



NATIONAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE

[2026 - 2030]

Royal Government of Bhutan



NATIONAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE

[2026 - 2030]

Royal Government of Bhutan

FOREWORD

Antimicrobial resistance (AMR) has emerged as one of the most pressing global health challenges of our time and a growing concern for healthcare professionals worldwide. Common infections that were once easily treatable are increasingly becoming resistant to available antimicrobial medicines, resulting in prolonged illness, increased mortality and significant social and economic consequences. The situation is further exacerbated by the limited development of new antibiotics, most of which belong to existing classes and remain costly. Antimicrobials are indispensable for managing infectious diseases. They are equally vital for protecting animal health and welfare and ensuring the production of safe food. However, inappropriate and excessive use of these medicines accelerates the development of resistance undermining their effectiveness and threatening human, animal and environmental health.

In Bhutan, antimicrobials continue to play a crucial role in safeguarding the health of people and animals, preventing disease transmission and contributing to national food security. Yet, AMR has increasingly become a national concern. It is no longer a distant global problem, it is a reality that demands a united, strategic and sustained national response. Recognizing this urgency, Bhutan has taken proactive steps to strengthen its response through a multi-sectoral One Health approach. The revised National Antimicrobial Resistance Action Plan (AMR NAP) 2026–2030 provides a coherent framework that brings together the human health, animal health and environmental sectors to combat AMR through coordinated, evidence-based and sustainable actions. This revised AMR NAP builds upon earlier AMR NAP 2018-2022 initiatives and lessons learned, addressing past challenges and limited coordination. It outlines strategic priorities to strengthen governance, surveillance, infection prevention and control, antimicrobial stewardship, awareness and research ensuring an integrated and resilient national response. The Ministry of Health in collaboration with the Ministry of Agriculture and Livestock and other key One Health stakeholders, will lead the coordination and implementation of this Action Plan. However, its success will depend on the active collaboration, shared responsibility and continued commitment of all sectors and partners. This document is the culmination of extensive

consultations, technical deliberations and the collective vision of Bhutan's medical and veterinary professionals, AMR Policy Fellows and One Health stakeholders. It represents not only a plan but a shared commitment to preserve the efficacy of life-saving medicines, protect the health of our people and animals and ensure a safer and healthier future for all.

Tashi Delek



(Pemba Wangchuk)

Chairperson

Inter-Ministerial Committee for One Health

ACKNOWLEDGEMENT

Several people were involved in revising the AMR National Action Plan (AMR NAP 2026-2030). The contributions of the following members are acknowledged in the development of this document:

1. Dr. Rinzin Pem, Chief Veterinary Officer, AHD, DOL, MoAL
2. Dr. Dorji Tshering, Chief Medical Officer, PGH, MOH (Policy fellow – Human Health)
3. Dr. N Dahal, AH Specialist, AHD, DOL, MoAL (Policy fellow – Animal Health)
4. Dr. Sonam Zangmo, ID Physician, National AMR focal for HH, JDWNRH
5. Mr. Jigme Tenzin, Chief Regulatory Officer, MPD, BFDA, MOH
6. Mr. Kunhal Gurung, AEO, Dept of Environment and Climate Change, MoENR
7. Dr. Nima Wangdi, Deputy CVO, NVH Motithang, MoAL
8. Dr. Chimi Jamtsho, Regional Veterinary Officer, RVHEC, Pling, MoAL
9. Ms Kinley Gyem, Deputy Chief Lab Officer, RCDC, MOH
10. Mr Govinda Rimal, Assistant Laboratory Officer, NFTL, BFDA, MOH
11. Mr. Gem Gyeltshen, Deputy Chief Regulatory and Quarantine Officer, BFDA, MOH
12. Dr. Nima Gyeltshen, Veterinary Officer, NCAH, MoAL
13. Mr. Nima Tshering, Sr Laboratory Technician, JDWNRH, MOH
14. Ms. Yeshey Wangmo, Project Assistant, FF PMU, MOH

This document has been developed under the guidance of the Fleming Fund Policy fellows and with the financial support from the Fleming Fund

TABLE OF CONTENTS

Foreword	i
Acknowledgement	iii
1. Introduction	1
2. Rationale	2
3. Scope	3
4. Guiding Principles	4
5. Situational Analysis	5
5.1 Governance	5
5.2 Rational Use of Antimicrobials	6
5.3 Education and Awareness	7
5.4 Research and Evidence Generation	8
5.5 Collaboration	8
5.6 Control and Regulation	9
6. Objectives	9
Objective 1	10
Objective 2	11
Objective 3	11
Objective 4	12
Objective 5	13
Objective 6	13
Objective 7	14
7. Implementation Matrix	15
8. References	23

1. Introduction

Antimicrobials are indispensable for the prevention and treatment of infectious diseases in humans, animals and plants. They are also vital to ensuring food safety, animal welfare and public health security. However, their irrational and excessive use has led to the emergence and spread of antimicrobial resistance (AMR), threatening the effective prevention and treatment of infections resulting in prolonged illness, higher mortality and significant social and economic consequences.

Globally, AMR is recognized as one of the greatest threats to health, food security and development. The World Health Assembly (WHA) has adopted a series of resolutions on rational use of drugs and AMR containment calling for coordinated global action. The Global Action Plan on AMR (2015) urges all Member States to develop and implement national action plans based on a One Health approach. This commitment was reinforced through the 2016 UN General Assembly Political Declaration on AMR and the 2024 High-Level Meeting of the 79th UNGA, where world leaders pledged to reduce human deaths associated with bacterial AMR by 10% by 2030. Within the WHO South-East Asia Region, AMR prevention and containment were further emphasized through the 2011 Jaipur Declaration and remain a flagship regional priority.

In Bhutan, AMR has been recognized as a major cross-sectoral health challenge for over a decade. Early efforts led jointly by the Ministry of Health (MoH) and the Ministry of Agriculture and Livestock (MoAL) with support from WHO, FAO, WOA and the Fleming Fund focused on awareness raising, surveillance initiation and laboratory capacity development. The first National AMR Action Plan (2018–2022) supported by Fleming Fund established a national governance framework and catalyzed coordinated action. Key achievements included the formation of the National AMR Technical Committee (NATC) and Inter-Ministerial Committee for One Health (IMCOH) and implementation of AMR surveillance in both human and animal health sectors and development of national antimicrobial treatment guidelines and stewardship programs. Bhutan also made substantial progress in antimicrobial stewardship with over 80% of human antibiotic use falling under the WHO “Access” category exceeding global benchmarks.

Surveillance capacity has expanded significantly with five human health and four animal health laboratories identified for the national AMR surveillance network. Laboratory quality systems have been strengthened through development of standard operating procedures and subscription to external quality assurance schemes (EQAS). Efforts are underway to integrate data from electronic Patient Information System (ePIS), National Early Warning, Alert and Response Surveillance (NEWARS) with Veterinary Information System (VIS). The country has also maintained low levels of antimicrobial consumption in animals (3.83 mg per population correction unit), the lowest in South Asia, reflecting effective governance and regulation of antimicrobial use.

Despite these achievements, challenges remain. These challenges include limited infection prevention and control (IPC) infrastructure, staff shortages, fragmented data systems, fiscal constraints and the complexity of sustaining integrated One Health AMR surveillance. Inadequate awareness among farmers, suboptimal enforcement in private sectors and emerging multidrug-resistant healthcare-associated infections further underscore the urgency for renewed and coordinated efforts.

The National AMR Action Plan 2026–2030 builds upon these achievements and lessons. It aligns with the Global Action Plan on AMR, Bhutan's One Health Strategic Action Plan 2025–2030, and the 13th Five-Year Plan priorities. The AMR NAP provides a strategic roadmap to strengthen governance, surveillance, IPC, antimicrobial stewardship, awareness and research while ensuring sustainable financing and multisectoral collaboration. Through a unified One Health approach, it aims to preserve the effectiveness of existing antimicrobials and safeguard the health and well-being of humans, animals and the environment for future generations.

2. Rationale

The AMR is a complex evolving threat that transcends the boundaries of human, animal and environmental health. It undermines decades of medical, veterinary and agricultural progress posing a serious risk to public health, food security and sustainable development. Addressing

AMR, therefore, demands a comprehensive, well-coordinated, and multisectoral response grounded in the One Health approach.

Given the cross-cutting nature of AMR and its far-reaching implications, Bhutan recognizes the urgent need to strengthen prevention, containment, and mitigation measures. The first National AMR Action Plan (2018–2022) established a solid foundation through governance mechanisms, surveillance systems and antimicrobial stewardship initiatives. However, challenges such as limited infection prevention and control capacity, resource constraints and fragmented cross-sectoral coordination continue to hinder progress.

The National AMR Action Plan 2026–2030 presents a renewed opportunity to reinforce Bhutan’s commitment to addressing antimicrobial resistance through an integrated, sustainable and One Health driven framework. It seeks to re-establish a dedicated national program under the Ministry of Health to coordinate and lead AMR activities, ensuring stronger governance and cross-sectoral collaboration. The plan is closely aligned with national priorities outlined in the 13th Five-Year Plan, the Bhutan One Health Strategic Action Plan 2025–2030, and the Global Action Plan on AMR (GAP-AMR). It aims to promote the rational and evidence-based use of antimicrobials across all sectors, strengthen surveillance and laboratory systems, enhance public and professional awareness and foster research, innovation and sustainable investment in AMR containment.

Ultimately, this action plan serves as a strategic roadmap for prioritizing limited national resources, fostering intersectoral collaboration and mobilizing collective efforts toward preserving the effectiveness of existing antimicrobials. Through this coordinated national effort, Bhutan reaffirms its commitment to safeguarding human, animal and environmental health and contribute to the global fight against AMR.

3. Scope

This National Action Plan on Antimicrobial Resistance (AMR) 2026–2030 applies to all sectors involved in the use, regulation and management of antimicrobials including human health, animal health, food and the

environment. It encompasses all stakeholders engaged in antimicrobial stewardship, surveillance, research, policy development, education and awareness.

The plan serves as a strategic framework to guide national actions aimed at preventing and containing AMR through a coordinated One Health approach. It defines the priorities, strategies and activities to be undertaken across sectors to ensure the rational and evidence-based use of antimicrobials, strengthen laboratory and surveillance systems, promote infection prevention and control and foster innovation and research. All future initiatives, investments and programs related to AMR shall align with the objectives and directions outlined in this plan to ensure coherence, sustainability and measurable progress toward national AMR targets.

4. Guiding Principles

The National Action Plan on AMR 2025–2030 is guided by the following principles:

One Health approach: Promoting coordinated and collaborative action across human, animal and environmental sectors.

Awareness and advocacy: Enhancing understanding of AMR at national, regional and local levels among policymakers, professionals and the public.

Rational and evidence-based use: Ensuring responsible access to and prudent use of antimicrobials across all sectors.

Prevention and containment: Reducing the emergence and spread of resistance through effective infection prevention, control and regulatory measures.

Behavioral change and ownership: Encouraging responsible prescribing, dispensing and use of antimicrobials while fostering active participation and shared accountability among all stakeholders.

5. Situational Analysis

5.1 Governance

Recognizing the need for stronger coordination, there is an urgent requirement to establish a coordinating center at the national level. To ensure an integrated approach to Infection Prevention and Control (IPC) and Antimicrobial Stewardship (AMS) in the human health sector, a National AMS and IPC Center has been established at JDWNRH in december 2025.

Given that the requisite technical expertise to guide and lead these initiatives is largely concentrated within JDWNRH, the establishment of the Center at JDWNRH was therefore both logically and strategically designed.

The center shall serve as the national coordinating Center (NCC) for AMR in the country, and provide technical leadership to the AMR NAP implementation. The center will lead systematic planning, including training, development of standards and guidelines, resource mobilization, and budgeting for AMR activities. Guided by a specific Terms of Reference, which is endorsed by the High-level Committee under the Ministry of Health, the center shall be responsible for technical oversight of all health facilities in the country.

Strengthening multi-sectoral collaboration and harmonization remains a key priority to ensure a unified, effective and sustainable national response to AMR. To ensure effective multi-sectoral collaboration, the National AMS and IPC center shall closely coordinate with the Animal Health ,the Environment, Biosecurity and Food Safety sectors in activities that are cross-cutting across all sectors.

The National AMR Technical Committee (NATC) will provide technical guidance to the National AMS and IPC center as well as to IMCOH. The Technical Working Group (TWG), comprising representatives from all relevant sectors will support the implementation of technical activities. The Inter-Ministerial Committee for One Health (IMCOH) will provide overall policy direction and high-level decisions to ensure coherence across

sectors. The National center for AMS and IPC shall be led by a clinician at the JDWNRH, who will oversee the center and also serve as the National AMR focal person for the human health sector. The AMR focal persons from the Animal Health, Environmental Health, and Biosecurity and Food Safety sectors will each lead implementation within their respective domains, ensuring alignment with the broader One Health framework.

5.2 Rational Use of Antimicrobials

The antibiotic guidelines were developed to provide strategic directions on antibiotic usage. However, these guidelines are largely adapted from international references and do not adequately reflect Bhutan's current AMR patterns. Additionally, compliance with the existing guidelines has been limited. There is a pressing need to review and update these guidelines based on national AMR data and to promote adherence through institutional audit mechanisms, strengthened supervision and regular awareness and training programs.

In the animal health sector, the antibiotic treatment guidelines were reviewed in 2023 aligned with OIE/WOAH and national standards. Although a Standard Treatment Guideline (STG) is available, both human and animal health sectors lack defined clinical treatment pathways for infectious diseases. Training workshops on the rational use of medicines are conducted periodically but often lack specific focus on antimicrobials. Routine prescription monitoring of antimicrobial use occurs at the National Referral Hospital; however, it is not systematic nor consistent. Weak interdisciplinary coordination and the absence of structured clinical auditing mechanisms further limit the effectiveness of antimicrobial stewardship efforts.

To strengthen rational antimicrobial use, there is an urgent need to establish robust coordination mechanisms among disciplines, institutionalize clinical audits and promote integrated stewardship initiatives across human, animal and environmental health sectors.

5.3 Education and Awareness

There is currently no structured or comprehensive educational curriculum on antimicrobial resistance (AMR) for health and livestock trainees in Bhutan. While some progress has been made, AMR education remains limited to a few faculties. For instance, the College of Natural Resources (CNR) offers a One Health module that incorporates AMR concepts and the Diploma in Laboratory Technology under the Faculty of Nursing and Public Health also integrates AMR within a One Health framework. However, such modules are absent in the Faculties of Agriculture and Sustainable Development, leaving significant gaps in awareness and interdisciplinary understanding. Similarly, AMR and rational antimicrobial use modules need to be incorporated into nursing and other relevant courses under the Khesar Gyalpo University of Medical Sciences of Bhutan (KGUMSB) to ensure comprehensive professional education across disciplines.

The concepts and principles of rational antimicrobial use should be mainstreamed into all relevant university curricula and professional training programs. Core and mandatory training on the rational use of antimicrobials should be provided for all categories of healthcare and veterinary professionals. Structured orientation programs for new recruits, alongside regular Continuous Professional Development (CPD) for in-service professionals are essential to sustain awareness and good prescribing practices.

Despite the existence of national treatment guidelines, routine prescription audits of antimicrobials are not practiced systematically, largely due to inadequate sensitization and limited adherence to existing policies. Furthermore, Information, Education and Communication (IEC) materials on AMR are limited to major medical and veterinary hospitals. To build a well-informed society and professional community, public awareness on the rational use of antimicrobials should be strengthened through targeted advocacy, communication campaigns and integration of AMR topics into health education programs across all sectors.

5.4 Research and Evidence Generation

At present, support for research on antimicrobial use and resistance in Bhutan is limited. Most AMR-related activities are primarily funded through the Fleming Fund country grant with minimal budget allocation from the government to carry out research. Consequently, research efforts remain constrained by inadequate financial resources, insufficient technical capacity and the absence of dedicated institutional mechanisms to promote and coordinate AMR studies. This situation has led to gaps in evidence-based planning and decision-making, with available data underutilized in guiding antimicrobial policies, stewardship interventions and surveillance priorities.

To strengthen the evidence base for action, research on antimicrobial use, resistance patterns and stewardship practices must be actively encouraged and prioritized. Regular operational and implementation research should be conducted at both national and sub-national levels to inform context-specific interventions. Crucially, to translate research into policy recommendations, there is a need to strengthen local capacity in identifying key problems and conducting an evidence-brief for policy research. Additionally, building research capacity, fostering collaboration among academic and research institutions, and ensuring sustained funding support will be essential to promote innovation and enable evidence-driven policies for effectively addressing AMR in Bhutan.

5.5 Collaboration

Coordination among relevant national agencies as well as with international partners has been steadily making progress. This has largely been supported either through Fleming or Pandemic Fund support. Collaborative activities in recent years have demonstrated the potential for joint action across sectors. Bhutan's One Health (OH) governance structure provides a platform for coordinating AMR initiatives as AMR is fully integrated into the OH Strategic Action Plan 2025–2030. Strengthening coordination across government agencies, technical committees, and international stakeholders remains critical to ensure a unified strategic approach. Enhanced collaboration will facilitate alignment of policies, harmonization of surveillance and stewardship activities and efficient implementation of interventions across human, animal, and environmental health sectors in line with the One Health approach.

5.6 Control and Regulation

Although the Medicines Act of the Kingdom of Bhutan 2003 does not specifically mention the regulation of antimicrobials, antibiotics are classified as prescription-only medicines under the associated regulations, which restrict their sale in private pharmacies. However, there remains a gap in regulatory provisions addressing the non-therapeutic use of antimicrobials in animals and other agricultural practices. To comprehensively address antimicrobial resistance, it is essential to incorporate such provisions into Bhutan's medicine legislation, ensuring the prudent use of antimicrobials across human, animal and agricultural sectors.

6. Objectives

The objective of this AMR NAP is to operationalize and facilitate the effective implementation of policies and plans to combat AMR effectively through multi-sectoral and multidisciplinary collaboration under One Health approach. Based on the above rationale, guiding principles and the situation analysis, the action plan shall focus on achieving the following objectives:

- **Objective 1:** To strengthen governance and coordination mechanisms to spearhead AMR activities.
- **Objective 2:** To promote rational and responsible use of antimicrobial agents in human, animal and environmental health sectors
- **Objective 3:** To strengthen surveillance and monitoring system on AMR and antimicrobials use
- **Objective 4:** To increase awareness and promote education on AMR through targeted campaigns and training
- **Objective 5:** To establish and strengthen a national system for research on AMR
- **Objective 6:** To foster national and international collaboration on AMR
- **Objective 7:** To strengthen regulatory and control systems for antimicrobials

Objective 1:

To strengthen governance and coordination mechanisms to spearhead AMR activities

A robust and well-coordinated governance structure is essential to effectively implement the AMR NAP 2026-2030. The Inter-Ministerial Committee for One Health shall serve as the highest policy and decision-making body providing overall strategic direction and endorsement of AMR-related policies and plans.

The National AMR Committee (NATC) shall function as the National Steering Committee, providing technical guidance, coordination, and oversight of AMR activities across the One Health sectors. The AMR Technical Working Group (TWG), comprising representatives from the human health, animal health, food safety and environment sectors shall provide technical and operational support to the NATC.

A National AMS and IPC center at the JDWNRH shall serve as the National Coordinating Center (NCC) responsible for technical oversight, planning, monitoring and reporting, and facilitating multi-sectoral coordination and implementation of AMR interventions. The Lead at the JDWNRH, shall serve as the National AMR Focal point for human health sector, and shall closely coordinate with AMR focal person from the Animal Health sector, the Environment, Biosecurity and Food Safety sectors ensuring alignment with national priorities and international commitments. Sectoral focal persons from animal health, Environment, Biosecurity and Food Safety sectors shall lead and coordinate sector-specific AMR activities in close collaboration with the national collaborating center.

All AMR-related activities shall be integrated into sectoral annual work plans and budgeted accordingly to ensure sustainability. Furthermore, hospital-based integrated AMS and IPC unit shall be established and operationalized in all national, regional referral hospitals, cluster hospitals including the seven new AMS sentinel sites to promote rational use of antimicrobials and strengthen infection prevention and control (IPC) practices.

Objective 2:

To promote rational and responsible use of antimicrobial agents in human, animal and environmental health sectors

Rational and evidence-based use of antimicrobial agents is critical to preserving their effectiveness and minimizing the emergence and spread of resistance. The national antibiotic treatment guidelines shall be periodically reviewed and updated based on national antimicrobial resistance surveillance data and clinical evidence. Adherence to these guidelines shall be promoted through institutional audits, regular training, and continuous professional education across all levels of healthcare and veterinary settings.

In the human health sector, antimicrobial stewardship programmes shall be strengthened and operationalized in all national and regional hospitals, led by dedicated multidisciplinary teams comprising clinicians, pharmacists, microbiologists and infection control personnel. The prescription monitoring and audit system for antimicrobial use shall be strengthened to ensure accountability and guide targeted interventions.

In the animal health sector, rational prescription and administration of veterinary antimicrobials shall be promoted through updated veterinary treatment guidelines, veterinary drug formulary, training of field veterinary staff and regular monitoring of antimicrobial use. Integration of AMU data into the national surveillance system will be strengthened. Interdisciplinary collaboration among clinicians, veterinarians, pharmacists, and environmental health professionals shall be enhanced to promote One Health-based antimicrobial stewardship. Awareness and capacity-building initiatives targeting prescribers, dispensers, and the public shall be institutionalized to foster behavioral change toward prudent antimicrobial use.

Objective 3:

To strengthen surveillance and monitoring system on antimicrobial resistance (AMR) and antimicrobials use (AMU)

A coordinated national surveillance and monitoring system is essential to generate reliable data to guide evidence-based interventions and

policy decisions on antimicrobial resistance and use. The national AMR surveillance system shall be strengthened and expanded to include both human and animal health sectors, with progressive integration of food safety and environmental health components. Laboratory capacity for AMR detection and reporting shall be enhanced up to the major district hospitals and regional veterinary laboratories, ensuring standardization of diagnostic procedures and data quality.

Regular monitoring of antimicrobial susceptibility patterns of priority pathogens shall be conducted and surveillance findings shall be routinely shared with prescribers, programme managers and policymakers. The data shall also be presented at the National AMR Committee meetings to inform national decision-making.

The AMR surveillance findings shall directly inform the revision of national treatment guidelines, veterinary drug formulary and procurement decisions to ensure the availability of effective antimicrobials. In parallel, a system for antimicrobial use (AMU) surveillance shall be instituted across human and animal health sectors. Data on antimicrobial consumption and prescribing trends shall be routinely collected, analyzed and reported to support antimicrobial stewardship and track progress toward reducing inappropriate use. Efforts shall also be made to align national AMR and AMU surveillance with the GLASS (Global Antimicrobial Resistance and Use Surveillance System) framework and regional networks to enable data sharing, benchmarking, and global reporting.

Objective 4:

To increase awareness and promote education on AMR through targeted campaigns and training

Raising awareness and building capacity on antimicrobial resistance is critical to encourage responsible behavior among healthcare professionals, veterinarians, students, and the general public. A structured AMR curriculum shall be integrated into tertiary and professional education programs in human health, veterinary, and food sectors. For in-service professionals, a comprehensive training program shall be initiated to strengthen knowledge, skills, and application of rational antimicrobial use,

infection prevention, and stewardship practices either through induction training or virtual learning platforms.

Regular public awareness campaigns shall be conducted using diverse Information, Education, and Communication (IEC) materials, including print, digital, and social media, community outreach programs, and school-based interventions. Campaigns shall aim to improve understanding of AMR, highlight the importance of responsible antimicrobial use, and promote infection prevention practices. Collaborative efforts across health, veterinary, agriculture, and environmental sectors shall ensure a One Health approach to AMR education and awareness, enhancing impact and sustainability.

Objective 5:

To establish and strengthen a national system for research on AMR

Sustained research and evidence generation are essential to understand the drivers of antimicrobial resistance and guide effective interventions. Adequate funding, infrastructure and human resources shall be allocated to support multidisciplinary AMR research in human health, animal health, food safety and environmental sectors.

Priority research areas shall be decided jointly and may include surveillance of AMR and AMU, antimicrobial stewardship interventions, infection prevention and therapeutics. Collaborative research initiatives involving universities, research institutions and international partners shall be promoted to enhance capacity and knowledge sharing. Evidence generated from these research activities shall be systematically analyzed and translated into policy recommendations, guideline updates and programmatic interventions ensuring that national AMR strategies are data-driven, context-specific and sustainable.

Objective 6:

To foster national and international collaboration on AMR

Strong collaboration at both national and international levels is essential to enhance knowledge, share expertise and strengthen capacities to combat antimicrobial resistance. Within Bhutan, inter-agency coordination

and partnerships across human health, animal health, agriculture, food safety, and environmental sectors shall be strengthened to ensure a One Health approach in AMR prevention and control.

At the international level, Bhutan shall actively engage with global and regional AMR networks, initiatives, and organizations to facilitate knowledge exchange, technical support and access to best practices. Membership and active participation in relevant international bodies shall be encouraged to leverage research collaborations, capacity building, and data sharing ensuring evidence-based national policies and interventions.

Objective 7:

To strengthen regulatory and control systems for antimicrobials

A robust regulatory framework is essential to ensure the quality, safety and efficacy of antimicrobial agents and to minimize misuse in human and animal health. The existing regulatory provisions under the Medicines, Food and Livestock Act shall be implemented, regularly reviewed and updated to address emerging challenges related to antimicrobial resistance.

The regulatory provisions for non-therapeutic use of antimicrobials including their use in animal feeds for growth promotion or prophylaxis, shall be regulated and progressively restricted. Mechanisms for licensing, prescription monitoring, and enforcement shall be strengthened across human and veterinary sectors to ensure compliance and promote rational antimicrobial use. Collaboration between regulatory authorities, enforcement agencies, technical professionals shall be enhanced to support effective implementation and oversight thereby safeguarding public health and preserving the effectiveness of antimicrobials.

7. Implementation Matrix

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 1: To strengthen governance and coordination mechanisms to spearhead AMR activities							
Human Health							
Enhance awareness and coordination across one-health sectors	Sensitization on the costed NAP AMR to the policy makers & relevant stakeholders	Percentage of all relevant stakeholders sensitized	0	All stakeholders including Policy makers and implementer are sensitized	July 2026	National AMS and IPC center	MoAL, OHS, BFDA,
Strengthen governance structure for AMR	Establish an integrated National AMS and IPC center in JDWNRH to spearhead the IPC and AMS activities in the country in human health	Established a fully operational national AMS and IPC center in JDWNRH	0	National AMS and IPC center established and operational	Operational since December 2025	National AMS and IPC center	JDWNRH, MOH
Expansion of AMS sentinel site	Establish IPC and AMS integrated team in seven new hospitals	Number of new hospitals with an integrated IPC & AMS team beyond the existing four	4	11	Oct 2026	National AMS and IPC center	Hospital administration, newly identified sentinel sites
Enhanced coordination among sentinel sites	Regular coordination meeting of AMS-IPC teams at National level	Number of coordination meetings conducted	0	At least once annually	Annual event	National AMS and IPC center	National AMS and IPC center, NMS, IPC program, sentinel sites
	Monitoring and supervision of AMS sentinel sites (Old and new sites)	Number of supervision visits	0	Once annually	Annual event	National AMS and IPC center	JDWNRH, CRRH, ERRH

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Animal Health							
Establish and strengthened microbiology and AMS at the national and regional level	Establish microbiology at NVH & RVH&EC P/ling	Laboratories functional by June 2027	Basic bacterial culture facility	2	June 2027	NCAH	NVH, RVH & EC P/ling
	AMS units at NVH and RVH&EC, P/ling	Functional AMS unit by Dec 2026	Draft AMS guideline and office furniture in place	2	Dec 2026	NVH	RVH & EC P/ling
Objective 2: To promote rational and responsible use of antimicrobial agents in human, animal and environmental health sectors							
Human Health							
Revise national antibiotic guideline and develop health workforce capacity	Revision of guidelines for Human Health to promote rational use of antimicrobials.	Revised National antibiotic guideline developed and implemented across all health centers	NA	NA	Dec 2027	National AMS and IPC center	TWG, JDWNRH, MRRH, CRRH, PGH
	Training of the revised National Antibiotic guideline	Percentage of key implementer trained	0	100%	June 2028	National AMS and IPC center	JDWNRH, CRRH, MRRH, PGH
Promote judicious use of higher generation antibiotics	Sensitization of the revised Protocol on the use of reserved and higher generation antibiotics	Percentage of physicians and pharmacists of AMS sentinel site sensitized	0	100%	June 2027	National AMS and IPC center	AMS IPC teams of the sentinel sites
Animal Health							
Promote rational use of antimicrobials at all levels	IPC SOPs available; AH staff trained on use of IPC guidelines	IPC SOPs endorsed and trained staff at NVH, NCAH & RVHEC P/ling	Endorsed IPC guidelines	3	Sept 2028	NVH	DOL, NCAH

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Medical Product Division (BFDA)							
Enhancement of DrukMed App	Enhance and update the BNF, VNF and Antibiotic Guidelines	Updated DrukMed app and guidelines in place by June 2028	DrukMed app and guidelines	4	June 2027	MPD	MoH, MoAL
Objective 3: To strengthen surveillance and monitoring system on AMR and antimicrobials use							
Human Health							
Expand microbiology testing sites	Strengthen microbiology testing facilities across seven new sites	SOP and LQM systems developed and implemented across all new microbiology testing sites	0	100%	June 2027	Microbiology lab, JDWNRH	RCDC, ERRH, CRRH, PGH
	Strengthen microbiology testing quality and standard in major hospitals/labs	All microbiology testing sites, including the new sentinel sites participate in NEQAS and EQAS program, subscribe to CLSI standard, and have all essential SOPs in place	0	100%	June 2027	Microbiology lab, JDWNRH	RCDC, Sentinel sites
		Produce the national AMR report-submit it to GLASS and to AMS and IPC center			Annual event	Microbiology lab- AMR Focal, JDWNRH	Microbiology lab- AMR Focal, JDWNRH

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Strengthen lab capacity in mycology, bacterial culture and genomics	Upgradation of existing lab personnel, and training of the newly recruited lab personnel	Short-term training in mycology completed, and newly recruited lab personnel trained in microbiology	0	100%	December 2027	RCDC, Microbiology lab JDWNRH	District hospitals
	Strengthened Lab-based AMR surveillance training and networking	Training to relevant lab personnel on bio-repository and bio-safety cabinet management, phenotype detection of AMR completed	0	100%	December 2027	RCDC, Microbiology lab JDWNRH	Sentinel site
	Strengthen capacity for basic qualitative molecular testing to determine AMR pathogen genomes at RCDC	Established genomic lab in RCDC operated by trained lab personnel	0	100%	December 2027	RCDC Microbiology lab JDWNRH	Sentinel site
Efficient shipment of AMR sample	Strengthen AMR surveillance by facilitating sample shipment NEQAS and IEQAS	AMR surveillance sample shipment in a safe and timely manner	NA	NA	-	RCDC, Microbiology lab JDWNRH	Sentinel sites

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Strengthened AMC and AMU data	Monitor antimicrobial consumption	SOP on reporting AMC developed and pharmacy personnel trained	0	100%	December 2026	Pharmacy department-AMC Focal, JDWNRH	Pharmacy department-AMC Focal, JDWNRH Sentinel sites
	Monitor antimicrobial consumption	Produce the national antimicrobial consumption report and submit it to GLASS			Annual event	Pharmacy department-AMC Focal, JDWNRH	Pharmacy department-AMC Focal, JDWNRH Sentinel sites
	Monitor antimicrobial use	Antimicrobial use survey (PPS) annually across all sentinel sites, and consolidated annual report generated	0	100%	Annual event	National AMS and IPC center, Sentinel sites	National AMS and IPC center, Sentinel sites
Animal Health							
Surveillance and monitoring of AMR and AMU in place	Institute AMR surveillance at NCAH, RLDC and RVHEC	AMR & AMU surveillance and monitoring report produced by June annually	Surveillance strategy in place	2	June 2026	NCAH	RLDC, NVH
	Develop materials and train staff on biosecurity	20 staff trained on biosecurity by June 2027	0	20	June 2027	NVH	DOL, NCAH
	Regulators and farmers trained on IPC and biosecurity	20 staff trained by June 2027	0	20	June 2027	BFDA	DOL

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Food (BFDA)							
Functional AMR residual testing facilities at NFTL	NFTL establish & strengthen antibiotics residue testing	Residue testing in place by June 2028	0	1	June 2028	BFDA	MOH, RCDC, NCAH
Strengthen POEs for AMR surveillance and residues	Equip and train POEs to monitor AMR and residues in all POEs	All POEs are capable of either using rapid kits or sample referral to monitor	0	6	June 2030	BFDA	MoH & MoAL
Objective 4: To increase awareness and promote education on AMR through targeted campaigns and training							
Achieve long-term sustainability in AMR knowledge and skills through the institutionalization of learning courses	Develop a pre-service course module on AMR to be incorporated in the existing curriculum of the health professionals	AMR module developed and incorporated in university curriculum	NA	NA	JUNE 2027	KGUMSB	KGUMSB
	Develop CPD course modules on AMS and IPC for in-service and pre-service recruits (virtual)	Mandatory virtual CPD on AMR implemented for in-service, including newly appointed staff members	Nil	100%	December 2027	KGUMSB	KGUMSB
Promote public awareness on AMR	Develop appropriate IEC materials and conduct advocacy programs on AMR to the public through various medium during the World Antimicrobial Resistance Awareness Week	Observed world antimicrobial week annually using various medium	Observed only locally, rarely observed nationally	Nationwide event annually	Annual event	Health promotion division, MoH	AMS and IPC center, AMS and IPC team of sentinel sites, Health promotion division, MoH

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Objective 5: To establish and strengthen a national system for research on AMR							
Promote appropriate use of AMR, AMU & AMC data to guide decision-making	Produce National data on antimicrobial resistance pattern, antimicrobial consumption and antimicrobial use as annual bulletin.	A national annual AMR bulletin published and distributed	Nil	Annually	Annual event	National AMS and IPC center	All sentinel sites
Strengthen AMR-related research	Prioritize AMR research in the HH sector	HH AMR research in selected priority areas published	-	-	2028 - 2029	National AMS and IPC center	National AMS and IPC center, AMS sentinel sites, RCDC
Objective 6: To foster national and international collaboration on AMR							
Improved coordination across one-health sector	Strengthen national multi-sectoral coordination	Stakeholder meetings conducted at regular interval	Infrequent	At least once annually	Annual event	National AMS and IPC center	All stakeholders (HH, AH, Environment, BFDA)
Establish institutional linkages for knowledge sharing and research collaboration	Institutional networking and collaboration shall be established with relevant agencies both within and outside the country for capacity building and resource sharing.	Active member to international AMR networks (GLASS, quadripartite initiatives and regional AMR networks), contribute to regional and global scientific network	NA	NA	NA	National AMS and IPC center	AMS sentinel sites, RCDC
	Foster collaboration between academia and research institutions	Join international AMR research consortia. Conduct training on AMR evidence to policy with the technical support from international experts	NA	NA	NA	National AMS and IPC center, KGUMSB	All HH stakeholders

Sectors/Objectives	Activities	Performance Indicator	Baseline	Target	Timeline	Lead Agency	Implementing Partners
Foster cross-border partnership to strengthen AMR information sharing	Establish cross-border collaboration	Establish formal linkages and collaboration with the National IPC & AMR center of the GoI to facilitate sharing of AMR surveillance information			2027-2028	National AMS and IPC center	RCDC, Microbiology lab JDWNRH
Objective 7: To strengthen regulatory and control systems for antimicrobial							
Monitoring and evaluation the NAP AMR implementation progress	Conduct mid-term evaluation of the NAP	Mid-term M&E conducted and reports disseminated	NA	NA	2028	National AMS and IPC center, NCAH, NVH, BFDA, RCDC, MPD, KGUMSB	All HH , AH, Environment, Biosecurity and Food Safety sectors stakeholders
	Conduct end of plan period evaluation of the NAP	End of plan period M&E completed and reports disseminated	NA	NA	2030	National AMS and IPC center, NCAH, NVH, BFDA, RCDC, MPD, KGUMSB	All HH , AH, Environment, Biosecurity and Food Safety sectors stakeholders

8. References

- Department of Health (2000), *UK Antimicrobial Resistance Strategy and Action Plan*, United Kingdom.
- Ministry of Agriculture (2001), *Livestock Act of Bhutan*, Thimphu, Royal Government of Bhutan.
- Ministry of Agriculture & Forest (2013), *Livestock Sector Development Policy of the Kingdom of Bhutan*, Thimphu, Royal Government of Bhutan.
- Ministry of Health (2003), *Medicines Act of the Kingdom of Bhutan*, Thimphu, Royal Government of Bhutan
- Ministry of Health (2007), *National Drug Policy*, Thimphu, Royal Government of Bhutan.
- Ministry of Health (2011), *National Health Policy*, Thimphu, Royal Government of Bhutan.
- World Health Organization (2010), *Regional Strategy on Prevention and Containment of Antimicrobial Resistance*, New Delhi; Regional Office for South-East Asia.
- World Health Organization (2011), *Establishment of National Laboratory-based Surveillance of Antimicrobial Resistance*, New Delhi; Regional Office for South-East Asia.

