Republic of Rwanda
Ministry of Health

Rwanda Biomedical Centre
Healthy People, Wealthy Nation

National Strategy and Costed Action Plan for the Prevention and Control of Non-Communicable Diseases in Rwanda

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PREFACE

Rwanda is rebuilding itself as a nation. While we continue to build our economy and develop our country, Rwanda continues to strive for universal access to health care with a major focus on the poor, via our community-based health insurance scheme.

However, while the disease burden is becoming increasingly controlled, challenges remain particularly among non-communicable diseases (NCDs).

NCDs like cancers, cardiovascular diseases, chronic respiratory diseases, diabetes, and injuries remain a challenge. NCDs, including injuries and disabilities, cause the highest loss of life in Rwanda, accounting for approximately 59 percent of all deaths in the country.

The Ministry of Health and the Rwanda Biomedical Centre, with support from The Defeat-NCD Partnership, and other strategic partners, prepared this National Strategy and Costed Action Plan for the Prevention and Control of NCDs to cover 2020 through to 2025. The comprehensiveness of this plan will enable us to reach our people at all stages of their lives and reduce premature deaths due to NCDs.

The costed action plan outlines how 358.15 billion Rwandan Francs (RWF) will be needed over the next five years in order to improve prevention, screening, diagnosis and treatment of NCDs, to strengthen advocacy initiatives and train health workers, and to raise general awareness among Rwandans. RWF 136.22 billion will be needed for treating cardiovascular disease and diabetes. RWF 106.71 billion to treat cancers, RWF 57.17 billion for respiratory diseases and RWF 11.09 billion for injuries.

Investing now in prevention will lead to savings in the future, money that would otherwise have to be spent on treating Rwandans in advanced stages of cancer, diabetes and cardiovascular disease.

The plan presents how a multisectoral approach, bringing sports, food and nutrition, trade, environment, education, and local government ministries together, as well as building the capacity of frontline health workers in villages and cells across Rwanda, supports necessary long-term investment.

The impact of this strategic plan goes far beyond clinics and hospitals; it will be felt by individuals of all ages and in communities across the country.

I call upon all health staff, partner government ministries, and all stakeholders to implement this strategic plan to contribute to a healthy and prosperous nation.

MINISTRY OF HEALTH

Dr. Daniel Ngamije

Minister of Health, Rwanda

Foreword

Reducing the burden of NCDs in Rwanda is urgent and so very important. The challenge is big and the response in this strategic plan is bold. It has to be. The quality of life for all of us depends on it.

To create an enabling environment to reduce exposure to risk factors, empower individuals and communities with the knowledge they need to make the right choices and enjoy healthy lives, and to provide high quality NCD services to the people who need them, is the responsibility of each one of us. It is too ubiquitous to be tackled by a single entity.

This strategic plan is truly multisectoral, calling upon actors across government, private entities, civil society organisations and the population at large, to all play a role.

Delivery of this plan will strengthen Rwanda's health system. For example, one of the outputs identified is to screen around 4.2 million people for cardiovascular diseases and diabetes by 2025, up from 0.74 million in 2020, representing nearly a five-and-a-half-fold increase. It will also allow us to prevent, better diagnose and treat NCDs, improving support to patients.

I would also particularly like to acknowledge the contribution of The Defeat-NCD Partnership for their invaluable technical support and their work with our team at the Division of NCDs that worked tirelessly to draft, consult on and edit this document. With the launch of this strategy, our collective passion to see Rwanda further progress to reduce the preventable burden of NCDs has just began to accelerate and bear fruit.

Dr. Sabin Nsanzimana
Director-General, Rwanda Biomedical Centre

EXECUTIVE SUMMARY

Guiding Rwanda's response to addressing non-communicable diseases (NCDs), this National Strategy and Costed Action Plan for the Prevention and Control of Non-Communicable Diseases covers a five-year period from July 2020 to June 2025. Incorporating key learnings from Rwanda's first Non-Communicable Diseases and Injuries National Strategic Plan 2014-2019, this is also inspired by, and aligned with, key national policies and plans.

This document combines Rwanda's national strategy for NCDs, together with a costed action plan. It lists the critical stakeholders involved in the prevention and control of NCDs in Rwanda and details the agreed operational priority interventions and their targets.

This strategy envisions a Rwanda free from the avoidable burden of NCDs, including injuries and disabilities. In Rwanda, as elsewhere around the world, the burden of NCDs is increasing. World Health Organization (WHO) estimates from 2016 show that NCDs, injuries and disabilities, accounted for 58 percent of total annual mortality in Rwanda [8]. Cardiovascular diseases, injuries, cancers, chronic respiratory diseases and diabetes are the biggest killers; these same diseases will be the focus of this five-year plan. Rates of NCDs are likely to be much higher than national statistics show, as many are not screened and go undiagnosed.

Three key domains are presented in this strategic plan to steer actions in tackling NCDs. The first, community action and engagement, is key to changing behaviours and increasing early detection. The second focuses on the prevention and control of NCD risk factors, like unhealthy diets, the harmful use of alcohol, and tobacco smoking. Quality NCD diagnosis and treatment services at all levels of care is the final domain.

Enhanced national multisectoral collaboration is a common theme throughout the national strategy. It is only through the involvement of all stakeholders that this plan will be successful in its mission to alleviate the economic, social and medical burden of NCDs in Rwanda, to reduce morbidity and premature mortality, improve functionality and ensure a healthier population.

The overarching goal of this plan is to reduce premature mortality from NCDs by 25 percent, by 2025. The actions that need to be taken to achieve this are organised in four strategic objectives:

1

Priority areas

Preventing NCDs through health promotion and reduction of risk factors

1. Awareness-raising / education to reduce exposure to modifiable NCDs risk factors.
2. Immunisation and early treatment of infections leading to NCDs.
3. Establish and strengthen the implementation of policies and regulations addressing NCD risk factors.
4. Improve road safety for the prevention of injuries and disabilities.
5. Deliver on communication plan to accompany the national strategy and costed action plan.

2

Priority areas

Strengthening health systems for quality NCD early detection, care and treatment at all levels

1. Human resources development for NCD early detection, care and treatment.
2. NCD service delivery.
3. Strengthen the supply chain of NCDs medications, laboratory commodities, and technologies/medical equipment.
4. Ensure continuous research and development to establish and advance various NCD treatment guidelines and protocols.
5. Financing of NCD prevention and control.
6. Enhance patient psychosocial and resource support programmes.
7. Establish policies and regulations to ensure continued access to NCD services during emergencies such as pandemics or epidemics (e.g. COVID-19).
8. Establish specialised NCD, including injuries and disabilities, diagnostic and treatment centres.

3

Priority areas

Strengthening disease surveillance and research, alongside robust monitoring and evaluation, for evidence-based intervention

1. Strengthen disease surveillance and M&E systems.
2. Enhance research for evidence-based interventions.

4

Priority areas

Strengthening intersectoral coordination, advocacy and resource mobilisation for the prevention and control of NCDs

1. Establish national mechanisms to coordinate the prevention and control of NCDs.
2. Enhance international, national and decentralised coordination mechanisms for prevention and control of NCDs.

Within each of these objectives are expected outputs, including indicators and measures to be tracked. As is commensurate with the scale and importance of the challenge, these are ambitious. For example, while Rwanda has a relatively low prevalence of tobacco smoking, more efforts will be put to further reduce prevalence of smoking from 13 percent, down to 10 percent of the population, with greater focus on persons over 15-years-old. Similarly, a national alcohol policy and action plan will be developed, allowing better understanding of the burden of the harmful use of alcohol in Rwanda and reducing its prevalence. Measures will be taken to halt the rise of diabetes and obesity, keeping obesity prevalence at 2.8 percent. Efforts over the next five years will ensure quality NCD services reaching at least 50 percent of the people who need them, with continuous availability of affordable NCD supplies and technologies.

Achieving this will require a shift in financing. National budget allocation, although increased, is limited and not proportional with the burden faced. This plan details alternative approaches. Every Rwandan Franc invested in NCD care brings cost savings, direct and indirect, many times higher.

The costed action plan outlines the resources needed to achieve the defined objectives, and a total budget of RWF 358.1 billion (USD 376.2 million) is required for the period of the plan (2021-2025). To fund the activities in the strategy, there is need to set priorities. This has to happen within budget allocations across government sectors, by developing a list of cost-effective priority activities within this strategy, as well as bringing in new funders and funding innovations. This will require close collaboration among different players including government departments, the private sector, local communities, and development partners.

While this strategic document and costed action plan is meant to provide guidance, clarity of purpose, and national alignment as we respond to NCDs, it does not imply that the strategy is frozen for the next five years. As a result, we expect that this strategy will evolve during its five-year lifespan, as new facts and evidence come to light, and new contexts emerge.

LIST OF ACRONYMS AND ABBREVIATIONS

AT	Assistive Technology
CBHIs	Community-Based Health Insurers
CHUB	University Teaching Hospital of Butare
CHUK	University Teaching Hospital of Kigali
CHWs	Community Health Workers
CoD	Cause of Death
COPD	Chronic Obstructive Pulmonary Diseases
CRDs	Chronic Respiratory Diseases
CSOs	Civil Society Organisations
CT or CAT	Computed Tomography
CVDs	Cardiovascular Diseases
CVRs	Civil Registration and Vital Statistics
DALYs	Disability-Adjusted Life Years
DM	Diabetes Mellitus
GBD	Global Burden of Disease
GDP	Gross Domestic Product
HIS	Health Information systems
HMIS	Health Management Information System
HPV	Human Papilloma Virus
HRH	Human Resources for Health
HRTT	Health Resource Tracking Tool
HSSP4	Fourth Health Sector Strategic Plan
HTN	Hypertension
IARC	International Agency for Research on Cancer
ICF	International Classification of Functioning, Disability and Health
IHME	Institute for Health Metrics and Evaluation
IP	In-Patient
LMICs	Low- and Middle-Income Countries
M&E	Monitoring and Evaluation
MRI	Magnetic Resonance Imaging
MoH	Ministry of Health
NCAP	National Costed Action Plan
NCD	Non-Communicable Disease
NST	National Strategy for Transformation
OHT	One Health Tool
OP	Out-Patient
OOP	Out-of-pocket
PEN	Package of Essential NCD Services
PHC	Primary Health Care
RBC	Rwanda Biomedical Centre
RHD	Rheumatic valvular heart disease
RSP	Rehabilitation Strategic Plan
RSSB-CBHI	Rwanda Social Security Board - Community-Based Health Insurance
RWF	Rwandan Franc
SDGs	Sustainable Development Goals
SWOT	Strengths-Weaknesses-Opportunities-Threats
TB	Tuberculosis
THE	Total Health Expenditure
TWGs	Technical Working Groups
UHC	Universal Health Coverage
USD	United States Dollar
VA	Verbal Autopsies
WHO	World Health Organisation
WHO FCTC	WHO Framework Convention on Tobacco Control
YLL	Years of Life Lost

LIST OF PARTNERS

ACS	American Cancer Society
AFCRN	African Network of Cancer Registries
CDC	Centre for Disease Control
CHAI	Clinton Health Access Initiative
DHS Institute	Demographic and Health Survey Institute
	Einstein-Rwanda Research and Capacity Building Programme
DNCD	The Defeat-NCD Partnership
ENABEL	Belgian Development Agency
FDA	Food and Drugs Authority
GAVI	Gavi, the Vaccine Alliance
HEC	Higher Education Council
HRHS	Human Resource for Health Services
HRHS	Human Resource for Health Services
IARC	International Agency for Research on Cancer
JADF	Joint Action Development Forum
MIBIICT	Ministry of ICT and Innovation
MIFOTRA	Ministry of Public Service and Labour
MINAFET	Ministry of Foreign Affairs
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MINICOM	Ministry of Trade and Industry
MINICOM	Ministry of Trade and Industry
MINIFRA	Ministry of Infrastructure
MINISPORTS	Ministry of Sports
MoA	Ministry of Agriculture
MoH	Ministry of Health
MoYC / MYCULTURE	Ministry of Youth and Culture (MoYC or MYCULTURE)

NCDA	NCD Alliance
PIH	Partners In Health
RBC	Rwanda Biomedical Centre
RDA	Rwanda Diabetes Association
REB	Rwanda Education Board
RFDA	Rwanda Food and Drugs Authority
RISA	Rwanda Information Society Authority
RMS Ltd	Rwanda Medical Supply Limited
RNP	Rwanda National Police
RRA	Rwanda Revenue Authority
RRC	Rwanda Red Cross
RURA	Rwanda Utilities Regulatory Authority
SFH	Society for Family Health
	Team Heart
TT1	Team Type 1
UNICEF	United Nations Children's Fund
UR	University of Rwanda
WDF	World Diabetes Foundation
WHO	World Health Organization

1 INTRODUCTION

1.1 Context and background

This National Strategy and Costed Action Plan for the Prevention and Control of Non-Communicable Diseases in Rwanda 2020-2025 will guide the national response to NCDs in Rwanda over a period of five years.

This follows the first Rwanda Non-communicable Diseases and Injuries National Strategic Plan 2014-2019. This 2020-2025 strategy was developed incorporating lessons learnt in the implementation of the 2014-2019 plan, together with the Global NCD Action Plan, the Fourth Health Sector Strategic Plan (HSSP4), and National Strategy for Transformation (NST1).

This national strategy will fulfil Rwanda's commitment to delivering Sustainable Development Goal 3: Ensure healthy lives and promote well-being for all at all ages, and, more specifically, target 3.4: By 2030, reduce by one-third premature mortality from NCDs. WHO defines premature mortality, in relation to NCDs and the SDGs, as preventable deaths of people aged 30 to 70 years old.

This strategy responds to other voluntary, global NCD targets, accelerating actions taken to address major risk factors, as well as the availability of drugs and equipment to manage major NCDs.

This strategy also provides details on realising a healthy, productive population, in line with 'The Rwanda We Want: Towards Vision 2050'.

HSSP4 anticipated the epidemiological transition of the country, the increase in population and life expectancy, and the expected increase in health needs of the elderly. The plan detailed the correlation with NCDs and the subsequent increase in prevalence. HSSP4 also predicted a decrease in external financial inflows.

This national strategy is therefore critical to address and highlight the most efficient and effective operational strategies to tackle NCDs, affordably and sustainably. The global COVID-19 pandemic, with its devastating effects on economies, on health systems in general, and on patients with NCDs in particular, emphasises the imperativeness of this plan. Tackling NCDs is important to decrease mortality and the risk of severity among COVID-19 cases.

This strategic document includes a costed action plan for five years, July 2020 to June 2025; taken together they are an operational plan that translates the agreed priorities into detailed service packages, to be implemented by the various actors involved in the prevention and control of NCDs in Rwanda.

1.2 Purpose

The overarching goal of the national strategy and costed action plan is to reduce premature mortality due to NCDs by 25 percent, by 2025. It aims to achieve this by improving universal accessibility, in geographical and financial terms, of equitable, affordable, and quality NCD services (preventative, curative, rehabilitative and promotional) for all in Rwanda.

The strategy and costed action plan focuses on the major four killers, namely cardiovascular diseases (CVDs), diabetes, chronic respiratory diseases (CRDs) and cancer, in addition to injuries and disabilities.

The strategy has three key domains to guide action on tackling NCDs in Rwanda:

- Community awareness and engagement for behavioural change and early detection
- Prevention and control of NCD risk factors
- Quality NCD diagnosis and treatment services at all levels of care

Implementation of these action domains relies on the following guiding principles and approaches:

A multisectoral approach

The nature of NCDs, and various social determinants of health and risk factors, requires the involvement of both health and non-health sectors in prevention and control measures. Mechanisms to ensure coordinated multi-stakeholder engagement and multisectoral action for health both, within government and by non-government actors, are being developed.

A National Multisectoral Steering Committee, supervising the development and implementation of the strategy and costed action plan will convene regularly.

Technical Working Groups (TWGs) responsible for the development, implementation, monitoring and evaluation (M&E) of the strategy and costed action plan will convene quarterly.

A life-course approach

Rwanda's population is quite young and growing. And with life expectancy increasing, it is also an aging population. With globalisation and 21st-century influences affecting lifestyles and local practices, prevention and care of NCDs needs to span all age demographics. Interventions to limit NCDs should begin early in life to have maximum impact. From conception, through early childhood, and continuing over the course of life, addressing NCDs relies on increasing general knowledge and empowering people to make healthy choices. Specific attention needs to be made in caring for senior citizens.

A human rights approach

Article 41 of the Rwandan Constitution amended in 2015 states:

"All citizens have rights and duties relating to health. The State has the duty of mobilising the population for activities aimed at promoting good health and to assist in the implementation of these activities. All citizens have the right of equal access to public services in accordance with their competence and abilities."

An equity-based approach

The disparity in occurrence of NCDs is due to unequal distribution of social determinants of health. Action on the determinants of health, both for vulnerable groups and the entire population, is essential to create inclusive, equitable, economically productive and healthy communities.

The COVID-19 pandemic has further exposed vulnerabilities and contributed to increased suffering of NCD patients globally, confirming that the global surge of premature mortality caused by NCDs shares many similarities with, and requires the same level of preparedness and response for, pandemics of infectious diseases.

All activities included within this strategy will be disability inclusive.

Empowerment of individuals and communities

Individual and community participation should be geared towards helping informed decision making, and leading activities related to the prevention and control of NCDs. Individuals and communities will participate in advocacy, policy development, planning, legislation, service provision, research, and M&E.

An evidence-based approach

NCD-related policies, guidelines and interventions will be based upon evidence, with an emphasis on scientific and clinical research.

Integration

Addressing NCDs must adopt an expansive, integrated, health system approach, rather than looking at individual programmes in isolation. All interventions to prevent, control and manage NCDs need to span service delivery, with a focus on primary health care and community services, and include long-term care services.

2 OVERVIEW OF THE NCD BURDEN AND RESPONSE

2.1 Global and regional burden of NCDs

NCDs, also known as chronic diseases, are the world's leading cause of death, morbidity, and disability. NCDs result from a combination of **behavioural, physiological, environmental, and genetic factors**.

NCDs are the main cause of mortality globally, accounting for more than 70 percent of deaths.

Close to

85% of these deaths occur in low- and middle-income countries (LMICs), and within this,

82% of these deaths are due to four primary NCDs: CVDs (17.5 million deaths annually), cancers (8.2 million), CRDs (4.0 million) and diabetes (1.5 million) [1].

Most premature mortalities due to NCDs can be avoided with well-established interventions to target common, modifiable risk factors. These behaviourally modifiable risk factors include physical inactivity, harmful use of alcohol, tobacco use and unhealthy diets. Metabolic risk factors include being overweight and obesity, raised blood pressure, raised blood glucose and abnormal blood lipids levels.

Oral, ear and eye health, mental health, and injuries from road accidents and other physical harm, are additional NCDs prioritised in many countries including Rwanda.

The burden in Sub-Saharan Africa is no different. An in-depth analysis of the burden of NCDs in sub-Saharan Africa shows that, in 2017, the leading causes were CVDs (22.9 million disability-adjusted life years or DALYs), neoplasms (16.9 million), mental disorders (13.6 million), and diabetes (10.4 million), in line with the leading causes of mortality due to NCDs [2].

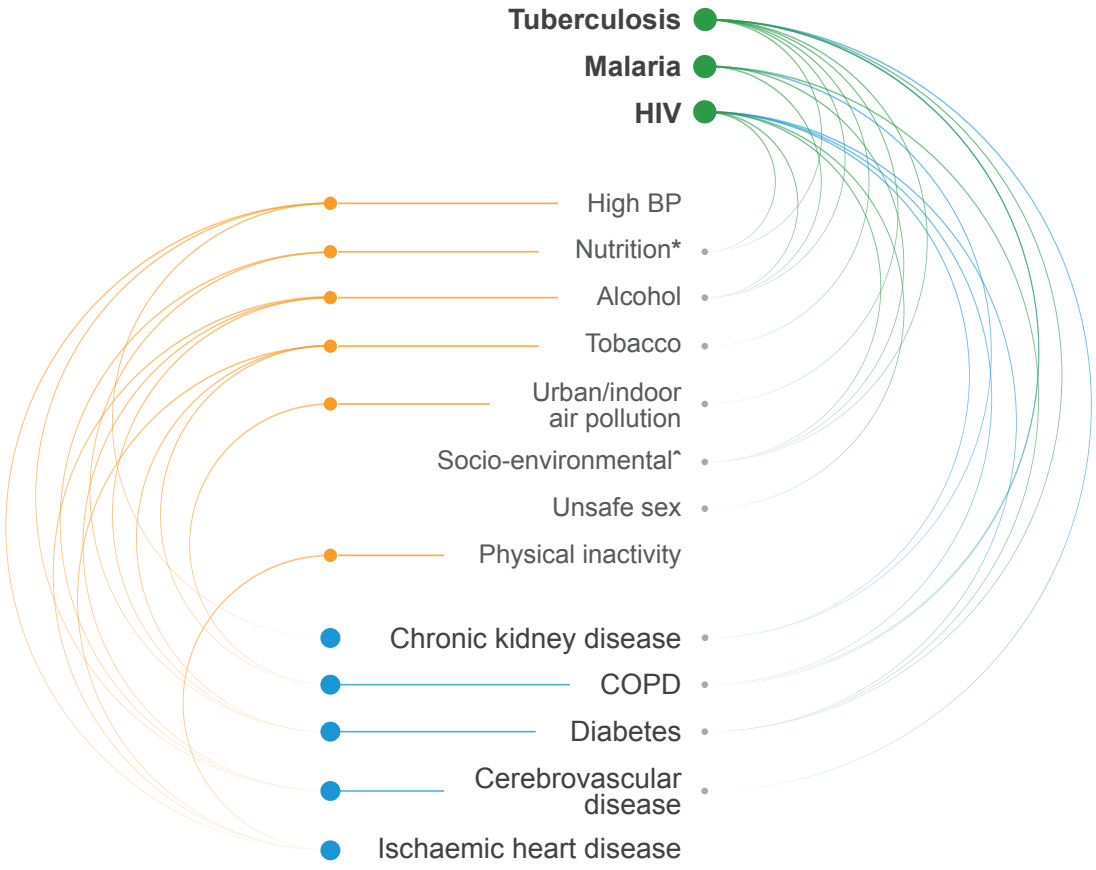
The burden of NCDs is not only epidemiological, but comes at a huge cost for individuals, households and entire societies. For chronic cases, the need for life-long treatment means escalated health care costs and loss of productivity, especially in undiagnosed or untreated cases. NCDs are preventable, but multisectoral efforts are required from all stakeholders to address underlying socioeconomic determinants, behavioural, environmental and other risk factors. Such efforts need to be based

on strategic, long-term, well-executed action plans, as well as population-based cost-effective interventions, to reduce the impact of NCDs on society.

NCD-related high mortality can be reversed through early detection and quality care. For example, a 2017 report on monitoring NCD commitments in Europe shows a rapid decline in premature deaths related to NCDs. The region is likely to achieve and exceed SDG target 3.4 [3]. WHO estimates that up to 80 percent of premature heart disease, stroke and diabetes could be prevented with the right interventions [4].

People with NCDs often suffer from two or more conditions, such as diabetes and hypertension (HTN), which are closely linked. NCDs are also interconnected to, and interact with, communicable diseases. Health systems must therefore increasingly manage patients living with NCDs as well as communicable diseases. For example, antiretroviral drugs allow people with HIV to live longer, putting them at risk of developing NCDs. There is also evidence of a relationship between HIV/AIDS and CVDs, diabetes and some cancers; and between diabetes and tuberculosis (TB). Infectious respiratory diseases like TB weaken the lungs and expose patients to a greater risk of developing CRDs like chronic obstructive pulmonary disease (COPD) and asthma [5].

FIGURE 1: Interaction between TB, malaria and HIV/AIDS, risk factors or disease precursors, and NCDs



* Encompasses underweight, overweight/obesity, low fruit/vegetable consumption, high glucose intake

^Conditions associated with informality: overcrowding, unsafe water and sanitation

2.2 The national burden of NCDs in Rwanda

2.2.1 Demographics and epidemiology of NCDs in Rwanda

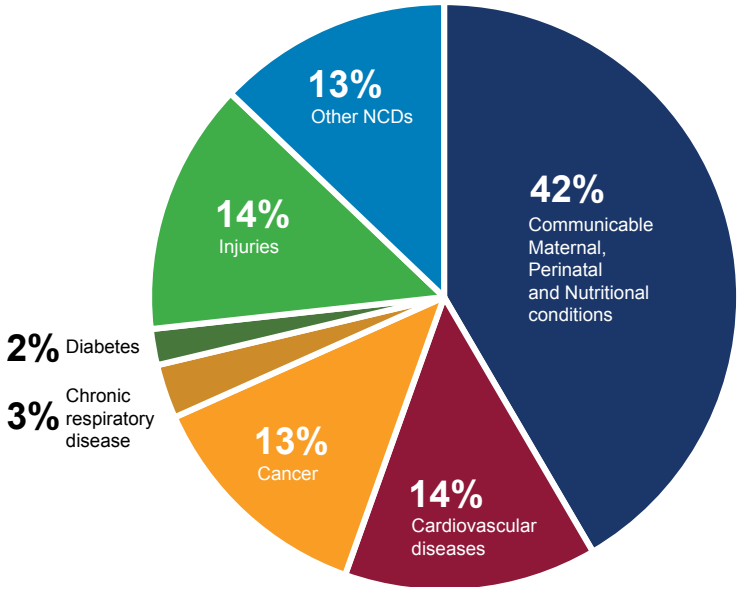
Rwanda's population stands at 12.4 million people, as of 2019, with an annual growth rate of about 2.1 percent. The population pyramid shows a relatively young population, expected to record a marginal shift by 2030 [6].

The total fertility rate declined from 5.7 to 4.0 children per woman between the years 2000 and 2018. Over the same period, average life expectancy at birth increased from 47 years to 69 years, denoting an ageing population. This indicates increased risk of NCDs.

The burden of NCDs in Rwanda has increased tremendously over the years. In 2018, the Institute for Health Metrics and Evaluation (IHME) noted that **NCDs are significant contributors to health loss in Rwanda, accounting for 35 percent of DALYs in 2016, up from 16 percent in 1990** [7]**.**

WHO estimates from 2016 show that NCDs accounted for 44 percent of total annual mortality in Rwanda, with CVDs and injuries the single largest shares of NCD-related mortality (both 14%), followed by cancers (13%), CRDs (3%), diabetes (2%) and other NCDs (13%) [8].

FIGURE 2: Proportional mortality (% of total deaths, all ages) in 2016 (WHO)



There are still gaps in mortality data and the Civil Registration and Vital Statistics (CVRS) of Rwanda faces challenges in recording deaths occurring outside of health facilities, which are usually neither notified nor registered. To address this, Rwanda initiated the registration and reporting of probable cause of death (CoD) when deaths occur outside of medical facilities. In the absence of trained physicians able to complete a CoD medical certificate, this is instead done through verbal autopsies (VA).

VA data in pilot districts shows that NCDs are the most common CoD, resulting in more deaths than all other CoDs combined. VA data also shows higher rates of deaths related to NCDs when compared to data provided by health facilities.

People with NCDs may be more likely to die in their communities, rather than in a health facility, when compared to patients with other conditions. There is a tendency for people with acute illnesses to immediately consult health facilities for treatment, whereas patients with NCDs may tolerate the disease for many years without treatment. Additionally, some significant risk factors do not cause recognisable symptoms until the disease is extremely advanced.

Higher rates of NCD deaths in the community also show that, although Rwanda has made significant efforts to fight communicable diseases, the capacity to diagnose and manage NCDs may have not improved at the same speed. Therefore, some people with NCDs may go undiagnosed and die from NCDs before they reach health facilities. For example, previous studies have shown that half of patients with diabetes are undiagnosed [9].

FIGURE 3: Distribution of adult deaths by broad Global Burden of Disease (GBD) category from VA data, before and after redistribution (adjusting data to better represent the whole population), 2017/18

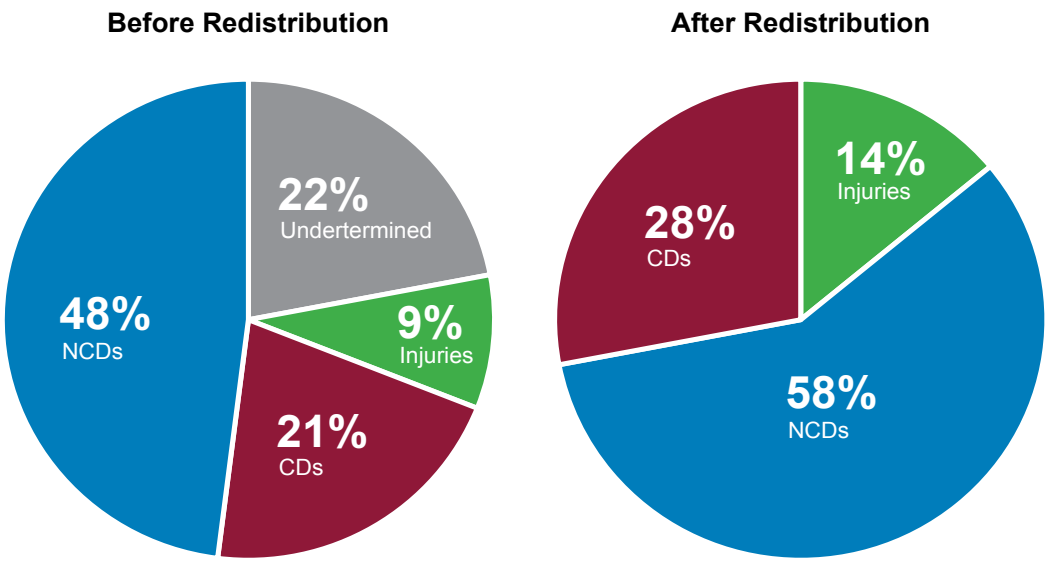
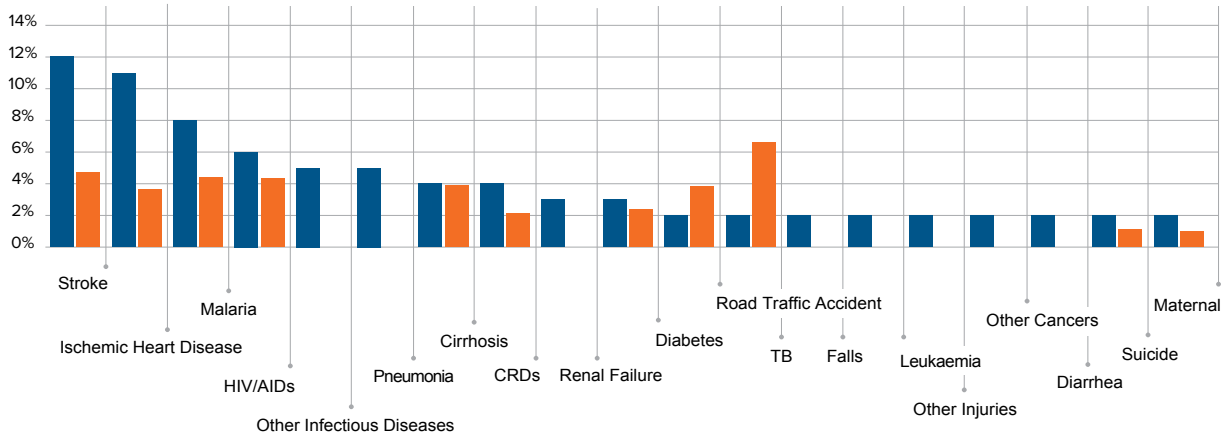


FIGURE 4: Comparison of leading causes of adult deaths from VA data and GBD estimates



2.2.2 Burden of the most common NCDs in Rwanda

Cardiovascular Diseases (CVDs)

There are currently no nationwide studies on CVDs and it is therefore difficult to tell their actual prevalence. Below is a summary from available literature in Rwanda.

STROKE: A multicentre study on strokes (haemorrhagic and ischemic) showed that the burden of strokes constituted 2,100 per 100,000 population in Rwanda.

Among these,

22% were not aware of their previous health status, and 53.5 percent of hypertensive patients were not on treatment at the time of the event [10].

HEART FAILURE: A retrospective study to determine the etiology of heart failure in Rwanda shows that congenital heart diseases (52%) and rheumatic heart disease (36%) were the most common causes of heart failure among children. For adults, cardiomyopathy (40%), rheumatic heart disease (27%) and hypertensive heart disease (13%) were most common.

40% of adults present for the first time with heart failure class III to IV (late-stage, requiring surgical intervention)[11].

RHEUMATIC VALVULAR HEART DISEASE (RHD): A few small-scale published studies for rheumatic fever (RF) and RHD, conducted among Rwandan school children in 2017, showed that RHD prevalence was 6.8 per 1,000 children examined [12].

Chronic Respiratory Diseases (CRDs)

CRDs include bronchial asthma, chronic pulmonary diseases such as chronic obstructive pulmonary diseases (COPD), occupational lung diseases and chronic interstitial lung diseases.

In 2011, a cross-sectional study conducted among urban and rural communities in Rwanda showed that:

the prevalence of asthma and COPD were 8.9% and 4.5% respectively among participants, and chronic bronchitis had a prevalence of 10.7% [13].

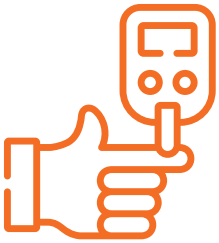
Household air pollution from solid fuels is considered to be one of the three risk factors that account for the highest disease burden in Rwanda. The other two are being underweight in childhood and alcohol use.

A WHO risk factor survey in 2014 shows that self-reported asthma cases accounted for 1.1 percent of the overall population, with greater prevalence in women [14]. This percentage is much lower than the cross-sectional study referred to above. The difference may be explained by the self-reporting methodology of the WHO survey, which excluded undiagnosed cases.

Based on an average of 1.1 percent prevalence of asthma, it is estimated that 141,900 people are living with asthma in the country.

Data from Rwanda's Health Management Information System (HMIS) shows that around 10,741 persons with asthma were enrolled in care in 2019.

Most asthma patients in Rwanda are therefore not diagnosed, and consequently not receiving treatment. The current coverage rate is around 7.5 percent. The aim is to increase this to 50 percent by 2025.



Diabetes mellitus (DM)

The prevalence of DM in Rwanda is estimated at between 3.0 and 3.5 percent. A 2012-2013 WHO STEPwise approach to surveillance (STEPS) survey [14] indicated that age-adjusted diabetes prevalence is 3.1 percent (for populations aged 15-64 years) and 4.3 percent (for populations aged 20-79 years). The WHO STEPwise approach to surveillance (STEPS) involves three different levels or 'steps' of risk factor assessment

Based on calculations using an average DM prevalence of 3.2 percent, it is estimated that 396,800 people are living with diabetes in the country.

HMIS data shows that around 15,763 persons with diabetes were enrolled in care in 2019. Around 2,000 of them have type 1 diabetes.

A World Development Indicators report noted:

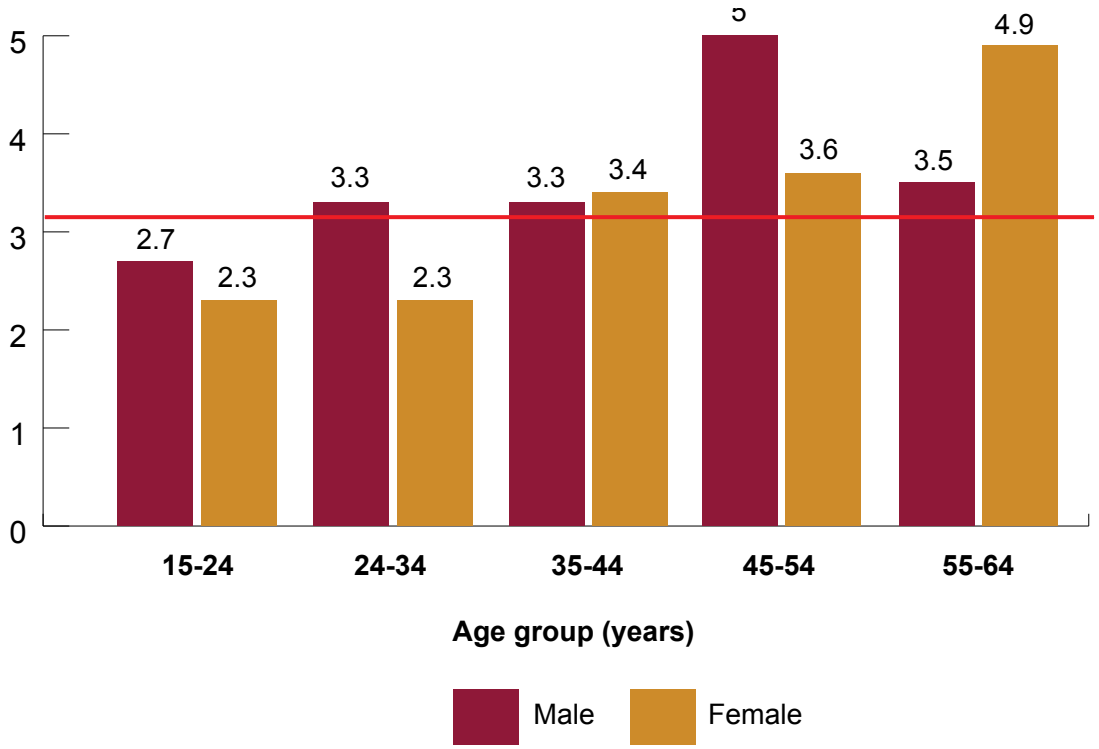
a sharp rise (167.5%) in diabetes cases between 2010 and 2017 among 20-79 year-olds in Rwanda [15].

WHO indicates that one in every 30 Rwandans has diabetes[8], and the Rwanda Diabetes Association reports that 1,918 people in the country die from diabetes and high blood glucose every year [27]. It is projected that the DM prevalence will rise significantly in coming years, posing an increased burden on the health system.

Some of the factors behind the increasing burden of the disease include improved detection and diagnosis, urbanisation and changes in lifestyle. Low health literacy in the country also means that the majority of the population cannot recognise the signs and symptoms of DM and are likely to present late with the illness, leading to potential complications. A shortage of skilled health workers, especially at primary care level, where the majority of Rwandans seek care, also poses a significant challenge in diabetes control and prevention.

Considering all the above, most diabetes patients in Rwanda are not diagnosed and accordingly are not being treated. The current coverage rate is around 4 percent and the aim is to increase this to 50 percent by 2025.

FIGURE 5: Prevalence of diabetes, as presented in Rwanda's STEPS 2012-2013 [14]



Cancers

Global estimates from the Global Cancer Observatory are that there were about 10,704 new cancer cases and 7,662 deaths in 2018 [16]. According to the International Agency for Research on Cancer (IARC), without effective intervention, there will be about 13,863 new cancer cases every year (7,944 women and 5919 men) in 2025. Annual mortality from the disease would be 10,112 (4,479 men and 5,633 women) by 2025. The age-standardised rate for cancer incidence per 100,000 among men is 130.9 and 144.8 in women in 2018. About 14 percent of women are at risk of developing cancer before the age of 75 years, compared to men at 12.7 percent.

Like other NCDs, the cancer burden in Rwanda is increasing. Data covering the 2007-2018 period from a newly established cancer registry in Rwanda provides the data included below.

In men, prostate is the most commonly diagnosed malignancy with 1,019 cases, followed by stomach (837 cases) and lymphoma (804 cases).

In women, cervix and breast are the most commonly diagnosed malignancy with 2,440 and 2,382 cases respectively, followed by stomach (863 cases).

A comparison of data from the Rwanda Cancer Registry with IARC data strongly suggests that the majority of cancer cases in the country are never

diagnosed or treated. For example, WHO's Global Cancer Observatory estimates breast cancer cases for Rwanda as 1,131 new cases annually, whereas annual cases recorded in the national registry are just 217. This suggests that only 20 percent of new cases are being diagnosed.

FIGURE 6: Cancer cases 2007-2018 in Rwanda (National Cancer Registry)

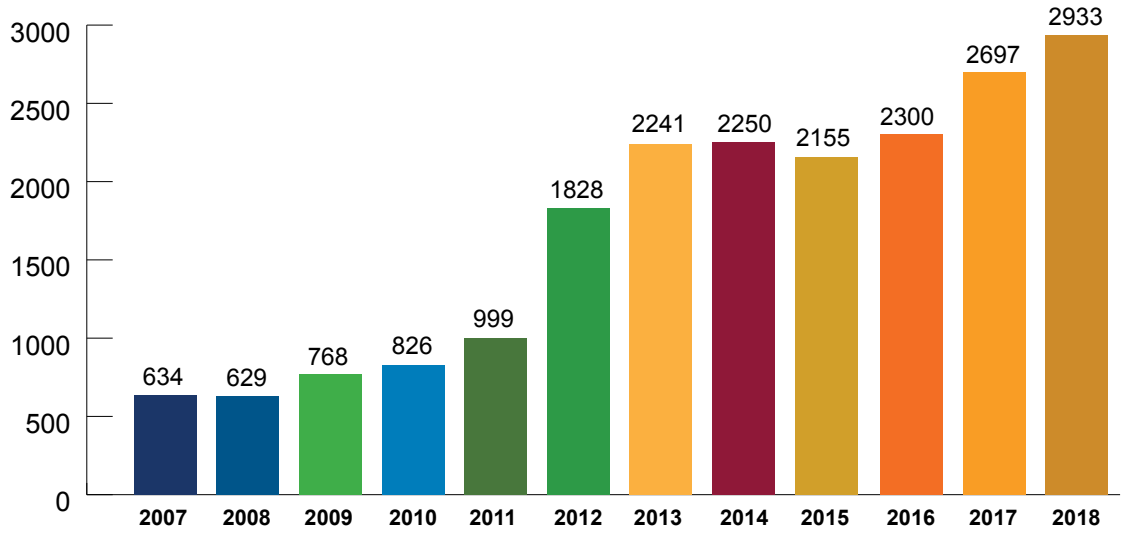
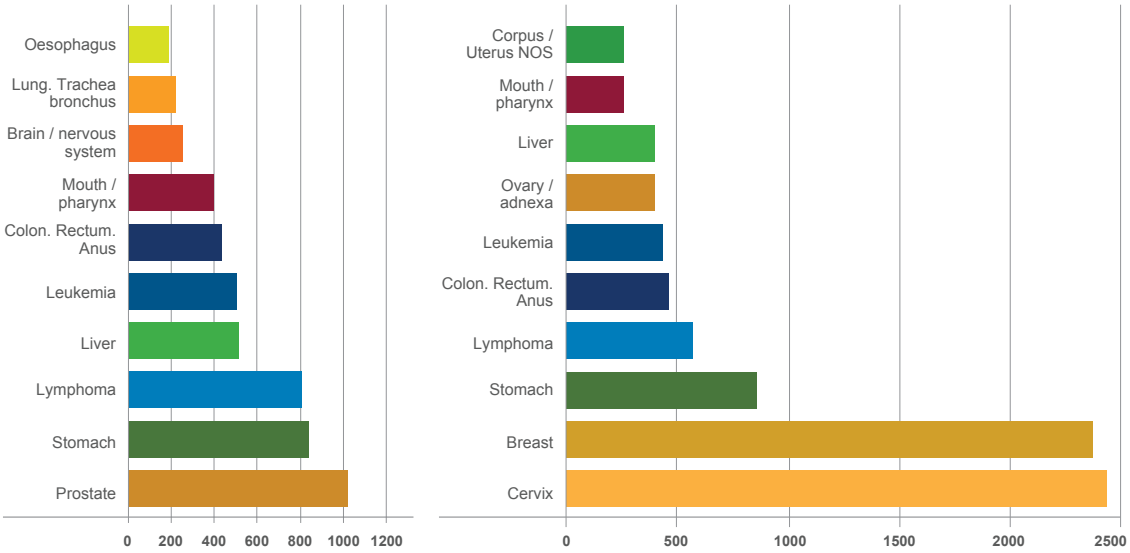
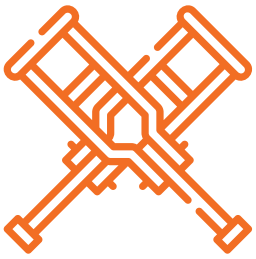


FIGURE 7: Top 10 cancers in Rwanda 2017-2018 (National Cancer Registry)





Injuries and disabilities

The prevalence of injuries and disabilities is estimated at 5.2 percent of the population [28].

A small-scale study in two hospitals reported a morbidity of 14 percent and a mortality of 10 percent due to interpersonal violence [17]. In a nationwide study,

the main drivers of injuries and disabilities include falls (45%), animal attack (16%), weapons (11%), road accidents (10%), burns (9% and work/home injuries (9%) [18].

Global Burden of Disease (GBD) data from 2010 estimated that injuries and disabilities, comprising road accidents, interpersonal violence, self-harm and falls, constituted the third highest burden of disease and accounted for 7.2 percent of total years of life lost (YLL) in Rwanda [19].

Rehabilitation services

In response to WHO's Rehabilitation 2030 initiative, Rwanda has started customising areas of action to its context through the development of a comprehensive Rehabilitation Strategic Plan (RSP).

The RSP is organised around four key phases with a pre-set timeline for each phase:

1. Situation assessment
2. Development of plan
3. Establishment of M&E and review processes
4. Implementation of strategic plan

The RSP will be defined in collaboration with rehabilitation stakeholders focusing on health system building blocks and using WHO guidelines as follows:

- **Leadership and governance:** multisectoral coordination and support for rehabilitation at all levels of care, with effective guiding policy and legislation. An operational rehabilitation TWG will support the implementation of this strategy.
- **Financing:** advocacy for insurance coverage providers to increase scope of rehabilitation service coverage, and explore sources of funding to subsidise such services.
- **Human resources:** develop a multidisciplinary rehabilitation workforce at all levels of care, and initiate training for specialised services (e.g. speech therapy).
- **Service delivery:** ensure quality, equitable and accessible rehabilitation service delivery.

- **Assistive technology (AT):** include AT and essential items required to fabricate local AT on the list of essential devices, as outlined in Rwanda's 2019 AT needs-assessment and other reports.
- **Infrastructure and medication:** improve rehabilitation infrastructure, as well as the availability of raw materials, to ensure the smooth functioning of rehabilitation services.
- **Information and research:** enhance research and health information systems (HIS) by including system-level rehabilitation data and information on functionality, using the International Classification of Functioning, Disability and Health (ICF).
- **Emergency preparedness:** define the modalities of coping with eventual emergencies and mitigating their impacts on beneficiaries, and advocate for the inclusion of rehabilitation into Rwanda's disaster management plan.

2.2.3 Risk factors for NCDs in Rwanda and the current implementation status of the control measures

The Rwanda Ministry of Health (MoH) Non-Communicable Diseases Risk Factors Report from 2012 shows that the main risk factors are the harmful use of alcohol and an unhealthy diet, followed by tobacco use. Physical inactivity and obesity were not presented as major risk factors in Rwanda in the report. However, cases of obesity are increasing.

Hypertension

A countrywide population-based survey showed HTN prevalence at

15.9% (16.8% for males and 15% for females) [14].

Only 22 percent were diagnosed. Another study shows HTN prevalence of 36 percent in adults aged 27 to 67 years [20].

Using the statistic of an average 15.9 percent prevalence of HTN, it is estimated that 1,188,142 people between the age of 15 and 64 are living with HTN in Rwanda.

HMIS data from 2019 shows that around 63,692 persons with HTN enrolled in care. Most patients with HTN in Rwanda are not diagnosed and therefore not receiving treatment. The aim is to increase the coverage rate of around 5.4 percent to 20 percent by the year 2025.

Alcohol consumption and control

In Rwanda, the overall prevalence of alcohol drinkers is **estimated at 41.2 percent (males 52%, females 31.4%)**.

Alcohol consumption is highest in semi-urban areas (44.7%), followed by in rural residences (43.1%) and urban residences (29%) [6].

Locally produced alcohol is affordable and accessible to a large majority of the Rwandan population. Despite high taxation on commercially produced alcoholic drinks, the population's large-scale consumption of locally brewed alcohol poses several challenges for alcohol control in Rwanda. There is a need to increase awareness in the general population on the harmful use of alcohol, as there is currently no significant media outreach focused on raising awareness of alcohol abuse.

Unhealthy diet

Overall fruit and vegetable consumption in Rwanda is very low.

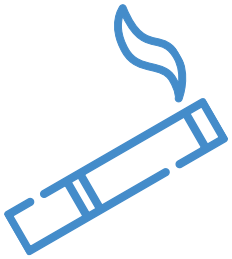
In Rwanda's STEPS 2012-2013,

99.6% of the population consumed less than five servings of fruit per day and

99.3 % consumed less than five servings of vegetables per day [14].

It is also important to highlight the low diet diversity found generally in the diet of the Rwandan population. A national Nutrition, Market and Gender survey by the Rwanda Agriculture Board in 2015 found that women of reproductive age have an unbalanced diet. A food consumption survey using a 24-hour recall method revealed that there were few consumers (≤5%) of coloured vegetables (rich in Vitamin A), eggs, fish, and meat. It also found that fat consumption was insufficient, and that their diet was largely composed of carbohydrates [30].

The consumption of salt in Rwanda is not documented.



Tobacco use

In Rwanda, adult tobacco **smoking prevalence stands at 12.8 percent** with variations in age and sex.

Male smokers accounted for 19.1%, while females accounted for 7.1%.

Smoking prevalence also varied by residence with the highest prevalence reported in rural areas (13.5%), followed by semi-urban (12.0%) and urban areas (9.7%) [14].

Currently, the Government of Rwanda, in collaboration with several multisector stakeholders, is implementing and enforcing the WHO Framework Convention on Tobacco Control (FCTC). This includes different tobacco laws and orders, focused on increasing tobacco taxes; inciting business owners to comply with laws and regulations on tobacco control; reducing, and possibly eliminating, exposure to second-hand smoke; promoting smoking cessation and preventing smoking initiation; and preventing people under 18 years-old from any contact with tobacco products.

Insufficient physical activity

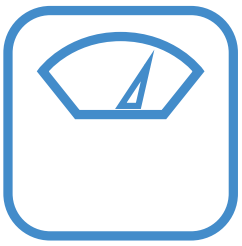
In Rwanda, 61.5% of the population have high levels of physical activity; 25.2% moderate levels and 13.3% have low levels of physical activity.

Younger people were more likely to report high levels of physical activity than older people. STEPS 2012-2013 stated that males were more physically active than females (65.8% vs. 57.6%) [14]. Similarly, people residing in semi-urban and rural areas have higher levels of physical activity than urban dwellers (semi-urban 68.2%, rural 64.4% and urban 42.8%). There are also regional variations in physical activity: Western (67.8%), Southern (65%), Eastern (64.3%), Northern Province (54.6%) and Central Kigali (46.7%) [14].

In 2014, MoH, in collaboration with the Ministry of Sports and Ministry of Local Government, introduced a 'Sports for All' initiative across Rwanda. For

example, in May 2016, the City of Kigali, Rwanda's capital, launched a 'Car Free Day', aimed at encouraging people to engage in regular physical activities to prevent NCDs. It started as a once-a-month idea, and now takes place twice a month in Kigali and has been extended to other districts. In addition to promoting physical activity, it also serves as a platform for NCD awareness and screening.

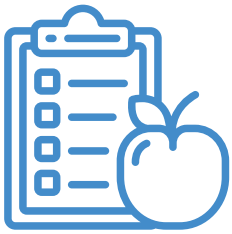
Since the initiative started in 2016, **48,782 people have been screened for NCDs. Among those screened, 23.7 percent were found to have high blood pressure, 9.4 percent had high blood sugar and 11 percent were obese.** This reflects higher prevalence rates in Kigali, supporting WHO's STEPS results.



Overweight and obesity

STEPS 2012-2013 found that 2.8 percent of Rwanda's population are obese, 14.3 percent are overweight and 7.8 percent are underweight. Obesity is most prevalent in the age group 35-54 and among females (4.7%). Furthermore, the prevalence of obesity is more predominant in urban areas (10.2%), and Kigali specifically (7.7%). Northern Province has the lowest prevalence of obesity (1.8%) [14].

A comparison of Rwanda's demographic and health surveys from 2000 and 2015 show the prevalence of being overweight or obesity in women of reproductive age has doubled within 10 years and is of public health concern, especially in urban areas [24, 25]. 36.8 percent of women were overweight or obese in urban areas, compared to 16.8% in rural areas [25].



Environment, occupation and nutrition

Environmental, occupational and nutritional risk factors like indoor pollution, agrochemicals, aflatoxins and asbestos exposure have been recognised regionally and internationally as risk factors contributing to increased NCD-related morbidity and mortality. More research into this burden for Rwanda will be generated over the course of the next five years.

2.3 Socioeconomic impact of NCDs in Rwanda

The negative impacts of NCDs affect health systems, individuals, families, businesses, and governments. Global economic analysis suggests that:

> **a 10% rise in NCDs is associated with 0.5% lower rates of annual economic growth [21].**

There are currently no reliable socioeconomic impact studies on NCDs in Rwanda.

The prevention and control of NCDs is globally prioritised in the SDGs but remains grossly underfunded at all levels. NCDs receive less than 3 percent of global development assistance [22].

In Rwanda, total expenditure on NCDs is not captured in detail within the Health Resource Tracking Tool (HRTT), as there is no itemised expenditure by NCD cluster. This makes it difficult to understand which of the NCDs are being prioritised and which are not. Nonetheless, and despite the rising burden of NCDs, budget allocations remain very low. **In fiscal year (FY) 2015-16, approximately 0.8 to 2 percent of the health budget was allocated to NCDs, compared with 57 percent for HIV/AIDS and other blood-borne diseases [35].** Budget allocation to NCDs increased in FY2016-17, but this increase was very limited vis-à-vis the disease burden.

> **Less than 1.7% of the 186 billion Rwandan Francs (RWF) spent on disease prevention and control programmes was spent on NCD control and prevention, according to HRTT from July 2020.**

Out-of-pocket (OOP) expenditure analysis in Rwanda using HRTT data shows low commitments to NCDs. Analysis done in 2014 studied expenditures relating to medical consultations and exams, hospitalisation, asthma drugs, astringents (e.g. iodine), heart disease medicine, diabetes drugs, hearing aids/prosthetic limbs/disability aids, and high/low blood pressure drugs. In this analysis, more expensive NCD services like cancer treatment and care, heart and neurologic surgeries and palliative care costs were not considered. These need to be included in order to give a true picture of NCD treatment and care costs.

> **The analysis showed low NCD expenditure on heart medicine (3%), asthma and DM (1% each), and HTN (2%).**

> **Consultations (37%) and hospitalisation (17%) are the main drivers of OOP spending and could potentially be traced back to NCDs.**

As Rwanda makes progress to universal health coverage (UHC) and moves closer to realising the SDGs, it needs to mobilise adequate resources to pay for necessary NCD services and reduce the impact on households.

Reports from Rwanda's Social Security Board states that members of community-based health insurers (CBHIs) are low-income earners who cannot afford to pay even one percent of the cost of their medication [29]. More information is required around public budgeting for NCD medicines and the extent to which budgets have facilitated widespread access to essential generic medicines. An emerging gap in NCD programming in Rwanda is the levels of OOP spending on these conditions and their consequences on household economies.

Rwanda's Fifth Integrated Household Living Survey (EICV 5) covering 2016-2017 showed that

19.3% of households reported a financial shock over a period of 12 months, due to serious illness or accident among household members.

Knowing that NCDs are the most common cause of morbidity, in addition to the high cost of treatment and care, it can be assumed that a high percentage of these household shocks can be attributed to NCDs [26].

One Rwanda study highlights the annual cost per patient for some NCDs [31]. DM was the most expensive annual cost, estimated to be USD151.32, followed by congestive heart failure at USD104.47, HTN at USD73.44, and CRD at USD69.30. These costs are driven primarily by medication therapy and laboratory testing, and therefore do not present the full cost burden.

This same study indicates that a total of USD47,976 is required in necessary fixed start-up costs to establish a new, advanced NCD clinic, serving a population of approximately 300,000 people (USD0.16 per capita). The additional annual operating cost for this clinic was calculated to be USD68,975 (USD0.23 per capita), to manage a 632-patient cohort and provide training, supervision and mentorship to primary health centres. Labour comprised 54 percent of total cost, followed by medications at 17 percent.

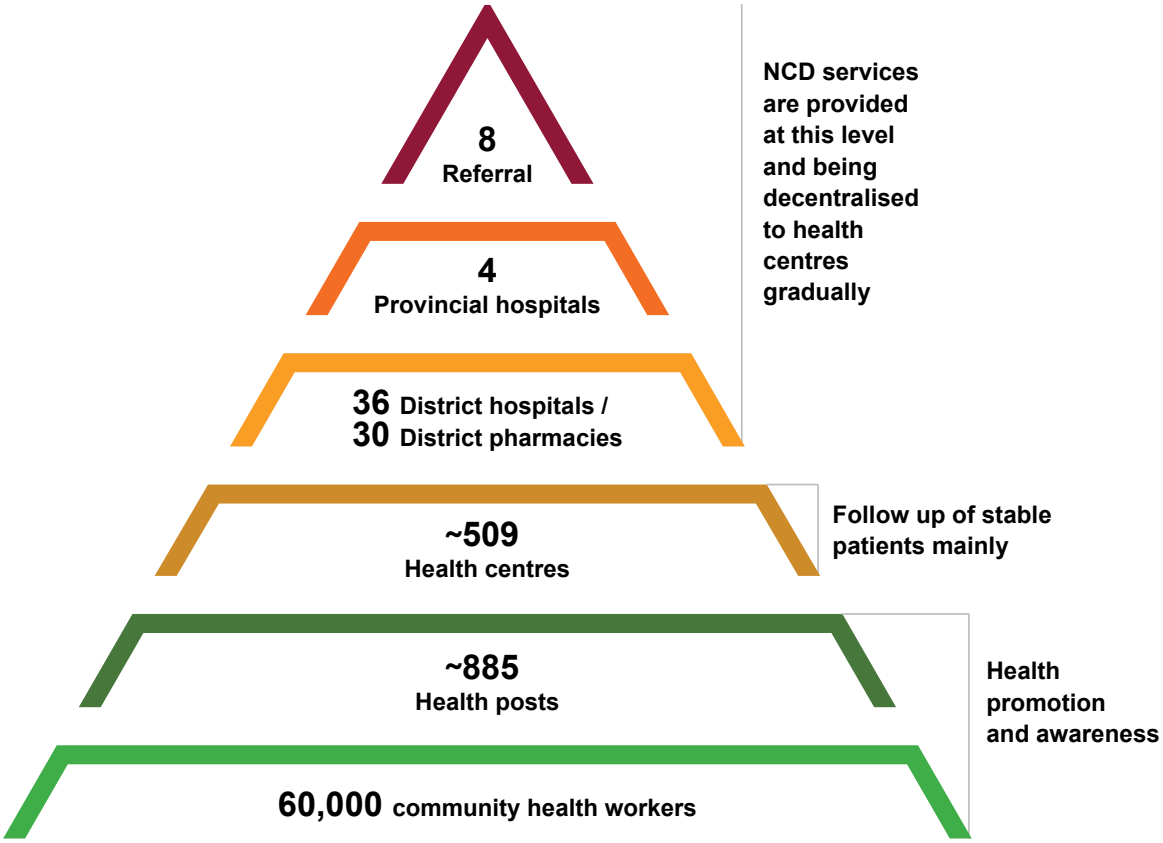
In addition to the massive direct costs related to NCD treatment and care, society bears massive indirect costs. This mainly concerns productivity losses, as a result of sickness or premature death. In the workplace, absences due to sickness, reduced performance and prolonged absences mount up. The time spent by relatives and loved ones acting as unpaid carers for sick people must also be taken into consideration.

Across both direct and indirect costs, there is untapped savings potential as prevention is effective and pays off. Introducing more effective and affordable innovative solutions in screening, managing, and treating NCDs will bring savings. Every RWF invested in NCD care brings cost savings many times greater.

2.4 Health system organisation and coverage of NCD health services

NCD services in Rwanda are provided through a mix of public and private systems.

FIGURE 8: Pyramid diagram showing the organisation of Rwanda's health system



The journey of an individual with an NCD starts in their local community, through contact with community health workers who link the patient to a health facility, or when the individual decides to seek care at a local health post or health centre. Each level of health facility treats patients according to its package of services, and each level of care then refers patients who need advanced management upward through the various levels.

District hospitals receive suspected HTN, DM, CRD cases from health centres to confirm diagnosis, provide treatment, and identify possible complications. Some are then managed at this level, and others with more severe diseases are escalated to upper level hospitals. Stable patients on medication are referred back to health centres to continue follow-up care.

All district hospitals and health centres are meant to provide the minimum WHO Package of Essential NCD Interventions (PEN). This includes health education, screening, referral, and treatment. However,

effective access to these services is limited due to a lack of availability, either because of funding limitations, insufficient staffing, or delays in the supply chain.

There are currently pilot services taking place in 79 health centres across five districts, diagnosing and initiating the treatment of non-complicated NCD cases. Lessons learned in these pilot sites will inform the scale-up of services to remaining district hospitals and raise the capacity of health centres to provide PEN.

A WHO report from 2018 indicated good availability of basic medicines, such as insulin, metformin and sulphonylurea for diabetic patients [8]. However, the problem of stockouts remains real, and patients often have to pay OOP to access treatment. This could result in catastrophic health spending and impoverishment. For example, affording two bottles of insulin, costing RWF14,000 per week for some patients, is not possible for many people in Rwanda. The current state of affairs in Rwanda suggests that even though health insurance coverage is high (almost 90 percent of the total population is covered, of which approximately 79 percent are covered by CBHI schemes), the coverage for NCD services may not be as effective and needs further assessment. Within the insurance package, users have to co-pay 10 percent for life-long and expensive conditions like cancer and heart surgery. This can be a very high cost and remains unaffordable for most patients. Chemotherapy drugs for cancer treatment are not yet covered by CBHI or *mutuelle de sante*, and not yet available in public health facilities.

Cancer care and treatment services, including diagnosis, surgery and chemotherapy, are provided at tertiary levels across five diagnostic and treatment centres: The University Teaching Hospital of Kigali (CHUK), University Teaching Hospital of Butare (CHUB), Rwanda Military Hospital, King Faisal Hospital and Butaro Cancer Centre. The national radiotherapy centre at the Rwanda Military Hospital provides a final link to comprehensive cancer treatment.

Palliative care services have been integrated at all levels of the health system and there is an encouragement to improve palliative services at the community level so that patients can be cared for at home.

To ensure the quality of NCD services, training manuals for various health cadres were developed and disseminated. All health centres therefore have at least one nurse trained in early detection and management of NCDs. Health centres have initiated NCD clinics to treat HTN, asthma and DM. By 2017, all of Rwanda's 42 hospitals had established NCD clinics, providing management and care of NCDs. In addition, diagnosis and treatment protocols for major NCD diseases were developed and distributed to health facilities. At a primary health care (PHC) level, assorted essential first-line and second-line drugs, as well as medical equipment and supplies, are distributed in line with the national basic package of health services for drugs and supplies. Similarly, staff at primary health facilities are trained in the mechanical operation and handling of diagnosis equipment, materials and tools, such as glucometer, blood pressure measurement, basic glycaemic and lipid profile measurement tools, to maximise the diagnostic quality of testing.

National capacity was built for HMIS, and disease surveillance and monitoring. The HMIS platform uses an electronic digital system at PHC level to collect and analyse morbidity data. This electronic database improves the quality of information collected and serves as a tool to provide evidence-based practices, to increase the effectiveness and efficiency of the healthcare system. Currently, all

health facilities utilise the electronic HMIS platform. In addition, special disease registries have been established to address the issues of M&E of chronic diseases using aggregated data. The current registries collecting individual data include the National Cancer Registry, Injury Registry and the Electronic Medical Records system 'OpenMRS' at different hospitals.

A key challenge in the prevention and control of NCDs is late presentation, making survival rates of NCD patients very low. Late detection is driven largely by a lack of knowledge and myths about NCD risk factors, prevention and treatment. As stated above, MoH has responded with key initiatives to fight NCDs, including decentralisation of NCD services, and running extensive awareness campaigns. In addition to the car-free days described previously, there is a designated day once a week when civil servants engage in physical activity. In fighting cancer, for example, high-risk groups have been given a free Hepatitis B vaccination to prevent the Hepatitis B virus infection that leads to liver cancer. MoH reports that immunisation against HPV in young girls currently stands at 97 percent of the target group, in a bid to eliminate the incidence of cervical cancer. A key focus for MoH is cervical cancer and breast cancer; currently, about 52 percent of district hospitals and health centres offer screening services.

2.5 Key issues facing NCD programming and governance in Rwanda

The focus of this strategy is the development of interventions that address the bottlenecks hampering NCD prevention and control in Rwanda.

Several outstanding challenges have been identified and informed the development of this strategy:

- Low levels of awareness and knowledge of NCD risk factors, symptoms and signs among the general population, leading to late presentation
- Insufficient domestic budget allocation for NCD prevention and control activities
- Poor resource tracking for NCDs, leading to a lack of planning for each category of NCD and targeted resource mobilisation and allocation
- Low budgets for primary health care, potentially leading to insufficient basic NCD equipment at these levels where the majority seek care. For example, in the 2016-2017 healthcare budget, only 10 percent of the total was allocated to health centres where the majority of outpatient services are offered
- Lack of an effective M&E system for NCD programming, including poor data capture and reporting
- Lack of research leading to proper planning and policy guidance
- Unavailability and unaffordability of certain essential medicines and basic technologies for NCD screening and management
- Inadequate capacity of health workers (quantity and skills) for the prevention and control of NCDs at all levels of care
- Lack of sufficient specialised centres for NCDs management
- Weak evidence on multisectoral planning and implementation of interventions for NCD prevention and control
- Minimal integration of NCD prevention and control with key public health care platforms such as HIV/AIDS, TB, family planning, maternal and child health
- Low numbers of partners active in NCD prevention and care (across public and private sectors, and CSOs)
- Some of the most expensive NCDs are not covered by CBHI schemes

2.6 Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis for the prevention and control of NCDs

Table 1: SWOT analysis: Adapted from the Rwanda Biomedical Centre (RBC) NSP for the Prevention and Control of Chronic Non-Communicable Diseases, 2014-2019

STRENGTHS	WEAKNESSES
Established dedicated and functional NCD division at ministry level under RBC	Lack of a national multisectoral NCD coordination mechanism
National guidelines developed for priority NCDs	Lack of comprehensive management of NCDs at health facilities or community level, including poor resources for advanced NCD health problems
National NCD policy	Poor HMIS, and lack of representative national data on NCDs
Included within HSSP4 and PRSP	Little research or data on chronic diseases and their risk factors in the country
National cancer control plan 2020-2024	Lack of links between academics and researchers with national policy makers
National guidelines for cervical cancer screening	Lack of health promotion materials to address a multisectoral list of risk factors (e.g. healthy lifestyle, environment, agriculture)
National palliative care policy	Minimal or poor coordination between public and private health systems
Integration of NCD services in existing PHCs	Lack of specialised comprehensive disease management centres (e.g. cancer or CVD centres)
Established National Population-Based Cancer Registry	No established electronic M&E tools for NCDs
Training guidelines for various health care providers	TWG guidelines for NCD implementing partners not developed, and TWGs not fully active
Health promotional materials developed and utilised	Few specialised doctors and other health professionals in NCD diagnosis and management
Comprehensive health insurance coverage includes major NCDs	Low coverage of NCD screening services for the general population
National Tobacco Control Law	Low capacity (equipment and staffing) at emergency departments to manage injuries
	Lack of national integration of mental health into NCD management

OPPORTUNITIES	THREATS
Strong and decentralised primary healthcare structure	Little involvement and experience within other sectors (ministries, institutions, and stakeholders) in NCD-related problems, including weak inter-sectoral collaboration
District hospitals and some health centres provide minimal PEN	Low budget allocation for NCDs
Annual community screening for certain NCDs	Lack of resources for NCDs (competing priorities with major infectious diseases)
Supportive policy and commitments from the government	Limited number of national and international partners for technical and financial support of NCD programmes
WHO 'best buy' interventions at PHC level are available for preventive and curative NCD services	Shortage of health workers in public health facilities
Global initiatives and high-level political commitment at global and regional levels to support the country's efforts	Shortage of medical equipment and supplies needed for the diagnostic or therapeutic care of patients with NCDs
Presence of a professional training institute for NCDs (college and universities)	Poor awareness and misconceptions about the burden and consequences of NCDs, among policymakers, health professionals and the general public
Most NCD diagnosis and treatment services are paid through a co-payment setup between patient and community-based health insurances schemes	Most NCD screening services are not part of CBHI schemes
Regularly organised physical activity initiatives targeting the general public (e.g. car free days)	Financial toxicity with regards to the payments of specialised NCD services such as cancer treatment, limiting accessibility of the low-income population
	Poor collaboration between MoH/RBC and health teaching universities in planning the integration of NCD national guidelines into curriculums
	Low utilisation of health services by the general public
	Low levels of awareness of NCD risk factors among the population
	Low levels of awareness of NCD symptoms among the population, leading to late presentation at health facilities

3 METHODOLOGY

The process undertaken to develop this strategy is as follows:

Preparatory meetings: involved RBC's NCD unit and The Defeat-NCD Partnership (DNCD) team. These evaluated the progress of the previous strategy and agreed on the strategies to be adopted over the next five years.

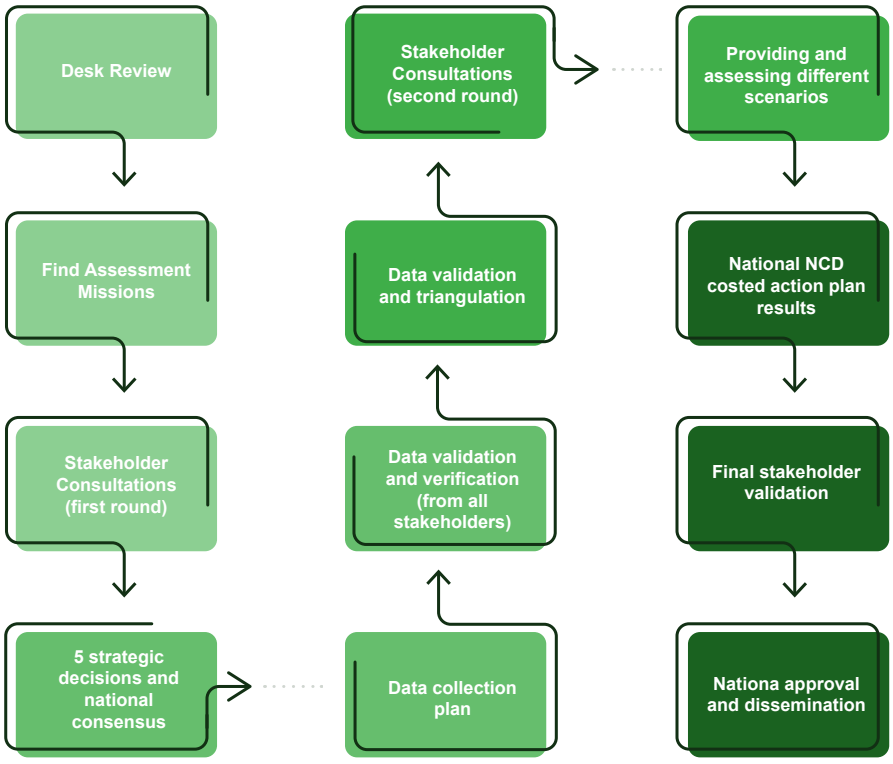
TWGs and key stakeholders: attended consultative meetings held with the NCD unit team and DNCD to discuss and agree on the strategies to adopt over the next five years.

Analytical desk reviews: conducted by the wider team to examine national and international literature informed the strategy formulation process. Some key documents reviewed were the Global NCD Action Plan, HSSP4 and NST.

Field visits: conducted to consult and engage districts in drafting objectives and strategies. Consultative workshop: held to collect inputs and ideas, and to set the strategic targets. Participating stakeholders were involved to enrich and guide the development of the strategy.

Validation and dissemination: conducted by submitting final documentation to all involved actors and receiving their endorsement, before submission to the Minister of Health for final approval.

FIGURE 9: Stages for the development of the National Strategy and Costed Action Pan for the Prevention and Control of Non-Communicable Diseases in Rwanda



4 GOAL AND STRATEGIC OBJECTIVES

Vision

A nation free from the avoidable burden of NCDs, including injuries and disabilities.

Mission

To enhance national multisectoral collaborations to alleviate the economic, social, and medical burden of NCDs, reduce morbidity and premature mortality, improve functionality, and ensure a healthier population.

Goal

By 2025, reduce premature mortality from NCDs by 25 percent.

STRATEGIC OBJECTIVE 1

NCD prevention through health promotion and reduction of risk factors

Guided by evidence-based and cost-effective approaches, promote healthy lifestyles and implement interventions that reduce the modifiable risk factors for NCDs. These risk factors include unhealthy diets, physical inactivity, tobacco use, harmful use of alcohol, indoor pollution, occupational exposure to carcinogens, and infections leading to NCDs.

While symptoms, complications and deaths from NCDs occur mostly in adulthood, exposure to risk factors begin in childhood (even in the intrauterine period) and build to a peak with premature mortality. It is therefore vital that there is a good level of health literacy among the general population, giving people the ability to make personal decisions that will have a positive effect on their health.

As the occurrence of NCDs is often caused by various risk factors, more cross-thematic and multisectoral approaches need to be considered. Sectors such as youth and sport, education, trade, agriculture and the environment should work together for NCD prevention.

Prevention activities should be designed and carried out to take better account of people's needs: their settings, such as schools, workplaces and local communities; their living conditions; and their knowledge, values and behaviours. This should focus on improving health status at every stage of life.

To achieve this objective, the following operational strategies and strategic actions will be undertaken:

PRIORITY AREA 1: Awareness-raising / education to reduce exposure to modifiable NCD risk factors

Strategic actions

Population-based prevention and health awareness

- Establish a school health programme for NCDs, including injuries and disabilities, increasing awareness and prevention as part of primary and secondary school curriculums
- Promote community awareness for prevention of NCD risk factors
- Introduce the practice of medicine and public health supported by mobile devices, known as mobile health or mHealth, to increase NCD awareness and prevention, and support behavioural change
- Strengthen the engagement of CSOs in NCD awareness campaigns

- Empower districts to run NCD prevention and education programmes
- Develop and disseminate NCD prevention communications material targeting the general population. These could focus on balanced diets, reducing alcohol consumption, promoting physical activities and reducing tobacco addiction

Prevention and awareness in healthcare

- Develop and integrate NCD-related education and awareness messages into the package of services provided at all levels of health care provision
- Develop and integrate NCD-related education and awareness messages in the package of services provided by community health workers

Awareness and prevention in the workplace

- Integrate NCD prevention with occupational health, such as within the workplaces of public and private institutions, and broader public areas

PRIORITY AREA 2: Immunisation and early treatment of infections leading to NCDs

Strategic actions

- Continuous vaccination against Hepatitis B
- Early detection, quality treatment and care of Hepatitis B and C infections
- Continuous vaccination programme against HPV
- Cervical cancer screening and treatment of precancerous lesions
- Strengthening and scaling up vaccinations against disabling conditions like poliomyelitis or meningitis
- Screening, diagnosis and treatment of rhematic fever and RHD

PRIORITY AREA 3: Establish and strengthen the implementation of policies and regulations addressing NCD risk factors

Strategic actions

Tobacco control

- Reinforce the implementation of the 2013 tobacco control policy and action plan

- Advocate for progressive increases to excise duty and prices for tobacco products, in line with WHO recommendations
- Develop and disseminate information and educational material to raise public awareness about the consequences of tobacco use, exposure to tobacco smoke, and encouraging smokers to quit
- Establish and implement measures to minimise illicit trade in tobacco products

Alcohol use control

- Develop and disseminate a national alcohol policy
- Support, empower and provide services to individuals or communities engaged in harmful alcohol use
- Strengthen community awareness on harmful use of alcohol

Promoting healthy diets

- Establish regulations or policies related to healthy diets. For example, the trade of trans-fats, sugary beverages, processed food and sodium
- Conduct public awareness campaigns, including mass and social media, to inform and engage consumers about healthy diets based on a variety of locally available food and drinks
- Promote user-friendly or easy-to-understand food labelling on processed food packaging; and translate international food labels into local languages
- Reduce sugar consumption through increased taxation on sugar-sweetened beverages
- Raise community awareness of healthy diets, including salt consumption
- Promote farming with controlled used of agrochemicals, ensuring crop diversity, and cultivating fruits and vegetables

Increasing physical activity

- Develop and disseminate guidelines for the general population on physical activity and sports
- Create enabling environments for promoting physical activity. For example, through road design and recreational spaces
- Increase general awareness on physical activity and its benefits

Controlling air pollution and exposure to toxic substances leading to NCDs

- Strengthen advocacy to support the transition to cleaner technologies and fuels, like liquefied petroleum gas, biogas, solar cookers, electricity, and other low fume fuels
- Raise general awareness of the health impacts of indoor air pollution and asbestos risks
- Regulate manufacturing of toxic gases and limit their presence in the environment by improving production processes
- Enforce the implementation of the National Policy on Occupational Safety and Health

PRIORITY AREA 4: Improve road safety for the prevention of injuries and disabilities

Strategic actions

- Identify and improve accident prone sites or 'red spots'
- Establish injury data sharing mechanisms between the various concerned stakeholders
- Introduce mandatory technical check-ups of motorcycles
- Increase awareness among motorcyclists and other public road users on the proper use of roads
- Introduce mandatory first-aid training for public transport and truck drivers
- Introduce mandatory first-aid kits in public transport and truck drivers
- Enforce mandatory medical check-ups (e.g. eyes, ears, disabilities) before issuing or renewing driver licences

PRIORITY AREA 5: Deliver on communication plan to accompany the national strategy

Strategic actions

- Improve external communications skills and increase capacity to support national NCD prevention programme
- Develop and implement the National Strategy and Costed Action Plan 2020-2025 communications plan

STRATEGIC OBJECTIVE 2

Strengthening health systems for quality NCD early detection, care and treatment at all levels

A major factor in NCD-related mortality in most LMICs, including Rwanda, is late presentation of cases with complications. This strategy will focus on scaling up NCDs screening, early detection, continuous follow-up, and quality treatment and care, to reduce complications leading to premature mortality.

Access to quality health services is at the core of UHC. Ensuring that all patients with NCDs can access quality services requires evidence-based system-wide strengthening: physical infrastructure, equipment, human resources, and the supply chain of medicines and laboratory commodities, to guarantee appropriate and timely screening, diagnosis and treatment of patients to avoid unnecessary complications.

The availability, affordability and acceptability of quality health services means that all health facilities are equipped with basic essential clinical equipment and tools for the assessment and management of NCDs and their risk factors. These should be accessible from primary to tertiary levels of care, including specialised centres providing advanced NCD treatment.

To achieve this objective, the following strategic actions will be carried out:

PRIORITY AREA 1: Human resources development for NCD early detection, care and treatment

Strategic actions

- Train in-service health care providers in early detection, diagnosis and management of NCDs, including injuries and disabilities, at all levels
- Strengthen retention of a skilled NCD workforce, through career development opportunities, continuous learning, credentialing, and privileging
- Establish and implement a strong NCD clinical mentorship system, cascaded throughout health system tiers
- Integrate national NCD prevention, early detection, care, and treatment guidelines into undergraduate pre-service training of the health workforce
- Provide pre-service training (e.g. postgraduate study or fellowships) to ensure adequate numbers of NCD specialists (e.g. oncology, pathology, cardiology, nephrology, emergency medicine, palliative care)
- Develop NCD e-learning modules targeting health care providers at all levels

PRIORITY AREA 2: NCD service delivery

Strategic actions

- Strengthen the implementation of WHO PEN in primary health care facilities
- Expand the implementation of complementary PEN-Plus services, which focus on severe chronic NCDs at district hospitals
- Establish NCD early detection, diagnosis, and patient follow-up care for DM and HTN at health posts
- Streamline the referral system for NCD prevention, care and management, while ensuring the availability of interoperable, high quality, electronic medical records
- Integrate NCD screening, treatment and care into other services, focusing on HIV/AIDS, TB and maternal, child and community health (MCCH) services
- Improve physical access for all to health services, including the elderly and people with disabilities
- Strengthen the integration of palliative care into existing health care systems
- Promote the delivery of palliative care services at home

PRIORITY AREA 3: Strengthen the supply chain of NCD medications, laboratory commodities, and technologies/medical equipment

Strategic actions

- Ensure the continuous availability of essential NCD medicines, supplies and technologies for screening, diagnosis, treatment and monitoring at all levels
- Establish and regularly update a list of essential NCD drugs, supplies and equipment at different levels of care

PRIORITY ACTION 4: Ensure continuous research and development to establish and advance various NCD treatment guidelines and protocols

Strategic actions

- Establish and regularly update NCD management guidelines and protocols
- Monitor the use of guidelines and protocols to ensure quality of care

PRIORITY ACTION 5: Financing of NCD prevention and control

Strategic actions

- Strengthen UHC initiatives through ***mutuelle de sante*** (CBHI) to facilitate affordability and sustainable financing of NCD services
- Increase the number of NCD services and AT in the benefit package covered by health insurance
- Subsidise expensive NCD services for the most vulnerable/poor patients
- Include NCD quality improvement indicators into performance-based financing or pay-for-performance systems
- Adapt innovative, sustainable and equitable financing mechanisms to ensure UHC for NCD prevention and control

PRIORITY ACTION 6: Enhance patient psychosocial and resource support programmes

Strategic actions

- Strengthen psychosocial and financial support programmes for patients with NCDs
- Integrate NCDs with nutrition programmes at health facilities
- Integrate NCDs with mental health programmes at health facilities

PRIORITY ACTION 7: Establish policies and regulations to ensure continued access to NCD services during emergencies such as pandemics or epidemics (e.g. COVID-19)

Strategic actions

- Ensure continuity of NCD care during emergencies by including NCDs in emergency response plans
- Provide alternative platforms for service provision to strengthen health system responses to epidemics or pandemics affecting NCD care
- Establish community-based programmes for the protection and care of the most vulnerable, including those with NCDs and persons with disabilities during emergencies, like COVID-19

PRIORITY AREA 8: Establish specialised NCD, including injuries and disabilities, diagnostic and treatment centres

Strategic actions

- Develop business cases for establishing priority specialised NCD diagnostic and treatment centres, in order to attract funding and private investment
    - National Cardiac Centre
    - National Renal Transplant Centre
    - A Nuclear Medicine Centre
    - Upgrading of Rwanda Cancer Centre
    - Upgrading of Pathology services at teaching hospitals
    - Establishment of Satellite cancer centres in teaching hospitals
    - Centre of Excellence for Trauma and Rehabilitation
- Build and equip new specialised NCD diagnostic and treatment centres

STRATEGIC OBJECTIVE 3

Strengthen disease surveillance and research, alongside robust M&E systems, for evidence-based intervention

Research and surveillance are critical for NCD prevention and control as they provide information that guides policy decisions and empowers the general population. Research into the various components of disease prevention and control – behavioural, health system-related, biomedical, epidemiological and clinical – are critical in producing unbiased information to monitor progress, evaluate plans and support informed policy decisions. Effective M&E systems ensure implementation of planned interventions and programme sustainability.

To achieve this objective, the following strategic actions will be carried out:

PRIORITY AREA 1: Strengthen disease surveillance and M&E systems

Strategic actions

- Conduct regular, comprehensive situational analysis of the availability, accessibility, and affordability of NCDs, including injuries, disabilities, and geriatric services
- Update standardised NCD M&E frameworks and tools, and integrate them into HIS at all levels
- Build the capacity of health staff at all levels in M&E, including protocols for routine surveillance and tracking of NCD data
- Strengthen data collection and analysis through national registries and mortality data, including the cancer registry, the injury registry and electronic medical records

PRIORITY AREA 2: Enhance research for evidence-based interventions

Strategic actions

- Establish and implement a national NCD research agenda
- Build capacity in NCD clinical research for health professionals at all levels
- Conduct NCD risk factors prevalence studies (e.g. a STEPS study, a study on risk factors for cancers)
- Conduct a national economic impact study of NCDs
- Build capacity around grant writing and manuscript writing

STRATEGIC OBJECTIVE 4

Strengthen intersectoral coordination, advocacy and resource mobilisation for the prevention and control of NCDs

The risk factors for NCDs go beyond the health sector; there is a need to involve other key sectors, such as education, sports, youth, transportation, agriculture and environment, trade, finance and planning. Private partners and civil society organisations also need to be actively involved, to form a multisectoral approach in addressing the increasing burden of NCDs.

A truly multisectoral approach requires political will and commitment to succeed in the fight against NCDs. Rwanda has prioritised NCD prevention and control, but advocating for increased funding is required. This is critical as the NCD burden rises in the country, prevention and control efforts will have heavy financial implications. This calls for innovations in health sector funding beyond current government resources. To effectively fund NCD efforts, there is a need to strengthen the country's NCDs resource mobilisation strategy and governance mechanisms. Only with capacity and legitimacy to mobilise resources and coordinate multisectoral action on NCDs will Rwanda be able to effectively address its NCD burden now and in the future.

To achieve this objective, the following strategic activities will be carried out:

PRIORITY AREA 1: Establish national mechanisms to coordinate the prevention and control of NCDs

Strategic actions

- Establish high-level, national, multisectoral NCD coordination mechanisms, including social cluster ministries and key private sector partners
- Ensure quarterly meetings of the NCD TWG
- Engage government institutions, public and private sectors to collaborate on joint financing mechanisms for NCD prevention and control activities

PRIORITY AREA 2: Enhance international, national and decentralised coordination mechanisms for prevention and control of NCDs

Strategic actions

- Establish NCD committees at district level to enforce NCD care, and strengthen collaboration mechanisms
- Create membership to key local and international organisations to enhance training, peer-to-peer learning, and collaborative research
- Develop telecommunication platforms that enable information exchange between local and international NCD experts

5 IMPLEMENTATION, MONITORING AND EVALUATION FRAMEWORK

Strategic objective 1:
NCD prevention through health promotion and reduction of risk factors

Priority area 1: Awareness-raising / education to reduce exposure to modifiable NCD risk factors

Population-based prevention and health awareness

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Establish a school health programme for NCDs, including injuries and disabilities, increasing awareness and prevention as part of the primary and secondary school curriculum	School health NCD programme is established and implemented	School health NCD (including injury and disability) prevention training curriculum available, in-person and via e-learning	By 2021, MINEDUC reports the availability and dissemination of the curriculum to the chair of the NCD multisectoral committee	**MINEDUC** **Baseline: 0** **Target: 1**	MoH / RBC / REB / DNCD / WHO / UNICEF / MINALOC / RRC / District administration
		% of schools implementing health programmes for NCDs prevention (including injuries and disabilities)	Annually, MINEDUC reports % of schools with health programmes for NCDs (including injury and disability) to the chair of the NCD multisectoral committee	**MINEDUC** **Baseline: 0** **Target: 20%**	MoH / RBC / REB / DNCD / WHO / UNICEF / MINALOC / RRC / District administration

Promote community awareness for prevention of NCD risk factors	The community has increased awareness and knowledge of NCDs risk factors	Number of country-wide awareness and screening campaigns related to prevention of NCD (including injury and disability) risk factors	Annually, MoH reports the number of country-wide awareness and screening campaigns to the chair of the NCD multisectoral committee	**MoH** **Baseline: 7** **Target: 35; 7 per year**	RBC / MINALOC / DNCD / SFH / PIH / Rwanda NCD Alliance / CSOs / Private sector
		Number of districts implementing car free days	Annually, MINISPORT reports the number of districts implementing car free days to the chair of the NCD multisectoral committee	**MINISPORT** **Baseline: 10** **Target: 30**	MoH / MINALOC
		% of the population with appropriate knowledge on NCD risk factors and how to prevent them	Every four years, MoH reports % of the population with appropriate knowledge on NCD risk factors and how to prevent them to the chair of the NCD multisectoral committee, using various surveys, e.g. STEPS or DHS	**MoH** **Baseline: N/A** **Target: 50%**	RBC / MINALOC / PIH / DNCD / SFH / Private sector / Rwanda NCD Alliance / CSOs

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Introduce mobile health or mHealth, to increase NCD awareness and prevention, and support behavioural change	The population has access to digital solutions to support awareness and prevention of NCDs	Number of mHealth solutions available	Annually MoH reports the number of implemented mHealth solutions to the chair of the NCD multisectoral committee	**MoH** **Baseline: 0** **Target: 1**	RBC / MINIICT / RISA / DNCD / Public sector
		% of population (with access to smartphones) using mHealth applications on awareness and prevention of NCDs	Annually, MoH reports % of population using mHealth applications on awareness and prevention of NCDs to the chair of the NCD multisectoral committee	**MoH** **Baseline: 0** **Target: 30%**	RBC / RURA / MINIICT / RISA / DNCD / Public sector / WHO
Strengthen the engagement of CSOs in NCD awareness campaigns	Increased engagement of CSOs in Rwanda in NCD-related activities	Number of CSOs expanding their activities to include NCD awareness	Annually, MoH reports the number of CSOs expanding their activities to include NCD awareness to the chair of the NCD multisectoral committee	**MoH** **Baseline: TBD** **Target: TBD**	RBC / MINALOC / DNCD / SFH / Rwanda NCD Alliance / CSOs
		Number of districts covered by CSOs working on NCD-related interventions	Annually, MoH reports the number of districts covered by CSOs working on NCD-related interventions to the chair of the NCD multisectoral committee	**MoH** **Target: 30%**	MINALOC / RBC / DNCD / SFH / Rwanda NCD Alliance / CSOs

Empower districts to run NCD prevention and education programmes	Districts with NCD (including injury and disability) prevention and education programmes	Number of districts with specific NCD (including injury and disability) activities and allocated budget within annual plans	Annually, MoH reports the number of districts with specific NCD (including injury and disability) activities and allocated budget within annual plans to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 30**	MINALOC / RBC / CSOs / Private sector / DNCD
Develop and disseminate NCD prevention communications material addressing risk factors, targeting the general population	NCD prevention communication materials developed and disseminated	Number of materials developed and disseminatedw	Annually, MoH reports the number of materials developed and disseminated to the chair of the NCD multisectoral committee	**MoH** **Baseline: TBD** **Target: TBD**	RBC / MINALOC / CSOs / Private sector / DNCD / WHO

Prevention and awareness in healthcare

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Develop and integrate NCD-related education and awareness messages into the package of services provided at all levels of health care provision	NCD awareness and prevention messages integrated at all levels of health care system	% of health facilities conducting NCD awareness sessions at least once per quarter	Bi-annually, MoH reports % of health facilities conducting NCD awareness sessions at least once per quarter to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 90%**	RBC / DNCD / SFH / NCD Alliance / CSOs / WHO
Develop and integrate NCD-related education and awareness messages in the package of services provided by community health workers	Community health workers (CHW) are trained on NCD prevention	% of CHWs trained in NCD prevention and first-aid skills for the prevention and control of injuries and disabilities	Annually, MoH reports % of CHWs trained in NCDs and first-aid skills for the prevention and control of injuries and disabilities to the chair of the NCD multisectoral committee	**MoH** **Baseline: 0** **Target: 70%**	RBC / MINALOC / CSOs / Private sector / DNCD / WHO / ICRC / RRC

Awareness and prevention in the workplace

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Integrate NCD prevention with occupational health, such as within the workplaces of public and private institutions, and broader public areas	NCD awareness and prevention are integrated in the workplace	% of workplaces with integrated NCD prevention messages and practices	Annually, MIFOTRA reports the percentage of institutions providing NCDs prevention messages / chair of the NCD multisectoral committee	**MIFOTRA** **Baseline: 0** **Target: 10%**	MoH / RBC / MINALOC / CSOs / Private sector / DNCD / WHO

Strategic objective 1:
NCD prevention through health promotion and reduction of risk factors

Priority area 2: Immunisation and early treatment of infections leading to NCDs

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Continuous vaccination against Hepatitis B	Hepatitis B vaccination in infants is optimised	% of infants that receive Hepatitis B vaccination	Annually, MoH reports % of infants that have received Hepatitis B vaccinations to the chair of the NCD multisectoral committee	**MoH** **Baseline: 93%** **Target: 93%**	RBC / GAVI / UNICEF / WHO
Early detection, quality treatment and care of Hepatitis B and C infections	High-risk population is screened for Hepatitis B and C infections	% of the population (≥15 years) screened for Hepatitis B and C infections	Annually, MoH reports % of target population screened for Hepatitis B and C infections to the chair of the NCD multisectoral committee	**MoH** **Baseline: 40%** **Target: 80%**	RBC / WHO / CHAI / PIH
		Number of patients receiving treatment for Hepatitis B and C infections	Annually, MoH reports the number of patients receiving treatment for Hepatitis B and C infections to the chair of the NCD multisectoral committee	**MoH** **Baseline: 5,000 for Hepatitis B and 30,000 for Hepatitis C** **Target: 7,000 for Hepatitis B and 40,000 for Hepatitis C**	RBC / CHAI / PIH
Continuous vaccination programme against HPV	Young girls aged 12 years are vaccinated against HPV	% of young girls aged 12 years that received HPV vaccine	Annually, MoH reports % of target population that received HPV vaccines to the chair of the NCD multisectoral committee	**MoH** **Baseline: 97%** **Target: 97%**	RBC / GAVI / UNICEF / WHO / DNCD

Cervical cancer screening and treatment of precancerous lesions	Eligible women (30-49 years) are screened for cervical cancer	% of target population screened for cervical cancer	Annually, MoH reports % of target population screened for cervical cancer to the chair of the NCD multisectoral committee	**MoH** **Baseline: 10%** **Target: 40%**	RBC / PIH / DNCD

Strategic Actions	**Expected Output**	**Indicators**	**Indicator Measurement**	**Lead Agency**	**Partners**
Continuous vaccinations against disabling conditions like poliomyelitis or meningitis	Vaccinations for poliomyelitis and meningitis accessed and delivered to all high-risk populations	% of target group that received poliomyelitis and meningitis vaccines	Annually, MoH reports % of target population that received poliomyelitis and meningitis vaccines to the chair of the NCD multisectoral committee	**MoH** **Baseline: 97%** **Target: 97%**	RBC / GAVI / UNICEF / WHO
Screening, diagnosis and treatment of rhematic fever and RHD	Decreased rates of rheumatic fever diseases leading to chronic diseases	% of target population screened for rheumatic fever and RHD	Annually, MoH reports % of target population screened for rheumatic fever and RHD to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 40%**	RBC / CSOs

Strategic objective 1:
NCD prevention through health promotion and reduction of risk factors

Priority area 3: Establish and strengthen the implementation of policies and regulations addressing NCD risk factors

Tobacco control

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Reinforce the implementation of the 2013 tobacco control policy and action plan	The enforcement of implementation of 2013 policy and action plan is increased	% reduction in prevalence of tobacco smoking	Every five years, MoH reports the prevalence of tobacco smoking through STEPS Survey	**MoH** **Baseline: 13%** **Target: 10%**	RBC / WHO / CSOs / DNCD
Advocate for progressive increases to excise duty and prices for tobacco products, in line with WHO recommendations	Increased taxation on locally produced and imported tobacco products	New tobacco taxation scheme issued	MINECOFIN reports changes in tobacco taxation to the chair of the NCD multisectoral committee	**MINECOFIN** **Baseline: 0** **Target: 1**	MoH / WHO / MYCULTURE / MINICOM / RRA / RBC / DNCD
Establish and implement measures to minimise illicit trade in tobacco products	Enforced laws on trade of illicit tobacco products	Rwanda signs on the tobacco illicit trade protocol	MINAFET reports on the signature and the implementation of the tobacco illicit trade protocol	**MINAFET** **Baseline: 0** **Target: 1**	MOH / WHO / MINICOM / MINECOFIN / RBC / DNCD

Harmful alcohol use control

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Develop and disseminate a national alcohol policy	National alcohol policy and action plan developed and disseminated	Alcohol policy developed and disseminated	MoH reports the progress towards developing and disseminating the national alcohol policy	**MoH** **Baseline: 0** **Target: 1**	RBC / WHO / DNCD / PIH / NCD Alliance / MINICOM

Support, empower and provide services to individuals or communities engaged in harmful alcohol use	Alcohol abuse counselling and therapy programmes established and functioning	Number of facilities providing alcohol abuse counselling and therapy services	Annually, MoH reports the number of facilities providing alcohol abuse counselling and therapy services to the chair of the NCD multisectoral committee	**MoH** **Baseline: TBD** **Target: TBD**	RBC / WHO / DNCD / PIH / NCD Alliance

Promoting healthy diets

Strategic Actions	**Expected Output**	**Indicators**	**Indicator Measurement**	**Lead Agency**	**Partners**
Establish regulations or policies related to healthy diets. For example, the trade of trans-fat, sugary beverages, processed food and sodium	Policies and regulations on trans-fat, saturated fats and sugar consumption in place	% reduction in obesity	Every five years, MoH reports % reduction in obesity through STEPS survey	**MoH** **Baseline: 2.8%** **Target:2.8%**	FDA / RBC / WHO / MINAGRI
Promote user-friendly or easy-to-understand food labelling on processed food packaging; and translate international food labels into local languages	Clearly labelled food products and ingredients	% of food products with clear labelling	Annually, FDA reports % of food products with clear labelling to the chair of the NCD multisectoral committee	**FDA** **Baseline: N/A** **Target: 50%**	MoH / RBC / FDA / RSB / MINICOM / DNCD
Reduce sugar consumption through increased taxation on sugar-sweetened beverages	Increased taxation on locally produced and imported sugar-sweetened beverages	New sugar taxation scheme issued	Annually, MINECOFIN reports the progress towards implementation of a new sugar taxation scheme to the chair of the NCD multisectoral committee	**MINECOFIN** **Baseline: 0** **Target: 1**	MoH / RBC / RRA / MINICOM / DNCD

Increasing physical activity

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Develop and disseminate guidelines for the general population on physical activity and sports	Guidelines on physical activity or sports developed and implemented	Guidelines available and disseminated	Annually, MINISPORTS reports the progress towards the development and dissemination of guidelines (public, schools, workplace) to the chair of the NCD multisectoral committee	**MINISPORTS** **Baseline: 0** **Target: 1**	MoH / RBC / MINALOC / Rwanda NCDs Alliance / WHO / DNCD
Create enabling environments for promoting physical activity. For example, through road design and recreational spaces	Improved accessibility to activities, facilities or wider environments enabling physical activity	% of the population with recommended levels of physical activity	Every five years, MoH reports % of the population with recommended levels of physical activity through STEPS	**MoH** **Baseline: ~15%** **Target: 20%**	WHO / MINISPORTS

Controlling air pollution and exposure to toxic substances leading to NCDs

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Regulate manufacturing of toxic gases and limit presence in the environment by improving production processes	Reduced manufacturing and production emitting toxic gases	Number of factories with implemented measures reducing toxic gas emission	Annually, MINICOM reports the number of factories with implemented measures reducing toxic gas emissions to the chair of the NCD multisectoral committee	**MINICOM / MoEnv** **Baseline: TBD** **Target: TBD**	MoH / REMA
Enforce the implementation of the National Policy on Occupational Safey and Health	Reduced work-related exposure to gases and particles that cause CRDs and cancers	Number of work environments with implemented measures reducing work-related exposure to gases and particles that cause CRDs and cancers	Annually, MINICOM reports the number of factories with implemented measures reducing work-related exposure to gases and particles that cause CRDs and cancers to the chair of the NCD multisectoral committee	**MINICOM / MoEnv** **Baseline: TBD** **Target: TBD**	MoH / REMA

Strategic objective 1:
NCD prevention through health promotion and reduction of risk factors

Priority area 4: Improve road safety for the prevention of injuries and disabilities

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Introduce mandatory technical check-ups of motorbikes	Improved safety for motorcyclists	% of registered motorcycles completing annual technical check-ups	Annually, RNP reports % of registered motorcycles completing annual technical check-ups to the chair of the NCD multisectoral committee	**RNP** **Baseline: 0** **Target: 20%**	MININFRA / MoH / DNCD / RBC
Increase awareness among motorcyclists and other public road users on the proper use of roads	Increased awareness and knowledge of motorcyclists about the proper use of roads	Number of awareness campaigns conducted	Annually, RNP reports the number of awareness campaigns conducted to the chair of the NCD multisectoral committee	**RNP** **Baseline: 0** **Target: 1 per year**	MoH / MININFRA / RBC / WHO / DNCD / MINICOM
Introduce mandatory first-aid training for public and truck drivers	Increased number of drivers trained on first aid as a condition for acquiring or renewing a driving licence	% of drivers with proper first-aid training	Annually, RNP reports % of drivers with proper first-aid training to the chair of the NCD multisectoral committee	**RNP** **Baseline: 0** **Target: 50%**	MoH / RBC / ICRC / WHO / DNCD / RRC
Introduce mandatory first-aid kits in public and truck drivers	Increased access to first-aid kits in case of accidents	% of cars with first-aid kits	Annually, RNP reports % of cars with first-aid kits to the chair of the NCD multisectoral committee	**RNP** **Baseline: 0** **Target: 50%**	MoH / MININFRA

Enforce mandatory medical check-ups (e.g. eyes, ears, disabilities) before issuing or renewing driving licences	Increased safety and reduced unintentional injuries	% of drivers completing medical check-ups when acquiring or renewing their driving licence	Annually, RNP reports % of drivers completing medical check-ups when acquiring or renewing their driving licence to the chair of the NCD multisectoral committee	**RNP** **Baseline: 0** **Target: 50%**	MoH / RBC / DNCD / WHO

Strategic objective 1:
NCD prevention through health promotion and reduction of risk factors

Priority area 5: Deliver on communication plan to accompany National Strategy and Costed Action Plan 2020-2025

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Improve external communications skills and increase capacity to support national NCD prevention programme	Improved external communication skills	% of personnel trained to build capacity in communication skills	Annually, MoH reports % of personnel trained to build capacity in communication skills to the chair of the NCD multisectoral committee	**MoH** **Baseline: 0** **Target: 100%**	RBC / DNCD
Develop and implement the national strategy communications plan	Communications plan development and implemented	Communications plan available	MoH reports progress in developing and implementing the communications plan	**MoH** **Baseline: 0** **Target: 1**	RBC / DNCD / WHO / Rwanda NCD Alliance

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 1: Human resources development for NCD early detection, care and treatment

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Train in-service health care providers on early detection, diagnosis and management of NCDs, including injuries and disabilities, at all levels	Increased number of qualified, trained healthcare providers at all levels to provide NCD early detection, diagnosis and management	Number of health care providers trained in NCDs management by disease category: integrated NCD management, injuries and disabilities, cancer early detection, and treatment and palliative care	Annually, MoH reports the number of healthcare providers trained to the chair of the NCD multisectoral committee	**RBC** **Baseline: 1,633** **Target: 67,340**	MoH / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
Establish and implement a strong NCD clinical mentorship system, cascaded throughout health system tiers	Increased quality of NCD services provided at all levels of care	% of hospitals with bi-annual mentorship visits	Bi-annually, MoH reports % of hospitals with regular mentorship visits to the chair of the NCD multisectoral committee	**RBC** **Baseline: 90%** **Target: 100%**	MoH / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
		% of health centres with quarterly mentorship visits	Quarterly, MoH reports % of health centres with regular mentorship visits to the chair of the NCD multisectoral committee	**MoH** **Baseline: 40%** **Target: 80%**	MoH / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA

Integrate national NCD prevention, early detection, care, and treatment guidelines into undergraduate pre-service training of the health workforce	National NCD prevention, early detection, care, and treatment guidelines are integrated into teaching curriculum of medical, midwifery, and nursing school undergraduate students	% of annual graduates from medical and nursing schools trained in national NCD prevention, early detection, care, and treatment guidelines	Annually, MINEDUC reports the number of graduates trained in national NCD prevention, early detection, care and treatment guidelines annually to the chair of the NCD multisectoral committee	**MINEDUC** **Baseline: N/A** **Target: 80%**	MoH / RBC / DNCD / UR / Higher learning institutions with medical and nursing schools / REB / HEC / HRHS

Strategic Actions	**Expected Output**	**Indicators**	**Indicator Measurement**	**Lead Agency:**	**Partners**
Provide pre-service training (e.g. postgraduate study or fellowships) to ensure adequate numbers of NCD specialists (e.g. oncology, pathology, cardiology, nephrology, emergency medicine, palliative care)	Increased number of healthcare providers with NCD related sub-specialisations	Number of health care providers who have completed NCD sub-specialisation fellowships	Annually, MoH reports the number of health care providers who have completed NCD fellowships specialising in NCD care to the chair of the NCD multisectoral committee	**HRHS** **Baseline: TBD** **Target: TBD**	MoH / DNCD / UR / Higher learning institutions with medical and nursing schools / REB / HEC
Develop NCD e-learning modules targeting health care providers at all levels	Four NCD e-learning modules available	% of healthcare providers that completed NCD-related e-learning modules, focused on cancer, integrated NCD management, palliative care, and injuries and disabilities	Annually, MoH reports % of healthcare providers that have completed NCD-related e-learning modules, focused on cancer, integrated NCD management, palliative care, and injuries and disabilities, to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 50%**	HRHS / RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 2: NCD service delivery

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Strengthen the implementation of WHO PEN interventions in primary health care facilities	Increased geographical access to quality NCD services nationally	% of primary health care facilities (district hospitals and health centres) with full implementation of WHO PEN interventions	Annually, MoH reports % of health facilities with full implementation of WHO PEN interventions to the chair of the NCD multisectoral committee	**MoH** **Baseline: 60%** **Target: 95%**	RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
		% of diabetic patients with controlled disease (fasting blood glucose level 126, random glucose level below 200, HbA1c below 7%)	Annually, MoH reports % of Type 2 diabetes patients with controlled disease at hospital level to the chair of the NCD multisectoral committee	**MoH** **Baseline: 40%** **Target: 60%**	RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
		% of hypertensive patients with controlled BP (140 / 90)	Annually, MoH reports % of hypertension patients with controlled disease at hospital level to the chair of the NCD multisectoral committee	**MoH** **Baseline: 40%** **Target: 60%**	RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
Expand the implementation of complementary PEN-Plus services, which focus on severe chronic NCDs at district hospitals	District hospitals provide complementary PEN-Plus services, including complicated severe NCDs	% of district hospitals that provide echocardiography-based management of heart failure	Annually, MoH reports % of provincial and district hospitals providing echocardiography-based management of heart failure to the chair of the NCD multisectoral committee	**MoH** **Baseline: 30%** **Target: 60%**	RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Establish NCD early detection, diagnosis, and patient follow-up care for DM and HTN at health posts	Health posts offer NCD screening and early detection	% of health posts providing NCD screening and early detection	By the beginning of 2024, MoH reports % of health posts providing NCD screening and early detection to the chair of the NCD multisectoral committeev	**MoH** **Baseline: N/A** **Target: 30%**	RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
		Percentage of eligible people screened for NCDs in community check-ups	Annually, MoH reports % of eligible people screened for NCDs in community check-ups to the chair of the NCD multisectoral committee	**MoH B** **aseline: 10%** **Target: 30%**	MINALOC / CSOs / private sector / DNCD
Streamline the referral system for NCD prevention, care and management, while ensuring the availability of interoperable, high quality, electronic medical records	Interconnected and interoperable digital medical records introduced across the referral system	% of health facilities with interconnected electronic medical records	Annually, MoH reports % of health facilities with interconnected electronic medical records to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 20%**	RBC / MINIICT / RISA / WHO / CHAI / DNCD / PIH / ENABEL
Strengthen the integration of palliative care into existing health care system	Increased access to palliative care services	Number of health facilities with functional palliative care services	Annually, MoH reports the number of health facilities with palliative care services to the chair of the NCD multisectoral committee	**MoH** **Baseline: 12** **Target: 48**	RBC / ACS / CSOs / PIH / DNCD / WHO / RDA

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 3: Strengthen the supply chain of NCD medications, laboratory commodities, and technologies / medical equipment

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Ensure the continuous availability of essential NCDs medicines, laboratory commodities and technologies / medical equipment for screening, diagnosis, treatment and monitoring at all levels	Stock outs of essential NCD medicines reduced at all levels, across central stores and health facilities (Cfr National Package of services by level of health care delivery)	% of facilities reporting frequent stock outs of NCD drugs and supplies	Annually, MoH reports the % of facilities reporting frequent stock outs of NCD drugs and supplies to the chair of the NCD multisectoral committee	**MoH** **Target: <5%**	RMS Ltd / RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
Establish and regularly update a list of essential NCDs drugs, supplies and equipment at different levels of care	The list of essential NCD medicines, supplies and equipment is available and updated regularly	Updated list of essential NCD medicines, supplies and equipment	Annually, MoH reports the updated essential NCD medicines, supplies and equipment from an updated list to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 1**	RMS Ltd / RBC / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 4: Ensure continuous research and development to establish and advance various NCD treatment guidelines and protocols

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Establish and regularly update NCD management guidelines and protocols	NCDs management guidelines and protocols are regularly revised and updated	Number of NCD management guidelines and protocols revised and updated every two years (integrated NCD management guidelines, cancer management guidelines and injury management guidelines)	Bi-annually, MoH reports the availability of updated NCD management guidelines and protocols to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 3**	RBC / RMS Ltd / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
Monitor the use of guidelines and protocols to ensure quality of care	Updated guidelines and protocols are used at health facilities	% of health facilities effectively using national NCD guidelines and protocols	Annually, MoH reports % of health facilities effectively using national NCD guidelines and protocols annually to the chair of the NCD multisectoral committee	**MoH** **Target: 80%**	RBC / RMS Ltd / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 5: Financing of NCD prevention and control

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Strengthen UHC initiatives through *mutuelle de sante* (CBHI) to facilitate affordability and sustainable financing of NCD services	The population has increased financial access to NCD prevention and control services	Number of new NCD services included in CBHI benefit packages to include chemotherapy, screening for cervical and colon rectal cancers, and prostheses	Annually, RRSB reports the number of new essential NCD services included in CBHI benefit packages to the chair of the NCD multisectoral committee	**RSSB** **Baseline: N/A** **Target: 4**	MoH / RBC / MINECOFIN / WHO / DNCD / PIH / CHAI / RDA
Include NCD quality improvement indicators into performance-based financing or pay-for-performance systems	Performance-based financing includes additional NCDs, including injuries and disabilities indicators	Number of new NCD indictors included in performance-based financing incentives	Annually, MoH reports the number of new NCD indictors included in performance-based financing incentives to the chair of the NCD multisectoral committee	**MoH** **Baseline: 3** **Target: 6**	RBC / MINECOFIN / WHO / DNCD / PIH / CHAI / RDA

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 6: Enhance patient psychosocial and resource support programmes

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Strengthen psychosocial and financial support programmes for patients with NCDs	Psychosocial and financial support programmes for NCD patients, including injury and disability, are established and implemented	Number of actors implementing psychosocial and financial support programmes for NCD patients, including injury and disability	Annually, MoH reports the number of actors implementing psychosocial and financial support programmes for NCDs to the chair of the NCD multisectoral committee	**MoH** **Target: 30**	MINALOC / RBC / WHO / DNCD / PIH / NCD Alliance
Integrate NCDs with nutrition programmes at health facilities	NCDs and nutrition programmes are integrated at health facility level	% of health facilities with integrated NCDs and nutritional services	Annually, MoH reports % of health facilities with integrated NCDs and nutritional services to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 80%**	MINALOC / RBC / WHO / DNCD / PIH / NCD Alliance
Integrate NCDs with mental health programmes at health facilities	NCDs and mental health programmes are integrated at health facilities	% of health facilities with integrated NCDs and mental health services	Annually, MoH reports % of health facilities with integrated NCDs and mental health services to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 80%**	MINALOC / RBC / WHO / DNCD / PIH / NCD Alliance

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 7: Establish policies and guidelines to ensure continued access to NCD services during emergencies such as pandemics or epidemics (e.g. COVID-19)

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
Ensure continuity of NCD care during emergencies by including NCD care in national emergency response plans	NCD services included in emergency response plans	NCD services included in national emergency plans	MoH reports the inclusion of NCD services in national emergency plans to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 1**	RBC / RMS Ltd / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
Provide alternative platforms for service provision to strengthen health system responses to epidemics or pandemics affecting NCD care	Continuous availability and accessibility of NCD services during emergencies	Number of alternative platforms, like mHealth and other IT platforms, in place to ensure continuity of care	Annually, MoH reports the number of alternative platforms in place to ensure continuity of care during emergencies to the chair of the NCD multisectoral committee	**MoH** **Baseline: 1** **Target: 3**	RBC / RMS Ltd / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA
Establish community-based programmes for the protection and care of the most vulnerable, including those with NCDs and persons with disabilities, during emergencies like COVID-19	Communities are empowered and supported to ensure the protection and care of NCD patients during emergencies	% of CHWs able to provide support to the most vulnerable, including those with NCDs and persons with disabilities, during emergencies	Annually, MoH reports % of CHWs able to provide support to NCD patients and persons with disabilities during emergencies annually to the chair of the NCD multisectoral committee	**MoH** **Baseline: 0** **Target: 25%**	RBC / RMS Ltd / DNCD / WHO / PIH / CHAI / Team Heart / WDF / RDA

Strategic objective 2:
Strengthening health systems for quality NCD early detection, care and treatment at all levels

Priority area 8: Establish specialised NCD, including injuries and disabilities, diagnostic and treatment centres

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency:	Partners
"Develop business cases for establishing priority specialised NCDs diagnostic and treatment centres, in order to attract funding and private investment: - National Cardiac Centre - National Renal Transplant Centre - A Nuclear Medicine Centre - Upgrading of Rwanda Cancer Centre - Upgrading of Pathology services at Teaching Hospitals - Establishment of Satellite cancer centres in Teaching Hospitals - Centre of Excellence for Trauma and Rehabilitation	Business cases for specialised NCD diagnostic and treatment centres are developed	Number of business cases developed to attract investment	Annually, MoH reports the number of business cases developed to attract investment to the chair of the NCD multisectoral committee	**MoH** **Baseline: 0** **Target: 8**	RBC / DNCD / PIH / CHAI / MINECOFIN
Build and equip new specialised NCDs diagnostic and treatment centres	The general population has increased access to specialised NCD diagnostic and treatment services	Number of new, functional, specialised NCD diagnostic and treatment centres	Annually, MoH reports the number new, functional, specialised NCD diagnostic and treatment centres to the chair of the NCD multisectoral committee	**MoH** **Baseline: N/A** **Target: 3**	RBC / DNCD / PIH / CHAI / MINECOFIN / private sector / investors

Strategic objective 3:
Strengthen diseases surveillance and research, alongside robust monitoring and evaluation system, for evidence-based intervention

Priority area 1: Strengthen diseases surveillance and M&E systems

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Conduct regular, comprehensive situational analysis of the availability, accessibility, and affordability of NCDs, including injuries, disability and geriatric services	Situational analysis report available	One situational analysis report published before the completion of the national strategic plan	MoH reports on progress towards publishing a situational analysis report in 2025 to the chair of the NCD multisectoral committee	**RBC** **Baseline: 0** **Target: 1**	MoH / CDC / WHO / DNCD / CHAI / PIH
Update standardised NCD M&E frameworks and tools, and integrate them into HIS at all levels	HMIS indicators updated to include relevant NCDs, including injuries and disabilities	HIS system includes priority NCDs, including injury and disability indicators	Every two years, MoH reports on progress towards including priority NCD (including injury and disability) indicators to the chair of the NCD multisectoral committee	**Baseline: N/A** **Target: 1**	MoH / CDC / WHO / DNCD / CHAI / PIH
Build the capacity of health staff at all levels in M&E, including protocols for routine surveillance and tracking of NCD data	Data managers and M&E staff are reporting quality data on NCD indicators (including injury and disability)	% of data managers and M&E officers trained in M&E and reporting skills	Annually, MoH reports % of data managers trained in M&E and reporting skills to the chair of the NCD multisectoral committee	**MoH** **Baseline: 50%** **Target: 80%**	RBC / CDC / WHO / PIH / DNCD / CHAI

Strengthen data collection and analysis through national registries and mortality data, including the cancer registry, the injury registry and electronic medical records	National registries for specific diseases and mortality data are established and operational	National cancer registry decentralised to all hospitals and clinics	Annually, MoH reports the coverage of national cancer registry (facilities covered) to the chair of the NCD multisectoral committee	**RBC** **Baseline: 20** **Target: 80**	MoH / WHO / IARC / AFCRN / PIH / Einstein-Rwanda Research and Capacity Building Programme
		Injury registry decentralised to hospitals	Annually, MoH reports the number of hospitals with national injury data to the chair of the NCD multisectoral committee	**MoH** **Baseline: 2** **Target: 10**	TBD
		% of health centers with operational electronic medical record systems	Annually, MoH reports % of health centers with operational electronic medical record systems to the chair of the NCD multisectoral committee	**MoH** **Baseline: 5%** **Target: 100%**	RBC / WDF / WHO / PIH / DNCD

Strategic objective 3:
Strengthen diseases surveillance and research, alongside robust monitoring and evaluation system, for evidence-based intervention

Priority area 2: Enhance research for evidence-based interventions

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Establish and implement a national NCD research agenda	NCD national research agenda is developed and disseminated	Research priorities and agenda developed and adapted	Annually, MoH reports on progress and implementation of identified priorities to the chair of the NCD multisectoral committee	**RBC** **Baseline: 0** **Target: 1**	MoH / PIH / PIH / CHAI / WHO
Build capacity for health professionals at all levels in NCD clinical research	e-training on research skills developed and undertaken by NCD staff at all levels	e-learning developed and disseminated	Annually, MoH reports on progress and implementation of identified priorities to the chair of the NCD multisectoral committee	**RBC** **Baseline: 0** **Target: 1**	MoH / CDC / WHO / DNCD / PIH / CHAI
		Number of NCD staff who have completed the clinical research e-training	Annually, MoH reports the number of NCD staff who have completed the clinical research e-training to the chair of the NCD multisectoral committee	**RBC** **Baseline: 0** **Target: 20**	MoH / CDC / WHO / DNCD / PIH / CHAI

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Conduct NCD risk factors prevalence studies (e.g. a STEPS study, a study on risk factors for cancers)	STEPS report	One STEPS report produced	Every five years, MoH conduct a comprehensive STEPS	**RBC** **Baseline: N/A** **Target: 1**	MoH / WHO / CDC / ENABEL / Bloomberg / DNCD
Conduct a national economic impact study of NCDs	Economic cost study conducted and published on international platforms	Economic cost study conducted	MoH reports on progress in conducting and disseminating results of an economic cost study	**RBC** **Baseline: 0** **Target: 1**	DNCD / MoH
Build capacity around grant writing and manuscript writing	NCD staff have capacity built in grant writing and reports	Number of manuscripts and grant proposals developed and published	Annually, MoH reports the number of manuscripts and grant proposals developed and published to the chair of the NCD multisectoral committee	**RBC** **Baseline: N/A** **Target: 20**	MoH / PIH / DNCD / WHO / CHAI

Strategic objective 4:
Strengthen intersectoral coordination, advocacy and resource mobilisation for the prevention and control of NCDs

Priority area 1: Establish national mechanisms to coordinate the prevention and control of NCDs

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Establish high-level, national, multisectoral NCD coordination mechanisms, including social cluster ministries and key private sector partners	A multisectoral coordination mechanism for NCDs established	An active NCD multisectoral coordination mechanism established	MoH reports establishment of an NCD multisectoral coordination committee	**MoH** **Baseline: 0** **Target: 1**	N/A
Ensure quarterly meetings of the NCD TWGs	NCD TWGs are established and functional	Number of TWG meetings	Annually, MoH reports the number of meetings of TWGs to the chair of the NCD multisectoral committee	**RBC** **Baseline: 0** **Target: 4 per year**	MoH / WHO / DNCD / PIH / CHAI

Strategic objective 4:
Strengthen intersectoral coordination, advocacy and resource mobilisation for the prevention and control of NCDs

Priority area 2: Enhance international, national and decentralised coordination mechanisms for prevention and control of NCDs

Strategic Actions	Expected Output	Indicators	Indicator Measurement	Lead Agency	Partners
Establish NCD committees at district level to enforce NCD care, and strengthen collaboration mechanisms	District level NCD committees established	Number of districts with active NCD committees	MoH reports the number of districts with active NCD committees	**MINALOC** **Baseline: 0** **Target: 30**	MOH / RBC / private sector / JADF

6 NATIONAL COSTED ACTION PLAN FOR THE PREVENTION AND CONTROL OF NCDS

To determine the resource needs for delivery of the strategic objections and actions listed above, analysis was conducted using WHO's OneHealth Tool.

6.1 Introduction

6.1.1 The need for costing

Implementing a programme has cost implications which need to be accurately estimated for successful programme implementation. Full knowledge of the cost of service delivery guides resource allocation decisions, which have an impact on patient care and health outcomes [32].

Tough decisions are made, particularly in resource constrained settings, as resources allocated for one programme may mean that other competing programmes have reduced resources, i.e. resource allocations need to be guided to the most cost-effective interventions. Thus, ministries of health across the world require reliable information on condition-specific costs and patient outcomes to make informed resource allocation decisions and cost-benefit trade-offs [33]. Such information is also required by governments to understand the budget implications of each strategy and how public funds would be managed for effective implementation.

A properly costed strategy, therefore, not only strengthens the quality of strategic documents, but also enhances transparency and accountability in managing public resources. It also helps in avoiding implementation failures emanating from poorly costed strategies. Accurate estimates on both health effects and costs is essential in making these decisions [34].

6.1.2 Costing the NCD strategy

This document details the efforts of every actor involved in the prevention and response to NCDs, together with comprehensive cost information for a given period of time, usually in the medium term (3-5 years). This national costed action plan shows in detail the financial resources needed to cover the cost of every effort that is delivered in the prevention or treatment of NCDs and their complications. It allows for a comprehensive resource mobilisation effort and gives funders the possibility to identify with priorities within the total action on NCDs and thus to decide which specific efforts they want to contribute to.

Objectives and scope of the National Costed Action Plan

The purpose of including a national costed action plan alongside Rwanda's national strategy for prevention and control of NCDs for 2020 to 2025, is to guide NCD-related investments to make NCD services universally accessible and affordable for all. The objectives of costing the plan are:

1. To assess resource needs, identify resource gaps and project future costs of strategic NCD plans for policy, management, and budgeting purposes.
2. To estimate costs of scaling up NCD service coverage in the context of UHC (affordable and accessible NCD services for all).
3. To provide a roadmap for sustainable financing of NCDs in Rwanda.

The costing exercise takes the perspective of the government, since most Rwandans (up to 80 percent of the population) are covered by health insurance, that is mainly public, and there is a government commitment to attain UHC by 2022.

The provider types considered in the exercise are public and faith-based organisations (FBO). Facility types include all tiers of service: health posts, health centres, district and provincial hospitals, referral hospitals, as well as all FBO clinics and hospitals. All levels of service (primary, secondary and tertiary) are considered in the costing exercise. Both recurrent (e.g. personnel, drugs and non-drug pharmaceuticals, utilities) and non-recurrent costs (infrastructure and other equipment) are costed where necessary.

The total costs are estimated on an annual basis and projections made from the beginning of 2021 to the end of 2025.

6.1.3 Choice of costing tool: the OneHealth Tool (OHT)

OHT (v4.671) is a software tool for strategic health planning which provides projected cost scenarios for health plans at a national level. The tool is used for medium-term strategic health planning (3-10 years) at national level, although it can be adapted for sub-national (district, province, county) health planning.

OHT was developed by WHO to respond to country requests for a single tool that reflected the best aspects of existing tools; a key advantage of OHT is that it incorporates already established models and best practices from at least nine other tools [35].

6.1.4 The costing process

Costing the NCD plan was a consultative and iterative process of formulating objectives, data collection, baseline analysis, setting targets and quality assurance to ensure accuracy of cost estimates. The phases of the costing exercise were as follows:

- Configuration of the tool to the Rwandese context including population and economic growth projections, as well as health care data such as NCD drugs and non-drug pharma, number and types of health workers, health facilities and general infrastructure.
- A presentation of the methodology and tool for validation by stakeholders.
- Data collection and cleaning by the technical focal persons from the Defeat-NCD Partnership and MoH.
- Validation of activities, treatment inputs and unit costs.
- Data analysis, report writing and stakeholder review of the report.

6.2 Methodology of the OneHealth Tool

6.2.1 Configuration of the OHT

Organisation and interventions

- The programme area is NCDs, but HPV vaccine costs are excluded as this is a separately funded intervention.
- The sub-groups were set as follows in accordance with Rwanda's NCD priorities: **CVD and diabetes, breast cancer, cervical cancer, prostate cancer, colorectal cancer, oral care and cancer, and respiratory diseases.** Others are emergency care for **injuries, risk factors and policy interventions.**
- Delivery channels are the five tiers of Rwanda's health system: **health post, health centre, district hospital, provincial hospital, and national referral hospitals.**

The services costed under each NCD are in accordance with standard treatment guidelines and were verified by MoH teams. The verification included service scope by facility (e.g. laboratory, drugs and supplies) and the unit costs.

6.2.2 Health system costs (shared costs)

All data inputs, outlined below, are tabulated in Annex 1. The health system strengthening costs (indirect costs for NCDs) are shared costs between NCDs and all other services. The model apportions shared costs based on time spent by health personnel on a particular service.

Infrastructure

Data for infrastructure was obtained from MoH's Civil Engineering Department. Data included facility baseline (numbers and types), construction costs, rehabilitation costs (basic and extensive) and operation costs for all levels of care.

Targets were based on population norms. The model calculates infrastructural (health facility) needs based on population norms.

The average number of beds and average number of outpatient (OP) visits and inpatient (IP) days were retrieved from Rwanda's statistical yearbooks [36, 37]. Previous studies by Collins et al. [38, 39] and WHO-CHOICE [34] were used to estimate average OP costs per visit and cost per IP day.

Input for human resources for health (HRH)

Projections for HRH needs were calculated based on policy decisions instead of target setting. This is well articulated in the human resources for health policy of 2014 [40]. The policy lays emphasis on integrated services that account for the following:

- Decentralised implementation of the HRH policy and strategy in accordance with the national health decentralisation strategy.
- Enhanced local health systems: improve district health governance, innovative planning, enhance local recruitment and district service operationality.
- Sustainable linkages to improve overall service delivery.

Estimates of HRH requirements between 2020 and 2025 were obtained from a 2019 Health Labour Market Analysis Report by MoH [41]. For HRH salaries, the International Labour Organisation's average wage growth rate for Africa (2.6%) was used in the projections [42].

Human resources data that have been considered in the costs include baseline data (numbers and type), salaries and benefits, time utilisation, attrition, and recruitment rates, as well as in-service training costs. Apart from shared personnel, there are 88 nurses and 14 national officers specifically working on NCDs.

Financing and fiscal space

The Rwanda health resource tracking report [43] provided the necessary input for financing data including trends in each funding source (public funding, donor agencies, households and private insurance). The Gross Domestic Product (GDP) growth rate was projected at 2 percent on average, while general government expenditure was projected at 6.45 percent on average, based on a decade-long trend (2009-2018). All expenditures were entered in absolute figures. The modelling for fiscal space considered current trends in government spending as well as the GDP growth rate.

Health information systems

MoH has documentations of unit costs for various activities including meetings, campaigns, workshops (large and small), training, monitoring and supervision visits, and hardware and networking. These unit costs were used in the programme estimates. MoH provided the numbers of activities required.

Currency and inflation

On average, the inflation rate in Rwanda for 2020-2025 was placed at three percent, based on trends for the last 10 years (3.7% on average) and future projections (2.4%) [44]. United States Dollar (USD) inflation was calculated at 0.35 percent. The USD exchange rate was set at RWF 951.8 on average for 2020, and factored in dollar inflation at 0.3 percent.

6.2.3 Service costs (NCD specific services)

NCD service coverage and target setting

Baseline data was obtained through review of published literature [45-56] and information from disease registries. Targets were set by MoH teams and guided by WHO global targets for NCDs. Population targets for coverage by each NCD service, e.g., screening services, treatments, were set by MoH.

Due to lack of national data, baseline and targets for cancer were set with data from WHO estimates [57]. Due to a similar lack of accurate national data on cancer incidence (all sites), WHO used estimates from neighbouring countries partitioned using frequency data. The findings suggest that there were about 10,704 new cases of cancer in Rwanda in 2018, of which only a few were diagnosed. For example, of the estimated 1,304 cases of cervical cancer, only 351 (27%) were diagnosed of which 51 of diagnosed cases were at stage 1, 91 at stage 2, 144 at stage 3, and 65 at stage 4. That means, at the baseline, only about 4 percent of estimated cases were diagnosed at stage 1, 7 percent at stage 2, 11 percent at stage 3, and 5 percent at stage 4 (Table 2).

Table 2: Baseline and targets based on WHO estimates

Cancer site	WHO estimates 2018	Diagnosed 2018	%	Stage 1			Stage 2			Stage 3			Stage 4		
				No	Baseline	Target	No.	Baseline	Target	No.	Baseline	Target	No	Baseline	Target
Cervical cancer	1304	351	27	51	4%	10%	91	7%	25%	144	11%	15%	65	5%	10%
Breast Cancer	1131	393	35	44	4%	10%	114	10%	25%	123	11%	15%	112	10%	15%
Colon Rectal	750	137	18	10	1%	8%	30	4%	12%	50	7%	15%	44	6%	10%
Prostate	707														

The figures as shown could not be used as a baseline, because the estimates are quite dated and did not consider recent efforts to improve cancer diagnosis, and the observation that up to 70 percent

of cases actually get diagnosed at stage 4 [58], contrary to the information on the table. The baselines were therefore adjusted accordingly (Annex 2).

Drugs and supplies

Stock lists with unit costs were obtained from RBC's Procurement Division, for 2020 prices. Cancer drugs and their unit costs were provided by MoH's NCD Division as they are not all procured by the Procurement Division. The projections for 2025 prices were based on contract agreements with suppliers which state a three-year no-price-change contract. Also considered were trends in medical and general inflation as well as government policies on pharmaceutical price controls. The period 2021-2025 was assumed too short for discounted prices.

All treatment inputs were guided by Rwanda's national benefits package and defined by the MoH team, which helped in clarifying the scope of services offered at each level of care.

6.2.4 Costs estimated outside the tool

Prostate cancer

Costs were calculated based on available literature. The annual cost of prostate cancer treatment was estimated at USD 13,200 per case. An assumption was made that at any time during each year there are about 570 prostate cancer cases receiving government treatment. The 570 cases were based on projections that there are about 10,504 new cancer cases in Rwanda each year, of which 5.4 percent are prostate cancer. The costs were inflation-rated at 3 percent per annum from 2021 to 2025.

Oral cancer

A similar budget for dental cleaning and preventive care has been placed on oral cancer treatment.

For emergency care needs

These were based on data provided by MoH's Injuries and Rehabilitation Unit. Estimates were based on 540,000 annual OP visits at RWF 2,500 on average per visit, and about 41,000 IP stays at RWF 4,500 per inpatient stay for four days on average. These were inflation-rated at 3 percent per annum.

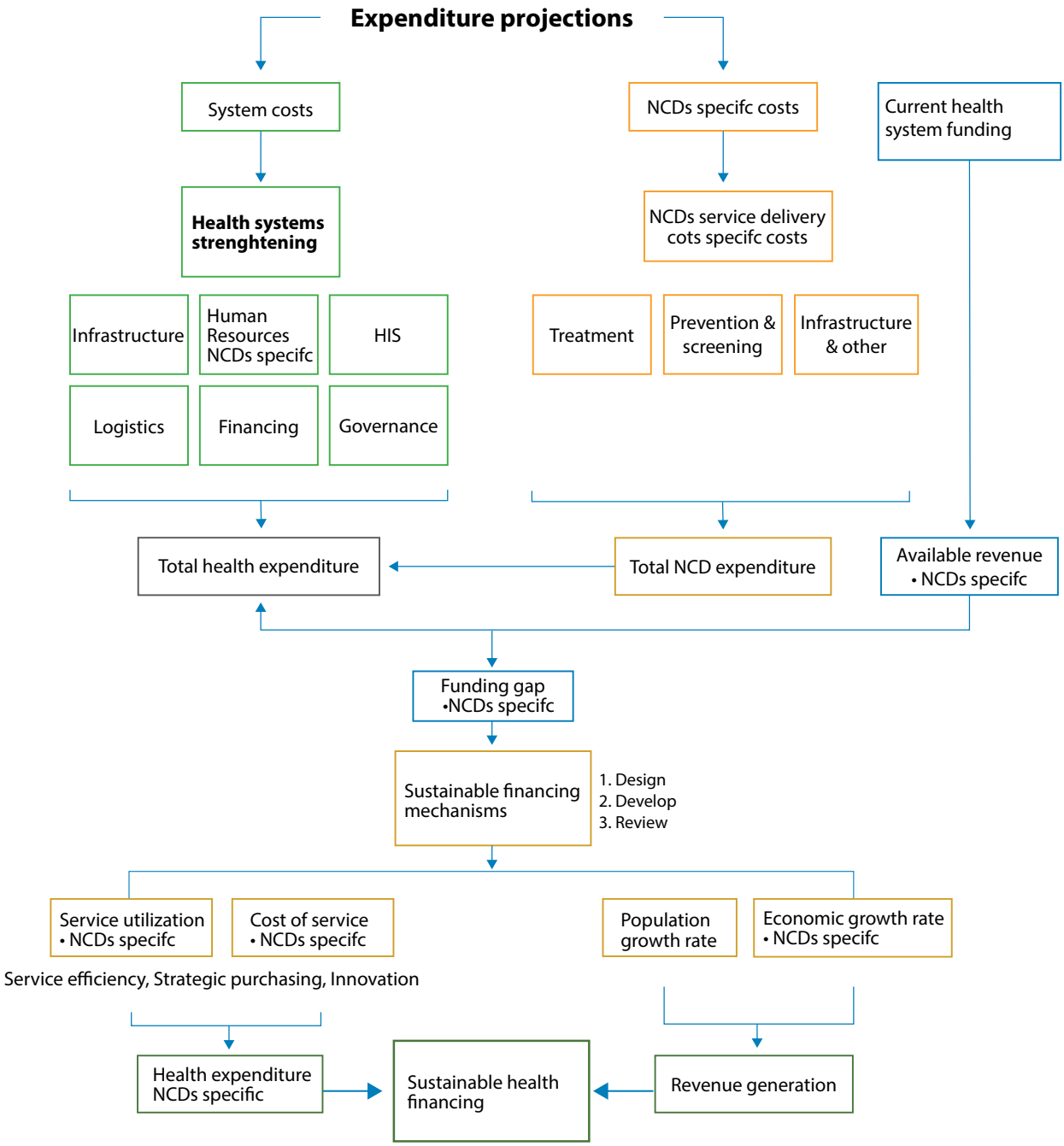
6.2.5 Framework for NCD Costing and Sustainable Financing

The framework for the costed action plan is represented in Figure 1. The objective of the costing work is to estimate NCD costs and explore the overall financial sustainability of the health system. This requires an understanding of the current funding features to be able to estimate available revenue, versus the cost of planned expenditure, including costs of NCDs and all other health programmes. This enables the identification of potential funding gaps and development of financing systems to address the gaps over the long-term.

As a contributor to overall health system costs, NCD costs include prevention and screening services, treatment and infrastructure, human resources, among other items. Shared costs include personnel time and operational costs from the utilisation of system-wide infrastructure during IP and OP services.

The capacity of the economy to finance the planned expenditure factors needs to consider parameters such as population growth rate, economic growth rate, service utilisation and unit costs. The results of the assessment of these parameters should inform next steps in establishing sustainable financing mechanisms for NCDs and the health system.

Figure 10: A Framework for NCD Operational Plan Costing and Sustainable Financing



In summary, developing sustainable financing for NCDs and the health system, requires reflections on several issues, including key cost drivers such as service utilisation and unit costs, as well as revenue drivers such as population size and economic growth rate. Important issues such as efficiency and equity trade-off, strategic purchasing, and financing innovations, need to be fully considered to contain costs and ensure that needed services universally reach the target population.

6.3 Results

6.3.1 Summary of Costs

The implementation of the strategic plan will require about RWF 358.1 billion (USD 376.2 million) for the period of the plan (2021-2025), beginning with an initial investment of about RWF 51.3 billion in 2021 (USD 53.9 million) (Table 3).

TABLE 3: Total cost of NCD prevention and control (USD 1 = RWF 952)

	2021	2022	2023	2024	2025	Total
Drugs and supply costs	42,853,630,241.91	50,486,879,151.86	63,485,143,431.56	75,118,372,056.54	87,419,559,521.59	319,363,584,403.46
Total programme costs	8,487,062,609.90	7,998,735,977.49	9,875,727,290.27	6,304,301,090.79	6,108,638,949.88	38,774,465,918.33
Total cost (RWF)	**51,340,692,851.81**	**58,485,615,129.35**	**73,360,870,721.83**	**81,422,673,147.33**	**93,528,198,471.47**	**358,138,050,321.79**
Total cost (USD)	**53,929,299.21**	**61,434,469.67**	**77,059,738.15**	**85,528,018.01**	**98,243,905.96**	**376,195,431.01**

Other costs (Table 4) are labour (time for non-NCD specific personnel) and administrative costs such as utilities that are incurred during outpatient and inpatient services. These costs are often budgeted for by the administrative/human resource department and therefore not very consequential budget-wise in operational costing for NCD prevention and control.

TABLE 4: Other costs (shared) (RWF)

	2021	2022	2023	2024	2025	Total
Labour costs	308,086,967.73	426,677,236.17	559,325,739.29	709,654,675.58	879,571,932.96	**2,883,316,551.74**
IP / OP costs	16,753,872,227.29	21,120,454,027.02	25,700,920,926.81	30,623,610,908.47	35,918,857,401.74	**130,117,715,491.34**

6.3.2 Intervention Costs (Drugs and Supplies)

Table 5 gives a breakdown of total treatment input costs including preventive measures by intervention area.

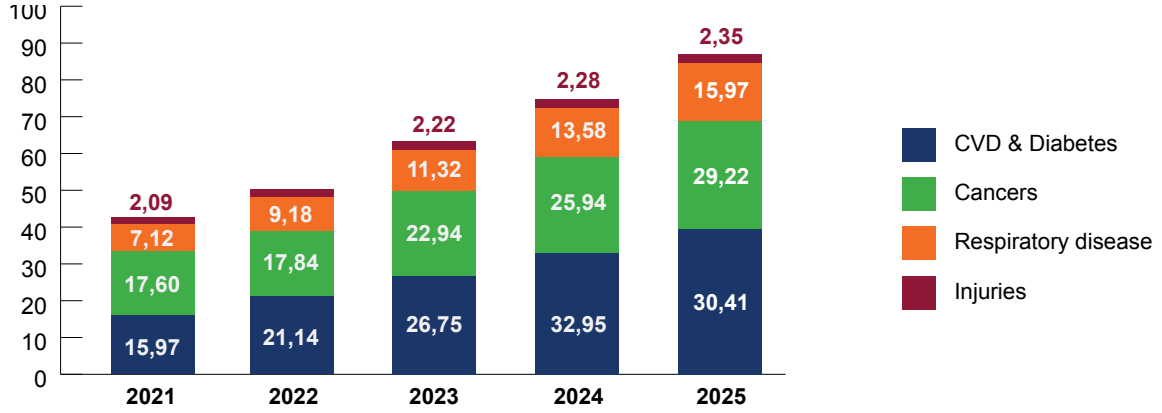
TABLE 5: Breakdown of NCD intervention costs (RWF billions)

Intervention area	2021	2022	2023	2024	2025
CVD and diabetes	15.97	21.14	26.75	32.95	39.41
Breast cancer	6.44	7.99	9.65	11.45	13.41
Cervical cancer	1.87	2.16	2.47	2.81	3.19
Colorectal cancer	0.08	0.1	0.12	0.14	0.16
Dental cleaning and preventive care	1.04	0.13	1.58	1.88	2.22
Oral cancer treatment	1.04	0.13	1.58	1.88	2.22
Prostate cancer	7.12	7.34	7.56	7.78	8.02
Respiratory disease	7.12	9.18	11.32	13.58	15.97
Injuries	2.09	2.15	2.22	2.28	2.35
Risk factor reduction	0.08	0.16	0.26	0.37	0.47
Total	**42.85**	**50.48**	**63.51**	**75.12**	**87.42**

The figures in Table 5 indicate that the main cost drivers are CVD and diabetes interventions, cancers in general (and breast cancer in particular), and respiratory illnesses. A few interventions have been identified as constituting the single largest cost drivers in each disease programme. These include standard glycaemic control (RWF 30.2 billion by 2025), screening for CVDs and diabetes (RWF 18.2 billion), treatment of rheumatic heart disease with benzathine penicillin (RWF 16.5 billion), trastuzamab drug for breast cancer (RWF 3.6 billion) and asthma treatment with 'low-dose inhaled beclometasone + SABA' (RWF 2.5 billion), by 2025.

As shown in Figure 10, CVD and diabetes programmes have the largest share of the costs which are estimated to rise from about RWF 16 billion in 2021 to RWF 39.4 billion in 2025. This is followed by cancers (RWF 17.6 billion in 2021 to 29.2 billion in 2025), respiratory illnesses (RWF 7.1 billion to 16 billion), over the period 2021 to 2025.

FIGURE 11: NCD treatment costs (RWF billions)



6.3.3 Programme costs

Programme costs in Table 6 amount to about RWF 8.5 billion in 2021 but fall to RWF 6.1 billion in 2025. The fall in expenditure is explained by heavier investment in the first three years of implementing the strategy. There is a need to increase programme expenditure, particularly in relation to public awareness, to shift focus from curative services to the prevention and control of NCDs.

TABLE 6: Breakdown of programme costs

	2021	2022	2023	2024	2025
1. Human Resources for NCDs	**523,653,709.60**	**533,547,313.20**	**535,433,619.60**	**537,264,446.40**	**539,261,712.00**
2. Training	**391,142,199.70**	**367,867,049.37**	**310,424,310.18**	**52,865,234.36**	**39,085,302.16**
In-service / refresher training	348,671,218.05	362,247,201.54	304,784,593.92	47,206,234.02	33,405,264.64
Other workshops	42,470,981.65	5,619,847.82	5,639,716.27	5,659,000.34	5,680,037.52
3. Supervision	**67,889,800.00**	**68,595,945.22**	**68,838,459.74**	**69,073,841.48**	**69,330,621.56**
4. Monitoring and Evaluation	**526,869,997.75**	**70,728,091.86**	**70,978,144.39**	**71,220,842.42**	**71,485,603.92**
Design / review of data systems	69,999,997.75	70,728,091.86	70,978,144.39	71,220,842.42	71,485,603.92
STEPS and NCD cost surveys	456,870,000.00	-	-	-	
5. Infrastructure and Equipment	**5,885,598,362.87**	**5,881,042,694.47**	**7,809,573,232.67**	**4,489,976,228.00**	**4,301,843,240.00**
Equipment upgrades for hospitals	2,807,020,006.00	2,836,216,789.00	2,846,243,967.00	2,855,976,228.00	2,866,593,240.00
Medical equipment	3,078,578,356.87	3,044,825,905.47	4,963,329,265.67	1,634,000,000.00	1,435,250,000.00
6. Outreach (risk factors)	**1,085,216,548.40**	**1,070,193,286.07**	**1,073,694,021.40**	**1,077,091,793.94**	**1,080,798,454.88**
Policy formulation	25,216,579.93	-	-	-	-
Social outreach activities	1,059,999,968.47	1,070,193,286.07	1,073,694,021.40	1,077,091,793.94	1,080,798,454.88
7. Advocacy	**6,691,991.58**	**6,761,597.30**	**6,785,502.29**	**6,808,704.19**	**6,834,015.36**
Planning an advocacy strategy	6,691,991.58	6,761,597.30	6,785,502.29	6,808,704.19	6,834,015.36
Total programme costs	**8,487,062,609.90**	**7,998,735,977.49**	**9,875,727,290.27**	**6,304,301,090.79**	**6,108,638,949.88**

Details of the training activities are in Annex 1 under 'Training programmes' and are targeted towards improvements in quality of NCD service delivery. Supervision costs include biannual national mentorship and supervision visits to the districts, as well as once-a-year mentorship and supervision from the districts to the local health facilities. The main cost drivers under M&E are the planned STEPS survey and NCD economic cost study. Proposed equipment purchases for CVDs, diabetes, and cancer, as well as data system upgrades, are captured under infrastructure and equipment. Under outreach, there are at least seven activities planned each year, besides monitoring risk factors including alcohol consumption, tobacco use, physical inactivity, and diet. The details are contained within the wider strategic plan.

6.3.4 Costs by strategic objectives

STRATEGIC OBJECTIVE 1

NCD prevention through health promotion and reduction of risk factors

The costs considered here include those related to awareness creation, risk factor reduction through screening and treatment, as well as treatment for infections leading to cancer. Screening services include CVDs and diabetes, breast and cervical cancers (Table 7).

TABLE 7: NCD prevention and risk reduction (RWF)

Cost area	2021	2022	2023	2024	2025
Screening	1,789,179,576.15	2,625,362,812.27	3,545,659,568.68	4,570,049,156.69	5,706,524,852.89
Follow-up care (secondary prevention)	272,672,257.34	330,133,225.42	388,748,842.95	450,500,295.31	515,831,040.19
Basic breast cancer awareness	3,609,197,713.23	4,370,821,346.66	5,154,463,490.19	5,986,412,905.67	6,872,600,309.81
Dental cleaning and preventive care	1,043,688,086.09	129,942,199.80	1,575,848,697.19	1,881,784,946.87	2,219,204,109.46
Risk factor reduction (health facility-based)	76,495,374.67	162,684,603.67	259,311,066.58	367,457,193.98	473,896,760.74
Awareness campaigns (risk factor reduction)	1,085,216,548.40	1,070,193,286.07	1,073,694,021.40	1,077,091,793.94	1,080,798,454.88
Advocacy	6,691,991.58	6,761,597.30	6,785,502.29	6,808,704.19	6,834,015.36
Total	**7,883,143,568.45**	**8,695,901,093.19**	**12,004,513,212.27**	**14,340,107,020.67**	**16,875,691,568.34**

STRATEGIC OBJECTIVE 2

Strengthening health systems for quality NCD early detection, care and treatment at all levels

Under the second objective, the costs include salaries and skills training for human resources, NCD treatment, mentorship and supervision for quality care, and medical equipment purchases (Table 8).

TABLE 8: NCD early detection, quality care and treatment (RWF)

Actions	2021	2022	2023	2024	2025
Human resources for NCDs	523,653,709.60	533,547,313.20	535,433,619.60	537,264,446.40	539,261,712.00
NCD service delivery training	348,671,218.05	362,247,201.54	304,784,593.92	47,206,234.02	33,405,264.64
Injury-related training	34,858,589.95	5,619,847.82	5,639,716.27	5,659,000.34	5,680,037.52
Supervision/ mentorship	67,889,800.00	68,595,945.22	68,838,459.74	69,073,841.48	69,330,621.56
NCD treatment (drugs, supplies)	36,138,892,609.10	43,030,619,567.71	52,820,422,832.55	62,229,624,752.00	72,105,399,209.24
Medical equipment	3,078,578,356.87	3,044,825,905.47	4,963,329,265.67	1,634,000,000.00	1,435,250,000.00
Total service delivery	**40,192,544,283.57**	**47,045,455,780.96**	**58,698,448,487.75**	**64,522,828,274.24**	**74,188,326,844.96**

Almost 80 percent of the strategy's costs are in this second objective, which further reveals the curative approach to NCD prevention and treatment in Rwanda. Deliberate efforts are required to start shifting NCD services towards preventive programmes.

STRATEGIC OBJECTIVE 3

Strengthen disease surveillance and research, alongside robust M&E systems, for evidence-based intervention

This third objective includes research capacity strengthening, establishment of data and digital systems (purchase of computers and tablets) as well as STEPS and cost of NCD surveys (Table 9).

TABLE 9: Surveillance, research and M&E (RWF)

Actions	2021	2022	2023	2024	2025
Research capacity building	7,612,391.70				
Data management systems (computers)	69,999,997.75	70,728,091.86	70,978,144.39	71,220,842.42	71,485,603.92
Digital connectivity of medical records	2,807,020,006.00	2,836,216,789.00	2,846,243,967.00	2,855,976,228.00	2,866,593,240.00
STEPS and NCD economic cost surveys	456,870,000.00	-	-	-	-
Total M&E, surveillance and research	**3,341,502,395.45**	**2,906,944,880.86**	**2,917,222,111.39**	**2,927,197,070.42**	**2,938,078,843.92**

STRATEGIC OBJECTIVE 4

Strengthen intersectoral coordination, advocacy and resource mobilisation for the prevention and control of NCDs

TABLE 10: Intersectoral coordination costs (RWF)

Actions	2021	2022	2023	2024	2025
Total intersectoral coordination	6,691,991.58	6,761,597.30	6,785,502.29	6,808,704.19	6,834,015.36

6.3.5 Health financing

Total planned health expenditure

In Table 11, total health expenditure (THE) is estimated at about RWF 488 billion in 2021, up from RWF 414 billion reported in 2017, and rising to RWF 569.6 billion in 2025. THE includes the entire health system with its different funding sources: public, donor agencies, households, and private health insurance.

TABLE 11: Total planned health expenditure (RWF)

	2021	2022	2024	2025
THE	487,797,500,000.00	509,701,000,000.00	548,792,280,000.00	569,592,000,000.00
THE, as % of GDP	4.8	4.7	4.5	4.4
... real THE growth rate (%)	3.4	3.4	3.4	3.4
THE per capita	35,145.40	35,940.00	37,120.40	37,758.50

THE is expected to grow at a constant rate of 3.4 percent per annum which, as expected health expenditures, is slightly above the inflation rate. THE as a share of GDP, in-keeping with the national trend, declines from 4.8 percent in 2021 to 4.4 percent in 2025. This, however, should not be the case as literature suggests that a THE of about 5 percent of GDP is required to effectively finance UHC. The Rwandan Government is fully aware of this proportion of total health expenditure relative to GDP and should work toward meeting this target.

Assessing capacity (financial space) to fund the projected costs (expenditure)

Figure 11 suggests that with the current financing trajectory, the economy can sustain the planned NCD expenditure for the first two years (2021-2022), thereafter deficits begin to emerge. By 2025, planned expenditure (RWF 601.7 billion or USD 632 million) exceeds potential mobilisable funding (RWF 558 billion or USD 586 million) by about RWF 44 billion. With efficiency measures, including strategic purchasing and use of cost-effective technologies, the funding gap can be effectively addressed.

As shown in Figure 12, NCD costs are estimated to account for about 18 percent of THE by 2025, up from about 13 percent in 2021. There is evidently poor tracking of NCD expenditures as previous analysis indicated that less than one percent of THE was spent on NCDs in 2017. Nevertheless, the projected 18 percent of THE for 2021 is modest, given the burden of NCDs in Rwanda and the status of NCD funding, which was assessed at less than two percent of THE.

FIGURE 12: Planned expenditure vs financial space (USD millions)

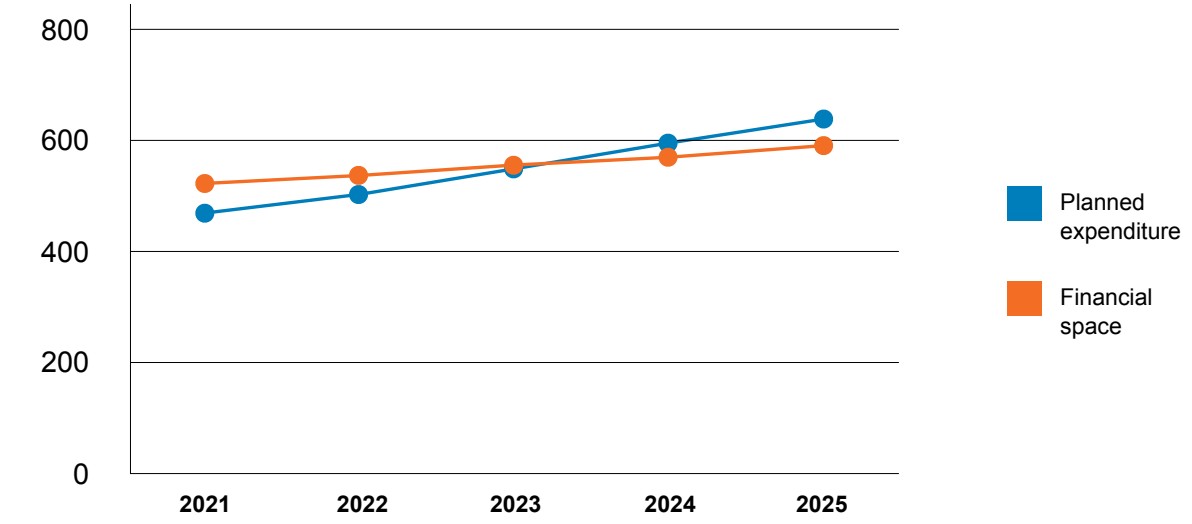
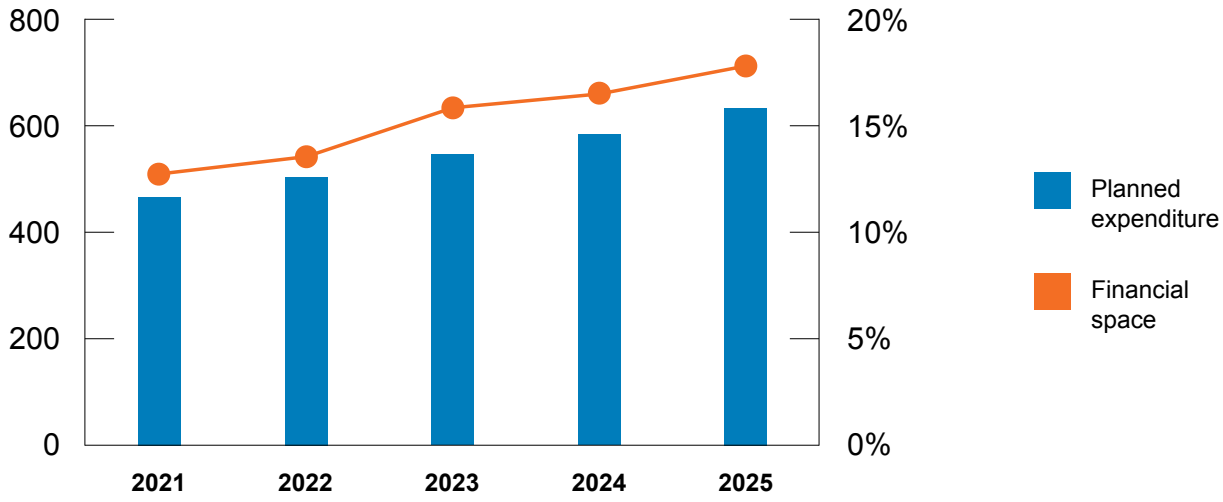


FIGURE 13: NCD costs, % of planned expenditure



Potential impact of planned NCD expenditure

The potential impact of planned health expenditure by disease category is represented by figures 13-16.

Figure 14: CVD (all health states)

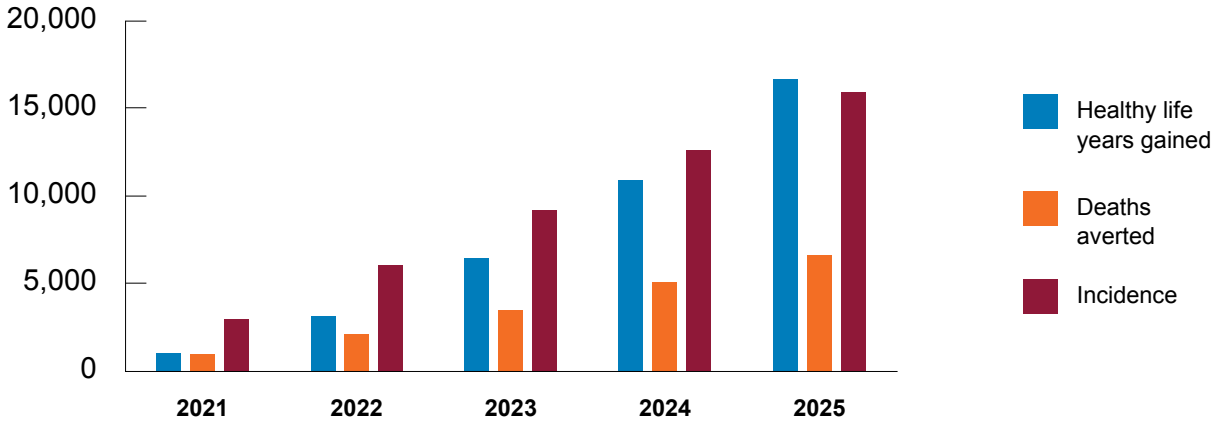


Figure 15: Diabetes (all health states)

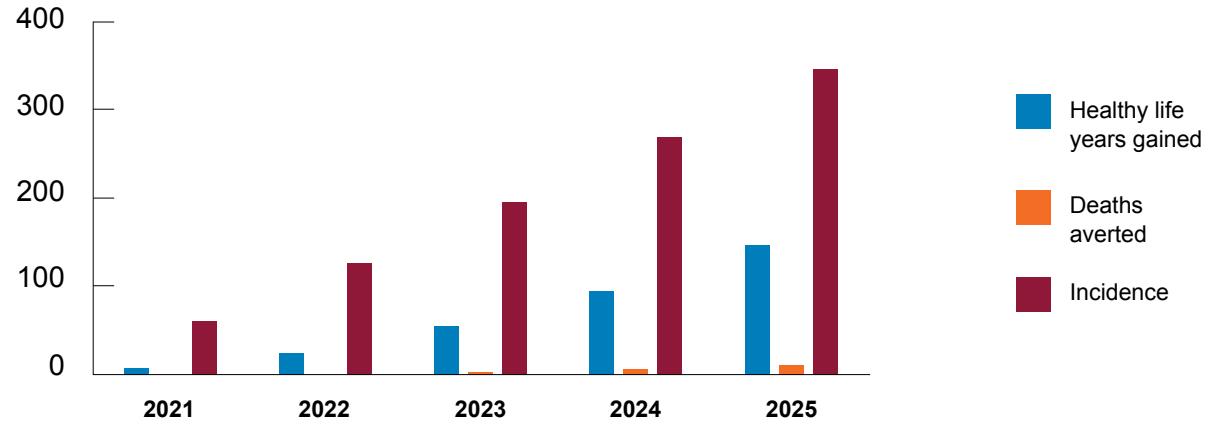


FIGURE 16: Breast cancer (all health states)

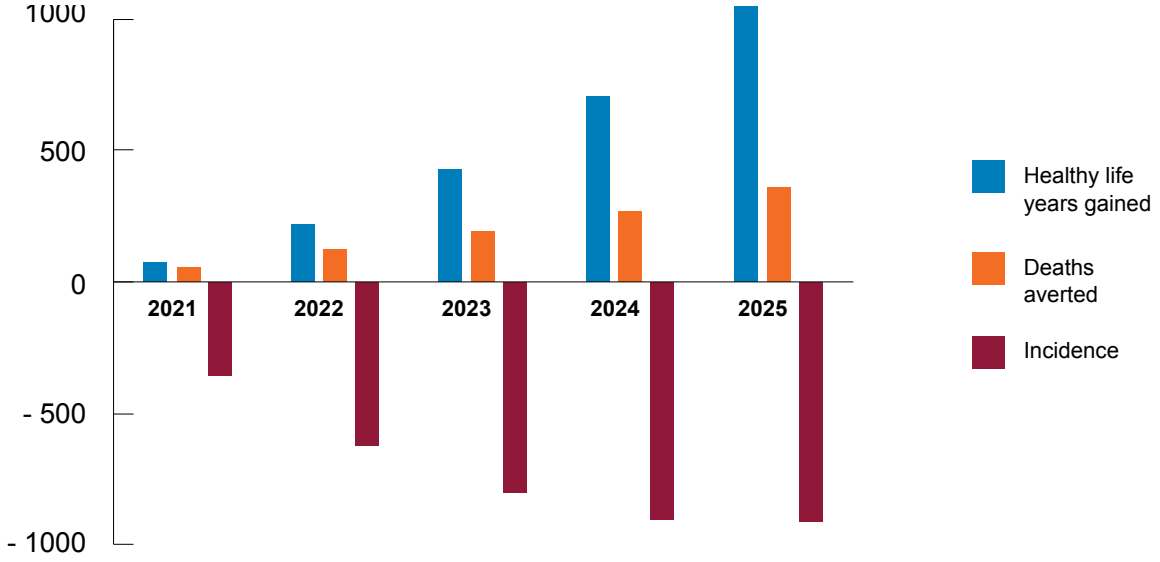
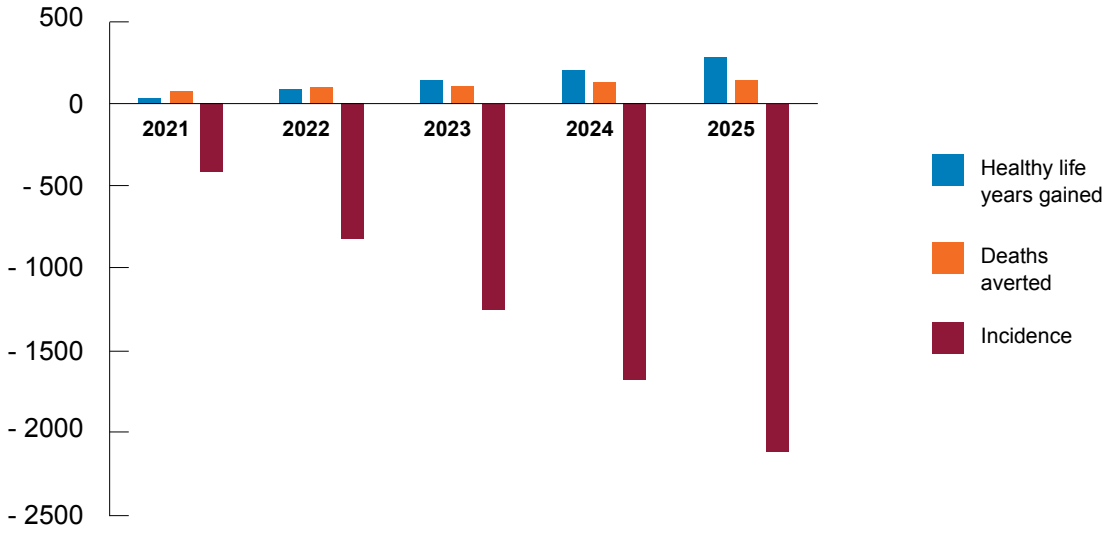


FIGURE 17: Colorectal cancer (all health states)



There are improvements in healthy years lived and deaths averted in all disease categories. These improvements are however, limited for diabetes and colorectal cancer. Increases and decreases in incidence in diabetes and CVD respectively on one side and cancers on the other, may indicate differences in timely diagnosis and levels of exposure to specific risk factors, and may require a longer period of interventions than presented here, before incidence rates begin declining.

6.4 Financing gap in NCD programming

In order to estimate the NCD financing gap in Rwanda, the following data sources were consulted: MoH budget allocations to the NCD Division; operational costs from Butaro Cancer Centre of Excellence to estimate expenditure by Partners in Health (PIH), one of the main players in NCD prevention and control in Rwanda [59]; communication with development partners such as the Clinton Health Access Initiative (CHAI); and estimates of NCD expenditure from RSSB. Of the RWF 52 billion reimbursed by RSSB in 2019-2020, the assumption was made that 40 percent of this reimbursement was related to NCDs, in reflection of Rwanda's disease burden and estimates by RSSB. Private health spending in Rwanda as a share of total health spending is 24.2 percent, so the same proportion was used to calculate private spending on NCDs (Table 12). In total, about USD 35.61 million was available for NCD programming in FY2019-20, contrasted with USD 47.42 million in planned expenditure.

TABLE 12: Estimates of NCD funding from different sources

Source	2019-20 (RWF)	2019-20 (USD)	%
MoH	650,000,000.00	670,103.09	1.9
Development partners	3,384,136,000.00	3,488,800.00	9.8
RSSB	20,800,000,000.00	22,819,528.25	64.1
Private sources	8,371,100,000.00	8,630,000.00	24.2
Total	**33,205,236,000.00**	**35,608,431.34**	**100**

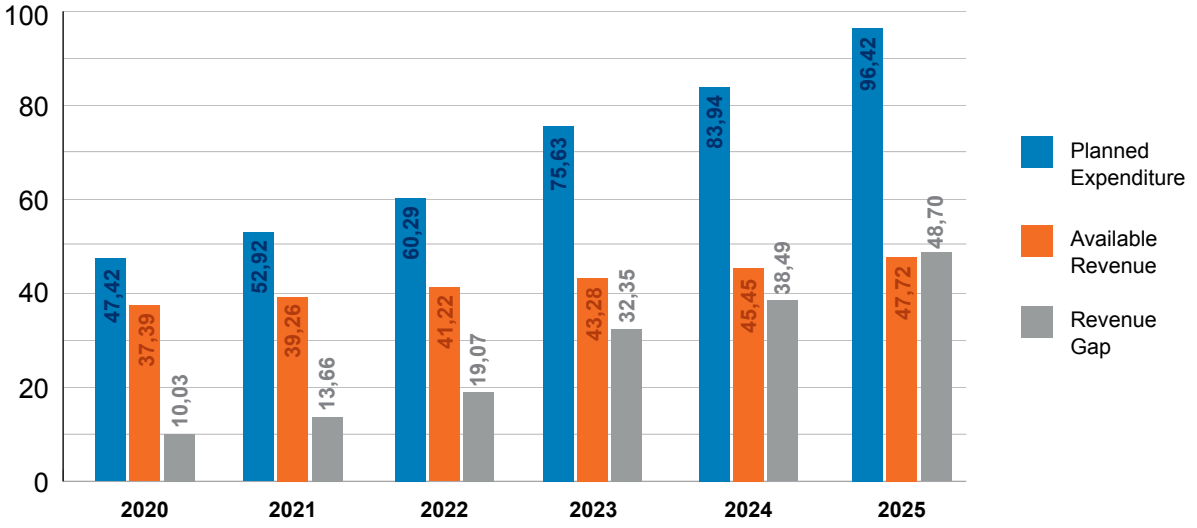
Although THE is expected to grow at an average rate of 3.4 percent, expenditure on NCDs is conservatively assumed to be at a higher rate of 5 percent due to the size of the burden and its priority. It was also assumed that the proportions of funding from the different sources will not change significantly between 2000 and 2025 (Table 13).

TABLE 13: Estimates of available revenue for NCD financing (USD)

Source	2019	2020	2021	2022	2023	2024	2025	Total (%)
MoH	670,103.09	703,608.25	738,788.66	775,728.09	814,514.50	855,240.22	898,002.23	**1.9**
Development partners	3,488,800.00	3,663,240.00	3,846,402.00	4,038,722.10	4,240,658.21	4,452,691.12	4,675,325.67	**9.8**
RSSB	22,819,528.25	23,960,504.66	25,158,529.90	26,416,456.39	27,737,279.21	29,124,143.17	30,580,350.33	**64.1**
Private sources	8,630,000.00	9,061,500.00	9,514,575.00	9,990,303.75	10,489,818.94	11,014,309.88	11,565,025.38	**24.2**
Total	**35,610,450.34**	**37,390,972.86**	**39,260,521.50**	**41,223,547.58**	**43,284,724.96**	**45,448,961.20**	**47,721,409.27**	**100**

Planned expenditure for NCDs range from USD 47.2 million in 2020 to USD 96.4 million in 2025. This leaves a funding gap ranging from USD 10 million in 2020 to USD 48.7 million in 2025 (Figure 17). An estimated revenue shortfall of RWF 44 billion or approximately USD 46 million by 2025 for the entire health sector was made based on fiscal space analysis, as opposed to financing trends, which would yield higher revenue shortfalls for the health sector.

FIGURE 18: NCD financing needs 2020-2025 (USD million)



Although the Rwandan government has put in place measures to address revenue shortfalls, especially for CBHI or mutuelle de sante, to achieve effective UHC for about 80 percent of the population, the adequacy of these measures (an additional RWF 6 billion or USD 6.2 million from the government budget and a 2.5 percent tax on profits from telecommunications) to meet the projected revenue shortfalls for the health system are unclear.

To effectively address the funding shortfall for NCDs, available revenue needs to increase at an annual rate of 20.9 percent between 2021 and 2025. If each of the major stakeholders increases their funding by about 20.9 percent, as outlined in Table 14, then funding gaps can be effectively addressed.

TABLE 14: Bridging the funding gap

Source	2021	2022	2023	2024	2025
MoH	850,662.37	1,028,450.81	1,243,397.03	1,503,267.00	1,817,449.81
Development partners	4,428,857.16	5,354,488.31	6,473,576.36	7,826,553.82	9,462,303.57
RSSB	28,968,250.14	35,022,614.42	42,342,340.83	51,191,890.06	61,890,995.08
Private sources	11,435,302.32	13,825,280.50	16,714,764.13	20,208,149.83	24,431,653.15
Total (Available)	**45,683,071.99**	**55,230,834.03**	**66,774,078.35**	**80,729,860.72**	**97,602,401.61**

The MoH and development partners need to increase their budgetary allocations for NCDs, while the RSSB and private insurance actors should expand their benefit packages to include more NCD services. These proposals are feasible with advocacy and innovative resource mobilisation initiatives, and necessary to supplement currently available NCD resources.

6.5 Conclusion

A heavy cost burden is associated with prevention and control of NCDs, particularly where treatment is concerned. Whilst it is important to meet the treatment needs of NCD patients, attention should focus on cost-effective preventive measures which have not only proven to be cheap, but also have high impact in reducing the disease burden.

Such actions should be backed by an appropriate financing plan that improves the current financing arrangements, as well as endeavours to identify and develop new financing mechanisms, to meet the rising demand of health care especially those related to NCDs.

The revenue shortfall is estimated at
RWF 44 billion by 2025, but projections for government interventions to address the shortfalls yields about
RWF 19.7 billion by 2025.

While the economy can, to a significant extent, afford the projected THE, **a series of reforms or innovations in health care financing will have to be set in motion in order to be able to meet planned expenditure. More stakeholders are needed to develop strategies for resource mobilisation for Rwanda's health sector.**

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8 ANNEXES

8.1 Programmes

FACILITIES				
	Total	**Av. no. beds**	**Av. bed occupancy rate %**	**Av. outpatient visits / year**
Health Post	885	0	0	2,688,454.00
Health Centre	509	11,212.00	90	13,781,240.00
District Hospital	36	5,940.00	90	365,519.00
Provincial Hospital	4	691	90	226,956.00
Central Hospital	8	2,123.00	90	632,408.00

OPERATING COST					
	Amount (USD)	**Amount (including electrical and water) (USD)**	**Operating costs as percent of construction cost**	**Amount (not including electrical and water) (USD)**	**Non-electrical / non-water operating expenses as % of construction cost**
Facilities delivering interventions					
Health Post	0	240	0	0	0
Health Centre	0	1,200.00	0	0	0
District Hospital	0	42,000.00	0	0	0
Provincial Hospital	0	66,000.00	0	0	0
Central Hospital	0	84,000.00	0	0	0
Outpatient and inpatient costs					
	Health Post	Health Centre	District Hospital	Provincial Hospital	National Referral
Cost per outpatient visit (RWF)	2615.02	3708.09	7443.18	10554.43	6067.01
Cost per inpatient day (RWF)	0.00	6311.31	13401.78	17489.32	56794.56

Training programmes

Type of training	Length of training (days)	Cost per person to be trained (RWF)	Trainees per workshop	Number of trainers required
Cervical and breast cancer screening and early detection (nurses and doctors)	5	268,397.00	400	4
Prostate and colorectal cancer screening (nurses and doctors)	2	219,677.20	120	2
LEEP training / cervical biopsy / colposcopy (doctors)	5	319,788.00	50	2
Biopsy and sample preservation and transportation procedures (GPs)	2	132,083.20	50	1
Breast ultrasound (GPs and nurses)	5	285,394.00	50	1
Basic cancer treatment (GPs and nurses)	5	617,344.36	55	1
Basic oncology skills - e-learning (all)	5	0	0	0
Comprehensive NCD care (+ palliative care) - Advanced (doctors)	5	285,794.00	100	2
Comprehensive NCD care - Basic - e-learning (nurses)	0	0	600	0
Comprehensive NCD, injury and disability care - Basic (nurses)	5	268,397.00	400	4
Advanced cardiac care (ECG, ECHOcardiography) (nurses and doctors)	5	319,788.00	25	1
Type 1 diabetes (nurses and doctors)	5	317,348.00	50	2
NCD screening and early detection (CHWs)	2	0	0	0
Basic life support GPs, nurses, anaesthetists, etc.)	5	316,948.00	50	1
Data management and reporting / forecasting and supply chain	5	316,948.00	50	1
Advanced /specialised trainings (2 Masters)	1	9,518,000.00	1	0
Training-of-Trainers - Palliative care and pain management	5	308,849.12	0	1
e-learning workshop	3	142,300.00	10	11

Type of Activity (RWF)	2021	2022	2023	2024	2025
Workshop for school based NCD / injuries curriculum development	18,292,196.85	0	0	0	0
Workshop to define research agenda	2,300,196.02	0	0	0	0
Workshop for research capacity building	5,312,195.68	0	0	0	0
Workshop for preservice NCDs / injuries integration curriculum	5,692,201.83	0	0	0	0
Workshop to review NCDs / injuries guidelines and protocols (2025)	5,312,195.68	0	0	0	0
NCD annual conference	5,561,995.59	5,619,847.82	5,639,716.27	5,659,000.34	5,680,037.52
Total Support Activities	**42,470,981.65**	**5,619,847.82**	**5,639,716.27**	**5,659,000.34**	**5,680,037.52**

8.2 Intervention coverage

	Baseline coverage from impact module (2020)	Target coverage used to assess impact and intervention costs (2025)
NCDs		
CVD and diabetes		
Screening for risk of CVD / diabetes	10	40
Follow-up care for those at low risk of CVD / diabetes (absolute risk: 10-20%)	10	20
Treatment for those with very high cholesterol but low absolute risk of CVD / diabetes (< 20%)	10	25
Treatment for those with high blood pressure but low absolute risk of CVD / diabetes (< 20%)	10	25
Treatment for those with absolute risk of CVD / diabetes 20-30%	10	25
Treatment for those with high absolute risk of CVD / diabetes (>30%)	5	20
Treatment of new cases of acute myocardial infarction (AMI) with aspirin	5	20
Treatment of cases with established ischaemic heart disease (IHD)	5	30
Treatment for those with established cerebrovascular disease and post stroke	5	30
Treatment of cases with rheumatic heart disease (with benzathine penicillin)	5	10
Standard glycaemic control	20	30
Intensive glycaemic control	5	10
Retinopathy screening and photocoagulation	20	30
Neuropathy screening and preventive foot care	0	0
Elimination of industrial trans fats	0	0
Breast cancer		
Basic breast cancer awareness	30	60
Screening: Clinical breast exam	10	50
Screening: Mammography	1.5	5
Diagnosis: Screened with clinical breast exam	40	60
Diagnosis: Screened with mammogram	10	20
Diagnosis without screening for breast cancer	50	55
Breast cancer treatment: Stage 1	10	20
Breast cancer treatment: Stage 2	10	30
Breast cancer treatment: Stage 3	20	30
Breast cancer treatment: Stage 4	70	75
Trastuzamab	5	20
Post-treatment surveillance for breast cancer patients	30	40
Basic palliative care for breast cancer	30	40
Extended palliative care for breast cancer	30	40
Breast cancer ultrasound	0	0
Cancers		

HPV DNA test	10	20
Visual inspection with acetic acid (VIA)	15	30
Papanicolaou test (Pap smear)	0	0
HPV DNA + VIA	15	30
HPV DNA + Pap smear	0	0
Biopsy and histopathology	20	30
Cryotherapy	10	15
Loop Electrosurgical Excision Procedure (LEEP)	10	15
Cervical cancer treatment: Stage I	10	20
Cervical cancer treatment: Stage II	10	30
Cervical cancer treatment: Stage III	20	30
Cervical cancer treatment: Stage IV	70	75
Post treatment surveillance for cervical cancer	30	40
Basic palliative care for cervical cancer	30	40
Extended palliative care for cervical cancer	30	40
Screening: Faecal immunochemical test	0	5
Screening: Faecal occult blood testing	0	5
Screening: Sigmoidoscopy	0	5
Screening: Colonoscopy	0.5	1.5
Diagnosis for colorectal cancer screened with FIT	0.5	5
Diagnosis for colorectal cancer screened with FOBT	0.5	1.5
Diagnosis for colorectal cancer screened with sigmoidoscopy	0	5
Diagnosis without screening for colorectal cancer (symptom based)	5	10
Colorectal cancer treatment: Stage I	10	20
Colorectal cancer treatment: Stage II	10	30
Colorectal cancer treatment: Stage III	20	30
Colorectal cancer treatment: Stage IV	70	75
Post treatment surveillance for colorectal cancer	20	40
Basic palliative care for colorectal cancer	30	40
Extended palliative care for colorectal cancer	30	40
Dental cleaning and preventive care	10	20
Oral cancer treatment	30	40
Prostate cancer	30	40
Respiratory disease		
Asthma: Inhaled short acting beta agonist for intermittent asthma	5	20
Asthma: Low dose inhaled beclometasone + SABA	5	20
Asthma: High dose inhaled beclometasone + SABA	5	20
Asthma: Theophylline + High dose inhaled beclometasone + SABA	5	10
Asthma: Oral Prednisolone + Theophylline + High dose inhaled beclometasone + SABA	10	20

COPD: Smoking cessation	5	10
COPD: Inhaled salbutamol	5	10
COPD: Low-dose oral theophylline	10	20
COPD: Ipratropium inhaler	10	20
COPD: Exacerbation treatment with antibiotics	5	20
COPD: Exacerbation treatment with oral prednisolone	5	10
COPD: Exacerbation treatment with oxygen	20	30
Emergency care		
Average annual emergency care needs	0.22	20
Risk Factors		
Offer to help quit tobacco use: Brief intervention	10	40
Screening and brief intervention for hazardous and harmful alcohol use	10	40
Physical inactivity: Brief advice as part of routine care	10	40
Policy interventions - Under Programme Costing		
Tobacco: Monitor tobacco use/prevention policies	20	70
Tobacco: Protect people from tobacco smoke	0	50
Tobacco: Offer to help quit tobacco use: mCessation	50	70
Tobacco: Warn about danger: Warning labels	50	70
Tobacco: Warn about danger: Mass media campaign	50	70
Tobacco: Enforce bans on tobacco advertising	50	80
Tobacco: Enforce youth access restriction	20	50
Tobacco: Raise taxes on tobacco	90	100
Tobacco: Plain packaging of tobacco products	0	50
Hazardous alcohol use: Enforce restrictions on availability of retailed alcohol	0	85
Hazardous alcohol use: Enforce restrictions on alcohol advertising	0	85
Hazardous alcohol use: Enforce drunk driving laws (sobriety checkpoints)	20	50
Hazardous alcohol use: Raise taxes on alcoholic beverages	20	85
Physical inactivity: Awareness campaigns to encourage increased physical activity	0	50
Sodium: Surveillance	0	50
Sodium: Harness industry for reformulation	0	50
Sodium: Adopt standards: Front of pack labelling	0	50
Sodium: Adopt standards: Strategies to combat misleading marketing	0	50
Sodium: Knowledge: Education and communication	0	50
Sodium: Environment: Salt reduction strategies in community-based eating spaces	0	50
Reducing obesity: Complete elimination of industrial trans fats	0	50
Reducing obesity: Replace saturated fats with unsaturated fats through reformulation, labelling, and fiscal policy	0	50
Reducing obesity: Reduce sugar consumption through taxation on sugar-sweetened beverages	0	50

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