

12th EADI General Conference
**Global Governance for
Sustainable Development**

The Need for Policy Coherence
and New Partnerships



**Why to include Chronic
Noncommunicable Diseases in the next
set of Development Goals**

“Globesity” and Jamaica

Author:	Johanna Witt
Institution:	University of East London
Address:	University Way London E16 2RD UK
E-mail:	Witt.Johanna@gmail.com
Telephone:	-

<u>INTRODUCTION</u>	<u>3</u>
<u>CHAPTER 1: THE MILLENNIUM DEVELOPMENT GOALS AND GLOBAL STRATEGY</u>	<u>4</u>
<u>CHAPTER 2: CHRONIC NONCOMMUNICABLE DISEASES</u>	<u>6</u>
2.1 DEFINITION AND CAUSE.....	6
2.2 EXTENT OF THE PROBLEM.....	7
<u>CHAPTER 3: STOCK TAKE OF METHODS AND COSTS</u>	<u>9</u>
3.1 THE METHODS	9
3.2 THE ESTIMATED COSTS	10
<u>CHAPTER 4: PROPOSED FRAMEWORK</u>	<u>12</u>
<u>CHAPTER 5: GLOBESITY</u>	<u>15</u>
5.1 DEFINITION AND CAUSES	16
5.2 THE GLOBAL EXTENT	16
5.3 CONSEQUENCES AND RISKS	18
<u>CHAPTER 6: JAMAICA</u>	<u>19</u>
6.1 ECONOMY AND DEVELOPMENT	19
6.2 CNCDS AND OBESITY	20
6.3 MDGs IN JAMAICA	22
6.4 IMPACTS OF CNCDS IN JAMAICA	22
<u>CONCLUSION</u>	<u>24</u>
<u>REFERENCES</u>	<u>26</u>

Introduction

Chronic noncommunicable diseases (CNCDs) cause serious health problems and can affect both economic and human development and poverty. Despite the assumption that CNCDs are illnesses of affluence, the majority of deaths caused by them occur in low and middle income countries. Rising obesity rates give reason to believe that diseases such as diabetes, heart disease and stroke will increase substantially over the next 10 to 15 years. However, they are not seen as a challenge to economic and personal development in the same way HIV/AIDS and malaria are. Furthermore, global agreements to fight poverty and promote development, such as the Millennium Development Goals (MDGs) do not include CNCDs.

Divided in six chapters, this paper suggests that chronic noncommunicable diseases should be included in the next set of development goals in order to make them a priority on the global agenda to fight poverty and to promote development.

Chapter 1 introduces the *Millennium Development Goals* (MDGs), describes under which circumstances they were established and points out that they fail to address CNCDs. Further, it briefly looks at the *Global Strategy for the Prevention and Control of Noncommunicable Diseases*, which has been developed around the same time as the MDGs.

Chapter 2 defines what CNCDs and their main causes are. A detailed overview of the extent of the problem worldwide shows that these diseases are killing more people than HIV/AIDS and Malaria. Despite differences in estimates from various sources, the predicted prevalence of chronic noncommunicable diseases for the coming years is extortionate.

The cost of CNCDs is examined in Chapter 3. Starting with a description of the different methods that measure the costs caused by illnesses, it proceeds to present the estimates of lost GDP as measured in one study. To put the figures found there into perspective they have been compared to the amounts of Official Development Aid (ODA) of some of the countries.

Chapter 4 describes a proposed framework that has been developed on the background of the methods in Chapter 3. This framework explains in which ways chronic noncommunicable diseases influence economic and human development and can contribute to poverty. Discussing each part of the table in turn, it becomes clear that the cost of CNCDs goes far beyond health care costs for treatment and medication.

The two examples of “Globesity” and Jamaica have been chosen to show that the costs and the extent of the CNCD problem may get out of hand and that these conditions already cost economies large sums of money.

Obesity is classed as a disease itself but more importantly it is a major risk factor for other diseases. Because of the global extent and the rising rates in virtually every country around the world, the condition is also nicknamed “Globesity”. Chapter 5 discusses this by starting with the definitions for overweight and obesity. The second part looks at the global extent of this apparently new health scare and at how much it has increased in just three years, before examining the increased risk excess weight poses to developing other chronic noncommunicable diseases.

Caribbean countries have high rates of both obesity and chronic noncommunicable diseases. Jamaica has been chosen as one example as the main concerns for development there are economic growth, unemployment and increasingly chronic noncommunicable diseases. Chapter 6 introduces Jamaica by starting with a brief description of the economic situation in the country, giving an overview of core indicators. Further, Jamaica’s involvement in the *Declaration of Port-of-Spain* is mentioned. The second part looks at CNCDs and obesity in the country and gives a general idea of how many people are affected by the conditions. Part three briefly describes the MDGs and their progress in Jamaica. The final part discusses the expenditure on CNCDs in 2001 and the increase in benefit claims caused by these illnesses.

The belief that CNCD rates will be rising, partly due to the obesity epidemic, and that the neglect of these diseases as a development challenge could be part of the lack of progress of the MDGs lead to the thesis of this study. Concluding, the suggestion to include CNCDs in the next set of development goals is drawn upon the findings of this research.

Chapter 1: The Millennium Development Goals and Global Strategy

In 2000, the leaders of the United Nations (UN) member states came together at the Millennium Summit to discuss “*the role of the UN in the 21st century*” (UN 2000 p.2)

Why to include Chronic Noncommunicable Diseases in the next set of Development Goals

Following this assembly, all but two member states agreed to the Millennium Development Goals (MDGs). These eight goals are described by the UN as responding “*to the world’s main development challenges*” (UNDP – About the MDGs: Basics)

The 189 nations agreed that the goals should “*represent a partnership between developed and developing countries determined, as the declaration states, ‘to create an environment – at the national and global levels alike – which is conducive to development and the elimination of poverty.’*” (OECD 2005 p.24)

Each goal has between one and four targets – 18 overall – and their progress can be measured by 48 indicators. The aim is to achieve the following goals by the year 2015

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

(UNDP – About the MDGs: Basics)

In 2007, the half way mark to achieving the MDGs, the official progress chart shows that the majority of the targets are not believed to be achieved by 2015. However, a number of targets are on track to be realised in some of the observed regions. (UN DESA 2007)

Concerned with diseases, the goal that should include CNCDS is Goal 6: Combat HIV/AIDS, malaria and other diseases. Its targets are to “*halt and begin to reverse the spread of HIV/AIDS*” and to “*halt and begin to reverse the incidence of malaria and other major diseases*” – whereas “other major diseases” refer to tuberculosis. Chronic noncommunicable diseases (CNCDS) such as diabetes, heart disease and stroke are not included in this or any of the other goals despite affecting large numbers of people in both industrialised and developing countries (UNDP – About the MDGs: Basics).

However, change is in sight as so far five out of 189 countries: Czech Republic, Mauritius, Poland, Slovakia and Thailand have adapted Goal 6 to include CNCDs. Further, Hungary, Jordan and Lithuania have recognised chronic diseases as major health problems and contributors to premature death (WHO 2005 p.72).

Other goals, especially Goal 1, which the World Bank has estimated to cost \$40-60 billion per year, would also benefit from the inclusion of CNCDs. (UNDP Jamaica 2004 p.13)

Around the same time, in the late 1990s, the World Health Organisation (WHO) set out to develop a “Global Strategy for the prevention and control of noncommunicable diseases”, which was also adopted in 2000. The WHO has recognised that CNCDs are a major and growing problem that “threatens economic and social development as well as the lives and health of millions of people” (WHO 1999 p.1) However, it took seven years to adapt another resolution: “Prevention and control of noncommunicable diseases: implementation of the global strategy”. An action plan is drafted and should be adopted at the World Health Assembly (WHA) in May 2008 (WHO 2008).

Despite the recognition of the effects CNCDs can have on development and poverty, the MDGs and the Global Strategy are not interlinked. However, in order to fight poverty and promote development it is necessary to address chronic noncommunicable diseases in conjunction with other development issues in a global agenda – presumably the next set of development goals.

Chapter 2: Chronic Noncommunicable Diseases

2.1 Definition and cause

Chronic noncommunicable diseases (CNCDs) are non infectious illnesses. The CNCDs addressed in this study are cardiovascular diseases (CVDs) – including heart disease and stroke – and diabetes.

The WHO has identified five major risk factors that can lead to these illnesses; they are hypertension (which is also a CNCD itself), high cholesterol, tobacco use, alcohol consumption and overweight. More generally it can be said that the main reason for developing a chronic noncommunicable diseases is an unhealthy lifestyle, namely physical inactivity and an unhealthy diet. (WHO 2003)

2.2 Extent of the problem

CNCDs are usually not clearly visible illnesses and symptoms do not show immediately. Furthermore, risk factors can presumably be controlled by the individual – an assumption that is only true if the access to a healthy lifestyle is provided. The “invisibility” of these illnesses is a possible reason for the absence of CNCDs from top political agendas and from the Millennium Development Goals.

However, chronic noncommunicable diseases are far more prevalent than commonly known. In 2005, more than 60% of all deaths worldwide were caused by CNCDs, an estimated 35 million of the overall 58 million deaths. Further, CNCDs account for around 50% of the burden of disease¹. Heart disease and stroke are by far the biggest killers, an estimated 17 – 17.5 million people worldwide die each year of these two conditions – 30% of all deaths. (WHO 2007a)

Despite the assumption that chronic noncommunicable diseases are illnesses of affluence, 80% of NCD deaths occur in low- and middle-income countries. Many of these countries have to cope with a double burden of both infectious and non-infectious illnesses. Apart from creating extra costs for both people and health systems, treatment and more importantly the prevention of CNCDs have been neglected for many years (Abegunde and Stanciole 2006; Abegunde *et al* 2007; CARICOM 2006, WHO 2007a, 2006a and 2003).

There are different estimates on the increase of the number of deaths caused by CNCDs. Abegunde and Stanciole suggest that between 2006 and 2015 around 388 million people will die from chronic noncommunicable diseases (2006 p.2). In a later paper Abegunde and other colleagues estimate that there will be between 48 and 53 million in the year 2030. However, between 2002 and 2005 the number of deaths due to chronic noncommunicable diseases has increased by 1.5 million, if it keeps rising at the same rate, it will already reach 40 million by 2015. Further, the authors believe that in the developing countries they have researched, half the deaths will be in people under the age of 70. In contrast, in developed countries only 27% of CNCD deaths will affect under 70-years-olds (Abegunde *et al* 2007 p.1932).

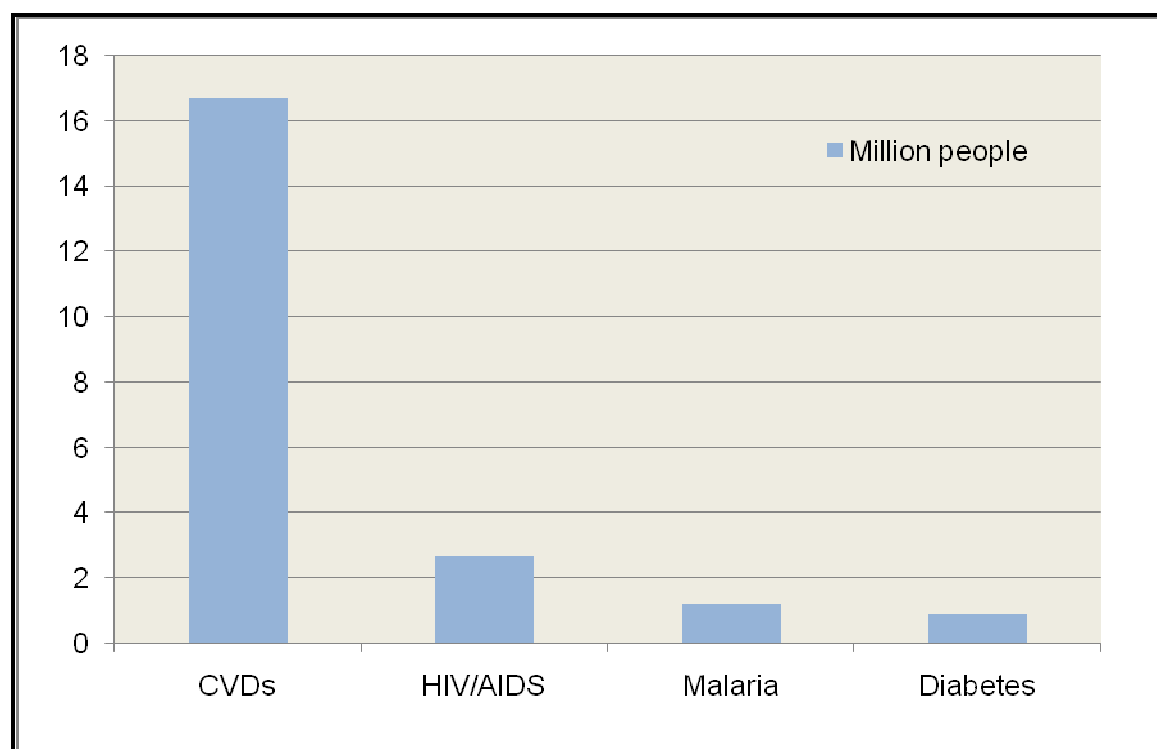
¹ Burden of disease is a calculation of the actual cost and loss of healthy life years due to disease. It can be used to measure and compare different diseases and is quantified in Disability Adjusted Life Years (DALYs)

Overall it has been found that cardio vascular diseases (CVDs) are the leading cause of death in many individual countries and also worldwide. A CAREC study (2005) found that heart disease has been the leading cause of death in the Caribbean for over twenty years. Diabetes is also among the ten leading causes of death in the Caribbean.

In 2005 around 1.1 million diabetic people worldwide have died. Compared to CVD deaths this number does not seem very high. The reason is that half the people suffering from diabetes actually die of heart disease or stroke. Again, the majority of these deaths occur in low- and middle-income countries. Further, the WHO has estimated that 180 million people are living with diabetes (WHO 2006a).

In contrast to chronic noncommunicable diseases the number of people dying from AIDS seems relatively small. UNAIDS (2007) estimates that in 2007 around 2.1 million people died of AIDS and that 33.2 million people are HIV positive (p.1). It is also believed that 25 million people have died of AIDS since the outbreak of the disease (AVERT 2007).

Figure 1: Numbers of deaths 2002



Source: WHO 2004

The case of malaria is very different, treatment can be very effective and those infected do not necessarily die. The WHO estimates that around 500 million people become severely ill with malaria every year. The effect on income can be immense. An average of 1.3% of

annual economic growth can be lost to the effects of the illness in high risk countries and up to 40% of public health expenditure can be accounted towards Malaria. (WHO 2007b)

Figure 1 visualises how big the difference between HIV/AIDS and Malaria and CVDs death rates was in 2002. Furthermore, the 2005 estimates for diabetes deaths, mentioned above, show that this number has increased by 0.2 million in just in three years.

The differences between these numbers are striking, even more so when considering that HIV/AIDS and Malaria are included in the MDGs. Further, chronic noncommunicable diseases cause costs for individuals and state budgets similar to those for Malaria and HIV/AIDS. Nonetheless, CNCs cause far more deaths, especially premature ones and the predictions for coming years are tremendous.

Chapter 3: Stock take of methods and costs

Despite the health problems caused by chronic noncommunicable diseases, they also have an impact on economic development that seems to be neglected. The WHO points out that “*Lost earnings and out of pocket health care payments undermine the socioeconomic development of communities and nations*” (WHO 2007a).

3.1 The methods

There are different methods to measure the costs of chronic noncommunicable and other diseases

The *Cost-of-illness (COI) method*, which is described as measuring the “medical and non-medical costs as well as the monetary value of lost labour productivity because of illness or death” (Abegunde *et al* 2007 p.1933), divides the cost of disease into three parts. The direct cost estimates the cost of medical care for people affected by the disease. This includes treatment and medication, diagnosis, hospital stays and preventive measures. It also accounts for the training and employment of skilled staff and for the production and distribution of informative materials. The indirect cost measures the loss of human resources or the loss of production due to morbidity, premature death and absenteeism. The third part is the intangible cost, which cannot be measured in monetary terms, it is therefore difficult to assess and according to Suhrcke *et al* (2006) rarely looked at. It examines the cost for the

individual affected by the disease, i.e. loss of healthy life years, bereavement, pain and other physical challenges that come with the disease (Suhrcke *et al* p.17; WHO 1998 p.83).

Another approach introduced by Suhrcke *et al* (2006) look at the microeconomic consequences and distinguishes between three dimensions. Firstly, the effects on consumption and savings, which are a result of the direct cost in the COI approach, only on a household level. The authors argue that, taking into consideration the cost for medicine and other goods required to care for an ill person, illness can have a lasting effect on the household budget. It then becomes difficult to keep consumption levels steady and not to let the additional cost drive the household into poverty. The second dimension examines the negative effects disease and ill health have on labour supply and productivity. This in turn can lower the economic output and also decrease the household income, similar to the indirect cost of the COI method. The third dimension, the authors say can be influenced, is education and human-capital accumulation; especially in developing countries where education is not the main priority on meeting a household's needs (p.19).

In the macroeconomic counterpart the authors suggest that life expectancy and adult mortality are strong predictors for economic growth. They make up a substantial part of the health burden of an economy and – combined with a loss of productivity and workforce – are believed to have a negative impact on its growth (*ibid* p. 27).

The method employed by Abegunde and Stanciole (2006) and by Abegunde *et al* (2007) in each of the studies is the application of an economic growth model. In both cases the Solow Growth Model is used to “*assess the effect of chronic diseases on national income through changes in key inputs such as labour supply and savings*” (2007 p.1933). The equation of this model has been adjusted to incorporate the cost for treating illness and the proportion of this cost funded by state budget savings (Abegunde and Stanciole 2006 p.6).

The results from the 2007 study, which estimated the loss of GDP, are displayed in Figure 2 below.

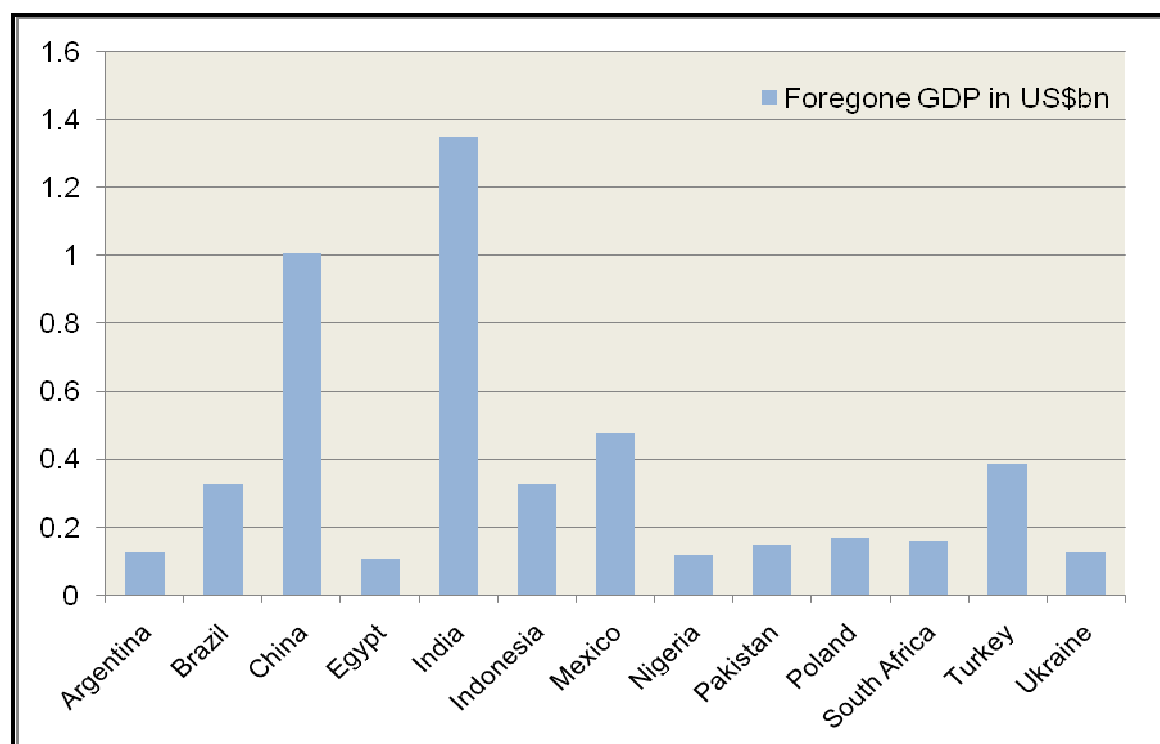
3.2 The Estimated Costs

The cost of chronic disease has been examined in several studies. Unfortunately, the results are not comparable. Each but one study estimated the cost of heart disease, stroke and diabetes, for one year or over a period of ten years (2006-2015). The main differences are the methods used and the factors that have been measured – loss of GDP, loss of economic

output or forgone national income. Despite these differences the common outcome is that several hundred billion dollars are lost to preventable diseases.

The World Health Organisation for example estimates that “China will lose \$558 billion in foregone national income due to the combination of heart disease, stroke and diabetes” (WHO 2007a). Abegunde and Stanciole (2006) say that “Countries like China, India and the Russian Federation stand to lose on average between \$23billion and \$53 billion annually in forgone national income”. They found a similar figure as the WHO and say that over the period between 2005 and 2015 China will lose \$556 billion as a “result of the impact of deaths from chronic disease on labour supplies and savings”. (p.11)

Figure 2: Forgone GDP in 2006



Source: Abegunde et al 2007 p.1934

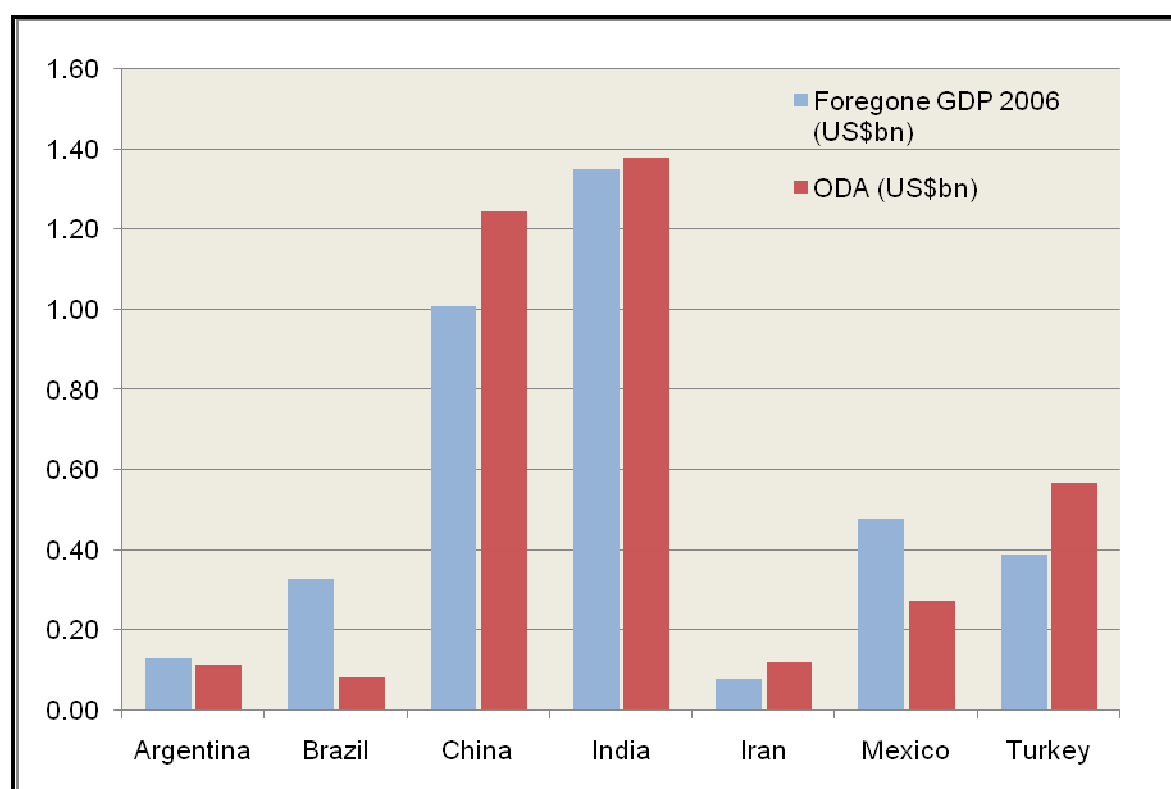
Abegunde et al (2007) estimate that the 23 countries² they have examined “risk losing \$84 billion in economic output in 2006–15 from coronary heart disease, stroke, and diabetes alone.” They have estimated foregone GDP due to the effects of heart disease, stroke and diabetes, taking into account not just deaths, but also labour force, savings, investment possibilities and health expenditure. (p. 1934)

² The researched countries are: Argentina, Bangladesh, Brazil, Burma, China, Colombia, DR Congo, Egypt, Ethiopia, India, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Poland, Russia, South Africa, Thailand, Turkey, Ukraine, Vietnam.

The results for selected countries (Figure 2) show that the countries with large populations and high GDP, i.e. China and India, lose large amounts whereas smaller countries lose a larger share of their GDP.

The average loss for these countries is 0.03% of the respective GDP, which is not a substantial amount. However, to put these figures into perspective, Figure 3 shows the loss in comparison to received Official Development Aid (ODA).

Figure 3: Foregone GDP compared to received ODA



Source: Abegunde *et al* 2007p.1934; UNDP 2007 p.290-293

It becomes clear that some of the countries, namely Argentina, Brazil and Mexico lose more GDP to chronic diseases than they receive in ODA. The other countries shown here still lose more than 60% of development aid.

Chapter 4: Proposed framework

Abegunde *et al* (2007) have taken into account several factors in their study to determine the loss of GDP due to disease. However, as the cost-of-illness study and the other methods demonstrate, there are more elements that are important for economic development, which

can be influenced by noncommunicable diseases. The following is a framework that describes these different elements and how they, influenced by chronic noncommunicable diseases, can impact economic development.

Table 1 is an overview of the different factors and elements for both households and on the state level, which can be impacted by CNCs. It combines the three dimension of costs described in the cost-of illness study with the micro- and macro-economic consequences of chronic noncommunicable diseases.

Table 1: The impact of CNCs

	Direct cost	Indirect cost	Intangible/personal cost
Micro-economic	<ul style="list-style-type: none"> ▪ Transport ▪ Treatment ▪ Home care 	<ul style="list-style-type: none"> ▪ Loss of income ▪ Lack of productivity ▪ Lack of education ▪ Loss of labour units and productivity 	<ul style="list-style-type: none"> ▪ Pain ▪ Bereavement ▪ Psychological problems ▪ Lack of education
	Impact on household budget		Impact on personal development
Macro-economic	<ul style="list-style-type: none"> ▪ Diagnosis ▪ Treatment ▪ Prevention ▪ Health services ▪ Staff 	<ul style="list-style-type: none"> ▪ Loss of labour units/workforce ▪ Loss of human capital ▪ Lack of skilled staff 	<ul style="list-style-type: none"> ▪ Decrease in life expectancy ▪ Increase in adult mortality
	Impact on country's productivity		Impact on human development

Source: Author's work

The direct or medical cost accounts for all costs directly linked to the illness. On the household level this can include expenditure for transport to the hospital or surgery, for diagnosis, check-ups, treatment or therapy. It also includes expenses for medication or on home based care provided externally. Because these costs would not be generated without an individual suffering from heart disease, stroke, diabetes or any other chronic disease, they put an extra burden on the household budget. In developing countries, where many households do not have a steady income or the main living is earned with subsistence farming, this can create a problem as funds have to be allocated. In more affluent situations,

it is not necessarily the main budget that is affected, but both savings become fewer and consumption levels drop.

On the macroeconomic level, the state budget is affected. Similar to the household costs, expenditure increases on diagnosis, treatment and hospital stays – those factors require material as well as trained staff. Further, measures of prevention have to be put in place. They include costs for producing and distributing informative materials. Combined, these costs put a strain on the health budget and will eventually affect the overall state budget. However, if spending on health is not increased according to growing needs of more people affected by noncommunicable diseases, the cost had to be implemented on the individual, which respectively increases the direct cost on household level.

To measure the indirect or non-medical cost many factors need to be taken into account. Generally, the loss of productivity and of labour units is a major contributor to this cost and the household and macroeconomic effects are interlinked. If the main breadwinner in a household becomes ill, a substantial amount of either the income or the production power is lost (given that there is no social welfare or security system as in the UK or Germany, where sick leave is paid for a certain length of time). Furthermore, if another member of the household has to provide care, more income is lost. If the person who steps in as a carer is in education, their progress could also be affected – it would be an overlap with the intangible cost and is addressed below. The main problem deriving from this scenario is that the combination of additional expenditure for direct costs and the loss of income can drive households into poverty.

On a larger scale, more people affected by CNCDs means that more people have to take sick leave or that their productivity is impaired. Overall it can lead to a decline in the country's workforce. This ultimately affects the economic output and therefore the Gross Domestic Product of a country. In addition to this, a reduction in consumption, mentioned as a result of the direct cost will also have an impact on the economy.

Mortality, rather than illness and disability as a result of chronic diseases increases the negative effect on the budget – of both household and state – as additional costs for funerals and cemetery maintenance have to be taken into account.

The intangible cost is more difficult to describe, and as pointed out above, difficult to measure. On the household level, personal costs are taken into account, including pain and bereavement but also psychological problems such as depression. These factors can have a

detrimental effect on healthy life years³. Further, the personal development of both the ill person and those affected secondarily can be affected by these diseases. As mentioned above, education can be impaired; on one hand because pain and illness make it more difficult to study and on the other hand because time allocated for learning is taken up by care or travel.

On the macroeconomic level, a lack of education and skilled workers has an effect on overall human development. Also, a larger number of ill people and higher adult mortality lead to a decrease in life expectancy. Added together this leads to a loss of human capital. An indicator for this can be the Human Development Index, which measures GDP, life expectancy and education.

There are many dimensions to the effects CNCDs can have on both micro- and macro-economic levels. However, lost productivity, fewer labour units, increasing numbers of ill and disabled people, loss of human capital, loss of GDP, increased health expenditure and a high number of households prone to increased poverty, will ultimately lead to a slow-down of the economic development of a country.

The high numbers of people affected by CNCDs give reason to believe that the negative economic effects will worsen in the future. Even though there are estimates on the cost of CNCDs for past years, the diseases may not be accredited with a significant share of economic decrease in certain countries.

Chapter 5: Globesity

Obesity has been recognised as an important factor that contributes to the increase of CNCDs but also has an impact on the economy. As the UNDP points out “*Nations around the world, both rich and poor, face a global epidemic of obesity that is likely to have staggering health and economic consequences in the future*” (UNDP 2000).

³ “The indicator Healthy Life Years (HLY) measures the number of remaining years that a person of a specific age is still expected to live in a healthy condition. A healthy condition is defined by the absence of limitations in functioning/disability.” (Eurostat 2007)

5.1 Definition and causes

“Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.” The Body Mass Index (BMI⁴) is an internationally used indicator to determine whether an individual is underweight (BMI<17.9), normal weight (BMI=18-24.9), overweight (BMI=25-29.9) or obese (BMI>30) (WHO 2006b).

The main reason for the accumulation of excess fat is an imbalance between calorie intake and use; there is a number of studies researching the causes of this imbalance, that can lead to obesity. As Fraser (2003) points out, that a change towards a sedentary lifestyle has led to a rise in obesity rates in the UK. However, according to his research in the English-speaking Caribbean, body image and preferences are additional factors that have contributed towards increases in weight in those countries (p. 338).

Cassels (2006), who researched obesity in Micronesia, also found that changes towards a “western” lifestyle – i.e. a lack of physical activity and a high-calorie and nutrient-poor diet – led to an increase in obesity rates in the region (p.2-4). The reasons for people changing their lifestyles are manifold and not always the individual’s choice. They can range from changes of food available in local shops and markets, to changes in imports and exports, which ultimately also determine the supply available to the public. In addition to lifestyle changes, Haslam and James (2005) suggest that genetics and foetal imprinting also contribute to an individual’s susceptibility towards obesity (p.1197&1201).

Despite many ideas of what the causes are, obesity rates are rising almost everywhere around the world.

5.2 The global extent

In recent years, obesity has become a problem of international concern. Similar to global warming, it has increasingly come to the attention of the public, the media and academic researchers of different fields. Obesity is a global problem, which is affecting both developed and developing countries. In some developing regions the increase in obesity rates has reached unprecedented levels (WHO 2003b p.5; Kumanyika 2002 p. 427).

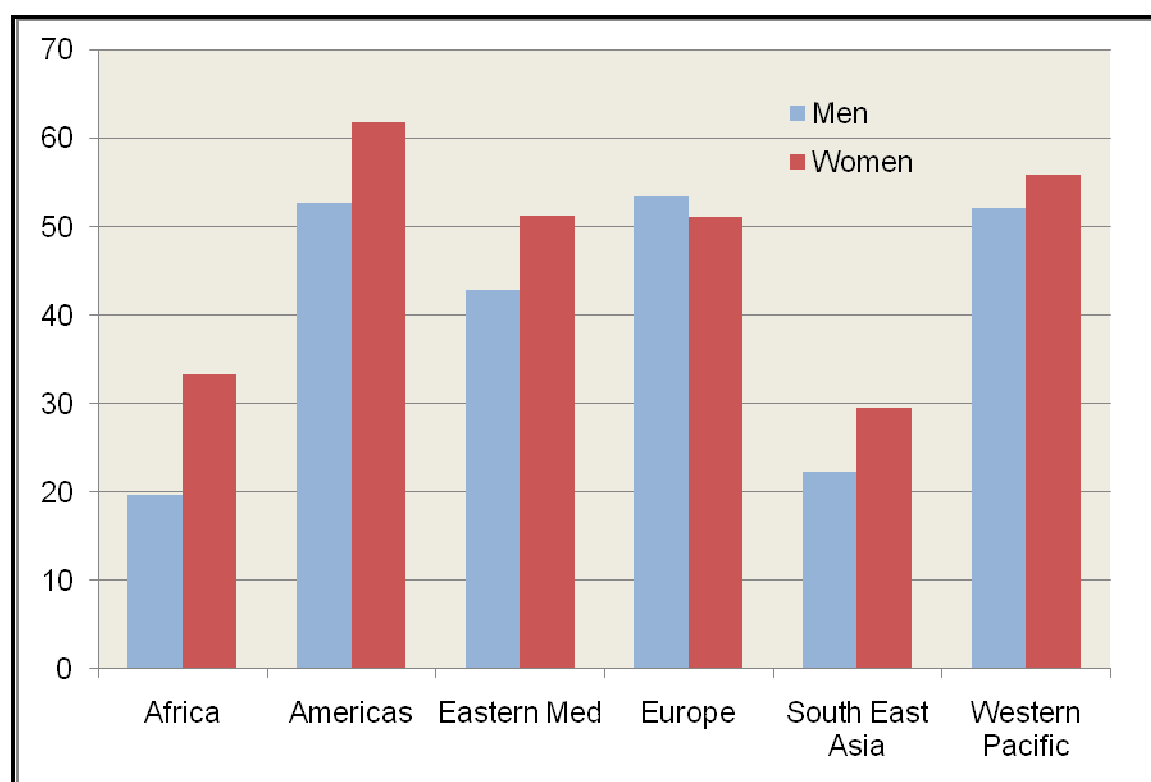
The WHO estimates that in 2005 worldwide around 1.6 billion adults were overweight, with 400 million of them being obese. In addition to this, it is estimated that 155 million school-

⁴ BMI=Body Mass Index: weight in Kg/ (height in m)²

age children are overweight, 30-45 million of them are classed as obese and a further 22 million children under the age of five are also believed to be overweight. That adds up to a total of almost 1.8 billion individuals with an “unhealthy” weight. In addition, the WHO projects that by 2015 around 2.3 billion adults will be overweight and 700 million of them obese – an increase of 70 million people per year. In contrast to this “only” around 820 million people around the world are believed to be living in hunger (WHO 2006b; IOTF 2007; WFP 2008;).

Figure 4 shows the average overweight prevalence in men and women for each WHO region in 2005 – including those who are obese (BMI>25).

Figure 4: Prevalence of overweight 2005



Source: WHO Global InfoBase 2005

There are significant differences in countries around the world as well as gender differences. However, the comparison of data from 192 countries showed that obesity rates are rising in every region even in Sub-Saharan Africa, where the disease is not quite as prevalent as in the other regions. Between 2002 and 2005, obesity rates in women rose in 83% of the 192 countries. Rates for men increased in three quarters of the countries over the same period. Another trend that was found also shows that there are generally more obese women than men – at least in non-European countries (WHO Global InfoBase 2005).

5.3 Consequences and Risks

“Corpulence is not only a disease itself, but the harbinger of others” (Hippocrates cited in Haslam and James 2005 p.1197).

As this comment by Hippocrates shows, even more than 2000 years ago, people realised that being overweight is not healthy.

The WHO has recognised this and has classed obesity as a disease itself. Further, obesity is known to cause other health problems such as infertility, disability and bone and organ conditions. (WHO 1998 p.43; WHO 2006a).

Moreover, in a report published in 1998, the WHO describes obesity as a “major risk factor for other NCDs⁵”. Unrecognised, obesity is the cause of many premature deaths due to the chronic noncommunicable diseases it can result in. In fact, it has been found that “severe obesity is associated with a 12-fold increase in mortality in 25-35-year-olds, when compared to lean individuals”. Further, a positive correlation between Body Mass Index (BMI) and the risk of developing heart disease has been discovered in women. The prevalence of hypertension is almost three times higher in overweight adults than in normal weight individuals (p.43, 50&51). Haslam and James (2005) found that the risk of high blood pressure increases with higher weight: “The risk of hypertension is up to five times higher among obese people than among those of normal weight” (p. 1199).

The link between obesity and type 2 diabetes has been found to be very strong and has been widely researched. “Around 90% of individuals who develop type 2 diabetes have a BMI higher than 23.0 kg/m², the risk of diabetes being greatly increased by early weight gain, especially in childhood” (*ibid* p.1200). Hossain *et al* (2007) suggest that the diabetes problem will be increasing with rising obesity numbers and may reach pandemic levels by 2030 (p. 214). In a study conducted in the USA, referred to by Fraser (2003), describes that “diabetes increased exponentially with increase in BMI” in women (p.337).

The scale of the impact obesity can have only becomes clear when looking at the global extent of the pandemic – the reason why obesity has also been dubbed “Globesity”. There are 1.8 billion individuals at risk of developing other costly conditions which can have severe consequences for economic development and poverty reduction.

5 Noncommunicable Diseases

This should be a reason to look beyond the impression that overweight and obesity are personal problems and that they need to be tackled as a development issue.

Chapter 6: Jamaica

The Caribbean are not necessarily the first region to spring to mind when thinking about chronic noncommunicable diseases. However, diabetes, stroke and heart disease have been the leading causes of death in the region for the past 20 years (CARICOM 2006 p.2)

6.1 Economy and development

Jamaica as one of the better-off states in the Caribbean is classified as a *medium human development* country (UNDP 2007 p.230). However, every seventh person lives below the poverty line.

Since its independence in 1962, Jamaica's economy has changed and both industry (especially bauxite and aluminium mining) and services (especially tourism) have become the most important sectors of the economy. The service sector accounts for 62% of the GDP and accordingly employs 64% of the workforce. The overall economic growth has been slow at 1.5% in 2007, the high rate of unemployment (10.2%) and the national debt (135% of GDP in 2007) pose challenges for the economy. The high unemployment rate, which is even higher among young people, is believed to exacerbate violent crime which "is hampering economic growth" (CIA World Factbook 2008). Table 2 gives an overview of some of the economic and humanitarian indicators for Jamaica.

In 2007, Jamaica saw a change of government from the People's National Party (PNP) – which gave Jamaica its first female prime minister – to the Jamaica Labour Party (JLP) with Bruce Golding as the new PM. He has proposed to make debt repayments one of his priorities and to encourage foreign investment with the aim to increase economic growth (EIU 2007 p.3). But he also acknowledges that chronic noncommunicable diseases are a growing problem in Jamaica. A few days after being sworn in, Golding took part in the CARICOM Summit on Chronic Non-Communicable Diseases (CNCDs) where the heads of state agreed to the *Declaration of Port-of-Spain: Uniting to Stop the Epidemic of Chronic NCDs*, a 14 point plan to fight CNCDs in all of the Caribbean. One of the most important points is the commitment to establish by mid-2008 a plan to provide care and access to

preventive education for 80% of affected individuals. However, the declaration does not acknowledge the importance of fighting CNCDs for the economic advancement of these countries. (CARICOM 2007)

Table 2: Overview of indicators in Jamaica

Population (2008 est.)	2.8m
Over 15 years	1.9m
GDP (ppp; 2007 est.)	\$13.47bn
Per capita (ppp; 2007 est.)	\$4,800
GDP composition by sector	Agriculture: 5% Industry: 34% Services: 61%
Life expectancy (2008 est.)	74 years
Adult mortality ⁶ (2005; m/f)	182/117
Unemployment rate (2007 est.)	10.2%
HD rank ⁷	101
% of population below poverty line (2003 est.)	14.8
Health expenditure ⁸ (2004)	5.2%
Share of government ⁹ (2004)	54.3%
Received ODA (2005)	\$35.74m

Source: CIA World Fact Book 2008 and compiled sources

6.2 CNCDs and Obesity

Chronic noncommunicable diseases are a serious problem in the Caribbean. CARICOM (2006) suggests that a transition is taking place from infectious diseases to chronic noncommunicable diseases as the major health worry. In the second half of the 1990s chronic diseases accounted for 51% of all deaths (p.XV). A detailed report by CAREC¹⁰ (2005) found that for the past 20 years, heart disease has been the leading cause of death

6 Source: WHOSIS 2006; Adult mortality is defined as probability of dying between 15-60 per 1000 population

7 Source: UNDP 2007

8 Source: WHOSIS 2007; as share of GDP

9 Source: WHOSIS 2007; as share of total expenditure

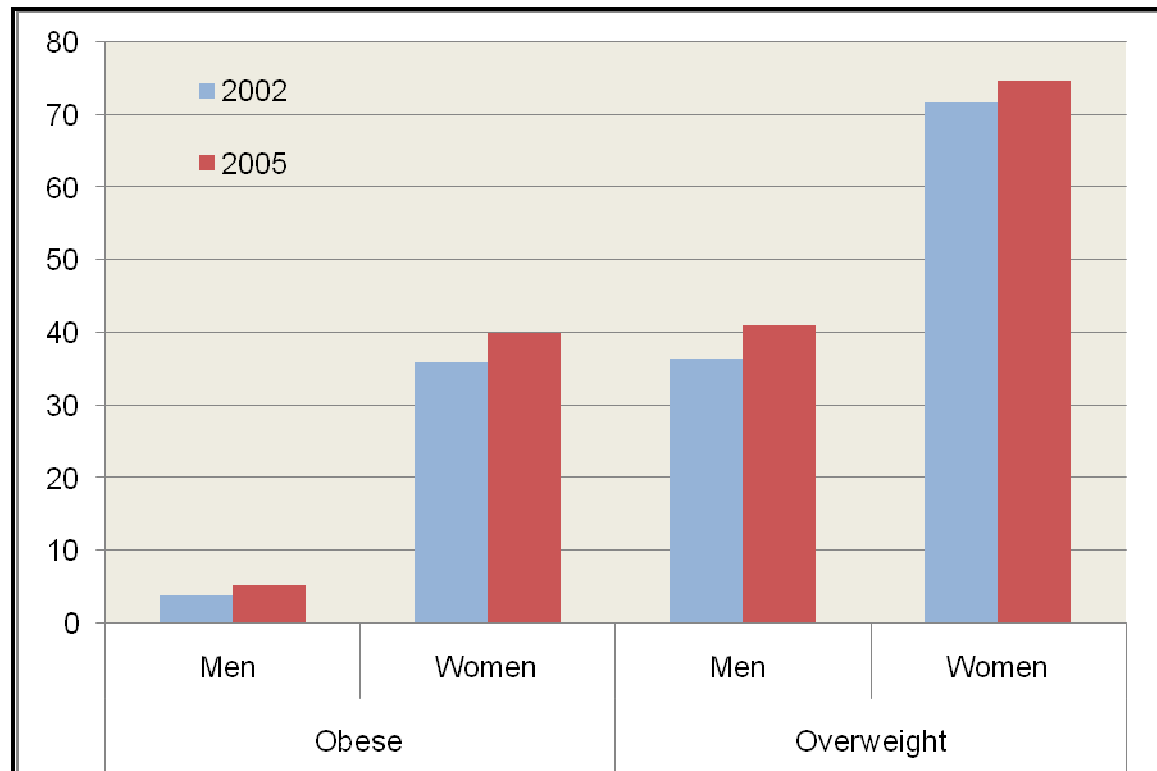
10 The Caribbean Epidemiological Centre is administered by the PAHO and has 21 member countries: Anguilla, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, Netherlands Antilles, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Suriname, Turks & Caicos

in its member countries, between 15% and 17% of all deaths. The percentage of all deaths attributable to diabetes increased from 5% in 1985 to 10% in 2000 (p.2-4).

Diabetes and hypertension are widespread in Jamaica, it has been estimated that in 2004 300,000 thousand people were living with diabetes – over 10% of the population, and that a quarter of the population suffer from hypertension. CARICOM (2006) estimates that these two conditions cost the Jamaican health system around \$58 million a year in direct costs alone (p.XV).

Obesity and overweight are also a growing problem in Jamaica. Rates have increased between 2002 and 2005 as Figure 5 shows. In 2005 almost 75% of Jamaican women over the age of 15 were overweight or obese, i.e. had a BMI higher than 25; that is the 12th highest rate in the world. In the same year, the obesity prevalence among women reached 41% that means almost 400,000 people have an increased risk of developing chronic noncommunicable diseases. In 2005, around 1.14 million people over the age of 15 had a BMI higher than 25 kg/m², more than half the population of that age group (WHO Global InfoBase 2005; CIA World Fact Book 2008).

Figure 5: Obesity and overweight among men and women, 2002 and 2005



Source: WHO Global InfoBase 2005

6.3 MDGs in Jamaica

In a UNDP report published in 2004, Jamaica is rated as a “green” country. In terms of MDGs, this means that it is very likely to achieve the goals. So far (in 2004) however, only Goal 2 and part of Goal 6 (Malaria) have been “achieved”. Goal 1 and Goal 7 are “on track” and the remaining four, including the HIV part of Goal 6 are “lagging” or are considered “far behind”¹¹ (UNDP Jamaica 2004 p.6)

A range of programmes and projects, some of which have been in place before the MDGs, are supporting or working towards achieving the targets. The Human Resources Programme “*which protected public spending in health and education and saw reforms in these sectors designed to afford higher priority to services that would be of greatest benefit to the poor*” and the National Poverty Eradication Programme, launched in 1996, are the main ones (*ibid* p.13&14).

6.4 Impacts of CNCDs in Jamaica

The framework introduced above shows in which ways chronic noncommunicable diseases can impact economic and human development and poverty. However, a lack of data on the different parts of the costs show that CNCDs are not given the priority they should be. The data that has been found gives an idea of how much these diseases have cost Jamaica.

Health care is partly provided by the government, but a PAHO Country Health Profile (2002) shows that in 2001 there was only one health insurance provider. Coverage differed immensely between the income groups – less than 1% in the poorest quintile and merely 33% in the wealthiest. This means a large proportion of the population has no health insurance and has to pay for services from their private budget. As described in the framework above, higher expenditure on healthcare has an effect on consumption and savings in affected households, especially when the budget is tight

A CARICOM study from 2001 revealed how much money is spent on diabetes and hypertension, as Table 3 shows.

11 **Achieved:** The country has achieved the target;

On Track: The country has attained the rate of progress needed to achieve the target of 2015 or has attained 90 per cent of that rate of progress;

Lagging: The country has achieved 70 to 89 per cent of the rate of progress required to achieve the target by 2015;

Far Behind: The country has achieved less than 70 per cent of the required rate of progress;

Slipping back: The country's level of achievement is at least 5 percentage points worse in 2000 than in 1990.

Table 3: The cost of diabetes and hypertension in Jamaica

COST ITEM	DIABETES	HYPERTENSION
Direct Cost (J\$)	7,017,249,359	8,454,156,769
Hospitalisation	67,464,915	19,541,215
Clinic/Doctor's Visits	2,890,700	11,507,200
Drugs	5,756,265,648	5,535,800,467
Laboratory/Diagnostic Tests	1,190,628,096	2,898,306,137
Indirect Cost (J\$)	1,869,350,533	3,092,035,940
Mortality	1,015,308,915	388,791,656
Morbidity	854,041,618	2,703,244,284
Total Cost (J\$)	8,886,599,892	11,564,192,709
%of GDP	2.33	3.02
Total in US\$	182,364,045	236,942,186

Source: CARICOM 2001

The direct cost was around US\$317 million. The GDP in that year was \$9.8 billion and only 6.8% or \$667 million were allocated for health care. Almost half of the health budgets was spent on these two conditions. It should be noted that these amounts do not include the cost for cardio vascular diseases, which is responsible for the majority of deaths in the Caribbean and presumably also in Jamaica. Further, neither obesity nor the prevention of chronic noncommunicable diseases are included in these costs and would increase the amount even further.

In total, US\$419 million were spent on diabetes and hypertension or around 2.67 per cent of Jamaica's GDP, which is substantially higher than the average 0.03% from the Abegunde *et al* (2007) study that was mentioned above. In the same year, Jamaica received \$54 million in Official Development Aid (ODA); eight times that amount has been spent on preventable illnesses (UNDP 2003).

The future for Jamaica is not looking any better, overweight and obesity rates are increasing, putting more people at risk of developing other chronic noncommunicable diseases.

Evidence for this is an increase in the number of people claiming Individual Health Benefits from the National Health Fund¹² (NHF), which can be claimed for help towards prescription drugs. In the financial year 2006/7, the number of satisfied claims rose by 115%; 70 per cent of these recipients suffer from hypertension and diabetes (JIS 2007).

These examples show that CNCDs play a costly role in Jamaica's budget. The fact mentioned above that more than half the working-age population is overweight or obese, gives a bleak outlook for Jamaica's future in terms of expenditure on these preventable diseases. Even when assuming that all people over 65 years are overweight, this still leaves half the work force with an unhealthy weight and potentially at risk of developing chronic noncommunicable diseases. This leaves Jamaica in danger of not increasing their economic growth due to the effects of preventable diseases.

Conclusion

The six chapters give an overview of the global situation of chronic noncommunicable diseases. The lack of a conjunction of global agendas, explained in chapter one, and the worldwide extent of these diseases and high numbers of death caused by CVDs, diabetes and hypertension, call for action. Further, the methods and the resulting framework show that a comprehensive method is needed to properly measure the impact of CNCDs on economies. The example of Globesity shows how the numbers of people affected by and dying from chronic noncommunicable diseases could reach unprecedented levels in the future and therefore also have a stronger effect on economic and human development. The example of Jamaica shows how high the price is, which a small island country already pays as a result directly related to chronic noncommunicable diseases.

Drawing on the findings described in the chapters, five reasons evolve to why CNCDs should be included in the next set of development goals:

1. Chronic noncommunicable diseases are responsible for the majority of deaths worldwide and kill more people than malaria and HIV/AIDS, which are targeted in the Millennium Development Goals
2. CNCDs make up the largest share of the burden of disease

¹² the equivalent to the NHS in the UK

Why to include Chronic Noncommunicable Diseases in the next set of Development Goals

3. The direct cost puts an extra burden on health systems, especially in countries, where health care is not the main priority or which have to cope with a double burden of both chronic and infectious diseases
4. The indirect cost, i.e. the loss of production and workforce and lower consumption and saving levels, affects the GDP and ultimately also the ability of countries to develop economically
5. The intangible cost has an impact on human development and can restrict the advancement of individuals affected by chronic noncommunicable diseases, both directly and indirectly
6. Through the combination of these costs chronic noncommunicable diseases have the ability to drive households into poverty

Despite the MDGs not being on track and the criticism they receive for it, they are an important tool to tackle development issues and to monitor the progress. Through these set goals and their targets, development issues are put on top of national agendas. Moreover, the issues are recognised as impairing development and contributing towards poverty. To successfully fight poverty and CNCDs, the diseases also need to be recognised as a development issue and not “just” a health problem.

The neglect of chronic noncommunicable diseases as development issues could be part of the reason why the MDGs are not being achieved and probably won't be until 2015. This gives reason to believe that there is going to be a “next set of development goals”. However, they do not have to be direct successors of the MDGs but rather an improved global strategy to fight poverty and promote development, which includes CNCDs.

To conclude, the Millennium Development Goals claim to tackle “*main development challenges*”; the five reasons mentioned above make chronic noncommunicable diseases seem like a development challenge which is worth taking on.

References

- Abegunde, D. and Stanciole, A. (2006). *An estimation of the economic impact of non-communicable diseases in selected countries*. WHO Working Paper. [online]
URL: http://www.who.int/chp/working_paper_growth%20model29may.pdf
[Accessed: 09/12/2007]
- Abegunde, D. et al (2007). The burden and cost of chronic diseases in low-income and middle-income countries. *The Lancet* 370 (9603) pp 1929-38. [online]
URL: <http://www.thelancet.com/journals/lancet/article/PIIS0140673607616961/fulltext>
[Accessed: 31/03/2008]
- Avert (2007). *Global HIV/AIDS estimates, end of 2007*. [online]
URL: <http://www.avert.org/worldstats.htm>
[Accessed: 23/02/2008]
- CAREC (2005). *Leading Causes of Death and Mortality Rates 1985 1990 1995 2000*. PAHO/WHO Publication. [online]
URL: <http://www.carec.org/documents/leading-causes-of-death-and-mortality-rates-in-CMCs.pdf>
[Accessed: 01/02/2008]
- CARICOM (2001) *Estimates of Economic Burden of Diabetes and Hypertension*. CARICOM Summit on CNCDS. [online]
URL: http://www.caricom.org/jsp/community/chronic_non_communicable_diseases/diabetes_hypertension.jsp
[Accessed: 03/05/2008]
- CARICOM (2006) *Report of the Caribbean Commission on Health and Development*. PAHO, WHO and CARICOM Publication. Ian Randle Publications. Kingston, Jamaica. [online]
URL: http://www.who.int/macrohealth/action/PAHO_Report.pdf
[Accessed: 09/12/2007]
- CARICOM (2007) *CARICOM Heads adopt Declaration on NCDs*. Press Release 15 September 2007. [online]
URL: http://www.caricom.org/jsp/pressreleases/pres212_07.jsp
[Accessed: 03/05/2008]
- Cassels, S. (2006). Overweight in the Pacific: links between foreign dependence, global food trade, and obesity in the Federated States of Micronesia. *Globalisation and Health*. 2 (10). [online]
URL: <http://www.globalizationandhealth.com/content/2/1/10>
[Accessed: 08/12/2007]
- CIA World Factbook (2008). *Jamaica*. [online]
URL: <https://www.cia.gov/library/publications/the-world-factbook/geos/jm.html>
[Accessed: 07/05/2008]
- EIU (2007) *Country Report Jamaica*. The Economist Intelligence Unit Limited. London, UK.
- Eurostat (2007) *Healthy Life Years Expectancy*. Concepts, Definitions and classifications. Statistical Office of the European Communities, Luxembourg. [online]

URL: http://europa.eu.int/estatref/info/sdds/en/hlth/hlth_hlye_sm.htm
[Accessed: 13/05/2008]

Fraser, H. (2003). Obesity: diagnosis and prescription for action in the English-speaking Caribbean. *Revista Panamericana de Salud Pública* 13 (5). Washington, USA. [online]
URL: http://www.scielo.org/scielo.php?script=sci_arttext&pid=S1020-49892003000400013&lng=en&nrm=iso&tlng=en
[Accessed: 05/10/2007]

Haslam, D.W. and James, W.P. (2005). Obesity. *The Lancet*. 366. p.1197-1209. [online]
URL: http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T1B-4H7052J-11&_user=10&_coverDate=10%2F07%2F2005&_rdoc=1&_fmt=&_orig=search&_sort=d&_view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=76cdc1a86d00ef86e24f87736a71c576
[Accessed: 16/10/2007]

Hossain, P. et al. (2007). Obesity and Diabetes in the Developing World – A Growing Challenge. *New England Medical Journal*. 356 (3). pp. 213-215. [Online]
URL: <http://content.nejm.org/cgi/content/full/356/3/213>
[Accessed: 14/10/2007]

IOTF (2007) *Childhood Obesity*. [online]
URL: <http://www.ietf.org/childhoodobesity.asp>
[Accessed: 09/05/2008]

JIS (2007) NHF Individual Health Benefit Programme Grew by 33 Per Cent in 2006/07. *Jamaican Information Service – Ministry of Health*. Wednesday, 20 June 2007. [online]
URL: http://www.jis.gov.jm/health/html/20070620T100000-0500_12357_JIS_NHF_INDIVIDUAL_BENEFITS_PROGRAMME_GREW_BY_33_PER_CENT_IN_2006_07.asp
[Accessed: 12/02/2004]

Kumanyika, S. et al (2002). Obesity Prevention: the case for action. *International Journal of Obesity*. 2002 (26). pp. 425-436. [online]
URL: <http://www.nature.com/ijo/journal/v26/n3/pdf/0801938a.pdf>
[Accessed: 08/02/2008]

OECD (2005). Millennium Development Goals. *OECD Observer*. 2005 (251). Pp 24-25. [online]
URL: www.un.org/Pubs/chronicle/2005/e_alert/MDGChartOECD.pdf
[Accessed: 22/04/2008]

PAHO Country Health Profile (2002) *Jamaica*. [online]
URL: http://www.paho.org/English/DD/AIS/cp_388.htm#respuesta
[Accessed: 01/05/2008]

Suhrcke, M. et al (2006). *Chronic disease: an economic perspective*. Oxford Health Alliance. London, UK. [online]
URL: <http://www.oxha.org/knowledge/publications/oxha-chronic-disease-an-economic-perspective.pdf>
[Accessed: 28/01/2008]

UN (2000) *54/254 Millennium Summit of the United Nations*. A/RES/54/254. 23 March 2000. [online].

URL: www.un.org/millennium/documents/ares54254e.pdf
[Accessed: 26/04/2008]

UNAIDS (2007). *AIDS epidemic update*. UNAIDS and WHO Programme. Geneva, Switzerland. [online]
URL: <http://www.unaids.org/en/KnowledgeCentre/HIVData/EpiUpdate/EpiUpdArchive/2007/>
[Accessed: 20/02/2008]

UNDP – About the MDGs: Basics. *What are the Millennium Development Goals?* [online]
URL: <http://www.undp.org/mdg/basics.shtml>
[Accessed: 22/04/2008]

UNDP Jamaica (2004) *Millennium Development Goals*. [online]
URL: <http://www.undp.org/fojam/>
[Accessed: 03/05/2008]

UNDP (2000). *Presentation on Obesity*. 16 May 2000. Kingston, Jamaica. [online]
URL: http://www.undp.org/fojam/obesity_speech.htm
[Accessed: 04/10/2007]

UNDP (2003). *Human Development Report 2003: Millennium Development Goals: A Compact among Nations to End Human Poverty*. Oxford University Press. Oxford, UK; New York, USA
URL: http://hdr.undp.org/en/media/hdr03_complete.pdf
[Accessed: 03/12/2007]

UNDP (2007). *Human Development Report 2007/2008: Fighting Climate Change*. Palgrave Macmillan. New York, USA. [online]
URL: http://hdr.undp.org/en/media/hdr_20072008_en_complete.pdf
[Accessed: 03/12/2007]

UN DESA (2007) Millennium Development Goals: 2007 Progress Chart. [online]
URL: www.un.org/millenniumgoals/pdf/mdg2007-progress.pdf
[Accessed: 22/04/2008]

WHO (1998). *Obesity: Preventing and Managing the Global Epidemic*. Geneva. Switzerland

WHO (1999) *Global Strategy for the Prevention and Control of Noncommunicable Diseases*. EB105/42. 16 December 1999. [online]
URL: ftp.who.int/gb/archive/pdf_files/EB105/ee42.pdf
[Accessed: 26/04/2008]

WHO (2003). *Surveillance of noncommunicable disease risk factors*. Fact sheet No 273. March 2003. [online]
URL: <http://www.who.int/mediacentre/factsheets/fs273/en/index.html>
[Accessed: 22/04/2008]

WHO/FAO (2003b). *Diet, Nutrition and the Prevention of Chronic Diseases*. Joint WHO/FAO Expert Consultation. Geneva, Switzerland. [online]
URL: http://whqlibdoc.who.int/trs/WHO_TRS_916.pdf
[Accessed: 29/11/2007]

WHO (2004). *World Health Report 2004*. Statistical Annex. Geneva Switzerland. [online]
URL: <http://www.who.int/whr/2004/annex/en/index.html>
[Accessed: 21/02/2008]

WHO (2005) *Preventing Chronic Diseases: A vital investment*. [online]
URL: http://www.who.int/chp/chronic_disease_report/contents/en/index.html
[Accessed: 21/04/2008]

WHO (2006a). *Diabetes*. Fact sheet No 312. September 2006. [online]
URL: <http://www.who.int/mediacentre/factsheets/fs312/en/index.html>
[Accessed: 22/02/2008]

WHO (2006b). *Obesity and Overweight*. Fact sheet No 311. September 2006. [online]
URL: <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>
[Accessed: 15/02/2008]

WHO (2007a). *Cardiovascular diseases*. Fact sheet No 317. February 2007. [online]
URL: <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>
[Accessed: 22/04/2008]

WHO (2007b). *Malaria*. Fact sheet No 94. May 2007. [online]
URL: <http://www.who.int/mediacentre/factsheets/fs094/en/index.html>
[Accessed: 23/02/2008]

WHO (2008) *Prevention and control of noncommunicable diseases: implementation of the global strategy*. A61/8. 18 April 2008.

WHO Global Infobase.(2005). Obesity BMI>25; BMI>30; Men and women. [online]
URL: <http://www.who.int/infobase/compare.aspx?dm=5&countries=212%2c214%2c276%2c332%2c388%2c780%2c826&year=2005&sf1=cd.0701&sex=all&agegroup=15-100>
[Accessed: 08/10/2007]

WHOSIS (2006) *Adult Mortality Rate*. Core Health Indicators – Jamaica. [online]
URL:
<http://www.who.int/whosis/database/country/compare.cfm?country=JAM&indicator=MortAdultMale,MortAdultFemale&language=english>
[Accessed: 05/05/2008]

WHOSIS (2007) Core Health Indicators – Jamaica. [online]
URL:
http://www.who.int/whosis/database/core/core_select_process.cfm?countries=all&indicators=nha
[Accessed: 10/12/2007]

World Food Programme (2008). Introduction. [online]
URL: http://www.wfp.org/aboutwfp/introduction/hunger_who.asp?section=1&sub_section=1
[Accessed: 02/01/2008]