Rwanda Biomedical Centre

Healthy People, Wealthy Nation

RAB

RWANDA

AGRICULTURE AND ANIMAL RESOURCES DEVELOPMENT BOARD

NATIONAL RABIES ELIMINATION STRATEGY (2026-2030)

2026

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List of abbreviations

CBHI	Community-Based Health Insurance
CBOs	Community Based Organizations
CHWs	Community Health Workers
CNS	Central Nervous System
CSF	Cerebrospinal Fluid
CSOs	Civil Society Organizations
DALYs:	Disability Adjusted Lost Years
DASSO	District Administration Security Support Organ
DCP	Dangerous Contact Premises
DFAT	Direct Fluorescent Antibody Test
DH	District hospital
DRCPT	District Rabies Elimination Coordination Committee
DRIT	Direct Rapid, Immunohistochemistry, Test
DRPCT	District Rabies Prevention & Control Taskforce
FAO	Food and Agriculture Organization of the United Nations
GARG	Global Alliance for Rabies Control
GDREP	Global Dog Rabies Elimination Pathway
HC	Health Centers
HDCV	Human Diploid Cell Vaccine
HMIS	Health Information System
HRIG	Human Rabies Immunoglobulin
e-IDSR	Electronic Integrated Disease Surveillance and Responses
e-CEBS	electronic Community Event – Based Surveillance system

IP	Infected Premises
M&E	Monitoring and Evaluation officer
MINAGRI	Ministry Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MOH	Ministry of Health
NAP	National Action Plan
NDVS	National Director of Veterinary Services
NGO	Non-Governmental Organization
NPHLS	National Public Health Institutes
NRCPT	National Rabies Elimination Coordination Committee
NRL	National Reference Laboratory
NRPCT	National Rabies Prevention & Control Taskforce
NTD	Neglected Tropical Disease
OIE	World Organization for Animal Health
OH	One Health
OHSC	One Health Steering Committee
PARACON	Pan-African Rabies Control Network
PCECV	Purified Chick Embryo Cell Vaccine
PEP	Post-Exposure Prophylaxis
PRPCT	Provincial Rabies Prevention &Control Taskforce
PVRV	Purified Vero Cell Vaccine
RA	Restricted Area
RAB	Rwanda Agriculture and Animal Resources Development Board
RABVs/RV	Rabies Viruses
RBC	Rwanda Biomedical Centre

RCVD	Rwanda Council of Veterinary Doctors
RDB	Rwanda Development Board
RIG	Rabies Immunoglobulin
RNA	Ribonucleic Acid
RNP	Rwanda National Police
RNRES	Rwanda National Rabies Elimination Strategy
RRT	Rapid Response Team
RPCT	Rabies Prevention and Control Taskforce
RT-PCR	Reverse Transcription-Polymerase Chain Reaction
SARE	Stepwise Approach to Rabies Elimination
SISCOM	Système d'information sanitaire des communautés/CHW information system
SPIU	Single Project Implementation Unit
SRECC	Sector Rabies Elimination Coordination Committee
TCID	Tissue Culture Infective Dose
ToR	Terms of Reference
TV	Television
TVR	Trap-Vaccinate-Release
UN	United Nations
UNEP	United Nations Environment Programme
UR	University of Rwanda
WHO	World Health Organization
WAG	Welfare for Animals Guild Rwanda

Foreword

This document describes Rwanda's strategy for the prevention, control, and elimination of dog-mediated human rabies. Rabies is a zoonotic disease that is 100% preventable because of the availability of effective vaccines for both animals and humans [1]. The disease causes approximately 59,000 human deaths worldwide annually in over 150 countries, with 95% of cases occurring in Africa and Asia. In Africa, rabies causes an estimated 25,000 deaths per year but due to underreporting and uncertain estimates, the deaths are likely grossly underestimated. The burden of disease is disproportionally borne by rural poor populations, with approximately half of cases attributable to children under 15 years of age [2,3].

Elimination of rabies from the dog population is the key target for stopping human rabies because it is the only real way to interrupt the disease's infectious cycle between animals and humans. Success in canine rabies prevention and control has been demonstrated in developing countries in Latin America and Asia, where sustained mass vaccination of dogs proved to be the most cost-effective intervention for preventing and controlling canine rabies. The cost associated with post-exposure prophylaxis in humans is high and exceeds the cost of rabies control in animals [4].

In Rwanda, efforts towards the prevention and control of human and dog rabies are increasing due to collaboration between the veterinary services and human-health sector. The Rwandan Government embracing the One Health approach and the One Health approach being approved by the cabinet presented an opportunity to promote inter-sectoral collaboration and coordination for the national rabies elimination strategy (46). Rwanda has marked rabies as a priority Neglected Tropical Disease (NTD), and this is outlined in the strategic plan for control of NTDs in Rwanda[1]. Rabies has also been prioritized as among the top three priority zoonotic diseases for elimination, providing a rationale and need for the development of this National Strategy for dog-mediated rabies elimination.
The Ministry of Health and the Ministry of Agriculture and Animal Resources through their implementing agency: Rwanda Biomedical Centre and Rwanda Agriculture and Animal Resources Development Board collaborated with other relevant ministries and International Organizations to develop this strategy for the elimination of dog-mediated human rabies. This strategy is based on activities planned following WOAH and WHO guidelines and recommendations based on a *Stepwise Approach to Rabies Elimination* (SARE) for the country to move from a rabies endemic state to a disease-free status. The main strategies in the plan focus on mass dog vaccinations, human dog population management, provision of Post Exposure Prophylaxis (PEP) to bite victims, strengthened surveillance and enhanced education and awareness on rabies.

Successful implementation of this strategy will require an multisectoral collaboration, with the involvement and support of various stakeholders in line with the One Health policy in Rwanda. Rabies prevention and control in Rwanda is the responsibility of different local actors and together with support from our regional and international partners, we are optimistic that we will prevent dog-mediated human rabies in Rwanda and achieve 'zero by 2030' in line with the global elimination goal.

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- Ministry of Health (MoH)
- Ministry of Agriculture and Animal Resources (MINAGRI)
- Rwanda Biomedical Centre (RBC)
- Rwanda Agriculture and Animal Resources Development Board (RAB)
- Rwanda Development Board (RDB)
- Rwanda Medical Supply Ltd (RMS Ltd)
- The University of Rwanda, College of Agriculture, Animal Science and Veterinary Medicine and the college of Medicine and Health Sciences
- Rwanda National Police (RNP)
- Nyarugenge, Nyagatare, Nyamagabe and Rulindo Districts Health and District agriculture and Animal Resources Development Units
- Food and Agriculture Organization (FAO)
- World Health Organization (WHO)
- Gorilla Doctors - Mountain Gorilla Veterinary Project
- King Faisal Hospital
- Welfare for Animals Guild Rwanda (WAG- Rwanda)
- Rwanda Council of Veterinary Doctors (RCVD)
- Rwanda Animal Welfare Organization (RAWO)
- New Vision Veterinary Hospital (NVVH)
- University of Global Health Equity (UGHE)

Executive summary

Rabies is a zoonotic disease caused by the rabies virus (a member of the Lyssavirus genus) and is characterized by acute progressive encephalitis [5]. This disease is almost always fatal with no available treatment once symptoms have begun, yet it is 100% preventable. Rabies is endemic across the African continent and results in an estimated 60,000 deaths per year [3].

In Rwanda, an average of 577 human dog bites are registered annually, resulting in 2-3 human deaths every year due to rabies. Rabies has been prioritized in Rwanda, through the NTD Strategic Plan 2019-2024 and One Health zoonotic disease prioritization workshops. As such, post-exposure health care services including post-exposure prophylaxis (vaccination) are insured by the Community-Based Health Insurance Scheme (CBHI), mutuelle de sante. Rabies is one of the few communicable diseases that can easily be controlled by currently available tools for veterinary and public health interventions.

Indeed, progressive control and eventual elimination is an attainable goal that can be achieved through prevention of the disease in the reservoirs, prevention of the disease in humans, effective real-time surveillance combined with proficient, decentralized, and validated laboratory testing.
The strategy aims to eliminate dog-mediated rabies human deaths in Rwanda, and this will be done through prevention and control of rabies at its source using a multi-sectoral and sustained approach by the year 2030. This strategy provides a guide for the systematic reduction of rabies risk through sustained mass dog vaccinations and sterilization, pre-and post-exposure prophylaxis, surveillance, and public education until the country is completely free of dog-mediated rabies in humans.

The strategy is based on activities planned per the Stepwise Approach to Rabies Elimination (SARE) for the country to move from an endemic state to a disease-free status [6]. SARE is a stepwise progression towards becoming a rabies disease-free country, consisting of 5 stages (Stage 1 to 5), each with a set of activities that build on each other to continuously reduce the risk of the disease, with the country being declared completely free of human dog-mediated rabies when it reaches Stage 5. The steps in rabies elimination stages include (i) adopting the national rabies elimination strategy, (ii) implementation of elimination plan in pilot districts (iii) implementation of the elimination strategy throughout the country and (iv) maintaining freedom from human-dog-mediated rabies and canine rabies. A set of targets must be reached and confirmed to move from one stage to the next. The pilot districts will give valuable lessons that will be used during the roll-out of the elimination campaign in the rest of the country.

CHAPTER ONE: INTODUCTION

1.1: Background

Rabies is a zoonotic disease, caused by the rabies virus, of the Lyssavirus genus, within the family Rhabdoviridae [7]. The disease is present in all continents and endemic in most African and Asian countries. The Rabies virus is transmitted through direct contact (such as through broken skin or mucous membranes in the eyes, nose, or mouth) with saliva or brain/nervous system tissue from an infected animal. People usually get rabies from the bite of a rabid animal. It is also possible, but rare, for people to get rabies from non-bite exposures, which can include scratches, abrasions, or open wounds that are exposed to saliva or other potentially infectious material from a rabid animal. The infection primarily circulates among domestic, feral, stray, and wild animals although all mammals are at risk. The disease is characterized by the development of severe neurological symptoms, paralysis, and death. Once symptoms of the disease develop, rabies is invariably fatal [8,9].

It is estimated to cause at least 59,000 deaths per year globally and domestic dogs contribute to 99% of human rabies deaths; about 56% of which occur in Asia and 44% in Africa, particularly in rural areas [2]. In Africa and Asia, these deaths are responsible for 1.74 million disability-adjusted life years (DALYs) lost each year. The estimated annual cost of rabies is US $ 8.6 billion 1, most of this cost being borne by Asian countries where large amounts of post-exposure prophylaxis are administered [2,10].

Rabies primarily affects rural, resource-limited populations who cannot at least afford to pay for post-exposure prophylaxis expenses. An estimated 29 million people worldwide receive post-exposure treatment annually [11]. Children <15 years of age account for 40% of people bitten by suspected rabid animals. The WHO regards rabies as a neglected tropical disease and efforts are promoted to establish wider access to appropriate post-exposure treatment for humans [2].

Africa suffers around 40% of the world's human rabies cases (estimated 24 000 every year), with nearly 10 000 of these being children and is mostly exacerbated in poor and rural communities (Ref)[2]. The history of rabies in Africa is not well documented but rabies is known to be an epidemic-prone enzootic infection in canine populations in many countries of sub-Saharan Africa. To date, no regions or countries in mainland Africa are known to be free of rabies [12]. In addition, several rabies-related viruses have been reported in the region with the most recent being two novel African lyssaviruses. It is likely that there are other unknown lyssaviruses in the region [13,14]. Unfortunately, rabies surveillance throughout most of Africa is weak, resulting in poor understanding of the disease epidemiology.

Rabies was first documented in Rwanda in 1981, the first human rabies case was recorded in a 29-year-old American woman living in Kigali, Rwanda. The prevalence of Rabies is not deeply explored; however, RBC recorded a total number of 413 dog bites

(average of 54 dog bites per month) and one death resulted from rabies countrywide in 2016 (Ref). The data in IDSR indicates a growing trend of dog bites over the last decade, however, there is inadequate mechanism for a coordinated detection prevention and treatment of rabies.

In recognition of the fact that Rabies is a zoonotic disease that requires multisector approach for its control. Leveraging on the fact that Rwanda has adopted One Health policy and strategic plan to foster an enabling environment for collaboration and coordination among human, animals, and environment by ensuring prevention, control, response and recovery from zoonotic diseases. The national rabies strategic plan is developed to guide national efforts towards the elimination of human death resulting from dog mediated rabies.

1.2 Rationale for the development of the strategy

Globally, rabies deaths in humans are projected at 59 000 per year and became a seriously neglected disease in most African countries over the past several decades. Today Africa bears 40% of the world's human rabies cases (estimated 24 000/year), with nearly 10 000 of these being children. Despite evidence that control of dog rabies through animal vaccination programs and elimination of stray dogs can reduce the incidence of human rabies, dog rabies remains common in many countries and exposure to rabid dogs is still the cause of over 90% of human exposures to rabies and of 99% of human rabies deaths worldwide.

In Rwanda, data from Integrated Disease Surveillance and Response system (IDSR) indicates the average of recorded cases of dog bites that are up to 474 annually. There is paucity of up-to-date data on the burden of rabies in Rwanda due to non-integrated surveillance, lack diagnostic capacity in both human and animal health sectors. The cost associated with post-exposure prophylaxis in humans is high and exceeds the cost of rabies control in animals through dog vaccinations and the direct medical cost associated with a complete regime of PEP in Rwanda is estimated at an average of USD 65 per person.

There is an increase in interest and focus on rabies elimination efforts at the regional and international level. In 2020, the Tripartite (WHO, OIE and FAO) now Quadripartite (WHO, WOAH, FAO and UNEP), launched the United Against Rabies Forum which is a rabies stakeholders network aiming to galvanize sustained efforts, political will, and additional resources to end human deaths from dog-mediated rabies by 2030.

The control of animal diseases including important zoonotic diseases is under the Ministry of Agriculture and Animal Resources. The National Agriculture Policy (NAP) which serves as a basis of the agriculture sector, formulates a policy agenda with specific policy actions. It suggests specific actions aiming at fighting against diseases including strengthening

disease diagnostic capacity in national veterinary and satellite laboratories and conducting research on animal diseases, vaccines, and drugs.

Rwanda has adopted the One Health Policy and strategic plan to guide the planning, monitoring, and evaluation of all activities under the One Health Approach. Rabies is one of the six prioritized One Health zoonotic disease in Rwanda. This reflects the shared commitment to enhance collaboration between environmental, animal and human health.

Rwanda has successfully suppressed rabies through sustained annual dog vaccination campaigns. However, in order to align with the current strategy, these efforts must be strengthened and sustained. Both the Ministry of Health and the Ministry of Agriculture and Animal resources are committed to this rabies elimination strategy.

1.3 Situation analysis

1.3.1 Rabies Surveillance System in the animal health sector

Rabies is an immediate reportable disease at the national and international levels. Rabies surveillance is mainly passive. At the field level, data on animal rabies is collected by the sector veterinary officer, compiled by the district veterinary officer who sends the report to Rwanda Agricultural and Animal resources development board (RAB) through the Veterinary Services Program in the Animal Resources Innovation and Technology Transfer Department. RAB reports to the MINAGRI, stakeholders in the OH-MCM and WOAH. There is no laboratory-based surveillance for rabies, although rabies case definitions exist and are well defined in the law determining the prevention and fight against contagious diseases for domestic animals in Rwanda Nº 54/2008 of 10/09/2008.

There is no specific document for rabies surveillance wildlife, which clearly states standard case definitions and data collection protocol, currently there is a veterinary unit at Rwanda Development board (RDB) in charge of disease surveillance in wildlife. In collaboration with RAB, OH-MCM, wildlife partners organize dog rabies ring vaccination carried out around National Parks and surrounding communities.

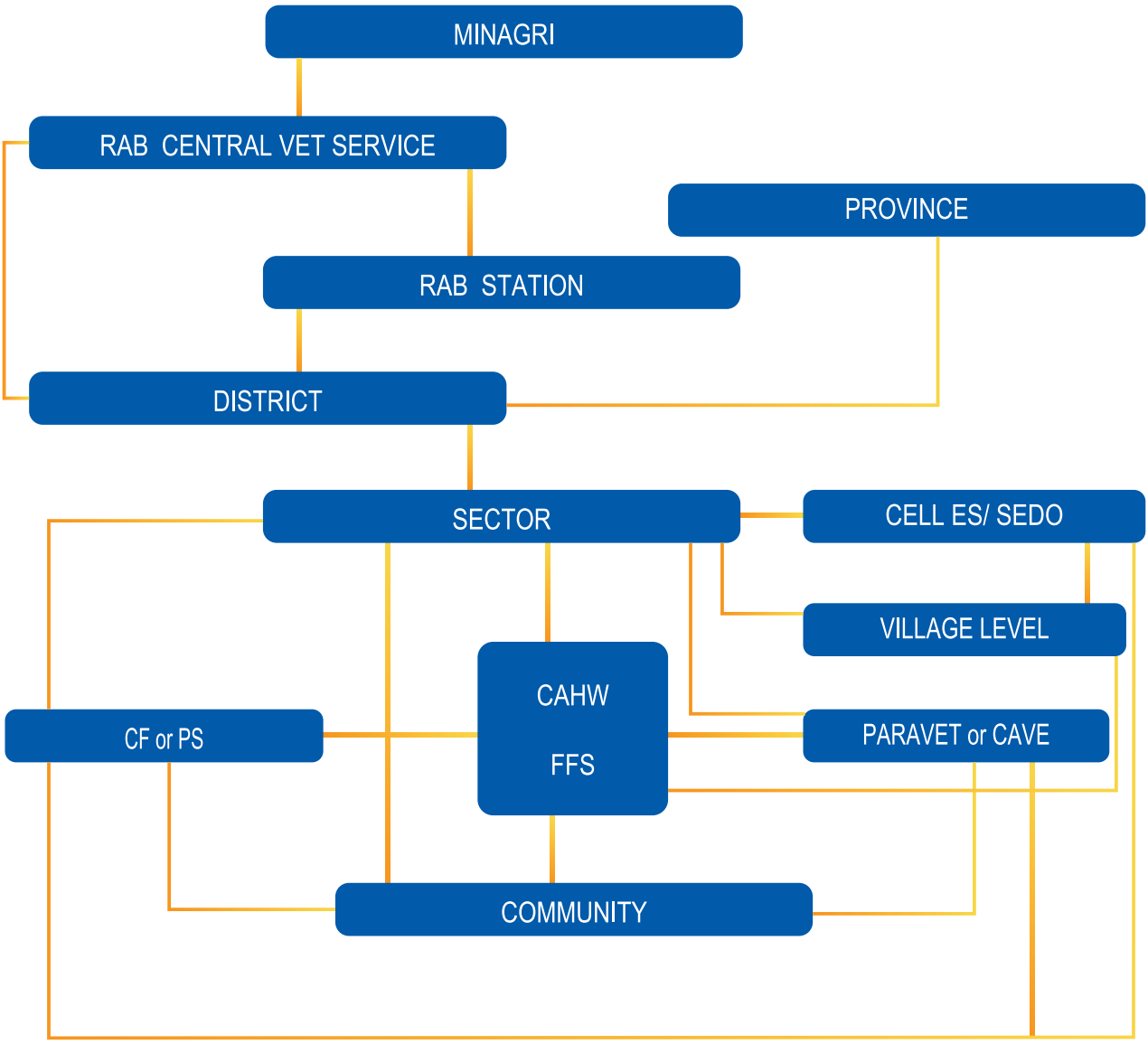

Figure 1: Information flow for disease surveillance in animal health sectors

1.3.2 Rabies Surveillance System in the Human health sector

Rabies is among priority diseases reported under the Integrated Disease Surveillance Response (IDSR) system. Dog bites are used as proxy for suspected rabies and reported through the weekly standard reporting form at the health facility levels as aggregates. The Ministry of health through the public health surveillance & emergency preparedness and response division at RBC summarizes all health facility reports and compiles IDSR weekly report sends it to relevant stakeholders. A case-based surveillance system also exists within IDSR where a standard form is used to collect epidemiological data on the suspected human cases though there is no laboratory testing.

Cases of dog bites from the community are also reported through the electronic Community Event – Based Surveillance system (e-CEBS) by community volunteers; commonly referred to as "Lookouts" to notify such health emergencies through Short Message Services (SMSs) which are sent using ordinary mobile phone. The main objective is to detect and report any suspected dog bite that has occurred in their community, at the earliest possible stages of their occurrence.

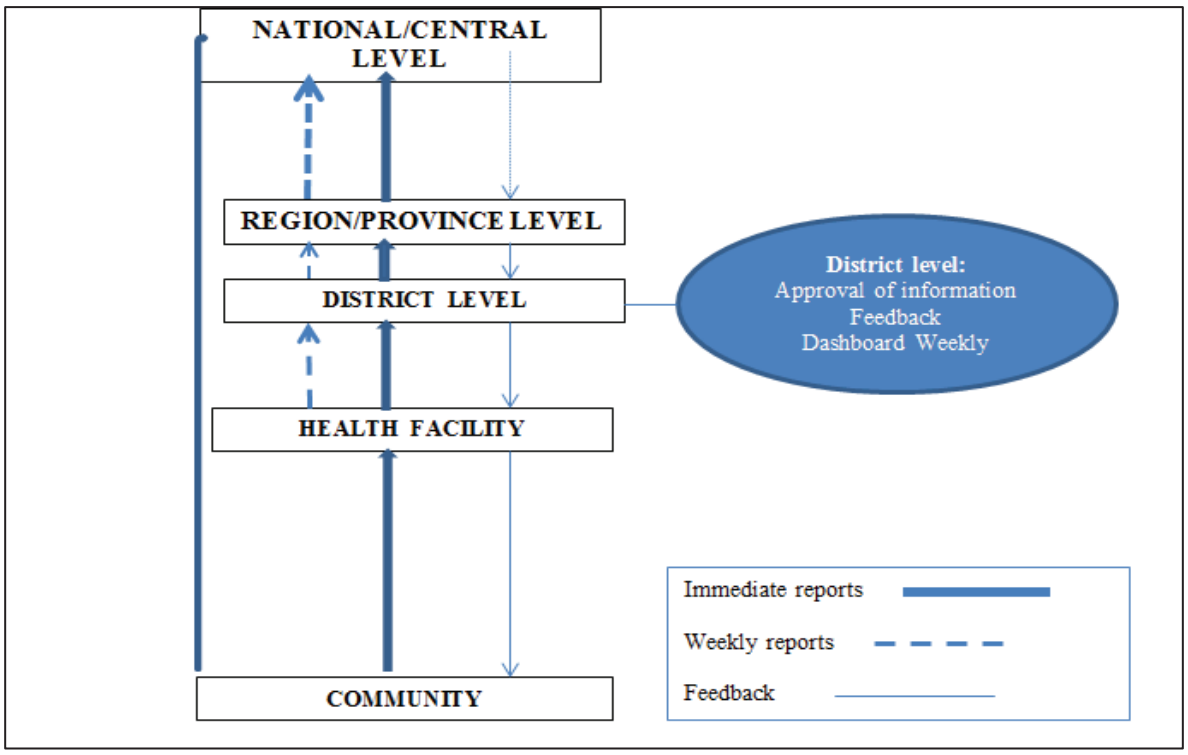

Figure 2: Information flow for e-IDSR

Source: Rwanda IDSR technical guidelines, 3rd edition 2022

1.3.3 Availability of rabies vaccines

1.3.3.1 Human

WHO recommends the use of cell culture-based rabies vaccine for post-exposure prophylaxis. This type of rabies vaccine is expensive and unaffordable for most Rwandans. In Rwanda on average 39,400 doses of nerve tissue vaccines are distributed annually among districts and referral hospitals according to Rwanda Medical supply. When administered appropriately, the cell culture-based vaccine is extremely effective at preventing rabies.

1.3.3.2 Animals

Rwanda imports on average 10,000 doses of Rabies vaccine annually for public and private veterinary professionals' use. Five brands of rabies vaccines that are available on the Rwanda market mainly inactivated virus vaccines.

1.3.4 Alignments

The development of the National rabies elimination strategy is in line with the strategic country development policies and strategies and other international agendas as outlined below:

- Sustainable Development Goals (SDGs): The 17 SDGs have built on the successes of the proceeding Millennium Development Goals. SDG 3 is relevant here where the former talks about "*ensuring healthy lives and promote well-being for all at all ages"*, and within its SDG Target 3.3, *"By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne diseases and other communicable diseases".* SDG 3 also has 13 targets established, most of them benefiting from the inter-sectoral collaboration approach of One Health.

- International Health Regulations: The IHR (2005) has as purpose and scope "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade".

- Rwanda 2050 Vision: This aspires to take Rwanda beyond high income to high living standards. Its income targets are to attain upper middle-income country status by 2035 and high-income status by 2050 with an objective of providing high-quality livelihoods and living standards. Its first pillar is dedicated to improving the quality of life of all Rwandans. Under this pillar it is clearly stated that one of the key objectives shall be ensuring that Rwandans have an environmentally friendly and climate resilient surroundings.

- National Strategy for Transformation (NST): the NST/Seven Years Government Program (2017-2024) sets the priority to enhance the Demographic Dividend through ensuring access to quality health for all. Focus will be on improving health care services

at all levels, strengthening financial sustainability of the health sector, and enhancing capacity of health workforce.

- National Agriculture policy: in its pillars, it aims at enhancing the capacity of the veterinary services for disease surveillance, vaccination, diagnostic capacity, and early warning and rapid response; promote One Health system to reduce the impact of disease emergence events on humans and livestock.

National Health Policy: aims to ensure universal accessibility (in geographical and financial terms) of equitable and affordable quality health services (preventative, curative, rehabilitative and promotional services) for all Rwandans. which focuses on equitable and affordable quality health services.

- National Wildlife Policy: focuses on maintaining wildlife resources in a healthy ecosystem.

- National One Health Policy: focuses on promoting and strengthening interdisciplinary collaboration and partnerships in One Health approach. Strengthening surveillance, early detection, rapid response, prevention, and control of zoonosis within the One Health approach and to build capacity and promote applied research at the human-animal-ecosystem interface.

1.8.7 Legal frameworks

- Nº 54/2008 of 10/09/2008 Law mandates the prevention and fight against contagious diseases for domestic animals in Rwanda. In Article 22 to 26, the law describes measures to be taken on animals considered to be infected with rabies, confirmation, surveillance of rabies, notification, and prevention of rabies diseases

- Ministerial order No 009/11.30 of 18/11/2010 on stray animals in cities and other places.

1.3.5 Current rabies prevention and control programs

In animals, Rabies prevention and control is under the responsibilities of the RAB of the various methods that have been put in place to control the disease over many years. Annual dog vaccinations are estimated to be up to 10,830 and are conducted by public, private animal health service providers and by animal welfare organizations. However, these efforts are largely not well coordinated and disjointed and have minimal impact on rabies control.
In humans, PEP is administered at the district, and referral hospitals across the country and rabies prevention and control is under the responsibilities of RBC.

To increase public knowledge of rabies in humans and animals and to offer advice and recommendations on how to prevent the disease, numerous initiatives have been launched and continuing actions are also being carried out. The climax of public awareness and free dog vaccination against rabies is during the World Rabies Day celebrations, an annual event held on 28th September every year. This brings together all stakeholders to share various efforts, achievements, research and way forward in rabies control.

1.4 Challenges in rabies control in Rwanda

1.4.1 Laboratory capacity

Diagnosis of rabies is largely dependent on the diagnosis of rabid animals, however, there is a limited diagnostic capacity for rabies confirmation in humans and animals in the country due to insufficient technical and laboratory resources. The National Veterinary Laboratory is the only laboratory that can conduct rabies testing in animals using an immunofluorescence test. However, there are limitations in human resource capacity, sample collection, packaging, and transportation to diagnostic laboratories. Countrywide, there are several human and animal laboratories that have the capacity to confirm rabies. However, these laboratories lack protocols for testing and reagents for timely testing of specimens.

1.4.2 Surveillance

There is underreporting of suspected rabies cases in dogs and other livestock due to the passive nature of the surveillance system. While in the IDSR system for humans, dog bites are used as a proxy for suspect rabies cases. However, dog bites are under-reported in health facilities resulting in missed cases and misclassification of deaths due to rabies. There is also inadequate sharing of surveillance data between the human and animal health sectors at local and national levels, resulting in lost opportunities for prevention of human rabies, early detection and timely response to rabies outbreaks.

1.4.3 Low awareness of rabies prevention and control

There is low awareness among the public, human and animal health workers on management of dog bite wounds, as well as pre- and post-exposure prophylaxis. There is low priority among policy makers on the importance and burden of rabies and the cost-effectiveness of rabies control through dog vaccination and other control measures. This makes rabies a neglected disease with less focus on its burden and control. Knowledge of the benefits of responsible dog ownership and dog population management among the public is low. Again, there is little understanding among the public of the value of timely response following dog bites and the value of timely PEP.

1.5.4 Inadequate Research on Rabies

There is inadequate research that can enhance rabies control. Data on important topics such as the economic benefits of rabies control, knowledge, attitude and practices, dog demographics and ecology, burden of rabies, dog bite incidence, sources and supply chain for anti-rabies vaccine and PEP, the economic benefits of rabies control and alternative dog population management methods are lacking.

1.4.6 Limited supply of rabies vaccine

The lack of a vaccine forecasting framework results in an inadequate supply and consequently limitations in timely vaccine supply. In addition, Pre and Post Exposure

Prophylaxis vaccines are only available at District and referral hospitals which is a constraint to the population in the remote areas. There is also lack of standardized vaccination certificate for dogs and cats. In addition to limited supply, gaps in supplied vaccine efficacy and effectiveness are another challenge.

1.5 Opportunities for rabies prevention and control in Rwanda

1.5.1 Establishment of One Health multisectoral coordination mechanism

Rabies is one of the six zoonotic priority diseases of which preparedness and response plans should be developed. In addition, Rwanda OH Strategic Plan in 2014 (OHSP I, 2014–2018), OHSP II, 2021–2026) and OH Policy which was approved in 2021 creates a OH platform (also known as the OH governance framework) and facilitate collaborations amongst sectors. This has created a unique opportunity for the development and implementation of the rabies elimination strategy.

1.5.2 Development of Neglected Tropical Diseases (NTDs) Strategic Plan 2019-2024

Rwanda Biomedical Centre developed a strategic plan 2019-2024, targeting control and elimination of all NTDs in the country. Rabies is one of the targeted diseases in the strategic plan. The objectives targeting rabies were to conduct Rabies burden assessment and to adapt the national strategy according to findings.

1.5.3 Increased Interest in Rabies Elimination by Partners

The burden of rabies and the fact that rabies is a neglected zoonotic disease that affects almost all mammalian species has resulted in many different agencies working together towards its control and elimination by 2030. Additionally, there is global recognition that human rabies is 100% preventable and that it can be eliminated by sustained mass dog vaccination. The partners interested in rabies prevention in Rwanda include national and major international agencies. Rabies prevention and control programs have already eliminated rabies in several countries and areas in the world. The operational strategies and cost/benefit analysis made for these programs can be used as a model for Rwanda where canine rabies continues to be endemic.

1.5.4 International, regional, and sub-regional rabies elimination networks

The Pan-African Rabies Control Network (PARACON), under the secretariat of GARC, was established in 2014 as the regional network for Sub-Saharan African countries to provide a platform to facilitate and promote coordinated and sustainable rabies control strategies and programs.

Sub-Regional Eastern Africa Rabies Network has also been formed recently including, Kenya, Ethiopia, Tanzania, Rwanda, and Uganda, to discuss how individual country strategies could be coordinated to address the unique challenges that are faced within the network [41]. The Stepwise Approach Towards Rabies Elimination and the Global Dog Rabies Elimination Pathway tool (figure 1) - a planning tool for mass dog vaccination has been used to stimulate discussion and planning to achieve the elimination of rabies by 2030. Regional approaches to rabies control are of value since neighboring countries can share their unique challenges while at the same time common approaches can be developed and resource-mobilization strategies implemented.

1.5.5 Research and capacity building

Rwanda has got medical, veterinary, and public health high learning institutions that can contribute to the prevention and control of rabies activities as well as the research agenda. Moreover, Universities can greatly contribute to the research and development of training materials for in services and pre-services health personnel.

1.6 SWOT ANALYSIS

STRENGHTS	WEAKNESSES
• There is a strong political commitment including the country's vision to become a center of medicine and vaccine manufacturing. • Multi-sectoral collaboration (MOH, MINAGRI, RBC, RAB, Rwanda FDA, RBS...) • Basic infrastructures (Laboratory, Buildings and Equipment) • Availability of Vaccines and annual vaccination calendar • Disease notification system (e-IDSR and e-CEBS)	• Inadequate laboratory capacity • Inadequate use and monitoring of surveillance system • Low awareness level of rabies prevention and control • Limited research development and coordination capacity on Rabies • Limited supply of rabies vaccine • Lack of identification and registration database for dogs and cats • cultural beliefs limitation
OPPORTUNITIES	**THREATS**
• Partner organizations willingness • Quadripartite organizations (WHO, FAO, WOAH, UNEP) • Mutual recognition framework regarding transboundary disease (EAC member states) • NTD's strategic plan recognizes rabies as Priority. • Rabies is one of the prioritized zoonotic diseases. • The is a strong regulatory environment for vaccine manufacturing international, regional, and sub-regional networks.	• Lack of active participation of external partners • Vaccination failure Inadequate implementation of vaccination among EAC member states

CHAPTER TWO: STRATEGIC FRAMEWORK

2.1. Vision

Rwanda free from human and domestic animal deaths due to Rabies by 2030.

2.2. Mission

Embrace one health approach to progressively strengthen Rwanda capacity to detect, prevent, control, and respond to rabies toward its elimination in human and domestic animal populations.

2.3. Strategic objectives

2.3.1. General objective

The general objective of this strategy is to ensure adequate capacity for detection, prevention, control and response to human and domestic rabies for its ultimate elimination.

2.3.2. Specific objectives

The specific objectives of this elimination strategy are:

- To enhance prevention and control capacity for rabies through awareness raising, effective mass vaccination of dogs and cats, and systematic pre and post prophylaxis for humans.
- To strengthen laboratory diagnostic capacity, surveillance systems, and response capacity to rabies.
- Promote operational research on rabies for advocacy, communication and evidence-based policy making.
- Strengthen the human capacity for an effective rabies elimination.
- Enhance responsible dogs and cats' ownership and law enforcement.

2.4. Guiding Principles of the Strategy

This rabies elimination strategy shall be guided by the following principles:

- One Health approach that brings together all relevant sectors to work together around common goals.
- All interventions for rabies elimination will be centered on saving human and domestic animal health.
- Sustained annual mass dogs and cats' vaccination of at least 70% of the dog and cats' populations.

2.5. Strategic Interventions

2.5.1. To enhance prevention and control capacity for rabies

Necessary efforts will be taken to enhance prevention and control capacity for rabies through effective mass vaccination of dogs and cats, awareness raising and systematic pre and post prophylaxis for humans through:

- Institutionalizing rabies vaccination for domestic dogs and cats.
- Promoting universal access to pre-exposure prophylaxis to high-risk groups including animal health workers, animal handlers and catchers, wildlife wardens, and laboratory staff handling the virus and potentially infected material.
- Promoting universal access to treatment of dog bite wounds and Rabies Immunoglobulin (RIG).
- Developing and enforcing standard meat inspection measures for meat produced from rabid livestock.
- Developing and enforcing standard measures for joint management and confinement of biting dogs/cats.
- Develop a rabies communication plan: to identify audience target, developing and testing messages, selecting media and channels for distribution of messages.
- Enhance public awareness on the risk of rabies, its prevention, management of dog bite wound, post exposure healthcare seeks behavior, dogs, and cat's welfare,

2.5.2. To strengthen laboratory diagnostic capacity, surveillance systems, and response capacity to rabies.

The laboratory diagnostic capacity, surveillance systems, and response capacity to rabies will be strengthened through:

- Strengthening of existing joint surveillance system between human, animal, and wildlife by enhancing collection and reporting of data on animal bites, rabies cases in humans and animals as well as surveillance for adverse events following vaccinations.
- Strengthening cross border surveillance for rabies information exchange.
- Promoting interconnectivity and strengthen networking of laboratory in the human and animal health sector.
- Enhancing testing capacity for rabies of diagnostic laboratories at all levels in human, animal, and wildlife sectors
- Designing and enforcing standards field sample collection and laboratory diagnosis for rabies in both humans and animals.

2.5.3. Promote operational research on rabies for advocacy, communication and evidence-based policy making.

Operational research will be promoted to gather evidence to inform the design of the strategy implementation, document best practices and guide optimal solutions to strategy challenges. The strategic interventions will include:

- Create a conductive environment for rabies related research.
- Create mechanisms and fora (i.e., bulletins, conferences, and policy briefs) to share rabies-related researched findings.
- Ensure efficient use of rabies related research findings to achieve and maintain the state of freedom from rabies.
- Promote and foster research conduct in following areas:
  - Rabies baseline surveys to determine rabies burden, ecology, demography as well as population knowledge, attitude, and practices vis a vis the rabies.
  - Studies on the basic parameters of dog populations including the number owned per household, turnover, accessibility, and ownership status in different dog and cats' sub-populations.
  - Studies on control and elimination strategies of stray dogs.
  - Post -vaccination surveys to access vaccination coverage.
  - Impact assessment surveys to determine the reduction in rabies incidence, PEP usage and cost-benefit analysis.
  - Assessment of best approaches to increase awareness about rabies and to improve healthcare-seeking behavior for PEP.
  - Evaluation of the rabies surveillance and response system

2.5.4. Strengthen the human capacity for an effective rabies elimination.

Effective rabies elimination in humans, dogs and cats requires to upgrade and build strong capacities for human resources.

This will be done through:

- Mapping the need in capacity building for catalyzing the elimination of rabies by 2030

- Create enabling environment for building capacity of community, health, and veterinary professionals on rabies elimination (bite wound management, effective prevention of rabies in human and animals, vaccines manufacturing, surveillance systems)

2.5.5. Enhance responsible dogs and cats' ownership and law enforcement.

Managing dogs and cat population is key in reducing the straying population and thus the risk to exposure to rabies for humans and animals.

This will be done through:

- Establishing census registration and tracking systems of dogs and cats.
- Availing and implementing a sustainable plan to control the population of dogs and cats.
- Ensuring that basic dogs and cats' welfare are respected by their owners.
- Enforcing regulations related to dogs and cat ownership responsibilities.

2.5.1 To strengthen capacity for coordination of rabies elimination.

Partnerships and multi-sectoral collaboration among all relevant stakeholders in rabies control including human, animal, and environmental health. These stakeholders include government ministries and agencies, Non-Governmental Organizations (NGOs), international and regional organizations, private sector and community which will be essential for successful implementation of the rabies elimination program.

A National Rabies Elimination Coordination Committee (NRCPT) at the national level under the leadership of the One Health multi-sectoral coordination mechanism (OH-MCM) will be established as a multi-sectoral task force that will provide stewardship in the implementation of the different components of the National Rabies Elimination Strategy (NRES). Similar committees will be set up at provincial (4) and district (30) levels with representation from the various sectors to coordinate implementation of the rabies elimination strategy at lower levels of the local Government.

2.5.2 To prevent and control rabies.

2.5.2.1. Strategic objective: To prevent and control rabies in dogs and cats

The principal method of rabies control is mass vaccination of susceptible pets and has been successfully used to eliminate rabies in several areas of the world including parts of South Africa, the Philippines, Tunisia, Western Europe and North and Latin America.

Vaccination of domestic dogs and cats at the human-domestic animal and wildlife interfaces is also very crucial so as to prevent the transmission of rabies from the wildlife reservoirs to adjacent human and domestic animal communities.

Studies and observations have shown that vaccinating 70% of the dog population in each area reduces rabies incidence significantly, as it achieves herd immunity to break the transmission cycle. Specific rabies control activities (area of interventions) include:

- Dogs and cats census and registration
- Identification of vaccinated dogs and cats
- Mass dogs and cats' vaccination campaigns
- Stray dogs and cats' control
- Local treatment of dog bite wounds to reduce the rabies virus load at the site of a bite by washing the wound using soap and running water for 15 minutes [43].
- Provision of Rabies Immunoglobulin (RIG) to provide passive immunity before the vaccine takes effect after high-risk exposure for category three bites.

- Human anti-rabies vaccines (use of the cell culture vaccines based on the management guidelines will be enhanced).
- Apply standard meat inspection measures in case of a rabid meat producing livestock.
- Apply standards measures for joint management and confinement of biting dogs/cats.
- Pre-exposure vaccination to be provided to high-risk groups including animal health workers, animal handlers and catchers, wildlife wardens, and laboratory staff handling the virus and potentially infected material. Continuous education of health professionals on proper dog bite wound cleaning and management, and administration of PEP will be an essential component of training health workers to provide effective prevention of human rabies.

2.5.2.2. Strategic objective: Prevention of rabies in humans

This strategy aims at protecting those at the highest risk of exposure, through the prompt provision of post-exposure prophylaxis and treatment. Specific activities will include early and appropriate post-exposure treatment through:

- Local treatment of wounds to reduce the rabies virus load at the site of a bite by washing the wound using soap and running water for 15 minutes [43].
- Provision of Rabies Immunoglobulin (RIG) to provide passive immunity before the vaccine takes effect after high-risk exposure for category three bites.
- Human anti-rabies vaccines (use of the cell culture vaccines based on the management guidelines will be enhanced).
- Apply standard meat inspection measures in case of rabid meat producing livestock.
- Apply standards measures for joint management and confinement of biting dogs/cats.
- Pre-exposure vaccination to be provided to high-risk groups including animal health workers, animal handlers and catchers, wildlife wardens, and laboratory staff handling the virus and potentially infected material. Continuous education of health professionals on proper dog bite wound cleaning and management, and administration of PEP will be an essential component of training health workers to provide effective prevention of human rabies.

2.5.3. To strengthen surveillance and response using a One Health approach.

Effective rabies surveillance in animals and humans allows for early detection and reporting of cases and is vital for initiating timely response and enabling informed decisions about when and where to intensify rabies control efforts.

Surveillance is essential in generating data to monitor the progress or impact of the control efforts, which is essential for their sustainable implementation as well as ascertaining rabies-free status. Outbreak response should involve both human and animal health personnel from relevant government institutions and other partners.

Activities (strategic interventions) will include:

- Strengthening of existing joint surveillance system between humans, animal and wildlife by enhancing collection and reporting of data on animal bites, rabies cases

in humans and animals as well as surveillance for adverse events following vaccinations.
- Cross border surveillance will also be a key component such as information exchange.
- Involvement of government, private sector, and the community as partners in surveillance and response.
- Development of the outbreak preparedness and response plan indicating the roles of the human, domestic animals, and wildlife sectors.

2.5.4. To strengthen rabies diagnostic laboratory capacity.

Laboratory capacity assessment of different aspects of the laboratories such as the existing workforce, established diagnostic and logistic capacity, available equipment and facility infrastructure will be conducted. The report will be used to determine the needs for appropriate training, facility improvements, and diagnostic algorithms to ensure the safety of all facility staff.
This will be achieved through:
- Mapping and needs assessment of diagnostic facilities in the human and animal health sector.
- Strengthening national and sub-national laboratory capacity for rabies diagnostic testing in human animal and wildlife
- Establishing/enhancing inter-sectoral, inter-laboratory networking (public and animal health)
- Strengthening capacity for field sample collection and laboratory diagnosis for rabies in humans and animals.

2.5.5. Advocacy, communication, and social mobilization

Raising community awareness on rabies enables prevention and helps reduce the risk of exposure and infections through acquiring practices on proper basic first methods for dog-bites or cat bites/scratch and seeking medical attention.
Increasing reporting of potentially rabid animals, sample collection and practices of responsible dog ownership will be enhanced.
The objectives of this strategy will therefore be:
- To raise public awareness about the risk of rabies and how to prevent it
- To improve awareness and practices on dog-bite management,
- To improve healthcare-seeking behavior for PEP
- Awareness raising on vaccination at the human-domestic animals and wildlife interfaces.
- To inform and educate at-risk groups including public health workers, veterinarians, animal handlers and catchers, wildlife wardens, and laboratory staff handling the virus and potentially infected material.
- Educate the community on basic pet welfare and responsible pet ownership.
- Promotion of responsible dog ownership through intensive community sensitization using radio, TV, posters, mobile phone texts and using public announcement systems in communities, primary schools, churches, mosques, marketplaces, hospitals, and other institutions

- Develop a communication plan to identify audience targets, develop and test messages, selecting media and channels for distribution of messages.

2.5.6. Conduct and promote operational research.

Operational research will serve to gather evidence to inform the design of the strategy implementation, document best practices and guide optimal solutions to strategy challenges. The output will ensure the best use of available resources and provide evidence of what is achievable in community-based settings.
These areas of research will include but not limited:

1. Rabies baseline surveys determine disease burden, ecology as well as knowledge attitude and practices vis a vis rabies.
2. Studies on the basic parameters of dog populations including the number owned per household, turnover, accessibility, and ownership status in different dog and cats' sub-populations.
3. Studies on control and elimination strategies of stray dogs.
4. Post -vaccination surveys to access vaccination coverage.
5. Impact assessment surveys to determine the reduction in rabies incidence, PEP usage and cost-benefit analysis.
6. Assessment of best approaches to increase awareness about rabies and to improve healthcare-seeking behavior for PEP.
7. Evaluation of the rabies surveillance and response system

2.5.7. Resource mobilization

To implement this strategy, resources required will include human resources, infrastructure, and finances. Procurement of diagnostics, vaccines, immunoglobulins, animal birth control, operational research, surveillance, response, monitoring and supervision will be done.
A funding and resources mobilization plan will be developed to ensure funds are available for every stage of the plan. Funding will be sourced from the line government ministries as well as local, regional, and international partners.
Targeting advocacy and communication to policy makers and stakeholders is essential in securing funds to implement the elimination strategy.

CHAPTER THREE: IMPLEMENTATION PLAN OF THE STRATEGY

3.1 GOVERNANCE AND COORDINATION STRUCTURE

3.1.1 Coordination of implementation of the strategy

The elimination of rabies requires the working together of different sectors within government, non-government organizations, academic and research institutions, international partners, and the general community.

To coordinate the implementation of the strategy the lead ministry MINAGRI in collaboration with One Health Multi-sectoral coordinating mechanism (OH-MCM) will establish a multi-sectoral Rabies Prevention and Control committee (RPCC) at the national, district and sector levels. To implement the Rwanda rabies elimination strategy,

technical teams will be formed at the national, district and sector levels. This will include the National Rabies Prevention and Control Committee (NRPCC), District Rabies Prevention and Control Committee (DRPCC) and Sector Rabies Elimination Coordination Committee (SRECC). The NRPCC will coordinate activities with DRPCC to ensure the implementation of the strategy. In turn the DRPCC will establish and supervise the Sector Rabies Elimination Coordination Committee (SRECC) that work closely with community and animal health workers.

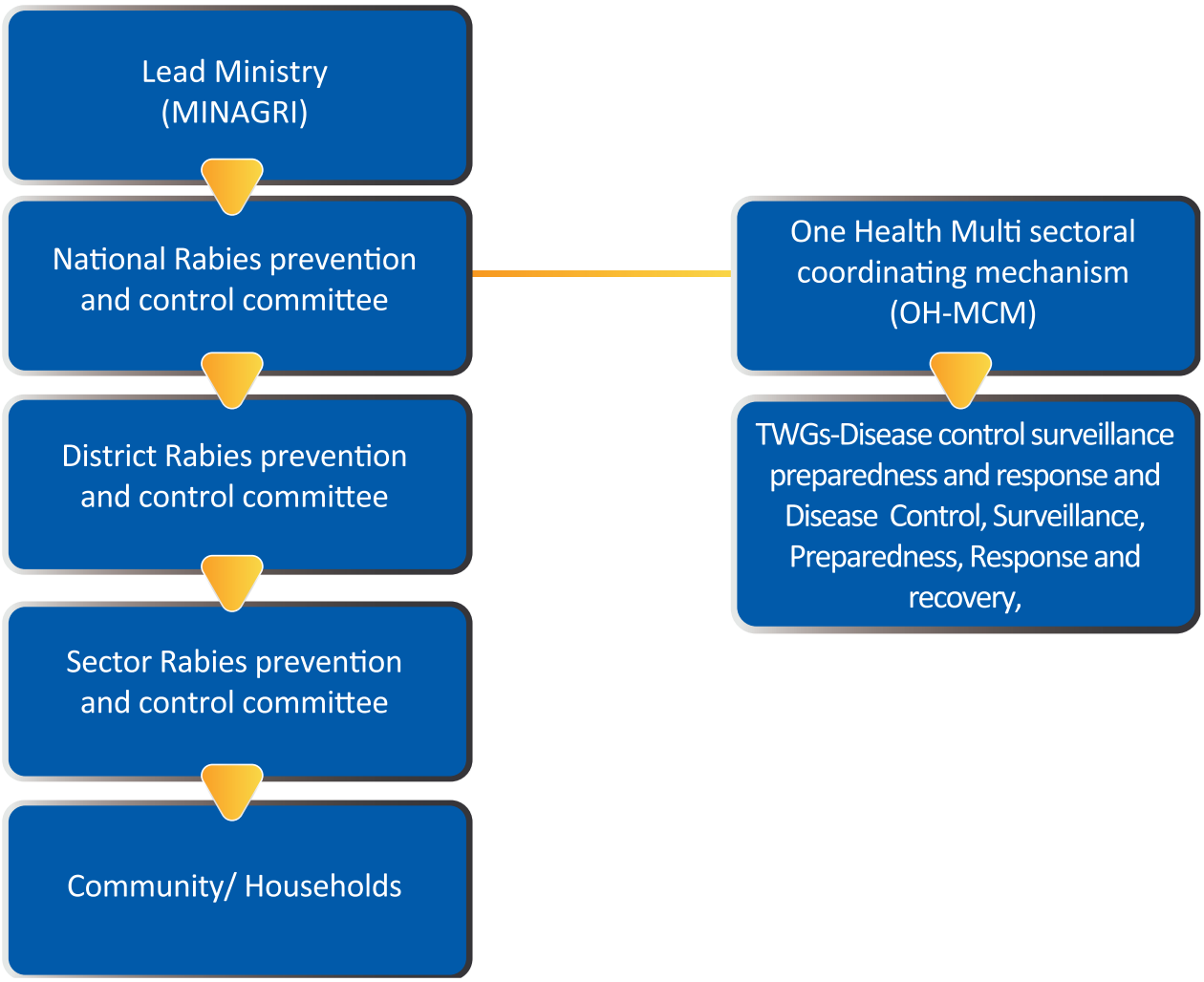

Figure 3: Implementation and coordination chart

3.1.2 Establishment and Composition of the NRPCC (National Rabies Prevention and Control Committee)

The membership will comprise of representation from various organizations including line ministries, government implementation agencies, Professional bodies, local non-governmental organizations and international development partners that are involved in human and animal health. The committee will be chaired by MINAGRI in collaboration with OH-MCM and will be composed by various expert in Human health, veterinary sciences, epidemiology, social sciences, education, environmental health sciences, medical and veterinary products supply chain and security organs.

3.1.2.1 Roles of the NRPCC (National Rabies Prevention and Control Committee)

- Guide the District Rabies Prevention and Control Committee (DRCPC)
- Resource mobilization
- Training and capacity building
- Monitor and evaluate implementation of the strategy.
- Provide technical advice on rabies prevention, control and elimination to the disease control surveillance preparedness and response and recovery technical working group as stated by One health Policy.
- Provide regular updates to the public and stakeholders on the implementation of the rabies elimination strategy.
- Propose changes and amendments to regulations and laws on rabies prevention and control.
- Assure linkage between different technical institutions/organizations involved in rabies prevention and control.

3.1.3 Establishment of District Rabies Prevention and Control Committee (DRPCC)

DRCPC will be formed at the district level to coordinate activities of the Rwanda rabies elimination strategy chaired by Vice Mayor of Social Development who will nominate a multi sectorial members from human, animal, environment, education, security organs and other district partners that deemed to be relevant. The committee will be comprised of 11 members with various expert in Human health, veterinary sciences, epidemiology, social sciences, education, environmental health sciences, medical and veterinary products supply chain, security organs and Community opinion leader member.

3.1.3.1 Roles of District Rabies Prevention and Control Committee

- Plan and coordinate national rabies elimination strategy activities at the district level.
- Monitor and evaluate rabies elimination strategy activities.
- Provide progress report to the NRPCC.
- Resource mobilization
- Supervise activities of the SRECC

- Provide regular updates to the public on the progress of the rabies elimination strategy.

3.1.4 Establishment and composition of the Sector Rabies Elimination Coordination Committee

The SRECC will be formed at the sector level to coordinate activities of the national rabies elimination strategy chaired by sector executive secretary who will nominate a multi sectorial members from human, animal, environment, education, security organs and community health and Animal health workers. The committee will be comprised of at least 11 members with various expert in Human health, veterinary sciences, social affairs, education, environmental health sciences, and security organs. Medical and veterinary Private sectors and community health and community animal health workers.

3.1.4.1 Roles of the Sector Rabies Elimination Coordination Committee

- Coordinate rabies elimination strategy activities at the sector level.
- Monitor and evaluate the implementation of rabies elimination strategy activities at the Sector level.
- Provide progress report to the DRPCC.
- Conduct awareness and mobilization at the household level.
- Provide regular updates to the public on the progress of the rabies elimination strategy.

3.2 RESOURCES MOBILIZATION PLAN

The line ministries, in collaboration with the OH-MCM (Office of the High-Minister for Country Management), will oversee the mobilization of resources and establish priorities for resource allocation. Resources will be sourced from various channels, such as the government budget, international developmental organizations, NGOs, private foundations, and corporate sponsorships. Proposals will be developed and presented to potential donors, highlighting the importance of eliminating rabies and the expected impact of the program.

All stakeholders in the sector will collaborate in the planning, implementation, monitoring, reporting, and resource mobilization and allocation processes. This cooperative approach aims to foster sustainable and effective development partnerships, strengthen national ownership, promote country-led programs, monitor performance, and align resources and timelines with country systems.

To ensure long-term availability of resources for rabies elimination efforts, a sustainability plan will be formulated. This plan may involve integrating rabies control activities into existing healthcare systems, creating a funding and resource mobilization plan, mapping

the resources of key partners, advocating for local capacity for vaccine production, strengthening surveillance networks, and fostering collaborations to secure continued funding and support.

3.3 MONITORING AND EVALUATION PLAN

Monitoring and evaluation are crucial components of the rabies elimination strategy. They provide the means to track, assess, and review progress towards achieving the strategic objectives of the National Rabies Elimination Strategy 2023-2030. The implementation of the strategy will be assessed using performance indicators.

To establish a monitoring mechanism, a comprehensive annual action plan will be developed, which will serve as a basis for monitoring and evaluation. Progress reports from sub-recipients will be the primary source of data for monitoring, reviewing, and evaluating the strategy's effectiveness. A monitoring and evaluation matrix will be created to define the specific indicators that will be monitored and evaluated.

At all levels of the program, routine monitoring, periodic assessments, and evaluations will be conducted to ensure that the implementation aligns with the plan. Objectively verifiable indicators will be utilized to measure progress and assess the achievements of the elimination program, in accordance with the regional strategy. An external independent evaluation will be carried out to evaluate progress and identify any necessary modifications to the program's strategies.

The National Rabies Prevention and Control Committee (NRPCC) will hold quarterly performance monitoring meetings to review the implementation progress against the targets set in the annual work plan. These meetings will address any implementation challenges and make adjustments as needed. Stakeholder performance monitoring and review meetings will also take place bi-annually at the county and district levels. These meetings will review performance against targets, address any constraints to implementation, and refocus activities if required. Additionally, the NRPCC will conduct annual data quality audits and ensure that routine rabies surveillance data is made available to the relevant parties.

3.5 IMPLEMENTATION ARRANGEMENT AND COSTING PER STRATEGIC OBJECTIVES.

IMPLEMENTATION FRAMEWORK AND BUDGETING PER STRATEGIC OBJECTIVE

Strategic Objective 1: To enhance prevention and control capacity for rabies through effective mass vaccination of dogs and cats; awareness raising, and systematic pre and post prophylaxis for humans												
1. Institutionalizing mass rabies vaccination for domestic dogs and cats												
#	Activity	Baseline (2024)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
1.1	Set up dog and cat vaccination sites at cell level	0	14837	Number of sites created and operational	RAB	Districts	X					82,712,864.00
1.2	Conduct country-wide bi-annual mass rabies vaccination for domestic dogs and cats	0	12	Rabies vaccine coverage achieved (Target 70%)	RAB	MINAGRI, RBC, DISTRICT, FAO, WHO, LOCAL NGO	X	X	X	X	X	60,000,000.00

1.3	Develop, review and update guidelines for vaccination	0	1	Number of developed and available documents	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X		8,448,918.00
1.4	Validation and sharing the guidelines on rabies vaccination	0	1	Number of validated guidelines and shared documents	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X		8,448,918.00
1.5	Create a gold list of rabies vaccines	0	1	Gold list created and shared	RAB		X		0
1.6	Create electronic logistic management system for rabies vaccines	0	1	Electronic logistic management system created and functional	MINISANTE	MINAGRI, RAB, RBC	X		75,000,000.00

1.7	Avail continuously vaccines for animals	0	6	Number of animal vaccines availed	RAB	Rwanda FDA	X	X	X	X	X	7,000,000.00
2. Promoting universal access to Pre-exposure prophylaxis to high-risk groups												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
2.1	Create an electronic register of high-risk groups	0	1	Electronic register available	MINISANTE	MINAGRI, RAB, RBC	X					30,000,000.00
2.2	Avail continuously vaccines for humans	0	6	Number of human vaccines availed	RMS Ltd	RBC	X	X	X	X	X	7,000,000.00
2.3	Provide pre-exposure prophylaxis to all high-risk groups	0	3	Number of vaccinated staff	RBC	MINISANTE	X	X	X	X	X	30,000,000.00

3. Promoting universal access to treatment of dog bite wounds and post exposure prophylaxis												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
3.1	Review/update dog bite and rabies management guidelines, standards, and protocols	0	1	Number of guidelines developed	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					6,448,918.00
3.2	Validation workshop for dog bite and rabies management guidelines	0	1	Number of guidelines validated	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					6,448,918.00

3.3	Avail rabies immunoglobuli n (RIG) and sero-vaccines at health center level	0	6	Number of immunoglobulin (RIG) and sero-vaccines availed	RMS Ltd	RBC	X	X	X	X	X	7,000,000.00
4. Developing and enforcing standard meat inspection measures												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
4.1	Elaborate guidelines on meat inspection for meat from animals suspected of being rabid	0	1	Number of guidelines developed	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					8,448,918.00

4.2	Validation guidelines on meat inspection	0	1	Number of guidelines validated	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X				8,448,918.00
5. Establishing and enforcing standard measures for joint management and confinement of biting dogs/cats											
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
5.1	Develop guidelines for confinement of biting dogs and cats	0	1	Number of guidelines developed	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					8,448,918.00
5.2	Validate developed guidelines for confinement	0	1	Number of guidelines validated	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					8,448,918.00

5.3	Elaborate guidelines for dog and cat bite reporting and investigations	0	1	Number of guidelines developed	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X		8,448,918.00
5.4	Validate guidelines on bite reporting and investigation	0	1	Number of guidelines validated	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X		8,448,918.00
5.5	Establish quarantine facilities for isolation at sector level	0	416	Number of dog/cat isolation stations established	RAB	Districts	X		416,000,000.00

5.6	Purchase 4 mobile jeep for transportation of suspected rabid dogs and cats	0	4	Number of mobile jeeps purchased	RAB	MINAGRI, RBC	X		X			280,000,000.00
5.7	Acquire dog and cats handling materials kits	0	1	Number of handling materials kits	RAB	MINAGRI, RBC	X	X				108,200,000.00
6. Develop rabies communication plan												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
6.1	Elaborate and implement National Rabies Elimination Communication Plan	0	1	Number of plans developed	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					8,448,918.00

6.2	Validation of the national rabies elimination communication plan	0	1	Number of plans validated	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					8,448,918.00
7. Enhance public awareness on the risk of rabies												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
7.1	Develop educational campaign materials	0	5	Number of educational materials developed	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X					16,897,836.00
7.2	Conduct awareness-raising sessions	0	6	Number of awareness sessions conducted	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X	X	X	X	X	2,912,000,000.00

7.3	Organize World Rabies Day	1	6	Number of World Rabies days celebrated	RAB	RBC, RDB, FAO, WHO, LOCAL NGOs	X	X	X	X	X	7,000,000.00
Strategic Objective 2: To strengthen laboratory diagnostic capacity, surveillance systems, and response capacity to rabies												
8. Strengthening of the existing joint surveillance system												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
8.1	Develop/Update integrated surveillance guidelines for rabies	0	1	Updated rabies surveillance guidelines	RBC/RAB/RDB	FAO, WHO, LOCAL NGOs	X		X			19,424,000.00
8.2	Integrate rabies surveillance data into the existing IDSR platform	1	1	Animal rabies data integrated in IDSR	RAB	RBC, RDB	X					0

8.3	Collect, analyze, report and share data on animal bites, rabies cases	1	1	Reports on rabies data	RBC	RAB, RDB	X	X	X	X	X	0
8.4	Organize bi-annual meetings for data sharing and feedback	0	12	Reports of bi-annual meetings	RBC	RAB, RDB, FAO, WHO, LOCAL NGOs	X	X	X	X	X	19,424,000.00
9. Strengthening of the existing rapid response team during the outbreak												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
9.1	Establish joint rapid investigation and response teams	0	30	Number of teams established	RBC	RAB, RDB	X	X	X			0

9.2	Develop guidelines for a multisectoral rapid response team	0	1	Guidelines developed	RBC	RAB, RDB	X				29,136,000.00
9.3	Conduct training of professionals on rapid response guidelines	0	30	Number of personnel trained	RBC	RAB, RDB, FAO, WHO, LOCAL NGOs	X	X	X	X	117,460,000.00
9.4	Conduct tabletop simulation exercises for rabies outbreak response	0	2	Number of exercises conducted	RBC	RAB, RDB	X				19,424,000.00
9.5	Conduct a dissemination workshop of the developed guidelines	0	1	Report of the dissemination workshop	RBC	RAB, RDB	X				9,712,000.00

10. Strengthening cross-border surveillance												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
10.1	Organize bi-annual meetings for cross-border coordination	0	12	Reports of meetings	RBC	RAB, RDB, FAO, WHO, REGIONAL NGOs	X	X	X	X	X	67,948,000.00
10.2	Develop standardized reporting formats for sharing rabies data	0	1	Reporting formats developed	RBC	RAB, RDB, FAO, WHO, REGIONAL NGOs	X					9,712,000.00
10.3	Develop cross-border response plans	0	1	Response plans developed	RBC	RAB, RDB, FAO, WHO, REGIONAL NGOs	X					9,712,000.00

10.4	Establish a regional network for rabies information exchange	0	1	Regional network established	RBC	RAB, RDB, FAO, WHO, REGIONAL NGOs	X					9,712,000.00
11. Promoting interconnectivity and strengthen networking of laboratories												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
11.1	Develop/Update standardized laboratory guidelines	0	1	Updated laboratory guidelines	RBC	RAB, RDB, FAO, WHO, LOCAL NGOs	X					9,712,000.00
11.2	Organize annual meetings for laboratory professionals	0	6	Reports of annual meetings	RBC	RAB, RDB, FAO, WHO, LOCAL NGOs	X	X	X	X	X	67,948,000.00

11.3	Organize training on shared laboratory techniques	0	3	Number of personnel trained	RBC/RAB/RDB	LOCAL NGOs		X		X		58,950,000.00
12. Enhancing testing capacity for rabies												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
12.1	Conduct comprehensive baseline assessment	0	1	Report of baseline assessment	RBC	RAB, RDB, LOCAL NGOs						19,650,000.00
12.2	Conduct laboratory equipment maintenance	0	6	Number of equipment items maintained	RBC/RAB/RDB	LOCAL NGOs	X	X	X	X	X	117,460,000.00

12.3	Develop standardized guidelines for rabies diagnosis	0	1	Guidelines developed and approved	RBC	RAB, RDB, LOCAL NGOs	X					29,475,000.00
12.4	Develop internal quality control measures	0	1	Quality control measures developed	RBC/RAB/RDB	LOCAL NGOs		X				19,650,000.00
12.5	Organize annual assessment of laboratory performance	0	6	Reports of annual assessments	RBC/RAB/RDB	LOCAL NGOs	X	X	X	X	X	88,425,000.00
13. Designing and enforcing standards for field sample collection												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)

13.1	Develop/Update comprehensive guidelines for sample collection	0	1	Guidelines developed and approved	RBC/RAB/RDB	LOCAL NGOs						29,475,000.00
Strategic Objective 3: Promote operational research on rabies												
14. Create a conducive environment for rabies-related research												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
14.1	Develop and implement applied research agendas	0	4	Research agendas implemented	RBC/RAB/RDB	LOCAL NGOs, academic institutions		X		X	X	19,424,000.00
14.2	Conduct students' competitions on rabies	0	6	Number of competitions conducted	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	117,900,000.00

14.3	Provide support to researchers	0	6	Number of researchers supported	Local/international NGOs		X	X	X	X	X	103,566,000.00
14.4	Create incentive mechanisms for collaborative research	0	6	Number of incentives created	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	0
15. Create mechanisms to share rabies-related research findings												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
15.1	Create research bulletins or newsletters	0	6	Number of bulletins created	RBC/RAB/RDB		X	X	X	X	X	0
15.2	Organize/participate in scientific conferences	0	3	Number of conferences attended	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X		X		X	67,948,000.00

15.3	Develop policy briefs	0	6	Number of policy briefs developed	RBC/RAB/RDB		X	X	X	X	X	0
15.4	Encourage publication in peer-reviewed journals	0	6	Number of meetings with researchers	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	0
15.5	Establish a dedicated website for sharing findings	0	1	Website established	RBC/RAB/RDB	LOCAL NGOs, academic institutions						0
15.6	Foster partnerships for knowledge sharing	0	6	Number of partnership MOUs signed	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	0
16. Ensure efficient use of rabies-related research findings												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)

16.1	Organize annual exchanges between researchers and policymakers	0	6	Number of meetings organized	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	58,272,000.00
16.2	Foster international collaboration	0	6	Number of international MOUs signed	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	0
17. Promote research in different fields												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
17.1	Conduct rabies baseline surveys	0	1	Report of baseline survey	RBC/RAB/RDB		X					19,650,000.00
17.2	Conduct studies on dog population parameters	0	6	Number of studies conducted	RBC/RAB/RDB		X	X	X	X	X	117,460,000.00

17.3	Conduct studies on control strategies for stray dogs	0	3	Number of studies conducted	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X		X		X	103,566,000.00
17.4	Conduct post-vaccination surveys	0	6	Number of surveys conducted	RBC/RAB/RDB	LOCAL NGOs, academic institutions	X	X	X	X	X	0
17.5	Impact assessment surveys	0	3	Number of assessments conducted	RBC/RAB/RDB			X		X		29,136,000.00
17.6	Conduct an evaluation of the surveillance and response system	0	1	Number of evaluations conducted	RBC/RAB/RDB		X	X	X	X	X	74,394,000.00
Strategic Objective 4: Strengthen the human capacity for effective rabies elimination												
18. Mapping the need in capacity building												

#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
18.1	Conduct a comprehensive capacity assessment	0	1	Report of assessment	RBC/RAB/RDB							19,424,000.00
18.2	Develop tailored training programs	0	1	Training materials developed	RBC/RAB/RDB		X	X				117,460,000.00
18.3	Establish mechanisms for professional development	0	2	Professional development mechanism in place	RAB, RBC		X		X		X	58,272,000.00
19. Create enabling environment for building capacity												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)

19.1	Conduct annual trainings of vet professionals on spraying/neutering	0	6	Number of trainings conducted	RAB		X	X	X	X	X	116,544,000.00
19.2	Train public health workers on dog bite wound management	0	6	Number of trainings conducted	RAB, RBC, RDB		X	X	X	X	X	133,920,000.00
19.3	Conduct public awareness campaign on seeking treatment	0	6	Number of campaigns conducted	RAB, RBC, RDB		X	X	X	X	X	969,988,120.00

19.4	Capacity building of health professionals on rabies treatment	0	3	Number of trained professionals	RBC			X		X		707,724,900.00
19.5	Train meat inspectors on rabid animal identification	0	3	Number of inspectors trained	RAB, RICA			X		X		19,424,000.00
19.6	Public awareness on responsible pet ownership	0	3	Number of campaigns conducted	RAB, RBC, RDB			X		X		484,994,060.00
19.7	Public awareness on meat inspection importance	0	3	Number of campaigns conducted	RAB, RICA		X		X		X	15,811,200.00

19.8	Training healthcare providers on dog bite treatment	0	3	Number of trainings conducted	RBC		X	X	X	X	X	58,272,000.00
19.9	Training veterinary professionals on vaccination techniques	0	3	Number of trainings conducted	RAB		X	X	X	X	X	67,921,200.00
19.1	Training on rabies surveillance guidelines	0	1	Number of trainings conducted	RBC, RAB, RDB			X				103,566,000.00
19.11	Awareness campaigns on dog/cat registration	0	2	Number of campaigns conducted	RAB, RBC, RDB							15,811,200.00

19.12	Public awareness on spaying and neutering	0	2	Number of campaigns conducted	RAB		X					15,811,200.00
19.13	Annual educational campaigns on pet welfare	0	6	Number of campaigns conducted	RAB	NGOs	X	X	X	X	X	94,867,000.00
Strategic Objective 5: Enhance responsible dogs and cat ownership and laws enforcement												
20. Establish census registration and tracking systems												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
20.1	Develop and implement registration guidelines	0	1	Guidelines developed and implemented	RAB	NGOs	x					19,424,000.00

20.2	Set up an electronic registration system	0	1	Fully developed system	RAB	NGOs	X					100,000,000.00
20.3	Operationalization of the registration system	0	1	Functional registration system	RAB	NGOs	x	X				40,000,000.00
20.4	Establish a centralized database	0	1	Centralized database established	RAB	NGOs	x	X				0
20.5	Purchase electronic microchip and readers	0	1	Number of microchips purchased	RAB	RBC, RDB, LOCAL NGOs	x	X				100,000,000.00
20.6	Organize registration campaigns	0	5	Number of campaigns conducted	RAB	RBC, RDB, LOCAL NGOs	X	X	X	X	X	79,056,000.00
21. Avail and implement sustainable plan for population control												

#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
21.1	Develop and implement spay/neuter programs	0	6	Number of programs implemented	RAB	RBC, RDB, LOCAL NGOs	X	X	X	X	X	94,867,200.00
21.2	Establish and operationalize dog/cat shelters	0	1	Shelters established and operational	RAB	RBC, RDB, LOCAL NGOs	X					150,000,000.00
22. Ensure that dogs and cats' welfare are respected												
#	Activity	Baseline (2026)	Target (2030)	Indicator of Progress	Lead Institution	Partners	2026	2027	2028	2029	2030	Budget Total (RWF)
22.1	Develop regulations on dog/cat ownership responsibilities and breeding regulation	0	1	Developed and approved regulations	RAB	RBC, RDB, LOCAL NGOs		x				19,424,000.00

22.2	Conduct educational campaigns on ownership responsibilities	0	6	Number of campaigns conducted	RAB	RBC, RDB, LOCAL NGOs	X	X	X	X	X	94,867,000.00
22.3	Organize quarterly inspections for enforcement	0	6	Number of quarterly inspections conducted	RAB	RBC, RDB, LOCAL NGOs	X	X	X	X	X	222,048,000.00
22.4	Establish a reporting mechanism for violations	0	1	Number of reported cases	RAB	RBC, RDB, LOCAL NGOs	X	X	X	X	X	0

Table 2: implementation arrangement for the elimination of rabies in Rwanda.

Timelines	Stages in the rabies progressive control pathway	
2030	Stage 5	Maintain freedom from rabies status in humans and dogs
2029-2030	Stage 4	Maintain freedom from dog-mediated human rabies elimination. Elimination of canine rabies
2026-2028	Stage3	Rabies risk reduction through full-scale implementation of the control strategy
2024-2025	Stage 2	Implementation of the strategy in pilot areas
2021-2023	Stage 1	Development and adoption of the National Rabies control strategy Preparation of its Implementation
<2021	Stage 0	Rabies suspected to be present. Scanty information available

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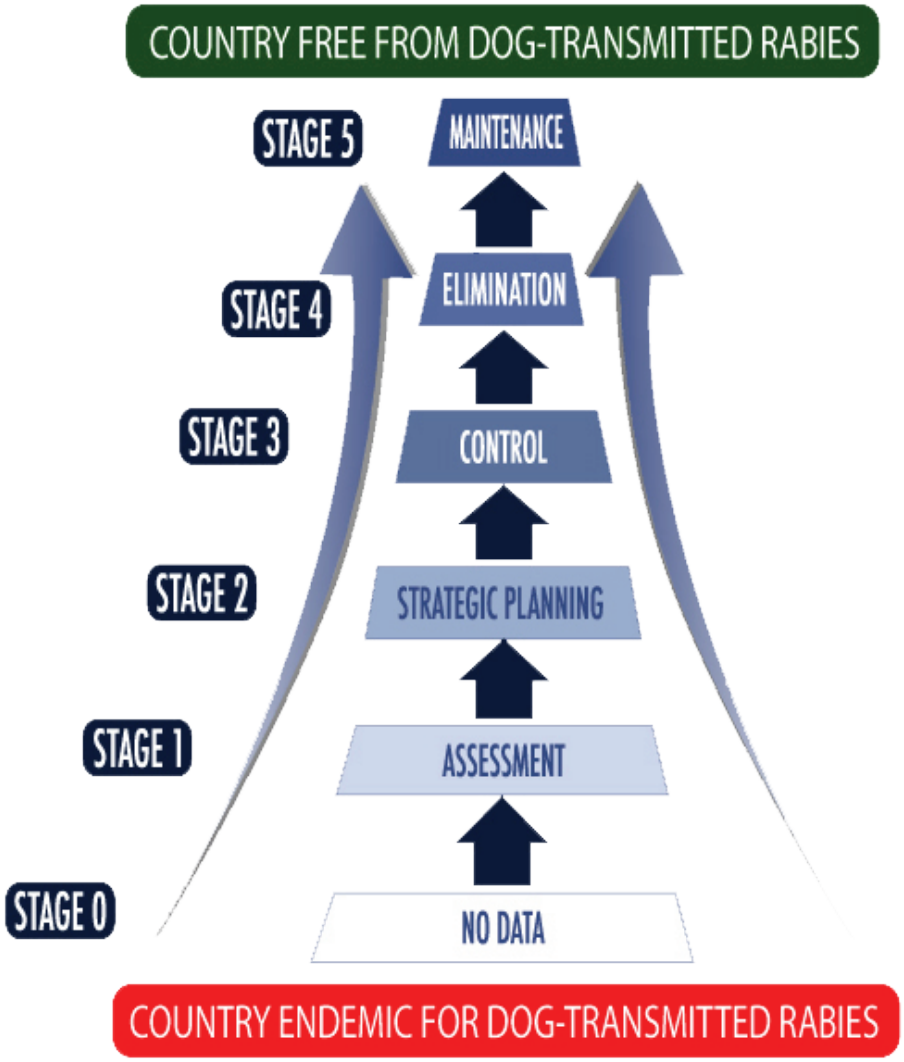

ANNEX 1 - The SARE diagram depicting the pathway to rabies elimination, beginning at Stage 0, where little or no data is available for rabies, and progressing through different stages until Stage 5 where a country is declared free from dog-mediated rabies.