- Management and coordination of ODA

The MDG TWG found that, in many cases, several donors were involved in closely related activities. It realized that there were systemic weaknesses at the policy as well as operational level in the management and coordination of ODA, undermining the effectiveness of the efforts. In the meantime, in order to optimize foreign aid, the government had embarked on a sector wide approach to donor coordination. It was hoped that this would lead to more effective management of all forms of foreign assistance.

- Membership of international organizations

PNG is a member to a number of international organizations and a signatory to many international agreements, including the World Trade Organization, the Economic Partnership Agreement with the European Union, the Asia Pacific Economic Cooperation and various other bilateral and multilateral agreements within the Pacific Region. It was realized that PNG's membership to these international organizations can impact in several ways on its ability to achieve the MDGs. It is possible that the opening up of trade barriers and liberalization will lead to economic growth. PNG has signed and entered into various trade liberalization agreements lifting barriers to trade particularly with the WTO and EPA through tariff reduction on many of its goods. However, existing internal constraints of the necessary infrastructure and technical barriers to trade and quarantine amongst others to improve efficiency are yet to build momentum. Hence, PNG industries are unable to fully compete on the world market. This may have a negative impact on PNG's ability to achieve the MDGs.

2. Situation analysis

2.1. Overseas Development Aid (ODA)

The main progress made since 2004 is in the area of management and coordination of ODA. PNG, in 2005, embraced the Paris Declaration on Aid Effectiveness. Furthermore, the Paris Declaration was localized into a “Joint Commitment of Principles and Actions between the Government of PNG and Donor Partners” and was signed in 2008. As a result, PNG’s ODA has seen a positive and encouraging trend. The Government has increased ownership of ODA and its role in coordinating external assistance has been strengthened. Moreover, bilateral and multilateral country programs are increasingly progressing towards greater consultation and ownership by the Government of PNG. The development of Country Assistance Programs and strategies are a reflection of the efforts towards developing partnership for global development. The UN country programme, the Partnership for Development schedules with Australia, and the World Bank Country Assistance Strategy (CAS), just to name a few, are a reflection of these positive changes.

Respective country programmes and strategies have been aligned with the National Plans and strategies, specifically the Medium Term Development Strategy 2005–2010 as well as sectoral development plans. Furthermore, the Government has just launched its Vision 2050 2010 -2050 and the PNG Development Strategic Plan (2010-2030) will soon be introduced. These overarching plans shall provide the long term platform and parameters to which investment and ODA shall be aligned. There are however several other issues that need to be addressed such as financial alignment, donor harmonization, collaborative monitoring and reporting on aid effectiveness and impact.

Two cases merit reporting: firstly the UN Country Programme, and secondly the partnership for development schedules with Australia. Rather than the UN system having several agency country programs, the UN system in PNG now has one UN Country Program pitched around the MDGs providing key areas that the UN system will focus on through the various UN agencies. It provides a predictable outlay for multi-year funding.

With regard to Australia’s Partnership for Development, this provides a framework for specific time-bound result driven schedules framed in the spirit and targets of the MDGs also with a multi-year financing outlay.

Furthermore, since 2004, the mechanism in the delivery of aid has graduated from project aid to program and sectoral aid approaches. The sector wide approach was introduced in 2004 and is increasingly gaining prominence in harmonizing donor support and aligning to Government sectoral plans and financial systems. The approach is still under review given the country’s complex, dynamic and evolving political and governance structure.

In 2004, total ODA amounted to 64 percent of total expenditure and 69 percent of the development budget. In 2010 it is anticipated that total ODA will be less than 40 percent of total expenditure and 70 percent of the development budget. The development budget captures all ODA, grants, loans and technical assistance for projects.

The following overview presents ODA as a percentage of the development budget by sector.

- Health sector	33 %
- Education sector	34 %
- Law and justice sector	32 %
- Infrastructure	35 %
- Economic sector	36 %
- Governance	30 %

It is anticipated that donor support in these key sectors will increase over the next three years. Furthermore, in 2009, grants constitute 70 percent of total ODA while the loan component is 60 percent.

2.2. Debt

Furthermore, the Government has adopted a Medium Term Debt Strategy approach to stabilize debt volatility by managing debts and debt servicing. This strategy mitigates any debt blow outs. Fortunately in the last five years PNG enjoyed a budget surplus and has been able to reduce and sustain debts at levels considered feasible. However, with the LNG gas project and several other loan financed projects, debt and debt servicing will be stretched and tested. It is anticipated that until 2014 when revenue from the LNG begins to flow in, a trend of budget deficient financing may be undertaken.

2.3. Trade and investment

Trade and investment has also reached new dimensions since 2004. With trade regulations relaxed and competition embraced and promoted, investment and competition has increased. In the telecommunication industry, the country has seen the entry of a new mobile phone competitor – Digicel – which has a strong presence in the Caribbean and Pacific. This has stimulated the growth of mobile phone services. Before 2004 few Papua New Guineans owned a mobile phone. Today there are an estimated one million subscribers of which 50 percent are Digicel and the balance belonging to Bemobile, a partially Government owned entity.

The Pacific trade and investment relations have also seen a surge in investment from business entities from the Pacific. Investment from the Fiji business community in pharmacy, supermarkets, computer technology, communication technology, and insurance has increased. There has been an increase in PNG made products within manufacturing sector over the years particularly with the establishment of tuna industries and downstream processing of forestry products. The spin-offs from these activities has also contributed to improving the livelihood of the local people.

Furthermore, the aviation industry has also seen the expansion of the largest third level airline, servicing some international routes in partnership with Virgin Airways. These examples are evidence of increased change of policy and rules to promote competition.

The two LNG projects, in the Southern Highlands and Gulf Province create the potential for a significant paradigm shift in PNG's investment and trade environment, and that of ODA. Bilateral and multilateral partnerships have risen to new heights with Japanese taking major stakes in the LNG project in the Southern Highlands. The demand for skilled human resources and contractors is putting added pressure

on the constrained supply side and may lead to an influx of international resources. There will also be added pressure on the rules and regulations for visas and work permits, and other related impediments to improved flow of resources into the country.

It is likely that the issue of PNG being categorized as a donor recipient will also become debatable. The potentially huge amount of revenue from LNG will undoubtedly lead to a decline in ODA and could make PNG a donor rather than a recipient of ODA. However, future external shocks could have detrimental effects on the economy.

2.4. MDG resource implications

Although some progress has been made in the methodology for the estimation of the resource implications of the MDGs, this applies mainly to MDG 1 to 5. Several problems need to be resolved before PNG can embark on an effective costing exercise for the MDGs.

Firstly, a costing exercise that is meaningful in the case of PNG, should relate to the national (tailored) targets, incorporated in the national policies and plans with which the MDGs have been aligned. Presently, the MDGs are aligned with the targets and indicators of the MTDS 2005-2010 and the government is committed towards achieving the targets incorporated in this MTDS. However, in 2010, the present MTDS will be replaced by the MTDP for the period 2011-2015. The preparations for the formulation of this plan have started. In order to achieve optimal alignment between the new MTDP for the period 2011-2015, it is imperative that the formulation of this plan is undertaken as a collaborative exercise.²⁸⁴

Secondly, in order to arrive at a meaningful estimate of the costs of achieving a particular MDG, its targets need to be defined clearly and unambiguously and refer to well-defined period of time. Although this is the case with most national targets of MDG 1 to 5, most targets for MDG 6 and 7 remain ambiguous and imprecise. It is hoped that these national targets will be more precisely defined in the new MTDP 2011-2015. However, it is realized that, considering the great uncertainties with regard to the present situation and trends in most MDG 6 and 7 related indicators, it will be difficult to establish satisfactory targets for these MDGs at this stage.

Thirdly, implementation of the MDGs in PNG is mainly at the provincial and lower level. Because of the extremely large socio-economic, demographic and other differences at the provincial and sub-provincial level, it is imperative that the overall cost estimates are based on the cost estimates of implementation of the MDGs at the provincial and lower level. Consequently, during the implementation phase of the 2nd MDGR, an attempt should be made, in collaboration with the provincial authorities, to establish provincial level targets for each of the MDGs. These targets should also be incorporated in the provincial population and sectoral projections. Ideally, this exercise should form the base for the estimation of the costs of achieving the MDGs at the provincial and hence at the national level.

Finally it is imperative that throughout the costing exercise at all levels the following three factors are given full weight:

²⁸⁴ Relating the costing to the global targets would amount to not much more than a theoretical exercise.

- The high cost in PNG of demographic investment, particularly in the areas of health, education and job creation in the modern sector.
- The impact of HIV/AIDS on all MDGs.
- The “Millennium Gaps” within PNG have been widening. MDG costing should take this into account. Interventions should focus on the narrowing of the large gaps that exist within the country. Not only the government but ODA as well should start concentrating on narrowing the enormous gaps in development that exist between PNGs geographic subdivisions, the provinces, districts and LLGs.

3. Targets and indicators

3.1 Global targets and indicators

The United Nations Development Group (UNDG) formulated six targets associated with MDG 8. The official list of global targets and indicators with regards MDG 7, effective 15 January 2009 is as follows²⁸⁵:

Target 8A Develop further an open, rule based, predictable, non-discriminatory trading and financial system. This includes a commitment to good governance, development and poverty reduction – both nationally and internationally.

The associated global indicators are:

- 8.1. Net ODA, total and to the least developed countries, as a percentage of OECD/DAC donors’ gross national income
- 8.2. Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation)
- 8.3. Proportion of bilateral official development assistance of OECD/DAC donors that is untied
- 8.4. ODA received in landlocked developing countries as a proportion of their gross national incomes
- 8.5. ODA received in small island developing States as a proportion of their gross national incomes

Target 8B Address the special needs of the least developed countries. This includes tariff and quota free access for the least developed countries’ exports; enhanced program of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction.

The associated global indicators are:

- 8.6. Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty
- 8.7. Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries

²⁸⁵Some of the global indicators of MDG 8 are monitored separately for the least developed countries (LDCs), Africa, landlocked developing countries and small island developing states.

- 8.8. Agricultural support estimate for OECD countries as a percentage of their gross domestic product
- 8.9. Proportion of ODA provided to help build trade capacity

Target 8C Address the special needs of landlocked developing countries and small island developing states (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly).

Target 8D Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term.

The associated global indicators are:

- 8.10. Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative)
- 8.11. Debt relief committed under HIPC and MDRI initiatives
- 8.12. Debt service as a percentage of exports of goods and services

Target 8E In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.

The associated global indicator is:

- 8.13. Proportion of population with access to affordable essential drugs on a sustainable basis.

Target 8F In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

The associated global indicators are:

- 8.14. Telephone lines per 100 population
- 8.15. Cellular subscribers per 100 population
- 8.16. Internet users per 100 population.

A DNPM Task Force on MDG 8 has proposed that the following global MDG8 indicators should not be localized in the case of PNG: 8.1, 8.4, 8.6, 8.7, 8.8, 8.10 and 8.11. The DNPM, in collaboration with stakeholders is in the process of formulating a Medium-Term Development Plan (MTDP) for the period 2011-2015. A review of the national MDG targets and indicators is part of this process. The proposed re-tailored MDG 8 indicators are discussed in the DACA report on human development and the MDGs.

3.2 Progress made towards achieving MDG 8

As in 2004, it has not been possible to quantify most of the global MDG 8 indicators that are relevant for PNG. The only quantitative information that has been made available refers to ODA as a percentage of total expenditure and as a percentage of the development budget and PNG's debt burden as a percentage of GDP. This information has been summarized in Table VIII-1.

Table VIII-1: ODA as a proportion (%) of total expenditure and as a proportion (%) of the development budget in 2004 and 2010 (projected) and PNG's debt burden as a proportion (%) of GDP in 2004 and 2007.

ODA			Debt burden	
Year	% of total expenditure	% of dev. budget	Year	% of GDP
2004	64	69	2004	71
2010 (Proj.)	< 40	< 70	2007	35

Based on this very limited information, it is difficult to say to what extent PNG has made progress concerning the achievement of MDG 8. However, a very positive sign is that PNG's debt burden has been halved in only three years.



PART C: SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

1. General

In the inaugural MDGR published in 2004, it was concluded that since MDG base year 1990, PNG's performance towards achieving the MDGs had been mixed. Although some limited progress had been made in some areas, e.g. MDG 2 and MDG 4, for some of the other MDGs there had been stagnation (e.g. MDG1, MDG 3, MDG 5 and MDG 7) or possibly even deterioration (MDG 6). Moreover, since it was not possible to localize MDG 8, the inaugural MDGR only covered this MDG in general terms. The overall assessment was that progress during the first 14 years of the MDG cycle 1990-2015 had been unsatisfactory and that PNG was not on track with regard to any of the global MDGs.

In 2004, the government considered the global targets associated with the MDGs as over-ambitious, unrealistic and therefore out of reach. As a result, it developed its own set of national targets and indicators associated with each of the MDGs. These so-called tailored or customized targets were thought to reflect the realities in PNG.²⁸⁶ These far more reasonable and achievable targets were incorporated in the Medium Term Development Strategy (MTDS) 2005-2010. In 2004, the MDGs were aligned to the MTDS and the national targets of the MTDS were adopted for purposes of MDG monitoring.

The analysis underpinning the inaugural MDGR also confirmed that with regard to most of the MDG indicators, the disparities at the sub-national level (e.g. the provinces) as well as between the rural and urban sector were large. It also became clear that, after Independence, the gaps between the provinces had in some cases further widened e.g. in the case of early childhood mortality and primary education. Consequently, it was concluded that the most obvious, cost effective and easy way of making progress towards achieving most of the MDGs would be to focus on the low achievers amongst the provinces.

The summary version of the second Millennium Development Goals report (MDGSR) that was published and launched in February 2010 largely confirmed the findings of the inaugural MDGR of 2004. Moreover, since most national targets included in the 2005-2010 MTDS were also considered as out of reach, these national targets have been re-tailored. In addition, the national indicators have also been re-tailored. In the process, those indicators that have never been measured and that will probably not be measured in the foreseeable future have been dropped. Others, often proxy indices that can be measured, have been added. A complete overview of all re-tailored national indicators can be found in the DACAM Report on monitoring MDGs and human development. This report also identifies the departments that will be responsible for the collection of the information required to measure the selected re-tailored indicators.

²⁸⁶ The tailored targets are an important component of the government's response to the challenges the country is facing. The tailoring exercise has initially been carried out by a Task Force consisting of members of all relevant departments. In practice, these were the same departments engaged in the formulation of the National Poverty Reduction Strategy (NPRS), unpublished and the Medium Term Development Strategy (MTDS). This work was further refined by the 2004 MDG Technical Working Group.

2. Status at a glance: PNG's progress towards achieving the MDGs

Since the MDGSR was published, no new assessment has been made of PNG's progress towards achieving the MDGs. In this report, the results of the MDGSR assessment, summarized in two summary tables, are therefore reproduced. These two summary tables C-1 and C-2 refer to:

Table C-1 Likelihood of achieving the global and national targets associated with MDG 1 to 8 and the state of the supporting environment for each of these MDGs.

Table C-2 Monitoring and evaluation capacity for each of the MDGs.

In both tables, a comparison is made with the assessment made in 2004 and incorporated in the inaugural MDGR. As in 2004, the present assessment has once again been based on broad consultations and discussions with a large number of stakeholders. However, the final decisions were made by the MDG National Steering Committee. Table C-1 assesses PNG's ability to achieve MDGs 1 to 7 by 2015.

Table C-1: Likelihood of achieving the global and national targets associated with MDG 1 to 7 and the state of the supporting environment for each of the MDGs

MDG	Year	Likelihood of achieving global and MTDS targets		State of supporting environment	
		MDG	MTDS	Policy/Legislation	Implementation
1	2004	Very unlikely	Potentially	Fair	Fair
	2009	Very unlikely	Likely	Fair	Fair
2	2004	Very unlikely	Potentially	Fair	Fair
	2009	Very unlikely	Potentially	Fair	Fair
3	2004	Very unlikely	Potentially	Fair	Weak
	2009	Very unlikely	Potentially	Fair	Weak
4	2004	Very unlikely	Potentially	Fair	Fair
	2009	Very unlikely	Likely	Fair	Fair
5	2004	Very unlikely	Potentially	Fair	Weak
	2009	Very unlikely	Very unlikely	Fair	Weak
6	2004	Very unlikely	Very unlikely	Fair	Weak
	2009	Very unlikely	Very unlikely	Fair	Weak
7	2004	Very unlikely	Very unlikely	Strong	Very weak
	2009	Very unlikely	Very unlikely	Fair	Very weak

The assessment in Table C-1 distinguishes between the ability to achieve the global goals and the national goals (incorporated in the 2005-2010 MTDS). This is important since the present analysis reconfirms that the global targets remain, in 2010, as unattainable as they were in 2004 whereas some of the far more realistic national targets have actually been achieved. Table C-1 also assesses the state of the supporting environment. This is done separately for the policy and legislative environment, and for implementation.

In Table C-1, the following rating system has been used with regard to PNG's ability to achieve the global and national goals:

Very likely

Likely

Potentially

Unlikely

Very unlikely

The assessment in Table C-1 shows that there are no major differences between the 2004 and 2009 rating of PNG's ability to achieve the global and national (MTDS) targets for each of the MDGs. In 2009, it is clear that it remains very unlikely that any of the global targets will be achieved. In fact, since only six years are left before the first MDG cycle 1990-2015 comes to an end, it has become even more unlikely that the global targets will be achieved. This situation concerning the national (MTDS) targets is somewhat different. Based on new evidence that has become available, it has now become likely that the rather modest MTDS targets for MDG 1 and 4 will be achieved by 2015. On the other hand, new evidence from the 2006 DHS indicates that it has now become extremely unlikely that the targets for MDG 5 will be achieved by 2015.

The scale used for rating of the supporting environment is:

Very good

Good

Fair

Weak

Very weak

With regard to policy/legislation the rating for MDG 7 has been scaled downwards to fair. Reasons for this include that, in 2009, the National Action Plans for the UNCCD and the UNCCC were still not yet in place. In 2010, this is still not the case. The same applies to the National Action Plan concerning Forests and the National Forest Inventory. The ranking concerning implementation of the policies and legislation has remained unchanged in 2009.

Table C-2 assesses PNG's monitoring and evaluation capacity for each of the MDGs. As has been extensively discussed in this report, PNG's database for human development and MDG monitoring remains incomplete and deficient. Many of the global as well as national (MTDS) indicators can, at this stage, not yet be measured. However, there are significant differences in the level of completeness and reliability of the data available for the monitoring of individual MDGs. Moreover, for several indicators, information is only available at one point in time and a trend can therefore not be established.

The database for monitoring MDG 7 and 8 is particularly weak and that for many aspects of MDG 5 and 6 it is only marginally better. Monitoring of the MDGs and more generally of development in PNG, heavily relies on the decennial censuses and the occasional (sample) survey. The institutional framework for the collection of most service statistics remains poorly developed. Consequently, these systems do not provide much reliable information that can be used for the effective monitoring and evaluation of the MDGs

In order to improve the monitoring of human development and the MDGs in PNG the following is required:

- The collection, processing, analysis, dissemination and utilization of MDG related service statistics by all relevant departments needs to be improved drastically. This applies amongst others to the DOH, DOE, DEC, DAL and FA.
- All censuses should provide a complete and accurate picture of the basic characteristics of the population (size and growth, structure and distribution) at the national and sub-national level, down to the lowest geographic unit, the Census Unit (CU). Moreover, until the time that PNG's systems of service statistics start producing complete and accurate information, the census should continue to provide a basic picture of the demographic processes fertility, mortality and migration.
- PNG needs to conduct more nationwide surveys based on a representative sample of the population. This applies in particular to economic surveys e.g. labour force surveys. Moreover, the last Agricultural Survey was conducted in the 1960s.

The scale used for rating the monitoring and evaluation capacity for the MDGs is the same as that used for the assessment of the supporting environment, viz.:

Very good

Good

Fair

Weak

Very weak

The assessment carried out in 2009 is presented in Table C-2. The 2004 assessment is again given for comparison.

Table C-2: Monitoring and evaluation capacity for each of the MDGs

MDG	Year	Data Collection.	Statistical Tracking	Statistical Analysis	Statistics in policy	Monitoring Evaluation	Quality Survey Data
1	2004	Weak	Weak	Fair	Fair	Weak	Good
	2009	Weak	Weak	Weak	Weak	Weak	Weak
2	2004	Fair	Fair	Weak	Fair	Fair	NA
	2009	Good	Fair	Fair	Good	Fair	Good
3	2004	Weak	Weak	Weak	Weak	Weak	NA.
	2009	Fair	Weak	Weak	Weak	Weak	Weak
4	2004	Fair	Fair	Fair	Fair	Fair	Fair
	2009	Fair	Fair	Fair	Fair	Fair	Good
5	2004	Very weak	Very weak	Very weak	Very weak	Very weak	Fair
	2009	Very weak	Very weak	Very weak	Very weak	Very weak	Weak
6	2004	Very weak	Very weak	Very weak	Very weak	Very weak	Very weak
	2009	Weak	Weak	Weak	Weak	Weak	Weak
7	2004	Very weak	Very weak	Very weak	Very weak	Very weak	Very weak
	2009	Very weak	Very weak	Very weak	Very weak	Very weak	Very weak
8	2009	Weak	Very weak	Very weak	Very weak	Very weak	NA

Since 2004, the monitoring and evaluation capacity concerning most MDGs has largely remained unchanged. However, with the introduction of the Annual Census by the DOE, the quality of educational statistics has improved. Similarly, since 2004, the number of testing sites for HIV/AIDS has drastically increased and this has undoubtedly led to some improvement in HIV/AIDS monitoring. Unfortunately, the database required for the monitoring of MDG 1 in 2009 was far more limited than in 2004. The trend in the poverty component of MDG 1 has been monitored using proxy indices related to “poverty of opportunity”.

3. Concluding comments

In 2010, limited progress has been made towards the achievement of some MDGs, but for others there has either been stagnation or even some deterioration. Generally, progress falls short of expectations. It is important to note that virtually all challenges that existed in 2004 still exist in 2010. These challenges remain enormous. Since 1990, the population has continued to grow at an average rate of more than 2 percent per annum. This requires huge demographic investment. In the meantime, service delivery, especially in the area of health, has not been able to cope with the continuously increasing demand. As a result, certain key indicators, especially those related to maternal health and mortality, present a devastating picture of the health situation in the country, and possibly by extension: of development.

PNG continues to face serious law and order problems as well as many socio-cultural challenges, especially gender based violence (GBV) that hampers attainment of the

MDGs. To these are now added the challenges resulting from climate change. Unfortunately, some of these challenges have become even more critical impediments for development than they were in the past. The most important challenge in 2010 is undoubtedly the HIV/AIDS epidemic, which threatens to undo all progress that has been made.

The government has tried to address the challenges through appropriate interventions detailed in its policies and plans. This report provides a brief summary of the interventions that are most crucial for the achievement of the MDGs. It is hoped that the drastic improvement in the economy will lead to improvement in PNG's demographic and socio-economic indicators. This will require large investment in human development and service delivery.

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APPENDIX A: LIST OF DISCUSSION PAPERS

MDG Discussion Paper	
No.	Title
1	Maternal mortality in Papua New Guinea. Evidence from the 1996 and 2006 Demographic and Health Surveys.
2	The methodology for the indirect estimation of levels, patterns and trends in early childhood mortality based on census and survey data. The case of Papua New Guinea
3	The methodology for the indirect estimation of adult mortality from census and survey data and the generation of two-parameter logit lifetables. The case of Papua New Guinea.
4	Poverty and hunger in Papua New Guinea. Progress made towards achieving MDG 1.
5	Some determinants of early childhood mortality in Papua New Guinea. Evidence from the 1996 and 2006 Demographic and Health Surveys.
6	Access, retention and achievement in education in Papua New Guinea. Progress made towards achieving universal primary education
7	Gender equality and empowerment of women in Papua New Guinea. Progress made towards achieving MDG 3.
8	HIV/AIDS surveillance in Papua New Guinea
9	Monitoring of environmental sustainability in Papua New Guinea
10	Challenges encountered in achieving MDGs in Papua New Guinea.
11	A critical assessment of the national MDG targets and indicators according to the 2005-2010 MTDS and the 2010-2030 LTDS
12	Some notes on MDG 8
13	Measurement of some international indices of development and poverty in Papua New Guinea