HEALTH SYSTEMS PROFILE

BELIZE

MONITORING AND ANALIZING HEALTH SYSTEMS
CHANGE/REFORM

July, 2009

AREA OF HEALTH SYSTEMS AND SERVICES HSS-SP

PAN AMERICAN HEALTH ORGANIZATION/
WORLD HEALTH ORGANIZATION

Pan American Health Organization
Regional Office of the World Health Organization

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ERRATA

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The third edition of the Health System Profile of Belize is the product of joint work by the Ministry of Health (MOH) and the Pan American Health Organization/World Health Organization (PAHO/WHO). Work was initiated by the then-Director of the Policy Analysis and Planning Unit (PAPU) of the Ministry of Health, Dr. Peter Allen (now Chief Executive Officer in the Ministry); former MOH human resources focal point and Acting Director of PAPU, Dr. Alfonso Ayala; and former Health Systems and Services (HSS) Advisor in the PAHO/WHO Belize Country Office, Dr. Guillermo Troya. Invaluable support was provided by the PAHO/WHO Health Policies and Systems program of the Health Systems Strengthening Area (HSS/HP), Washington, D.C.

With changes in roles and responsibilities in both the MOH and the PAHO/WHO Belize Country Office, the work team was subsequently led by Dr. Lesbia Cocom Guerra, the acting Director of the Policy Analysis and Planning Unit and supported by the current Director of Health Services in Belize, Dr. Michael Pitts. The team included Dr. Jorge Polanco and Ms. Marjorie Parks, Deputy Directors of Health Services; Dr. Ayala; Dr. Robert Tucker, Health Planner; and Ms. Michelle Vanzie, Health Economist, all of PAPU. Other MOH members of the team were Mr. Ethan Gough, Epidemiologist; Mr. Englebert Emmanuel, Biostatistician; Mr. Jesse Chun, Statistical Clerk; and Ms. Michelle Cox-Hoare, Quality Assurance Coordinator.

The editing of the document was done by Ms. Marjorie Parks and the peer review by Dr. Ismael Hoare, former Dean of the Faculty of Nursing, Allied Health and Social Work, University of Belize, with technical cooperation from PAHO/WHO. Technical cooperation was coordinated by Dr. Troya and Ms. Marilyn Entwistle, who replaced him as HSS Advisor in the PAHO/WHO Belize Country Office in July 2009. The PAHO/WHO HSS/HP program was responsible finalization and printing of this document.

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Page 9 – Maternal Mortality

The median maternal mortality ratio increased from 64 per 100,000 live births for the period 2000-2004, to 85.3 per 100,000 live births for the period 2005-2007 which is a 33.0% relative increase

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ARVs	Anti-retrovirals
BSSB	Belize Social Security Board
BBS	Belize Bureau of Standards
BHIS	Belize Health Information System
BSSB	Belize Social Security Board
CARICOM	Caribbean Community
CDB	Caribbean Development Bank
CPA	Country Poverty Assessment
CZMA	Coastal Zone Management Authority
DHS	Director of Health Services
DOE	Department of the Environment
EPHF	Essential Public Health Functions
FSW	Female Sex Workers
GDP	Gross Domestic Product
GOB	Government of Belize
HFS	Health Financing and Sustainability Project
HSRP	Health Sector Reform Project
IDB	Inter-Development Bank
KHMH	Karl Heusner Memorial Hospital
MIF	Multilateral Investment Fund
MoH	Ministry of Health
MSM	Men who have sex with men
MDG	Millennium Development Goals
NHI	National Health Insurance
PAHO	Pan American Health Organization
PCP	Primary Care Providers
PSR	Public Sector Reform
PEH	Public Expenditure on health
SICA	Central American Integration System
SIF	Social Investment Fund
SLA	Health Service Level Agreements
TFR	Total Fertility Rate
UB	University of Belize
WHO	World Health Organization
UWI	University of the West Indies

EXECUTIVE SUMMARY

The annual population growth of Belize is estimated at 3.3% for both periods of reporting (2000-2004 and 2005-2007). Population indicators show that Belize is in the third phase of demographic transition which is characterized by a stable crude death rate, declining crude birth rates, continued population growth, an increased burden of non-communicable, communicable and degenerative diseases on population mortality relating to lifestyles, increasing life-span, environmental conditions, and sexual risk behaviors. Epidemiological data show that maternal, infant and neonatal mortality rates have increased in the last few years. Mortality from AIDS, malignant neoplasms of the lung and breast, and circulatory diseases has also shown a notable increase.

The health sector in Belize is impacted by political, social, economic and environmental conditions. Belize is a sovereign state governed by the principles of parliamentary democracy with a stable political environment. However, there are major challenges that affect the health situation, including poverty and unemployment, slow economic growth, insufficient human resources, market incentives and globalization, partisan political tensions, and border disputes. Public expenditure per capita increased from US$1,973 (2000-2004) to US$ 2,293 (2005-2007). Public expenditure on health per capita was US$243.57 in 2007. A review of the social determinants of health shows that Belize has made strides in education with an increase in primary school enrollment, and in providing access to safe, potable water, but has made limited progress in sanitation, especially in rural areas. An increase in waste generation and inadequate waste management represent a major national challenge.

The Ministry of Health (MoH) is responsible for leading the health sector. The national public health system delivers services through a network of institutions at the primary, secondary, and tertiary levels. The current emphasis is on the primary and preventive care focusing on the prevalence of lifestyle and behavior related conditions as indicated by the country's epidemiological profile. MoH implemented the Health Sector Reform project consisting of three major components, namely, sector restructuring, services rationalization and improvement, and financing strategy.

The Health Sector Reform has resulted in a number of infrastructural and managerial changes in the health care system. One of the major changes was the subdivision of the country into four health regions. Another major milestone was the introduction of the National Health Insurance, designed to provide universal health care to the poorest sector in Belize, namely the Southern Health Regions and the southern part of Belize City. In addition, legislative review and new legislation were proposed to provide the legal framework for the health reform project.

1. CONTEXT OF THE HEALTH SYSTEM

This analysis, focuses on the period 2000 to 2007, and compares health indicators and information for the periods 2000 to 2004 and 2005 to 2007. To allow for comparison between these two periods, median rates are reported unless otherwise noted.

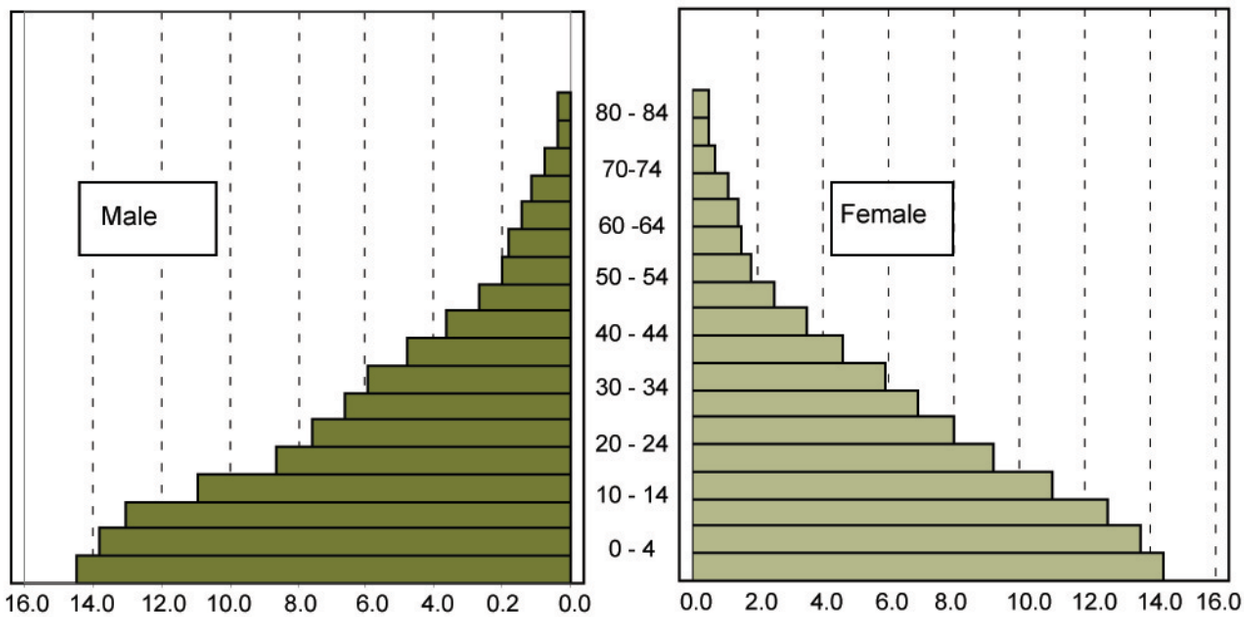
1.1 HEALTH SITUATION ANALYSIS

1.1.1 DEMOGRAPHIC ANALYSIS

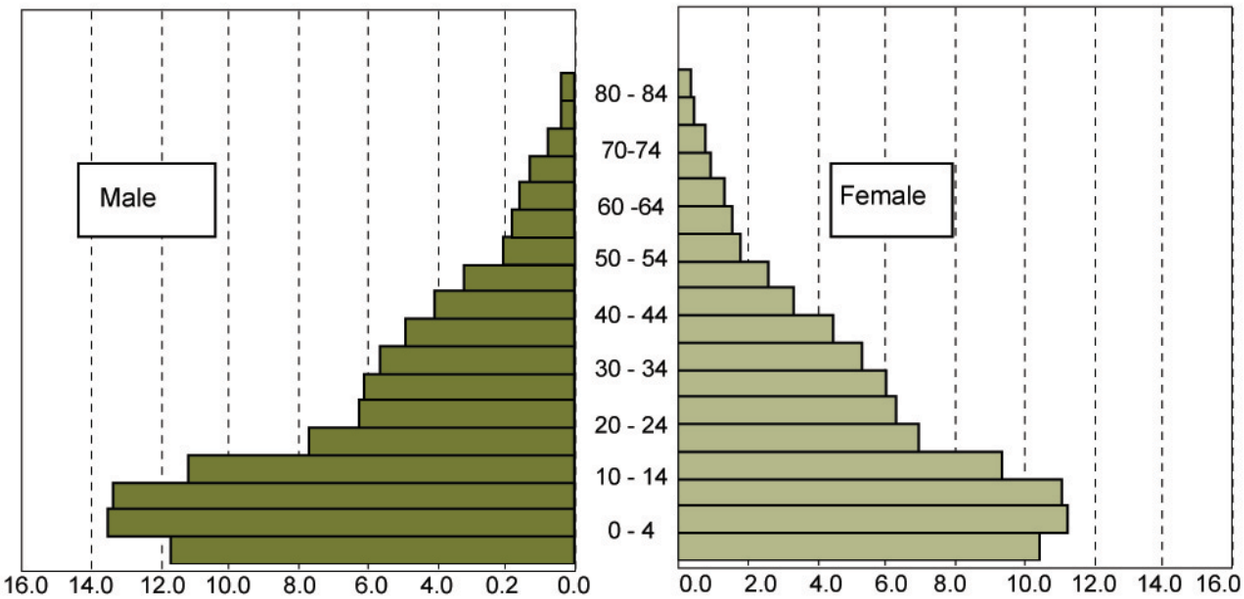
The most recent population pyramids document the changing structure of Belize's population. The trend depicts decreasing birth and mortality rates. Amidst demographic changes such as decreasing crude birth rates and population growth, Belize has experienced some important changes in disease burden in the past decade. Overall, the health of Belize's population has improved in the past decade as shown in Table 1.

Figure 1. Population pyramids by sex (proportional distribution), Belize 2003 and 2008

2003



2008



Source: Epidemiology Unit, Ministry of Health

The total fertility rate (TFR) per woman in the period 2001 to 2007, decreased by 5.7%. The crude birth rate has shown a relative decrease of 15.0% from one period to the next. The crude birth and death rates, coupled with the 3.3% growth rate, indicate that Belize is in the third phase of Demographic Transition, which is characterized by a stable crude death rate, declining crude birth rates, and continued population growth. This phase of the transition is also characterized by an increasing burden of non-communicable and degenerative diseases on population mortality related to lifestyle, behaviors and an increasing life-span. This is combined with the continued occurrence of communicable diseases related to poverty, sanitation, environmental conditions, malnutrition and sexual risk behaviors.[1]

1 Boutayeb A. The double burden of communicable and non-communicable diseases in developing countries. Transactions of the Royal Society of Tropical Medicine and Hygiene 2006; 100: 191-199.

Table 1. Demographic Trends, Belize 2000-2004 and 2005-2007

Indicator / Period	2000-2004		2005-2007	
	Male	Female	Male	Female
Total Population (Mid-period)	134,390	131,810	151,050	150,600
Urban Population	64,743	66,485	74,450	78,350
Indigent Population	N/A		N/A	
Population less than 15 years old	55,390	53,683	60,978	59,458
Population more than 60 years old	7,980	7,613	9,878	9,318
Annual population growth per year	N/A		3.3	
Total fertility	3.5 (2001-2004)		3.3	
Crude Birth x 1000 persons	28.0		23.8	
Total Deaths	833	584	808	572
Crude Mortality	5.6	3.9	5.4	3.9
Life expectancy	66.7 (2001)	73.5 (2001)	69.4	75.2
Migratory Balance	N/A	N/A	N/A	N/A

Source: Ministry of Health, Belize.

1.1.2 EPIDEMIOLOGICAL ANALYSIS

Advances in vaccine coverage have greatly reduced the impact of vaccine preventable diseases and overall mortality due to transmissible diseases has declined. However, some diseases such as respiratory and intestinal infections continue to be a significant cause of mortality in the population less than 5 years, and conditions such as dengue and HIV continue to be concerns in the general population. Maternal and infant mortality have increased, as has non-communicable disease mortality.

There have been no reported cases of measles or poliomyelitis since 1981 in Belize. The last cases of neonatal tetanus, non-neonatal tetanus, and congenital rubella syndrome were reported in 1997. No confirmed cases of diphtheria have been documented since 1982. The risk of these diseases has been reduced through a steady increase in vaccination coverage with BCG, DPT, OPV, and MMR antigens between 2000 and 2007. In 2007, national coverage rates for each of these vaccines were 95.0% or greater.

The rate of hospitalizations due to clinically diagnosed influenza has decreased dramatically. Hospitalization rates ranged from a median 19.2 cases per 10,000 population between 2000 and 2004 to 0.03 cases per 10,000 population between 2005 and 2007. However, despite the decrease in the rate of hospitalizations due to clinically diagnosed influenza in the past decade, the number of cases not resulting in hospitalization increased dramatically from 485 cases in 2001 to 2,249 reported cases in 2007. Although this increase may be partly attributable to improved reporting during that period, the trend indicates that the burden of illness due to influenza is significant. Acute respiratory infections (ARI) remain a leading cause of death in the age group less than 5 years old, representing 2.5% of all deaths in infants and 8.7% of all deaths in children 1 to 4 years of age in 2007.

Table 2. Morbidity and Risk Factors, Belize 2000-2004 and 2005-2007

Indicators	2000-2004		2005-2007	
	Urban	Rural	Urban	Rural
Underweight prevalence at birth (%)	4.2		6.9	
Fertility rate in adolescent women (15-19 years)	N/A		84.2	
Percentage of birth assisted by skilled personnel	N/A		89.2	
Annual hospitalizations due to Influenza (per 10,000 population)	19.2		0.0	
Annual number of confirmed dengue cases	14	10	53	81
Annual number of confirmed malaria cases	131	985	79	792
Annual incidence of TB (per 10,000 population)	5.1		3.0	
Annual incidence of HIV/AIDS (per 10,000 population)	16.2		14.7	
Ratio of HIV/AIDS cases (male/female)	1.2		1.3	
Annual incidence of malignant neoplasm of the lungs (per 10,000 population)	0.08		0.31	
Annual incidence of malignant neoplasm of the breast in women (per 10,000 population)	0.2		0.6	
Annual incidence of malignant neoplasm of the cervix (per 10,000 population)	1.0		0.9	

* There were 8 cases of dengue that had no locality for 2003.
Source: Ministry of Health, Belize.

With respect to vector-borne diseases, Belize has all four serotypes of the dengue virus. There were 14 confirmed dengue cases in urban areas and 10 confirmed cases in rural areas between 2000 and 2004. However, dengue cases increased four-fold in urban communities and eight-fold in rural communities in the subsequent period, with 53 cases in urban and 81 cases in rural areas. With dengue serological testing available at the country's national referral laboratory since 2007, the number of confirmed cases is expected to continue to be greater than in previous years when no diagnostic test was available in the public health system. On the other hand, malaria cases have decreased by 40.0% in urban populations and by 20.0% in rural communities from one period to the next. The number of cases was 7 to 10 times greater in rural communities than in urban communities in both periods.

HIV and AIDS pose major challenges to national development. Belize's epidemic is classified as generalized, however pockets of infection are believed to exist in high risk groups such as Men Who Have Sex with Men

(MSM), Female Sex Workers (FSW), partners of clients of sex workers, and female partners of MSM. In 2007, adult prevalence of HIV was estimated to be 2.1%, which is the highest in Central America and the third highest in the Caribbean. However, annual incidence has shown a slight decrease in the period 2005 to 2007. HIV continues to infect men more frequently than women, with a male-to-female ratio of 1.2 and 1.3 in 2000 to 2004 and 2005 to 2007, respectively.

With respect to non-communicable diseases, cancers were not among the top ten causes of mortality overall in the last decade. However, malignant neoplasms of the lung and of the breast have shown a notable increase. Hospitalizations due to both cancers increased four-fold during the two periods under review.

Table 3. Mortality Rate per 10,000 Population, Belize 2000–2004 and 2005-2007

	General	Maternal Deaths*	Communicable Disease	TB	AIDS	Malaria	Circulatory System Diseases	Malignant Neoplasms	External Causes
Periods									
2000-2004	4.8	64.0	0.7	0.1	0.3	0.0	1.2	0.5	0.8
2005-2007	4.6	85.3	0.6	0.0	0.3	0.0	1.0	0.6	0.8
Sex									
Male	5,139	N/A	909	68	370	2	1,457	631	1,438
Female	5,669	43	599	30	185	1	1,354	587	331
Geographic Zones									
Urban 2001-2004	3,064	N/A	N/A	N/A	N/A	1	N/A	N/A	N/A
Rural 2001-2004	1,968	N/A	N/A	N/A	N/A	1	N/A	N/A	N/A
Urban 2005-2007	2,389	N/A	366	17	172	1	577	271	390
Rural 2005-2007	1,737	N/A	206	13	56	0	375	233	301

NB: There were 88 deaths from 2001-2004 with unknown community address.
NB: There were 28 deaths from 2005-2007 with unknown community address.
NB: There were 3 unknown communities for Malignant Neoplasm, 1 unknown community for Circulation and 12 Unknown for External Causes for the period 2005-2007.
* Maternal deaths per 10,000 live births.
Source: Ministry of Health, Belize.

No data are available for the period 2000 – 2004, but for the period 2005 - 2007, the cumulative percentage of births assisted by a skilled attendant was 89.2%. Maternal mortality has also shown an increase in the last decade. The median maternal mortality ratio increased from 64 per 10,000 live births for the period 2000-2004, to 85.3 per 10,000 live births for the period 2005-2007 which is a 33.0% relative increase. It must be noted, that these percentages represent a very small number of deaths (maximum 10 maternal deaths between 2000 and 2007).

Table 4. Infant Mortality per 10,000 Population, Belize 2000-2004 and 2005-2007

Indicators	Neonatal (0 -28 days)	Post Neonatal (28 days to 1 year)	Infant (0 to 1 year)	Post Infant (1 to 4 years)	Total (1 to 5 years)
Period					
2000-2004	10.4	6.5	16.9	4.3	21.2
2005-2007	10.9	7.5	18.4	5.1	23.5
Causes					
Infections originating in the perinatal period (birth trauma, asphyxia and premature birth)	384	11	395	0	395
Intestinal infections (EDA)	3	37	40	10	50
Respiratory infections	16	66	82	23	105
Congenital anomaly	77	45	122	13	135
Nutrition deficiency	4	25	29	10	39
Other causes	55	167	222	158	380
Geographic Zones					
Urban (2001-2004)	171	88	259	53	312
Rural (2001-2004)	141	92	233	64	297
Urban (2005-2007)	111	77	188	43	231
Rural (2005-2007)	118	92	210	54	264

NB: There was 1 unknown community for post neonatal mortality and 1 unknown community for post infant mortality for the years 2005-2007.
Source: Ministry of Health, Belize.

Infant and neonatal mortality rates showed a slight increase between 2000 and 2007. The most notable increases were in post neonatal (16.0% relative increase) and post infant mortality rates (19.0% relative increase). In each age group, the predominant causes of death were infections originating in the perinatal period (0.0%-71.2% of all deaths), followed by either respiratory infections (3.0%-18.8% of all deaths) or congenital anomalies (6.1%-14.3%), then followed by intestinal infections (6%-10.5%).

1.1.3 MILLENNIUM DEVELOPMENT GOALS[2]

In 2008, an assessment of Belize's status in relation to achieving the Millennium Development Goals (MDG) was conducted. According to this report, of the fifteen goals and targets, only two were determined to be at a stage where the goal will probably be achieved by 2015. These were:

1. Goal 2, Target 3: completion of a full course of primary education for girls and boys.
2. Goal 7, Target 10, Indicator 30: halve the proportion of people without access to improved drinking water.

The supportive environment for achieving both these goals was determined to be strong.

Eight of the goals and targets were determined to be at a stage where they could potentially be achieved by 2015. These were:

1. Goal 3: eliminate gender disparity and empower women.
2. Goal 4, Indicators 13, 14: reduce infant and under-five mortality by two-thirds.
3. Goal 5: reduce maternal mortality rate by three-fourths.
4. Goal 6, Target 8: halt and reverse the incidence of malaria and other infectious disease.
5. Goal 7, Target 9: integrate principles of sustainable development into policies and programs.
6. Goal 7, Target 11: achieve significant improvement in the lives of slum dwellers.
7. Goal 8, Target 17: provide continued access to affordable, essential drugs.
8. Goal 8, Target 18: make available the benefits of new technologies, especially information and communication.

The supportive environment for achieving these goals was determined to be fair.

Five of the goals and targets were determined to be at a stage where they are unlikely to be achieved by 2015. These were:

1. Goal 1, Target 1: halve the number of persons living in poverty.
2. Goal 1: eliminate extreme poverty.
3. Goal 6, Target 7: halt and reverse the spread of HIV/AIDS.
4. Goal 8, Target 15: deal comprehensively with the debt problem.
5. Goal 8; Target 16: develop and implement strategies for work for youth.

The supportive environment for achieving the first four of these goals was determined to be weak, while the supportive environment for achieving the fifth unlikely goal was determined to be fair.

Belize is in a position where several of its MDG targets can potentially be achieved by 2015, however only two of the goals seem probable in the time remaining. Those targets related to poverty, strengthening global partnerships, and HIV/AIDS with its significant economic implications remain unlikely.

2 Paradigm Development Consulting. Millennium Development Goals: First report. Belmopan: Ministry of National Development. BRC: Belize; 2005.

Table 5. Progress towards Achieving selected MDG, Belize 2005

Goals	Targets	General Status	Main Challenges
Goal 1: Eradicate extreme poverty and hunger	Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.	**Far Behind** as it relates to halving the percentage of persons living below the poverty line. (This target is not relevant to Belize as the minimum wage is US$ 10 for an 8 hour day).	▪ Unstable economic environment. ▪ Chronic poverty among the indigenous population. ▪ Influx of immigrants from neighboring countries.
	Halve, between 1990 and 2015, the proportion of people who suffer from hunger.	**Far Behind** as it relates to eradicating extreme poverty (ie. those below the indigent line as there are limited cases of hunger).	▪ Increasing poverty in urban areas. ▪ Identification of viable economic opportunities for vulnerable groups. ▪ Changing weather patterns affecting food production.
Goal 2: Achieve universal primary education	Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.	**Well Poised.**	▪ Ensuring that slippage does not occur. ▪ Improve the quality of education. ▪ Lower cost of education to poor families.
Goal 3: Promote gender equality and empower women	Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015.	**Well Poised** as it relates to education but lagging **Behind** in women's participation in employment and decision making.	▪ Stem the gap that is threatening boys' secondary and tertiary education. ▪ Ensure equal access to economic opportunities for women.
Goal 4: Reduce child mortality	Reduce by two-thirds, between 1990 & 2015, the under-five mortality rate.	**Well Poised.**	▪ Maintain current trends. ▪ Ensure access to quality services in rural areas. ▪ Improve registration of infant deaths.
Goal 5: Improve maternal health	Reduce the maternal mortality ratio by 75% between 1990 and 2015.	**Reasonably Poised.**	▪ Improve level of participation in pre- and ante natal clinics. ▪ Build capacities at local level for birth attendants. ▪ Increase information and education on contraceptive use and family planning.

Goal 6: Combat HIV/AIDS, malaria and other diseases	Have halted by 2015, and begun to reverse, the spread of HIV/AIDS.	**Behind.**	▪ Combat stigma and discrimination. ▪ Change attitudes and behavior to reduce risk. ▪ Effectively target girls and ensure that they are protected. ▪ Empower PLWHA and change messages to those that give hope to PLWHA.
	Have halted by 2015, and begun to reverse the incidence of malaria and other major diseases.	**Behind.**	▪ Improve surveillance. ▪ Stem increasing trend in major non-communicable diseases.

Source: Paradigm Development Consulting. Millennium Development Goals: First report. Belmopan: Ministry of National Development. BRC: Belize; 2005.

1.2 DETERMINANTS OF HEALTH

1.2.1 POLITICAL DETERMINANTS

One of the determinants of health is the political context in which the health system operates. Politics has a direct relation to the health situation and the performance of the health system. The global economic situation and changes in national and local governments are factors that impact health investment and national health priorities and policies. Belize is geo-politically and historically unique in its position of being a part of two sub-regional bodies: Central American Integration System (SICA), and the Caribbean Community (CARICOM).

Belize is a sovereign state governed by the principles of parliamentary democracy based on the British Westminster system. The titular head of state is Queen Elizabeth II, represented by a Governor General. A Prime Minister and Cabinet constitute the executive branch of the government while a National Assembly consisting of a 31-member elected House of Representatives and a 12-member appointed Senate form a bicameral legislature. The Cabinet consists of Ministers appointed by the Governor General, on the advice of the Prime Minister. The relevant ministries define the national mechanisms for planning and managing development and social policies.

A stable nation, Belize has political and social challenges that affect the health situation, including poverty and unemployment, slow economic growth, insufficient human resources, market incentives and globalization, partisan political tensions, and border disputes. As part of the fight against poverty, the third Country Poverty Assessment (CPA) is currently being implemented with the assistance of the Caribbean Development Bank

(CDB) to target more of the benefits from its development interventions to the poor.[3] The CPA is also being conducted to assess the current conditions affecting the welfare of people, and identify policies, strategies, action programs and projects that would reduce the extent and severity of poverty in Belize.

The CPA is intended to be used by the Government of Belize (GOB) and development organizations to enhance social development and improve overall quality of life for all social groups. Results from previous CPAs have been used in the design of poverty reduction initiatives such as National Poverty Elimination Strategy and Action Plan 2007-2011 (NPESAP), Social Investment Fund (SIF), rural enterprise development projects, and human settlements projects. Results have also been used to inform the design of other projects in education, agriculture, and health. In addition, CPAs have guided the reform of social policies and institutions and the redesign of various programs, such as the CDB-financed Basic Needs Trust Fund Programme. The major components of the Health Sector Reform Project (HSRP) are:

i. Sector restructuring
ii. Service rationalization and improvement
iii. Financing strategy

In the implementation of the HSRP, the re-organizational development of the MoH included decentralization of the Health Regions.[2] This initiative continues to be a challenge especially for delivering public services since a balance needs to be struck among ensuring high service quality levels, having human resources capacity, and sustainability.

The National Security Strategy and the National Development Framework: Horizon 2030 are current inter-sectoral initiatives promoted by the government with key inclusion of the health sector. While the Horizon 2030 plan is in its early stage of development, the National Security Strategy is in the implementation stages, with the goal of being committed to a national common agenda to establish “a safe, secure Belize at peace with itself and its neighbors, where the security environment allows the development of a peaceful and democratic society that utilizes its human and natural resources to ensure social justice, ethnic harmony, security, stability and prosperity.”[3]

1.2.2 ECONOMIC DETERMINANTS

Belize, like most countries, exhibits “mixed economy” characteristics. The government has traditionally kept control of public services and some basic industries, in order to guarantee essential services to all citizens. The global trend however, has progressively gravitated towards privatisation of these services, and Belize has generally followed this trend in the privatization of power, water, and marine port and airport services. The government however, has maintained control over those industries that appear to lack the ability to raise sufficient capital investment from private sources.

3 Halcrow (2008): Caribbean Development Bank and Government of Belize. Belize Country Poverty Assessment Detailed Work Plan Report.

Belize's exports have traditionally been agricultural in nature, counting sugar, citrus, bananas, papayas and more recently marine products as its main exports. However, the secondary sector is quickly expanding as petroleum extraction has provided a significant contribution to the GDP. Main trading partners have remained essentially the same with Central America topping the list in 2007 as opposed to the United States of America in 2001. Other trading partners include the United Kingdom, other EU countries and Mexico.

In the year 2000, Belize had an unprecedented GDP growth of 13%, but following several natural disasters, crop disease, higher fuel prices, a slowing global economy, and reductions in the central government's expenditures, the country had a growth rate of only 1.7% in 2007. Inflation rose by 2.6% during the same year despite lower import duties and decreases in the US export price index. It is worth noting that although GDP has increased exponentially from 1990 to 2007, so has the foreign debt in relation to GDP, and its corresponding servicing, which was set at approximately 23.2% in 2007.

The total unemployment rate in Belize in 2007 was 12.1%. The unemployment rate among men was 8.4% while among female it was 18.6%. Among youths, the unemployment rate was 24%. Data on income distribution for males and females were not available.

1.2.3 SOCIAL DETERMINANTS

Results of the country poverty assessment of 2002 indicated that 33.5% of the country's population was poor and 10.8% was extremely poor or indigent. Belize has an income inequality ratio of 4.0% to 5.9% which means that the top 20% of the population earns between 4 to 5 times as much as the bottom 20% of the population. Poverty in rural areas (44.2%) surpassed urban areas (23.7%). The Toledo District had the highest level of poverty (79.0%) and the Belize District had the lowest (24.8%). Among ethnic groups, 76.0% of Maya are poor, 30.0% of Mestizos, 26.5% of Creoles, and 24.3% of Garifuna. Overall, 30% of the labour force can be categorized as "working poor". According to the National Poverty Elimination Strategy 2007-2011, poor families were most likely to have the lowest educational levels and the least access to health care services. In 2006, with a human poverty index (HPI) of 17.5, Belize ranked 70th among 135 developing countries.[4] Belize's human development index (HDI) was .771 giving it a rank of 88th out of 179 countries.[5] In respect to child labor, findings show that 6.3% of children between 5 -14 years are engaged in child labor in the rural areas in the agricultural sector.[6]

The total adult literacy rate in 2005 was 94.7% (94.8% for females and 94.6% for males). Primary school education is mandatory in Belize, and most public schools operate under a Church-State system. The net enrollment rate for primary school-aged students[7] is estimated at 89.9% for the 2002 school year (91.7% females and 88.2% males). The primary school gross enrollment rate[8] was 104.5%[9] in 2002 and 157.5%

4 2008 Statistical Update – Country Fact Sheets- Belize. United Nations Development Program.
5 2008 Statistical Update – Country Fact Sheets- Belize. United Nations Development Program.
6 2007 Findings on the Worst Forms of Child Labor- Belize. United States Department of Labor found at www.unhcrh.org.
7 Number of children 5-12 years enrolled in primary school, expressed as a percentage of all children 5-12 years.
8 Number of children enrolled in primary school, expressed as a percentage of all children 5–12 years.
9 The 104.5% figure is explained because some children attending primary school are 12 yrs and older.

in 2006. Between 2000 and 2001, overall enrollment in secondary schools increased by 5%, with a further increase of 6% between 2001 and 2002. Males comprised 49.0% of overall enrollment. The total dropout rate in 2004-2005 period at the primary school level was 0.9%; for the same period in secondary schools, the dropout rate was 10.4% overall.[10]

Access to safe drinking water has improved over the years. In urban areas, coverage increased from 95% in 1990 to 99.5% in 2004 and has remained steady since. In rural areas coverage increased from 51% in 1990 to 90% in 2008. The rural areas of the Belize and Toledo Districts have the highest percentage of persons without access to potable water.

Limited progress has been made in sanitation, especially in the rural areas. In 2001, 54.8% of all households had access to sewer systems or septic tanks while 39.7% used pit latrines, 10% shared toilet facilities, and 3.5% did not have any toilet facility. In that year, adequate sanitation coverage was 68.1% for urban areas and 25.8% in rural communities; slightly more than 65% of all rural households used pit latrines, compared to approximately 35% of the urban households (except for Belize City). In 2007, 64.5% of households had adequate sanitation connected to a sewer system or to septic tanks, but approximately 32.5% were still using pit latrines.

Increased waste generation and inadequate waste management represent a major national problem. Belize produces an estimated 112,000 tons of municipal solid waste annually with a per capita generation of 1.32 kg/day.[11] Waste generated by the major industries (citrus, banana, sugar, and shrimp) for the period 1995-2000, ranged from 400 to 650 thousand metric tons.

The challenge for Belize is to ensure improved sanitation coverage, particularly in rural areas, as proper facilities to dispose of solid waste do not exist countrywide. A national solid waste management plan currently awaits implementation. In June, 2008, the Government announced its intention to develop a Water and Sanitation Strategic Sector Plan, with the support of the Inter-American Development Bank (IDB).

Gender-based violence and child abuse also remain public health challenges. In 2007, 1,148 cases of domestic violence were reported. Women aged 30-39 years and 20-29 accounted for the highest number of cases (31.3% and 31.1% of total cases respectively), followed by the age groups 40-49 years (22.3%) and 15-19 years (6.5%). Between 2001 and 2007, the rate of domestic violence increased. The highest rate was reported in 2003 (45.3 cases per 10,000). Although the median rate for that period was 33.2 cases per 10,000 population, the rates increased by 37.8% from 2001 (26.74 / 10,000) to 2007 (36.85 / 10,000).

10 Belize Education Statistics at a Glance 2005-06, Ministry of Education.
11 National Solid Waste Management Project, NSWMP, 1999; CSO 2002.

1.2.4 ENVIRONMENTAL DETERMINANTS

The MoH forms part of a decision making, policy development and enforcement body through a multisectoral approach with key actors namely: Ministry of Agriculture, Department of Meteorology, Coastal Zone Management Authority (CZMA), Belize Bureau of Standards (BBS), Department of the Environment (DoE), and the Ministry of Economic Development.

Through the Public Health Act Chapter 40, the MoH oversees problems related to the following six programmatic areas: Water Quality, Food Safety, Control of Communicable Diseases, Animal, Environmental, and Port Health. The enforcement of this Act is through existing Public Health Standards and management practices.

The MoH tracks all suspected and confirmed cases of dengue, malaria and chagas. Fogging of areas with high mosquito infestation is routinely done. The MoH is not involved in the surveillance nor has any existing programs to monitor environmental factors that pose risks to the health of the population. The Pesticide Control Board deals mostly with collection of information, surveillance, prevention and control activities related to pesticides use.

Several legal instruments, Public Health, Air Pollution, and Green House Acts, provide for the regulation of environmental determinants of health, including problems related to disposal of excreta and waste. The Public Health Act and its subsidiary Acts provide the regulatory framework that deals with monitoring of inland waste disposal. DoE is the agency responsible for the regulation of the disposal of toxic and radioactive products. The public health legislation is currently being revised to reflect the new environmental challenges and to allow for better enforcement of regulations.

2. FUNCTIONS OF THE HEALTH SYSTEM

2.1 STEERING ROLE

2.1.1 CONDUCT/LEAD

The MoH is responsible for leading the health sector. It develops policies and proposes legislations, procedures, and standards to support policy implementation. Presently, a limited number of formal, written policies are available and will be addressed through the strengthening of the Policy Analysis and Planning Unit and the establishment of the Licensing and Accreditation Unit. The MoH Strategic Plan, “Health Agenda 2007-2011,” sets out goals and targets to be achieved and programs and activities to be implemented during this period.

The MoH mission statement is “The National Public Health System provides quality primary, secondary, tertiary health care and community health services through a network of regulated public facilities and programs.” Its vision statement is “We envision a national health care system which is responsive to national, regional and local needs, based on equity, affordability, accessibility, quality and sustainability in effective partnership with all sectors of government and the rest of society, in order to develop and maintain an environment conducive to good health”.

The national public health system delivers services through a network of institutions at the primary, secondary, and tertiary levels. The current emphasis is on the primary and preventive care focusing on the prevalence of lifestyle and behavior related conditions as indicated by Belize’s epidemiological profile. The MoH has developed an information system to provide real time information. Data from the information system will be used in analyzing and planning, implementing, and evaluating interventions.

The MoH delivers on its mandate by collaborating with a broad spectrum of stakeholders, and mobilizes available human, material and financial resources. In addition, the MoH accesses technical support from regional and international agencies, and through bilateral agreements with countries such as Cuba, Mexico, Guatemala, Taiwan, and Nigeria.

2.1.2 REGULATION

The MoH presently works under the legal framework of two primary pieces of legislation, the Public Health Act, and the Health Services and Institutions Act and their Subsidiary Acts. These Acts assign the Director of Health Services as the competent authority and guides regulation of the MoH directly and through its regional health management teams. Sanitary Health Standards for public and private establishments are monitored by the MoH and the Department of the Environment. Sanctions are enforced as outlined in the Acts. Central Government entities such as the Ministries of Local Government and National Security provide support for the enforcement functions at the national and sub-national levels.

The need to review and develop new legislations that would facilitate the reorganization of health service delivery became evident after a series of consultations working with the Health Sector Reform Project. The General Health Act, which is currently in draft form, will serve to further strengthen the stewardship role of the MoH.

An important regulatory function of MoH is the certifying of health professionals. The licensure of physicians and opticians is regulated by the Belize Medical Council, licensure of nurses and midwives by the Nurses and Midwives Council of Belize, and Pharmacists through the Pharmacy Board. An Allied Health Professionals' Bill has been developed and tabled for legal review. Enactment of this bill will provide the framework for certifying allied health professionals.

2.1.3 DEVELOPMENT OF THE ESSENTIAL PUBLIC HEALTH FUNCTIONS

Public health is a core element of governments' attempts to improve and promote the health and welfare of their citizens. The Essential Public Health Functions (EPHF) are the fundamental set of actions that should be performed in order to achieve public health's central objective: improving the health of populations. The Pan-American Health Organization/World Health Organization (PAHO/WHO), through the Public Health in the Americas Initiative, defined 11 EPHF necessary to strengthen public health practice, and developed a methodology that allows countries to evaluate their public health capacity. In 2000, with PAHO assistance, the MoH conducted an EPHF performance evaluation in Belize. The evaluation showed that EPHF 7 scored the highest, followed by EPHF 11, and 10, while those with the lowest scores were EPHF 9, 6, and 8.

A plan of action was developed to improve the performance of the EPHF with the lowest scores and maintain those performing well. In 2003, the MoH led a review of the plan and evaluated its progress. Progress was not satisfactory and a decision to focus on the three EPHF that scored the lowest on the 2001 evaluation was made.

To address EPHF 6, a Regulatory Unit was established in 2007 to carry out licensing functions, including inspecting and assessing medical facilities, services, and equipment against established standards. The review and updating of existing legislation for health professionals has been ongoing. New legislations have been developed, such as the Allied Health Professionals Bill and a General Health Act.
To address EPHF 8, human resources development and training in public health has been ongoing and conducted in collaboration with the University of Belize (UB). Public Health inspectors/environmental health

officers, public health and rural health nurses, pharmacists, medical laboratory technologists continue to be educated at UB. A Human Resource Observatory is being developed with a plan of action to further address the needs in this area as a follow-up of the Toronto Call for Action.

To address EPHF 9, quality assurance of personal and population based health services is carried out by the Regulatory Unit and National Health Insurance (NHI). Clinical protocols have been developed and implemented for 40 medical conditions. A Complaints Policy and Reporting and Resolution Mechanism has been developed, and a Patient's Bill of Right and Responsibility instituted.

2.1.4 ORIENTATION OF FINANCING

The MoH is financed through general revenues from GOB's consolidated funds administered by the Ministry of Finance. The MoH submits an annual budget on behalf of its Health Regions and programmatic areas and once approved, each district within a Health Region has a certain degree of autonomy over budget execution. A National Health Insurance (NHI) scheme, which covers a primary care package of services, is functional in the south-side of the Belize District and the Southern Health Region, the most poverty-stricken area of the country. Sustainability of the NHI has not been ensured, and roll-out to the rest of the country is uncertain.

2.1.5 HARMONIZATION OF SERVICE PROVISION

Harmonization of service provision refers to the MoH's capacity to promote complementarity among service providers and user groups so as to extend equitable and efficient health care coverage. The MoH has established basic health service delivery standards for both rural and urban health, as well as promoted and ensured the integration and coordination of primary, secondary, and tertiary levels of care. The MoH is the principal provider of health services in the country therefore minimizing duplication of services.

The National Health Plan 1996-2000 was developed to guide standardization of health care service delivery across all levels of care. As part of health sector reform, the MoH reorganized health services into four health regions (Northern, Central, Western, and Southern). A regional health manager along with a management team is responsible for coordinating the delivery of population-based health services to the communities in their respective geographical areas. The MoH utilizes regional Health Care Action Plans to standardize health service provision among all health care providers in the four health regions. The MoH makes available management models for the different decentralized public agencies that deliver health services.

During 2001-2004, significant developments have occurred to support standardization, such as institution of protocols for the prevention of mother to child transmission of HIV/AIDS, family violence protocols, psychotropic drug use protocols, and national policy. The MoH has also initiated the use of Health Service Level Agreements (SLA) in all four health regions for provision of primary, secondary, and tertiary health care. The goal of SLAs is to strengthen the optimal provision of health services for all populations within the framework of access, equity, quality of care, efficiency, patient satisfaction, and harmonization of health care service delivery.

2.2 FINANCING AND ASSURANCE

2.2.1 FINANCING

Belize's public health system is primarily financed through tax revenues, and comprises three main institutions: MoH, Social Security Board (SSB) and NHI. NHI is the purchasing arm of the MoH and is housed within SSB. Hence, the cost of care is considered "free" in most instances, and only incurs a symbolic "price" in others.

The estimated national expenditure has increased drastically from 1990-2007, as has the public expenditure on health (PEH), although not at the same rate. If measured as a percentage of GDP, PEH increased from 3.2% in 1990-1994 to 5.4% in 2005-2007. PEH constituted 20.6% of total public expenditure in 2007. Capital II and III investments are included to reflect the government's commitment to strengthen social programs and health sector reform implementation. PEH per capita was US$243.57 in 2007, of which approximately 6.38% corresponded to the NHI fund. In terms of private expenditure, data are not available. Out-of-pocket expenditure was estimated as averaging 24.9% for 1995-1999 and 21.7% for 2005-2007. It is interesting to note that that although this particular type of expenditure has fluctuated over the years, it has been steadily decreasing since 2001 when the NHI was implemented. Further studies are needed to determine if the NHI is responsible for this reduction.

Table 6. Health System Financing (Us Dollars), Belize
1990-1994, 1995-1999, 2000-2004, 2005-2007

	1990-1994	1995-1999	2000-2004	2005-2007
Estimated National Expenditure	$ 325,926,842.40	$ 387,186,881.20	$ 525,328,228.00	$ 691,968,712.00
Public Sub-Sector (total) Expenditure				
Ministry of Health	$ 21,579,439.80	$ 31,087,754.00	$ 39,308,574.60	$ 63,559,830.67
Social Security	$ 10,676,613.00	$ 18,467,176.80	$ 33,191,165.80	$ 51,063,732.33
Others (NHI)	N/A	N/A	$ 5,030,760.25	$ 7,808,038.33

Sources: MoH, and Ministry of Finance.

2.2.2 ASSURANCE

The MoH has established a network of service outlets to facilitate access for the majority of the population to a specified package of health services. The NHI currently assures an explicit package of services to about a third of the population. The SSB provides coverage of work-related injuries/illnesses. Standards are being developed to regulate the quality of inpatient and outpatient health services delivery. The MoH along with NHI monitors compliance and performance of the health system.

The Constitution of Belize, and the Medical Services and Institutions and the National Health Insurance Acts provide for the right to access health care in Belize. Regulations for the NHI outline beneficiaries of the basic package or entitlements of health services at the primary and secondary levels. Individual providers and institutions are contractually obligated to provide health care or face legal sanctions if they do not comply with the provisions outlined in the Acts, contracts and standards.

Benefits that are assured to the population of Belize include public goods, safe water, wholesome food, vaccination of children against immuno-preventable diseases, micronutrients, maternal health, and growth promotion of children, to mention a few. A package of services that includes the promotion of wellness and primary care for the prevention and control of communicable and non communicable diseases is provided by both the public and private sector participating in the NHI. The public health sector not part of the NHI is also mandated to provide this package of services. The MoH is responsible for the provision of these benefits to the entire population.

Belize's public health system provides primary, secondary and limited tertiary care. The private sector also has a parallel structure and provides some additional tertiary care and imaging services not available in the public system. Persons in need of these services can purchase out of pocket from the private sector or the MoH purchases these services on their behalf.

Significant oversight of service provision occurs; however, the same is not applied to the financial aspect of health services including liquidity, transparency, and collection of co-payments. Significant efforts have been made to monitor and evaluate the quality of care provided by the private sector in the areas of maternal health and primary care, the latter exclusively for private providers participating in the NHI.

Since 1990, the Government of Belize through the MoH provides universal coverage for health services to the population. Relevant health services are provided using the life cycle approach with no distinction by gender or place of residence. Community outreach services complement the institutional primary care level of service. This includes maternal, child, mental, and environmental health services. The private sector covers about 15% of the population. The NHI purchases services for 35% of the population, in the south side of Belize City and both southern districts (Stann Creek and Toledo). The remaining 65% of the population is covered by the national public health system.

Health services are generally provided free to the population through regional health facilities nationwide. These facilities are funded through general revenues. NHI purchases a defined primary care package from both public and private facilities. NHI source of funds originates from general revenues, Social Security Board, and an allocation from the MoH's budget. This purchasing fund is limited to the southern districts and the southern portion of Belize City. NHI monitors the quality of care provided through performance indicators and reduces fiscal inefficiencies, as all persons within specified "health zones" are eligible for coverage. A token co-payment is collected as preventative barrier to moral hazard. This token payment is waived if it becomes a barrier to the access of care. In this model of delivery and purchase of health care, the general practitioner is the gatekeeper and is the referrer of patients to specialists or tertiary care, reducing adverse selection at the point of entry into the system.

Payment for services purchased at public facilities is through general revenues or the Ministry of Finance, while payment to private providers consists of out-of-pocket revenues at the point of service or through private insurance. Two specific specialist services are contracted by the government from a private hospital; these are haemodialysis and lithotripsia procedures for a pre-determined patient load.

2.3 SERVICE PROVISION

2.3.1 DEMAND AND SUPPLY OF HEALTH SERVICES

In 2007, women utilized health services more than men. Women are typically in greater need of health care services because of pregnancy, child bearing, and child care in early years of children's growth. This pattern is observed at both primary and secondary care services. The total number of visits was 206,854 for 1st Level Care Units, and 20,512 for 2nd Level Care Units.

Table 7. Use of Health Services (%). Belize 2007

Level of care	Sex		Geographic Area		Ethnic Group				Age groups				
	Men	Women	Rural	Urban	Whites	Afro-descendants	Indigenous	Others	<5	5-14	15-49	49-64	>65
1st level	41.3	58.7	48.8	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2nd level	31.8	68.2	43.8	56.2	0.20	64	6.8	29	16	6	62	7	9

Sources: MoH's Belize Health Information Service.
MoH Epidemiology Unit.
Statistical Institute of Belize.

A review of health services utilization in Belize shows greater usage of primary care facilities for rural areas. Analysis of the parameters for primary and secondary care vs. geographical area shows that most outpatient facilities are located in Belize City. The reason is the demand of Belize City's large underprivileged populations for health services and the reciprocal number of primary level care units in urban areas to meet demand.

In examining the pattern of utilization by ethnic groups, three significant trends are observed. First, the principal target population is being addressed at the secondary care centers, i.e., hospitals. The second is the apparent "extreme" health need of this population. The third is the impact on Belize's secondary health care establishments. No statistics are available for utilization of primary health care units by ethnic group.

In terms of utilization of the health services by age group, the groups that most needed and sought care are those less than five and those more than 65 years (the youngest and oldest). Both the 5-14 and 49-64 age groups have similar health needs as the older age group. The 15-49 age group, crossing a span of 34 years, leaves some important health indices undiscovered and perhaps a group in specific need of health services.

Table 8. Number and Capacity of Treatment Facilities, Belize 2007

Indicator	Public Sector		Private Sector	
	(No. Centers)/ 1000 Inhabitants	(No. Beds)/ 1000 Inhabitants	(No. Centers)/ 1000 Inhabitants	(No. Beds)/ 1000 Inhabitants
HOSPITALS				
High level complexity (KHMH)	(1) 0.003	(125) 0.42	N/A	N/A
Medium/basic specialties (BZ Reg. Hosp.)	(3) 0.01	(153) 0.49	(4) 0.013	(67) 0.59
Low-gen. med. (BZ. District Hospital)	(3) 0.01	(76) 0.24	N/A	N/A
Total (Hospitals)	(7) 0.02	(354) 1.14	(4) 0.013	(67) 0.59
OUTPATIENT CENTERS				
Specialty Center	N/A	N/A	N/A	N/A
Gen. primary care center	(44) 0.14	N/A	(69) 0.22	N/A
Non-professional staffed PHCs	N/A	N/A	N/A	N/A
Total (Outpatient Centers)	(44) 0.14	N/A	(69) 0.22	N/A

Sources: MoH's Belize Health Information Service.
MoH Epidemiology Unit.
Private Medical Institution Survey, March 2009.

Outsourcing of services in the public sector occurs in the areas of support services, namely, emergency transportation and ancillary services for laundry and security.

2.3.2 HUMAN RESOURCES DEVELOPMENT

Human Resources Training

The University of Belize (UB), through its Faculty of Nursing, Allied Health and Social Work, offers programs in professional nursing, midwifery, practical nursing, rural health nursing, public health nursing, pharmacy, medical laboratory technology, public health inspectors, and social work. UB graduates between 60-90 non-physician health care professionals annually. The curricula for undergraduate-level programs are under review by the faculty. The limited pool of qualified health professionals to teach certain specialized subjects poses a challenge for UB.

Belize does not have a national medical school. Belizean students utilize scholarship opportunities provided under bilateral technical cooperation agreements, particularly with Cuba, and to a lesser extent, Mexico and Taiwan. Most medical professionals are trained in Mexico and Central American countries, i.e. Guatemala, Costa Rica, and Nicaragua. As a Caribbean sub regional training institution, the University of the West Indies (UWI) is mandated by CARICOM to provide space in its School of Medicine for students from Belize.

Continuing education opportunities in a wide range of medical issues and health knowledge and skills areas are provided to health professionals in Belize based on supply from local and international trainers, and through professional associations. However, these are not part of a structured programme for the management, development and continuing education of human resources in health. Targeted but temporary ad-hoc training initiatives in relevant skill areas are provided to semi-professionalized health care providers such as community health workers and traditional birth attendants. Certification mechanisms for health workers exist but are in need of revision. The establishment of a Human Resources Development and Management Unit in the MoH will address staff development issues.

Management of Human Resources and Employment Conditions

According to the government, pay scales correlate with income and qualification level. Several categories of staff such as physicians, nurses and certain field workers are entitled to different allowances such as non-practice allowance, availability allowance, overtime payment, danger allowance, camping allowance and a responsibility allowance. These allowances are provided when officers forfeit private practice, work extra hours or are assigned to geographic areas that pose some degree of sacrifice or risk. Limited data are available on types of health employment, job flexibility and social protection for public health workers. The remuneration system in the private sector is not regulated resulting in major variations in that sector.

Supply and Distribution of Human Resources

Belize is experiencing a general shortage of health professionals. Over the last ten years there has been the need to recruit health professionals, especially physicians and nurses, from Central America, the Caribbean, and other countries to supplement the delivery of health care. During 1997 to 2007 the number of certified health professionals increased an average of 9% to 10% annually.

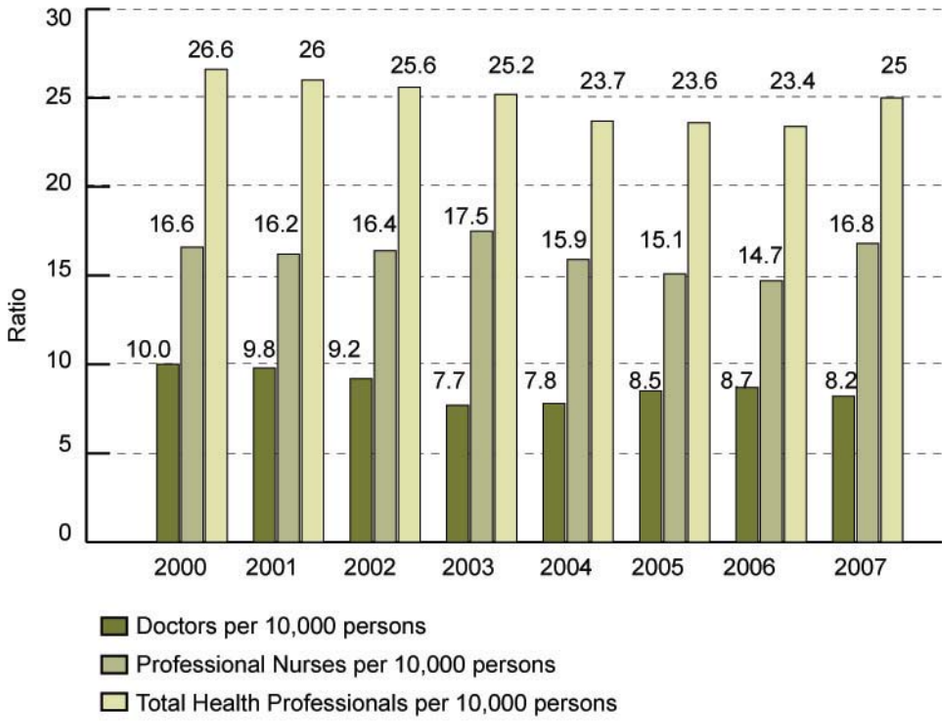
Table 9. Human Resources in Health, Belize 1997-2007

Number of Health Professionals											
	1997	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Nurses	252	257	277	307	344	404	441	470	521	542	618
Physicians	114	119	130	139	152	172	189	211	229	258	256
Pharmacists	69	71	74	74	82	93	102	107	115	123	124
Dentists	14	14	16	19	21	22	24	28	29	32	39

Source: Belize Medical & Dental Council, Belize Nurses and Midwives Council, Pharmacists Board.

Belize, with a density of 25 health professionals per 10,000 inhabitants has achieved the target proposed by the Ministries of Health of the Americas, from the Toronto Call to Action initiative.

Figure 2. Physician and Nurses Ratios, Belize 2000-2007



Source: Epidemiology Unit, Ministry of Health, Belize Observatory of Human Resources in Health

Overall, the majority of health sector workers in Belize are employed in the public sector. Public/private sector distribution of health professionals is 11.2 nurses in the public sector for every nurse in the private sector while there are 1.5 doctors in the public sector for every doctor in the private sector.[12] Almost 75% of the health personnel work in the public sector, the largest group comprising practical and professional nurses (66.5%).

12 National Health Plan: Health Agenda 2007-2011.

It is estimated that one-fifth of health personnel work in both the public and private sectors. The professional public health workforce includes 30% of physicians and 10% of nurses from other countries. Updated data are required to identify gaps in the health labour force composition and availability in comparison with the national epidemiological and demographic profiles.

In Belize, inadequate health staffing is a core weakness of the health system. The problematic dichotomy between health care delivery in urban and rural areas is not only reflected in inequitable distribution of medical equipment and supplies favouring urban areas but also in the number, and more importantly, the quality of health personnel. This is particularly acute for remote rural areas.

Nursing attrition increased from 7.7% in 2001 to 9.6% in 2006. Several factors contribute to this attrition including inadequate conditions in health facilities, shortage of medical supplies, poor state of buildings, inadequate accident and emergency services, limited availability of drugs, inappropriate ventilation, lack of support and communication from management, unconfirmed contracts, and disparity in pay for doing the same or similar job. [13]

The global shortage in nursing personnel has placed an additional strain on the health delivery system. Over the last decade, developed countries' annual demand for nurses, particularly the U.S., exceeded the numbers of nursing graduates from their domestic nursing training programs. As a result, developed countries use attractive financial packages to recruit nurses from developing countries, such as Belize. This practice has created a domino effect as these countries in turn utilize the same practices to recruit from other middle and lower income countries.

Belizean nurses have been emigrating to the USA, Canada and the UK due to reported local "push" factors: lack of understanding of career paths, supervision problems, unconfirmed contracts, unfulfilled promises, lack of resources, inadequate work environment and personal reasons/issues.[14] In turn, this external migration added to attrition, creates a shortage of nurses in Belize.

There is inequity in the rural to urban distribution of health professionals. To address the disparity created in the concentration of human resources among Health Regions, primarily in the urban setting, technical cooperation agreements exist between the Belize, Cuban and Nigerian[15] governments, in which health personnel, mainly general practitioners are deployed to work in the rural areas.

13 Jones, David (2007). Human Resources in Health Retention Plan for Belize.
14 Idem.
15 The donor country provides salary payments and Government of Belize covers the cost of airfare, housing and utilities for the international volunteer brigades.

A concentration of health personnel exists in the urban areas, especially Belize City in the Central Health Region, where more than half of health professionals are employed (65% pharmacists, 52% practical nurses, 45% professional nurses and 35% physicians). The Northern Health Region accounts for 32% of the physicians and 24% of the nurses. The Western Health Region accounts for 24% of the physicians and 19% of the nurses. The Southern Health Region has the least number of doctors and nurses. The Southern Health Region serves a population that is more dispersed, have access limitations, and live in more precarious socio-economic conditions.

Table 10. Distribution (%) of Health Professionals by Region, Belize, 2006

	Central[1]	West	North	South
Physicians	34.71	24.12	32.35	8.82
Registered Nurses	44.83	19.44	24.14	11.60

Source: Health Regions reports, Observatory of Human Resources in Health in Belize.

Governance and Conflict in the Health Sector

The Constitution of Belize, labour law, government workers regulations, public service regulations, contractual agreements, institutional policies, disciplinary manual, and complaint mechanisms are some of the instruments used to address conflict management in the health sector. Regional Health Management teams focus on strategies to build consensus on policies and participatory management. The Public Services Commission is the key arbitrator of labour issues in the public sector along the ombudsman, Ministry of Labour, and the Supreme Court.

Few changes have been introduced into the area of human resources planning and management. There are no modifications being designed or introduced into human resources education to respond to the needs generated by sectoral reform. An important related contextual background is that a statutory instrument drafted as part of the HSRP gives the MoH power to appoint and transfer public officers. This instrument was rescinded in 2008. This meant that any vacancy created due to resignation, promotion or dismissal and new posts cannot be filled under standing public sector hiring rules. The impact is most severe on key social sector ministries such as the MoH. Therefore, the MoH needs to seek approval from the Ministry of Public Service and the Ministry of Finance to fill key vacancies and to open planned posts at different levels. This lengthy process slows down the effective development of human resources in health and delays the actions of the MoH in achieving its proposed objectives.

The participation of health workers and their representatives in the sectoral process in regards to human resources has been in the form of workshops and general discussions, but not in the form of sustained participation in the definition of national health policy options. Performance incentives for personnel in the public sector include an annual increment and merit award for outstanding performance. A multidisciplinary approach is promoted in the public sector to achieve health goals.

2.3.3 MEDICINES AND OTHER HEALTH PRODUCTS

The Chemist and Druggist Act is the current legal framework that guides the use and distribution of pharmaceutics. There is currently no essential medicines observatory nor is there a National Drug Policy. The national list of essential and necessary medicines included in the National Drug Formulary is reviewed every five years by the Pharmaceutics and Therapeutics Committee. Purchasing and distribution is regulated by the Maximum Price Contract Committee. A Drug Inspectorate is charged with the responsibility to monitor and enforce compliance with the National Formulary. Drugs listed in the formulary are subsidized to make them accessible to all Belizeans using the public health system. Limited treatment protocols for pathologies prevalent in public health facilities are applied to primary and secondary levels of care to guide utilization of drugs in the formulary. Pharmacists are required, by law, to operate in both public and private pharmacies. The Regulatory Unit functioning out of the Office of the Director of Health Services assists in enforcing the law.

2.3.4 EQUIPMENT AND TECHNOLOGY

Limited access to equipment and technology continues to be a challenge in Belize. Routine maintenance of existing equipment is compromised due to limited budgetary allocation, lack of trained medical maintenance technicians, and limited use of preventive maintenance protocols. In addition, this maintenance is centralized, and 80% of the maintenance resources go to the Karl Heusner Memorial Hospital (KHMH). As a result, a large percentage of the existing medical equipment in districts have become defective and/or out of use. Advanced medical technology equipment is available only in Belize City at the private Medical Centers and KHMH. Even though the MoH has some sophisticated radio-imaging diagnostic equipment, they are underutilized due to lack of trained radiology technicians.

Table 11. Availability of Equipment in the Health Sector, Belize, 2009

Sector	(No. of Beds)/ 1000 pop.	(Diagnostic Imaging Equip)/1000 pop.	(Clinical Labs)/ 1000 pop.	(Blood Banks)/ 1000 pop.
Public	(354) 1.14	(12) 0.04	(3) 0.03	(1) 0.003
Private	(67) 0.59	(5) 0.016	(4) 0.012	(1) 0.003
Total	(421) 1.35	(17) 0.054	(7) 0.023	(2) 0.006

Source: MoH's Belize Health Information Service.
MoH's Epidemiology Unit.
Private Medical Center Survey (Mar 09)

The most advanced areas in the private sector are radio-diagnostic and clinical laboratories and their numbers are on the rise. However, limited quality assurance and control are available in these two clinical diagnostic services. The expenditure for new medical equipment and its maintenance has increased since KHMH became semi-autonomous in 2006, and is expected to increase given the demand for better health care.

2.3.5 QUALITY ASSURANCE

Quality Assurance is an integrated system of management activities involving planning, implementation, assessment and corrective action to ensure that a process, item or service is of the type and quality needed and expected by users. As part of the reform process, minimum mandatory standards for inpatient facilities and community-based programs have been developed and approved. Budget requirements for each priority program were identified and included in annual operational planning process.

The MoH has recently instituted a Regulatory Unit to provide efficient, cost-effective and quality health services using accurate epidemiological and health data. This unit is mandated to examine strategies to improve health service quality, train and develop health care providers in implementing standards, license and accredit health facilities, and monitor and evaluate compliance with health service standards. Several initiatives have been identified through the existing management processes to ensure that a system of continuous quality improvement is maintained at the service delivery levels.

There are no national criteria and procedures for accrediting health institutions; however, there are mechanisms to measure standards of quality such as instruments for in/outpatient facility standards. SLAs and NHI audit tools have also been developed and implemented to evaluate health service delivery.

Mechanisms for channeling claims and settling complaints have been established for different actors in the health sector through the approval of the National Complaints and the Patient's Bill of Rights and Responsibility Policies. The MoH Regulatory Unit has a regulatory framework that provides the critical elements and legal safety needed for decision-making in the supervision of health facilities and health service delivery.

2.4 INSTITUTIONAL MAPPING OF THE HEALTH SYSTEM

Table 12. Institutional Mapping of the Health System of Belize

FUNCTIONS / ORGANIZATIONS	Steering Role		Financing	Assurance	Service Provision
	Conduct/ Lead	Regulation and Enforcement			
Central Government - Min. of Health - Min. of Justice - Armed Forces - Others	MoH	MoH	MoH	MoH	MoH
Social Security Institutions			Social Security (work-related injury)		
Regional government (provincial, departmental)					
Local government (district, municipality, etc.)		Local government (limited to environmental sanitation)			
Private insurers - Non- profit - For- profit					
Private providers - Non-profit - For-profit					Private providers (non-profit)

Source: MoH

3. MONITORING HEALTH SYSTEMS CHANGE/REFORM

Several overarching policy and sectoral initiatives have been developed to reform the state over the last decade. Larger reform initiatives focus on the entire system of governance and the public sector itself (the Public Sector Reform). However, these larger reform initiatives have been affected by slow implementation momentum. The most significant sectoral reform in Belize is the Health Sector Reform Project (HSRP) designed to address areas of health governance, health service delivery, and ultimately increase effectiveness and efficiency across the health sector.

The major components of the HSRP are:

i. *Sector restructuring:* promote the development of institutional capabilities within the MoH to enhance its regulatory function and to strengthen technical capacity in policy formulation, strategic planning, development of norms, standards, guidelines, and monitoring and evaluation of national health programs. Sector restructuring also includes deconcentration of services towards newly created health regions, providing them with appropriate management and financial capabilities.

ii. *Services rationalization and improvement:* support investment activities in infrastructure and medical equipment for the health sector at all levels: primary, secondary and tertiary. This aims to improve the public supply of health services by concentrating surgical and other key hospital services in a smaller number of regional centers (three) in order to increase utilization capacity and improve quality. Investment will be tied to the implementation of performance agreements.

iii. *Financing strategy:* achieve an equitable and sustainable system of sector financing by supporting the setting up of a National Health Insurance Fund (NHIF), and focusing public spending on the poor. An Innovation Fund utilizing loan resources to finance payments to health care providers in order to test the system for contracting health care providers and the acquisition of health care and purchasing skills was provided. The Ministry of Finance plays an important role in the provision of financial options, decentralization of funds and sustainability of the reform.

3.1 IMPACT ON THE “HEALTH SYSTEMS FUNCTIONS”

The MoH, with constitutional responsibility for the overall health of the population, is the primary entity that executes the sector’s steering role. In 1982, the Social Security Board began expanding the country’s health services by financing services related to worker’s health through specific benefit packages. In this scheme, contributors are covered for illnesses attributable to the work environment or those acquired while they are gainfully employed. In 1990, the private sector became an increasing player in service delivery, providing services to approximately 15% of the population.

3.2 IMPACT ON THE "GUIDING PRINCIPLES OF HEALTH SECTOR REFORM"

The MoH's strategy for achieving the Government of Belize's commitment to improved equity, accessibility, quality, efficiency and effectiveness in both public and private sector was through a Health Sector Reform.

Specific data is not available to demonstrate that the reform process has reduced health coverage gaps according to sex, age, race, and socioeconomic level. However, universal coverage of primary health care services is expected to be carried out through the establishment of the National Health Insurance (NHI). The NHI currently provides services to one third of the population in the poorest regions of Belize, namely the Southern Health Region and southern part of Belize City. Equity in the distribution of health professionals in rural areas continues to pose a challenge. The utilization of first and second level of care units is lower in rural areas than in urban areas which may be due to limited access to health care services.

The impact that the health sector reform process has had on the reduction of the gaps in the number of physicians and professional nurses per 10,000 inhabitants cannot be substantiated due to the unavailability of data prior to 2000. However, in 2000 there were 10 doctors/10,000 population and within an eight year period (2000-2007) no improvement is evident. During the years 2003 and 2004, the health system had the lowest number of physician per 10,000 population with 7.7/10,000 population and 7.8/10,000 population respectively. Since 2005-2007, it has remained stable (8.5, 8.7 and 8.2/10,000 population respectively). In reference to professional nurses per 10,000 population within the eight year period (2000-2007) from a rate of 16.6/10,000 population in 2000 it has remained relatively stable with a high of 17.5/10,000 population in 2003 and a low of 14.7/10,000 population in 2006. Although health system financing has increased over the periods analyzed, the increase has not kept pace with the demands of human resources, technology, equipment and universal coverage.

Country wide there has been an expansion of primary health care networks and an increase in staff and services at the secondary level. There is a general belief that waiting times have been reduced; however, there is a need to confirm this through the collection of quantitative data on population groups, geographical areas, and ethnic groups.

Infant mortality has increased from 16.9/1,000 live births for the period 2000 to 2004 to 18.4/1,000 live births for the period 2005 to 2007. The majority of deaths occurred in the neonatal period; prematurity, low birth weight, and complications at birth remain the main causes of infant death. Maternal mortality has remained stable.

Over the last 10 years there has been an increase in the number of deaths due to breast cancer while cervical cancer deaths have remained steady. Malignant neoplasms remain a major area of public health concern.

There has been a significant decrease in the number of malaria cases over the last 8 years, from 1,116 cases for the period of 2000 to 2004 to 871cases for the period of 2005 to 2007. The largest proportion of cases occurs in the Western and Southern Health Regions. The incidence of Tuberculosis has decreased to 2/10,000 population in 2007. The incidence of HIV/AIDS has hit a plateau over the last three years at about 14.5/10,000

population. The management of TB has received attention considering the risk of co-infection; and specific targeted programs for HIV/AIDS in terms of anti-retrovirals (ARVs) have been instituted.

Health sector reform has resulted in a number of infrastructural and managerial changes in the health care system. Customer satisfaction has improved; especially where the NHI has been rolled out. The reform agenda expects to engage civil society and community groups in policy and decision-making processes.

3.3 IMPACT ON THE "HEALTH SYSTEM"

As part of the HSRP the legal framework was reviewed and changes to the legislation were proposed. According to the "Review and Analysis of Legislation" relevant to the "Health Policy Reform Process Report", recommendations on the reorganization of the MoH at the central and local level, and the delegation of power from the central Government to the MoH to perform certain functions which are now the responsibility of the public service were made.

In terms of organization and management, the following have been achieved:

(i) The Karl Heusner Memorial Hospital has acquired statutory board management status while 4 regions have been identified with varying levels of development.

(ii) Regional health managers have been appointed to run services at the regional level while the Director of Health Services remains the technical head of health services.

(iii) The Policy Analysis and Planning Unit has been created but needs strengthening in both its technical capacity and human resources.

(iv) A Regulatory Unit is being developed to support the DHS function.

The Social Security Act has been amended to allow the introduction of NHI to allow for transparency and accountability in dealing with funds to be administered under Belize Social Security Board (BSSB)-NHI. The justification being that, for a small economy like Belize it would be illogical to establish an entire new organization to run the NHI, therefore BSSB-NHI became the sole health care purchaser for government. A pilot project was implemented in the South side of the Belize District on August 9, 2001 and on June 5, 2006 the cabinet made a decision to roll-out the NHI scheme to the south of the country. However, the MoH is still responsible for the provision of government health services in Belize and the ability to pay is not an obstacle to receiving health care.

Some lines of action have been introduced in the management model or in the relationships among the actors either inside or outside of the public or private health facilities in the signing of management contracts between the Health Regions and the MoH, between BSSB-NHI and public and private Primary Care Providers (PCP) in the south side of the Belize District and with public PCPs in the south of the country. All PCP have also signed working contracts with staff and many have outsourced services specifically laboratory and imaging. Within the BSSB-NHI scheme patients have the right to select their physician. The aim is to increase efficiency internally and in the health system as a whole. Progress is incremental and adjustments are made continuously.

An autonomous board, the Karl Heusner Memorial Hospital Authority (KHMHA), was established for the administration of the Karl Heusner Memorial Hospital (national referral hospital and secondary care hospital for the Belize District). It has been operational since 2000 and is governed by the provision of a legal statutory instrument approved in the same year, the Karl Heusner Memorial Hospital Act.

Another area of achievement is the greater use of automation in management and information systems to increase control over productivity and costs, broaden access to the information, and in general, improve health services management. The Belize Health Information System (BHIS), launched in 2008, is a web-based, fully integrated health information system that covers all key health sector management needs in an effort to improve individual health outcomes and public health performance and optimize resource utilization.

3.4 ANALYSIS OF ACTORS

A comprehensive assessment conducted by an international firm through "The Health Financing and Sustainability (HFS) Project", a five-year effort by the US Agency for International Development to help developing countries improve the financial status and efficiency of their health sectors. It addressed key financial policy and organizational constraints hindering the ability of developing countries to provide access to health services of acceptable quality for all citizens. The report presented to the Government of Belize in 1991 included short, medium, and long term recommendations leading to a large-scale sector reform.

The main short-term recommendation was to develop and implement the MoH decentralization strategy, while the long-term recommendation was to develop a comprehensive health insurance system. PAHO proposed a decentralization strategy to the MoH between 1992 and 1993, but this was not implemented. In 1996, the MoH launched its National Health Plan 1996-2000, *Quest for Equity*, with the technical support of PAHO. The Plan analyzed health conditions and determinants and presented a vision, mission and goals to guide health sector policy development and planning. Whilst not specific in either strategies or cost estimates, this Plan constituted an important step toward health sector reform.

Cambridge Consulting Corporation and Resource Management Consultants through a technical assistance contract from the Inter-American Development Bank (IDB), conducted between May 1996 and July 1998, the Diagnostic Phase of the health sector reform. This was done with consultation across the sector: civil society, consumer groups and the professional community. The four major policy areas for the technical assistance inputs of this consultancy were: financing of the health sector, allocation of health sector resources, public and private sector roles, and improving quality and equity of health services.

The Government of Belize with the support of the IDB, the Caribbean Development Bank (CDB), the European Union (EU) and a grant from the Multilateral Investment Fund (MIF) initiated the Health Sector Reform Project with a total budget of US$18.1 million. The IDB financed US$9.8million, CDB US$4.7million, EU US$1.6 million and GOB US$2.0 million. The overall goal of the program is to meet the four policy objectives. The Belize Medical and Dental Association made in kind contribution of about US $250,000.00.

In addition to the three components supported by the loan (sector restructuring; services rationalization and improvement; and financing strategy), the complementary MIF Technical Cooperation supported the creation of a policy, regulatory and purchasing environment, which facilitated the expansion of the Belize private sector in publicly and privately funded health services. It also provided technical support for the design of the operational manual for the Innovation Fund.

There were many actors involved in the implementation of the Health Sector Reform process and as the Government of Belize strategizes to roll out the NHI nationally in the near future these actors will play a key role.

The Ministry of Finance will continue to play an important role in providing financial options. The Social Security Board needs to continue providing financial resources to support the collection and purchasing mechanisms of the NHI. The unions are also major stakeholders for end users of the system. The United Nations in country agencies provide technical support in regional and global initiatives for reform, and in setting objectives, targets and goals. Finally, the Office of the Solicitor General is conducting a review of the legal framework to support the reform process and the development of contractual agreements.

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