Review of Public Expenditure on Health

Final Report

Kingdom of Tonga

September 2010

A Report commissioned by the Government of Tonga and the Australian Agency for International Development

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LIST OF ABBREVIATIONS

AusAID	Australian Agency for International Development
A$	Australian Dollar
CMO	Chief Medical Officer (Ministry of Health)
CVD	Cardiovascular Diseases
DCA	Development Cooperation Agreement
FY	Fiscal / Financial Year
GDP	Gross Domestic Product
GoT	Government of Tonga
HIS	Hospital Information System
HR	Human Resources
HSPMP	Health Sector Planning and Management Project
HSPER	Health Sector Public Expenditure Review
HSSP	Health Sector Strengthening Project (World Bank)
JICA	Japan International Cooperation Agency
KRA	Key Result Area
KPI	Key Performance Indicator
MCH	Maternal and Child Health
MoFNP	Ministry of Finance & National Planning
MoH	Ministry of Health
NCD	Non-communicable disease
NGO	Non-governmental organizations
NHA	National Health Accounts
NZ	New Zealand
NZAID	New Zealand Agency for International Development
PEFA	Public Expenditure & Financial Accountability
PER	Public Expenditure Review
PICs	Pacific Island Countries
PMS	Performance Management System
PRISM	Pacific Regional Information System
SDP8	Tonga Strategic Development Plan 8: 2006/07 – 2008/09
SPC	Secretariat of the Pacific Community
SRA	Strategic Result Area
STEPS	WHO STEPwise approach to Surveillance
STI	Sexually-transmitted Infections
ToP / T$	Pa'anga (Tongan currency)
UNDP	United Nations Development Programme
US$	United States Dollar
WHO	World Health Organisation

Executive Summary

A. Health Review Scope and Methodology

This Health Sector Public Expenditure Review (HSPER) has been commissioned by AusAID and the Tongan Government (GoT) to draw together sector financial and performance data, and assist the Ministry of Health (MoH), other Government agencies and donors to make decisions regarding setting and prioritising Health budgets in coming years.

A Public Expenditure Review team, comprising an international public finance expert, together with three national consultants with lengthy experience of finance and health in Tonga, commenced work in early May 2010 and completed report writing in August 2010. The team visited health establishments and interviewed the Director of Health, numerous government officials, clinicians and private health providers, NGO directors. A presentation to GoT and donors regarding the preliminary Review findings was made on 23 June 2010 and a final mission to Tonga to discuss PER findings was made from 20-24 September.

The assignment was managed and supported by AusAID Tonga Post staff and AusAID's Tonga Health System Support Program's Strategic Health Adviser, who provided advice on emerging findings, reviewed the final PER Report and joined the Team Leader in a the final PER mission.

B. Country Economic, Fiscal and Social Background

Tonga is ranked 99th among 182 countries in human development by UNDP in 2009.[1] Tonga is now rated as one of the countries with "medium" human development, having slipped from 54th place in 2005, primarily due to a steep fall in its GDP per capita.

Tonga's development ranking partly reflects the population's relatively high life expectancy (72 years). Tonga is currently rated as "likely" (the highest rating) to meet most of the targets for the three health-related Millennium Development Goals: Goal 4, relating to reducing child mortality; Goal 5, regarding improving maternal health; and Goal 6 relating to combating major diseases such as malaria and HIV. Targets related to NCD's (also part of Goal 6) may, however, not be met[2].

Tonga faces significant economic, political and social challenges in coming years, due to the impact on the country's finances of the 2008 global financial crisis. As in other Pacific countries, the ***impact of the global financial crisis has reduced trade and remittances to, and investments in, Tonga***. This, in turn, has significantly reduced Government revenues, and required budget cuts.

C. Health Sector Structure and Spending

Total recurrent health sector spending (including training) in FY 2008/09 was T$ 20.9 million (A$ 12.5 million[3]). Total recurrent spending accounted for nearly 13 per cent of the government's recurrent budget in 2008/09. On and off-budget development spending (by

[1] http://hdr.undp.org/en/media/HDR_2009_EN_Table_H.pdf

[2] Tonga's Second National Status Report, due to be completed in mid-late 2010 (as this Report was being finalised), suggests that Tonga is slightly off track in reducing major non-communicable diseases (NCDs)

[3] End FY 2008/09 (June 2009) exchange rates used : T$ 1 = A$ 0.60 = US$ 0.50

donors) accounted for T$ 9.1 million (A$ 5.5 million), bringing ***total sector spending to T$ 30.0 million*** (A$ 18 million) in 2008/09.

The share of total sector spending accounted for by donor funding has fluctuated around 30-40 per cent of total sector spending. ***Donor spending accounted for 30 per cent of total sector spending in 2008-09, compared to 37 per cent in 2004-05***.

In 2008/09, the health share of total recurrent expenditure in Tonga was 13 per cent, lower than other comparable countries in the Pacific (Samoa, Cook Islands, Kiribati). Total sector spending on health was 3.4 per cent of GDP in 2008/09. The latest figures for Pacific country health shares of GDP (summarised in Table 13) suggests that ***Tonga's health share of GDP is at the low end of the range compared to neighbouring countries***.

Total government recurrent spending on health has risen by T$ 9 million over 6 years - a 40 per cent real growth in health spending. However, most of the growth in health spending (T$6 million out of T$9 million spending increase) has been absorbed by salaries, following GoT's decision to significantly increase civil servant salaries in 2005.

Since 2003/04, ***salary and wages*** have nearly doubled in absolute terms from T$7 million to T$13.5 million. As a share, salaries have risen from 60 per cent of total spending in 2003/04 (before the large salary hikes in 2005/06) to 65 per cent of total MoH spending in 2008/09. ***Operational spending*** has fallen from over 40 per cent to 35 per cent of total spending over the last 5 years. In real terms (after accounting for inflation), operating costs has fallen by nearly 30 per cent since 2006/07. Provision of funds for essential operating costs is currently extremely limited (at around T$1 million per year).

The high share of costs accounted for by salaries is squeezing out operational spending and some operational items are now seriously under-funded. For example, travel and communications and (non-donor financed) capital budgets have been cut. Maintenance funding is below that specified in the Development Cooperation Agreement (DCA), which means that the state of repair of premises and equipment is likely to have deteriorated. Furthermore, ***salary costs could rise in coming years***, further squeezing the non-salary operational budget, unless some clear actions are taken.

<u>Primary and Secondary Health Spending</u>

The share of hospital-based care has been fairly constant at around two-thirds of total health recurrent spending over the last 5 years. ***The share of spending accounted for by preventive care has risen from a very low base of around 5 per cent of government health spending in 2004/05 to around 8 per cent in 2009/10***.

Substantial donor assistance has been provided for the re-construction of the main acute care referral hospital (Vaiola). The World Bank and AusAID jointly funded Phase I of the reconstruction of Vaiola Hospital at a total cost of T$25 million (USD 13 million) and also provided technical assistance for the improvement of MoH administration and management information systems. Phase 2 of Vaiola hospital reconstruction was commissioned in mid-2010, funded by JICA at a cost of T$39 million (USD 20 million).

Government funding for health equipment is inadequate, and is being supplemented by donors. Whilst it is unlikely that donor funding will cease, it is not desirable that the GoT

should need to rely on donor funding to cover the cost of essential / basic health equipment such as x-ray equipment and everyday simple tests such as glucose tests for diabetes.

Private Health System Spending & Costs

The private sector plays an important role in Tonga's health system and consists largely of a network of traditional healers mainly in rural areas, together with a small number of private practice clinics and pharmacies in the capital city, Nuku'alofa. The latest available National Health Accounts (for 2005/06) estimated that ***household out-of-pocket spending accounted for around 8 per cent of total health spending*** – just under T$ 3 million a year. Roughly a third of out of pocket spending was on physicians, dentists and hospitals, a third on traditional healers and a third on pharmacy goods.

Post-Secondary & Tertiary Health Spending

Under $1 million of health costs are spent on tertiary level / overseas hospital treatments, including the costs of running the government overseas medical referral scheme and the counterpart costs associated with overseas specialist teams coming to Tonga. There have been ***clear benefits of bringing specialised medical teams to Tonga***.

Given funding constraints, the share of resources taken by specialised / tertiary level medicine should be kept under close review by Ministries of Finance and MoH to ensure that this element of spending does not unbalance overall Sector spending and undermine the provision of high quality basic health services.

D. Health Sector Performance, Outputs and Outcomes

Health Sector Outputs

There is one main referral hospital, 3 other district hospitals, 14 health centres and 34 MCH clinics throughout the Kingdom. The number of hospital beds per population (around 3 per 1,000 people) is fairly even throughout the major island administrative health districts and comparable to the level in Tongatapu.

Bed occupancy is moderately high (though low by international standards) at the main hospital (c.65%), but very low at the district hospitals in Vava'u (33%) and Ha'apai (25%). This low bed occupancy is due mainly to the fact that the hospitals were constructed to deal primarily with infectious diseases, and hence had a high number of beds and isolation wards. Infectious disease outbreaks are now comparatively rare and most NCDs are managed outside of hospital in-patient settings.

With a ratio of 0.5 doctors per 1000 people, there is no evidence that Tonga is "over-doctored". In fact, Tonga's ratio of physicians and midwives is at or below other countries (similar to Fiji, but markedly below Samoa). The number of nurses looks to be slightly above that in other neighbouring countries (except Samoa).

Health Sector Performance and Outcomes

The leading causes of mortality in Tonga has remained unchanged over the last two decades, with cardiovascular diseases (CVDs) causing the most deaths, followed by cancer and respiratory illnesses. ***Communicable diseases have largely been controlled*** although there continue to be sporadic outbreaks of dengue fever, typhoid and pulmonary tuberculosis.

Non-communicable diseases (NCDs) such as cardiovascular disease, diabetes and cancer are now some of the leading causes of morbidity and mortality in Tonga. Previously uncommon in traditional Pacific societies, NCDs have occurred in epidemic proportions over the last 20 years: Tonga is one of the top 3 countries in terms of diabetes prevalence in the Western Pacific region, and NCD incidence and prevalence in Tonga now exceeds those in many industrialised societies. The latest Development Plan – SDP 9 – sensibly acknowledges that the Ministry of Health's mandate is to focus on preventive health, and reduce the impact of non-communicable diseases.

Excessive weight and obesity is one of the main drivers of the increases in CVD, diabetes and some cancers in Tonga. In 2004, nearly 15 per cent of children aged 12 to 15 years of age were either overweight or obese. In 2008 the first case Type 2 diabetes under the age of 14 was admitted to Vaiola Hospital. More recently, the Diabetes Heart and Health Study (DHAHS) conducted in Auckland found that older Pacific adults were over 11 times more likely to be obese than their Europeans counterparts.

There has been a steady (and alarming) increase in the number of registered diabetic cases at the Diabetic Centre at Vaiola Hospital. This trend is likely to continue. STEPS / population projections estimate that 25 per cent of the 12,000 people over the age of 60 by 2030 will be diabetics with 3,100 diabetics over 60 alone, compared to a total of 3,500 diabetics across the entire Kingdom in 2008. To compound the future health burden, diabetes is a major risk factor for cardiovascular diseases.

E. Health System Appropriateness, Efficiency and Effectiveness

Health services should ensure that resources are appropriately utilised to achieve desired outcomes and value for money.

In Tonga's case, increasing the use of appropriate medications and other effective therapies may help to ensure that interventions produce desirable outcomes. Pharmacy policy is being strengthened to meet pharmacy-related goals. Appropriate referral of some conditions, especially from the out-patient department, may also be desirable.

Health care delivery systems in Tonga seem to be working fairly well. The provision of donor-funding for significant new infrastructure is likely to increase both efficiency and effectiveness[4]. The fact that MoH has a dedicated maintenance budget (first among all ministries), and has now also recruited a dedicated Asset Manager, will improve the availability of assets and equipment, which in turn is likely to improve health care quality.

However, ***health care effectiveness is limited by various challenges*** including: an under-staffed Outpatients Department at Vaiola Hospital, resulting in long waits and potentially repeated visits to outpatients due to insufficient time being spent with individual patients; a lack of senior medical staff on the remoter islands, potentially reducing quality of care; a widespread lack of equipment; excessively rationed drugs and medical supplies; and a less than sufficient repair and maintenance budgets.

[4] Effectiveness of health care relates to the extent that a treatment, intervention or service achieves the desired outcome. Efficiency implies that choices in health care delivery and treatments should be made so that the maximum total benefit is derived from the available health care resources.

Technical health care efficiency is being reduced by low bed occupancy rates and possibly excessive use of overtime. Key efficiency indicators may not be being measured in a sufficiently systematic way. Suggestions for particular relevant efficiency indicators that could be monitored are given in recommendation 8 below, and in more detail in Annex 1.

F. Equity

Equitable access to health care

The fact that health care is free at the point of use means that ***there is generally reasonably equitable access to health care across the whole population***. Ministry of Health Annual Reports state that the entire population has access to appropriate health care services and essential drugs within one hour's walk of their habitation. However, access to good quality primary care, medication and hospital care is less reliable for some populations on the outer islands e.g. on outlying islands in the Ha'apai Group.

Inter-Island Equity

Mortality and morbidity data suggests that health care is to some extent inequitable on a geographic basis. Overall, the cost per capita in the outer islands was about a third of the per capita costs on the main island, Tongatapu. This is largely explained by the fact that the main referral hospital is located on Tongatapu, and efficiency and effectiveness considerations dictate that costly secondary and tertiary care services are provided there.

However, a PER review team visit found that ***some necessary preventive activities are being limited by lack of access to basic supplies and diagnostic equipment*** (e.g. glucose testing strips and X-ray facilities at the hospital in Vava'u). MoH has made primary care strengthening a top priority to address this challenge.

Gender Disparities

There is no evidence that women and girls are discriminated against in terms of health care. A key element of care for women - reproductive and maternity care - is generally of high quality, though care needs to be taken that unnecessary maternal deaths are avoided. However, some of the medical complications associated with the growth of NCDs seem to be having a disproportionate impact on women, such as amputations associated with foot sepsis. This is possibly linked to the higher rates of obesity observed in women in Tonga.

G. Sector Management and System Capacity

Ministry administration has been concentrated in new premises at Vaiola hospital since 2004, which has had positive efficiency, communication and resource costs impacts. The Tonga Health Sector Planning and Management Project (HSPMP) which ran from 1999 to 2007 embedded a culture of change within the health care system and helped develop sector leadership.

Corporate planning, a "balanced scorecard" to monitor sector performance and a Performance Management System (PMS) for the Executive have been introduced. However, the PMS has subsequently lapsed and resource constraints, both human and financial, have limited the Ministry's ability to convert the Corporate Plan into feasible actions to improve service delivery. Externally, ***there is a need to improve co-ordination across Ministries.*** There is a need for an effective coordination mechanism to monitor and

evaluate the level and stages of enforcement of legislation, and also to review the impact of legislation on service delivery.

Staff capacity and retention continues to be a challenge. MoH has sought to retain staff and establish professional development opportunities for returning graduates by subsidising post graduate training. However, ***more effort is required to formalize professional development not only for doctors but also for nurses***, and ensure sufficient rotation of clinicians around the main island groups thereby ensuring proper back-up and support for outer island CMOs.

There is a need to further develop and improve HIS data sources, especially at the operational level, for monthly and quarterly reporting purposes. A key operational and financial challenge will be to ensure that medical and nursing staff at Vaiola are trained up to use the HIS and to expand coverage of the HIS to the Outer Island Hospitals.

The existence of good quality National Health Accounts (NHA) and Annual Reports is a positive indicator of MoH staff and health information systems quality. However, the ***quality of the data varies and ongoing work to improve data quality is needed. It is also important that the 2007/08 NHA and future NHAs are completed in a timely manner***, so that up-to-date financial data is available.

H. Conclusions and Recommendations

Conclusions

A review of health performance indicators over the last decade has concluded that ***Tonga has performed relatively well compared with neighboring Pacific countries***, especially given a fairly low health sector share of total government recurrent spending. ***Life spans are at or above the regional average and Tonga performs very well on maternal and infant mortality rates***. Immunization has been a clear success story and communicable diseases now pose only a very limited health burden on the population.

This is all the more commendable, since Tonga's spending on health as a percentage of GDP is below that of most of its' Pacific neighbours, and Tonga's public health spending per head was over 40 per cent lower than in Samoa and Fiji.

However, there are two clear challenges to this good performance:

(i) ***a growing incidence of non-communicable disease (NCD***), due mainly to obesity, poor diet and alcohol / tobacco use, poses a substantial challenge to the health care system and overall population health;

(ii) ***a tight macroeconomic and fiscal position has led the significant planned cuts in health spending over the next three years***. Recent budget cuts have led to poor maintenance of medical equipment, and insufficient funding has been provided to address the rising incidence of NCDs and to fund core operational costs.

The combined impact of these challenges has been to raise costs, while reducing the ability of the Tongan government to allocate funds to the health sector.

Recommendations

The Review has 8 key recommendations:

Recommendation 1: **The MoH recurrent budget should rise from 12 to 15 per cent of the government's total recurrent spending** over the medium-term, to address health challenges.

Recommendation 2: **An additional T$2 million per annum should be generated by 2012-13 to finance an expanded preventive NCD healthcare and asset maintenance budget**, through earmarking additional revenues from higher tobacco and alcohol duties, increased fees for non-Tongans and duties on unhealthy foods.

Recommendation 3: **Medical salary costs will need to be controlled to a total of 60 per cent of the total health budget** to enable essential operational health services to continue to be provided and improved. A variety of means for cost control should be used including reducing the use of planned overtime, and using experienced nurses to delivery services.

Recommendation 4: **Health outcomes should be improved through introduction of an explicit 'Quality in Health Care' program (see Annex 1) and better NCD management**, including enhanced enhanced professional development, new management structures & systems for NCD treatment, and the dissemination of clear management guidelines for priority NCDs.

Recommendation 5: **Non-clinical health information should be integrated into a single Ministry of Health Executive Reporting System** including data from pharmaceutical supplies, HR, finance as well as information from the National Health Accounts.

Recommendation 6: **The Ministry should work to improve key indicators relating to non-communicable diseases**, by increasing the share of the health budget spent on NCD prevention; expanding and targeting secondary preventive activities and effectively implementing anti-smoking, food standards and nutrition legislation.

Recommendation 7: **Greater priority should be given to asset maintenance** to enable an increase in the availability and reliability of equipment and facilities, thereby improving quality of care, medical efficiency and reducing long-run capital costs.

Recommendation 8: **Further efficiency savings should be sought, and ploughed back into curative care budgets**. Examples of such savings include: contracting out additional support services; optimizing hospital outpatient staffing to reduce unnecessary repeat visits; and optimizing medical staff inputs. Efficiency measures that are monitored should include average length of stay for the top 20 DRGs, and some indicators related to timeliness of surgical admissions and operative cancellations (see Annex 1 for more details).

1. Introduction: Rationale and Scope of Review

1.1 Rationale and Scope of the Public Expenditure Review

Tonga faces significant economic, political and social challenges in 2010/11 which are likely to persist for at least the next 3 years.

External economic challenges include: the country's relative isolation from world markets; the impact of the 2008-09 global financial crisis on trade and investment in Tonga and on vitally important remittance income[5]; the collapse of hitherto profitable agrarian exports e.g. squash; and the seeming increasing frequency and ferocity of climate-related events (tsunamis, cyclones etc).

Internal political and social challenges include: the transition to a constitutional monarchy and a more broadly elected membership of Parliament in late 2010 and beyond; the need to improve health standards, especially the incidence of non-communicable diseases (NCDs)[6]; the existence of high rates of youth unemployment and the growing social impact of changing lifestyles, which is leading to a degree of social dislocation and a number of health-related problems including teenage pregnancies and mental health disorders.

This Health Sector Public Expenditure Review (HSPER) was commissioned to assist and guide the Government of Tonga (GoT), especially MoH, and AusAID and other development partners in making difficult decisions in setting and prioritising budgets in the health sector, in the face of these prevailing economic, social and political challenges.

1.2 Economic Development Context

Despite efforts by the Tongan authorities to develop tourism and agriculture, slow output growth has been mirrored by slow employment growth and an increase in youth unemployment. As a result that Tonga's real GDP has barely grown over the last decade. Section 2 describes in more detail the impact of recent adverse political (riots), fiscal, economic and climate-related events, which has meant that Tonga's real income per head has fallen over the last 3 years.

Tonga was ranked 99th among 182 countries in human development by UNDP in 2009.[7] Tonga is rated as one of the countries with "medium" human development, having slipped in recent years from 54th place (within the group of countries ranked as having "high" human development) due to a steep fall in its GDP per capita.

Tonga's ranking is buoyed up by the population's relatively high life expectancy (72 years). Encouragingly, Tonga is rated as "likely" (the highest rating) to meet Millennium Development Goals 4, 5 and 6 related to child mortality, maternal health and combating infectious diseases.

[5] Large numbers of Tongans seek careers overseas and send remittances to family members back in Tonga, which account for an estimated 45% of gross domestic product (GDP) e.g. T$ 180 million in 2007/08.
[6] Taken from Government of Tonga SDP8: health is the 6th key outcome to sustain economic growth
[7] http://hdr.undp.org/en/media/HDR_2009_EN_Table_H.pdf

1.3 Tongan Policy Context and Challenges

Beyond financial issues, there are a number of ***broad political and social challenges*** facing the country over the next 10 years, including: the transition to a constitutional monarchy and a more broadly elected membership of Parliament; the need to limit and reduce historically high levels of public debt and a reduction in the current high rates of youth unemployment.

Civil service salary increases in 2006 led to a ***social and fiscal crisis*** which was addressed by Strategic Development Plan (SDP) No. 8, finalised in June 2006. Based on an extensive consultative process, SDP 8 set out eight medium-term national development goals[8], including the goal of improving health standards, which is directly relevant to this PER.

SDP actions to secure better governance and economic stability included a ***restructuring of public administration and downsizing of the civil service*** through a voluntary redundancy program, were both initiated in the first half of 2006. However, this restructuring and downsizing did not, of itself, assist – and may have hindered through reducing clinical staff numbers – improvements in health standards.

Finally, there is growing awareness of the severity and importance of the challenge relating to the need to address high rates of obesity and non-communicable disease (NCDs). NCD incidence is growing rapidly (see Section 6 below), and is affecting all sections of Tongan society, including, increasingly, younger adults and even children. It is the one area where Tonga may not meet its health-related MDGs. The 2010/11 Budget Statement (Paper 2) correctly notes that "*because of the chronic nature of NCDs, the burden they impose on the patient, their family and the health system is long-term*".

1.4 Review Objectives, Methodology and Scope

The ***key objective of the Health Sector Public Expenditure Review (HSPER) is to assess the efficiency, effectiveness and equity of public health expenditures***. In assessing these issues, the HSPER examined health outcomes in Tonga along with government and international donor financial allocations and investment in the health sector.

The Terms of Reference sets out the purpose of the HSPER as providing ***an assessment of the efficiency, effectiveness and equity of public health expenditures.*** The HSPER aims to provide the government with important evidence to help make difficult budget decisions around prioritisation and resource allocation for the health sector. It aims to complement the recently completed education sector PER.

<u>Review Scope</u>
The scope of the PER includes:

- Analyse ***health system performance*** by identifying current health priorities and outcomes, and comparing them to both past performance and regional performance;

[8] The other seven goals relate to ensuring macro-economic stability, promoting sustained private sector-led economic growth, equitable distribution of the benefits of growth, creating a better governance environment, improving education standards, ensuring environmental sustainability and reduced disaster risk, and maintaining social cohesion and cultural identity.

- Review and analyse the extent to which ***public expenditures match the strategic objectives of government for the health sector***;

- Examine the current financial sources and mechanisms for funding services including the role of the private sector, donors and government and ***assess the sustainability and future potential of funding sources***.

Review Methodology

Work commenced with a team teleconference in mid-May 2010, followed by briefing and mobilisation of the international consultant in Tonga shortly afterwards. The team interviewed key stakeholders in both the Government and Non-Government-run health systems. The first two Health PER Workshops were held in mid-late May, at which ministry staff and other GoT officials, NGO representatives and donors were briefed on the team's Work Plan and progress with collecting data.

During the rest of May and June 2010, the HSPER team interviewed senior staff in the Ministry of Health (MoH), Ministry of Finance (MoFNP), non-government run clinics and NGOs. In addition, the team visited Vaiola and Prince Ngu Hospitals as well as a number of outlying clinics to obtain first-hand accounts and impressions of the health system.

The team collected financial and performance data from MoFNP, MoH, and from non-government and NGO health providers. Field data collection was completed in late June 2010. Initial PER findings were presented to Government officials and overseas donor representatives at a Final Health PER Workshop on 23 June 2010. The final report was then drafted after comments and further information were received from MoH, MoF and AusAID.

2. The Macroeconomic & Fiscal Environment

2.1 The Macro-economic Environment

Real growth of the economy in recent years has been fragile, at best. Table 1 shows that since June 2003, there have been 3 years of recorded real growth in the Tongan economy, offset by 4 years of negative real growth. As a result, Tonga's real GDP has fallen since 2003.

The stagnation of the Tongan economy in the last 2 years comes on top of an overall net near zero growth in GDP in the five previous fiscal years (June 2003 – June 2008), due mainly to the contraction of the economy due to the domestic political disturbances in 2006.

Table 1: Growth in GDP at factor cost (2000/01 prices), 2003/04 to 2009/10

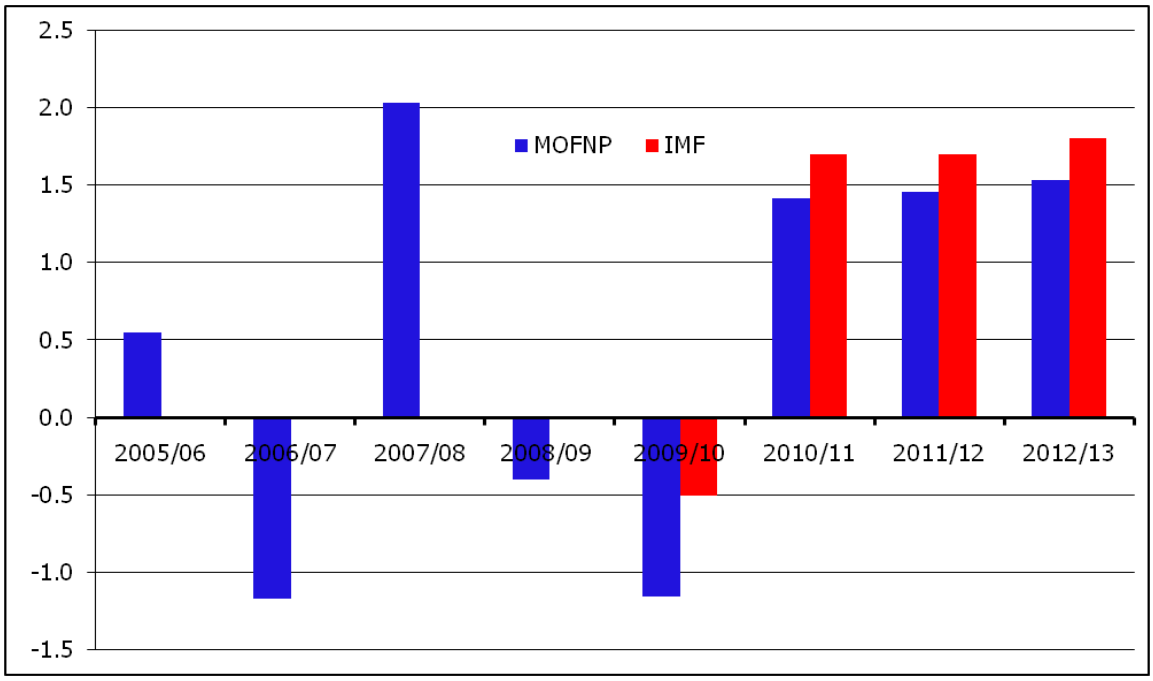
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Real GDP growth (% pa)	1.0	-0.4	0.8	-3.2	2.0	-0.4	-1.2

Source: For 2003/04-2006/07: Budget Paper 1, 2009 & 2010 Budget Statements, MoFNP; For 2007/08 – 2009/10: Budget Paper 1, 2011 Budget Statement.

Tonga's GDP per head ranking has therefore slipped in recent years. The latest UNDP Human Development Report shows that in 2009, Tonga's ranking stood at 120th out of 182 countries though Tonga's ranking may have slipped further in 2010. Tonga's GDP per capita (US$3,750) in 2009 was slightly lower than the average for the countries ranking 'medium' in the human development index, and significantly lower than the East Asia & Pacific average (US$5,733).

Tonga's economy continues to face a challenging macro-economic environment, due to the lingering impact of the recent global financial crisis. MoFNP's latest estimate is that the economy declined by 1.2% in 2009/10, a second successive year of negative growth.

Figure 1: Past and Forecast GDP Growth Rates: 2005/6 to 2012/13



2.2 Government of Tonga Fiscal Situation in 2009/10

2009-10 Spending and Revenues

The latest government estimate is that real GDP has fallen by 1.2 per cent in 2009/10 (see the graph above). Both the Government and the IMF expect GDP to rebound with real GDP growth in 2010/11 and in the following 2 years of around 1.5 per cent. However, forecasts have been unduly optimistic in the past, and positive growth may not materialise.

Unsurprisingly given the macro-economic picture presented above, the Government's fiscal position – and hence its ability to fund public services – in the last year has deteriorated as a result of falling revenues, due in turn to declining trade, spending and company profits[9].

[9] The Government has introduced a reform of taxation – to bring down the rate of corporate taxes to harmonise rates and reduced tariffs to a flat rate of 15% to comply with WTO requirements. These reforms should raise revenues over time.

Table 2 below shows that after a strong increase in revenue collection in 2005/06, Government operating revenues fell in cash terms between 2005/06 and 2009/10. As a result, the Government has run sizeable (and unprecedented) fiscal deficits in four out of the last five fiscal years.

Table 2: Total Government Operating Revenues and Spending, 2004/05 – 2009/10

ToP million	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Total Revenues[10]	116.0	148.3	148.5	163.6	142.0	136.9
Total Expenditure[11]	112.3	181.9	164.1	161.5	185.3	180.9
Fiscal Surplus/Deficit	6.3	-33.6	-15.6	2.1	-41.3	-44.0

Source: 2004/05 – 2008/09: Table 13, Annex C, 2011 Budget Statement; 2009/10 Table 5 (Revenue) and Table 15 (Expenditure), Paper 2, 2011 Budget Statement, MoFNP

According to the latest MoFNP figures in the Budget Statement for the year ended 30 June 2011, provisional estimates of total government expenditure in 2009-10 is T$181 million. This represents a reduction of T$23 million on 2009/10 budgeted spending.

Government revenues have been over-estimated in recent years. Although the 2010 BS projected total revenues and grants of T$ 220.1 million for 2009/10, the latest estimates published in the 2011 Budget Statement showed a provisional total grant and revenue estimate of T$176.4 million. This reflects a sharp reduction in tax revenue (see Table 3 below). At the time of the 2010 Budget, tax revenues were estimated to rise by T$31 million. However, the expected 2009/10 outturn is for a reduction of T$10 million below the 2008/09 revenue level.

Table 3: Government of Tonga Fiscal Revenue, by major category, 2007/08 – 2009/10

Tongan Pa'anga million	07/08 (Actual)	08/09 (Provis.)	09/10 (Estimate)	09/10 (Projecte Outturn)
Tax	**139.1**	**119.1**	**150.2**	**109.7**
Income Taxes	26.8	30.4	32.0	24.7
Consumption Tax	59.7	47.2	61.2	43.0
Import Duties	40.5	16.0	21.5	15.0
Excise & others	11.1	25.5	35.5	27.0
Non-Tax	**24.5**	**22.8**	**20.7**	**27.2**
Entrepreneurial	10.5	9.2	7.2	15.3
Fees & Charges	12.7	11.9	12.5	10.5
Miscellaneous	1.3	1.7	2.4	1.5
Total Revenue	**163.6**	**142.0**	**172.2**	**136.9**

Source: 2007/08: Tables 13 & 15, Annex C, 2011 Budget Statement; 2008/09 - 2009/10: Table 5 Paper 2, 2011 Budget Statement, MoFNP.

[10] Tax and non-tax revenues excluding grants

[11] Expenditure excluding equity payments, but including debt repayments

2010-11 Spending and Revenue Estimates

The latest Budget available predict a further slight fall total government revenues in 2009-10 to T$132.6 million. However, total revenues are forecast to increase slightly in 2010-11 and in the two following years, due to tax reforms and a small bounce-back in the economy, returning the budget to surplus. However, given errors in past revenue and spending predictions, this scenario is not guaranteed.

The significance of this economic and fiscal background for the Health Sector is that the economic environment facing the Government has been adverse in recent years, which will impact on Health Budget settlements in coming years, as it has on 2009/10 expenditures.

Table 4: Government Revenue & Expenditure estimates, FY 2009 to FY 2012

Tongan $ million	2009-10	2010-11	2011-12	2012-13
Total Government Revenue	132.6	143.0	156.0	156.0
Total Government Expenditure	166.0	185.0	152.0	152.0

Source: Ministry of Finance and National Planning

3. Overview of Public Spending on Health

3.1 Aggregate Health Spending

Trends in recurrent health spending up to 2008/09

Total government recurrent spending on health has risen from T$ 11.8 million in FY2003/04 to T$ 20.9 million in FY 2008/09 – see Table 4 below. This is an increase of a little over T$ 9 million over 6 years, 77 per cent in nominal terms. However, allowing for inflation, the real growth in health spending was around 40 per cent.

The bulk of this expenditure increase was due to sharply higher salary costs, following the 2005 civil servants' strike. Medical staffing costs leapt by over T$ 3 million in one year, from T$ 7.5 million in 2004/05 to T$ 10.7 million in 2005/06, taking the salary share from 56% to 63% of the recurrent health budget.

Table 5: Total Government Health Expenditure, 2003/04 to 2008/09

ToP million	**2003/04**	**2004/05**	**2006/07**	**2008/09**
Total Recurrent Government Health Expenditure	11.8	13.5	20.0	20.9
On-budget Health Development Expenditure	0.2	1.1	0.6	0.6
Off-budget Health Development Expenditure	7.4	6.9	8.5	8.5
Total Sector Recurrent & Development Spending	**19.4**	**21.5**	**29.1**	**30.0**

Source: Tonga National Health Accounts & Treasury, MoFNP

2009/10 and Medium-term Health Spending forecasts

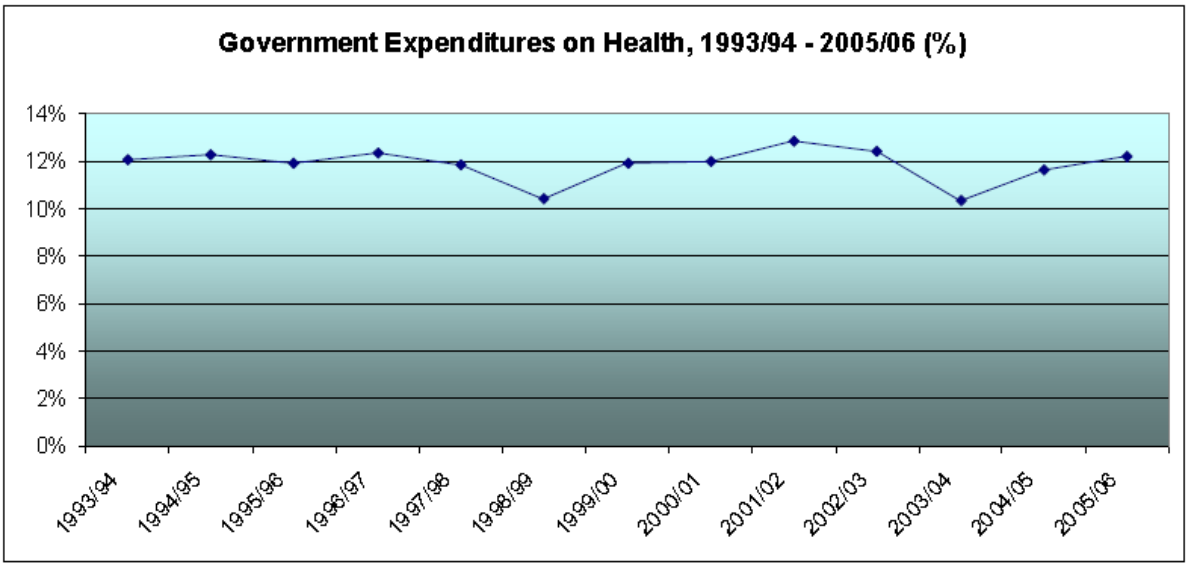
The total recurrent health budget for FY 2009/10 was T$ 30 million. However, all Ministries were asked to reduce spending in March 2010, in the face of much lower FY 2010 revenues than budgeted. Actual 2009/10 government health spending will be less than the original budgeted figure at around the ceiling imposed by Treasury of T$ 21.5 million, a reduction of 6.5 per cent in planned spending. As establishment numbers, and hence the salary bill, are hard to cut, this reduction has fallen largely on operational spending.

In real terms, total Government recurrent expenditure has fallen since 2006/07. In the 2010/11 budget round, the Government instituted a policy of across-the-board cuts in spending in the light of revised revenue estimates. According to BS 2011 Budget Paper 2, Government current expenditure on health is expected to fall further to T$ 20.4 million in 2010/11, and again significantly to T$ 18.5 million in 2011/12 and 2012/13.

3.2 Health sector share of Government spending

As shown in the Table below, Government expenditures on health have been fairly constant – at around 12 per cent of total government expenditure since 1993/94.

Figure 2: Health Expenditure as share of Government Spending, 1993/94 – 2005/06



Source: National Health Account, 2005/06

The long-term trend has continued in recent years. Health's share of government recurrent spending (see Table 6) has fluctuated around 11-13 per cent since 2004/05[12]. Health's spending share rose to a high point of around 13 per cent in 2006/07 and 2007/08, declined to 11 per cent in 2008/09 due to a significant rise in government spending and returned to its historical average of around 12 per cent in 2009/10.

[12] Total health spending rose sharply in 2005/06, due to the 60/70/80 per cent increase in salaries implemented in that year (see Table 17 for details of increases in salary costs).

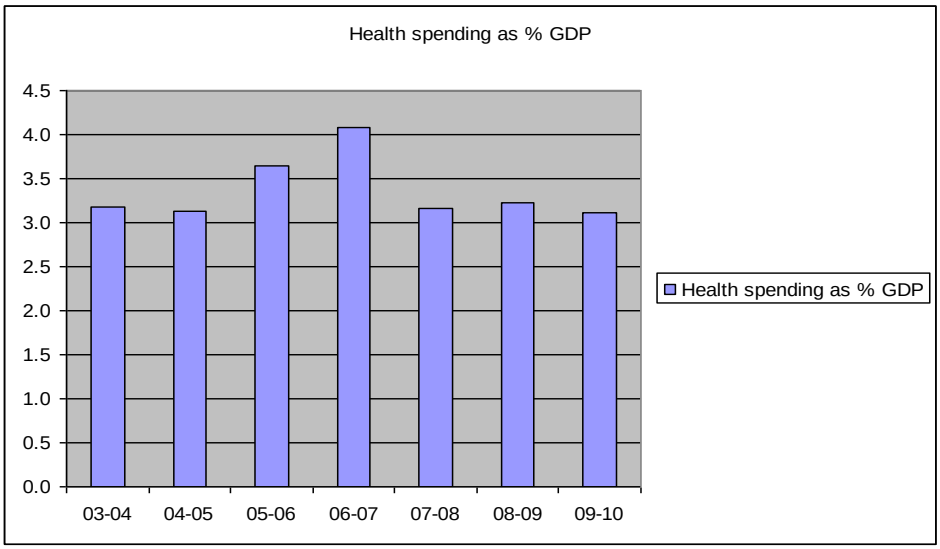
Table 6: Health Spending as Share of the Government Budget, 2004/05 to 2009/10

T$ (pa'anga) million	2006/07	2007/08	2008/09	2009/10
Health Sector Recurrent spending	20.0	19.2	20.9	21.8 (p)
Total Recurrent Government spending[13]	153.3	148.9	192.7	180.0
Health spending share (%)	**13.0**	**12.9**	**10.8**	**12.1**

Source: Treasury National Accounts. Data for 2008/09 & 2009/10 taken from Budget Statement 2010/11, Paper 2, Table 2, MoFNP

Figure 3 below shows that recurrent public health spending as a share of total GDP has been stable at a little over 3 per cent of GDP in recent years, except for a slightly higher than the average share of 3.5 to 4 per cent in the middle years of the decade, due to salary increases. The 2005/06 National Health Accounts estimate that total health spending, including privately incurred and out-of-pocket spending amounted to 6.8 per cent of GDP.

Figure 3: Total health spending as a share of GDP, 2003/04 to 2009/10



Source: MoFNP, Budget Department. 2009/10 figures are provisional at the time of writing

Non-government Health Sector Funding

The table below shows the full breakdown of non-Government health funding. The main source of non-government health funding is from development partner (donor funds), which in 2005/06 amounted to T$ 11.1 million. In addition, around T$ 3.5 million was provided by households (mainly for spending on traditional healers, drugs and private clinics). A further T$ 0.7 million was provided by other sources, of which the largest was international and Tongan NGOs.

[13] Recurrent government expenditure is defined net of equity transactions, but includes debt interest payments

Table 7: Health Funding, by source, 2006

Sources of Health Funds	Amount (T$)	Per cent	Per Capita (T$)
Ministry of Finance	17,128,841	52.9	167.9
Private Employer Funds	21,162	0.1	0.2
Household Funds	3,463,634	10.7	34.0
NGO Funds	494,832	1.5	4.9
Other Private funds	162,565	0.5	1.6
Donor Funds	11,090,676	34.3	108.7
TOTAL	**32,361,709**	**100.0**	**317.3**

Source: National Health Accounts, 2005/06

Funding from AusAID, NZAid, JICA (and recently China) to support various health programmes and activities has played a key role in supporting the health sector in the Kingdom. In recent years, development expenditure has risen from around T$8 million in 2003/04 to over T$11 million in 2007/08, with the vast majority of funding being off-budget. Major projects (HSSP, renovation of Vaiola hospital) have accounted the bulk of expenditure (see HSPER Background Papers for more details).

The longer-term trend of donor funding is shown below. Donor spending has typically accounted for around a third of total health sector expenditure. The share of total sector spending accounted for by donor funding has been between 30-40 per cent over the period 2003/04 to 2008/09. This substantial share reflects the inability of the Tonga Government to fund significant health capital / development costs out of its limited budget.

Table 8: Donor Spending Share of Total Education Spending, 2003/04 - 2008/09

T $ (Pa'anga) million	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Donor Health Sector Spending (on/off budget)	7.6	7.1	8.1	8.5	11.1	8.6
Total Sector Expenditure	19.4	20.6	25.2	28.6	30.3	23.9
Donor Spending as % Total Sector Spending	**39%**	**34%**	**32%**	**30%**	**37%**	**36%**

Source: MoH, MoFNP.

3.4 Composition of Health Expenditure

Recurrent Spending

Health spending across sub-sectors is shown in Table 9 below. The share of recurrent spending on hospital-based care (curative, nursing & dental) has been fairly constant at around two-thirds of recurrent spending between 2004/05 and 2009/10. This reflects the fact that the bulk of health services are delivered out of Vaiola and other hospital settings.

Spending on curative care has maintained its share at just under two-thirds of total recurrent MoH spending, with total central overhead costs rising to around 25 per cent. GoT spending on preventive health has risen slightly in absolute terms, but has remained constant at around 8 per cent of total spending.

Table 9: Recurrent Health Expenditure, by sub-sector, 2006/07 - 2009/10

T $ (Pa'anga) million	2004/05	2007/08	2008/09	2009/10
Curative, Dental & Nursing Care	8.6	12.3	13.7	12.0
Preventive Care	1.1	1.1	1.6	1.6
Other - Planning & Leadership	3.8	5.8	5.5	5.4
Recurrent Total Health Spending	**13.5**	**19.2**	**20.9**	**19.0**

Source: Estimates based on Treasury data, MoF Budget Statements & MoH Annual Reports

Sector Development Spending

Health-related development budgets have been a significant part of total development budgets until recently (see Table 10 below). This reflects the fact that there have been significant capital and health management development programmes in the 2000's. For example, an estimated T$ 25 million (USD13million) has been spent since 2005/06 on the renovation and construction of Vaiola Hospital – see PER Background Papers annexed for more details.

Table 10: Health Sector Development Spending, 2004/05 to 2008/09

T $ (Pa'anga) million	2004/05	2005/06	2007/08	2008/09
Health Development Budget	6.1	11.1	1.3	2.8
Total Development Expenditure	25.1	34.9	34.5	108.1
Development Spending as % Total	**24%**	**32%**	**4%**	**3%**

Source: MoFNP – Development Unit (provisional data for 2009/10)

The share of health development spending out of the total has fallen in recent years, due to the completion of various health projects (Vaiola Hospital reconstruction Phase 1 and HSSP) and to the very significant expenditure on other projects in the Kingdom, including the reconstruction of Nuku'alofa town centre.

Spending on Overseas Secondary & Tertiary Care

Overseas medical teams pay regular visits to the Kingdom to carry out specialist procedures such as Operation Open Heart, ophthalmology procedures (3 teams from USA and NZ), orthopaedic, plastic (Interplast) and ENT surgery. Over 80 operations were performed by visiting medical teams in 2008, and over a third of these were considered major operative procedures. In addition, a total of around 2,000 patients were seen by the visiting Ophthalmology teams and a further 400-500 people were seen by other Teams.

In addition to overseas visits, in 2007/08 and 2008/09 the government allocated T$ 600,000 each year to finance overseas treatment (in NZ). This scheme is mainly used to fund open heart surgery procedures (in 2008 to funded 15-20 patients at a cost of T$25,000-40,000 each). In total, only around 3 per cent of sector operational spending (T$0.6 million on

overseas referrals plus GoT contributions in-kind to overseas team expenses) in 2008/09 is spent on government or donor-sponsored overseas health care.

3.5 Per capita health spending

Recurrent spending per head has risen from T$ 133 to over T$ 200 over the last 5 years, a rise of 50 per cent in nominal terms, but *only a rise of a little over 15 per cent in real terms*. However, the absolute increase in non-salary spending has been much more limited – a rise from T$ 59 to T$ 72 per head, but *a fall of around 10 per cent in real terms*.

Table 11: Total Health Recurrent Spending per head, 2004 to 2008

T $	2004-05	2005-06	2006-07	2007-08	2008-09
Recurrent public spending	13,521,000	17,076,000	20,002,000	19,213,000	20,900,000
Recurrent public spending per person	132.7	166.8	194.4	187.9	203.4
Non-salary spending	6,015,000	6,320,000	8,272,000	7,580,000	7,399,000
Non-salary spending per person	59.0	61.7	80.4	74.1	72.0
Total Population	101,865	102,369	102,907	102,259	102,730

Source: MoH Annual Report, 2008, MoFNP.

3.6 Regional & international comparison of spending shares

3.5.1 Regional Comparisons of Health Spending Shares

A comparison of the proportion of government spending on health across Pacific countries in Table 12 below for 2008 shows that Tonga's health spending proportion is at the low end of the range found in comparable countries. Fiji has a slightly lower share, while other neighboring countries (Samoa, Kiribati, Cook Islands) all have a significantly higher share of spending on health.

Table 12: Public Health Spending Shares, Pacific Countries, 2008

2008	Tonga	Samoa	Fiji	Cook Islands	Kiribati
Health recurrent expenditure as % Total Govt recurrent spending	10.8%	20.0%	8.3%	12.4%	15.9%

Source: SPC data base. http://www.spc.int/PRISM/Economic/Finance/Govexp.html. NB PNG Data is for 2002 and Cook Islands is for 2007

Data for selected Pacific countries health spending as a proportion of total national income (GDP spending shares), taken from the SPC PRISM database, is summarized below. Again this shows that Tonga is currently at the low end of the spending range, with public health spending just under 3.5 per cent of GDP. Historically, spending in Tonga has been around 3-4%, except for a slight rise in 2005/06 due to higher salaries paid that year.

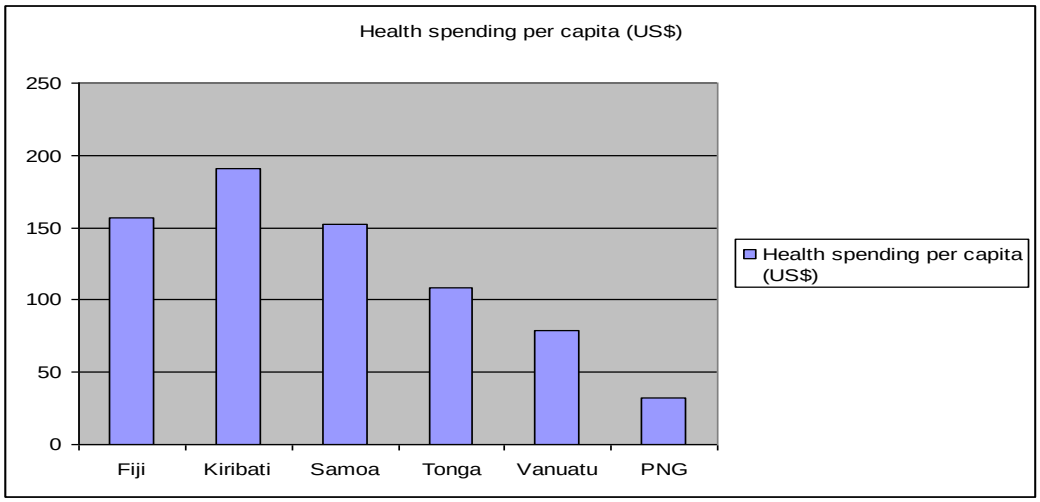
Table 13: Comparative Health Expenditure as a share of GDP, Pacific, 2008

	Tonga	Samoa	Fiji	Vanuatu	Cook Isls
Spending on Health as share of GDP (%)	3.4%	5.0%	4.0%	3.6%	3.2%

Source: SPC data base. http://www.spc.int/PRISM/Economic/Finance/Govexp.html.
Data for 2008, except for the Cook Islands where the data is for 2007.

Health spending per capita in Tonga, as shown in Figure 3 below, is substantially lower than in neighbouring Pacific countries of Samoa, Fiji and Kiribati, but higher than the Melanesian countries of Vanuatu and PNG.

Figure 4: Regional comparison of health spending per capita, 2007



3.7 Equity of Health Expenditure

Inter-Island Equity

Table 14 & Figure 5 below show the detailed breakdown of cost by island district. The main Vaiola hospital in Tongatapu accounts for an average of 85 per cent of total national health spending. The remaining 15 per cent of spending is shared by the other island groups.

Specialist medical staff and high tech medical equipment are only available at the main hospital, apart from occasional visiting overseas visiting and local medical teams. As a result, patients from the outer islands requiring acute treatment are generally referred to Vaiola Hospital in Tongatapu for reasons of effectiveness and the costliness of delivering secondary health care across the scattered islands of the Kingdom. This explains the fact that spending in Tongatapu at $250 per head of the population is significantly higher than a uniform per capita health funding allocation would imply.

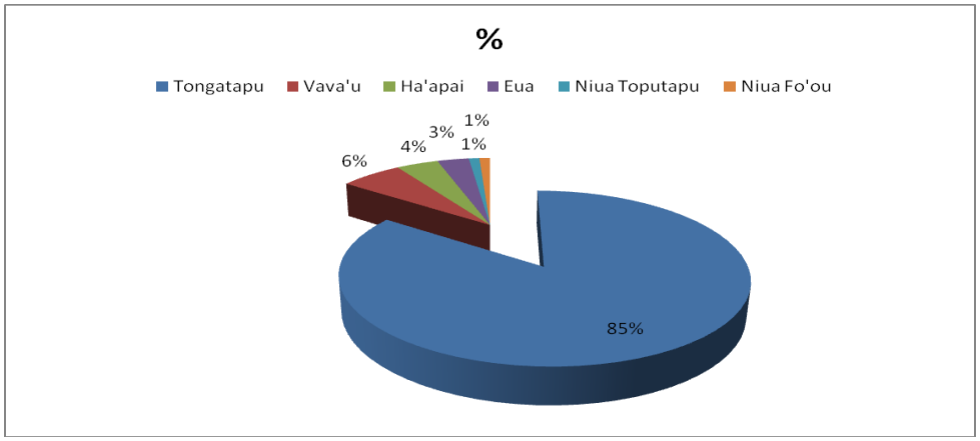
Table 14: Cost per Capita by Island Group, 2008/09

Island Group	Population	Expenditure	Per capita Spending	% Population
Tongatapu	72,045	18,408,206	256	71
Vava'u	15,506	1,159,393	75	15
Ha'apai	7,570	667,806	88	7
Eua	5,206	449,941	86	5
Niuas	1,655	215,626	130	2
Total	**101,982**	**20,900,972**	**205**	**100**

Source: MoH Annual Report 2008; Population: 2006 Census

The cost per capita in the outer islands were $75 for Vavau, $88 for Ha'apai , $86 for 'Eua and $ 130 for the Niuas. Overall, the cost per capita in the outer islands was about a third (1/3) of the per capita costs in Tongatapu. Health spending in Vava'u and Haapai was only 5 and 3 per cent of total health spending respectively, although 15 per cent of the population lives in Vava'u and 7 per cent of the population lives in the islands of Ha'apai. A case could be made for higher spending – on primary care and on some diagnostic equipment – to meet the needs of these populations. The island of 'Eua is sufficiently close to Tongatapu that secondary care needs can be met from services at Vaiola.

Figure 5: Share of Health Expenditure, by Island Group



In terms of facilities, clinics on the remoter islands have generally lower population to health personnel ratios, as seen in Table 15 below. Given the distribution of the population, the number of people per facility is highest on the main island and lowest on the least populated island district of the Niuas. This equates to significant waiting lists and queues to use the outpatient facility at Vaiola hospital.

With the exception of some islands in the Ha'apai Group and the Niuas, there is good access to hospital care in Tonga. Significant travel times to the hospital in Ha'apai and the absence

of a hospital in the Niuas mean that access to hospital facilities is more limited in these islands.

Table 15: Government Health Facilities, by Island Group, 2008

	Total	Tongatapu	Vava'u	Ha'apai	'Eua	Niuas
Number of Government Health Facilities[14]	52	27	9	8	4	4
Population	102,473	70,724	16,594	8,591	5,210	1,354
Persons per Facility	**1,970**	**2,619**	**1,843**	**1,074**	**1,302**	**339**

Source: MoH 2008 Annual Report, Appendix 10

4. Non-Government Health Services and Spending

4.1 Non-Government Health Services

The private sector is small and consists largely of a network of traditional healers mainly in rural areas, together with 3 officially recognised private pharmacies and a small number of "after hours" private practice clinics in the capital city, Nuku'alofa, run by Government doctors. During PER team visits and discussions with non-government providers, it was apparent that private clinics play a vital role in complementing government-provided services and deal with a substantial number of clients. There is a close working relationship between non-government service providers, and the services provided by the hospital.

In addition, international and local NGOs run their own private for-profit and not-for-profit health centres. In 2005/06, there were 15 NGOs providing health-related services. The largest by far is the Tonga Family Health Association, followed by 'Aloua Ma'a Tonga, Vaiola Hospital Board of Visitors, Tonga Red Cross and a number of community-level and Church groups (Table 6 of PER Background Paper 1 contains a full list of NGOs).

In 2005/06, 60 per cent of NGO funds came from overseas and 40 per cent were mobilised locally, and this broad share is unlikely to have changed significantly in recent years. Most funds were spent on maternal & child health, NCD prevention and education & training of health personnel.

4.2 Non-Government Health Spending

The latest National Health Accounts (for 2005/06) provide the best estimates of non-government health expenditures. In 2005-06 it was estimated that household out-of-pocket spending accounted for around 8 per cent of total health spending – just under T$ 3 million a year. Roughly a third of out of pocket spending was on physicians, dentists and hospitals, a third on traditional healers and a third on pharmacy goods.

A precise breakdown of household health spending is given in Table 16 below:

[14] Health facilities include: hospitals, health centres and MCH clinics

Table 16: Household Out-of-Pocket Health Expenditures, 2006

Sources of Health Funds	Amount (T$)	Per cent
General Government Hospitals	337,528	11.3
Physicians, Clinics & Health Centres	511,625	17.2
Dentists	143,566	4.8
Traditional Healers	908,764	30.5
Medical & Diagnostic Laboratories	33,244	1.1
Dispensing Chemists	843,435	28.3
Provision & Administration of Public Health Programs	18,863	0.6
Other Health related Expenditures	180,264	6.1
TOTAL	**2,977,289**	**100.0**

Source: National Health Accounts, 2005/06

4.3 Costs and Fee levels in non-Government clinics

Household data analysis, undertaken to compile National Health Accounts, indicates that traditional healers are trusted by the community to fill a perceived "gap" in healthcare in rural areas. In 2005-06, it was estimated that there were around 1,000 traditional healers in Tonga, accounting for around T$ 900,000 of spending in cash and in-kind.

A survey of 230 of these healers for NHA 2005/06 found that healers saw an average of 7 persons in the month surveyed (which implies a total of over 19,000 yearly patient visits). An average of T$ 7 was paid in cash and $12 in the form of in-kind payment (the vast majority of cases).

The fees charged by the non government health providers appears to be generally accepted by the public at large judging by the appointments and drop-in clients witnessed during the Teams' visit to these service providers. As such, the role of private health service providers is vital to the government's strive to improve the public's health needs as well as providing additional choice for individual's seeking health services.

Households spent a total of T$ 500,000 consulting physicians and attending non-hospital clinics in 2006. Given inflation since 2006, this figure is likely to be nearing T$ 700,000 in total in 2009/10. This costing is based on average fees charged for a consultation of T$ 20 for an estimated total of around 3,500 individual consultations per month. In addition, drug costs per visit are around T$ 20-30.

5. Health Spending, Unit costs and Budget Execution

5.1 Detailed Health Spending Trends

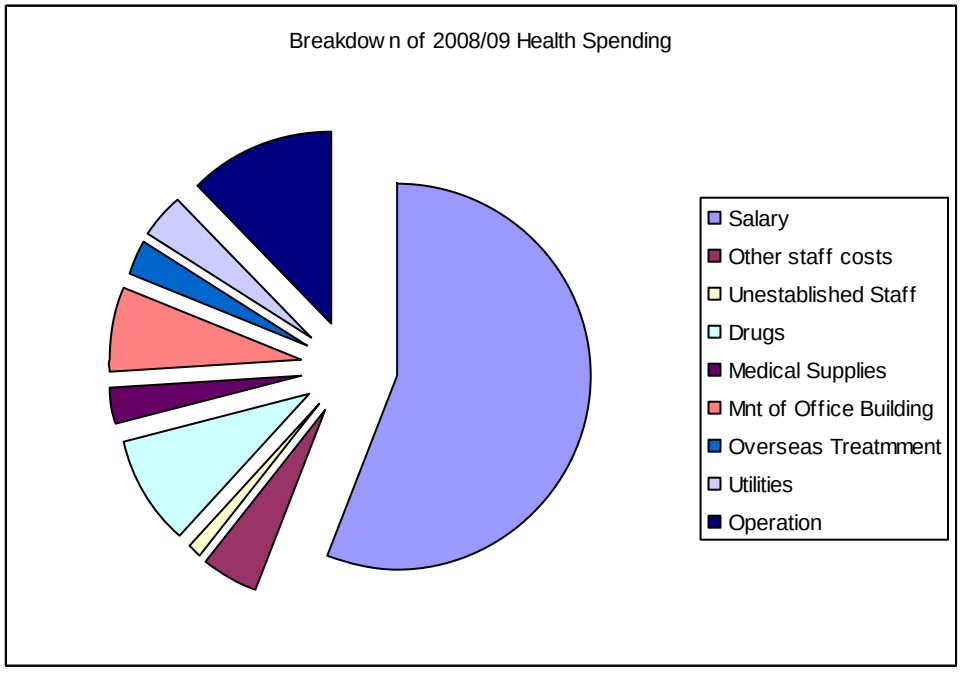
Total expenditure on public health has increased from $21.6 million in 2004/05 to $30 million in 2008/09. This is an increase of $8.4 million (39%) in nominal terms over the period of five years, but *only 2 per cent real growth in spending after inflation* is taken into account.

Health Sector recurrent spending

The chart below sets out total 2008/09 Ministry of Health (MoH) recurrent spending broken down into the key expenditure categories. Table 17 shows total health spending trends. Since 2003/04, *salary and wages have nearly doubled from T$7 million to T$13.5 million*. As a share, salaries have risen from 60 per cent of total spending in 2003/04 (before the large salary hikes in 2005/06) to 65 per cent of total MoH spending in 2008/09. This trend is due to continue due to reductions in budgeted operational spending: salaries were budgeted to consume over 75 per cent of total MoH spending in 2010/11.

Salary costs increases in 2008/09 were largely due to the recruitment of medical staff on short term contracts, to replace doctors that were on leave. This trend is likely to continue on into the future, as there are continuing shortages of staff, especially medical doctors.

Figure 6: Expenditure shares of health spending elements, 2008/09



By contrast with salaries, operational spending has fallen from 40 per cent to 35 per cent of total spending. *In real terms (after accounting for inflation), operating costs has fallen by nearly 30 per cent since 2006/07*. Provision of funds for essential operating costs is currently extremely limited (at around T$1 million per year).

Spending on ***transport and communication*** has barely risen in cash terms since 2003/04, which fails to take into account the rising cost of utilities and transport. The annual allocation was only 3% of the Ministry's total budget.

Spending on ***maintenance*** of buildings, equipment and vehicles accounted for around 5 per cent of the Ministry's total operating costs in 2008/09 and has been relatively stable at this level in recent years. Maintenance spending has increased from T$0.5 million in 2004/05 to $1.0 million in 2008/09. This doubling of spending over the last 6 years was due to an agreement with development partners to provide $1.2 million for the maintenance of the new hospital. These funds have been used to carry out urgent short-term maintenance needs.

Table 17: Health Recurrent Spending, by economic category, 2003/04 – 2008/09

Financial Year (T$ '000s)	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Expenditure Category						
Established Staff	6,941	7,288	10,381	11,188	11,163	13,091
Unestablished Staff	151	217	374	541	468	411
Salary & Wages	**7,092**	**7,505**	**10,755**	**11,730**	**11,631**	**13,502**
Salary Costs as % of Total	**60**	**56**	**63**	**59**	**61**	**65**
Travel & Communications	507	487	522	525	610	525
As % of Total	4	4	3	3	3	3
Maintenance & Operations	471	520	907	923	1127	1031
As % of Total	4	4	5	5	6	5
Goods & Services	3692	3831	3605	4113	4514	5681
As % of Total	31	28	21	21	23	27
Minor Capital Spending	2	1,177	1,287	2,711	1,330	161
Total Operating Costs	**4,673**	**6,016**	**6,321**	**8,273**	**7,581**	**7,398**
Operational Costs as % Total	**40**	**44**	**37**	**41**	**39**	**35**
MoH Grand Total	**11,765**	**13,521**	**17,076**	**20,003**	**19,213**	**20,901**

Source: MoFNP, Treasury and Public Accounts

Maintenance spending has commendably risen as a proportion of total operational spending. However, even rising absolute spending has been insufficient to carry out essential maintenance, especially for medical equipment. The PER team was told that several items of medical equipment were not currently operational due to unrepaired faults.

Such already very low expenditure has been squeezed further in 2010 through the application of a lower ceiling on overall Ministry spending, and this is likely to continue into future years, given the downward pressure on government budgets. If additional maintenance funding is not secured, then maintenance work would be neglected and this is likely to prove

very costly in the long run. The team believe that all hospital / health clinic budgets should contain a compulsory provision (say, 10% of total funding) for maintenance and repairs.

Purchase of goods and services has increased from $3.7 million to $5.7 million in 2008/09 - an increase of $1.9 million (50%). The cost of drugs and medical supplies makes up around 40 per cent of total operational spending, only leaving the remaining 60 per cent (T$3.5 million in 2008/09) to cover all other operational costs. The average annual allocation of a quarter of the total MoH budget for drugs was too low to cover the rising cost of drugs and medical supplies due to the weakening of the Tongan Pa'anga against key currencies (NZ & Australian dollar) and the big increase in the cost of electricity due to increasing cost of fuel.

Public and Preventative Health Spending

The allocation for public and preventive health has been relatively constant over recent years at around 8% of the total expenditures on health. The main cost of this programme was on staff salaries (see Table 18 below).

Salaries comprised 87 per cent of the total programme cost in 2004/05 but have dropped to 59 per cent in 2009/10, staying flat in nominal terms – a real drop of around 35 per cent. The Public Health Chief Medical Officer expressed strong concerns over the lack of qualified staff (with postgraduate degrees), as well as a general shortage of staff due to financial constraints in filling vacant posts, which have led to the fall in salary shares of total preventative health spending.

Communication and travel are required to provide public health services, especially on the outer islands in the Kingdom. However, only 1 per cent of the budget has been allocated to travel and, in general, operational funds have not been sufficient to carry out community-based preventive programmes. Table 18 below shows the breakdown of total expenditure on preventative services:

Table 18: Preventative Health Service Spending, 2004/05, 2008/09 & 2009/10

Financial Year (T$)	2004-05	2008-09	2009-10
Salary spending	944,395	1,046,930	943,869
% of Total	87	65	59
Travel & Communication	10,966	20,752	4,793
% of Total	1	1	0.5
Maintenance	63,465	209,140	210,896
% of Total	9	13	13
Purchases of Goods & Services	68,359	342,383	428,630
% of Total	6	21	27
TOTAL	1,087,185	1,620,205	1,588,188

Source: Treasury, MOFNP. 2009/10 figures are provisional.

Secondary Health Care

PER Background Paper No. 1 contains a detailed analysis of curative care expenditures. Curative health has spending stayed constant at around 60 per cent of public health spending in recent years, once nursing costs are included[15]. Table 19 below provides comparative figures for curative health spending between 2004/05 and 2008/09.

Table 19: Analysis of Expenditures - Curative Services

Financial Year (T$)	2004-05	2008-09
Salary spending	2,475,145	2,534,204
% of Total	29	45
Travel & Communication	36,676	46,474
% of Total	0	1
Maintenance	263,473	91,897
% of Total	3	2
Purchases of Goods & Services	5,642,728	2,945,686
% of Total	67	52
TOTAL	8,418,022	5,618,261

Source, Treasury, MOFNP

Salaries for medical staff (doctors and nurses) accounted for nearly half the cost of curative care in 2008/09, and more if nursing costs were taken into account. The other major costs were for medical supplies, drugs and the cost of overseas referrals. Operational funds for the purchase of goods and services have varied in recent years, possibly due to the reductions of costs of goods due to the practice of hosting visiting Australian medical teams to carry out surgery in Vaiola Hospital since 2007/08 who bring some medical supplies with them.

The share of total curative spending on maintenance was low – at 2-3 per cent, which has contributed to the lack of operational medical equipment (such as diagnostic equipment, dental supplies, glucometers etc) in the island hospitals and especially in facilities in the outlying islands. The PER Note on the team's visit to Vava'u, which documents this point among others, is appended at Annex 2.

Health Sector Development Spending

Contributions from development partners such as AusAID, NZAID, JICA to support various health programs have historically played a key role in supporting health facilities in Tonga.

The Table below shows the expenditures processed through the Treasury ('on-Budget') and 'off-Budget' development spending. It shows that, on average, that over the last 5 years development partners have financed around 35 per cent of health spending.

[15] Nursing costs were given a separate budget code in 2005-06. However, the Chief Nursing Officer estimates that 85 per cent of the nursing school syllabus relates to curative care, and the majority of the staff nurses are working on curative care.

Table 20: Health Development Expenditures, 2004/05 – 2008/09

Financial Year (T$ '000s)	2004/05	2005/06	2006/07	2007/08	2008/09
On Budget Development Expenditure - Donors	1,096	599	604	1,054	631
Off Budget Development Expenditure - Donors	6,939	11,586	8,519	10,508	8,477
Total Development Expenditure	**8,034**	**12,185**	**9,123**	**11,562**	**9,108**
Development Expenditure (% of Total)	**37**	**42**	**31**	**38**	**30**

Source: Public Accounts, MOFNP. Development spending are on-budget donor funds

Development expenditures have been provided for various health related programmes in the form of both cash and in-kind spending, which has been handled and managed directly by aid donors in consultation with the MOH. Table 20 shows the substantial volume of health assistance handled "off-budget"[16]. For example, between 2003/04 and 2008/09, the World Bank and AusAID jointly funded Phase I of the reconstruction of Vaiola Hospital, and the provision of technical assistance for the improvement of MoH administration and management information systems, at a total cost of T$ 25 million (US$ 13 million) - see PER Background Paper on MoH Administration for more details. Phase 2 of the Vaiola Hospital reconstruction project was commissioned in May 2010, and is due to be completed by December 2011 at a cost of T$ 39 million (US$ 20 million), of funds provided by JICA.

5.2 Health Care District and Unit Costs

Regional Health Spending

Vaiola Hospital in Tongatapu is the main hospital in Tonga. In addition, there is one smaller hospital in each of the outer islands, namely Vavau, Ha'apai, 'Eua, and Niua Toputapu and Niua Foou as well as local Health Clinics. Table 21 below shows expenditure across the island groups.

Table 21: Hospital and Health Clinic Expenditure, by Island Group

Name	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	Average
Tongatapu	11,650,442	13,310,644	17,908,736	16,873,147	18,408,206	%
% of Total	**86**	**78**	**90**	**88**	**88**	**85**
Vavau	869,410	1,418,642	817,780	1,127,392	1,159,393	
% of Total	**6**	**8**	**4**	**6**	**6**	**6**
Ha'apai	558,421	1,073,983	570,453	622,960	667,806	
% of Total	**4**	**6**	**3**	**3**	**3**	**4**
Eua	283,466	849,680	295,213	373,667	449,941	
% of Total	**2**	**5**	**1**	**2**	**2**	**3**

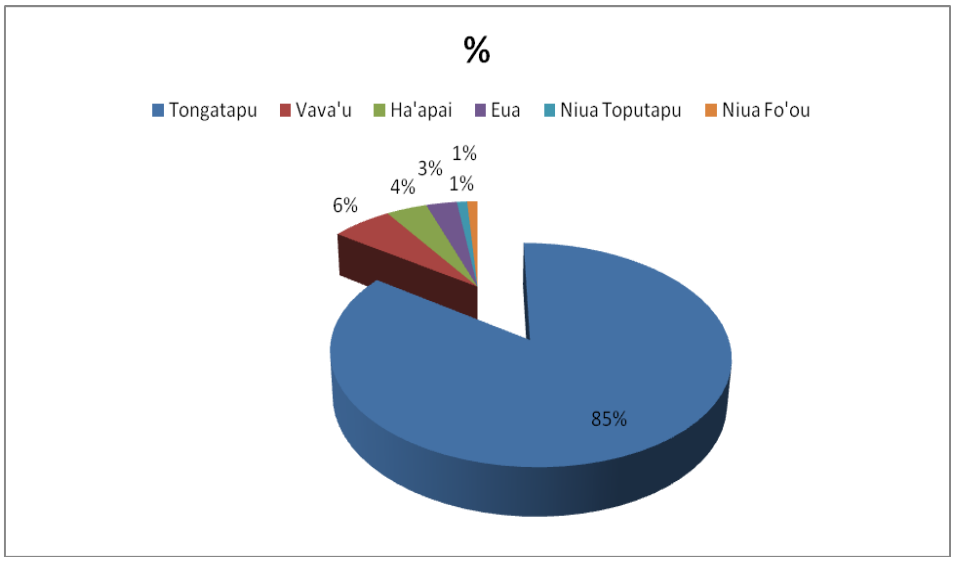
[16] Given, the limitations on information provided by international donors to MoH, the figures provided above may not reflect the full amount of development expenditures by international donors on public health.

Niua Toputapu	88,512	279,992	294,196	134,664	125,752	
% of Total	**1**	**2**	**1**	**1**	**1**	**1**
Niua Fo'ou	68,681	143,491	116,395	81,109	89,874	
% of Total	**1**	**1**	**1**	**0**	**0**	**1**
TOTAL	**13,518,932**	**17,076,432**	**20,002,773**	**19,212,939**	**20,900,972**	**100**

Source; Treasury, MOFNP

Table 9 & Figure 7 below shows the detailed breakdown of health costs by island district. The main Vaiola hospital in Tongatapu absorbs around 85 per cent of total national spending. The remaining 15 per cent of spending is shared among health services and hospitals in the other island group. Tongatapu's share of public spending is disproportionate to the island's population share (71%), though the higher per capita spending in Tongatapu is due to the specialist medical staff and high tech medical equipment which is located at the main hospital and the fact that patients from the outer islands are referred for treatment in Tongatapu due to economies of scale benefit of centralized tertiary care treatment facilities.

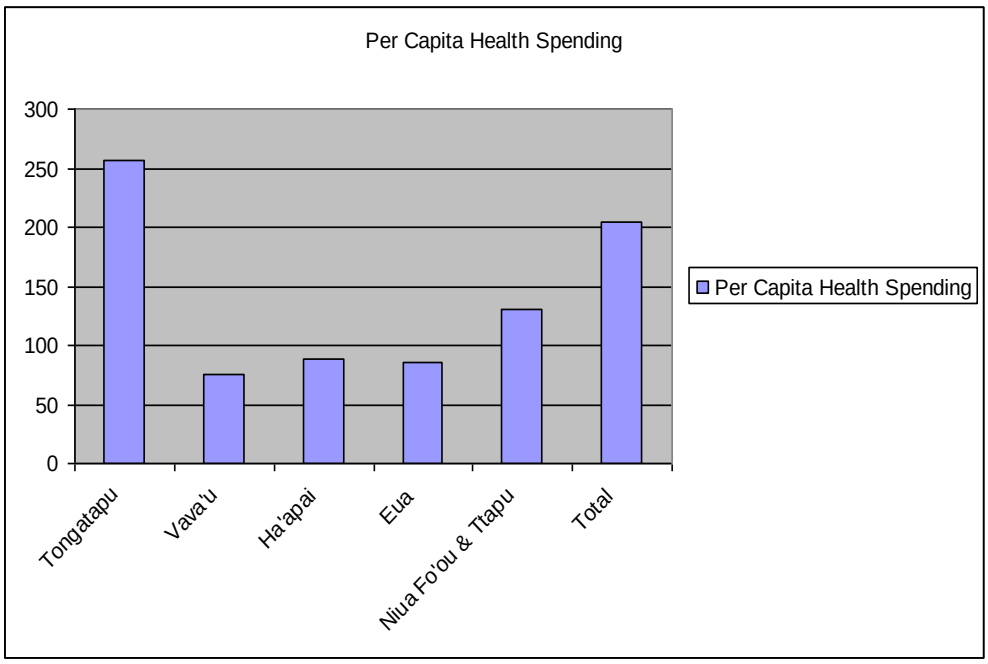
Figure 7: Health Spending, by Island Group, 2008/09



Source: Treasury, MOFNP

Average recurrent spending per head has risen from T$ 133 to over T$ 200 over the last 5 years, a rise of 50 per cent in nominal terms, but only a rise of a little over 15 per cent in real terms. The Chart below shows that per capita health spending is significantly lower in the outlying islands – and was on average one third (T$80) of the level of spending on Tongatapu (T$ 250 per head per year). This is due to the fact that the main hospital is on Tongatapu.

Figure 8: Per Capita Health Spending, by District



5.3 Health Budget Execution

Table 22 shows budgeted and actual spending for Ministry of Health. Further analysis of actual and budgeted spending is given in PER Background Paper 1.

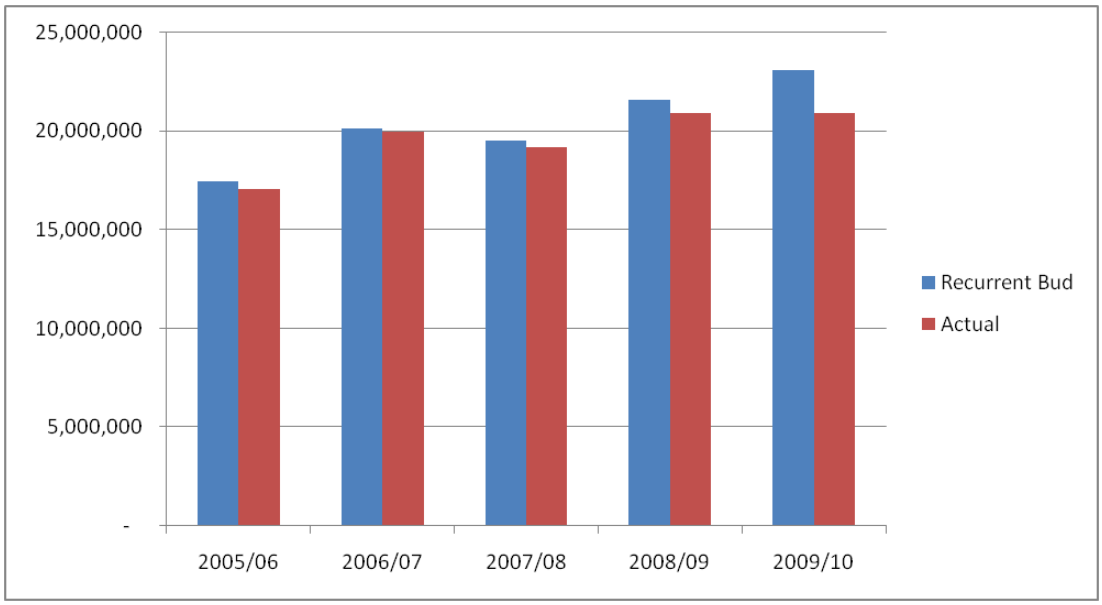
Table 22: Recurrent Planned and Actual Public Health Spending, 2005/06 to 2009/10

F /Year	2005/06	2006/07	2007/08	2008/09	2009/10
Budget	17,442,899	20,170,094	19,531,081	21,580,000	23,094,000
Actual	17,076,432	20,002,773	19,212,938	20,900,972	21,500,000 (p)
Variation as % Budget	**2%**	**1%**	**2%**	**3%**	**7%**

Source: MoFNP

The budget outturns over the last five years were graded as 'A' (budget execution of more than 90 per cent) in a Public Expenditure & Financial Accountability (PEFA) Study for Tonga conducted in May 2010. The overall grading given for all Ministries in Tonga were C. For the Ministry of Health, the variation between budgeted and actual spending was on average only 2% and the big variance of 7% in the last financial year was due to MoF mandated cuts in spending against a previously agreed budget, not under-spending due to poor budget execution. It can be seen that MOH has clearly reaped the benefit of the Health Sector Strengthening Project (HSSP) implemented five years ago, funded by the World Bank and AusAID to strengthen and improve MoH's financial management system.

Figure 9: Comparison of Recurrent Budget and Actual Public Health Spending



Source; Public Accounts, MOFNP

6. Health Sector Performance & Outcomes

6.1 Introduction

The overall performance criterion for the health system is set in the Ministry of Health's Vision statement, namely that:

"By 2010 Tonga is the healthiest nation compared to its' Pacific neighbours, as judged by international determinants".

Tonga first Report[17], in 2005, on progress on health-related Millennium Development Goals (MDGs) found that the Kingdom was making good and steady progress towards the MDGs. The 2005 Report however drew attention to the need to ensure equity in access to essential health care services and the provision of safe water. Tonga's Second National Status Report, due to be completed in mid-late 2010 (as this Report was being finalised), suggests that Tonga is slightly off track in reducing major non-communicable diseases (NCDs)[18].

Sections 6.2 and 6.3 below examine the Ministry's detailed plans and health system outputs. Section 6.4, and PER Background Paper 3 on Health Performance and Outcomes, explore (the latter in more detail) to what extent the Ministry's vision and plans are being achieved in terms of improvements in health outcomes.

[17] Tonga First National Status Report, 2005
[18] Personal communication to Dr Sunia Foliaki, PER Team Member

6.2 Health Planning

To achieve the Government's above health vision, the Ministry of Health has developed a focused Corporate Plan, which provides the Government with guidance on future policy directions, and identifies priority investments over the medium term to long-term. The latest Plan states that the Ministry's core purpose is *"to support and improve the health of the nation by providing quality, effective, sustainable health services and being accountable for health outcomes."*

In 2009, the Government adopted an explicitly sustainability-oriented approach to strategic planning in its most recent Strategic Development Plan (SDP 9)[19]. The Government is now focusing on achieving seven key outcomes that are believed to be fundamental to sustain economic growth[20]. In SDP 9, the sixth 'Key Outcome' is related to health, namely to: ***"Improve the health of the people by minimizing the impact of non-communicable diseases"***.

The latest Development Plan - SDP 9 - acknowledges that the Ministry of Health's mandate is to focus on preventive health and reduce the impact of non-communicable diseases. Previously uncommon in traditional Pacific societies, for more than two decades NCDs have occurred in epidemic proportions and NCD incidence and prevalence now exceeds those in many industrialised societies. The Kingdom of Tonga is no exception to these trends. Cardiovascular disease, diabetes and cancer are among the leading causes of morbidity and mortality in Tonga.

The table below gives a breakdown of plans for the use of health funds in 2006. It shows that the largest share of spending is on curative care (around 40%). The other main areas of spending were: new buildings and equipment; research and development, staff training and administration – each accounting for around a further quarter of health spending.

Under 10% of health spending was for health promotion and disease prevention, of which the bulk was spent on maternal & child health and family planning, and only 3 per cent of health spending (around 980,000 pa'anga) in Tonga was planned to be spent on health promotion, prevention of non-communicable disease and other public health programmes.

[19] Policies / strategic plans are expected to contribute to the fiscal balance, especially initiatives that will produce short to medium returns on expenditure through savings or increases in revenue

[20] The 7 key outcomes are: 1. Facilitate Community Development by involving district/village communities in meeting their service needs; 2. Support private sector growth through better engagement with government, appropriate incentives and streamlining of rules and regulations; 3. Facilitate continuation of Constitutional Reform; 4. Maintain and develop infrastructure to improve the everyday lives of the people; 5. Increase the performance of Technical Training Vocational Education & Training to meet the challenges of maintaining and developing services and infrastructure. 6. Improve the health of the people by minimizing the impact of Non-Communicable Diseases 7. Integrate environmental sustainability and climate change into all planning and executing of programs.

Table 23: Detailed Breakdown of Health Spending, 2006

Uses of health funds	Amount (TOP)	Percent	Per Capita (TOP)
Inpatient curative care	5,087,373	15.7%	49.9
Inpatient curative (overseas)	2,302,078	7.1%	22.6
Basic Outpatient Medical and Diagnostic Services	791,062	2.4%	7.8
Outpatient Dental Care	786,913	2.4%	7.7
Traditional Health Care	908,764	2.8%	8.9
Clinical laboratory	607,032	1.9%	6.0
Diagnostic Imaging	236,446	0.7%	2.3
Pharmaceuticals	3,143,266	9.7%	30.8
Maternal and Child health, FP and counseling	1,468,105	4.5%	14.4
Prevention of communicable diseases	211,462	0.7%	2.1
Prevention of non-communicable diseases	514,149	1.6%	5.0
Health Promotion & Other public health services	479,907	1.5%	4.7
General Government Administration of Health	2,855,282	8.8%	28.0
Health Administration & Health Insurance	129,060	0.4%	1.3
Capital Formation of health care providers	7,754,023	24.0%	76.0
Education and training of health personnel	1,925,693	6.0%	18.9
Research and development in health	2,701,300	8.3%	26.5
Food, Hygiene and drinking water control	74,754	0.2%	0.7
Environmental Health	384,447	1.2%	3.8
Other Health Related Functions	592	0.0%	0.0
Total	**32,361,709**	**100%**	**317.3**

Source: National Health Accounts, 2005/06

Health Strategic Goals

In the current Corporate Plan period (2009/10 to 2011/12), the Ministry has identified a total of 6 Strategic Result Areas (SRA) to implement its Vision. These SRAs are to:

i) build capability and effectiveness in ***preventive health services*** to fight the NCD epidemic and communicable diseases
ii) improve the efficiency and effectiveness of ***curative health service delivery***
iii) provision of ***services in the Outer Island Districts*** & Community Health Centres
iv) build ***staff commitment and development***
v) improve ***customer service***
vi) continue to improve the ***Ministry Infrastructure and ICT***.

The annexed HSPER Background Paper on Health Sector Outcomes & Performance Paper discusses SRA's (i), (ii) and (iii), while the Background Paper on Health Administration & Performance Management Systems discusses SRAs (iv), (v) and (vi) in detail.

The MoH Corporate Plan establishes goals for each SRA with detailed strategies and targets. Monitoring and evaluation of the Ministry's performance in terms of implementing the SRAs is done by using Key Performance Indicators (KPIs) as documented in *Annex A* of the Ministry's Corporate Plan, and reproduced in the Health Outcomes PER Background Paper.

Additional mechanisms, such as use of a "Balanced Scorecard"; an Executive Performance Appraisal System and a detailed MOH Annual Report are also in place to report on achievement of Strategic Goals. The Balanced Scorecard measures actual performance in

relation to the expected strategic outputs/ outcomes. This is directly linked to the Executive Performance Appraisal system, including the performance of the MoH Chief Executive Officer (Director of Health). The reporting system ensures that the actual performance is measured, monitored and reported at all levels on a monthly and quarterly basis, to ensure that targets are met.

The table summarises the SRA, Goals, Planned Actions and Indicators for SRA's i) to iii) above. It shows that each of the SRAs has a strategic goal, as well as planned actions and indicators to measure attainment of the goal / SRA. Across the 3 SRAs, there are 14 planned actions and a total of nearly 50 Key Performance Indicators (only some of which are documented in the table below).

6.3 Programme Outputs

The main outputs of the health systems are health care facilities (hospital facilities and beds, health centres) and the provision of health staff.

Table 24: Bed Availability and Occupancy, by District

Administrative District	Beds per 1000	Bed Occupancy Rate (% available beds)
Tongatapu	2.76	60
'Eua	3.27	19
Ha'apai	2.91	25
Vava'u	2.77	33
Niuas	N/A	N/A

Source: MoH Annual Report

The major referral hospital is on the island of Tongatapu, as are half (7 out of 14) of the health centres in the Kingdom. The table below shows the number of hospital beds per population and bed occupancy rate. The number of beds per 1000 population is fairly even across administrative health districts Lower activity in the outer islands may partly explain the low bed occupancy rate in Vava'u and Ha'apai of 33% and 25% respectively in comparison to Tongatapu (60%) – see also Table 25 below.

The overall low bed occupancy rate is explained mainly by the fact that the construction of most hospitals in Tonga was done in an era when communicable diseases were more endemic and specific management of these communicable diseases were mostly hospital based and required 'isolation' in hospitals. Such dedicated isolation beds/wards in all hospitals contributes to a consequent low occupancy rate, since treatment practices of most communicable diseases have recently adopted more outpatient oriented management.

The relatively higher occupancy rate in Vaiola may partly be due to its role as the main referral hospital, given the relatively uniform bed per population ratio nationwide. A comparable number of hospital beds per population throughout the four main health districts however does not necessarily equate to a comparable array of basic laboratory and other diagnostic equipments appropriate for district hospitals. The existing x-ray machine at Prince Ngu Hospital in Vava'u produces poor quality of developed x-ray films, so is of little use as a diagnostic tool. Similarly, the once existing x-ray service at Ha'apai Hospital has not been available since 2006.

6.3.1 Access to Health Facilities

Ministry of Health Annual Reports from 2004-2008 consistently report that the whole population is within an hour's walk to health care services, with a regular supply of essential drugs. However, overall, access to basic health services in most of the island populations in Ha'apai and Vava'u island groups is inadequate.

Access to the main hospital of the Ha'apai District from one of the two health centres (Ha'afeva and Nomuka) serving the relevant district normally involve travels by small open boats ranging from two to three hours, weather permitting. The situation is similar in Vava'u. Quarterly health visits to outlying islands from district hospitals on the other hand usually consists of a day trip per island which restricts the health tasks that can be carried out, for example dental activities are generally restricted to tooth extractions. Scheduling of recommended immunization to babies, young children and pregnant mothers are as a consequence often aligned with/when quarterly health visits from District hospitals to island health centres and individual islands are carried out.

6.3.2 Hospital Admissions

Circulatory diseases are the leading cause of death, and diabetes was the leading cause of admission to the Vaiola Hospital medical ward in 2008. Nevertheless, communicable diseases such as respiratory and parasitic diseases are still the leading causes of hospital admissions in Tonga. A similar trend is evident in other Pacific islands. For example in Fiji, cardiovascular diseases account for the leading cause of death, but respiratory conditions are the leading cause of admissions.

The table below shows the distribution of hospital beds, admissions and consultations across the Kingdom in 2006. The table shows that 55 per cent of outpatient consultations, over 70 per cent of beds and deliveries, 75 per cent of dental cases, 85 per cent of admissions and over 90 per cent of patient days in hospital were at Vaiola Hospital on the main island of Tongatapu. Although Prince Ngu Hospital in Vava'u was comparatively busy, only 5-10 per cent of admissions, deliveries and dental cases took place in the islands of 'Eua or Ha'apai.

Table 25: Beds, Admissions and other Use of Hospital Facilities, by Island Group, 2006

Island Divisions & Hospitals	# Beds	% of total beds	Occup rate	Total Admission 2006	Total Patient days	Ave LOS	Delivery	Dental 2006	Outp. Consult.
Tongatapu (Vaiola)	199	71%	58%	8,706	42,268	5	1,018	24,105	58,198
Vava'u (Ngu)	43	15%	33%	1,036	5,205	5	338	5,098	23,500
Ha'apai (Niu'ui)	22	8%	25%	370	1,978	5	54	1,445	12,568
Eua (Niu'eiki)	17	6%	19%	268	1,178	4	75	2,165	11,082
Niuas		0%							
Total	**281**	**100%**	**49%**	**10,380**	**50,629**	**5**	**1,485**	**32,813**	**105,348**

Source: National Health Accounts, 2005/06

Table 26: Health Strategic Result Areas, Goals, Actions and Indicators

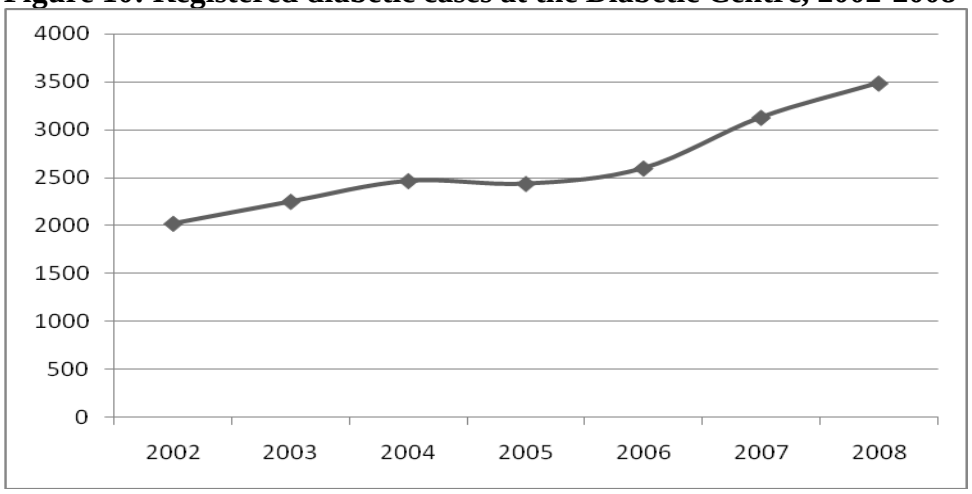
SRA	Strategic Goal	Planned Actions	Key Indicators (KPIs)[21]
SRA 1: Build capability & effectiveness in preventive health services to fight the NCD epidemic & communicable diseases	Use effective preventative health measures, being good role models & developing public participation and commitment	1. NCDs included as priority issues in the Government's National Strategic Plans as well as the Ministry's Corporate Plan. 2. Establishment of the Tonga Health Promotion Foundation 3. Establishment of the Health Promoting Churches Partnership (HPCP) 4. Establishment of the Health Promoting Schools Programme 5. Development of the Tonga National Strategy to Prevent & Control NCDs (2010-2015) 6. Development of a National Strategic Plan for HIV & STIs (2009-2013)	1. Reduce the mortality rate from NCDs by 10% by 2015 2. Reduce morbidity rate from NCDs by 10% by 2015 3. Increase recurrent preventive health care budget allocated to 15% by 2015 4. Standard management guidelines developed for primary health care and tertiary health level on priority NCDs 5. Develop Self-Management Guidelines on priority NCDs 6. Reduce adult/childhood obesity by 2% by 2015 7. Increased number of Primary Health Care (PHC) facilities implementing NCD primary prevention and care services 8. PHC personnel trained on NCD prevention and management at PHC level 9. Increased funding for community prevention and control NCD activities 10. Increased number of churches actively participating in HPCP 11. Increased number of schools with NCD and health promoting messages in curriculum 12. Decrease in Infant Mortality Rate 13. Decrease in Maternal Mortality Ratio 14. Decreased mortality from priority communicable diseases 15. Achievement of Outcomes of the Tonga National Strategy to Prevent and Control Non Communicable Diseases (2020-2015)
SRA 2: Improve the efficiency and effectiveness of curative health service delivery	Deliver the range and quality of services to meet basic health requirements	1. Opening of new buildings and facilities at Vaiola Hospital. 2. The procurement of new equipment including a digital retinal camera for the Ophthalmology Section.	1. Percentage of population with easy access to basic curative care. 2. Optimum nursing and medical staffing 3. Number of wait-listed elective procedures 4. Reduced waiting time for consultations in hospitals 5. Bed Occupancy Rate 6. Average Length of Stay (ALOS) 7. Number of Deliveries in hospital settings

[21] Selection of Key Indicators – full list provided in PER Background paper on Health Outcomes

		3. Coordination and enabling regular Overseas Medical Teams to visit Tonga to conduct various training, clinics and operative procedures including cardiac, orthopaedic, and ophthalmology.	8. Reduced re-admission rates 9. Survival rate for major cancers priority diseases 10. Reduced surgical mortality rates 11. Reduced operative (surgical) deaths. 12. Reduced medical mortality rates from priority diseases 13. Reduced hospital case fatality rate 14. Reduced number of overseas referrals. 15. Decrease in financial allocations for overseas medical referrals
SRA 3: Provision of Services in the Outer Island Districts & Community Health Centres	To provide appropriate services to all Outer Island Districts and community health centres through effective resourcing. Specialized services will be provided through regular programmed visits.	1. Completion of the renovation of Ha'apai Hospital (joint funding by Australia and NZ) in 2008 following damaged from and earthquake in 2005 2. Overseas donations of equipment including wheel chairs and beds for the hospital and health centres 3. Local fund raising for respective Hospital/Health Centres to meet some of the costs for hospital maintenance. 4. Overseas health teams visit the outer islands to conduct treatment & limited training 5. NZAid funded reticulated water supply for Niu'eiki Hospital	1. Access to basic services with essential supplies in Outer islands & Health Centres 2. Optimum staffing in the outer islands health service facilities 3. Timely and regular medical supplies and basic diagnostic services to outer islands and Health Centres 4. Regular supervisory, specialized clinic and follow up and training visits to outer islands and Health Centres 5. Detection rate of priority non communicable diseases (diabetes, cardiovascular, cancer etc) in Outer Island population, plus for relevant population: 6. Childhood Immunization status by age 7. Infant Mortality Rate 8. Delivery in health facilities 9. Maternal Mortality Ratio 10. Screening rate for priority conditions (breast screening, Pap Smear etc)

This fact that respiratory disease is the leading cause of admissions is partly due to the nature of certain respiratory infections, whose acute or severe nature often requires immediate admission for in-patient management. Seasonal and periodic epidemics of other infection-related diseases such as influenza, dengue and diarrheal diseases further contribute to hospital admissions. Admissions for the leading causes of mortality and most non-communicable diseases on the other hand rank are fewer, although they often involve a longer length of stay.

Figure 10: Registered diabetic cases at the Diabetic Centre, 2002-2008



Source: Ministry of Health Annual Report; 2008

In 2009, hospital admissions for respiratory illnesses were four times larger than for diabetes-related admissions (666 vs. 166 admissions). However, the average length of stay (ALOS) in hospital for diabetes-related illnesses was 21 days compared to 5 days for respiratory illnesses, meaning that the overall burden of admissions was similar. The leading cause of admission among diabetics in 2009 was for foot ulcers. Certain clinics like the Diabetic Clinic do have clinic attendance registers which gives further indication of the burden of disease on hospital staff (see Figure 10 above).

6.3.3 Health Facilities

There is currently only a very low maintenance budget, amounting to around T$ 300,000 for preventative and curative services in 2009-10 and T$ 1 million in total (see PER Background Paper 1 on financial operations for more details on hospital maintenance budgets), which means that the state of health assets and facilities is likely to be deteriorating over time.

Staff capacity to fix and repair specialized equipment is, and has been, severely lacking. Several departments that are responsible for maintenance are not managed well. There has been no clear overall maintenance manager, allowing tradespeople to act independently of each other with little or no oversight, with variable results.

In addition, in the past, medical equipment has been unavailable for long periods (even stretching to years), due to lack of staff, motivation or perceived complexity of the task. The World Bank HSSP developed a preventative maintenance programme to extend the lifespan of equipment and maintain the condition of equipment at high levels. A DCA was signed to

maintain the standard of facilities at the renovated Vaiola Hospital, but maintenance funds were not applied as envisaged.

6.3.4 Doctor: Population Ratios

The number of doctors, nurses and other staff in Tonga is set out in detail in Section 3 of the Health Administration PER Background Paper. Key staffing ratios for Tonga and other PICs are as follows:

Table 27: Medical staff / Population ratios, Tonga & other Pacific Islands

Staff Category	Physicians	Nurses	Dentists	Midwives	Pharmacists
Tonga – Staff Nos	51	299	14	19	10
Ratio of staff per 1000 population					
Tonga (2009)	0.50	2.93	0.13	0.18	0.09
Cook Islands (2004)	1.08	2.56	n/a	0.54	n/a
Fiji (2006)	0.42	2.08	0.05	n/a	0.08
Samoa (2005)	2.74	7.47	n/a	2.03	n/a

Source: WHO Country Health Profiles

There is no evidence that Tonga is "over-doctored" - Tonga's ratio of physicians and midwives is at or below other countries. The number of nurses looks to be slightly above that in other neighbouring countries (except Samoa).

One of the main issues with respect to staffing is the need to establish satisfactory workforce planning and career opportunities in order to retain medical graduates in Tonga. In particular, workforce / career planning for Outpatients category workers needs to be identified and strengthened, in order to maximise morale in a potentially stressful area.

The Health Administration PER Background Paper identifies a cost of TOP $ 164,000 to establish a career path for doctors and nurses, and recommends that such a structure be funded from efficiency savings (see recommendations in Section 8 below).

6.3.5 Health Staff Qualifications

The PER Background Paper on Health Sector Administration and Performance Management shows the current MoH organisational structure and provides detailed information on the numbers of doctors and nurses, and numbers who have migrated overseas.

The table below provides information on the qualification of staff. Most MoH staff possess either a Certificate or a Diploma. Around one-third of MoH staff do not possess a vocational or tertiary qualification, and have simply a secondary school certificate. A relatively low ratio of Ministry staff (under 25 per cent) have gained a University degree, and only 6 per cent hold a post-graduate qualification. There is therefore a clear need for in-service training especially for nurses, therapists and allied health professionals.

Table 28: Ministry of Health Staff Qualifications, 2009

Staff Category	TOTAL	Certificate	Diploma	Undergraduate	Postgraduate
Medical Officers	51 (1)	-	26	45	15
Nurses	299	193	90	14	2
Dentist	14	-	3	8	3
Dental Therapist	21	21	-	-	-
Health Officer	23	23	-	-	-
Laboratory Technician	32	20	4	7	1
X-Ray Technician	7	5	2	-	-
Allied Health Staff	14	7	4	2	1
Pharmacist	10	3	2	4	1
Asst. Pharmacist	8	8	-	-	-
Administrator/Planning	23	2	10	8	3
Maintenance	5	3	2		
Total	**537**	**285**	**122**	**95**	**34**

Source: Government Staff List 2009. (1) Qualification numbers do not add up to 51 as many medical officers hold multiple qualifications

6.4 Programme Outcomes

The following sections summarise key health sector outcomes – related to mortality, morbidity and health status indicators.

6.4.1 Mortality Rates

As can be seen in Table 28, the population is fairly static, with the population living in Tonga between 1996 and 2006 only growing from a little under 98,000 to nearly 102,000 persons, a rate of only a little over 4 per cent in total over 10 years[22]. Tongans have a relatively high life expectancy of over 67 years and 73 years of age for men and women respectively. However, overall, the population will age, with a decreasing proportion of the young population aged 15 years and younger, and an increase of the population aged 60 years and older.

Records show that the population aged over 60 has increased over the last 10 years. The latest Tongan Census Report (in 2006) projects a continuing increase in the percentage of the population aged 60 and older: from 8,300 in 2006 (8%) to 12,000 (up to 12% of the population) or more in 2030. This represents an increase of around 4,000 people aged over 60 years over the next 20 years, and prefigures an increase in morbidity (see Section 6.4.2).

As Tonga's population grows older we would expect that the health problems associated with advanced age will increase. A longer life span will mean an increasing number of people living with and/or developing NCDs. In addition we would expect to see an increase in the mental problems of the aged and aging (senile dementia, psychosis etc). The associated increase in human and financial resources to address the above disease burden should be carefully considered given the already strained budget available to address the current epidemic of NCDs.

[22] Outward migration plays a major role in the low population growth as the total fertility rate is still fairly high at 4.6 children per woman.

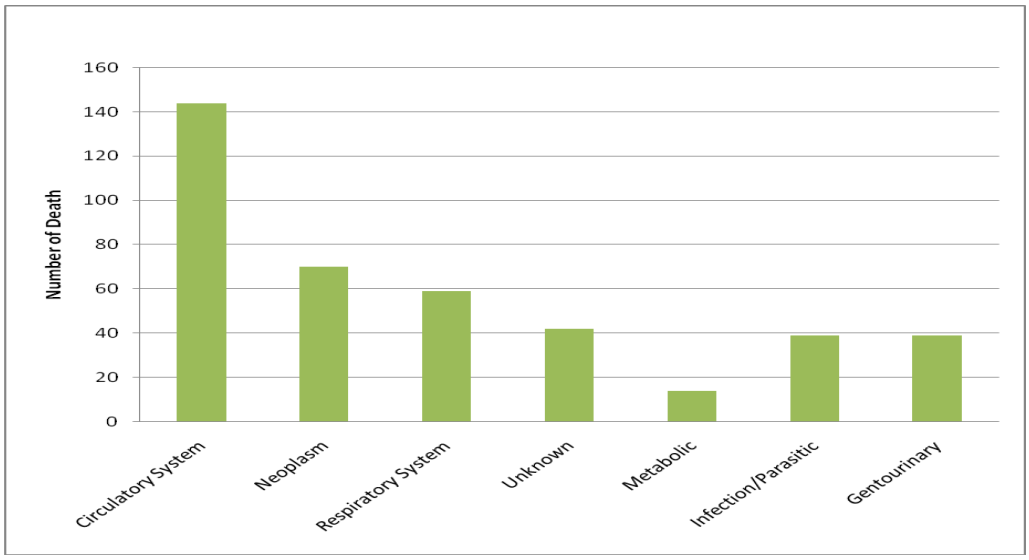
Table 29: Key Demographic Indicators, 1998 - 2008

INDICATOR	2008	2006	2004	2002	2000	1998
Estimated Population ('000)	102.3	102.4	101.8	101	100.3	98.4
Percentage of Population less than 14 years	35	35	36	36	39	36
Percentage of population 65 years and over	6	6	6	5.8	5.2	5.2
Total Fertility Rate	3.7	4.1	3.8	3.3	3.3	3.2
Crude Death Rate (per 1,000)	5.1	5.0	6.1	5.8	6.5	4.4
Life Expectancy (Male)	70	70	70	70	70	NK
Life Expectancy (Female)	72	72	72	72	71	NK
Number of Maternal Deaths	2	3	2	2	2	1
Maternal Mortality Rate (per 100,000 live births)	76.1	110.5	82.3	78.2	77.5	40.2
Infant Mortality Rate (per 1,000 live births)	16.4	10.7	15.7	9.8	13.1	15
Perinatal Mortality Rate (per 1,000 live births)	18.9	13.1	10.3	15.8	16.9	10.4

Source: MoH Annual Reports

The main causes of death in 2008 are shown in Figure 11 below with Cardiovascular Disease (CVD) being identified as the leading cause of death. Cancer has, over the last decade, consistently been the second leading cause of death.

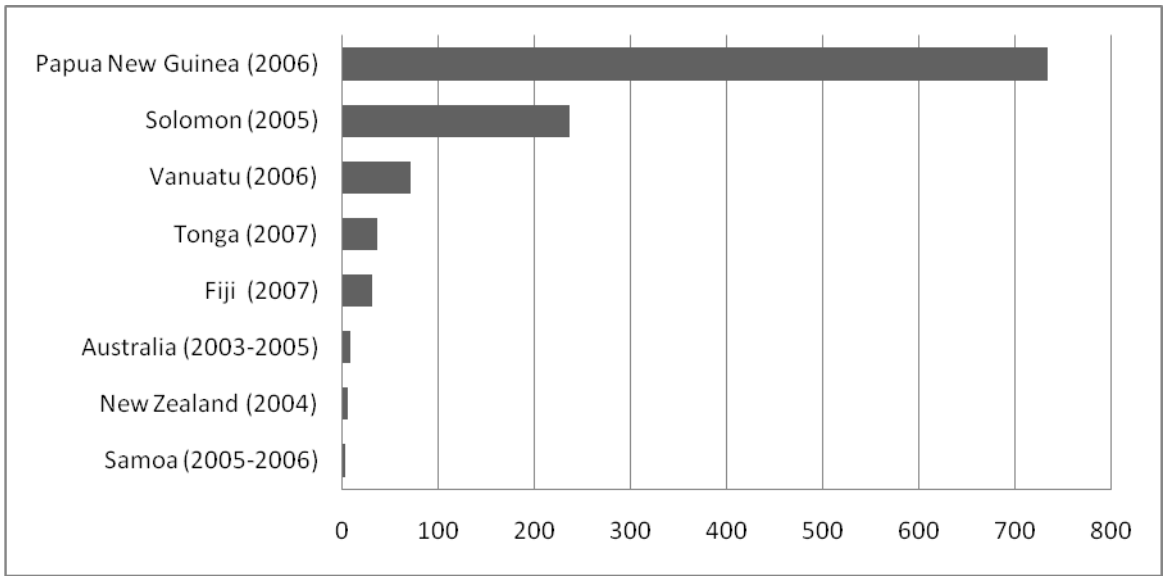
Figure 11: Leading Causes of Death in Tonga, by Disease Type, 2008



Maternal Mortality Rate

The numbers of maternal deaths over the last decade have generally been low (with 1-2 deaths a year and none in some years) compared to other Pacific islands [23] (Figure 12 below). The 97% of deliveries conducted in a health facility in Tonga warrants 0 to 2 maternal deaths a year with such unfortunate events only expected to occur among those who deliver outside hospitals and in outer islands. The maternal mortality figures for 2008 were similar to the figures for neighbouring Fiji.

Figure 12: Maternal Mortality Ratio (per 100,000 live births) in the Pacific



The weighted moving average of Maternal Mortality (Figure 13) is affected by an unusual six mortality deaths in 2005. Given that Tonga's deliveries were nearly universally in health facilities, we would expect a more favourable maternal mortality outcome in Tonga's case. Thus the range of zero maternal deaths to six (most of which occurred in a health setting) in a period of less than 5 years requires continuous auditing and review to identify any preventable causes.

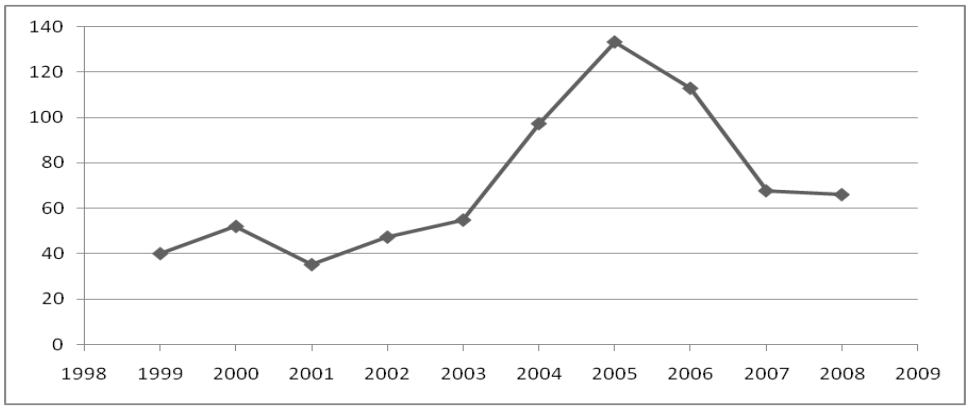
Child and Infant Mortality

Tonga has reached and successfully maintained a low child mortality rate, partly as a result of a highly successful immunization programme, a high percentage of delivery in health facilities and a well structured public health nursing led child health program.

It is unlikely that Tonga will achieve a two-thirds reduction in child mortality or infant mortality as per the Millennium Development Goal targets, as the rates are already low in comparison to other non-industrialised countries. The increases in some years of the infant mortality rate should be interpreted with care due to the small events occurring in a small population.

[23] Maternal mortality rates (MMR) calculated per 100,000 live births fluctuate enormously when calculating rates in countries with relatively small populations. As such, one or two maternal deaths converts to a large maternal mortality number in Tonga which has just under 3,000 live births a year.

Figure 13: Weighted Maternal Mortality Rate for 1999 to 2008

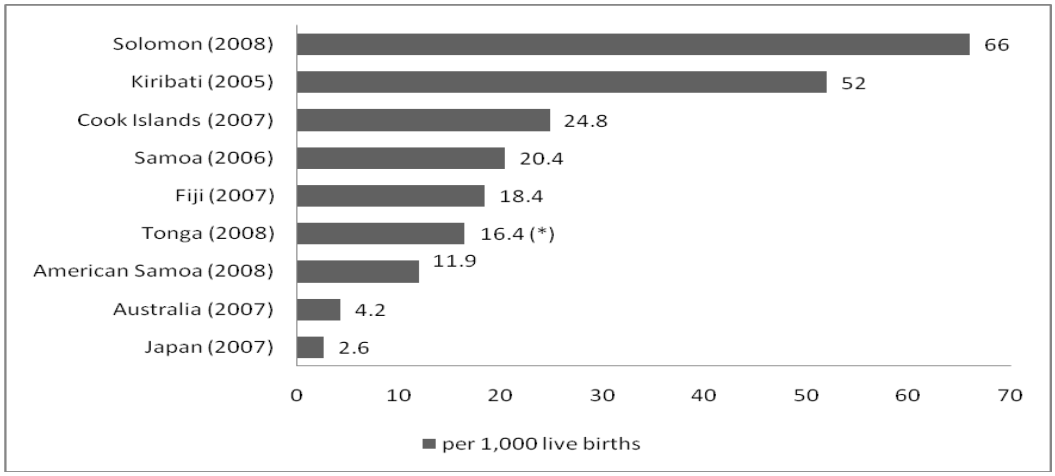


Source: MoH. A weight of 1.0 was used for the current year, a weight of 0.5 for each year before and after, and 0.25 for each year 2 years away. Thus five years worth of data contribute to each data point.

Tonga's Infant Mortality Rate is among the lowest in the Pacific (Figure 14). The rate has oscillated around 12 per 1,000 live births over the last 10 years. This has been attributed to various factors, including high immunization coverage. For the last 10 years, Tonga's immunization coverage has been 96-99% for the WHO recommended immunizable diseases for the South Pacific region. Immunization of pregnant mothers for tetanus has been comprehensive, given the vast majority of women attending ante-natal care.

Another factor contributing to Tonga's low child mortality record is that 97 out of 100 deliveries took place in a health facility in 2008. The role of public health nursing personnel therefore plays a key role in maintaining Tonga's good child health status. Hospital-based initiatives specifically in screening and treating various childhood health issues including Rheumatic Heart, vaccine initiatives (Hib) and partnership with outside clinical initiatives for paediatric cardiac care have also made positive contributions to infant mortality.

Figure 14: Infant Mortality Rates in Pacific countries, 2007-08



Source: WHO WPR Health Databank & Country Profiles, 2009 Revised;
* Tonga MoH Annual Report (2008)

6.4.2 Morbidity Rates

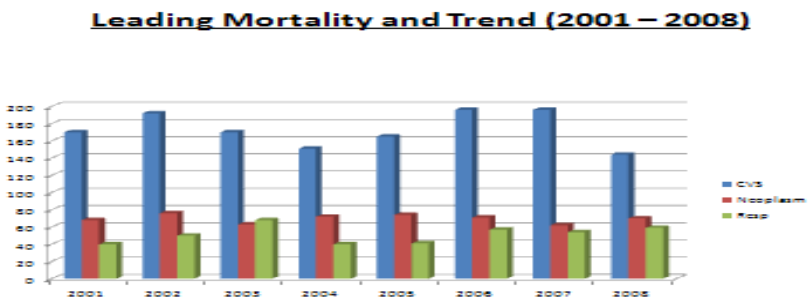
Chronic diseases account for the greatest share of early death and disability worldwide, the majority of these chronic conditions being non-communicable diseases (NCD). Over the next few decades, this burden is projected to rise particularly fast in the developing world. In the Western Pacific, NCDs already account for seven out of every ten deaths[5.] Previously uncommon in traditional Pacific societies, for more than two decades NCDs have been occurring in epidemic proportions and their incidence and prevalence now exceeds those in many industrialised societies. The Kingdom of Tonga is no exception to these trends.

The leading causes of mortality in Tonga has remained unchanged over the last two decades, with cardiovascular diseases (CVDs) – in blue in the Chart below – causing the most deaths, followed by cancer – in red – and respiratory illnesses – in green. Figure 15 shows an increase in absolute numbers of fatalities as well as an increasing gap between CVDs and the latter two conditions, except for 2008. The PER Background Paper on Health Outcomes provides more details on the incidence of the key sources of morbidity listed above.

As Tonga's population grows older and life span increases, the health problems associated with advanced age will increase as people live longer with and/or develop NCDs. The fact that a large number of people are finding themselves with acute and chronic complications of NCDs is having an impact on overall population health[24].

In addition to the lifetime disadvantage, mostly borne by disabled children through poorer health and education, a high proportion of people have been identified in the Tonga National Disability Identification Survey as living with disabilities caused by NCDs. 15 per cent of people surveyed were identified as living with a disability caused by diabetes, and a further 14 per cent by heart disease and high blood pressure (combined) – nearly 30 per cent of the total**.**

Figure 15: Leading Causes of Mortality in Tonga (2001-2008)



Source: Ministry of Health, Annual Reports.

[24] The Tonga National Disability Identification Survey of 2004/2005 gives an overview of disabilities and the associated impacts including social, educational and health disadvantages.

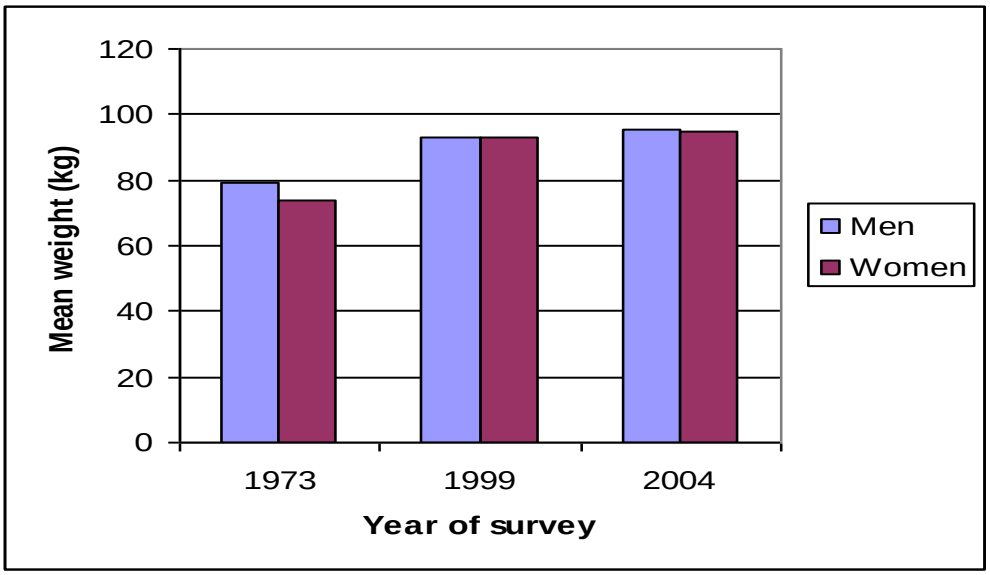
Obesity

One of the main drivers of the increases in CVD, diabetes and also some cancers is the high prevalence of excessive weight and obesity in the population. The Diabetes Centre has reported average body weights at three time points (1973, 1999 and 2004) - shown in Figure 16 below. The incidence of obesity has risen markedly - the increase in weight has been particularly noticeable in women since 1973, with an average increase per woman of 21 kg. The corresponding increase for males is nearly 17 kg.

The incidence of childhood obesity is also growing. The 2004 Tonga STEPS Survey reported that 15 per cent of children 12-15 years of age were overweight or obese (BMI >25), which is a predictor of NCDs in adulthood. Figure 17 below shows that Tonga had the second highest prevalence of diabetes in the Western Pacific region in 2003, after Nauru, which has one of the most serious problems with diabetes globally.

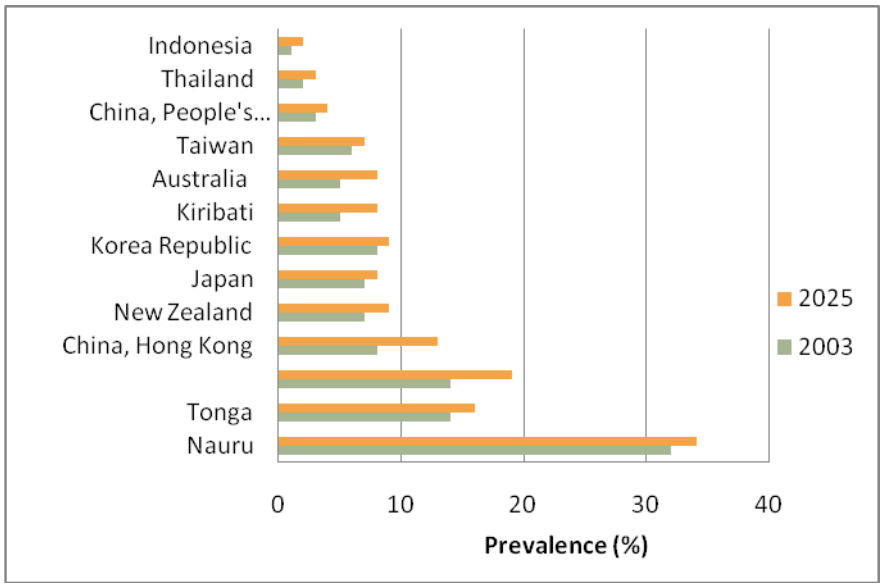
By 2025, WHO estimates predict that Tonga will have a prevalence nearly double that of Australia, NZ and Japan by 2025, at a rate nearing 20 per cent. This escalation in diabetes incidence will have significant health system and health expenditure impacts.

Figure 16: Mean weights in adult Tongans in 1973, 1999 and 2004, by gender



Increasing diabetes prevalence unfortunately goes hand in hand with complications and associated personal, family and health cost. All lower limb amputations (28) in 2008 in Tonga were on diabetic patients; 24 of whom were females.

Figure 17: Diabetes Prevalence Estimates, W. Pacific Region



6.4.3 Environmental Health

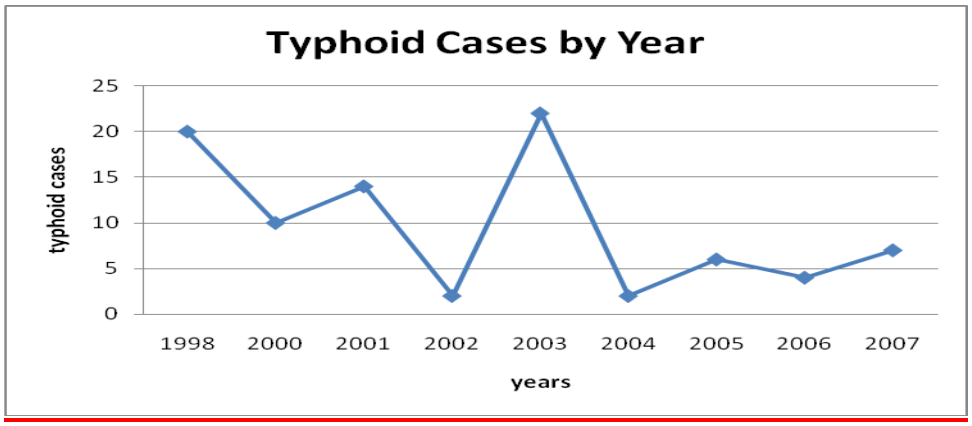
The Environmental Health Section of the Public Health Division collaborates with village communities in maintaining village water supplies. However, such tasks are not well documented - laboratory testing of water quality recorded ranged from 12 tests in 2004 to 748 tests in 2006. The recent 'epidemic' of typhoid in a Vava'u in 2009 was traced to a village whose reticulated water supply had not been functioning for over 5 years.

Problems of domestic waste disposal were voiced by health personnel in Vava'u as well as in some areas of Nuku'alofa. In 2008, the 3rd leading cause of admission to Vaiola's Paediatric ward was due to Dengue Fever. The Communicable Disease Section registered 343 cases of Dengue Fever for the same year with 2 deaths. However, the prevalence of Dengue Fever cases in the community not presenting to hospital is unknown.

The relationship between an adequate supply of safe water, the timely appropriate disposal of rubbish and other domestic waste and health is a fundamental relationship that needs very little debate. The Chart below shows the potential for typhoid to continually emerge as a public health issue.

The number of cases of typhoid have shown a decrease over the last decade although the spike in the number of cases in 2003 that exceeds the cases five previous to that (1998) testifies to the potential threat of typhoid and it's relation to presence or absence of an adequate supply of safe water. The graph below shows that, apart from a spike in 2003, the number of typhoid cases has gradually diminished over the last 10 years for which data exists.

Figure 18: Confirmed Typhoid Cases (1998-2007)



Source: MoH

7. Health System Management & Performance

7.1 Education System Planning, Management and Reporting

The Ministry of Health consists of 6 Divisions, namely: Medical Services; Public Health Services; Dental Services; Nursing Services; Administration and Health Planning and Information. Ministry Organisation Charts, which provide an overview of the Ministry's lines of communication and authority, are available in the Ministry's Annual Report, and so are not replicated in this Report. The current geographical distribution of staff by location and Division is as follows:

Table 30: Ministry of Health Staff Distribution, by Location, 2010/2011

Location	Total Posts Filled
Tongatapu	623
Vava'u	66
Ha'apai	34
'Eua	27
Niuatoputapu	7
Niuafo'ou	4
Total MoH Staff	**761**

Source: MoH

Unsurprisingly, given the location of the main hospital, most staff were located on Tongatapu. In 2008/09, the estimated expenditures on Management and Administration were 8 per cent of the Ministry's annual budget. The share of MoH costs accounted for administration and management (Sub-head 01) has been declining since 2005-06, though appears to have increased in 2009-10, due to the fact that administrative spending is largely a fixed cost whereas the Ministry's level of total spending has fallen. This level of spending is not out-of-line with international norms for administration costs.

Table 31: Ministry Administration Costs & Share of MoH Spending, 2005/06 – 2009/10

T$ million	2005-06	2006-07	2007-08	2008-09	2009-10
Number of Ministry Staff (filled posts[25])	810	740	734	754	764
MoH Admin. & Management costs	1.54	1.91	1.54	1.68	2.31
Total MoH recurrent expenditure	14.9	20.0	19.2	20.9	19.0
Admin & Management costs as share total MoH Expenditure (%)	10.3%	9.6%	8.0%	8.0%	12.1%

Source: MoH Annual Reports. 2009/10 figures are provisional

Internal Ministry Co-ordination and Decision-making

The commission of the new Health Administration building (funded by AusAID) in September 2004 marked a positive milestone in the administration of the affairs of the Ministry of Health. The new building on the site of Vaiola Hospital (but separate from it) provides offices for the Hon. Minister; Director of Health, three Heads of Division and the supporting staff of the Administration and Health Planning and Information divisions. The benefits of the new administration facilities have been significant:

- it has allowed a physical separation of the Ministry from the Hospital, enabling the Medical Superintendent and the relevant Hospital Program Managers to be responsible and accountable for the operation of the Vaiola Hospital, thereby improving management discipline;

- improvements in communication and staff morale has had a positive efficiency impact through reduced resource costs and improved access to other services including Public Health, Dental and other clinical services and hospital supporting services.

Apart from the main office, a separate Hospital Administration office has been included in the last phase of the Redevelopment and Upgrading of Vaiola Hospital which will be constructed towards the end of this year, and will include the new Dental office for the Chief Dental Officer. The Chief Medical Officer, in-charge of the Public Health Services remains in the same location. The Chief Medical Officer (Ngu Hospital) and Senior Medical Officers (Ha'apai and 'Eua) of the Outer Island District Hospitals are stationed in their respective Hospitals.

The Policy Manual provides instruction regarding policy direction setting and resolution of issues that need Ministerial approval, including training, overseas travel, appointments, dismissals etc. Other tasks are approved by the Director of Health as Head of Department including signing of vouchers, approval of annual leave, staff transfers, acting appointment and other duties.

Some duties have been delegated to Heads of Division and the Officers' In-charge of Outer Island Hospitals, who work as chief clinicians as well as Island Health Administrator on behalf of the Director of Health. Further delegation from the Main Office is envisaged under an ongoing reform process, which will help to improve administrative efficiency further.

[25] Total filled posts as on 31 December in the relevant year (i.e. 31/12/05 for 2005-06)

External Co-ordination (with other Ministries)

Essentially, Ministry of Health alone would not be able to effectively deliver quality service without the support of other local and offshore support. Local support includes the Ministry of Education, Women and Cultural Affairs; the Ministry of Finance and National Planning; Public Service Commission; Ministry of Agriculture, Fisheries, Forestry and Food; Customs and Revenue Departments; Non-Government Organizations; Ministry of Youth, Sport and Employment among others. Recognizing the potential impact of these local stakeholders, the Ministry invites them to participate as standing members of our National and Sub- working committee on the National NCD Strategies "Foot Path to Health – Halafononga (NCD Plan).

Through the Heads of Department Forum and Government Reform Program, the Director of Health and Senior Officials of Ministry (Medical Superintendent, Senior Medical Officer (NCD) and Principal Health Administrator) are appointed as the Ministry representatives on these committees. The Ministry is anticipating the creation of a National HR Committee to discuss issues regarding training opportunities, bonding, migration and other issues.

In the case of external (offshore) support, effective co-ordination and harmonization of all donor support would best be done through establishing of a Project Management Unit to oversee all donor activities. The advantage of this arrangement is that such a Unit would be the focal point for all donor support, help to build up effective working relationship with Development Partners but also avoid duplication, minimize the Administrative costs and to ensure there is a centralized data system available for all health-related projects.

Improving HR Systems and Staff Skills

There is a strong need to have a good HR Information System to record staff information. MoH is currently trying to develop an electronic record / HR profile for each staff member before proceeding further to review the staff level, skill mix, staff distribution and other issues. The Ministry has established a record of training needs and this is regularly updated and prioritized during the Annual Budget Preparation process.

Staff Utilisation

Within the Ministry itself, staff utilisation may as much, or more, of an issue than availability of staff. There is a need for appropriate training and staff development opportunities.

The issue of staff turnover and external migration has been an issue for a long time, and remains an issue not only for doctors and nurses, but also for other technical staff. Work needs to continue on training Nurse Practitioners to take up some of the work currently undertaken by Medical Officers and Health Officers at the Hospital Outpatients Department and/or Health Centres, as well as running NCD Clinics and Outreach Programs at the community level.

Likewise Laboratory Technician should be trained as X-Ray Technicians at the Outer Island Hospitals where the workload is very small compares to Vaiola. Likewise, Senior Medical Officers should be rotating on regular interval to provide clinical support and development for those medical officers who are stationed at the outer island hospitals. This would also ensure that people at the isolated station have access to quality professional services provided by experienced medical personal

7.2 Health Financial Management Systems

Budget Preparation

The MoH budget preparation process is undertaken in a collaborative manner by a Budget Team consisting of staff of the Accounts, HR and Administration divisions plus members of the Executive. In recent years, the Accounts Section has been able to provide a Monthly Financial Report using the Ministry's access to the Treasury's Sun System (Accounting software). This has proved useful for budgeting, and also as a financial management tool for Program Managers. During the budget cycle, the Accounts Section has a heavy burden of fund transfers due to insufficient or inadequate funding for certain items e.g. overtime, utilities, medical supplies.

On the revenue side, the Ministry was able to collect over 90% of its projected target of $1 million in fees. This achievement is due to the effective mobilization of Revenue Collectors even though there are still room for improvement, especially the commitment of staff in the outer islands to raising revenues.

National Health Accounts and Public Expenditure Review

Apart from budgeting, the Ministry is continuing to work on institutionalizing the National Health Account (NHA) activities and the NHA Team is currently working on 2007/2008 report. The team is facing difficulties in trying to obtain data on Private Providers and Donor Support. The Household Expenditure data of 2001/2002 needs to be updated and the NHA Team is hoping to receive assistance from the Statistics Department with regard to data contained in their most recent 5-yearly Household Expenditure Survey.

Similarly, data on Development funding (Donor Projects) is currently held in dispersed locations and records. The Ministry would like to integrate donor projects information into a centralized location to enable swifter and more efficient interface with Development Partners.

7.3 Performance Management

Corporate Performance Appraisal

No systematic HR and performance appraisal process is yet in place for staff. A "Balanced Scorecard" and a staff performance appraisal system were introduced initially for the Head of Department and then for Heads of Divisions through an AusAID Health Planning and Management Project. The Director of Health (as MoH Chief Executive Officer) signed a Contractual Performance Agreement with the Hon. Minister of Health. Heads of Division then signed performance agreements with the Head of Department in 2006/2007 and 2007/2008. The practice however has not been sustained once the AusAID project which stimulated these processes came to an end in 2007[26]. However, more positively, quarterly reporting has been maintained to date on the Balanced Scorecard, which is also reflected in Corporate Plan targets and KPIs.

Introduction of a simple staff capacity development and appraisal process should be based on a merit-based performance culture within the Ministry (and more widely within the Civil Service). Arguably, this culture is not yet in place in Tonga. Once Ministry officials understand, and are supportive of performance appraisal, then a simple appraisal system can be introduced.

[26] The practice was discontinued after completion of the AusAid Tonga Health Sector Planning & Management Project (February 1999 – November 2007) and a change in the Director of Health.

International experience would suggest that an appraisal and staff development system should be based on broad job categories and linked to career advancement rather than pay, and appraisal marking needs to be reviewed for consistency. For ease, rather than designing such a system from scratch, an existing model from elsewhere in the Pacific region (e.g. Fiji, Samoa, New Zealand etc) could simply be adapted.

Ministry Reporting and Information System

The Annual Report of the Hon. Minister of Health highlights milestones for each KRA and the latest Report available at the time of writing is for 2008. Production of the 2009 Report is 2 months behind schedule at the time of writing. It will also be important to ensure that the correct Quarterly Reports can be used as reliable information sources for the Annual Report.

The establishment of Hospital Information System (HIS) has facilitated access to relevant clinical information, since Medical Officers can access to Laboratory and X-Ray results through the system. The challenge now is not only to sustain the system at Vaiola, but to extend the HIS to outer island hospitals and also to integrate all other Health Information into a single Executive Reporting System including Pharmaceutical Drug and Supplies; HR; Finance and the National Health Account into one HIS.

8. Conclusions, Recommendations and Financing Options

8.1 Conclusions

A review of health performance indicators over the last decade has concluded that ***Tonga has performed relatively well compared with neighboring Pacific countries***, especially given a fairly low health sector share of total government recurrent spending.

Table 32: Index of Health Spending Shares in the Pacific, 2008

	Tonga	Samoa	Fiji	Kiribati	Vanuatu
Health Spending Per capita (2007)	100	141	145	177	73
Health spending as a percent of GDP (GDP share, %)	100 (3.4%)	147 (5.0%)	117 (4.0%)	N/A	106 (3.6%)

Source: SPC (PRISM) Database

Tonga's level of spending on health as a percentage of GDP is below that of most of its' Pacific neighbours. As a percentage of GDP, spending in Tonga in 2008 was nearly 50 per cent lower than Samoa's, nearly 20 per cent lower than in neighbouring Fiji and 6 per cent lower than in Vanuatu. Tonga's public health spending per head was over 40 per cent lower than in Samoa and Fiji.

Life spans are at or above the regional average and Tonga performs very well on maternal and infant mortality rates. Immunization has been a clear success story and communicable diseases now pose only a very limited health burden on the population.

However, there are two clear challenges to this good health performance in Tonga:

(iii) ***a growing incidence of non-communicable disease (NCD***), due mainly to obesity, poor diet and alcohol / tobacco use, poses a substantial challenge to the health care system and overall population health (see PER Background Paper No. 3 on Health Performance and Outcomes for more analysis);

(iv) ***a tight current macroeconomic and fiscal position has led the Government to make significant cuts in health spending over the next three years*** (See Background Paper No. 2 on Sector Financial Sustainability & Funding). The 2010/11 health budget has been cut by T$ 2 million (9% of 2009/10 spending). A further cut of over 20 per cent in real terms[27] (to $18.5 million) has been penciled in over the next two years.

The combined impact of these challenges has been to raise health costs, while reducing the ability of the Tongan government to allocate funds to the health sector[28]. The impact of budget cuts in recent years has led to poor maintenance of medical supplies, and insufficient funding provided to address the rising incidence of NCDs and to fund core operational costs. However, there is the possibility of using revenues accruing to government from the consumption of harmful substances such as tobacco and alcohol to offset the likely growing costs of treating NCD's. The table below shows past and forecast excise revenues.

Table 33: Actual and Forecast Excise Duty Rates & Collections, 2008/09 - 2012/13

	2008/09 (actual)	2009/10 (actual)	2010/11 (budget)	2011/12 (forecast)	2012/13 (forecast)
Tobacco Duty (T$/Kg)	150	150	200	200	200
Tobacco revenues (T$ million)	8.5	7.3	9.8	9.8	9.8
Alcohol Duty (T$/litre)	40	40	42	42	42
Alcohol Revenues (T$ million)	1.5	1.3	1.8	1.8	1.8

Source: Personal communication to PER Team, Ministry of Finance

The table shows that an additional T$3 million of tobacco and alcohol excise revenues are budgeted in 2010-11. It is proposed in Section 8.2 (Recommendation 2) that a portion of these revenues be used to bolster the budget of MoH.

To minimize the impact of government revenue reductions on service delivery to the public, significant budget support has also been sought from development partners to fund vital social services such as health and education. A recent World Bank review of funding options concluded that the most sustainable option was to continue funding services through general revenues, with any additional resources required to be generated through efficiency savings. ***This Review concurs with that finding***.

[27] Based on estimated annual inflation of 6 per cent.

[28] Just over half (54%) of the total cost of health services is borne by the government through general taxation and user fees, with the bulk of remaining cost split between international donors (33%) and households and NGOs (13%).

The PER Background Paper on Health Outcomes and Performance notes that a population-based approach to NCD reduction is likely to save a significant number of lives and reduce illness. ***Evidence from the international literature on NCD interventions supports the use of broad community and policy-based interventions to reduce NCD risk factors***. For example, a review of major community-based preventive health projects has documented the positive experience with heart health promotion work[29].

A WHO Bulletin article notes that "the systematic involvement of primary health care centres can, in the long run, be one of the most effective intervention tools. This may be particularly true where the intervention deals with biological risk factors such as hypertension or elevated blood cholesterol." Another study[30] notes that experience of NCD interventions provides the following "lessons for implementing successful lifestyle interventions across populations:

- Interventions should be long term with multiyear time frames.
- Credible agencies should be responsible for such interventions.
- Collaboration between the health sector, other government agencies, schools, workplaces, and the voluntary sector is important.
- Cooperation with the food industry is essential to ensure the availability of reasonably priced healthier food options with food labeling that presents relevant information in a clear, reliable, and standardized way.

This review therefore concludes that MoH needs to strengthen – and dedicate funding for – primary care-based activities to reduce NCD risk factors. In addition, carefully targeted secondary prevention interventions for identified high-risk groups should be undertaken.

In terms of delivering quality of care and health outcomes, significant progress has been made in Tonga with the development of the Corporate Plan, and accompanying balanced scorecard. However, more attention could be given to providing a systematic approach to delivering quality care and measuring outcomes, if sustained improvements in this area are to be achieved. Some suggestions for indicators that might be monitored are given in Annex 1.

The ***recommendations*** in Section 8.2 are categorized according to the WHO's six Health System Strengthening pillars and include:
(a) suggestions regarding the sustainable level of financing of the health sector over the next 5 years given the need to increase activities related to NCDs, while safeguarding the gains – for example on reproductive health – that have been made in recent years; and

(b) suggestions regarding efficiency savings in the health sector which could be ploughed into meeting core health ministry and national health priorities, especially regarding the funding of preventative work to reduce the future burden of NCDs on the population in coming years.

[29] For example, following a successful pilot project in N Karelia, Finland in the 1970s, which showed significant net reductions in both risk factors and CHD mortality, intensive and comprehensive activities were started on the national level. This led to declines in smoking rates among men, serum cholesterol and blood pressure levels, as well as major dietary changes and a national decline of CHD mortality by 65%. Analyses have shown that most of this decline in CHD mortality is explained by population-level changes in the main risk factors, especially dietary changes. Evidence cited in "Community-based NCD interventions: lessons from developed countries for developing ones", Aulikki Nissinen, Ximena Berrios & Pekka Puska, WHO Bulletin, 2001, 79 (10)
[30] "Priorities in Health", Hoffman.

8.2 Recommendations

Based on the PER findings and analysis, the Review team make following recommendations:

Pillar 1: Leadership / Governance

No specific recommendations are made beyond those in the ongoing health management reform process, which will help to further improve health administration, leadership and governance. Recommendations 5 and 6 below (under HR) will require significant MoH management leadership.

Pillar 2: Finance

Recommendation 1**: In the medium-term, the MoH recurrent budget should rise from under 12 per cent to 15 per cent of the government's total recurrent spending**, to enable the rising incidence of NCDs to be effectively addressed. By 2012/13, the government health budget should be raised by 10 per cent above the real 2008/09 level[31], equivalent to an additional MoH funding of T$2.1 million at 2008/09 prices. The proposed division of this increase by 2015-16, a small reduction in salary costs and share of total spending, and a gradual increase in operational spending – both in absolute terms and as a share of total spending – is provided in Table 34. Funding sources that could generate the finance required (T$ 2.1 million) for this increased level of spending are given in Recommendation 2 below.

Table 34: Actual and Proposed Health Budget Allocations, 2008/09 – 2015/16

	2008/09 (actual)		2010/11 (budgeted)		2012/13 (proposed)		2015/16 (proposed)	
	T$ mn	% total	T$ mn	% total	T$ mn	% total	T$ mn	% total
Salary	***13.5***	***65***	***15.4***	***72***	***14.5***	***62***	***14.1***	***60***
Operational Costs, of which:	***7.4***	***35***	***6.0***	***28***	***8.5***	***38***	***9.4***	***40***
- Maintenance	1.0	5	1.5	7	1.5	10	2.0	10
- Drugs & Medical Supplies	3.0	14	3.6	15	5.0	16	5.4	18
- Other Operational costs	3.4	16	0.9	6	2.0	14	2.0	12
Total Recurrent Allocation	**20.9**	**100**	**21.4**	**100**	**23.0**	**100**	**23.5**	**100**

Source: MoH

Recommendation 2: **Additional revenue streams should be generated** to finance an expanded preventive NCD healthcare and maintenance budget, including:

a. Additional tobacco excise revenues should be earmarked for NCD prevention. 50 per cent of the *additional T$ 1,250,000 in revenues* raised and allocated to MoH from a 33 per cent increase in excise duty on tobacco in 2010/11 should be earmarked for NCD prevention activities;

b. Introducing an outpatient fee of up to T$5 for a doctor's consultation once the new Vaiola Hospital wing is completed. This could raise around *T$250,000 a year*, allowing for the fact that actual revenue raised is likely to be lower than multiplying

[31] In addition to health budget increases in line with annual inflation, currently estimated at 6 per cent a year

current annual OPD attendances by 5, since a fee is likely to deter some people from using outpatient services;

c. Revised hospital inpatient fees for non-Tongans to better reflect the current cost of providing the services. Increasing the level of fees may *raise around T$ 100,000 per annum* by 2012-13;

d. A reduction in overseas medical referrals to limit referrals only to people with good prognosis and under 50 years of age, and to allow for more in-country specialist work. This will enable the annual allocation for overseas medical referral to be reduced by 50 per cent – *saving T$ 300,000 a year* out of a current annual expenditure of T$ 600,000;

e. Re-impose a duty of 15 per cent on mutton flaps[32] and a duty on other unhealthy food and drinks, and use the revenue raised – *an estimated T$ 500,000 a year* – to fund subsidies for healthy foods (vegetables etc) and to promote healthy eating.

Recommendation 3: **International donors should recognise that the Tongan health system will need external HR and financial support for the foreseeable future.** Long-term plans should be drawn up by interested development partners, based on medium-term government financing projections and up-to-date MoH Corporate Plans, to provide coherent, better harmonised[33], effective and sustainable health sector support.

Recommendation 4: **The volume of off-budget funding of various development programs should be curtailed and funding brought fully "on budget"**. The Health Finance Department and Treasury should fully account for all development partner funds, so as to allow the Government to fully take these funds into account in making informed public health decisions.

Pillar 3: Human Resources

Recommendation 5: **To enable essential operational health services to continue to be provided and improved, medical salary costs should be better controlled and limited to 60 per cent of total MoH costs in the medium-term**. Based on the Government's fiscal stance outlined in the latest Budget paper, the following spending framework, and associated activities and targets for health care costs, is proposed:

(i) a new separate Board within the Public Service Commission (PSC), working closely with MoH senior management, should be set up to manage medical and support staff, with authority over recruitment, remuneration etc. A key objective of the new PSC Board will be to contain and reduce total staffing costs from 65% of the overall MoH budget in 2008/09, to around the recent average of 62% of the total MoH budget by 2012/13, and below 60% of the total MoH budget within 5 years. As this task will not

[32] Duty was removed in FY 2009 by order of the Prime Minister

[33] Situations where donors are not informed of each others' activities (e.g. AusAID was only informed of additional Chinese doctors after the doctors had arrived in Tonga, despite being engaged in recruitment for senior medical staff through PACTAM

be easy to achieve in the light of pressures to increase staff numbers and salaries, the following additional measures should be vigorously explored to control staff costs:

a. reducing overtime by a variety of means, including: rostering in additional Chinese-funded doctors; making arrangements for donor-funded secondments from medical schools in Fiji, New Zealand and Australia etc; and engaging doctors on a contract basis e.g. 40 hours a week, and 5 hours per shift;

b. training more senior nurses and health officers to reduce doctors' workloads e.g. to enable reduced health officer cover at health clinics[34];

c. exploring the possibility of introducing rostered night shifts for junior medical staff (this will require a cadre of junior medical staff be established);

d. exploring whether routine nurse staffing could be reduced by more closely matching nurse staff numbers to variable workloads (which will require the creation of a casual or part-time nursing pool, and appropriate IT systems to monitor workloads).

(ii) The savings resulting from actions in (i) above should be channeled to raising operational spending, to enable the share of operational spending to be increased from 35% to 38% of the total MoH budget by 2012/13, and 40% by 2015/16.

Recommendation 6: **Improve and compress health outcomes across Tongan districts**by undertaking the following management actions to improve outcomes:

a. Establish a more satisfactory medical career structure for doctors and nurses at an estimated cost of ToP $164,000 to be funded from efficiency savings;

b. The Health Promotion Department – working closely with Public Health Department, Tonga Health and Nursing Division – should be clearly mandated to oversee the control of NCDs within the Ministry of Health, working very closely with clinicians in hospital settings;

c. Standard management guidelines for priority NCDs at health centre, hospital and intensive care level should part of the package of care for diabetes and NCDs, and up-to-date self-management guidelines for priority NCDs for affected patients should be established;

d. Further training should be provided for hospital staff, including short term attachments and training through attendance and observation during overseas medical team visits.

Pillar 4: Health Information Systems

Recommendation 7: **Integrate all non-clinical health information into a single Executive Reporting System** including: Pharmaceutical Drug and Supplies; HR; Finance and the National Health Account information.

[34] For example, the health clinic at Ma'unfanga has been operated by retired registered nurses

Further detailed recommendations relating to HIS are included in the PER Background Paper No. 4 on Health Administration and Performance Management Systems.

Pillar 5: Services Delivery

Non-Communicable Diseases

The main goal should be to reduce the growing burden of non-communicable disease. International evidence, though limited, indicates that key NCDs such as most coronary artery disease, stroke, and diabetes and some cancers – may be prevented or delayed by realistic changes in diet and lifestyle[35].

Recommendation 8: **The Ministry should focus on obtaining improvements in key indicators relating to non-communicable diseases, by**:

a. making a firm high-level commitment to provide sufficient funds to support NCD prevention. The share of the health budget spent on NCD prevention should be raised from 5% in 2008/09, to 10% by 2012-13, 12% by 2014-15 and 15% of the Ministry's total budget by 2020. Evidence suggests this investment will be more than self-funding in the long run, through the generation of significant reductions in the cost of secondary and tertiary care for people with cardiovascular diseases, hypertension and diabetes[36];

b. Expanding and targeting secondary preventive activities to provide early detection and effective management of diabetes and hypertension. This should include improving the operation of diabetic and hypertension clinics and ensuring that outer island hospitals have the necessary diagnostic equipment and basic testing supplies;

c. Properly implementing legislation already in place to improve population health such as anti-smoking, food standards and nutrition legislation. This will require closer coordination of policy-making and legislative implementation between government and non-government agencies (e.g. ministries of agriculture, health, environment and customs and churches) addressing the interconnection between health, food, education and the legal system.

Improving Health Care Effectiveness

Recommendation 9: **The effectiveness of health care, and subsequent health outcomes, should be strengthened through the development and monitoring of an integrated**

[35] "Cost-Effective Strategies for Non-communicable Diseases, Risk Factors, and Behaviors", Chapter 5, "Priorities in Health", Hoffman.

[36] An illustration of the overall economic consequences of successful heart health interventions comes from the North Karelia Project in Finland. This project assessed the overall CVD-related costs in N. Karelia and in the whole of Finland in 1972 (at the outset) and again in 1992. After 20 years the age-adjusted CVD rates had been reduced remarkably. The conclusions were: the decrease in annual costs in all Finland were c. US$ 100 million for persons over 64 years old and US$ 600 million for those from 35 to 64 years old. This could translate into savings of US$ 35 million in one year alone.

'Quality in Health Care' program (see Annex 1) which takes into account the following dimensions of quality care:

- Safety;
- Effectiveness;
- Access;
- Appropriateness;
- Consumer Participation.

Recommendation 10: **Greater priority should be given to asset maintenance** to enable an increase in the availability and reliability of equipment and facilities, thereby improving medical efficiency and reducing capital costs in the long-run. In particular:

(a) the share of MoH spending on maintenance of health assets should be raised from 5% to 10% of total spending i.e. from T$1 million to T$ 2 million a year by 2012/13;
(b) An up-to-date Fixed Assets Register should be drawn up and maintained;
(c) Annual maintenance should be based on a costed work plan drawn up by the Maintenance Supervisor, which documents and costs the required preventative building and equipment maintenance tasks.

Improving the Efficiency of Curative Care

Recommendation 11: **Efficiency savings should be sought, and ploughed back into curative care budgets**, including through the following actions:

a. Ongoing review and reduction in hospital costs by, for example, optimizing;
   i. the mix of inpatient, outpatient and community services;
   ii. the length of stay for admissions for key diseases; and
   iii. bed occupancy and staffing ratios.

b. Contracting out additional support services. Savings of around T$80,000 have already been identified through contracting out of sewing, laundry and public convenience maintenance. Further savings should be identified by doing cost /benefit analyses for other services such as catering and mortuary services and appointing a government 'buying agent' to order drugs and medical supplies.

c. Optimizing hospital outpatient staffing to reduce unnecessary repeat visits. Time savings[37] from reduced repeat attendances should be ploughed into patient care, thereby increasing staff morale and improving likely patient outcomes;

d. More efficient use of medical staff. Medical staff over the compulsory GoT retirement age of 60 years should be contracted for 3 days per week and governed through an Independent PSC Board. This is estimated to save around T$ 130,000 per year compared to current salaries;

[37] There will be no cash savings to MoH as overall hospital staffing will be unaffected.

Recommendation 12: **The current drug formulary should be reviewed and revised** to link available drugs with standard treatment guidelines, and to ensure that they are both cost-effective and appropriate. Prescribing of drugs should be closely monitored to ensure that standard clinical and prescribing guidelines are being followed.

9. Conclusions on Data Analysis and Further Work Required

9.1 Data Availability and Analysis

The existence of high quality Ministry of Health documentation, such as a Corporate Plan, MoH Annual Reports and bi-annual National Health Accounts (NHA), which have been generated largely as a result of donor-funded management and FM assistance (HSSP etc), has made the information gathering by the PER Review team relatively straightforward.

Some data – such as the 2007/08 Tonga National Health Accounts and the Second Tonga Country Update regarding Tonga's status with respect to the Millennium Development Goals – was still being compiled at the time of writing, so could not be fully drawn on in the Review.

Data that proved most difficult to unearth included generating an accurate sub-sector breakdown of health spending, and (given unpublished 2007/08 NHA) obtaining a comprehensive up-to-date picture of private and household-level and non-Government clinic health spending and activity.

9.2 Further Work Required

The Review team found that some data could not be collected or verified in the time available. Key areas where further work / data is now required to firm up the actions and costings in Section 8.2 above, and validate Review recommendations, include:

(i) drawing up a ***detailed prioritised action plan, with associated costings, to implement the National NCD Plan*** ('The Path to Health') and undertake work to establish the likely future NCD caseload at primary, secondary and tertiary level;

(ii) ***speedy finalisation of 2007/08 National Health Accounts*** and starting work on 2009/10 NHAs;

(iii) ***costing and detailing a workplan to resource all primary care health centres***, including using Nurse Practitioners to lead NCD prevention at primary level;

(iv) further work to ***refine proposed future health funding allocations***, ***likely additional MoH revenues and associated planned changes in activities*** e.g. allocations / activities in relation to secondary health preventive activities.

Annex 1: Managing the Quality of Health Services

Everyone connecting with a health system including consumers, policy makers, clinicians and managers has an interest in the quality of care provided. Improving quality of health care requires a coordinated approach to the many parameters which contribute to health outcomes. To achieve this, an overarching coherent framework for managing quality of health care in a systematic way is required. There must also be acceptance that the health service, in addition to the individual providers of care, has a governance responsibility for the quality of care.

Significant progress has been made in Tonga with the development of the Corporate Plan, and accompanying balanced scorecard. However, more attention could be given to providing a systematic approach to quality of care and health outcomes if sustained improvements in this area are to be achieved.

NSW Health underwent a significant movement in this direction in the 1990s and 2000s and has prepared several documents which may be of use as tools in this respect. The first is "A Framework for Managing the Quality of Health Services in NSW[38]" is discussed below. The accompanying clinician's toolkit is specifically aimed at clinicians and their role in ensuring quality outcomes within their department[39].

The NSW Health framework identifies six dimensions of quality which provide a basis for measurement, reporting and improvement efforts. For each of these dimensions, example indicators (in three phases) have been suggested. The dimensions are:

- Safety;
- Effectiveness;
- Efficiency;
- Access;
- Appropriateness; and
- Consumer Participation.

In addition, the Framework identifies cross-dimensional issues which impact on quality of care and should also be considered. These are:

- Competence of health care providers;
- Continuity of care;
- Information management to support effective decision making;
- Education and training for quality; and
- Accreditation of health services.

The six dimensions are discussed briefly below.

[38] Taken from "A framework for Managing the Quality of Health Services in NSW", NSW Health 1999
[39] 'The Clinician's Toolkit for Improving Patient's Care", NSW Health 2000

1. SAFETY

Safety in health care is defined as "the extent to which potential risks are avoided and inadvertent harm is minimized in care delivery processes". This is often the first dimension addressed with respect to quality of care and remains an important one.

It is important to note that substantial improvements in this area commenced with the cultural change towards systemic identification of errors. As noted in the report, "*error is an inevitable accompaniment of the human condition, even among conscientious professionals with high standards. Errors must be accepted as evidence of system flaws and not character flaws*".

Selected Phase 1 examples (highlighted in yellow) from NSW Health, as shown below, may be appropriate for Tonga.

NSW Health Safety Indicators: Phase 1 examples	
1.	Patient harm indicators including (but not restricted to) • Percentage of patients experiencing falls • Percentage of patients developing pressure sores • Percentage of patients developing hospital acquired bacteraemia • Percentage of patients having evidence of wound infection on or after the 5th post operative day following clean and/or contaminated surgery • Percentage of patients experiencing an assault in inpatient units
2	Unplanned return to operating theatre during the same admission
3.	Unplanned readmission to hospital within 28 days
4.	Rate of unexpected admission to ICU

2. EFFECTIVENESS

The effectiveness of health care relates to the extent to which a treatment, intervention or service achieves the desired outcome. There is little dispute that sustained improvement in the quality of health care requires a commitment to delivering health care based on sound scientific evidence and there is general consensus that the development and use of standard clinical guidelines forms a basis to achieving this. Dissemination of guidelines must be accompanied by planned implementation and evaluation programs that encourage the adoption of effective health care practices.

Once again, a selection from the phase 1 examples from those from NSW Health could be adapted for Tonga. Avoidable deaths for diseases more relevant to Tonga (e.g. TB or typhoid) may also be included.

NSW Health Effectiveness Indicators: Phase 1 examples	
1.	Percentage of facilities which have established a process for introducing current NH&MRC best practice guidelines
2	Percentage of specified best practice guidelines being used in clinical practice, including • The use of Deep Venous Thrombosis prophylaxis • Percentage of eligible patients admitted with myocardial infarction who are discharged home on aspirin (or other anti-platelet therapy) • Percentage of stroke admissions receiving CAT scan within a certain time of arrival in the Emergency Department

3.	Chronic care management – a composite indicator consisting of age and sex standardized admission rates for: • Asthma • Diabetes • Epilepsy
4.	Screening rates for: • Breast cancer • Cervical cancer
5.	Avoidable deaths – a composite indicator of potentially avoidable deaths consisting of (with age and sex standardization where possible): • Mortality from peptic ulcer (age 25-74) • Mortality from fracture of the skull and intracranial injury (age +1) • Maternal mortality (ages 15-44) • Mortality from hypertensive and cerebrovascular disease (ages 35 – 64) • Mortality from asthma (age 5-44) • Mortality from appendicitis, abdominal hernia, cholelithiasis and cholecystitis (ages 5-64) • Mortality from coronary heart disease (age < 65 years)
6.	The existence of a communication strategy with the General Practitioner divisions (adapt for health centres/primary care)

3. EFFICIENCY

Health services must ensure that resources are utilized to achieve value for money. The economic concept of efficiency implies that choices in health care delivery and treatments should be made so as to derive the maximum total benefit from the available health care resources.

There are two aspects to efficiency. Technical efficiency is concerned with reducing costs and minimizing waste whereas allocative efficiency informs decisions on what services or treatments to deliver.

Technical efficiency is about providing the highest quality services for the lowest cost. It has been defined as the least cost combination of resource inputs necessary for the production of a particular service. Technical efficiency does not provide information on whether or not a particular treatment or service should or should not be undertaken in the first place, or whether one type of treatment is preferable to another.

Allocative Efficiency is concerned with how to achieve the optimal mix of health care treatments and services to maximize total benefits (outcomes) from available resources. Two aspects of allocative efficiency are relevant; first choosing between disease states (heart disease or diabetes) and second, choosing alternatives within disease states (eg prevention of lung cancer or its treatment).

The NSW Health efficiency indicators listed below relate mostly to technical efficiency and require sophisticated IT systems to be measured. This level of measurement may not be possible or appropriate in Tonga but nevertheless some could be adapted and others developed which would provide an ongoing indication of efficiency. Numbers 1, 3, 8 & 9 could be

appropriate. Number three - measuring the ALOS for the top 20 DRGs would be particularly beneficial if measurement is possible.

NSW Health Efficiency Indicators: Phase 1 examples	
1.	Average length of stay (ALOS) – *more valuable if casemix adjusted*
2	ALOS of acute episode
3.	Inpatient ALOS for top 20 DRGs
4.	Cost per casemix adjusted separation in acute health services
5.	Cost per emergency occasion of Service (OOS)
6.	Cost per primary and community based OOS
7.	Cost per outpatient OOS
8.	Percentage of elective surgery patients admitted on the day of surgery
9.	Percentage of elective surgery patients cancelled because of poor preparation
10	HCC adjusted cost per casemix weighted
11	Inpatient fraction (IFRAC) %
12	Acute inpatient fraction %
13	Cost per non & subacute bed day.

4. ACCESS

Health Services should offer equitable access on the basis of patient need, irrespective of geography, socio-economic group, ethnicity, age or sex.

With the exception of the triage times in the Emergency and Outpatients Department, the Phase 1 NSW Health indicators may not be very relevant to Tonga. Nevertheless, the importance of developing and measuring access indicators should not be overlooked and specific indicators relevant to Tonga should be developed.

5. APPROPRIATENESS

The notion of appropriateness in health care refers to the selection of the intervention that is most likely to produce the desired outcome. Essentially the appropriateness of health care is about using evidence to "do the right thing" to the right person in a timely fashion.

In western countries, appropriateness indicators often target the overuse of certain procedures by measuring sentinel procedure relative utilization rates. In Tonga the underuse of certain procedures may be of greater importance. Appropriate referral of some conditions (especially from the OPD) may also be important for Tonga. Specific objectives within the broader aim of ensuring appropriate use of health services could also include increasing the use of appropriate medications and other effective therapies.

6. CONSUMER PARTICIPATION

Not only do consumers have a fundamental right to participate in health care delivery but such input should have considerable benefit. Consumer participation should enhance the level of **acceptability** of services which describes the degree to which a service meets or exceeds the expectations of informed consumers.

The following are the examples from NSW Health.

NSW Health Consumer Participation Indicators: Phase 1 examples	
1.	The service prepares and distributes consumer information regarding specific diseases
2	Existence of a consumer communication strategy with the identified peak consumer body
3.	Evidence of compliance with MOH guidelines for frontline complaints handling at minimum practice level
4.	Evidence of at least 5 examples of participation of consumers/community representatives in service planning or development

Remaining NSW indicators

NSW Health Access Indicators: Phase 1 examples	
1.	Clearance time (months)
2	Average waiting time (months)
3.	Overdue urgent admissions
4.	Long wait urgent and semi-urgent patients on list as % of total
5.	Triage times for emergency – in each triage category
6.	Access block
7.	• Waiting times for all services including (but not restricted to) a) Elective surgery; b) Aged care assessments; c) Nursing home placements
8.	Appropriate priority access indicators
9.	• Ability to admit the patients to the intensive care unit from: a) Within the hospital; b) The emergency department; c) The catchment area
10	Delayed discharge from hospital for people aged 75 years and over

NSW Health Appropriateness Indicators: Phase 1 examples	
1.	Sentinal procedure relative utilisation rates: • Coronary angioplasty • Caesarian section • Cholecystectomy • Coronary artery bypass grafts • Upper gastrointestinal endoscopy • Hysterectomy: abdominal and vaginal • Lens and cataract procedures • Tonsillectomy • Transurethral prostactectomy • Knee arthroscopy • Colonoscopy • Grommet surgery for glue ear • Male circumcision • Reversal of vasectomy • Breast enhancement
2	• Percentage of people who present to ED with deliberate self harm attempt who receive a mental health assessment

Annex 2: Notes of PER Vava'u Health Services Visit: May 2010

Summary
The CMO noted that the health situation in Vava'u is "generally good". The PER team however is of the opinion that the preventive care aspects are not of a similar status.

The situation regarding ***curative care*** seems generally satisfactory. Services are mainly run out of the only hospital (Prince Ngu, Neiafu), which is spacious, has an adequate (if not excessive) number of beds (60) and is in reasonable condition. There are 4 outlying health centres, all with premises which have been recently refurbished, but only 1 clinic is fully staffed and operating.

There have been few outbreaks of ***infectious disease*** (e.g. a typhoid outbreak in 2009 which was traced to a village whose central water supply had ceased to function for at least 5 years). Maternal, in utero fetal and neo-natal deaths are rare, and the CMO hopes to eliminate these entirely.

The main curative care requirement is for another senior doctor, who can reliably deputise for the CMO (this existed in previous years) in certain medical and, in particular, emergency surgical procedures including Caesarian Sections. There is also a need to replace and upgrade medical equipment – the CMO and nurses noted the need for some new equipment (e.g. an ECG machine, reproductive health equipment) and replacements for ageing equipment (e.g. an X-ray machine, hospital truck, a boat for inter-island transport..

The position relating to ***non-communicable disease and preventive care*** is less satisfactory. Nearly 30 per cent of adults have diabetes, high blood pressure or CVD, which is high by international standards, and new patients come forward every month.

The Vava'u health service conducts a 'special clinic' that provides services for diabetic, hypertensive, asthmatic and other medical conditions related mostly to non-communicable diseases, but this service is currently significantly under-staffed (1 nurse and a volunteer) and lacks regular appropriate drugs. Outreach is patchy, mainly due to transport costs. This results is some "uncontrolled cases", and some patients are not followed up, which occasionally results in in-patient admissions. Health promotion work is done, including in schools, though the nurses noted they were not always able to undertake planned activities.

The main preventive care requirements are: 1-2 more nurse practitioners (who can prescribe) to run the diabetic, HT & CVD clinics; a computer to keep notes / records; adequate supplies of diabetic and anti hyper-tensive medication; and adequate access to transport to do health promotion.

Detailed Notes: Main points arising from individual discussions

1. Discussion with Dr 'Etika 'Akau'ola, Vava'u CMO

Preventive care

- *Waste Management*. Rubbish collection is carried out only in Neiafu. The collection and its appropriate disposal is a real problem as there is no agreement as to who is primarily responsible for carrying this out. Vava'u MoH is taking a leading role (hiring a loader to clear rubbish sites) in the interest of preventing public health outbreaks such as dengue. Two health inspectors and 5 staff control mosquitos by spraying.
- *Health Education.* There is a need for "aggressive" health promotion to encourage better diet, exercise and a reduced consumption of alcohol and tobacco. Imported tobacco is still widely used and still very affordable (at a price of ToP 5 / pack of 20 cigarettes).
- *Equipment.* Urgent need for an X-ray machine, as current one is 30 years old and produces poor images.

Curative Care

- *Medical Personnel.* The CMO said that another senior doctor would help to share the load of serious / emergency cases. Currently, there are 3 doctors and 2 health officers to look after c. 16,000 people – a ratio of 1 doctor to over 3,000 people. Normally, the ratio should be 1 doctor for every 2,000 people. The shortage of medical staff and associated stress has direct negative impact on individual health of medical personnel. The long hours are not readily appreciated in terms of monetary awards or leave entitlements. Such situations has the potential to affect health care delivery and quality of such services.
- *Health Clinics / Medical Outreach.* The CMO said that most people come to Neiafu to do shopping and other related activities regularly. More recently a significant a significant number of islanders and their children practice 'Monday to Friday migrations' to Neiafu to accompany children attending school at Neiafu, returning to the islands on week ends only. These recent trends means that there is now a rather limited need for full-time, fully staffed island based health centres. On the other hand, these island health centres would provide essential bases for public health outreach activities (health promotions, island medical quarterly surveillance/medical visits). Out of around 80 patients seen, only 10-12 need to be referred to the doctor – rest have minor skin infections, cuts etc. Nevertheless, the intention was to staff the clinics with a health officer / nurse practitioner and nurse (Hunga would have a nurse practitioner), to provide remote area services and health promotion services**.**

2. Discussion with Hospital Administration & Finance Dept

- Manual Vote book and Cash book records are kept, with summaries held on computer. In addition, a computerised asset register is maintained (last updated 30/8/09).
- Total Vava'u 2009-10 health budget is c. ToP 1.12 million[40]. Salaries account for ToP 912,000 (82%), with an additional ToP 41,800 budgeted for daily wages and overtime.
- The total operational budget is ToP 161,000 (14% of total Vava'u health budget). Total maintenance budgets in 2009-10 are ToP 12,000 (1%). Finance Dept recommended that MoH should set maintenance standards and allocate funds accordingly.

[40] Spreadsheets for financial expenditure & revenue were provided by Manavahe.

- Budgets for wages (36%), overtime (330%), vehicle maintenance[41] (88%), water (40%) and office supplies (80%) were over-spent (% overspent in brackets). Transfers between individual budget vote elements are used to keep within the overall budget.
- In addition, donations of around ToP 50,000 from the Hospital Board of Visitors and others including Churches (FWC and Mormons), families, farmers, businesses and foreigners are used to pay for domestic travel, patients' diet, and laundry expenditure over allocated budget.
- Additional funding is required to provide furniture and medical equipment at Falevai and Hunga Clinics, and for medical equipment at Tefisi Clinic. In addition, the boat needs to be upgraded as it is old / unseaworthy. Finance recommended that health officers and nurses based at these clinics have an agreed work plan.

3. Discussion with Diabetic / Hyper-tension Clinic Nurse

- The clinic has been located in the laundry room of the hospital since 2003. The clinic is due to be relocated to newly built premises at the end of the year, although the Chief Medical Officer does not have information at the moment on the plans for allocation of space within the new Clinic.
- There used to be 2 nurses running the NCD clinics, but now there is only 1 nurse, plus a JICA-funded volunteer.
- There are 750 people registered for the diabetic clinic and 1,700 registered with hyper-tension (HT) or cardiovascular disease (CVD). 3-5 new people are registered each month. The doctor does a clinic twice a week – once on Tuesdays at the hospital (50 people seen) and home visits are undertaken on a Thursday.
- Problems include some "uncontrolled" cases, the fact that nurses cannot prescribe and that the clinic runs out of test strips & drugs, due to shortages in the central pharmacy at Vaiola Hospital.
- The nurse said that access to transport (and staffing?) prevented chasing up "no shows".
- Recommendations include more screening, health education, a computer to keep notes and records and better supplies / contact with the central pharmacy.

4. Discussion with Reproductive Health Nurses

- There are 5 ante-natal, reproductive health nurses. Nurse numbers are sufficient, but nurses said there is a there is a need for an additional midwife, to replace one who left for Fiji.
- Nurses spend the afternoons doing paperwork and there is an issue as to whether this is the best use of their time.
- There are no maternal, neo-natal deaths as a result of pregnancy in 2009. The numbers of STIs / single mothers are increasing.
- Nurses plan to visit schools to undertake health promotion (personal hygiene, diet etc), but these visits do not always take place as planned due mainly to transport restrictions.
- Stated requirements include: a fund to pay for transport for an outreach programme for outlying villages, plus equipment (Fetal heart rate monitor, different size cuffs for blood pressure monitoring, scales for clinics and a glucometer, plus Tongan language health promotion posters

[41] For 6 vehicles