Federal Democratic Republic of Ethiopia
Ministry of Health

NATIONAL STRATEGIC ACTION PLAN (NSAP) FOR PREVENTION & CONTROL OF NON-COMMUNICABLE DISEASES IN ETHIOPIA

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Contents

List of Acronyms

AMI	Acute Myocardial Infraction
BCC	Behavior Change Communication
BMI	Body Mass Index
BSS	Behavioral Surveillance Survey
COPD	Chronic Obstructive Pulmonary diseases
CRD	Chronic Respiratory Diseases
CSA	Central Statistical Authority
CVD	Cardiovascular Diseases
DALY	Disability Adjusted Life Years
DPCD	Disease Prevention and Control Directorate
DM	Diabetes Mellitus
EDHS	Ethiopian Demographic and Health Survey
EPHA	Ethiopian Public Health Association
FCTC	Framework Convention on Tobacco Control
FMOH	Federal Ministry of Health
HBV	Hepatitis B Viruses
HCV	Hepatitis C Viruses
HDA	Health Development Army
HEW	Health Extension Worker
HEP	Health Extension Program
HMIS	Health Management Information System
HPV	Human Papilloma Viruses
HSDP IV	Health Sector Development Program IV
IARC	International Agency for Research on Cancer
IEC	Information, Education and Communication

JSC	Joint Steering Committee
LMIC	Low-Middle Income Countries
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MoFED	Ministry of Finance and Economic Development
NCD	Non-communicable Diseases
NGO	Non-Governmental Organizations
NMTAG	National Multi-sectoral Technical Advisory Group
NSAP	National Strategic Action Plan
NSC	National Steering Committee
NTWG	National technical Working Group
PBCR	Population-Based Cancer Registries
PEN	Package of Essential Non-communicable (PEN) Diseases Interventions
PHC	Primary Health Care
PPD	Planning and Policy Directorate
RHB	Regional Health Bureau
RHD	Rheumatic Heart Disease
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToT	Trainer of trainees
WHO	World Health Organization

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Executive Summary

Non-communicable diseases, including cardiovascular diseases, cancer, chronic respiratory diseases and diabetes, are the leading causes of morbidity and mortality in today's world. The majority of deaths due to NCDs occur in low and low-middle income countries and this poses a significant challenge for human development as a whole. NCDs and their risk factors have a complex interaction with each other, with infectious diseases, nutritional deficiencies and other communicable conditions and the impact of NCDs affect sectors beyond the health sector. The response for the prevention and control of NCDs requires a multi-sectoral approach and efforts should be made throughout the whole of the human life cycle.

In Ethiopia, there is evidence of an increasing burden of NCDs and their risk factors across the board. A number of separate small-scale studies and the situational analysis conducted by the Federal Ministry of Health in 2008 supports the above conclusion on the situation of NCDs and their risk factors in Ethiopia. Accordingly, in 2010 the Federal Ministry of Health developed a national strategic framework on the prevention and control of NCDs and their risk factors. The strategic framework recommended the development of a detailed national and sub-national strategic action plan (NSAP). Therefore this national strategic action plan has been prepared which outlines the detailed actions and interventions required in the prevention and control of NCDs and their risk factors in Ethiopia.

This national strategic action plan outlines the major NCDs and their risk factors which should receive due priority in Ethiopia. These are cardiovascular diseases, cancers, chronic respiratory diseases and diabetes and their shared risk factors including tobacco, physical inactivity, unhealthy diet and excessive alcohol use, as well as khat consumption. Mental, neurological and substance use disorders that make a large contribution to NCDs are dealt with separately in the National Mental Health Strategy. The NSAP for NCDs includes plans for the national coordination mechanisms and the multi-sectoral response that must operate for effective prevention and control of NCDs and their risk factors. The action plan is focused on the delivery of essential and quality preventive and curative health services integrated within the three tiered healthcare system of the country. Health services will be provided integrated within the PHC extended to the health post and health extension program, as well as in secondary and tertiary health facilities. Besides, the private sector and civic society will be engaged in delivering health services for NCDs and their risk factors. Mechanisms will be established to avail essential medical technologies and generic medicines. Overall the action plan aims to establish and strengthen the multi-sectoral response in general for the prevention and control of NCDs and strengthening the health system in particular.

This action plan is the road map for the prevention and control of NCDs in Ethiopia. It comprises fundamental public health and clinical "best-buy" interventions and describes resource needs. It is designed to curb the challenges posed by NCDs and their risk factors and aimed to register improved health outcomes in Ethiopia if implemented effectively and in a timely fashion. It calls for a collective multi-sectoral response, strategic policy changes, resource mobilization and collaboration among all stakeholders. Strong national and sub-national political commitment and government leadership is fundamental for the success of this action plan.

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Introduction

Poverty, rapid urbanization, population ageing, the effects of globalization of marketing and trade, and the social determinants of health are among the contributing factors to the rising incidence and prevalence of non-communicable diseases. Non-communicable diseases (NCDs) cause disease, disability, and death, and reduce productivity. Non-communicable diseases and their risk factors lead to increased burdens on individuals, families and communities, including impoverishment from long-term treatment and care costs, and to a loss of productivity that threatens household income and leads to productivity loss for individuals and their families and to the economy of the nation. NCDs impose substantial costs on health services, particularly since NCDs frequently lead to ongoing disability and need for long-term care. Consequently, non-communicable diseases are contributory to poverty and hunger, which may have a direct impact on the achievement of the internationally-agreed development goals, including the Millennium Development Goals (MDGs).

Health inequities arise from the societal conditions in which people are born, grow, live, work and age, referred to as social determinants of health, and this is true especially for non-communicable diseases. These include early years' experiences, education, economic status, employment and decent work, housing and environment, and effective systems of preventing and treating ill health. Better health outcomes from non-communicable diseases can be achieved much more readily by work across different sectors and levels of government influencing public policies in sectors like agriculture, communication, education, employment, energy, environment, finance, industry, labor, sports, trade, transport, urban planning, and social and economic development than by making changes in health policy alone.

Innovative approaches are needed to strengthen advocacy to raise public awareness about the links between non-communicable diseases and sustainable development, support governments in integrating non-communicable diseases into the health-planning processes and development agenda, and increase and prioritize budgetary allocations for addressing non-communicable diseases. International cooperation and assistance also are crucial to support governments in their national efforts to set national targets and measure results, and develop national multi-sectoral plans and policies for the prevention and control of non-communicable diseases. Therefore, advocacy and awareness raising activities shall target and reach policy makers, influential individuals and the population at large.

Universal health coverage is a key requirement for effective prevention and control of non-communicable diseases. The vicious link between non-communicable diseases and impoverishment cannot be severed in the absence of universal health coverage in national health systems. Especially people centered primary health-care and social protection mechanisms should be ensured, to provide access to health services for all and in particular for the poorest segments of the population. Therefore, effective and efficient prevention and control of NCDs requires national and subnational level policy interventions and multi-sectoral collaboration. Appropriate policies and legislations should be created and implemented to tackle the main behavioral risk factors (tobacco, physical inactivity, unhealthy diet and harmful use of alcohol and khat).

Quality health services shall be delivered to those in need. Primarily these health services shall be provided integrated within the existing health system by virtue of health for all. In Ethiopia the primary health care particularly the Health Extension Program (HEP) and health centers must play central role in promoting health of the community via health promotion and disease prevention. Health promotion and disease prevention interventions shall be delivered based on the priority NCDs as well as their shared risk factors, including khat. Essential NCDs treatment and care must be provided integrated within the PHC (HCs and primary hospitals) and services shall be linked to the higher level through a functional referral networking. Adequate resource

mobilization and utilization will get due priority in the implementation of this national strategic action plan. Resources included but are not limited to health workforce, training and capacity building, infrastructure, essential medicines, diagnostic, palliative and therapeutic technologies. Specific guidelines will be developed in order to enable the translation of this plan and to help define or redefine operational tools to implement. Besides, appropriate mechanism will be established to engage communities in developing their own health.

In Ethiopia, the central pillar of the health sector of the government is "improving the health of the population" through promotive, preventive, curative and rehabilitative health services (MoFED, 2010). This vision will remain truer in case of the NCDs and their risk factors specifically. In order to achieve this goal in the arena of the NCDs, it is obvious that developing clear and straight forward national strategic action plan is a prerequisite. Thus, this National Strategic Action Plan (NSAP) to tackle the raising burden of NCDs and their risk factors is envisioned to achieve an optimal goal in the prevention and control of NCDs and foreseen to formulate and equip the country to cope with the increasing burden of NCDs and their risk factors.

This document outlines the framework for the prevention and control of NCDs and their risk factors as well as the reduction of morbidity and mortality attributable to NCDs.

Burden of NCDs

Global

Health transition is a reality in the 21st century, reflected by its demographic and epidemiological transitions. Aging populations, unplanned urbanization, rapid economic development and more sedentary lifestyles are some of its features. Subsequently, non-communicable diseases (NCDs) have become the major killers of human kind in recent years. An estimated 36 million deaths, or 63% of the 57 million deaths that occurred globally in 2008, were due to non-communicable diseases, comprising mainly cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%) and diabetes (3.5%)(WHO, 2010a). Nearly 80% (29 million) of these deaths were in low- and middle-income countries and more than 90% of premature deaths (death before the age of 60 years) occurred in these countries.

The African region is not spared from this global epidemic of NCDs and, in fact, continues to suffer from a double burden of diseases (communicable and non-communicable diseases). The WHO predicted that deaths from NCDs will increase globally by 17% over the next ten years, with the greatest increase in the African region (by 27% or 28 million deaths from NCDs) (WHO, 2010a). In Africa, projections indicate that deaths from NCDs will exceed the combined mortality from communicable, maternal, perinatal, and nutritional diseases to become the most common causes of death by 2030. It is clear that non-communicable diseases (NCDs) present a leading threat to human health and human development in Africa.

National

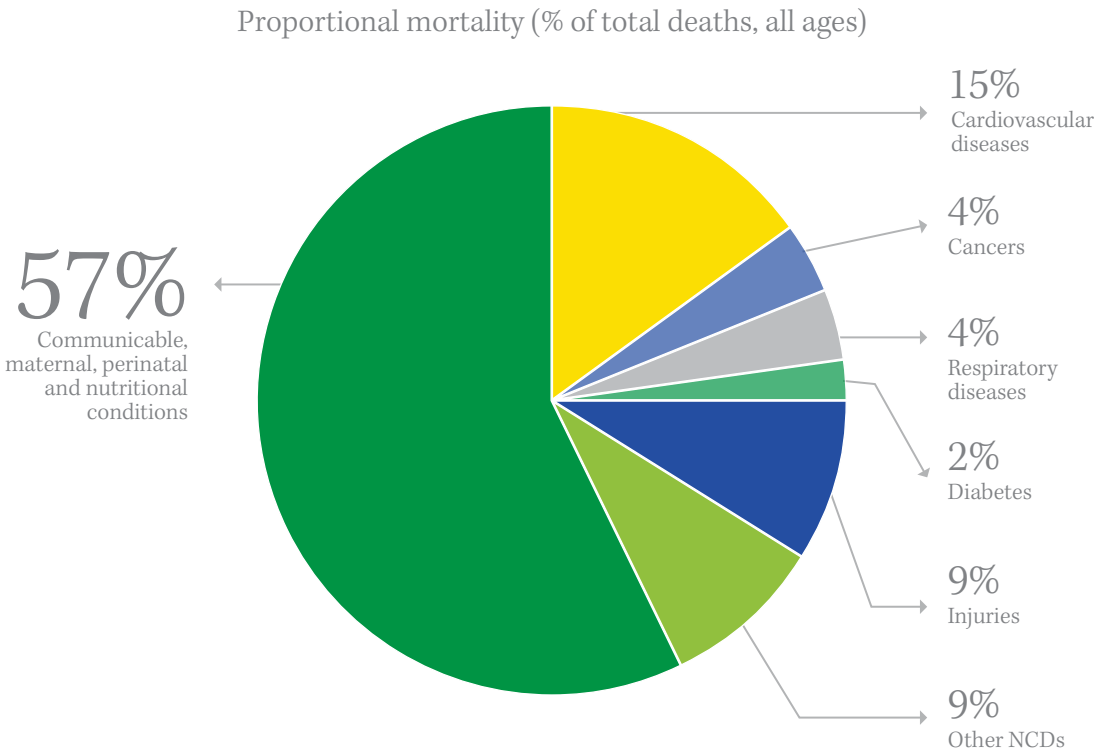
Estimates from the WHO (from 2008) indicated an NCDs-related annual death rate of 34% in Ethiopia (WHO, 2010a). In this report, cardiovascular diseases accounted for 15%, cancers for 4% and respiratory disease for 4% of all causes of death. Furthermore, diabetes accounted for 2%, injuries for 9% and other NCDs for 9% of causes of deaths in the same year.

Nationally representative surveys on NCDs and their risk factors in Ethiopia are not available. However, a number of small-scale studies have reinforced the estimate above. For example, a study from Addis Ababa investigating cause of death using verbal autopsy showed that 51% deaths were due to non-communicable diseases (Misganaw, Mariam & Araya, 2012). In the same study, amongst the non-communicable diseases cardiovascular disease was the leading cause of death (24%), followed by malignant neoplasms (10%); respiratory tract diseases (9%); and type1 and type2 diabetes (5%). Similarly, the study revealed disproportionate age-

specific death rates, with a significant rise in death from non-communicable disease between the ages of 44 and 74 years.

Another population-based 'STEPS' survey conducted in Jimma (south-west Ethiopia) from 2008 – 2009 showed a substantial burden of NCDs and their risk factors within the community. In this study a prevalence of 3% of cardiovascular diseases, 2.6% of hypertension, 1.5% of asthma and 0.5% of diabetes was reported.

Fig 1: *Situation of communicable and non-communicable diseases in Ethiopia*



Cardiovascular Diseases: Cardiovascular diseases (CVDs) are a group of disorders affecting the heart and blood vessels and include: coronary heart disease, heart valve disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism.

No nationwide studies have been carried out on CVDs in Ethiopia. Unpublished hospital studies and a small number of community based studies have shown CVDs to be a major cause of morbidity and mortality in Ethiopia. Community-based studies showed that the prevalence of hypertension among adults was 31% and 8.8% in Addis Ababa and Butajira, respectively (FMOH& WHO, 2008). Based on a school survey, the prevalence of Rheumatic Heart Disease (RHD) was 6.4 per 1000 population in Addis Ababa, compare to 4.6 per 1000 in a rural town (Oli K et al 1999, and Oli, Tekle-Haimanota, Lars Forsgrenb & Jan Ekstedtb, 1992).

According to unpublished data from four tertiary hospitals in Addis Ababa and Gondar, RHD accounts for 34.7% of cardiovascular visits and hospital admissions. Besides, hypertension was responsible for 15.2% of CVD visits and admissions in these tertiary hospitals, while atherosclerotic heart disease accounted for 8.9% of CVD visits and admissions. The most common cause of sudden death in Addis Ababa was ascertained to be Coronary Artery Disease. RHD also takes an aggressive course with early mortality and morbidity.

Cancer: In Ethiopia, cancers, such as cervical and breast cancer in women, Kaposi's sarcoma and prostate cancer in men have been cited as important emerging public health problems. According to the International Agency for Research on Cancer (IARC), the estimated number of cancer cases in Ethiopia in 2012 was 60,749 (Male-19,654, Female-41,095). The report indicated that digestive organ cancers (3,956) are the leading cancers in males, followed by hematopoietic (3,603) and male genital organ cancers (1,427). The leading cancer in females was breast cancer (12,956), followed by female genital organ cancers (10,181) and cervical cancer (7,095). Data from the Addis Ababa population based cancer registry showed that breast and cervical cancers were the leading causes of cancer, comprising 22.6% and 10.8% respectively of all cases of cancers. Leukemia, which is a blood cancer, accounted for 7% followed by colorectal cancers accounting for 6.4%.

Diabetes Mellitus: Diabetes is a chronic illness with multi-system complications. In recent years diabetes mellitus has emerged as an important clinical and public health problem throughout the world. In Ethiopia by the year 2011 estimates from the International Diabetes Federation (IDF), showed nearly 2.5 million people live with diabetes (an estimated prevalence of 2%). In 2010, diabetes contributed to approximately 2% of all deaths and approximately 6% of deaths due to non-communicable diseases in Ethiopia. Small scale studies from Ethiopia have shown a steady but progressive rise in DM. In 1979, the prevalence of diabetes among bank employees in Ethiopia was 1.2%; however, more recent studies showed a higher prevalence of diabetes. In a community-based study conducted among 576 subjects aged 40 years or older in the town of Jimma, the prevalence of type 2 diabetes was 5.3% and the prevalence of people with an impaired glucose tolerance test was even higher (7%). In a facility-based study conducted in two zones of Gondar and Jimma, the annual incidences of diagnosed insulin-requiring and non-insulin requiring diabetes were 2.1 and 2.6 per 100 000, respectively. Studies among Ethiopian immigrants to Israel showed diabetic prevalence of 10.3%. A much higher diabetic prevalence is reported among urban residents than in the rural population. This finding is suggestive of the lifestyle change among the urban population that is fuelling the observed rise in DM.

Chronic Respiratory Diseases: The chronic respiratory diseases (CRD) include Bronchial Asthma, chronic pulmonary disease such as chronic obstructive pulmonary diseases (COPD), occupational lung diseases and chronic interstitial lung diseases

Little was known about bronchial asthma in Ethiopia until about four decades ago. It was after the mid -1970's that asthma began to be mentioned as a cause of hospital outpatient visits and admissions. For example, 4.3% and 1.7%, respectively, of medical admissions to the armed force hospitals and three civilian hospitals in Addis Ababa were due to asthma. Another study carried out a few years later showed that asthma was seen in 2.7% of 5900 medical inpatients and 1% of 26,314 out patients, thus demonstrating that asthma had become a common cause of morbidity in adults, at least in Addis Ababa. Subsequently, larger community based prevalence studies were carried out among school children in both Addis Ababa and regional towns (Jimma/Gondar). The prevalence of ever experiencing asthma in these studies was found to be 2.8 % and 3.8%, respectively. More worryingly, the 12 month prevalence of self-reported wheezing was found to be 10.7% and 16.2% in Addis Ababa and Gondar, respectively.

Hospital admission analysis showed that chronic bronchitis comprised 7% and 4.3% of all the respiratory admissions in two hospitals where the study conducted. Similarly, amongst hospitalized patients for respiratory diseases; chronic cor pulmonale was found in 1.8% while chronic bronchitis was 1.2%. Further data on 42 cases of chronic cor pulmonale showed that chronic bronchitis /emphysema was the third most common under lying cause of cor pulmonale, accounting for 28.5% following bronchial asthma and chronic fibro-cavitary tuberculosis. Among 1495 patients attending the chest referral clinic at Tikur Anbessa Hospital from 1986 – 1988; more than 69 (4.6%) of the patients were registered as having COPD.

The Double Burden of Diseases

Infectious and non-communicable diseases can combine together in a vicious cycle. For instance, diabetes increases the risk of developing tuberculosis while it has been hypothesized that tuberculosis may also increase the risk of developing diabetes. Similarly, there is evidence that people living with HIV have high rates of non-communicable diseases. It is also clear that some non-communicable diseases are directly related to HIV infection itself such as HIV-associated lymphoma, cervical cancer and others. Besides, antiretroviral therapy has been associated with an increased risk of developing metabolic syndrome and HIV has been linked to an increased risk of developing both diabetes and cardiovascular diseases. Ethiopia has a high burden of HIV/AIDS, tuberculosis, under-nutrition and other infectious conditions, which contributes to elevated morbidity and mortality associated with non-communicable diseases. Currently, nearly 711,446 people are living with HIV while it is estimated that 220,000 persons have active tuberculosis.

The fact that HIV programs are now widely available means that people with HIV are living longer and ageing, and are developing non-HIV-related chronic conditions similar to the rest of the population. While this is a very encouraging success for the country, it is now necessary to address the imminent challenges due to the subsequent surge of non-communicable diseases.

In addition, Ethiopia has a large and ageing population, and factors such as rapid urbanization and unhealthy lifestyle changes are becoming rampant (including low physical activity, unhealthy diet and high level of alcohol and khat consumption). These societal changes are indicative of the manifold challenges that need to be faced while recognizing that health services and resources are already strained.

In Ethiopia, infectious and communicable diseases still remain the leading causes of morbidity and mortality. However, the evidence indicates a rising burden of non-communicable diseases as is being observed in other low and middle income countries. In a WHO report from 2009, 60 - 80% of the health problems in Ethiopia were due to infectious and communicable diseases whereas the remaining burden (40 – 20%) was accounted for by NCDs and injuries. Similarly the report indicated that nearly 20% of Disability Adjusted Life Years (DALYs) in 2009 were due to NCDs (WHO, 2010b). In conclusion, Ethiopia revealed a typical double burden of communicable and non-communicable disease which is now an emerging public health problem.

Situation of Major Risk Factors for NCDs in Ethiopia

A large percentage of NCDs are preventable through the reduction of the four main shared behavioral risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets (referred to as modifiable risk factors). Up to 80% of heart disease, stroke, and type 2 diabetes and about 40% of cancers could be prevented by eliminating these shared risk factors. These behavioral risk factors subsequently lead to more formidable biochemical risk factors, including raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity; usually called 'intermediate risk factors'.

A report compiled by the EPHA in 2012 indicated that the four behavioral risk factors (physical inactivity, inadequate intake of fruits and vegetables, alcohol consumption and cigarette smoking) were widely prevalent in Ethiopia. Similarly, high prevalence is reported for overweight, obesity and associated raised blood pressure in urban areas. Mental and behavioral disorders, substance abuse/misuse, violence and injuries (including road traffic accidents) are some of the health and health related problems that also need both urgent and proper public health intervention. The stepwise survey; conducted in Addis Ababa and Butajira in 2008 by the Federal Ministry of Health and WHO showed across-the-board prevalence of NCD risk factors. These included biological, behavioral, and intermediate risk factors in the study population of Butajira and Addis Ababa (FMOH & WHO, 2008).

Insufficient physical activity: Roughly 3.2 million people die each year due to physical inactivity. People who are insufficiently physically active have a 20% to 30% increased risk of all-cause mortality globally. Regular physical activity reduces the risk of cardiovascular disease, including high blood pressure, diabetes, breast and colon cancer, and depression. In Ethiopia, an estimated 9% of males and 25% of females, or 11% of rural and 20% of urban populations had insufficient levels of physical activity (FMOH & WHO, 2008). Figures from national data for physical activity are lower than the global average of 35% (men 28% and women 34%) (WHO, 2010a); However, in urban areas like Addis Ababa on the levels of physical inactivity were comparable with the global data (men 15% and women 31% in Addis).

Tobacco: Tobacco kills nearly 6 million people each year and results in the economic loss of hundreds of billions of dollar globally. An additional 600,000 people are estimated to die from the effects of second-hand smoking. Surprisingly, tobacco continues to be the leading cause of preventable death. Most of the deaths due to tobacco (80%) occur in low and middle-income countries. Current projections indicate that over 8 million people will die from the effects of tobacco by 2030 and if governments do not take forceful measures tobacco will kill over a billion people in the 21st century (WHO, 2011).

In Ethiopia a report from WHO (2011) indicated an adult current smoking prevalence of 4% (8% male and < 1% female). Other small scale studies have found higher levels of tobacco smoking than the above WHO estimate. Nine percent of students reported current use of any form of tobacco; where 3% were currently smoke cigarettes and 8% currently used some other form of tobacco (DACA, 2005). Similarly a study in Butajira indicated 11.8% men and 0.2% women were current smokers (Schoenmaker, Hermanides & Davey, 2005).

In addition, in Ethiopia the rapid expansion of khat consumption (which is reported as a precursor to the initiation of smoking) is presumed to increase the prevalence of smoking. Furthermore, there is also an overall agreement among public health experts that the use of "shisha" and non-smoke tobacco consumption is expaning in Addis Ababa and significant other major regional cities.

Khat: In East Africa and the Arabian Peninsula including Ethiopia; khat consumption is increasingly popular. Over 10 million people use khat daily, mainly in East Africa and the Middle East where the prevalence ranges from 4.1% - 90% among countries in this region (and from 8.7 – 50.3% in Ethiopia) (Bahaa-eldin et al, 2012). In Ethiopia, approximately 18.7% of youth consume khat one or more days per week, with a daily consumption prevalence of 7.7% nationwide (FMOH & WHO, 2008). While chewing khat, individuals concomitantly consume high levels of tea, sugary carbonated drinks and coffee. Moreover, khat chewing is often accompanied by cigarette smoking and use of cannabis (ganja or marijuana), with a strong statistical association between khat chewing and initiation of smoking. In most cases khat users end up using alcohol to avoid the after effects of the psychoactive content. The above facts illustrate the vicious cycle between khat chewing and other major NCD risk factors.

Most of the effect of chewing khat is thought to come from cathinone and cathine – which are structurally and pharmacologically related to amphetamine (Cox &Rampes, 2003 and Hoffman &Al'Absi, 2010). Khat produces sympathomimetic and central nervous system stimulation analogous to the effects of amphetamine. Thus it increases blood pressure and heart rate through noradrenaline (norepinephrine) release from peripheral neurons similar to amphetamine (Kalix, 1988). A study in Addis Ababa showed a significant association between khat chewing and raised diastolic blood pressure (Tesfaye, Byass, Brehane, Bonita & Wall, 2008). FMOH and WHO (2008) cited studies in Yemen suggesting heavy khat chewing as a major and independent risk factor for developing of Acute Myocardial Infarction (AMI).

Harmful use of alcohol: Nearly 2.3 million people die each year from the harmful use of alcohol (3.8% of all deaths in the world). More than half of these deaths occur from NCDs caused by alcohol, including cancers, cardiovascular disease and liver cirrhosis.

Despite the lack of standardized national data, consumption of both traditional and industrial produced alcohol in Ethiopia is reported to be widely prevalent. Data from the 2011 EDHS showed among adults age 15 – 49 years of age, 45% of women and 53% of men reported drinking alcohol at some point in their lives. Similarly the survey indicated alcohol consumption increases with age and it is higher among urban residents than rural residents as well as among those with more than secondary education and in the highest wealth quintile. A study conducted among in-school and out-of-school adolescents age 15 - 24 in Ethiopia from 2001 to 2002 reported that 19.3% drank alcohol on a weekly basis (8.9% in-school and 24.2% out-of-school) whereas, alcohol intake on a daily basis was reported by 2.1% (0.4% in-school and 2.4% out-of-school). Separate studies conducted among students in southern Ethiopia and private schools in Addis Ababa found a prevalence of 19.2% and 57.7% for alcohol consumption, respectively; whereas another school based study in Harar reported 22.2% had a history of ever drinking alcohol while 10.4% reported they had drunk alcohol within the last 30 days prior to the study.

In Ethiopia alcohol production and imports have showed a significant increase in the past two decades. According to information gathered from Central Statistical Authority (CSA) of Ethiopia a total of 348,834 hectoliters (hl) of distilled alcoholic liquor was produced in Ethiopia from 1996 to 2005. The local production of these alcohols increased from 18,915hl in 1996 to 54,132hl in 2005. A thirteen percent annual alcohol production increase has been observed between the years 2000 – 2005. On top of that, a large quantity of different types of alcohol beverages has been imported into the country through legal and illegal means. From 1997 – 2006 a total of 5.2 million liters of distilled alcoholic beverages were imported into the country through the legal means with yearly average import of alcoholic liquors at about 519,000 liters. The above report included only the production and import of distilled alcohol. However, it is worth mentioning the production and import of non-distilled alcohol, such as beer, might be much higher than the above statistics indicate considering the rampant expansion of beer factors in the country both by domestic and international companies.

The wide market available for alcoholic liquors in the urban and semi urban areas and the favorable environment created for the private sector has been cited as a reason for the increase of alcohol production in Ethiopia. There are also reports which indicate alcohol as a good source of revenue for the government from excise tax.

Generally, it is cited in many parts of the developing world, that while traditional drinking patterns dominated by sporadic episodes of intoxication continue, involvement in the cash economy and industrialization of alcohol production and distribution have permitted the episodes of alcohol consumption to become more frequent. Given this pattern of drinking in many developing societies, problems associated with intoxication episodes typically predominate, including injuries and interpersonal violence causing harm to the drinker and to others, as well as adverse impacts on family and community life and functioning. The above global realities are not different here in Ethiopia. If representative national survey could have been carried out, the magnitude of alcohol consumption in Ethiopia might have been much higher than reported above. Therefore all the factors combined require a multi-sectoral response to tackle the health and social dangers posed by alcohol to this rapidly growing African nation.

Unhealthy diet: Adequate consumption of fruit and vegetables reduces the risk of cardiovascular diseases, stomach cancer and colorectal cancer. On the other hand, high consumption of saturated fats and trans-fatty acids is linked to heart disease. Unhealthy diet is rising quickly in lower-resource settings (WHO, 2010a). Fruit and vegetable consumption is not a common habit among Ethiopians and it has been shown that less than 0.2% of per capita expenditure was allocated for purchase of fruits and vegetables in Ethiopia (FMOH & WHO, 2008). Similarly the same report indicated the inadequate use of fruits and vegetables with the prevalence of inadequate use up to 100% in one study.

A study conducted in 2006 showed that cultivation and consumption of vegetables and fruits in Ethiopia was far below the standard. This study indicated in aggregate, 41.5% and 75.5% of households did not produce/cultivate any of the common vegetables and fruits over the year preceding the survey, respectively. Whereas, 38.1% and 36.5% of the children studied did not eat vegetable and fruit in the week preceding the survey, respectively.

Others: On top of the above shared risk factors certain NCDs also have an infectious origin. Infectious causes of non-communicable diseases are more highly prevalent in developing countries than developed countries. This is very true principally in Africa, including Ethiopia. Mostly, these infectious causes are preventable or treatable.

Worldwide, infections are linked to about 15% to 20 % of cancers. Chronic infections that lead to cancer include hepatitis B viruses (HBV) and hepatitis C viruses (HCV), certain types of human papilloma viruses (HPV), Helicobacter pylori, schistosomiasis, the liver fluke and human immunodeficiency virus (HIV). In Ethiopia, cancers such as cervical cancer, Kaposi's sarcoma and liver cancer are reported to be as some of the emerging public health problems. However, it is possible to prevent both liver and cervical cancer through immunization against infectious causes and screening services. These services are both feasible and cost-effective.

Raised Blood Pressure: Globally, 7.5 million annual deaths were attributed to raised blood pressure in 2008. The positive and progressive relationship between raised blood pressure and coronary heart disease and ischemic and hemorrhagic stroke is well known. Heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment are all recognized complications of raised blood pressure. Globally, the prevalence of raised blood pressure in adults aged 25 and over was estimated at 40%, being highest in the African region at a prevalence of 46%. In addition the prevalence increases while the income of countries decreases (WHO, 2010a).

The prevalence of raised blood pressure in Ethiopia ranges from 8% in rural Butajira to 30% in Addis Ababa where, 32% and 30% of males and females respectively were hypertensive in Addis (FMOH & WHO, 2008). Another study in Addis showed hypertension prevalence of 20% among bank employees and teachers (ACIPH & MIRT, 2010). Moreover, uses of substances such as tobacco, alcohol and khat are all believed to result in increased blood pressure.

Overweight and Obesity: It is clear now that increasing body mass index (BMI) increases the risk of heart disease, stroke, diabetes and certain type of cancers. Nearly 2.8 million people die each year because of being overweight or obese. A STEPS survey in Addis showed a prevalence of 30% for overweight or obese whereas the prevalence of obesity was 2% and 11% for males and females, respectively (FMOH & WHO, 2008). Summary statistics from the EDHS for 2000 – 2011 indicated an overall increment of overweight/obesity among non-pregnant women in Addis Ababa from 16.1% in 2000 to 20.6% in 2011. In view of similar lifestyle changes occurring within their male counterparts, one can easily extrapolate the proportional increment of overweight/obesity. Besides, similar lifestyle changes are likely to be taking place in the population residing in the regional capitals and other big towns. In summary, although hard data are scarce, all indication suggest alarger number of Ethiopians are overweight and/or obese and that this number is increasing year on year.

Impact of NCDs

The costs to health-care systems from NCDs are high and projected to increase. However, the impact of NCDs goes beyond increasing the cost of health services. Significant costs to individuals, families, businesses, governments and health systems add up to major macroeconomic impacts. These socioeconomic impacts of NCDs threaten progress towards the UN Millennium Development Goals.

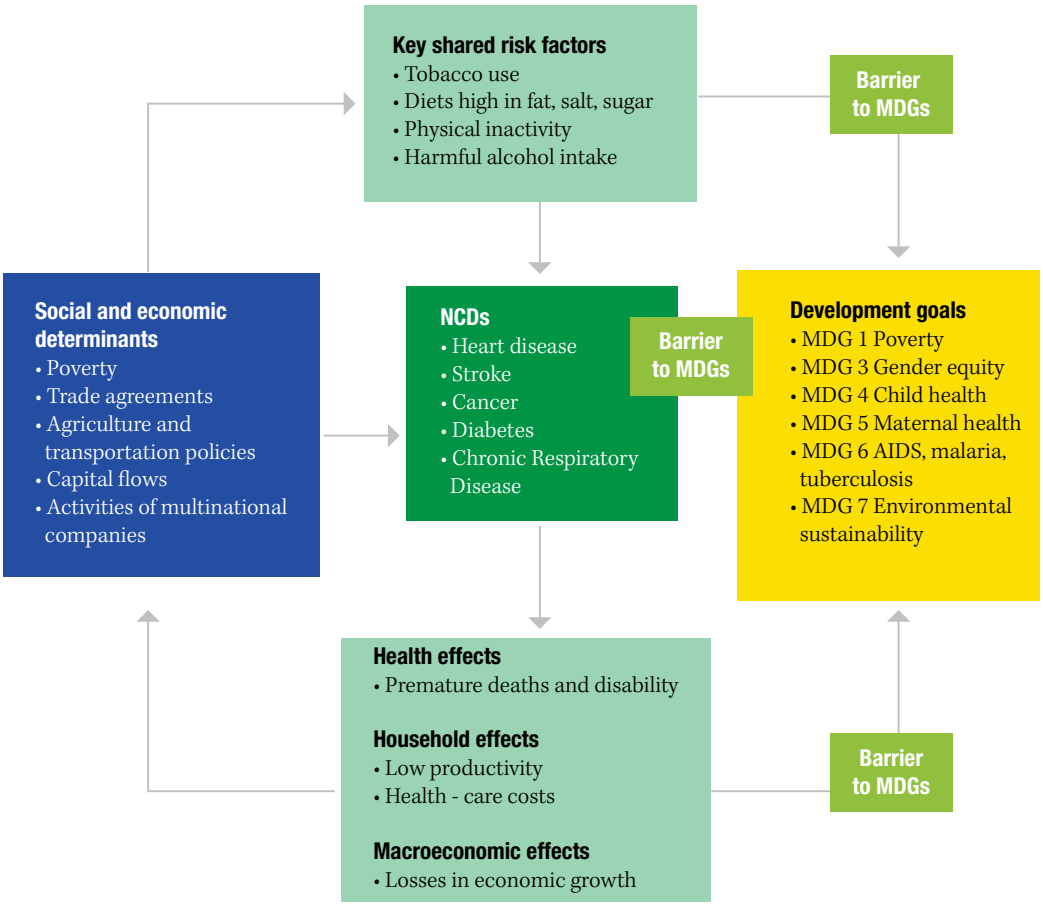
Poverty is closely linked with NCDs. NCDs and poverty create a vicious cycle whereby poverty exposes people to behavioral risk factors for NCDs and, in turn, the resulting NCDs become an important driver of families

towards poverty. In low and low middle income countries, treatment for diabetes, cancer, cardiovascular diseases and chronic respiratory diseases can be protracted and therefore extremely expensive. Such costs can force families into catastrophic spending and impoverishment. Nearly 100 million people are pushed to poverty per year due to NCDs.

Vulnerable and socially disadvantaged people get sicker and die sooner than people of higher social positions, especially because they are at greater risk of being exposed to harmful products, such as tobacco or unhealthy food, and have limited access to public health education and health services. People in developing countries are increasingly eating foods with higher levels of total energy and are being targeted for tobacco, alcohol and "junk food" marketing. Overwhelmed by the speed of growth, many governments are not keeping pace with the ever expanding needs for policies; legislation, services and infrastructure that could help protect their citizens from NCDs.

Evidence-based and cost-effective strategies exist to prevent and control the growing burden of NCDs even in low and middle income countries. NCD prevention and control programs remain dramatically under-funded at the national and global level (only received less than 3% of global development assistance). NCD prevention is currently absent from the Millennium Development Goals though NCDs have impact on the poorest people and impose a heavy burden on socioeconomic development in low-income countries. The achievements gained towards the MDGs will be halted by the steady rise of NCDs. Economic analysis suggests that each 10% rise in NCDs is associated with 0.5% lower rates of annual economic growth. The figure below demonstrates the intertwined association between MDGs and NCDs.

Fig 2: *Associations between poverty, non-communicable diseases (NCDs) and millennium development goals: Adapted from: The Lancet 2011; 377: 1438–47 and The NCD Alliance*



Ethiopia has registered substantial gains towards achieving the MDGs. The country has already achieved the target in reducing child mortality ahead of time. In addition, impressive results have been recorded in reducing poverty, achieving universal primary education, promoting gender equality and in other goals too. In the past few years Ethiopia has made substantive economic progress and with the current rates of growth the country is expected to join the middle income economies by the year 2035. However, these substantial achievements made towards the MDGs and economic development gained will be reversed unless the rising burdens of NCDs and their risk factors are checked and appropriate measures are taken.

Rationale for Comprehensive Response for the Prevention and Control of NCDs

The toll of morbidity, disability and premature mortality due to non-communicable diseases can be greatly reduced if preventive and curative interventions that are already available are implemented effectively. Most premature deaths from non-communicable diseases are preventable by influencing public policies in sectors other than health, rather than by making changes in health policy alone. Quick gains against the epidemic of non-communicable diseases can be made through modest investments in cost effective interventions. Widespread implementation of these interventions needs active engagement of sectors beyond health and a whole-of-government, whole-of-society and health-in-all policies approach.

The UN Political Declaration on Non-communicable Diseases makes a clear call for including Non-communicable diseases in health-planning processes and the development agenda of each Member State. It acknowledges the importance of promoting patient empowerment for self-care, rehabilitation and palliative care for persons with Non-communicable diseases, and a life course approach, given the often chronic nature of Non-communicable diseases. It also commits governments to a series of multi-sectoral actions and to exploring the provision of adequate, predictable and sustained resources through domestic, bilateral, regional and multilateral channels, including traditional and voluntary innovative financing mechanisms.

Thus; efficient prevention and control of NCDs requires multi-sectoral collaboration and a coordinated nationwide effort. Public health solutions for reducing the impact of NCDs that are affordable, feasible and cost-effective, even in a resource limited setting, are now available. These interventions are designed to reach the population at large as well as individuals with NCDs or are at high risk of developing NCDs.

Fortunately, Ethiopia has a favorable health service delivery system for making an effective response to the rising burden of NCDs. Furthermore, the government has displayed strong commitment and leadership in health sector development. The Health Sector Development Program (HSDP) adopts an innovative health service delivery structure and the country is one of the leading nations in health service delivery pivoted to ensure health for all according to the foundation of primary health care (PHC). The PHC system in Ethiopia functions on the principle of decentralization and community empowerment to ensure health promotion, prevention treatment and care services.

Thus in Ethiopia it is possible to provide NCD health promotion, prevention, treatment and care services at a PHC level. Unlike the traditional perceived scenario of tertiary level treatment and care for NCDs, proven "best buy" (affordable, feasible, and cost-effective) interventions are now available to provide treatment and care of NCDs at PHC level. With appropriate capacity building and mentoring, diagnosis, treatment and care for hypertension, diabetes, asthma, prevention of stroke and other NCDs is feasible in the PHC setting. The WHO Package of Essential Non-communicable (PEN) Diseases Interventions; highlights lists of recommended NCDs treatment and care services that are high impact and can be delivered at a PHC level in a low-resource setting.

Thus, this strategic action plan for the prevention and control of NCDs in Ethiopia is consistent with the Government's health policy (decentralization and democratization of health services) as well as with that of the WHO's PEN disease interventions in low-resource settings.

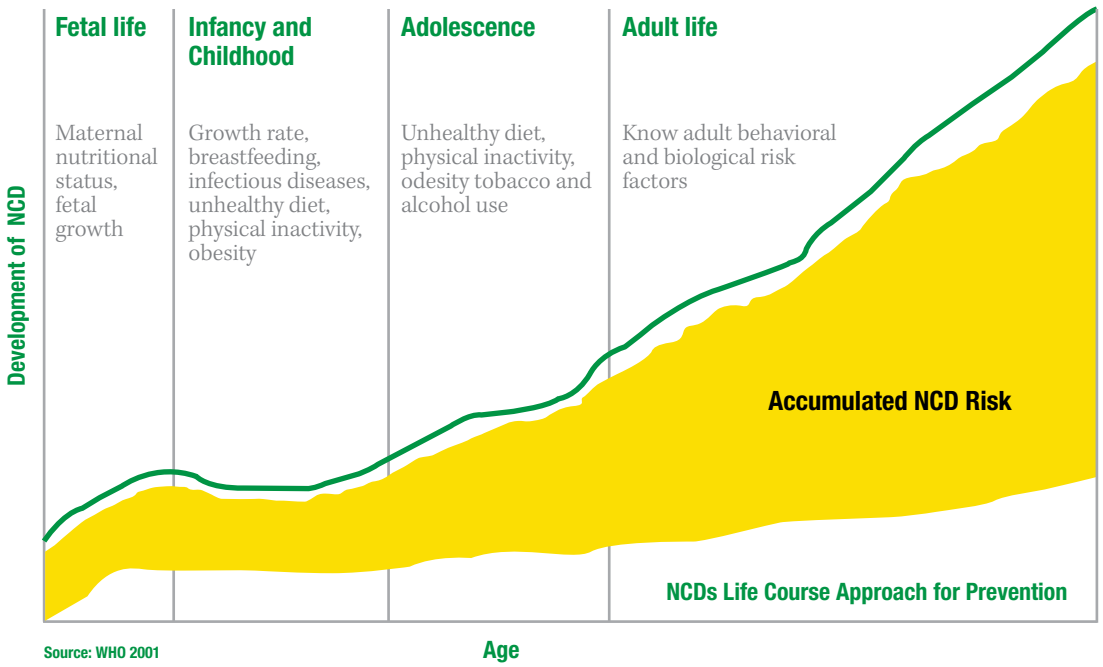
Therefore the strategy is envisioned based on the following principles and values:

Life course approach:

In humans, diseases do not occur randomly. Individual level health and biological systems are determined, at least in part, by behaviors and exposures across the whole life course. These include what we eat, how physically active we are and our exposure to health risks such as those caused by smoking, harmful consumption of alcohol, or exposure to toxic substances. Thus, the risk of non-communicable diseases may occur at critical periods of human growth and development or risk may accumulate with age and be influenced by factors acting at all stages of the life span. For example, evidence is now surfacing that low birth weight and malnutrition in the first 1,000 days of life contribute significantly to diabetes and cardiovascular problems later in life. Hypertension and diabetes during pregnancy also increase the risk of diabetes and cardiovascular disease later in life (Meiro-Lorenzo, Villafana & Harrit, 2011).

Thus, prevention and control of NCDs should target people at all stage of the life span. A life course risk of NCDs development and benefits of interventions targeting the whole human lifespan through addressing environmental and behavioral factors is illustrated in the figure below. As such, health promotion actions and NCD prevention should start early during pregnancy through promoting pre-natal care and proper maternal nutrition. Then fostering breastfeeding, protecting children and adolescents from exposure to risk factors (alcohol, tobacco) and adoption of protective factors (healthy diets, physical activity, avoiding tobacco and alcohol), need to be continued during adulthood and the rest of the life cycle.

Fig 3: A life course approach for NCD prevention



Multi-sectoral response

The health and economic impact of NCDs is beyond the health sector, implying that the health sector, acting alone, cannot curb the NCD epidemic. The FMOH has the lead responsibility to ensure that appropriate institutional, legal, financial and service arrangements are set for the prevention and control of non-

communicable diseases. However, all sectors of the government and society must work together. Action is required from sectors including agriculture, communication, education, energy, environment, finance, industry and trade, media, labour, social policies and economic policies, sports, transport, and urban planning. Governments, civil society, consumers and the private sector all play important roles. Efficient prevention and control of NCDs requires a multi-sectoral collaboration and partnership. Therefore, in Ethiopia the NCDs response will be multi-sectoral, coordinated via a National Steering Committee (NSC). A National Multi-sectoral Technical Advisory Group (NMTAG) will be established to consult the NSC on scientific and technical matters as well as to lead and guide the overall response for NCDs prevention and control in the country.

Population-wide and individual health care interventions:

It is clear that major NCDs share four common behavioral risk factors and interventions addressing these common risk factors should target the population at large as well as individuals with NCDs and those at high risk of developing NCDs. There are population-wide, cost-effective and achievable interventions that can work in any country including ours. Public policies protecting people from tobacco exposure, alcohol, unhealthy diet and excessive salt consumption are some cited by WHO as intervention "best buys". Raising taxes on cigarettes, alcohol and unhealthy diets are not only cost effective interventions but also could serve to raise finances for the prevention and control of NCDs. Vaccinations against Hepatitis B and human papillomavirus (HPV) are cost effective measures in the prevention of cancers as a population-wide intervention. Principally the population approach needs to be set within the framework of community interventions through the health extension program and that of the health development army (HDA) and should reach directly to the communities. Moreover, health promotion and awareness raising activities, including sites such as schools, worksites and through the media, should be targeted.

On top of that interventions should also be targeted at individuals with NCDs or who are at high risk of NCDs. A high-risk approach to NCDs entails the reorientation of health services in the country. Ethiopia has a promising health care delivery system based on the PHC promotive, preventive and curative services. However, similar to other low and middle income countries, NCDs preventive and curative care service in Ethiopia is mainly dependent on hospital based acute care. Unfortunately, patients with NCDs come to hospitals late, either with acute and/or chronic complications, where management is expensive and protracted. Evidence has shown that there are cost effective or low cost interventions that can also be replicated in resource limited settings at a PHC level. Such health care services shall be provided integrated within the PHC as well as connected with efficient referral systems to the level above. These interventions will be focused and designed to achieve early detection and management of patients. A proper referral system will be ensured along the health care hierarchy. Basic medical technologies and low cost generic drugs will be made available at all levels. Overall, the combined population-wide and individual interventions will save many lives and reduce suffering from NCDs in the country.

Services integrated within the existing health system

NCD prevention and curative services will be delivered integrated within the three tiered health care system of the country (primary, secondary and tertiary). Services will be given at all levels ranging from the health posts up to the tertiary referral hospitals. Specialized screening, diagnostic and treatment services will be established at different levels of the health delivery hierarchy based on equitable use of resources and feasibility. Strong and functional referral networking will be established.

On top of that, NCD services in the PHC will get special priority. Ensuring equity and access are the priorities of the health policy of Ethiopia where all people, particularly the poor and vulnerable, are entitled to have access to quality health services. A core element of Ethiopia's health policy is decentralization of health services so that PHC has become the basis for the country's health care system, designed to enhance health

of individuals and households. Most NCDs and their risk factors are preventable and manageable at the PHC level. Thus, the focus of this PHC intervention for NCDs is based on the principles of health promotion, disease prevention, early detection, care and treatment. Through this approach, NCDs promotive, preventive, curative and rehabilitative services will be provided, without discrimination, to all people in need.

National Strategic Action Plan for Prevention and Control of NCDs

Scope

Non-communicable diseases cover a broad range of health and health-related problems. Where resources are limited and with other major competing priorities, four categories of NCDs have been selected for prioritisation: cardiovascular diseases (CVD), cancer, chronic respiratory diseases and diabetes. These four categories of NCDs make the largest contribution to morbidity and mortality from non-communicable diseases especially in low and Low-middle income countries (LMIC). The other major contributors to NCD morbidity, namely mental, neurological and substance use (MNS) disorders, are covered in the National Mental Health Strategy of Ethiopia. Although considered in separate plans, it is recognized that MNS disorders and other NCDs need to be considered together in view of their high levels of co-morbidity, their similar risk factor profiles and the population-level and health system response that is needed to address both.

The four major NCDs considered in this action plan share common behavioral risk factors namely, tobacco, physical inactivity, unhealthy diet and harmful use of alcohol. In accordance with the UN political declaration on prevention and control of NCDs and the position of WHO's Strategic Action Plan for the prevention and control of NCDs 2013 – 2020, the NSAP in Ethiopia will prioritize its focus areas on the aforementioned four major NCDs and their shared risk factors.

As per the national health policy of Ethiopia, this NSAP for the prevention and control of NCDs will be delivered based on the ideologies of health promotion, disease prevention, care and treatment which address populations at large as well as individuals with NCDs or at high risk of developing NCDs.

Vision

Healthy and Productive Ethiopians free from avoidable non-communicable diseases

Mission

To prevent and reduce morbidity and premature mortality attributed to NCDs through health promotion and adoption of healthy lifestyles and treatment of NCDs and risk factors

Goal of the NSAP

The NSAP is consistent with the WHO Global Action Plans for the prevention and control of NCDs from 2013 – 2020. The plan consists of priority actions that can be implemented at national and sub national policy level, integrated within primary health care, as well as actions to be performed at a population and individual level. Thus the Goal is:

To reduce the burden of preventable morbidity and disability and avoidable mortality due to non-communicable diseases among Ethiopians

Priority Areas:

The NSAP is organized by priority area, consisting of four targeted areas of intervention that will guide the implementation of NCD activities. These priority areas include:

Priority Area One: Strengthen national response through policy, governance and leadership

Strengthen country-wide ownership of NCD interventions by influencing health-related policies and fostering the development of multi-sectoral leadership in NCD related interventions.

Priority Area Two: Health promotion and disease prevention targeting behavioral risk factors

Reduce population's exposure to, and participation in, activities identified as "risk factors" for NCDs by increasing public knowledge of disease prevention and healthy living

Priority Area Three: NCD Comprehensive treatment and care

Strengthen and reorient health systems to address prevention and control of non-communicable diseases through people-centered primary care and universal health coverage.

Priority Area Four: Monitoring, evaluation and research

Evaluate and monitor landscape of disease prevalence, medical capacity for care and national behavioral trends to determine progress in the prevention and control of NCDs.

SWOT Analysis for the Prevention and Control of NCDs

A SWOT analysis is an exercise that is valuable to policy makers and service providers because it identifies the strengths, weaknesses, opportunities and threats associated with the implementation of a program. The following chart was generated through collective inputs provided by medical experts, regional health bureau staffs and public health professionals. This SWOT analysis was used to inform the NSAP's strategy area activities and can be used to determine short-term, mid-term and long-term priorities.

Table 1: SWOT Analysis: Adapted from FMOH Strategic Framework for the Prevention and Control of Chronic Non-Communicable Diseases, 2010

Strength	• Dedicated and functional National NCD Unit • Government interest in NCDs and High level commitment within the FMOH • Included within HSDP4 and HSTP • Comprehensive health insurance coverage including for NCDs prevention and treatment services
Weakness	• Little involvement and experience of other sectors (Ministries) in health-related problems • Lack of comprehensive management of NCDs at health facility or community levels, • Lack of systematic training on chronic disease prevention and control at pre-service and in-service levels, • Poor health management information system, and lack of vital registration system - obscuring disease burden, • Little research or data on chronic diseases and their risk factors in Ethiopia, • Lack of representative national data on NCDs • Poor coordination between the public and private health systems, • Under powered NCD unit (Epidemiologist, biostatistician, additional human resources needed) • No or weak experience of inter-sectoral collaboration although NCDs prevention and control requires multi-sectoral response

Opportunities	• Strong primary healthcare structure especially designed for disease prevention and health promotion through the HEP • FMoH has many success stories on community based health promotion and prevention through HEW and HDA • The four major NCDs are preventable by addressing their shared risk factors ("best buy" intervention through population-wide approach) • "Best buy" interventions at a PHC level available for preventive and curative NCDs services • Recent initiative for high level political commitment at the global and regional levels • Growing role of the private health sector in the clinical care of non-communicable diseases, • Growing number of health professional training institutions (colleges of health sciences, universities), • Accumulated experience in HIV/AIDS, MCH and other communicable diseases- conducting training, developing training material, mentoring, supportive supervision, task shifting • UN and WHO, as well as growing international interest on NCDs
Threats	• Poor awareness and misconceptions about the burden and consequences of NCDs, among the policy makers, health professionals and the general public • No or weak experience of inter-sectoral collaboration although NCDs prevention and control requires multi-sectoral response • Lack of resources for NCDs (competing priorities of major infectious diseases; limited donor interest on chronic diseases) • Limited funding source • Limited number of national and international partners for technical and financial support of the NCDs program • Shortage of health workers in public health facilities • Shortage of medical equipment, and supplies needed for diagnostic or therapeutic care of patients with NCDs • Unregulated transnational (global) trade leading to imported products and behaviours, • Proliferation of industrial/commercial food processing and brewery- promoting unhealthy lifestyle changes (smoking, alcohol, physical inactivity, refined foods with added salt, sugar and saturated fat, etc.,) • Economic gain from alcohol, Khat and cigarettes • Association of NCD risk factors with recreation and addiction (khat, alcohol etc) • Inevitable imported changes in lifestyle of the population (e.g. work and eating habits) • NCDs are complex disease and shall be addressed in a broader context • Lower value for health in the general population • Weak health seeking behaviour among the public

National Targets for the prevention and control of NCDs

The WHO global action plan on NCDs 2013 - 2020, outlines nine voluntary targets for the prevention and control of non-communicable diseases by the year 2025. Generally these global targets are comprised of three categories including: multi-sectoral national policy response, increased public awareness and reduced incidence of behavioral risk factors, and decreased morbidity and mortality resulting from NCDs. For the purpose of Ethiopia's NCD action plan, these three categories serve as national outcome indicators.

In the early stages of implementation, the NSAP will prioritize the collection of baseline data on NCD incidence and prevalence of behaviors increasing the risk of NCDs. Today, very few studies in these areas have been performed in Ethiopia. National evidence-based targets will then be agreed upon and upheld in the form of

multi-sectoral and regional policies. These targets will be managed by the multi-sectoral National Steering Committee (NSC). While these targets will be established to reflect Ethiopia's country-specific profile, these targets will likewise aim to achieve the 2025 global targets for the prevention and control of NCDs, set by the WHO.

Output indicators are included in the plan to monitor the success of activities and the ability of programs to achieve the stated national targets. Stakeholders involved in the implementation of this NSAP will be required to collect the specified indicators and report them to the NSC. Additionally, selected priority health indicators will be integrated within the national HMIS for periodic reporting. A summary of these activities and output indicators can be found in Annex 1, titled "Implementation of the NSAP".

Implementation of Priority Interventions in the NSAP

The NSAP articulates actions that will be taken at each level of the health system, from the FMOH to the community. Similarly, it describes actions to be taken within the non-health sectors, including the private sector. The focus is on health promotion and disease prevention through population wide as well as individual based interventions. Prevention and control of NCDs starts high at a policy level with multi-sectoral collaboration. The NSAP provides a roadmap for to encourage individuals to adopt and develop healthy behaviors and lifestyle. It indicates priority interventions throughout the human life course. Thus interventions shall be started early during fetal life and continued throughout infancy, childhood, in adolescence and all over the adult life.

Descriptions of the NSAP main priority areas and their strategies

Priority Area One: Strengthen national response through policy, governance and leadership

Objective: Strengthen national capacity and country-wide ownership of NCD interventions by leadership, governance, multi-sectoral action and partnerships in order to accelerate the national response for prevention and control of non-communicable diseases.

Strengthen country-wide ownership of NCD interventions by influencing health related policies and fostering the development of multi-sectoral leadership in NCD related interventions.

Effective implementation of this priority action area will result in increased political commitment, availability of sustainable resources, and multi-sectoral activities. During the UN Political Declaration on NCDs, countries committed themselves to strengthen and integrate non-communicable disease prevention and control into their health-planning processes and national development agenda. Ethiopia was among the countries who committed to this goal. As we uphold this pledge, we recognize that this far-reaching program will be best implemented when backed by policy both within and beyond the health sector.

This priority area outlines strategies to foster multi-sectoral cooperation, develop healthy-living preventative policies and encourage nation-wide leadership and governance in the fight against NCDs.

Strategies

Strategy 1: Strengthen National health policy on NCDs and their risk factors.

The objective of this strategy is to address the challenges posed by NCD risk factors and the diseases themselves through policy and regulation. Much of the NCD risk factors will be addressed through appropriate national policies and regulatory measures. Thought-leaders in global health development are increasingly aware of the burden NCDs play in developing countries. More so now than ever before, host country leaders and development organizations are drafting national development plans that include detailed strategies for NCDs prevention and control. Specific policies and legislation are required to address the rising burden of

NCD risk factors. In Ethiopia, risk factors that will be given most attention include: tobacco, unhealthy diet, physical inactivity, and alcohol abuse and khat consumption. Future policies and legislation will be designed to prioritize medical intervention for people affected by NCDs resulting from these high risk activities, and will also prioritize strategies that decrease public participation in these activities.

Strategy 2: Establish/Strengthen national and sub-national non-communicable diseases unit.

The FMOH has established an NCD Case team within the Disease Prevention and Control Directorate. Among many responsibilities, the FMOH NCD Case team is committed to developing NCD governance by:

- Strengthening and/or establishing NCD case teams at all levels including: federal, regional, zonal and Woreda
- Staff NCD offices with employees that demonstrate expertise for the position,
- Ensure NCD offices are allocated a working budget to perform responsibilities
- Build capacity for NCD case team members among all levels of program management

Strategy 3: Develop and revise the national strategic action plan for the prevention and control of non-communicable diseases.

The Strategic Framework for the Prevention and Control NCDs has been finalized, and the two documents can be used together. As a three-year plan, the NSAP will be revised and updated periodically in accordance with the changing priorities of the country and its capacity to respond.

Strategy 4: Raise awareness among policy makers, senior managers, health workers, and public on the burden of NCDs and their risk factors.

NCDs are not merely a health problem. They impact all sectors of the government, thus requiring a collaborative response. To this end it is mandatory to create awareness among policy makers, senior managers and health professionals primarily accountable to lead the prevention and control of NCDs and their risk factors.

Strategy 5: Establish national and sub national multi-sectoral mechanisms for coordination of implementing the plan.

It is impossible to curb all the problems posed by NCDs and their risk factors through the work of one sector. Effective prevention of NCDs requires the coordination of many sectors. Today, the health sector can and should take the central coordination and stewardship role. However, it is important to engage other sectors and share leadership roles depending on the interventions. The national multi-sectoral approach will be established and coordinated under supervision of the prime minster and regional state president offices. All ministries and concerned bodies will be represented in the national multi-sectoral taskforce, and responsibilities will be regularly distributed, monitored and evaluated.

Strategy 6: Set up a national and sub national NCDs advisory group and technical taskforce.

The advisory group will be responsible for planning, guiding, monitoring and evaluating the enactment of the strategic national plan of action and the performance of national, multi-strategic activities that extend beyond the scope of the plan.

Strategy 7: Strengthen partnership and resource mobilization at all levels through conducting national symposia and fund raising events.

Priority Area Two: Health promotion and disease prevention through addressing behavioral risk factors

Objective: Reduce exposure to modifiable risk factors for non-communicable diseases through the creation of environments that promote healthy living. Cardiovascular diseases, cancer, chronic respiratory diseases

and diabetes are four non-communicable diseases cited by global thought-leaders as diseases that share common risk factors and have lower prevalence when these behavioral risks are reduced. Over 80% of CVDs and diabetes and nearly 40% of cancers are preventable through addressing their shared behavioral risk factors. Comparative research and comparative country experience can demonstrate that interventions which effectively decrease public participation in risky behaviors are a cost-effective public health approach for low and middle income countries.

Community-wide education aiming to promote healthy living and reduce the prevalence of NCDs will be provided at all levels of the health service delivery hierarchy. Through training, health care professionals will be better equipped to educate patients of NCD risk factors and capable of identifying symptoms of NCD related illnesses. Health extension workers and members of the health development Army (HDA) are valuable assets that can provide health promotion and disease prevention messages to the population at a community-level. Youth educators can be trained to teach students, and populations at large can be addressed through wide-spread media campaigns, information, education and communication (ICE). By increasing public awareness and education of NCDs and disease relationships to behavior thorough a wide range of mediums, society at large can make informed choices

Populations can be addressed through provision of sustained and intensive information, education and communication (IEC) in order to encourage the population at large to adopt healthy living choices. High risk groups can be targeted by launching programs within the health care delivery structure.

Strategies

Strategy 1: Health promotion and disease prevention by increasing public awareness and education.

Strategy 1.1: Raise awareness among policy makers, senior managers and health workers, on the burden of NCDs and their risk factors.

Strategy 1.2: Produce and strengthen public awareness campaigns to increase population-wide understanding of NCD causes, symptoms and prevalence through mass media, IEC/behavior change communication (BCC) and mhealth[1].

Strategy 1.3: Health education and promotion to individuals at all levels of the health sector including in the PHC and private health setting.

Strategy 2: Health promotion and disease prevention that targets Ethiopia's five major shared risk factors for NCDs and other predisposing risk factors.

Strategy 2.1: Reduce tobacco use by establishing tobacco free environments, increase public knowledge on the hazards of tobacco and continuously increase taxes on purchase and selling of tobacco products. Ethiopia has already ratified the WHO Framework Convention on Tobacco Control (FCTC) and the Protocol to Eliminate Illicit Trade in Tobacco; however, it is of paramount importance to develop an implementation guideline and regulatory mechanism that can enforce the convention in order to reduce the population's risks of NCDs and its consequences related to tobacco use.

The following points will be followed:

- The government of Ethiopia has made a big step forward in ratification of the WHO FCTC therefore it would be timely to develop an implementation guideline as well as regulatory mechanism so as to enforce and restrict tobacco consumption and eliminate illicit trade in tobacco.
- Formulate legislations to increase tax and inflation-adjusted prices on all tobacco products, regulate tobacco production, import, marketing, advertising and promotion.

1 mHealth: an abbreviation for Mobile health is the use of mobile and wireless technologies to support the practice of medicine and public health.

- Formulate and enforce legislation to support smoke-free indoor workplaces, and indoor public spaces such as educational institutions, health care facilities, workplaces and sporting environments to encourage cessation of tobacco use.
- Provide support, diagnosis, treatment and counseling services to people who want to stop smoking.
- Promote and strengthen public awareness regarding global and national initiatives and legislations on tobacco control.
- Awareness raising and education on tobacco for youth enrolled in higher institutions, students attending primary and secondary school, as well as children not enrolled in school.

Strategy 2.2: Promote healthy diet by encouraging culturally appropriate, affordable and balanced dietary habits for individuals and the population at large. A balanced diet is defined as one which includes proper intake of vegetables, fruits, and whole grains; low-fat dairy products, poultry, fish, legumes, vegetable oils and nuts; and limited intake of sweets, sugar-sweetened beverages and meats.

- Support implementation of a national nutrition program to uphold global nutritional recommendations for maternal, infant and young children through legislative policy and action.
- Develop policy measures and enforce regulations that promote local production, marketing and consumption of fruits, vegetables and other foods that contribute to a healthy diet.
- Develop policy measures and support regulations to control local production and import marketing of processed food and drink that contain high levels of added salt, sweeteners, saturated, trans-fatty acids and refined carbohydrates. Such regulation can require the labeling of ingredients in commercial products to inform the customer. Finally, consumables identified as likely health hazards can be taxed.
- Develop and distribute dietary guidelines to promote healthy dietary lifestyles among the general population.
- Produce and distribute regulatory guidelines and reference on food products to ensure production and marketing of healthy foods
- Advocacy and education can be delivered through HEW, HDA, print and electronic media to promote healthier dietary habits.

Strategy 2.3: Promote physical activity: Promote and protect health by creating environments that encourage physical activity to reduce disease and death rates related to physical inactivity.

- Collaborate with the Ethiopian Sport Commission, Ministry of Education, Ministry of Transport and Communication, Ministry of Housing Construction and Urban Development, and other municipalities to develop national, multi-sectoral policies and guidelines that promote physical activity.
- Promote physical activity through activities of daily living including in schools, workplace, road sideways (walking and cycling), recreational and leisure activities.
- Increase public awareness as to the health benefits of maintaining physical activity through HEWs, HDAs, and mass media.

Strategy 2.4: Reduce harmful use of alcohol: Improve the health of individuals, families and communities by reducing harmful consumption of alcohol.

- Consider and implement laws governing production, marketing and consumption of alcohol. Policies should aim to protect children and pregnant women from health threats associated with alcohol consumption. This can be inclusive of laws which restrict the production and marketing of alcoholic products, age restrictions for alcohol consumption, product labeling of health hazards associated with alcohol consumption, taxation, and advertisement regulation.
- Policies should be coordinated in partnership with relevant sectors.
- Ensure access to information and health education to raise public awareness among all levels of society about responsible drinking behavior, and the hazards of alcohol abuse.

Strategy 2.5: Address risks related to Khat consumption.

- Identify health risks caused by khat consumption.
- Consider policy to regulate the distribution and use of khat domestically such as taxation, and the protection of minors.

Priority Area Three: NCD Comprehensive Treatment, Care and Support

Objective: Strengthen and reorient health systems to provide early detection, diagnosis, treatment and palliative care for patients affected by non-communicable diseases.

The federal NCD unit will develop diagnostic and treatment protocols for each major NCDs, namely Cardiovascular diseases, Asthma and COPD, Diabetes Mellitus and Cancers. Essential services for each selected NCDs will be identified, and training materials for health care workers serving in public and private settings will be made available. This material will be developed by one of two approaches. The first option will be by creating a country-specific manual. The second option will be to utilize the WHO Package of Essential NCD (WHO PEN) interventions. Training of trainers (TOT) will be provided for physicians from Universities, public and private hospitals and personnel at Regional Health Bureaus (RHBs). Implementation of task shifting will be done through such training and will target multidisciplinary teams of health care workers, including: physicians, health officers and nurses, radiographers, laboratory professionals, pharmacy personnel, health educators, dieticians.

Provider support tools and client education materials will be prepared and distributed. The set of technologies required for NCD diagnosis and treatment will be defined and made available. Regular quality assurance and maintenance of laboratory services and other equipment used for NCDs prevention and care will be established. Additionally, standardized reporting tools will be created to strengthen data management. In conjunction with the development of training and supportive supervision tools, a clinical mentorship will be launched.

Screening for NCD at different points of care with an emphasis on early identification, long-term management, and prevention of medical complications will be the responsibility of multidisciplinary teams within primary health care units. Standardized appointments, regular follow up, and appropriate referrals will be practiced. Adherence support, psychological, social and spiritual care will be provided by clinical and non-clinical teams. Non-clinical team members will include HEWs, HDAs, case managers and community based organizations.

Strategies

Strategy 1: Ensure disease prevention through standardized screening for DM and Pre DM, Hypertension, dyslipidemia and vaccination for HBV vaccination, Visual Inspection with Acetic Acid (VIA) cervical cancer screening, HPV vaccination, and self-breast examination.

Strategy 2: Ensure the availability diagnostic and treatment services for non-communicable diseases.

Strategy 3: Ensure the availability of human resources at all levels of the health care delivery system for to provide prevention, control, treatment and palliative services.

Strategy 4: Ensure availability and affordability of essential medicines and technologies to ensure diagnosis, treatment and monitoring of NCDs is available to the public.

Priority Area Four: Monitoring and evaluation including surveillance and research

Monitoring and Evaluation aims to examine risk factors, prevalence of risky behavior and prevalence of NCDs in Ethiopia. This baseline information will then be used to measure the effectiveness of the programs. Social, economic, behavioral and political determinants will be used to inform public health policies that can protect the public from NCDs.

Research and surveillance are vital for NCD prevention and control interventions. Prevalence studies for both risk factors and chronic disease conditions provide valuable statistical information that can guide priorities for public health interventions including which diseases are most prevalent, what behavioral risks are prevalent, and which target groups can be addressed.

Research into the economic burden of NCDs and the cost-benefits of intervention strategies can serve to justify policies aimed at reducing the prevalence of NCDs. Linear surveillance data that captures measurements across regions and demographics can indicate the effectiveness of interventions.

Monitoring at national level

NCD surveillance is the ongoing systematic collection and analysis of data to provide information on disease burden, target population groups at risk, estimates of NCD mortality, morbidity, and behavioral risk factors. Surveillance provides critical information necessary to inform policy, programmatic development.

The three major components of NCD monitoring and evaluation include:

a. Monitoring outcomes, specifically morbidity and mortality by disease

b. Monitoring behavioral risk factors

c. Assessing health system capacity to respond to population's NCD related health needs

Monitoring outcomes: mortality and morbidity

Adult mortality is one informative way to measure the extent of the NCD epidemic, and to plan and target effective programs for NCD prevention and control. All-cause and cause-specific death rates, particularly deaths before age 60, are key NCD indicators. High-quality mortality data can only be generated by long-term investment in civil registration and vital statistics systems. National initiatives to strengthen vital registration systems, and cause-specific mortality statistics, are a key priority. These should include strengthening cause of death certification and coding, using the International Classification of Diseases, as well as the use of interim measures such as widespread application of verbal autopsy.

Accurate information on morbidity, e.g. cancer and diabetes, is important for policy and program development. This is particularly the case for cancer where data on the incidence and type of cancer are essential for planning cancer control programs. In lower-resource settings such as Ethiopia, hospital-based registries are important when establishing population-based cancer registries (PBCR). PBCRs provide an unbiased description of the cancer patterns and trends in defined catchment populations. Information on morbidity attributed to major NCDs may also be obtained from the routine health management information system.

Monitoring exposures

Monitoring of risk factors should be the mainstay of national NCD surveillance in most countries. Data on behavioral risk factors can be obtained through a national health interview or health examination surveys. Data on social determinants of NCDs can then be used to deepen our understanding of risk factor patterns. Given the major public health significance of NCDs and their risk factors, each country should have at least one health examination survey, including interview and biological and clinical data collection, every five years.

Monitoring national health system response

The monitoring of the national response and capacity requires inputs, outputs and coverage indicators. It will be important to monitor infrastructure and human resource capacity. The availability and affordability of basic diagnostics and essential medicines requires good facility data, while the monitoring of access to and coverage of case detection and treatment measures is often done through household surveys. Verbal autopsy may also be used to monitor risk factors of NCDs.

Measurement implications

Main components of the surveillance system required for monitoring progress towards the national targets and indicators include:

- **Death registration, with a reliable cause of death**

  National initiatives to strengthen vital registration systems and cause-specific mortality should be a priority. Physicians must be trained on the importance of completing death certificates. In settings with poorly functioning registration systems, special efforts are needed until birth and death registration systems are sufficiently strengthened. Local demographic surveillance studies and sample registration systems can help estimate the level of adult mortality. In settings where many deaths are not attended by a physician, alternate methods, such as verbal autopsy, may be used to complement data collected from death certificates until vital registration systems are adequately strengthened.

- **National surveys, with physical and biochemical measurement**

  Data is collected from the general population through representative national household surveys conducted at least once every five years. Information is collected through interviews, physical measurement, and biological testing. A survey that includes an interview and physical and biochemical measurement is called a health examination survey – the WHO Stepwise approach to Surveillance (STEPS) is the most globally adopted example of this type of survey for NCDs in a large number of low-and middle-income countries. Risk factor data, other than for tobacco, to support indicator development and target setting are most robust in populations aged 18+.

- **Policy reviews**

  Policy indicators require a regular, systematic, and independent assessment to judge whether the policies are in place, implemented, and enforced. In addition, to monitor the capacity of regions to respond to NCDs, FMoH in collaboration relevant partners will conduct periodic assessments of the major components of capacity in all regions. The capacity assessment examines the public health infrastructure available to deal with NCDs; the status of NCD-relevant strategies, action plans and programs; the existence of health information systems, surveillance activities and surveys; access to essential health-care services including early detection, treatment and care for NCDs; and the existence of partnerships and collaborations related to NCD prevention and control. Addressing data gaps and capacity building is needed to strengthen risk factors monitoring and death certification by cause.

Objective: To generate empirical evidence on the pattern, trends and determinants of non-communicable diseases and their risk factors and monitor progress towards attainment of the strategic objectives

Strategy 1: Integrated approach:

Surveillance and monitoring systems for prevention and control of non-communicable diseases need to be integrated into national health information systems, including causes of death, household surveys, facility assessments, as well as health facility and administrative reporting systems. Similarly, NCD progress monitoring should be well integrated into country accountability processes, and become a significant component of the monitoring of the implementation of national health and development strategies that are discussed at national reviews, such as annual health sector reviews.

Strategy 2: National targets and monitoring framework:

Define and adopt a minimum set of national targets and indicators to contribute to the global targets and based on the global monitoring framework for measuring progress of prevention and control of non-communicable diseases. As well, it is mandatory to include additional locally desirable indicators and targets such as consumption of khat.

Strategy 3: Vital events registration:

There is a need to establish and strengthen vital events registration systems and cause specific mortality statistics. High-quality mortality data can best be generated by long-term investment in civil registration. Recording all deaths and their cause on a country level is a critical requirement. National initiatives to establish and strengthen vital registration systems and cause-specific mortality will be a priority.

Strategy 4: Disease registries:

Disease registries, including for cancer, cardiovascular diseases should be established and maintained, if feasible and sustainable, with appropriate indicators to better understand national and regional needs. Data on cancer incidence is obtained from population based cancer registries, which collect and classify information on all new cases of cancer in a defined population, providing incidence and survival statistics for the purposes of assessing and controlling the impact of cancer.

Strategy 5: Non-communicable disease risk factor surveillance:

Periodic data collection should be undertaken on the behavioral and metabolic risk factors (harmful use of alcohol, physical inactivity, tobacco use, unhealthy diet, khat use, overweight and obesity, raised blood pressure, raised blood glucose, and hyperlipidemia). Surveys should also be conducted on infections that eventually lead to cancer such as HBV and HPV infection.

Strategy 6: Capacity strengthening:

There is a need to strengthen technical capacity in country to manage and implement surveillance and monitoring systems that are integrated into existing health information systems' capacity, with a focus on capacity for data management, analysis and reporting in order to ensure availability of high-quality data on non-communicable diseases and risk factors.

Strategy 7: Policies and plans:

A shared national research policy and plan on prevention and control of non-communicable diseases has to be developed, implemented and monitored in order to prioritize research in public health needs, implementation and innovation.

Strategy 8: Innovation:

Make more effective use of academic institutions, multidisciplinary agencies and encourage the establishment of national reference centers and networks to conduct policy relevant research and incentivize innovation.

Structural Framework for the Prevention and Control of NCDs in Ethiopia

The prevention and control of NCDs requires a multi-sectoral response and collaborations. As such an appropriate organizational structure to support coordination and implementation will ensure the delivery of efficient NCD/NCD risk factors prevention and control programs in the country. During the political declaration of the high-level meeting on the prevention and control of NCDs, Heads of States and representative of governments recognized NCDs as the foremost global burden of diseases and as a threat to economies and development, while promising to lead the prevention and control of NCDs in a multi-sectoral mechanism. In Ethiopia a multi-sectoral National Steering Committee (NSC) with its technical wing of a National Multi-sectoral Technical Advisory Group (NMTAG) will be formed.

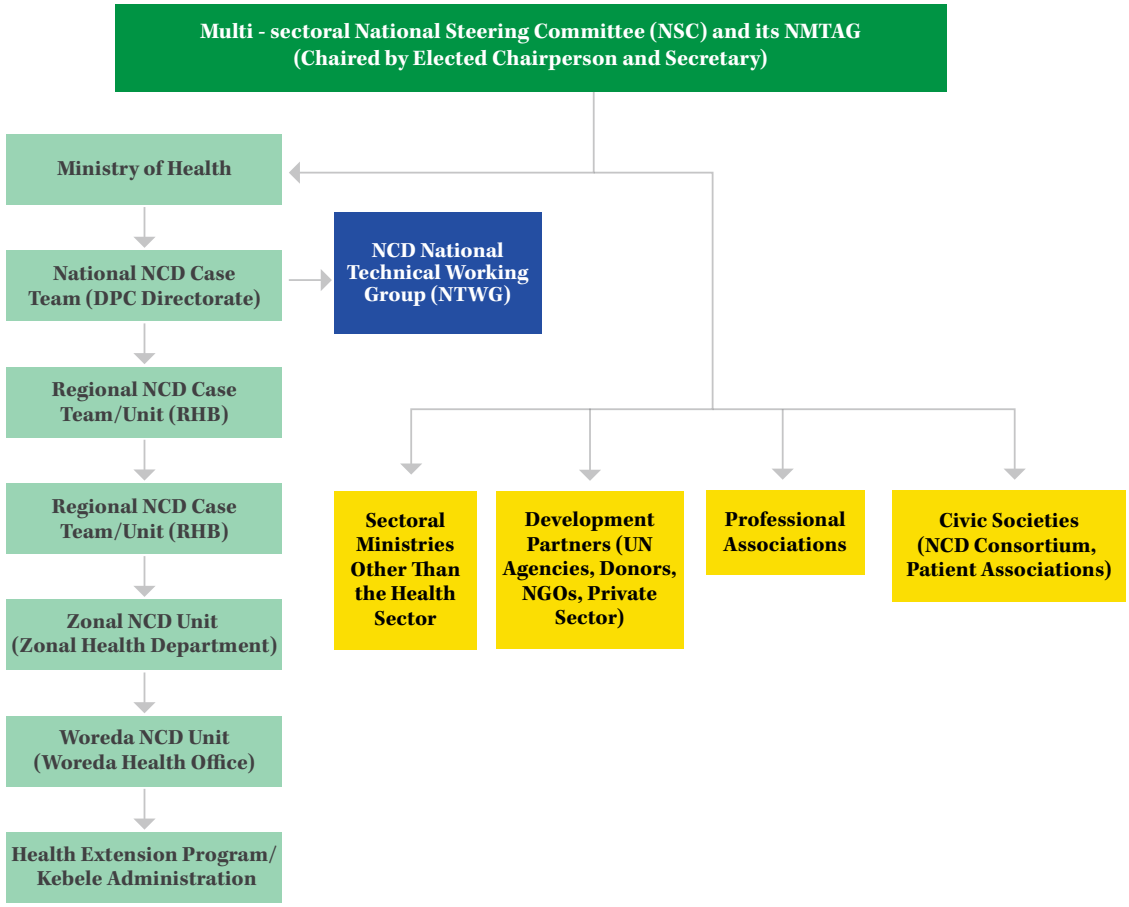
The NSC will be in charge of coordination, monitoring and evaluation of the different agreed upon action points of the multi-sectoral response. The NSC will have a chairperson and secretary elected from the NSC member ministries where mainly they will be in charge of leading and oversee the general functions of the

NCDs prevention and control response in the country. To this end the Ministry of Health provides technical expertise and play central role in the overall national effort to halt the growing burden of NCDs and their risk factors.

Member Sectoral Ministries and Specialized Agencies of the NSC:

1. Ministry of Health (plays leading role)
2. Ministry of Education
3. Ministry of Trade
4. Ministry of Industry
5. Ministry of Finance and Economic Development
6. Ministry ofCulture and Tourism
7. Ministry of Agriculture
8. Ministry of Justice
9. Ministry of Transport and Communication
10. Ministry of Labor and Social Affairs
11. Ministry of Women's, Children and Youth Affairs
12. Ethiopian Custom and Revenue Authority
13. Ministry of Housing Construction and Urban Development
14. Ministry of Communication and Information Technology
15. Ethiopian Standards Agency
16. Food, Medicine and Health Care Administration and Control Authority of Ethiopia (FMHACA)
17. Ethiopian Public Health Institute (EPHI)
18. Ethiopian Sport Commission
19. Government Communication Affairs
20. Development Partners(UN agencies, NGO, Private sector, Civic Societies)
21. Professional Associations (EMA, EPHA, etc)

Fig 4: *Organizational Structure for NCD Prevention and Control in Ethiopia*



Roles and Responsibilities of the NSC and its Chairperson and Secretary

As stated above the NSC will be formed from the different sectoral Ministries and social agencies. The NSC will be in charge of leading, coordinating, monitoring and evaluation of the implementation of agreed up on multi-sectoral action plans and strategies in the prevention and control of NCDs and their risk factors in Ethiopia. The Chairperson in consultation with the secretary shall take the overall leadership of the roles and responsibilities of the NSC. They will be in charge of organizing multi-sectoral meetings, action plans, and adopting policy documents as required. The NSC will be actively supported by its technical wing; the National Multi-sectoral Technical Advisory Group (NMTAG). The NMTAG will comprise of technical expertise and multi-disciplinary teams from all sectoral ministries and concerned individuals. Its role will be to support the NSC in technical and scientific matters, provide policy recommendations, actively participate in the development of national action plan and track its implementation.

Roles and Responsibilities of Ministry of Health

As a specialized agency for health in Ethiopia, the Ministry of Health (MOH) has a leading role in the prevention and control of NCDs and their risk factors. The MOH will serve as a secretary for the NSC and assist the head of government and NSC in coordination and implementation of the national multi-sectoral action plan. The Ministry has a duty to provide technical expertise, policy recommendations, guidelines and implementation strategies for the NSC and its partners. As well the Ministry shall assist other sectoral ministers and other

stakeholders in performing their duties and responsibilities as stated by the national multi-sectoral action plan and strategy. The Ministry will compile biannual and annual performance reports of the multi-sectoral response on NCDs prevention and control and present to the NSC and head of government as well as recommendations and action points for improvement. The Ministry will have its own National Technical Working Group (NTWG). Similar to the NMTAG the NTWG will comprise different technical expertise and multi-disciplinary teams and its role will be to support the MOH in scientific and technical matters. It will be actively engaged in development and update of national action plans, guidelines and offer advice on policy recommendations and current scientific updates in the prevention and control of NCDs. Further the NTWG shall have a broader role including producing of local evidence through research and monitoring and evaluation of programs in Ethiopia.

Roles and Responsibilities of Sectorial Ministries other than MOH

It has been stated time and again that NCD prevention and control requires and will be a multi-sectoral response. The NSC will lead and coordinate the development of national multi-sectoral action plan. Accordingly each sectoral ministry will have specific roles and responsibilities and will be accounted for the execution of its tasks.

Roles and Responsibilities of Partners

In this document, the term "partners" is defined broadly and includes, but is not limited to, UN agencies, donors, NGOs, private sector, professional associations, patient associations, NCD consortium. Principally they will be represented within the NSC as a member. Their roles and responsibilities will be defined by the NSC and they will be engaged actively in the prevention and control of NCDs.

Roles and Responsibilities of Regional Health Bureaus (Reflection of the MOH)

Regional Health Bureaus (RHBs) are representatives and will reflect the roles and responsibilities of, the FMOH in their respective regions. The RHBs with their regional NCD case teams/units will be in charge of planning, implementing, coordinating monitoring and evaluation of regional NCDs prevention and control programs. Regions as needed and according to their context, can and should develop regional strategic action plans on the prevention and control of NCDs and their risk factors. As well, in consultation with the FMOH and NSC they shall organize and establish regional steering committees headed by the regional President and serve as a secretary for the regional steering committee. They should also provide technical and scientific advice, policy recommendations and guidelines for the regional steering committees.

Monitoring and Evaluation of the NSAP

Monitoring and Evaluation (M&E) of the NSAP is essential to maintain a systematic assessment, analysis and documentation of the progress in the implementation of major activities related to prevention and control of non-communicable diseases (NCD). Monitoring and evaluation will be done at different levels of the health system as well as in non-health sectors that are participating in the NCD prevention and control program. Thus, operational and epidemiological indicators will be collected, compiled, analyzed and disseminated and used to made evidence based decisions and policy changes.

Evidence to date shows epidemiological changes in the prevalence and incidence of NCDs occurring over a long period of time, for example over a 10 to 15 years period. Such log-term trends will be tracked through surveillance surveys (including the DHS) and vital events registers. In the meantime process measures which monitor the implementation of the action plan will be monitored and evaluated. Immediate outcome measure in the form of positive changes in behavior towards healthy lifestyle (quitting tobacco, physical activity, healthy eating and avoidance of alcohol abuse) will be monitored through Behavioral Surveillance Surveys (BSS).

Implementation of the action plan will be tracked through nationally agreed upon indicators and targets. The national indicators and targets will be in line with the global monitoring framework that comprises 25 indicators and nine voluntary targets for countries to adopt based on local evidence and capacity. The indicators and the national targets provide overall direction and the action plan provides a road map for reaching the targets.

a. Coordination

A system of monitoring and evaluation of the NSAP will be instituted and coordinated. The prime coordination responsibility for the M&E of the NSAP will be the national multi-sectoral steering committee. The technical advisory group (the National Multi-sectoral Technical Advisory Group (NMTAG)) will be in charge of guiding and implementing the agreed upon M&E action points. The FMOH and the national NCDs TWG, as a specialized health unit in the country, will be in charge of providing technical and administrative support to the national multi-sectoral steering committee. Specifically, the health sector response will be coordinated through Joint Steering Committee (JSC) of the health sector.

b. Health facility recording and reporting

Major selected NCD indicators will be incorporated into the national HMIS. Health facilities will be required to collect, compile and supply these NCD HMIS indicators through the relevant administrative level as per the reporting period. Subsequently, Woreda, zonal and regional office will compile, analyze and use the information for local decision and further report to the FMOH. Appropriate NCD HMIS registers, for example, tally sheets and reporting templates, will be developed and distributed to all levels of the health system.

c. Supportive Supervision

Ongoing supportive supervision will be an important component of the M&E of the NSAP. Supportive supervision is a process that promotes quality at all levels of the system by strengthening relationships within the system, focusing on the identification and resolution of problems, and helping to optimize the allocation of resources. Thus, periodical supportive supervision activities will be carried to lower administrative levels in all sectors that are involved in the prevention and control of NCDs. The national steering committee and its NMTAG will be in charge of guiding and coordinating the implementation of supportive supervision in all sectors. In the health sector supportive supervision activities will be carried to health facilities and lower administrative levels periodically to guide, train and encourage staff to improve their performance in the provision of high-quality health services and program management.

d. Periodical Intersectoral Consultative and Evaluative Workshops

NCDs prevention and control requires a multi-sectoral response. As such, the implementation and the progress made by each sector ought to be assessed and evaluated periodically in multi-sectoral consultative and evaluative workshops.

e. Surveys

Periodical surveys will be conducted both at a facility and population level. This helps to capture data elements and indicators that are not obtained in the other alternative systems. NCD indicators will be incorporated into the national DHS questionnaires. National Multiple Indicator Cluster Survey (MICS), BSS and NCDs WHO Stepwise surveys will be organized and conducted periodically.

Budget and Funding for the NSAP

To implement the NSAP there is a substantial requirement for budget and funding. The NSAP follows the WHO's recommendation of focusing on "best buy" interventions (that are affordable, feasible and cost-effective). These interventions are usually delivered through population-wide measures to prevent exposure to risk factors such as tobacco, alcohol, unhealthy diet and physical inactivity and through interventions

targeting individuals with NCDs or those at high risk of developing NCDs. These best buy interventions have been categorized within four priority areas in the NSAP and this costing analysis made according to the budget needs within the four priority areas.

A detailed costing of Ethiopia's 2014-2106, National Strategic Action Plan; was conducted to outline the project's 3-year budget. Costs included in this model reflect the financial costs associated with the program allocated to the year of planned expenditure, and do not include any opportunity or depreciation costs.

Costs presented below include figures derived from two sources: the WHO Costing Tool for Prevention and Control of Non-Communicable Disease and a purpose-made activity-based costing tool created in Microsoft Excel. The WHO tool was used to provide an assumed value of NCD related medical interventions and the purpose-built excel tool was used to cost the activities detailed in the Federal Ministry of Health's (FMoH) NCD 2014-2016 National Strategic Action Plan.

The model, which directly reflects the NSAP, is organized by the plan's four priority areas including: National Systems Response, Health Promotion, Treatment and Care, and Monitoring and Evaluation. This analysis projects the costs of policy and planning meetings, workshops and trainings, design and printing of materials, the distribution of materials, media campaigns, staff salaries, baseline research and equipment. The analysis also considers the assumed cost of medical treatment necessary as result of NCDs. This figure was sourced from the WHO Costing Tool.

Table 2: *Summary of total 3-year Cost in millions USD*

Model	Year 1	Year 2	Year 3	Total
Cost of Strategic Action Plan Other than Medical Treatment	$ 16.9	$ 18.0	$ 18.7	$ 53.6
Cost for Medical Treatment of NCDs	$ 15.0	$ 16.9	$ 18.9	$ 50.7
Total	$ 31.9	$ 34.8	$ 37.7	$104.4

The total 3-year plan is estimated to cost $104.4 million. Year one is estimated to cost $31.9 million, year two $34.8 million and year three $37.7 million. Of the total cost, 48.7% is allocated towards the provision of medical treatment for patients affected by NCDs. As outlined in the table above, the cost for implementing the NSAP (cost addressing NCD risk factors, M&E, research and program management), prior to including the cost of medical treatment of patients affected by NCDs is estimated to cost $53.6 million US Dollars. The estimated value of medical treatment alone, as determined by the WHO Costing Tool is $50.7 US Dollars.

The WHO Costing Tool total for medical treatment includes capital expenditures for technologies and equipment, running costs of laboratory diagnostics, clinician salary and medicines. It is probable that some of these assumed costs will be absorbed by the patient, while others will be drawn from the plan's budget. As this project is launched, too few studies have been performed to determining Ethiopia's NCD prevalence, demographic and behavioral incidence or clinical treatment, therefore necessitating the use of the two models.

Table 3: *Summary of Costing by Priority Area In ETB and USD, In Millions*

Summary	Year 1	Year 2	Year 3	% of Total	Total Amount
Total Cost (USD)	$ 31.89	$ 34.82	$ 37.66		$ 104.37
Total Cost (ETB)	ETB 605.83	ETB 696.43	ETB 790.91	100%	ETB 2,093.17
National Systems Response	ETB 51.90	ETB 42.34	ETB 41.49	6.5%	ETB 135.73
Health Promotion	ETB 96.73	ETB 119.77	ETB 119.75	16.1%	ETB 336.26
Treatment Enablers	ETB 24.53	ETB 15.43	ETB 35.43	3.6%	ETB 75.39
M&E	ETB 148.23	ETB 181.76	ETB 196.46	25.2%	ETB 526.45
Medical Treatment (WHO Figure)	ETB 284.44	ETB 337.12	ETB 397.77	48.7%	ETB 1,019.33

Following the assumed cost of medical treatment, the largest priority area is the cost of monitoring and evaluation. This priority area is estimated to be 25.2% of the total program cost. This area is followed by the estimated cost of health promotion, at 16.1% of the total program cost.

Graph 1: *Total Cost of Non-Communicable Disease Action Plan In millions USD*

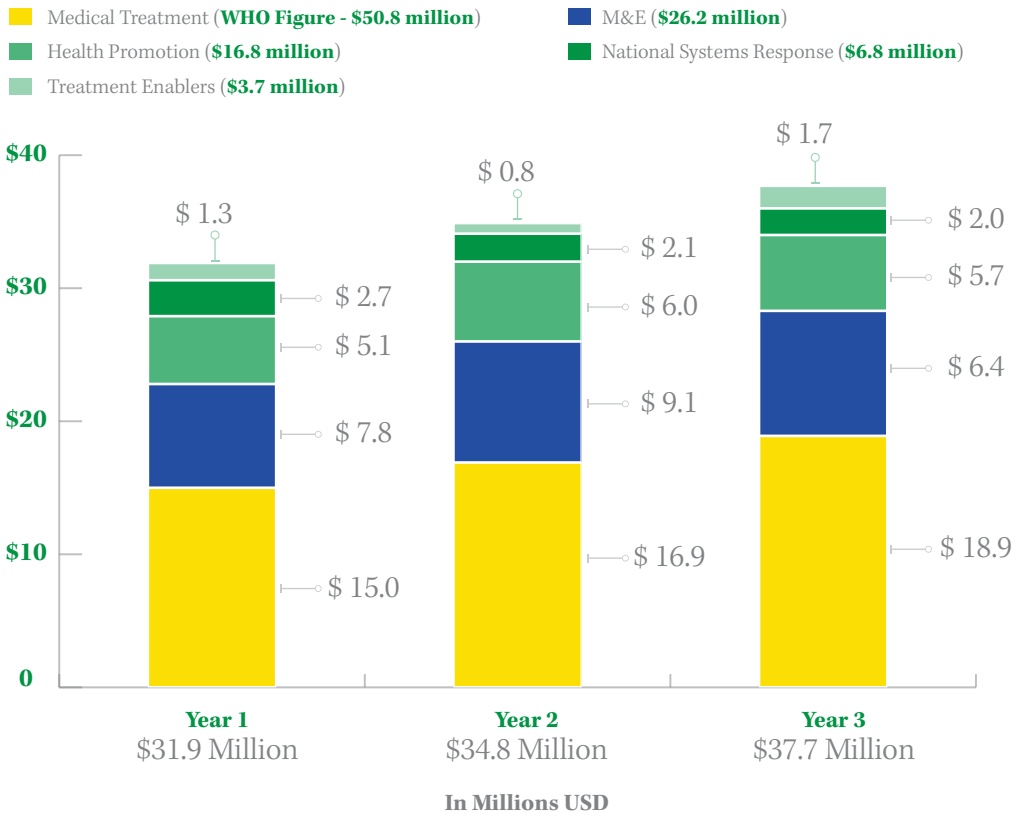
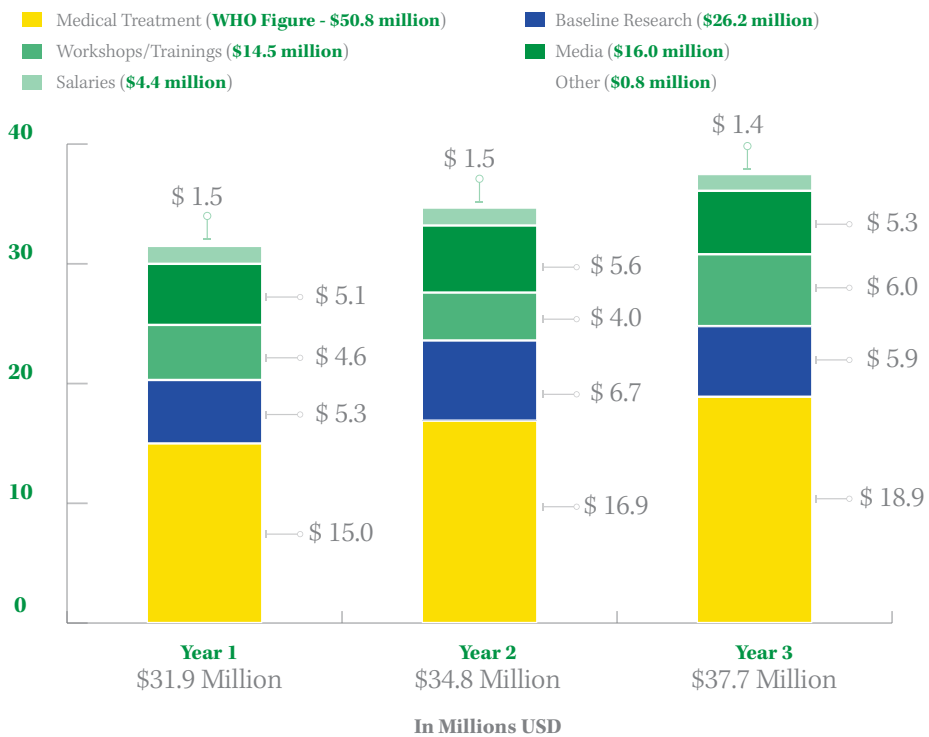


Table 4: Summary of Cost by CategoryIn ETB and USD, In Millions The estimated costs of priority areas can also be evaluated by category.

Cost by Category	Year 1	Year 2	Year 3	% of Total	Total Amount
Policy & Planning Meetings	ETB 4.42	ETB 1.39	ETB 1.06	0.3%	ETB 6.87
Workshops/Trainings	ETB 87.04	ETB 80.07	ETB 124.98	14.0%	ETB 292.10
Design & Printing	ETB 34.97	ETB 48.92	ETB 48.53	6.3%	ETB 132.42
Distribution of Materials	ETB 1.42	ETB 2.54	ETB 2.54	0.3%	ETB 6.50
Media Campaign	ETB 62.85	ETB 62.86	ETB 62.86	9.0%	ETB 188.57
Staff Salary	ETB 28.90	ETB 29.29	ETB 29.29	4.2%	ETB 87.48
Baseline Research	ETB 100.20	ETB 133.55	ETB 123.80	17.1%	ETB 357.56
Equipment	ETB 1.58	ETB 0.69	ETB 0.07	0.1%	ETB 2.34
Medical Treatment (WHO Figure)	ETB 284.44	ETB 337.12	ETB 397.77	48.7%	ETB 1,019.33
Total Cost in (ETB)	ETB 605.83	ETB 696.43	ETB 790.91	100%	ETB 2,093.17
Total Cost (USD)	$ 31.89	$ 34.82	$ 37.66		$ 104.37

When evaluating the cost by category, the second-largest area after medical treatment is baseline research, accounting for 17.1% of the total 3-year estimated cost.

Graph 2: Cost of Action Plan Spending by Category In millions USD



Funding for the NSAP will be mobilized from national and international sources. Ethiopia has adopted a comprehensive health insurance system that incorporates almost all the health expenditures required for diagnosis and treatment of the major NCDs. The national steering committee in collaboration with the FMOH will adopt innovative funding and resource mobilization mechanisms in order to ensure adequate availability of the required finance.

Annex 1: Implementation plan of the NSAP

Priority Area 1: National System Response

Objective: To strengthen national capacity, leadership, governance, multi-sectoral action and partnerships in order to accelerate the national response for prevention and control of non-communicable diseases

Sr.No	Activities	(Indicator)	Time frame	Responsible body	MOV (Data Source)
Strategy 1: National health policy to integrate prevention and control of non-communicable diseases into health-planning processes and development plans of the country					
	Finalize and disseminate NCD national strategic framework and action plan together	Action plan developed	2014	NCD case team	Activity report
	NCDs action plan to be integrated in the national five year development plan	NCD action plan integrated	2015/16	NCD case team	Activity report
	Promoting the NCD NSAP in the national five year development plan and in the upcoming HSDP	NCD action plan integrated	2015/16	NCD case team	Activity report
Strategy 2: Establish/Strengthen the national and sub national non-communicable diseases unit					
	Strengthen and/or establish the NCD case team at all level(at federal, regional, zonal and Woreda) Staffing with the appropriate expertise for the job and allocate required budget Capacity building for NCD case team members at all level on program management Arrange exchange program with other countries for sharing experience Equipping NCD of with necessary materials (computer,printer,photocopy,scanner)	Number of staff, number of capacity building training	2014/2015	DPC directorate	Activity report
	Set up regional NCD case team under the regional health bureaus(region, zone, Woreda)	NCD case teams established	2014/2015	FMOH NCD case team and RHB	Activity report
Strategy 3: Develop and revise as appropriate national strategic framework and plan of action on the prevention and control of non-communicable diseases					
	Disseminate the national strategic framework on the prevention and control of NCDs	Dissemination workshop	2014	FMOH NCD case team and RHB	Workshop report
	Revise and update national NCD plan of action	Action plan revised	2016	FMOH NCD case team and RHB	New action plan developed

Objective: To strengthen national capacity, leadership, governance, multi-sectoral action and partnerships in order to accelerate the national response for prevention and control of non-communicable diseases

Sr.No	Activities	(Indicator)	Time frame	Responsible body	MOV (Data Source)
Strategy 4: Raise awareness among policy makers, senior managers, health workers, and public on the burden of NCDs and their risk factors					
	Organizing high level advocacy meetings/workshops to policy makers	Number of Workshops	2014 - 2015	FMOH NCD case team and RHB	Workshop report
	Established parliamentarian support	2014- 2015		FMOH NCD, NTWG, NMTAG	Activity report
	Number of workshops	2014- 2015		FMOH NCD case team and RHB	Workshop report
	Number of capacity building sessions	2014 - 2016		FMOH NCD case team and RHB, development partners	Activity report
	Coordinate and conduct intensive nationwide campaign on NCDs and their risk factors Action steps public walks(100,000 birr for Tshirt) public panel discussions radio and TV spots radio and TV programs(60-70,000/30mnts) articles in newspapers flyers, magazines	Number and type of campaign	2014 - 2016	FMOH NCD case team and RHB	Activity report
Strategy 5: Develop policies and legislations for multi-sectoral national response, cooperation and partnership					
	Establish national multi-sectoraltechnical advisory group	NMTAG established	2014	FMOH NCD case team, NTWG	Activity report
	Develop national multi-sectoral action plan	Action plan developed	2014/2015	NSC/NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Assist different sectorial Ministries to incorporate NCD prevention and control in their respective policies	NCD prevention and control integrated	2014-2016	NSC/NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Establish and foster partnership and collaboration across various sectors including the private sector	Mechanism for coordination established	2014-2016	NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
Strategy 6: Set up a national and subnational NCDs advisory group and technical task force					
	Set up a national and subnational NCDs advisory group	Advisory group established	2014	NSC/NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Set up overall NCD technical taskforce	Taskforce established	2014	NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Establish other sub taskforces per the major NCDs (CVD, Cancer, DM, Chronic respiratory disease, etc)	Sub taskforce established	2014	NSC/NMTAG, FMOH NCD case team	Activity report

Objective: To strengthen national capacity, leadership, governance, multi-sectoral action and partnerships in order to accelerate the national response for prevention and control of non-communicable diseases					
Sr.No	**Activities**	**(Indicator)**	**Time frame**	**Responsible body**	**MOV (Data Source)**
Strategy 7: Strengthen partnership and resource mobilization at all level through conducting national symposium and fund raising event					
	Create and strengthen both national and international partners	Develop[MOU and regular meeting	2014 - 2016	NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Mobilize necessary financial resources for prevention and control of NCDs from national and international arena	Resource mobilized	2014 - 2016	NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Allocate regular budget for the prevention and control of NCDs from the federal down to the regional governments and health facilities	Budget allocated	2014 - 2016	FMOH, RHBs, development partners	Activity report

Priority Area 2: Health promotion and disease prevention through addressing risk factors

Objective: To reduce exposure to modifiable risk factors for non-communicable diseases through creation of health promoting environments					
Sr.No	**Activities**	**MOV (Indicator)**	**Time frame**	**Responsible body**	**MOV (Data Source)**
Strategy 1: Intensive Nationwide campaign to raise awareness on NCDs and their risk factors among the general population					
	Develop communication strategy (or see if the existing health communication strategy addresses the need of NCD) and health education modules	communication strategy developed	2014/2015	FMOH, NTWG, development partners	Activity report
	Information, education and communication (IEC)/ behavior change communication (BCC) through print and electronic media	Number and type of IEC materials and activities	2014 - 2016	NSC/NMTAG, FMOH NCD case team, NTWG, development partners	Activity report
	Health education by health workersin all health facilities including at the primary health care setting on NCDs and their risk factors	Number of health education at HFs	2014- 2016	FMOH, RHBs, Woreda health office, HFs	Activity report
	Health education using HEWs and HDAs at a household level	Number of health education by HEWs and HDAs	2014 - 2016	FMOH, RHBs, Woreda health office, HEWs, HDAs	Activity report
	Develop key messages for NCDs to be used at community and health facility levels	Type and number of message developed	2014 - 2016	FMOH, RHBs, NTWG, NSC/ NMTAG, Development partners, civic society	Activity report
	Awareness raising workshops among health workers and HEWs.	Number of participants	2014 - 2016	FMOH, RHBs, NTWG, NSC/ NMTAG, Development partners	Activity report

Objective: To reduce exposure to modifiable risk factors for non-communicable diseases through creation of health promoting environments					
Sr.No	**Activities**	**MOV (Indicator)**	**Time frame**	**Responsible body**	**MOV (Data Source)**
Strategy 2: Tackling risks related to tobacco through legislation, policy enforcement, health promotion					
	Ratification of WHO FCTC and its protocol to eliminate illicit trade in tobacco	FCTC ratified, protocols adopted	2014 - 2016	NSC/NMTAG, FMOH/ FMHACA, development partners	Activity report
	Formulate legislations to increase tax and inflation-adjusted prices on all tobacco and tobacco products	Legislation developed and implemented	2014/2015	NSC/NMTAG, FMOH/ FMHACA, development partners	Activity report
	Regulate tobacco production, import, marketing, advertising and promotion	Regulation protocol developed and implemented	2014/2015	NSC/NMTAG, FMOH/ FMHACA, development partners	Activity report
	Formulate and enforce legislation to support smoke free indoor workplaces, indoor public places and other places	Smoke free legislation and enforced	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Enforce and promote cessation of tobacco use, in places such as educational institutions, health care facilities, workplaces and sporting environments	Smoke free legislation and enforced	2014 - 2016	NMTAG, FMOH development partners	Activity report
	Legislations and enforce labeling of health hazard warning on cigarette packets including in local languages	Legislation on labeling and enforcement of law	2014 - 2016	NSC/NMTAG, FMOH/ FMHACA, development partners	Activity report
	Providing help to people who want to stop smoking including diagnosis and treatment of tobacco dependence and counseling services	Number of people received diagnosis and treatment	2014 - 2016	FMOH, RHBs, HFs	Health facility report
	Raise public awareness regarding global and national initiatives and legislations on tobacco control, using all available communication tools	Type and number of awareness sessions	2014 - 2016	NSC/NMTAG, FMOH/ FMHACA, development partners	Activity report
	Awareness raising and education on tobacco in school and among targeted out of school children			NSC/NMTAG, FMOH, development partners	
Strategy 3: Promoting healthy diet: that is healthy dietary habit which is culturally acceptable, financially affordable and beneficial for health					
	To cooperate with maternal, child and nutrition case teams in order to promote maternal, infant and young child nutrition as per the national nutrition policy	Type and number of cooperative activities	2014 - 2016	FMOH case teams	Activity reports
	Policy legislation and regulations to promote local production, marketing and consumption of fruits and vegetables and other foods that contribute for a healthy diet	Policies on healthy food (fruit and vegetables)	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report

Objective: To reduce exposure to modifiable risk factors for non-communicable diseases through creation of health promoting environments					
Sr.No	**Activities**	**MOV (Indicator)**	**Time frame**	**Responsible body**	**MOV (Data Source)**
	Develop policy measures and reinforce regulations to control local production, import and marketing of processed food and drinks with added salt, sweeteners, saturated or trans fatty acids and/or refined carbohydrates (including preservatives)	Policy and reinforcement on junk food	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Legislation and regulation on labeling of ingredients in commercial products or imported foods and drinks with likely health hazards and impose taxation on such foods and drinks	Legislations on labeling	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Produce and distribute regulatory guidelines and reference on food products to ensure production and marketing of healthy foods	Guidelines developed	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Develop and distribute food based dietary guidelines to promote healthy dietary lifestyles among the general population	Guidelines developed	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	School based health promotion to encourage health diet and avoid childhood obesity among school age children	Type and number of health promotion activities	2014 - 2016	NSC/NMTAG, FMOH, MOE, development partners	Activity report
Strategy 4: Promoting physical activity: protecting health through creation of an enabling environment for physical activity					
	Formulate and develop multi-sectoral national policies and guidelines to promote physical activity	Policy on physical activity	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Promote physical activity in schools, workplace, road sideways (walking and cycling), recreational and leisure activities	Number and type of promotional/awareness raising activities	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
Strategy 5: Reducing harmful use of alcohol					
	Develop and enforce national policies, strategies and action plans to reduce the harmful use of alcohol including taxations	Policies on alcohol	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Policy and legislation to protect under age children including from locally produced alcohol	Policies on alcohol protecting under age children	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Reinforce existing drink-driving laws	Type of reinforcement activities	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
	Policies and legislations on labeling of alcohol hazards and health messages	Policies on labeling of alcohol hazards	2014 - 2016	NSC/NMTAG, FMOH, development partners	Activity report
Strategy 6: Tackling risks related to Khat consumption					
	Policy and regulation on the distribution and use of khat domestically including tax	Policy and regulation developed	2014 – 2016	NSC/NMTAG, FMOH, development partners	Activity report

Priority Area 3: NCD Comprehensive Treatment and Care

Objective: To strengthen and reorient health systems to address prevention and control of non-communicable diseases through people-centered primary care and universal health coverage

Sr.no	Activities	Indicator	Time frame	Responsible body	MOV (Data source)
Strategy 1: Ensure disease prevention through screening and vaccination (including HBV and HPV vaccination, VIA screening, self-examination of breast, serum glucose, lipids & BP measurements)					
	• Develop screening guideline and implementation protocols Develop training material for service providers • Develop provider support tools • Develop health education materials • Develop recording and reporting tools	Number and type of guidelines/protocols and training/teaching materials developed	2014/2015	FMOH, RHBs, development partners, NTWG	Activity report
Strategy 2: Ensure the availability of non-communicable diseases and their risk factors diagnostic, treatment and care services					
	• Activities 1.1: Activities to be done by with this regard include • Develop guideline for NCD prevention and control and its implementation plan • Develop disease screening, diagnosis and management protocols • Develop NCD training material for physicians, health officer and nurses, laboratory professionals and pharmacy professionals • Define list of medical and laboratory equipment, reagents and drugs for NCD • Develop provider support tools • Develop client education materials • Develop mentoring guide and tools • Develop supportive supervision checklist • Develop recording and reporting tools	Number and type of guidelines and protocols developed Number and type of training/teaching materials developed	2014/2015	FMOH, RHBs, development partners, NTWG	Activity report
	• Activities 1.2: Guideline and implementation plan				
	• Adherence to care	Number and type of guidelines and protocols developed	2014/2015	FMOH, RHBs, development partners, NTWG	Activity report
	• Rehabilitation	Number and type of guidelines and protocols developed	2014/2015	FMOH, RHBs, development partners, NTWG	Activity report

Objective: To strengthen and reorient health systems to address prevention and control of non-communicable diseases through people-centered primary care and universal health coverage				
Sr.no Activities	**Indicator**	**Time frame**	**Responsible body**	**MOV (Data source)**
Strategy 3: Ensure the availability of the required human resources at all level of the health care delivery system for the prevention, control and treatment of non-communicable diseases				
• Establish multidisciplinary team for NCD at health facilities • Training materials (task shifting) (provide training to health workers • Clinical Mentorship • Screening for NCD at different points of care • Provide package of clinical services for NCD using clinical team • Provide psychological, social and spiritual care by clinical and non-clinical team. Non clinical team include case managers, community based organizations… • Strengthen referral linkage	Multidisciplinary team established	2014 – 2106	FMOH, RHBs, Woredas	Activity report
Strategy 4: Ensure availability and affordability of essential medicines and technology (focus on generic drugs and supplies) for diagnosis, treatment and monitoring of NCD				
• Define the components of essential medical instruments, drugs, laboratory supplies and reagents for NCD in the Ethiopian setup	Number and type of essential medicines defined for NCDs in Ethiopia	2014 – 2106	FMOH, RHBs,	Activity report
• Medical instruments	Number of HFs with essential medical instrument	2014 – 2106	FMOH, RHBs, Woredas	Activity report
• Essential drugs for NCD	Adequate and regular procurement and distribution	2014 – 2106	FMOH, RHBs, Woredas	Activity report
• Laboratory machines	Availability and accessibility of tests	2014 – 2106	FMOH, RHBs, Woredas	Activity report
• Laboratory supply and regents	Adequate and regular procurement and distribution	2014 – 2106	FMOH, RHBs, Woredas	Activity report
• Lab Quality assurance (has 3 components: internal quality control; external quality assessment [panel testing, blinded rechecking and onsite evaluation] and quality improvement)	Number and type of lab quality assurance visits	2014 – 2106	FMOH, RHBs, Woredas	Activity report

Priority Area 4: Monitoring and evaluation including surveillance and research

Objective: To generate empirical evidence on the pattern, trends and determinants of non-communicable diseases and their risk factors and monitor progress towards attainment of the strategic objectives

Sr.No	Activities	Indicator	Time frame	Responsible body	MOV (Data source)
Strategy 1: Integrated approach					
	Incorporate key indicators on major NCDS into the revised HMIS	Type and number of key NCD indicators	2013 - 2014	FMOH (NCD and HMIS case teams)	HMIS documents
	Modify existing registers and develop follow up charts for NCDs	Draft modified registers and follow up charts	2013 - 2014	FMOH (NCD and HMIS case teams)	HMIS documents
	Promote the use of updated versions of ICD 10 codes	Number of health facilities using ICD 10 codes	2013 - 2014	FMOH (NCD and HMIS case teams), NTWG	HMIS documents
	Integrate NCD progress monitoring into the annual health sector reviews	Number of ARM agendas on NCDs	2014 - 2015	FMOH (NCDs case team, PPD)	Annual HSDP Review Bulletin
	Integrate supportive supervision of NCDs program into monitoring and evaluation of health programs	Number of integrated supportive supervisions	2014 - 2015	FMOH (NCDs case team, PPD)	Supportive supervision report
	Conduct biannual program specific supportive supervision	Number of program specific supportive supervisions	2014 - 2016	NCDs case team	Supportive supervision report
	Integrate assessment of the availability of generic NCD medicines into the national service provision assessment	Number of assessments	2014 - 2015	FMOH (NCDs case team, PPD)	Assessment report
Strategy 2: National targets and monitoring and evaluation framework					
	Define and adopt national indicators and targets based on the global monitoring framework	Number of adopted targets and indicators	2013 - 2014	FMOH (NCD case team, PPD), NTWG	National NCD Monitoring and Evaluation Framework
	Define and select additional set of national targets and indicators	Number of additional targets and indicators	2013 - 2014	FMOH (NCDs case team, PPD), NTWG	National NCD Monitoring and Evaluation Framework
	Conduct a consultative workshop to review draft document for the selected set of national targets and indicators to achieve national consensus among stakeholders	Workshop conducted	2014	FMOH (NCD case team)	Workshop proceeding

Objective: To generate empirical evidence on the pattern, trends and determinants of non-communicable diseases and their risk factors and monitor progress towards attainment of the strategic objectives					
Sr.No	**Activities**	**Indicator**	**Time frame**	**Responsible body**	**MOV (Data source)**
	Conduct biannual performance review meetings to monitor progress against the targets	Number of review meetings	2014 - 2016	FMOH (NCDs case team, PPD), RHBs	Reports of review meetings
	Develop annual NCD bulletin in order to disseminate best practices, survey results and other findings	NCD bulletin developed	2015/2016	FMOH (PPD, DPCD, EHNRI)	Bulletin
Strategy 3:Vital registration					
	Assess the level of adult mortalitythrough sampled vital registration systems	Assessment conducted	2014- 2016	FMOH, NCD and PPD case teams, NTWG	Assessment report
	Conduct verbal autopsy in sentinel sites	Verbal autopsy conducted	2014 - 2016	FMOH (NCD, PPD case teams, EHNRI), NTWG	Verbal autopsy report
Strategy 4:Disease registries					
	Establish hospital based cancer registries in 5 university hospitals	Number of hospitals with cancer registries	2014	FMOH (NCDs case team), RHBs, University hospitals	Annual Hospital based cancer registry report
	Maintain Addis Ababa cancer registry	AA cancer registry sustained	August 2013-June 2015	FMOH (NCDs case team),TAH, AACAHB	Annual AA cancer registry report
	Scale up population based cancer registry into 5 regions of the country	Number of regions with population based cancer registries	2015 - 2016	FMOH, RHBs,	Activity report
Strategy 5: Non-communicable disease risk factor surveillance					
	Conduct WHO Stepwise survey on major NCDs and risk factors of NCDs	STEPS survey conducted	2014 - 2015	FMOH (EHNRI), NTWG	Survey report
	Conduct national youth tobacco survey	National youth tobacco survey conducted	2014 - 2015	FMOH (NCD case team, EHNRI),	Survey report
	Establish "national biometric reference data set" on selected biomedical indicators, such as serum cholesterol and glucose, in collaboration with biomedical laboratories	"National biometric reference data set" established	2014 - 2016	FMOH (NCD case team, EHNRI), NTWG	Activity report
Strategy 6: Capacity strengthening					
	Conduct training of health workers at primary, secondary and tertiary levels on the use of NCD registers and follow up formats	Number of trainings conducted	2014 – 2016	FMOH (NCDs case team, PPD)	Training report
	Provide training for data clerks and statisticians to improve their skills on data collection, data cleaning, analysis and reporting	Number of trainings conducted	2014 – 2016	FMOH (NCDs case team, PPD)	Training report
	Conduct training to program managers and key stakeholders on NCD surveillance and health systems research	Number of trainings conducted	2014 - 2016	FMOH (NCDs case team, PPD, EHNRI), WHO, AAU	Training report

Objective: To generate empirical evidence on the pattern, trends and determinants of non-communicable diseases and their risk factors and monitor progress towards attainment of the strategic objectives

Sr.No	Activities	Indicator	Time frame	Responsible body	MOV (Data source)
Strategy 7: Local evidence for Policies and plans					
	Identify research needs in the area of non-communicable diseases and their risk factors	Type and number of research needs identified	2014 - 2016	FMOH (NCDs case team), WHO, academic and research institutions	Activity report
	Facilitate and support health systems research, epidemiological studies on major NCDs and their risk factors	Type and number of studies conducted	2014 - 2016	FMOH (NCDs case team, EHNRI)	Research reports
	Conduct capacity assessment of regional health bureaus and health facilities regions to respond to non-communicable diseases	Number of assessments	2014 - 2016	FMOH (NCDs case team, PPD), WHO	Assessment report
Strategy 8: Innovation					
	Collaborate with AAU and with at least five regional university health science colleges on NCD sentinel surveillance	Number of sentinel surveillance sites established	2014 - 2016	FMOH (NCDs case team, EHNRI), AAU, regional universities and healthy science colleges	Activity report
	Include NCD activities in annual plan and Woreda based plan	Number of Woredas included NCD in their annual plan	2014 – 2106	FMOH, RHBs, Woredas	Activity report
	Include NCD variables in integrated supportive supervision checklist	Type and number of NCD indicators included	2014 – 2106	FMOH, RHBs,	Activity report
	Include NCD activities in annual review meetings	NCDs in annual review meeting	2014 – 2106	FMOH, RHBs,	Activity report

Annex 2: Costing of Non-Communicable Diseases Strategic Action Plan

Table 1: Detailed Summary of Strategies- National Systems Response Summary

National Systems Response Summary	2014	2015	2016
Total Cost (USD)	**$ 2,731,528.26**	**$ 2,116,895.39**	**$ 1,975,880.99**
Total Cost (ETB)	**ETB 51,899,037.00**	**ETB 42,337,907.75**	**ETB 41,493,500.70**
National Health Policy Development- Action Plan & Strategic Framework	ETB 1,544,336	–	–
Establish/Strengthen NCD Units	ETB 32,245,800	ETB 31,823,720	ETB 31,678,600
National Strategic Framework/Plan of Action	–	–	–
Professional Public Awareness Raising	ETB 17,780,095	ETB 9,811,445	ETB 9,811,549
Policy and Legislation for Multi-sectoral National Response	ETB 328,806	ETB 702,743	ETB 3,352
National NCD Advisory Group/Technical Taskforce	–	–	–
Sustained Resources	–	–	–

Table 2: Detailed Summary of Strategies- Health Promotion Summary

Health Promotion Summary	2014	2015	2016
Total Cost (USD)	**$5,091,192.54**	**$5,988,721.39**	**$5,702,526.18**
Total Cost (ETB)	**ETB 96,732,658.20**	**ETB 119,774,427.80**	**ETB 119,753,049.68**
Nationwide Campaign to Raise Awareness	ETB 63,102,380	ETB 62,883,370	ETB 62,861,230
Tobacco: Legislation, Policy Enforcement, Health Promotion	ETB 26,062,296	ETB 50,676,508	ETB 50,676,660
Promote Healthy Diet	ETB 723,433	ETB 2,575	ETB 2,727
Promote Physical Activity	ETB 723,433	ETB 2,575	ETB 2,727
Reduce Harmful Use of Alcohol	ETB 723,433	ETB 2,575	ETB 2,727
Tackle Risks Related to Khat Consumption	ETB 723,433	ETB 2,575	ETB 2,727
NCD Awareness Raising Among Children	ETB 4,674,250	ETB 6,204,250	ETB 6,204,250

Table 3: Detailed Summary of Strategies- Treatment Enablers Summary

Monitoring and Evaluation Summary	2014	2015	2016
Total Cost (USD)	**$7,801,650.58**	**$9,088,133.93**	**$9,355,256.26**
Total Cost (ETB)	**ETB 148,231,361.08**	**ETB 181,762,678.66**	**ETB 196,460,381.38**
Integrated Approach- Supportive Supervision	ETB 34,069,674	ETB 34,173,706	ETB 59,140,246
National targets and monitoring and evaluation framework	ETB 778,450	ETB 778,450	ETB 778,450
Vital Registration	ETB 709,975	–	–
Disease Registries	ETB 752,740	ETB 832,300	ETB 310,310
Non-communicable disease risk factor surveillance	ETB 28,500,000	ETB 57,000,000	ETB 38,000,000
Capacity Strengthening	ETB 11,782,590	ETB 11,782,590	ETB 11,782,590
Policies and Plans- Capacity Assessment of Regional Health Bureaus & Health Facilities	ETB 71,637,932	ETB 77,195,633	ETB 86,448,785

Table 4: Detailed Summary of Strategies- Monitoring and Evaluation Summary

General Inputs & Assumptions	2014	2015	2016	Comments on Assumptions
General				
Number of Regions	11	11	11	
Number of Zones	75	75	75	
Number of Woredas	822	822	822	
Number of Development Partners/ NGOs (AA)	30	30	30	Working group assumption
# of ministries (AA)	22	22	22	
# of Professional Associations (AA)	15	15	15	Working group assumption
# of Civic Societies (AA)	50	50	50	Working group assumption
# of Government offices at regional level (AA)	22	22	22	Working group assumption
Number of Working Days in a Year	250	250	250	
Months Per Year	12	12	12	
ETB - USD Exchange Rate (ETB per USD)	19	20	21	Estimate based on inflation
Health Facility				
Number of health centers	3,521	3,521	3,521	source: Distribution of Public Facility List- Ministry of Health July, 2013
Number of hospitals	245	245	245	
total health faciilties	3,766	3,766	3,766	
% of health centers in Addis Ababa	2.81%	2.81%	2.81%	
% of health centers in regions	97.19%	97.19%	97.19%	
% of hospitals in Addis Ababa	2.86%	2.86%	2.86%	
% of hospitals in regions	97.14%	97.14%	97.14%	
Vehicles				
Driver Cost for Day Trip	ETB 100	ETB 100	ETB 100	Source: CHAI Clinical Mentoring model
Driver Cost for Overnight Trip	ETB 100	ETB 100	ETB 100	
Annual Insurance Cost as % of Car Value	2%	2%	2%	
Fuel Cost per Kilometer	ETB 3	ETB 3	ETB 3	Estimate. Source: CHAI clinical mentoring model=Assume 8 km per liter fuel efficiency and 20 etb liter, 15% price inflation
Basic Costs				
Transport Cost - National	ETB 2,000	ETB 2,000	ETB 2,000	
Transport Cost - Regional	ETB 120	ETB 120	ETB 120	
Transport Cost - Zonal	ETB 60	ETB 60	ETB 60	
Transport Cost - Woreda	ETB 60	ETB 60	ETB 60	
Cost Radio Spot per 1 second	ETB 30	ETB 30	ETB 30	NCD price quote form producer
Cost TV Spot per 1 second	ETB 270	ETB 270	ETB 270	NCD price quote from producer
Cost per minute Radio Program	ETB 1,764	ETB 1,764	ETB 1,764	NCD price quote from FANA radio
Cost per minute TV program	ETB 2,000	ETB 2,000	ETB 2,000	NCD price quote from producer

General Inputs & Assumptions	2014	2015	2016	Comments on Assumptions
Trainings/Meetings/Workshops				
Cost per Day per Head for Refreshments & Lunch (national/ regional)	ETB 350	ETB 350	ETB 350	Working group assumptionestimate
Cost per Day per hear for Refreshments & Lunch (zonal/ Woreda)	ETB 100	ETB 100	ETB 100	Working group assumptionestimate
Cost per Day for Venue (National / Regional)	ETB 1,500	ETB 1,500	ETB 1,500	Working group assumptionestimate
Cost per Day for venue (Zonal/ Woreda)	ETB 500	ETB 500	ETB 500	Working group assumptionestimate
Cost per person for Stationary	ETB 40	ETB 40	ETB 40	Working group assumptionestimate
Cost per Head for Round Trip Transport- local resident	ETB 100	ETB 100	ETB 100	Working group assumptionestimate
Cost per Day per Head for Accommodations & per Diems	ETB 300	ETB 300	ETB 300	Working group assumptionestimate
Cost per Head for Round Trip Transport- non-local resident	ETB 3,000	ETB 3,000	ETB 3,000	Working group assumptionestimate
Trainer Fee per day	ETB 500	ETB 500	ETB 500	Working group assumptionestimate
Cost per head for international flight + ground transport	ETB 32,300	ETB 32,300	ETB 32,300	Working group assumptionestimate
Cost per head international accommodations& per diem	ETB 6,000	ETB 6,000	ETB 6,000	Working group assumption estimate
Tea/coffee & Bread only per head	ETB 10	ETB 10	ETB 10	
Manuals and Printed Materials				
Cost per page of printing	ETB 1.5	ETB 1.5	ETB 1.5	
Cost per manual print (10-50 pages)	ETB 20	ETB 20	ETB 20	MOH public relations
Cost of designer per day	ETB 450	ETB 450	ETB 450	MOH public relations
Distribution costs-Addis Ababa (per material)	ETB 3	ETB 3	ETB 3	
Distribution costs- Regional (per material)	ETB 1	ETB 1	ETB 1	
Distribution costs- Zonal/Woreda/ kebele (per material)	ETB 1	ETB 1	ETB 1	
Cost per poster (print)	ETB 10	ETB 10	ETB 10	MOH public relations
Cost per leaflet (print)	ETB 1	ETB 1	ETB 1	MOH public relations
Cost per billboard per month	ETB 3,000	ETB 3,000	ETB 3,000	Clinical Mentoring Model Assumptions, CHAI
Cost per newspaper publication	ETB 200	ETB 200	ETB 200	Assumption derived from MOH's 5 year contract of 50,000 birr for 1 article per week
Cost per magazine publication	ETB 200	ETB 200	ETB 200	Assumption derived from MOH's 5 year contract of 50,000 birr for 1 article per week

General Inputs & Assumptions	2014	2015	2016	Comments on Assumptions
Office Equipment				
Chair	ETB 2,000	ETB 2,000	ETB 2,000	Working group assumptionestimate
Desk	ETB 4,000	ETB 4,000	ETB 4,000	Working group assumption estimate
Printer	ETB 7,000	ETB 7,000	ETB 7,000	Working group assumption estimate
Computer	ETB 15,000	ETB 15,000	ETB 15,000	Working group assumption estimate
Photocopy machine	ETB 20,000	ETB 20,000	ETB 20,000	Working group assumption estimate
Powerking strip	ETB 100	ETB 100	ETB 100	Working group assumptionestimate
Phone	ETB 300	ETB 300	ETB 300	Working group assumption estimate
scanner	ETB 7,000	ETB 7,000	ETB 7,000	Working group assumption estimate
Stationary	ETB 10,000	ETB 10,000	ETB 10,000	Working group assumptionestimate
Cost to furnish a new office at national/regional level	ETB 65,400	ETB 65,400	ETB 65,400	
Cost to furnish a new office at a zonal/Woreda level	ETB 63,400	ETB 38,400	ETB 38,400	
Cost of new employee- National	ETB 31,100	ETB 31,100	ETB 31,100	
Cost of new employee- Regional	ETB 31,100	ETB 31,100	ETB 31,100	
Cost of new employee- Zonal	ETB 16,000	ETB 16,000	ETB 16,000	
Cost of new employee- woreda	ETB 16,000	ETB 16,000	ETB 16,000	
% total material cost needed annual replacement	10%	20%	25%	
Annual cost equipment maintenance- National/Regional office	ETB 6,540	ETB 13,080	ETB 16,350	
Annual cost equipment maintenance- Zonal/Woreda office	ETB 6,340	ETB 7,680	ETB 9,600	
Staff				
Salary with Bachelor's Degree	ETB 2,300	ETB 2,300	ETB 2,300	Working group assumption estimate
Salary with Master's Degree	ETB 3,400	ETB 3,400	ETB 3,400	Working group assumption estimate
Salary with MD	ETB 4,000	ETB 4,000	ETB 4,000	Working group assumption estimate
Salary with MD/Masters	ETB 6,000	ETB 6,000	ETB 6,000	Working group assumption estimate
Salary Principle Investigator	ETB 20,000	ETB 20,000	ETB 20,000	Working group assumption estimate
Salary co-investigator	ETB 15,000	ETB 15,000	ETB 15,000	Working group assumption estimate
Salary Nurse	ETB 2,000	ETB 2,000	ETB 2,000	Working group assumption estimate
Assumed Costs of Programs				
Clinical Mentoring (preliminary training)	ETB -	ETB -	ETB 20,000,000	Based on CHAI Clinical Mentoring Costing model (training segment)
STEPS Survey on NCD and their risk factors	ETB 28,500,000	ETB 28,500,000	ETB -	(EHNRI and NCD Case team assumption)
National Youth Tobacco Survey	ETB -	ETB 28,500,000	ETB -	(Based on EHNRI and NCD Case Team assumption generated in STEPs step 1 strategy)
Establish Biometric Reference data sheet	ETB -	ETB -	ETB 38,000,000	(Based on EHNRI and NCD Case Team assumption generated in STEPs step 3 strategy)

WHO Tool Outputs for CVD and Diabetes In USD

WHO Outputs: CVD, Diabetes				
By cost category	**2014**	**2015**	**2016**	**Total**
Primary care visits	417,127.5256	4813,85.9359	555,806.7986	**145,4320**
Ancillary care visits	1,269,998.846	1,417,258.588	1,580,225.123	**426,7483**
Drugs / medicines	4571,695.069	5,180,856.807	5873968.213	**15,626,520**
Lab & diagnostic tests	740,538.9002	908,206.4832	1,110,162.18	**2,758,908**
Hospital inpatient care	0	0	0	**0**
Hospital outpatient care	0	0	0	**0**
Hospital-based procedures	0	0	0	**0**
Sub Total	**6,999,360.341**	**7,987,707.815**	**9,120,162.315**	**2,410,7230**

WHO Tool Outputs for Cancer In USD

WHO Outputs: Cancer				
By cost category	**2014**	**2015**	**2016**	**Total**
Primary care visits	152,161.9854	169,291.1656	187481.8178	**508,935**
Ancillary care visits	152,161.9854	169,291.1656	187481.8178	**508,935**
Drugs / medicines	0	0	0	**0**
Lab & diagnostic tests	7,213,510.225	8,025,549.553	8,887,909.854	**24,126,970**
Hospital inpatient care	0	0	0	**0**
Hospital outpatient care	0	0	0	**0**
Hospital-based procedures	453247.2	504270.1473	558,454.9172	**1,515,972**
Sub Total	**7,971,081.395**	**8,868,402.032**	**9,821,328.407**	**26,660,812**

WHO Tool Inputs: Laboratory Testing and Diagnostics and ValuesIn USD

	2	**3**	**4**	**5**	**6**	**7**	**8**
Laboratory & Diagnostic Tests and Procedures	**Blood Culture, sensitivity**	**Ultrasound**	**Blood glucose Test**	**Urinalysis**	**Blood**	**Urine Culture**	**Blood serology**
Low-Income	2.71	3.78	2.00	1.83	50.91	0.55	6.67

10	**12**	**13**	**14**	**15**	**16**
Urine test trip for microalbumin and creatinine	**CBC**	**Blood Assay**	**General anaestisia**	**automated heamogram**	**Bilirubin assay**
2.40	1.50	6.89	25.73	7.00	4.30

17	**18**	**19**	**20**	**21**	**22**	**23**
biopsy	**bone density study**	**chemotherapy**	**chest xray**	**drainage**	**ECG**	**Echo**
32.51	64.54	12.69	16.17	50.38	2.77	7.58

24	**25**	**26**	**27**	**28**	**29**	**30**	**31**
Liver imaging	**Mamography**	**Partial mastechtomy**	**Radical mastectomy**	**Pathology procedure**	**pelvic examination**	**Radiotherapy**	**Tamoxifen therapy**
43.73	24.86	96.88	98.81	3.14	2.39	23.50	0.00

References

ACIPH & MIRT. (2010). Preliminary results: Survey of non-communicable diseases among bank employees and teachers in Addis Ababa, Ethiopia

African Health Monitor. (2008). Fighting NCDs: Africa's new silent killers

Bahaa-eldin E. A. Rahim1, Umar Yagoub1, M.S. Mahfouz2, Yahya M.H. Solan3, R. A. (2012). Abuse of Selected Psychoactive Stimulants: Overview and Future Research Trends, 9(4), 2295–2308. Retrieved from http://www.lifesciencesite.com/lsj/life0904/339_12289life0904_2295_2308.pdf

Beaglehole.R. et.al.(2011). Priority actions for the non-communicable disease crisis. Lancet 2011; 377: 1438–47 Published Online April 6, 2011. DOI:10.1016/S0140-6736(11)60393-0

Cox, G. &Rampes, H. (2003). Adverse effects of khat: a review. Accessed from DOI: 10.1192/apt.9.6.456

DACA. (2005). A Report on Global Youth Tobacco Survey (GYTS) conducted in secondary schools in Addis Ababa-Ethiopia

Darnton-Hill., Nishida, C., & James, WPT.(2004). A life course approach to diet, nutrition and the prevention of chronic diseases. Public Health Nutrition: 7(1A), 101–121. DOI: 10.1079/PHN2003584

Demissie,T., Ali,A., Zerfu,D. (2009). Availability and consumption of fruits and vegetables in nine regions of Ethiopia with special emphasis to vitamin A deficiency

EDHS(2012). Ethiopia Demographic and Health Survey 2011.Central Statistical Agency Addis Ababa, Ethiopia ICF International Calverton, Maryland, USA.

FMOH. (2010). Health sector development program IV 2010/11 – 2014/15. Final draft October, 2010

FMOH. (2010). Prevention and control of chronic non-communicable diseases strategic framework

FMOH & WHO. (2008). Situational analysis on chronic diseases and their risk factors in Ethiopia. National technical working group on chronic diseases in Ethiopia; December 2008

Health Policy of the Transitional Government of Ethiopia Sept. 1993

Hoffman, R., &Al'Absi, M. (2010). Khat use and neurobehavioral functions: suggestions for future studies. Journal of ethnopharmacology, 132(3), 554–63. doi:10.1016/j.jep.2010.05.033

Kalix, P. (1988). Khat: A Plant With Amphetamine Effects Department of Pharmacology, University Medical Center, Geneva, Switzerland. Accessed from http://blog.ecu.edu/sites/penderst/files/2011/01/Khat-a-drug-with-stimlant-effects.pdf

Kebede et al. (2005). Khat and alcohol use and risky sex behavior among in-school and out-of-school youth in Ethiopia

Lynch, J., & Smith, G.D. (2005). A life course approach to chronic disease epidemiology.Annu.Rev.Public Health 2005. 26:1–35 doi: 10.1146/annurev.publhealth.26.021304.144505

Meiro-Lorenzo, M., Villafana, T.L., &Harrit, M.N. (2011). Effective responses to non-communicable diseases: Embracing action beyond the health sector. HNP discussion paper

Ministry of Finance and Economic Development (MoFED). (2010). The Federal Democratic Republic of Ethiopia Growth and Transformation Plan (GTP) 2010/11-2014/15. Draft September 2010 Addis Ababa

Ministry of Health Brasilia-DF. (2011). Strategic ac t ion plan to tackle non-communicable diseases (NCD) in Brazil 2011-2022

Misganaw, A., Mariam, DH., &Araya, T. (2012). The double mortality burden among adults in Addis Ababa, Ethiopia, 2006-2009.Prev Chronic Dis 2012;9:110142.

MOH the Government of Pakistan. (2004). National action plan for prevention and control of non-communicable diseases and health promotion in Pakistan

Muluneh.AT.et al. (2012). Population based survey of chronic non-communicable diseases at gilgel gibe field research center, southwest Ethiopia. Ethiopian Journal of Health Sciences, Vol 22, special issue, August 2012

n.a. (n.d). 204. Profile on production of distilled alcoholic liquors. Accessed on February 6, 2014 fromhttp://www.southinvest.gov.et/Publications/SSNPR%20draft%20Profile/D/%20Distiled%20Alcoholic%20Liquors.pdf

Nigatu, T. (2012). Epidemiology, complications and management of diabetes in Ethiopia: A systematic review

Oli K et la. (1999). Prevalence of rheumatic heart diseases among school children in Addis Ababa East Africa medical Journal .1999,76 (11) :601-605

Oli, K., Tekle-Haimanota,R., Forsgrenb, L., & Ekstedtb, J. (1992). Rheumatic Heart Disease Prevalence among Schoolchildren of an Ethiopian Rural Town. cardiology 1992;80:152-155 (DOI: 10.1159/000174993)

Reda,A.A., Moges,A., Wondmagegn,B.Y., &Biadgilign, S. (2012). Alcohol drinking patterns among high school students in Ethiopia: a cross-sectional study

Republic of South Africa. (20130. Strategic plan for the prevention and control of non-communicable diseases 2013-17

Schoenmaker, N., Hermanides,J., & Davey, G. (2005). Prevalence and predictors of smoking in Butajira town, Ethiopia.Academic Medical Centre, University of Amsterdam, the Netherlands; Department of Community Health Addis Ababa.

Tesfay, F., Byass, P., Brehane, Y., Bonita, R., & Wall, S. (2008). Association of Smoking and Khat (Catha edulisForsk) use with high blood pressure among adults in Addis Ababa, Ethiopia.Preventing Chronic Disease volume 5 number 3; 2008.

The NCD Alliance. (n.d). Non-Communicable Diseases (NCDs): Central to the post 2015 development framework

Ulaanbaatar. (2007). National program on prevention and control of non-communicable diseases

UNAIDS.(2011). Chronic care of HIV and non-communicable diseases.How to leverage the HIV experience.

WHO. (2013). Revised draft: Global action plan for the prevention and control of non-communicable diseases 2013 – 2020.

WHO.(2012). A comprehensive global monitoring framework, including indicators, and a set of voluntary global targets for the prevention and control of non-communicable diseases. Discussion paper; version dated 25 July 2012

WHO. (2011). Scaling up action against non-communicable diseases: how much will it cost?

WHO. (2010). Global recommendations on physical activity for health

WHO. (2010a). Global status report on non-communicable diseases

WHO. (2010). Global strategy to reduce the harmful use of alcohol

WHO. (2010). Package of essential non-communicable (pen) disease interventions for primary health care in low-resource settings

WHO. (2010b). Regional office for Africa: Ethiopia Factsheets of Health Statistics 2010

WHO.(2009). WHO Country Cooperation Strategy 2008-2011 Ethiopia 2009.

WHO. (2008). 2008-2013 Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases. World Health Organization, Geneva, 2008.

WHO. (2004). Global strategy on diet, physical activity and health

WHO. (2003). WHO framework convention on tobacco control

WHO. (2002). A summary of alcohol in developing societies: A public health approach. Management of substance dependence non-communicable diseases

WHO.(2001). Life course perspectives on coronary heart disease, stroke and diabetes.Key issues and implications for policy and research. Summary report of a meeting of experts 2–4 May 2001

Young, F., Critchley, A. J., Johnstone, K. L., &Unwin, C. N. (2009). A review of co-morbidity between infectious and chronic disease in Sub Saharan Africa: TB and Diabetes Mellitus, HIV and Metabolic Syndrome, and the impact of globalization.