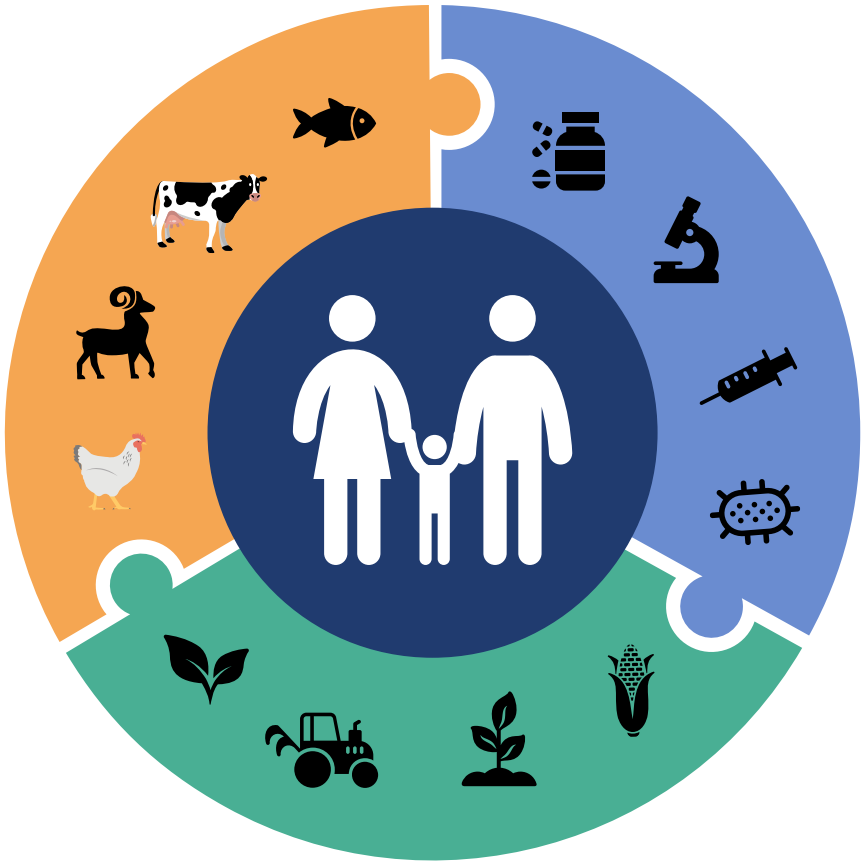
REPUBLIC OF KENYA

NATIONAL ACTION PLAN ON PREVENTION AND CONTAINMENT OF ANTIMICROBIAL RESISTANCE



2023-2027

National Action Plan for the Prevention and Containment of Antimicrobial Resistance, Nairobi, Kenya: Government of Kenya, September 2023. © 2023 Government of Kenya

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ACRONYMS AND ABBREVIATIONS

AMC	Antimicrobial Consumption
AMR	Antimicrobial Resistance
AMS	Antimicrobial Stewardship
AMU	Antimicrobial Use
FAO	Food And Agriculture Organization
GAP	Global Action Plan
GDP	Gross Domestic Product
HAI	Health Care-Associated Infection
IPC	Infection Prevention And Control
KeFS	Kenya Fisheries Service
KEMRI	Kenya Medical Research Institute
KHIS	Kenya Health Information System
M&E	Monitoring And Evaluation
MIBEMA	Ministry Of Mining, Blue Economy And Maritime Affairs
MOALD	Ministry Of Agriculture And Livestock Development
MoECCF	Ministry Of Environment, Climate Change And Forestry
MOH	Ministry Of Health
MTaPS	Medicines, Technologies and Pharmaceutical Services
NAP	National Action Plan
NASIC	National Antimicrobial Stewardship Interagency Committee
NASIC-SC	Nasic Steering Committee
NASIC-TC	Nasic Technical Committee
NEMA	National Environment Management Authority
PCPB	Pest Control Products Board
PPB	Pharmacy And Poisons Board
QC	Quality Control
TWG	Technical Working Group
UNEP	United Nations Environment Programme
UoN	University Of Nairobi
USAID	Us Agency For International Development
VMD	Veterinary Medical Directorate
WHO	World Health Organization
WOAH	World Organisation For Animal Health

FOREWORD

Antimicrobial resistance (AMR) is a global threat that requires urgent action through a coordinated, multisectoral, One health approach in the context of the 2030 Agenda for Sustainable Development within and among countries. Recent estimates indicate that bacterial AMR is a health problem whose magnitude is at least as large as major diseases such as HIV and malaria, and potentially much larger. In 2019, it was estimated that the highest rates of AMR burden were in sub-Saharan Africa (Murray, et al., 2022).

The Global Action Plan (GAP) on AMR was adopted in 2015 by all member states through decisions in the World Health Assembly, the Food and Agriculture Organization (FAO) Governing Conference, and the World Assembly of World Organisation for Animal Health (WOAH) Delegates. As a result, member states agreed to have a national action plan on AMR aligned with the GAP and to implement relevant policies and plans to prevent, control, and monitor AMR considering national and regional priorities. In March 2022, the tripartite was joined by United Nations Environment Programme to form the Quadripartite. Having recognised the looming crisis, the Government prioritised developing and implementing the National Action Plan (NAP) for the prevention and containment of AMR 2017-2022 through a One Health approach. The lead ministries, the Ministry of Health and the Ministry of Agriculture, Livestock and Fisheries, through the National Antimicrobial Stewardship Interagency Committee (NASIC), coordinated the efforts of various stakeholders in the implementation of NAP 1.0.

The implementation of the NAP 1.0 yielded several successes which included the establishment and strengthening of the AMR governance and coordination mechanisms at the national and county levels, improvement in AMR surveillance structures, increased awareness and knowledge on AMR, establishment of antimicrobial stewardship programmes and strengthened infection prevention and control. The national AMR surveillance conducted during NAP 1.0 implementation period provided evidence of the high levels of AMR within the human and animal health sectors. Inadequate diagnostic capacity for AMR, limited human resources, lack of funding, and insufficient enabling legislation have been identified as some of the main impediments to implementing the NAP. Therefore, this NAP 2.0 to combat AMR in Kenya is informed by the lessons learned from implementing NAP 1.0 and emerging evidence and lessons on AMR from other parts of the world. The development of this NAP 2.0 was also informed by the findings from the World Health Organization review of NAP implementation in the human sector. The focus of this NAP 2.0 will be to mobilise resources and strengthen the multisectoral coordination mechanisms across all sectors and levels while raising the visibility of AMR as a national agenda from a multisectoral perspective.

Averting the AMR crisis requires a multidisciplinary, intersectoral, and global effort. Successful implementation of this Action Plan requires strong Government commitment and collaborative actions across the sectors and with our international partners. Accordingly, this action plan outlines the key activities, roles and responsibilities and calls on everyone to act now to avert the threat of AMR in Kenya and the world.

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PREFACE

Antimicrobial resistance (AMR) occurs when bacteria, virus, fungi, and parasites change over time and no longer respond to medicines making infections difficult to treat. This increases the risk of disease-spread which may lead to severe illness and death. The currently available standard treatments to common infections have become ineffective, with a rapid rise in multidrug resistant organisms (superbugs) globally, resulting to increased vulnerability of the community to infections.

The Ministries of Health (MOH); Agriculture and Livestock Development (MOALD); Mining, Blue Economy and Maritime Affairs (MIBEMA); and Environment, Climate Change and Forestry are devoted to demonstrating stewardship in the implementation of this National Action Plan (NAP) on prevention and containment of AMR. This NAP is in line with the National Policy on prevention and containment of AMR and is a product of the NAP-AMR (2017-2022). The NAP 2.0 (2023-2027) is anchored on the following key strategic objectives: to establish and sustain governance and co-ordination structures, to improve awareness and understanding of AMR, to strengthen knowledge through surveillance and research, to reduce the incidence of infection, to optimise the use of antimicrobial agents, and to ensure sustainable investment in countering AMR. Under each strategic objective of the NAP-AMR, interventions, activities, and responsibilities have been defined with allocated timelines. The implementation of the NAP is evaluated through the monitoring and evaluation framework (2023-2027).

This NAP provides an implementation framework to establish and strengthen systems to contain the emergence and spread of AMR. Its implementation will require budgetary allocation at national and county levels for sustained funding, leadership commitment, and effective coordination and collaboration among different sectors, in a "One Health Approach".

To achieve these goals, we must urgently take coordinated One Health action to prevent the AMR crisis. Without such action, the progress we've made will be lost, leading to substantial social and economic consequences. This poses a serious and immediate threat to both the current and future generations.



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ACKNOWLEDGEMENT

We wish to acknowledge the Cabinet Secretaries for the Ministries responsible for Health, Agriculture and Livestock Development, Environment, Climate Change and Forestry, Mining, Blue Economy, and Maritime Affairs for providing support and leadership in the development of this National Action Plan (NAP) and the implementation of the previous iteration of the NAP.

We recognise the contribution of the Principal Secretaries for State Department for Public Health and Professional Standards; State Department for Livestock Development, Environment, Climate Change and Forestry; Blue Economy and Fisheries. We thank the Directors/Director General for Health, Veterinary Services, Environment, Kenya Fisheries Services, Crop Development, Plant Protection, and Food Safety. We are grateful to the county governments for their invaluable input into this National Action Plan. We also appreciate other Ministries, Departments, and Agencies for their contribution in the development of this NAP and implementation of NAP 1.0.

We would like to acknowledge the support we received from many partners in the implementation of the NAP-AMR version 1.0, including the World Organization of Animal Health (WOAH), US Agency for International Development (USAID) Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, USAID Infectious Disease Detection and Surveillance Program, Food and Agriculture Organization (FAO) of the United Nations, World Health Organization (WHO), US Centers for Disease Control and Prevention, UK Fleming Fund through International Livestock Research Institute, PATH, Washington State University, University of Nairobi, Aga Khan University Hospital, Kenya Medical Research Institute, Foundation for Innovative New Diagnostics, African Society for Laboratory Medicine, Amref Health Africa, International Center for AIDS Care and Treatment Program (ICAP), International Training and Education Center for Health (ITECH), ReACT, Clinton Health Access Initiative (CHAI), and many more.

We appreciate the support from USAID MTaPS Program, FAO, WOAH, WHO, CHAI and East, Central and Southern Africa Health Community (ECSA-HC) for their unwavering support, both financially and technically, in the development of the NAP-AMR version 2.0. Additionally, we recognize and appreciate the USAID MTaPS Program for supporting the compilation and printing of this document.

Finally, we wish to appreciate the tireless efforts, leadership and technical expertise provided by the National Antimicrobial Stewardship Interagency Committee, both during the implementation of the previous iteration of the NAP and the development of the NAP-AMR (2023-2027).



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INTRODUCTION

Antimicrobial resistance (AMR) is the inherited or acquired ability of microorganisms to survive or proliferate at concentrations in the presence of an antimicrobial that would otherwise kill or inhibit them. AMR poses a major threat to all areas of health, involves many sectors, and impacts the whole of society globally. Overuse and misuse/abuse of antimicrobial agents in human and veterinary practices have been documented to be responsible for the current crisis.

One major challenge to tackling AMR is understanding the actual burden of resistance globally, particularly in areas where surveillance is minimal, and data is unavailable. However, extensive literature estimates the effects of AMR on incidences, deaths, hospital length of stay, and cost of healthcare for select pathogen–drug combinations, but it is lacking in the other health sectors. A recent Lancet report clearly shows that bacterial AMR is a major global health problem, with 96% of all AMR-related deaths attributed to infections caused by, tuberculosis, Staphylococcus aureus, Escherichia coli, and Klebsiella pneumoniae (Murray, et al., 2022).

Available data suggest that the African region shares the worldwide trend of increasing drug resistance. It is important to note that death rates attributable to AMR are highest in sub-Saharan Africa. Yet, the paucity of data in sub-Saharan Africa on AMR prevalence and antimicrobial use is a huge impediment to the effective control and management of infectious diseases. For example, the African Region has witnessed the increasing emergence of multidrug-resistant TB, reports of resistance of Vibrio cholerae against cotrimoxazole, the resistance of Neisseria meningitidis to ceftriaxone and chloramphenicol, and the worrying trend of AMR to the commonly prescribed antibiotics for gonococcal disease.

The use of antimicrobials in animal production and its exposure to the environment is an important contributor to AMR. In Africa, findings indicate that most countries do not have antimicrobial use (AMU) and AMR surveillance systems, and some are at different stages of development. Notably, there is a high level of AMU, especially tetracycline, aminoglycoside, and penicillin, in animal production systems, escalating the already high prevalence of AMR and multi-drug resistance in the continent.

In Kenya, data indicates a rise in the trends of antibiotic-resistant bacteria. For instance, multi-drug resistance of E. coli isolated from community-acquired infections, over 60% resistance rates to tetracycline in E. coli isolates in both humans and livestock, ceftriaxone and oxytetracycline as the most frequently used antibiotics in hospitals and livestock production, respectively.

This National Action Plan (2023–2027) provides a common framework for action by all stakeholders in Kenya from different sectors, including but not limited to human health, animal health, agriculture, fisheries, and environmental sectors together with the civil society in managing and implementing appropriate AMR control activities, while being part of a collective strategy to meet the overall goal.

The goal of this National Action Plan is to ensure, for as long as possible, continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them. To achieve this, it is important to:

1. Establish and sustain governance and co-ordination structures for tackling AMR in a "One Health Approach"
2. Increase public knowledge and understanding of AMR and use of antimicrobials, particularly in those involved in healthcare, nursing care, food, and livestock production and aquaculture.
3. Enhance surveillance and monitoring in order to understand the state of AMR patterns and trends and use of antimicrobials
4. Enhance proper infection prevention and control (IPC)
5. Promote antimicrobial stewardship (AMS) in order to reduce antimicrobial-resistant organisms; and
6. Accelerate research on the mechanism of AMR emergence and transmission, and its impact on the economy, and promote research and development for new preventive, diagnostic, and therapeutic technologies in order to ensure the continued availability of effective preventive, diagnostic, and therapeutic treatments for antimicrobial-resistant infections.

During implementation of the 2017–2022 National Action Plan for AMR, the following achievements and challenges were realised:

Achievements

1. Development and implementation of the National Policy and Action Plan on the Prevention and Containment of Antimicrobial Resistance in November 2017.
2. Inauguration of the National Antimicrobial Stewardship Inter Agency Committee (NASIC).
3. Establishment of County Antimicrobial Stewardship Inter Agency Committee (CASICs) in 14 out of 47 counties
4. Development and implementation of the two strategies: National AMR Surveillance Strategy 2018-2022 and Communication Strategy 2018.
5. Development of MOALD Guidelines for Prudent Use of Antimicrobials in Animals, October 2018.
6. Development and implementation of the National Antimicrobial Stewardship Guidelines for Health Care Settings, March 2020.
7. Implementation of a Kenya National IPC Policy for Health Care Services 2021, Kenya National IPC Strategic Plan for Health Care Services 2021-2025-, , Kenya National IPC Guideline for Health Care Services 2010, and Basic Training Course for Infection Prevention and Control (IPC) available in the MOH e-learning academy.
8. Development of the National Monitoring and Evaluation (M&E) Framework and reporting system through the KHIS for AMR, Infection Prevention and Control and Patient Safety.
9. Early implementation of the National AMR Surveillance Strategy 2018-2022 with expansion from initial two pilot sites in 2018 to 23 by 2022.
10. Establishment of AMR One Health Surveillance System reporting platform and dashboard to visualise AMR trends across the country https://onehealth.nphl.go.ke/.
11. Annual commemoration of the World Antimicrobial Awareness Week since 2013.
12. Conclusion of a scoping report on the investment incentives for local production of essential antibiotics in Kenya in light of mitigating AMR.
13. Continuous mobilisation of technical and financial resources to support implementation of the AMR Policy through development partners.

Challenges

Various challenges were encountered during implementation of the previous NAP-AMR and these were largely responsible for missed targets on some of the strategic interventions and activities. They include the following:

1. Limited funding from both domestic and development partners
2. Inadequate knowledge on AMR across all sectors
3. Challenging environment for multisectoral collaboration
4. Weak infrastructure to support implementation across relevant sectors
5. Inadequate investment in communication, data management capacity, and monitoring and evaluation efforts
6. Inadequate political commitment across all levels
7. Limited laboratory capacity impacting surveillance and data collection
8. Underutilisation of established microbiology services

OPERATIONAL FRAMEWORK

In its aim of promoting countermeasures on AMR, this NAP is structured around strategic objectives in the following six areas: (1) Governance and Coordination Mechanisms in a One Health Approach (2) Public Awareness and Education, (3) Surveillance and Monitoring, (4) Infection Prevention and Control, (5) Appropriate Use of Antimicrobials, and (6) Research and Development. The NAP is organised around these objectives to facilitate collaborative action by the Kenyan Government, in partnership with development partners, individuals, and organisations aiming to strengthen healthcare, public health, veterinary medicine, agriculture, food safety, and research and manufacturing.

Strategic interventions to achieve these objectives and specific actions to implement the strategies are presented for each objective as set out in Table 1.

Table 1. Six Strategic Areas and Objectives for Countermeasures on AMR

Strategic Areas	Strategic Objective
Governance and Coordination	To establish and sustain governance and coordination structures for tackling AMR in a One Health approach
Public Awareness and Education	To improve public awareness and understanding, and promote education and training of professionals
Surveillance and Monitoring	To continuously monitor antimicrobial resistance, use and disposal of antimicrobials, and appropriately understand the trends and spread of antimicrobial resistance
Infection Prevention and Control	To prevent the spread of antimicrobial-resistant organisms by implementing appropriate infection prevention and control measures
Appropriate Use of Antimicrobials	To promote appropriate use of antimicrobials in the fields of healthcare, livestock production, agriculture, and aquaculture
Research and Development	To promote research on antimicrobial resistance and foster research and development to secure the means to prevent, diagnose and treat the antimicrobial-resistant infections

The strategies to achieve the above objectives are described in subsequent sections with their purposes, background, specific actions, related ministries, agencies, and institutions for the actions, and indices to evaluate the actions.

IMPLEMENTATION FRAMEWORK

GOVERNMENT COMMITMENT

The Kenyan government will lead and consolidate the efforts by individual programmes or institutions through the development of policies, strategies, and legal frameworks towards combating AMR. These efforts will encompass the different government departments and the private, intergovernmental, and non-governmental sectors. A commitment from all these stakeholders will allow for the simultaneous achievement of set targets and for more resources to be generated. The government will collaborate with the civil societies to raise awareness and disseminate information about AMR to the general public.

NATIONAL GOVERNMENT COORDINATION MECHANISMS

The Ministries responsible for Health, Agriculture, Livestock, Fisheries, Environment, Education, Trade, National Treasury, and Cooperatives will continue being part of the multi-sectoral AMR Secretariat hosted at the Ministry responsible for Health to coordinate the AMR agenda. These ministries will implement the National Action Plan on Prevention and Containment of AMR 2023-2027 and associated policy and strategies in a "One-Health" approach. Institutions that will play a leading role in the implementation of the National Policy for AMR include the National and county governments, and departments and agencies from the relevant sectors.

National Antimicrobial Stewardship Interagency Committee

The AMR governance mechanism comprises the NASIC Steering Committee (NASIC-SC) and a NASIC Technical Committee (NASIC-TC).

NASIC Steering Committee

The NASIC-SC comprises the Principal Secretaries of relevant ministries and two representatives of the Council of Governors. The NASIC-SC is responsible for policy direction, resource mobilisation, budget, and work plan approvals. The membership of the NASIC-SC is as follows:

1. **Co-Chairs:** MOH and Ministry of Agriculture and Livestock Development (MOALD).
2. **Members:** Ministry of Mining, Blue Economy and Maritime Affairs (MIBEMA), Ministry of Environment, Climate Change and Forestry (MoECCF), Ministry of Education, Ministry of Investments, Trade and Industry, and the Ministry of National Treasury and Economic Planning.
3. The Committee may co-opt any department, bureau, office, agency, or instruments of the government, and request the county governments and private sector for assistance as the circumstances may require.

Terms of Reference for the Steering Committee

- Policy direction
- Approval of budgets
- Approval of work plans
- Resource mobilisation

NASIC Technical Committee (NASIC-TC)

The NASIC-TC comprises the Technical Directors of relevant ministries. The NASIC-TC is responsible for technical oversight, overseeing the implementation of the National Policy for AMR. It shall also ensure close coordination with other relevant stakeholders.

Terms of Reference for the Technical Committee

- Formulate, monitor, and evaluate implementation of the national action plan.
- Collaborate and coordinate with government agencies, private and non-state actors.
- Mobilise human and financial resources to support the plan through regular budget allocations and mainstreaming of activities within core programmatic areas.
- Promulgate guidelines, make recommendations on rules and regulations, as well as possible penalties and sanctions for violations in accordance with existing laws, as may be necessary, related, or consistent with the purpose, intent, and objective of this NAP.
- Submit to the steering committee regular status reports, budgets, and policy proposals on the implementation of the NAP.
- Establish thematic area advisory groups and technical working groups to facilitate effective implementation of the NAP.
- Provide technical inputs for the technical areas and objectives, and to introduce corrective technical actions
- Perform other functions and activities as may be assigned by the NASIC-SC.

The NASIC will meet at least biannually. The responsible Principal Secretaries will select a chairperson based on his or her expertise in leadership. There will be rotation of the chair every two years between MOH and MOALD. NASIC will have a mechanism (with appropriate records) to ensure that its members have no conflicts of interests and that the work of the committee in the interests of public health is transparent. The NASIC shall review its composition annually to ensure representation of all relevant sectors and stakeholders.

National AMR Focal Persons

The national AMR focal persons shall be appointed from the key ministries to enhance leadership, coordination, and collaboration for AMR NAP implementation. Within the key ministries, the AMR focal points from relevant departments will be nominated by the AMR focal person in the ministry for appointment by the technical directors. This will apply in the different agencies according to the structure of their organisations. The AMR focal persons constitute the membership of the NASIC Secretariat. The AMR Focal points constitutes the technical working groups (TWGs).

NASIC Secretariat

The NASIC will be supported by an appropriately resourced secretariat based at the MOH, responsible for the logistics of meetings; minute-taking; preparation and circulation of documents (e.g. background papers, reports, and advisory notes to ministers); and storage and archiving. The head of the Secretariat will be the national AMR focal person from the ministry at the time chairing the NASIC-TC.

Roles and Responsibilities of the NASIC Secretariat

- Link the two levels of the AMR co-ordination mechanism at the national and county levels.
- Coordinate policy implementation at the national and county governments
- Ensure continuous international, national, and county stakeholder engagement.
- Develop and present the national AMR position in meetings, conferences, stakeholder meetings and other relevant national and international forums.
- Ensure monitoring and evaluation of the National Action Plan on Prevention and Containment of AMR.
- Engage technical advisors and support the functions of TWGs.

Composition of the Secretariat

The NASIC Secretariat is composed of the AMR focal persons representing the relevant sectors, notably human health, animal health, plant health, aquaculture, environment sectors, education, trade, and finance. The Secretariat can co-opt members as an when necessary. Representatives should have sufficient authority from their institutions to make decisions pertaining to policy implementation.

AMR Technical Working Groups

The NASIC-TC is operationalised by six TWGs, in accordance with the defined strategic objectives of the AMR NAP. The TWGs are mandated with specific tasks to provide technical input and implementation recommendations. In addition, the TWGs will collaborate on review of AMR NAP, and monitoring and evaluation of each strategic objective of the NAP. The TWGs are accountable to the NASIC-TC.

Membership to TWGs

The membership of the TWG includes AMR focal points and experts from each NAP strategic objective across the One Health sectors and relevant stakeholders. The six TWGs shall include:

- TWG for AMR Governance
- TWG for Awareness and Education
- TWG for AMR Surveillance, Monitoring and Laboratory Strengthening
- TWG for Infection Prevention and Control
- TWG for Antimicrobial use/ consumption (AMU/AMC)
- TWG for AMR Research and Development

Roles and Responsibilities of TWG

Each TWG will have specific terms of reference stipulating specific scope, roles, and responsibilities. The TWGs interact with the representatives of the required sectors, as determined by their scope of work, and report regularly to the NASIC-TC. General responsibilities shall include to:

- Develop work plans aligned to the specific objective areas
- Cooperate with NASIC-TC in the formulation/review of NAP and respective operational plans
- Coordinate implementation of prioritised activities outlined in the NAP per strategic objective
- Ensure monitoring and evaluation of activities
- Report to NASIC-TC on the progress of implementation of the respective strategic objectives.
- Provide technical update, recommendations, and advice to the NASIC-TC and AMR focal persons

COUNTY GOVERNMENT COORDINATION MECHANISMS

At the county government, the lead departments (Health, Agriculture, Environment) will establish a CASIC. The CASIC will comprise county Chief Officers and county Directors of Technical Departments (Health, Agriculture, Livestock, Fisheries, Trade, Finance Environment, Education), representatives of regulatory bodies, professional associations, institutions of higher learning, faith-based organisations, and experts. The CASIC will be responsible for approving budgets and work plans, resource mobilisation and implementation of the NAP at the county level.

Terms of Reference for the CASIC

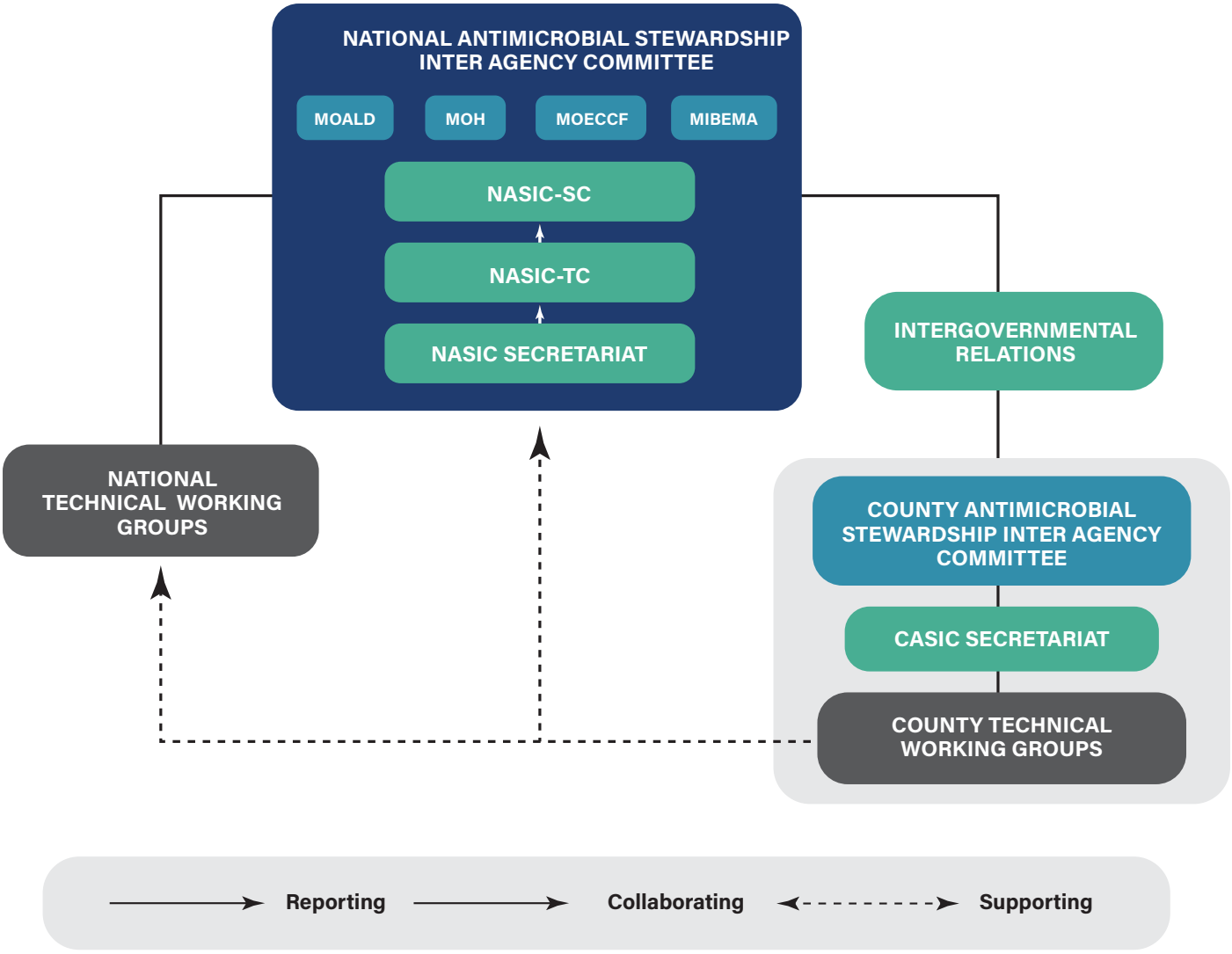
- Monitor and evaluate the implementation of the national action plan at the county level for the prevention and containment of AMR.
- Mobilise human and financial resources to support the plan through regular budget allocations, mainstreaming of activities within core programmatic areas.
- Enforce guidelines, rules, and regulations in accordance with existing laws, as may be necessary, related, incidental, or consistent with the purpose, intent, and objective of this National Action Plan.
- Submit to the NASIC Secretariat regular status reports, budgets, policy proposals on the implementation of the national plan.
- Collaborate and coordinate with the county and national government and non-state actors.

NATIONAL AND COUNTY GOVERNMENT COORDINATION MECHANISMS

The Role of Intergovernmental Relations

The Intergovernmental Relations (Amendment) Act 2021 establishes several Intergovernmental structures, which serve to facilitate greater intergovernmental cooperation and consultation under the devolved government model. The national government and county governments will use these structures to facilitate implementation of the NAP. See Figure 1.

Figure 1. Structure for Coordination Mechanism



PARTNERSHIPS AND IMPLEMENTATION

The implementation of this National Action Plan will be guided by key institutional coordination and legal framework operating at different levels of the governance system in the country. This will require the sustained, coordinated, and complementary efforts of individuals and groups locally and globally, including public and private sector partners, healthcare providers, healthcare leaders, veterinarians, agriculture industry leaders, manufacturers, policymakers, and patients.

Table 2. Strategic Interventions to Operationalise the National Action Plan

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
Strategic Intervention: Strengthen governance and coordination mechanisms in a One health approach									
Develop a costed annual work plan for the NASIC Secretariat	Funded NASIC Secretariat Annual work Plan	X	X	X	X	X	X	2023	NASIC Secretariat
Increase dedicated Human resource for the NASIC Secretariat	Staffing plan Increased human resources for the NASIC Secretariat	X	X	X	X	X	X	2023	NASIC Secretariat
Establish M&E Unit within the NASIC Secretariat	M&E Unit Established	X	X					2024	NASIC
Establish an Information Communication and Technology Unit within the NASIC Secretariat	Information and communication technology unit established	X	X					2024	NASIC
Establish CASICs in all counties	Functional CASICs (CASIC members with official appointment letters and conducting regular meetings)	X	X	X	X	X	X	2023-2027	NASIC, county departments responsible for sectors involved
Develop CASIC workplans	Launched CASIC workplans	X	X	X	X	X	X	2023-2027	CASICs
Mobilise resources to support implementation of CASIC workplans	Funded CASIC workplan/ Activities	X	X	X	X	X	X	2023-2027	CASICS, NASIC
Review the M&E Framework for the AMR National Action Plan	M&E Framework Reviewed	X	X	X	X	X	X	2023	NASIC, NASIC Secretariat Partners
Review AMR Communication Strategy	Reviewed Communication Strategy	X	X	X	X	X	X	2023-2024	NASIC Secretariat Partners
Strategic Intervention: Mobilize Resources and Promote Internal and External Networking									
Develop and submit project proposals for funding	Secure funding from proposals submitted	X	X	X	X	X	X		NASIC Secretariat Partners
Advocate and lobby for direct funding from government	Direct budgetary support from government	X	X	X	X	X	X		NASIC Secretariat Partners

STRATEGIC OBJECTIVES

STRATEGIC OBJECTIVE 1: TO STRENGTHEN GOVERNANCE AND COORDINATION MECHANISMS

Measure of Outcome: Number of functional AMR One Health coordination structures at national and county levels of government.

The country has established good foundations for addressing AMR. There is need to scale up and sustain efforts to make a sustainable impact. Progress will be actively monitored through an M&E framework. The Multi-Sectoral Coordinating Committee is responsible for coordinating, facilitating, and overseeing the implementation of all AMR activities in the country.

Previous AMR containment measures were often siloed focusing mainly on human and animal health sectors. However, this approach is no longer considered adequate due to potential implications of widespread antimicrobial use, not just in human health and animal health, but also in crop and aquatic sectors, as well as environmental contamination through antimicrobial residual discharge. Focusing containment effects primarily in the two sectors limited the potential for comprehensive and sustained improvements across the country. There is now general acceptance that the inherent complexities of AMR containment require a coordinated multisectoral effort grounded in the One Health approach.

Counties are at different levels of establishing a One Health platform and political commitment to AMR containment. This may be due to unique challenges facing them but attributed to governance and coordination mechanisms.

There is need to focus on strengthening leadership, policy, governance, and enabling environment; building capacity; and supporting monitoring and feedback and self-learning through a dedicated thematic area. There is also a need to further strengthen coordination and reporting of county-level AMR governance structures and activities with national-level governance structures and activities and draw linkages to other relevant committees e.g. the IPC committees at the national and county level.

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
STRATEGIC OBJECTIVE 1: TO STRENGTHEN GOVERNANCE AND COORDINATION MECHANISMS									
Strategic Intervention: 1.1 Establish and Strengthen Governance and Coordination Mechanism at National and County Levels									
1.1.1 Review of relevant policies and strategies related to AMR	Updated strategies	X	X	X	X	X	X	2023-2027	NASIC Secretariat
1.1.2 Review National Antimicrobial Stewardship Interagency Committee membership and structure to incorporate all the relevant sector	NASIC membership and structure reviewed	X	X	X	X	X	X	2023	NASIC Secretariat
1.1.3: Capacity development (technical, operational, and financial) of the NASIC Secretariat for effective coordination and implementation of the NAP	Capacity of the NASIC Secretariat enhanced	X	X	X	X	X	X	2023-2027	NASIC Secretariat

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
1.1.4: Support establishment of CASICs in all counties	CASIC established in all the counties	X	X	X	X	X	X	2023-2025	NASIC Secretariat CASIC Secretariat
1.1.5: Support development of CASIC work plans on AMR	CASIC work plans	X	X	X	X	X	X	2023-2025	NASIC Secretariat CASIC Secretariat
Strategic Intervention: 1.2 Strengthen and Sustain Collaborations in AMR									
1.2.1 Conduct mapping of stakeholders involved in implementation of AMR National Action Plan	Mapped stakeholders	X	X	X	X	X	X	2023-2024	NASIC Secretariat CASIC Secretariat
1.2.2: Formalise partnership and collaborations with stakeholders	Signed memorandums of understanding	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/ NEMA/Kenya Fisheries Service (KeFS)/MIBEMA Professional bodies NASIC Secretariat CASIC Secretariat Implementing and development partners
1.2.3: Develop a framework for cross-sectoral collaborations	Collaboration framework developed	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/ NEMA/ KeFS/MIBEMA NASIC Secretariat CASIC Secretariat Partners
Strategic Intervention: 1.3 Monitor Implementation of the National Action Plan									
1.3.1 Develop the M&E framework for AMR National Action Plan	M&E framework	X	X	X	X	X	X	2023	NASIC Secretariat CASIC Secretariat
1.3.2: Establish an M&E system for NAP implementation	M&E system	X	X	X	X	X	X	2023	NASIC Secretariat CASIC Secretariat

STRATEGIC OBJECTIVE 2: TO IMPROVE AWARENESS & UNDERSTANDING OF AMR THROUGH EFFECTIVE COMMUNICATION, EDUCATION & TRAINING

Measure of Outcome: Proportion of stakeholders who are aware of AMR and AMU. AMR is a real public health crisis affecting the entire population that is exposed to antimicrobial resistant microorganisms (through human-human transmission, food, or other transmission routes).

Promotion of nation-wide measures against AMR in human health and agriculture requires public awareness and understanding of AMR and antimicrobial use. The current level of public awareness is limited, and AMR is not a core component of professional education, training, or certification in both human and agricultural courses. Awareness campaigns are on-going through professional associations and stakeholder for a, in limited areas but these need to be scaled up countrywide. Therefore, there is need for increased awareness for the general public and professionals to ensure appropriate use of antimicrobials. However, it is important to develop AMR communication messages tailor made to suit different audiences and develop mechanisms to measure their effectiveness.

There is need for creating awareness in relevant ministries to ensure concerted efforts in combating AMR. These efforts will also be replicated at county level. Combating AMR calls for commitment of national and county governments through resource mobilisation and ensuring comprehensive sensitisation at grassroots level.

Antimicrobials for human and animal use can be accessed without prescription. With this regard, there is need to educate the farmers, animal keepers and the general public to enforce behaviour change. Reducing the emergence and spread of AMR requires AMS and IPC among professionals. Behaviour change based on increased knowledge and understanding of AMR is critical in addition to the strengthening regulations in this sector.

Many farmers do not practice infection prevention measures in animals and crops and may resort to unnecessary use of antimicrobials; hence the need to emphasise adoption of good agricultural practices during sensitisation campaigns. Agriculture input manufacturers should be sensitised to eliminate unnecessary use of antimicrobials during processing especially of animal feeds.

Activity	Deliverable	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
STRATEGIC OBJECTIVE 2: TO IMPROVE AWARENESS & UNDERSTANDING OF AMR THROUGH EFFECTIVE COMMUNICATION, EDUCATION & TRAINING									
Strategic Intervention 2.1: Enhance Public Awareness, Knowledge, and Understanding of AMR									
2.1.1: Develop, review, and disseminate information, education, and communication materials and sensitisation packages	Information, education, and communication materials	X	X	X	X	X	X	2023-2027	NASIC Secretariat CASIC Secretariat Partners
2.1.2: Undertake studies to assess the level of awareness and intervention strategies on AMR among the public	Knowledge attitudes and practices report	X	X	X	X	X	X	2024-2027	NASIC Secretariat CASIC Secretariat Partners
2.1.3: Review the communication strategy for AMR	AMR communication strategy reviewed	X	X	X	X	X	X	2023	NASIC Secretariat CASIC Secretariat Partners
2.1.4. Conduct AMR awareness campaigns at national, county, and international levels	AMR awareness events conducted and reports developed	X	X	X	X	X	X	2023–2027	NASIC Secretariat CASIC Secretariat Partners

Activity	Deliverable	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
2.1.5: Conduct periodic AMU and AMR messaging and dissemination on existing and emerging issues to targeted groups	AMU/AMR messaging dissemination report	X	X	X	X	X	X	2023-2027	NASIC Secretariat CASIC Secretariat Partners
2.1.6: Develop and disseminate periodic policy briefs for policy makers across all sectors on AMR	Periodic policy briefs	X	X	X	X	X	X	2023-2027	NASIC Secretariat CASIC Secretariat Partners
2.1.7: Create awareness on environmental dimensions of AMR	Dissemination materials on environmental dimensions of AMR	X	X	X	X	X	X	2023-2027	NASIC Secretariat CASIC Secretariat Partners
2.1.8: Disseminate evidence-based AMR findings to leadership, professionals, and general public	Dissemination reports	X	X	X	X	X	X	2023-2027	NASIC Secretariat CASIC Secretariat Partners
Strategic Intervention 2.2: Promote Education and Training on AMR and IPC									
2.2.1 Conduct training and sensitisation of professionals and extension workers on AMR	Trained professionals on AMR and IPC	X	X	X	X	X	X	2023-2027	MOH/MOALD/ MoECCF/NEMA/KeFS/ MIBEMA, professional bodies NASIC Secretariat CASIC Secretariat Partners
2.2.2: Review and disseminate AMR training modules to include environmental dimensions, aquaculture, and crop health	Reviewed AMR modules	X	X	X	X	X	X	2023-2027	MOH/MOALD/ MoECCF/NEMA/KeFS/ MIBEMA, professional bodies NASIC Secretariat CASIC Secretariat Partners
2.2.3: Incorporate AMR and IPC training modules as part of continuous professional development	AMR modules incorporated into continuous professional development	X	X	X	X	X	X	2023–2027	MOH/MOALD/ MoECCF/NEMA/KeFS/ MIBEMA, professional bodies NASIC Secretariat CASIC Secretariat Partners
2.2.4: Incorporate AMR as component of in-service and pre-service training curriculum for professionals	AMR included as component of in-service and pre-service training curriculum for professionals	X	X	X	X	X	X	2023-2027	MOH/MOALD/ MoECCF/NEMA/KeFS/ MIBEMA, professional bodies NASIC Secretariat
Strategic Intervention 2.3: Build Capacity of Media Personnel on AMR									
2.3.1: Coordinate media personnel trainings on AMR/ AMU and identify champions	Media trainings reports Media champions identified	X	X	X	X	X	X	2023–2027	NASIC Secretariat CASIC Secretariat Partners
2.3.2: Engage media to cover AMR events and occurrences	AMR events report Media Clips	X	X	X	X	X	X	2023–2027	NASIC Secretariat CASIC Secretariat Partners

STRATEGIC OBJECTIVE 3: TO STRENGTHEN THE KNOWLEDGE & EVIDENCE BASE THROUGH SURVEILLANCE AND RESEARCH

Measure of outcome Availability of information on incidence, prevalence, and resistance trends across pathogens required for the understanding of the AMR development and spread and timely national and local actions to improve treatments and curb the development of AMR.

Establishing surveillance systems to detect and report resistant pathogens as well as the consumption of antimicrobials plays a critical role in developing evidence-based policies and guidelines to control/ limit overuse of antimicrobials which is a major driver of AMR. In Kenya surveillance and research on AMR is dependent on local research institutions, training institutions, health facilities and international research partners. More detailed surveillance has historically been limited to enteric pathogens which cause diarrheal diseases and significant mortality and morbidity in children. This data is insufficient to facilitate implementation of robust interventions. While the country cannot wait for all the data to initiate actions, data collection can be undertaken alongside risk mitigation.

Building the capacity of health professionals and laboratories that take part in the process of surveillance enable reliable and robust diagnostic testing and proper data to be reported. With proper information and sharing of surveillance studies across borders, targeted approaches and treatment strategies may be developed to limit the spread and emergence of pathogens with AMR.

The extent and impact of AMR in the agricultural sector is not yet well defined. The judicious use of antimicrobials in food-producing animals is a critical step in lessening the AMR patterns seen in human medicine. This necessitates the establishment of an effective monitoring system to monitor trends in AMR from the point of slaughter to processing of animals, as well as the implementation of surveillance systems focusing on AMR mitigation strategies in animals.

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
STRATEGIC OBJECTIVE 3: TO STRENGTHEN THE KNOWLEDGE & EVIDENCE BASE THROUGH SURVEILLANCE AND RESEARCH									
Strategic Intervention 3.1: Strengthen the National AMR Surveillance System									
3.1.1: Establish AMR Surveillance sites in environment, crop, and aquaculture sectors	Functional surveillance sites established			X	X	X	X	2023–2027	MOALD/MoECCF/NEMA/ KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.1.2: Increase the number of AMR Surveillance Sentinel Sites	AMR Surveillance sentinel sites Increased	X	X					2023–2027	MOH/MOALD NASIC and CASIC Secretariat Partners
3.1.3: Integrate information management system for AMR and AMU/AMC	Integrated information management system established	X	X	X	X	X	X	2023–2027	MOH/MOALD/MoECCF/ NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.1.4: Scale up the AMR information management system to include data from all sectors	AMR information management system scaled up	X	X	X	X	X	X	2023–2027	MOH/MOALD/MoECCF/ NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
3.1.5: Review the AMR Surveillance Strategy using a One Health approach	AMR surveillance strategy reviewed	X	X	X	X	X	X	2023-2024	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.1.6: Publish annual AMR surveillance report	Annual AMR surveillance report published	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.1.7: Conduct AMR data analysis, data review meetings and utilisation to optimise use of data for decision making	AMR data review reports.	X	X	X	X	X	X		MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
Strategic Intervention 3.2: Strengthen Laboratory Capacity for AMR Surveillance									
3.2.1: Assess capacities of existing laboratories on AMR surveillance including environment, food, crop, and aquaculture	Laboratory assessment report	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.2.2: Establish and maintain laboratory quality management system in all the surveillance sites	Laboratory quality management system established	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.2.3: Standardise laboratory testing methods and reporting tools for AMR surveillance	Standardised laboratory methods and reporting tools	X	X	X	X	X	X	2023-2025	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.2.4: Conduct training on AMR testing methods across all sectors	Training reports	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners
3.2.5: Develop a forecasting and quantification tool for microbiological laboratory supplies (as a means of understanding the need, to draw on economies of scale and to reduce stock outs)	Forecasting and quantification tool	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA NASIC and CASIC Secretariat Partners

STRATEGIC OBJECTIVE 4: TO REDUCE THE INCIDENCE OF INFECTION THROUGH EFFECTIVE SANITATION, HYGIENE, AND IPC MEASURES

Measure of Outcome: extent of reduction in the prevalence of preventable infections, and in particular the incidence of drug resistant infections in health care settings. Better hygiene and infection prevention control are essential to limit the development and spread of antimicrobial-resistant infections and multidrug-resistant bacteria. To prevent transmission of AMR infections infection prevention and control, biosecurity, sanitation, hand washing, food and water safety and animal hygiene must be core components of infectious disease prevention. Vaccination, where appropriate as an infection prevention measure, should be encouraged. Prophylactic use of antibiotics in humans and animals, to prevent the acquisition and spread of diseases, and their use as a growth stimulant, promotes the development of AMR. Infection prevention and control including surveillance of health care associated-infections (HAIs) should be institutionalised and strengthened. Kenya currently has IPC policy, strategy, guidelines, and basic training course in place. This NAP supports the Implementation of the IPC Strategic Plan to reduce the incidence of infections and demand for antimicrobials and subsequently reduce AMR.

Improving the level of husbandry, hygiene management and maintaining the health condition of livestock are extremely important elements of controlling the occurrence and selection of antimicrobial resistant organisms leading to the prevention of the occurrence of infectious diseases in animals, to secure safety production of animal products, as well as to reduce instances of using veterinary antibiotics. They are also highly important from the viewpoint of reducing production costs.

During food processing and distribution processes, promote countermeasures to reduce contamination with Antimicrobial Resistant Organisms and other microorganisms as well as to prevent food poisoning from occurring by promoting HACCP (Hazard Analysis and Critical Control Point).

In all fields of livestock, farm-raised aquatic animals and pets, appropriate vaccination is important to prevent infectious diseases, in addition to thorough hygienic management.

Studies have indicated that antibiotics can contaminate the environment through three principal channels: animal waste, human waste and manufacturing waste containing active pharmaceutical ingredients. This can result in soil, crops and water sources contamination and facilitate the development of antimicrobial resistance amongst the pathogens with which they interact creating environmental reservoirs of antimicrobial resistant bacteria. This calls for adequate treatment of waste products released into the local environment, limiting the sale and use of by products that could contain antimicrobials like manure from animals treated with antimicrobials. Public awareness on proper disposal of antimicrobials and treatment of hospital waste will be beneficial in reducing the burden of antimicrobial resistant pathogens in the wastewater.

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
STRATEGIC OBJECTIVE 4: TO REDUCE THE INCIDENCE OF INFECTION THROUGH EFFECTIVE SANITATION, HYGIENE, AND IPC MEASURES									
Strategic Intervention 4.1: Strengthen Infection Prevention and Control Measures									
4.1.1: Improve hand hygiene compliance in healthcare facilities	Improved hand hygiene compliance rate	X						2023-2027	MOH NASIC and CASIC Secretariat Partners
4.1.2: Coordinate continuous in-service IPC training for healthcare workers	Improved health care worker knowledge level on IPC	x						2023-2027	MOH NASIC and CASIC Secretariat Professional bodies Partners

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
4.1.3: Establish a national HAI surveillance system	HAI surveillance system established	x						2023-2027	MOH NASIC and CASIC Secretariat Partners
4.1.4: Incorporate IPC and AMS indicators into the National Health Insurance Fund accreditation checklist	IPC and AMS indicators incorporated into the National Health Insurance Fund accreditation checklist	x						2023-2027	MOH NASIC and CASIC Secretariat Partners
4.1.5: Disseminate and implement farm biosecurity guidelines	Farm biosecurity guidelines disseminated		X	X	X	X	X	2023-2027	MOALD/MoECCF/ NEMA/KeFS/ MIBEMA NASIC and CASIC Secretariat Partners
4.1.6: Advocate for vaccination and immunisation to reduce incidences of preventable diseases	Counties sensitised on vaccination	X	X					2023-2027	MOH, MOALD, MIBEMA, NASIC and CASIC Secretariat Partners
4.1.7: Strengthen hygiene and food safety measures in food value chains	Hygiene and food safety measures strengthened		X	X				2023-2027	MOALD/MoECCF/ NEMA/KeFS/ MIBEMA NASIC and CASIC Secretariat Partners
4.1.8: Strengthen good agricultural practices along the food value chain	Strengthened agricultural practices		X	X		X	X	2023-2027	MOALD /KeFS/ MIBEMA NASIC and CASIC Secretariat Partners
4.1.9: Conduct continuous biorisk management training for professionals under One Health	Strengthened Bio risk management	X	X	X	X	X	X	2023-2027	MOH/MOALD/ MoECCF/NEMA/ KeFS/ MIBEMA
Strategic Intervention 4.2: Reduce and Minimise Environmental Contamination by Antimicrobials									
4.2.1: Map key sources of contamination / high risk facilities that have an impact on AMR in the environment.	High risk facilities mapped			X				2023-2027	MoECCF/NEMA NASIC and CASIC Secretariat Partners
4.2.2: Develop and disseminate guidelines, procedures and protocols on effluent and waste disposal from different sectors	Guidelines, procedures and protocols on effluent and waste developed and disseminated	X	X	X	X	X	X	2023-2027	MOH/MOALD/ MoECCF/NEMA/ KeFS/ MIBEMA NASIC and CASIC Secretariat Partners
4.2.3: Enhance compliance to proper effluent and waste management, treatment, and safe disposal	Effluent and waste management compliance enhanced	X	X	X	X			2023-2027	MoECCF/NEMA/ KeFS/ MOH NASIC and CASIC Secretariat Partners

STRATEGIC OBJECTIVE 5: TO OPTIMIZE THE USE OF ANTIMICROBIALS

Measure of outcome: extent of reduction in national human consumption of antibiotics, the consumption of antibiotics used in food production and the use of medical and veterinary antimicrobial agents for applications other than human and animal health.

Prudent AMU is vital to sustainable prevention and treatment of microbial diseases. Areas of focus in this strategic objective include development and implementation of guidelines, enhanced regulation, enhancing human resource capacity, ensuring access to essential antimicrobials as well as strengthening lab diagnostic capacity. Ensuring sustainable access to quality essential antimicrobials is, therefore, integral in successfully hampering the development of AMR. Consumption of substandard or counterfeit antimicrobials containing less than the specified amount of the active ingredient, or consuming suboptimal dosage due to lack of supply or limited accessibility to antimicrobials contributes to the emergence of AMR. Strengthening the regulatory measures, tools, and activities of the national drug regulatory agency in ensuring the safety, efficacy, and quality of medicines from market authorisation to post-marketing surveillance will help combat AMR. Efforts must also focus on sustaining an efficient supply chain system towards ensuring the availability or accessibility of quality medicines to all patients at all times with emphasis on appropriate use by both patients and prescribers. Additionally, Kenya has developed an essential medicines list incorporating AWaRe (Access, Watch, Reserve) categorisation of antibiotics as well development of National Guidelines on Antimicrobial Stewardship to ensure prudent use of antimicrobials.

Antimicrobials are important in protecting the health and welfare of livestock and enhance the efficient production of safe food. On the other hand, their use always involves a risk of selecting antimicrobial resistant bacteria that might bring adverse effects to human medicine, veterinary medicine, and food safety.

The local demand for animal food products such as milk, meat, fish, and eggs, is bound to increase. This increased demand for animal protein engenders complex intensive production systems that results to an increase in the use of antimicrobial agents.

The WOAH, Codex Alimentarius Commission and other international organisations have formulated guidelines concerning the use of veterinary Antimicrobials. Appropriate use of veterinary antimicrobials will be ensured through various regulatory systems based on applicable laws.

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
STRATEGIC OBJECTIVE 5: TO OPTIMIZE THE USE OF ANTIMICROBIALS									
Strategic Intervention 5.1: Support Implementation of Strategies and Guidelines to Optimise the use of Antimicrobials									
5.1.1: Conduct baseline assessment on AMU/AMC	Baseline data on AMU/AMU generated	X	X	X		X	X	2024	MOH, MOALD, Pharmacy and Poisons Board (PPB), Veterinary Medical Directorate (VMD), Pest Control Products Board (PCPB) NASIC and CASIC Secretariat Partners
5.1.2: Develop, review, and disseminate strategies, guidelines, and interventions to optimise use of antimicrobials	Strategies and guidelines disseminated.	X	X	X		X	X	2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.1.3: Establish a national monitoring system for AMU and AMC	AMU and AMC Monitoring systems established	x	x	x		x	x	2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
5.1.4: Review, disseminate and implement AMS guidelines	AMS guidelines developed and implemented	X	X					2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.1.5: Monitor compliance to antimicrobial use guidelines and strategies	AMU compliance data available	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.1.6: Promote adoption of point of care diagnostics tools	Point of care diagnostics tools adopted	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
Strategic Intervention 5.2: Strengthen the Regulatory System of Antimicrobials									
5.2.1: Conduct routine joint risk-based post marketing surveillance and quality surveys of antimicrobials	Post marketing surveillance reports	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.2.2: Engage regulatory bodies on market authorisation process of antimicrobials	Market authorisation process updated	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.2.3: Hold annual engagements with regulatory bodies, including on Good Distribution Practice	GDP inspection report	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.2.4: Review laws and regulations related to AMU/AMC	Laws and regulations reviewed	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
5.2.5: Periodic review of antimicrobials classified as critical for use in human and animal health	Updated list of critical antimicrobials	X	X					2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners
Strategic Intervention 5.3: Strengthen Laboratory Capacity for Quality Control (QC) of Antimicrobials									
5.3.1: Enhance laboratory capacity to assess the quality of antimicrobial agents	Laboratory capacity for QC enhanced	X	X	X				2023-2027	MOH, MOALD, PPB, VMD, PCPB NASIC and CASIC Secretariat Partners

STRATEGIC OBJECTIVE 6: TO DEVELOP AN ECONOMIC CASE FOR SUSTAINABLE INVESTMENT THAT TAKES ACCOUNT OF THE NEEDS OF KENYA, AND INCREASE INVESTMENT IN NEW MEDICINES, DIAGNOSTIC TOOLS, VACCINES AND OTHER INTERVENTIONS

Measure of Outcome: extent of increase in sustainable investment in capacity to counter antimicrobial resistance, including investment in developing of new medicines and diagnostics.

Research is required on trends in resistance, practices and attitudes driving resistance in Kenya to inform appropriate interventions including the research agendas that were published by WHO in 2023. In addition to investment in the discovery and development of new antimicrobials, diagnostic tools, and vaccines, is required. Research and development of new antimicrobials though perceived as a less attractive business investment than that of medicines for chronic diseases, can provide opportunities for feeding the antimicrobial pipeline. Research and investment in diagnostic tools and improved vaccines can contribute to the overall reduction in AMU.

The causes, effects and impacts of AMR in the animal sector entail a better and deeper knowledge of the phenomena's complexity. Veterinary antimicrobial consumption needs be further assessed in order to determine the correlation of AMR in both animal and human health in the country. Moreover, toxicological studies need to be performed to establish the safety of veterinary drug residues in the human diet, as well in the human intestinal flora. Researchers are needed to enhance the development of effective strategies and alternatives to combat AMR in food-producing animals.

To implement policies for combating AMR, it is important not only to accumulate existing scientific evidence and incorporate it into public health measures, but also to create new scientific evidence in Kenya and share it with society and the international community.

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
STRATEGIC OBJECTIVE 6: TO DEVELOP AN ECONOMIC CASE FOR SUSTAINABLE INVESTMENT THAT TAKES ACCOUNT OF THE NEEDS OF KENYA, AND INCREASE INVESTMENT IN NEW MEDICINES, DIAGNOSTIC TOOLS, VACCINES AND OTHER INTERVENTIONS									
Strategic Intervention 6.1: Promote Research on AMR									
6.1.1: Consolidate and inventory ongoing and completed research on AMR	Inventory for research created	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/ NEMA/KeFS/MIBEMA, research institution NASIC and CASIC Secretariat Partners
6.1.2: Develop AMR research agenda guided by the WHO policy on global research agenda for AMR and research priorities	Research agenda develop	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/ NEMA/KeFS/MIBEMA, research institution NASIC and CASIC Secretariat Partners
6.1.3: Promote research on alternative therapies	Increased research on alternative therapies	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/ NEMA/KeFS/MIBEMA, research institution NASIC and CASIC Secretariat Partners

Activity	Deliverables	Sector Involved						Time frame	Responsible Entity
		Human Health	Animal Health	Plant Health	Environmental Health	Fisheries & Aquaculture	Food		
6.1.4: Prioritise research on economic impact of AMR	Economic impact of AMR established	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA, research institution NASIC and CASIC Secretariat Partners
6.1.5: Promote operational research on programmes with impact on AMR	Operational research conducted	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA, research institution NASIC and CASIC Secretariat Partners
6.1.6: Promote research on the environmental dimension of AMR	Research on the environmental dimension of AMR conducted	X	X	X	X	X	X	2023-2027	MOH/MOALD/MoECCF/NEMA/KeFS/MIBEMA, research institution NASIC and CASIC Secretariat Partners

MONITORING AND EVALUATION

Upon the official adoption of this National Action Plan, NASIC shall review the Monitoring & Evaluation Framework to include targets and indicators for the activities captured within the National Action Plan for AMR.

An M&E framework for the AMR national action plan is critical in measuring the impact of proposed interventions. This framework will be developed for each activity bearing a monitoring indicator to be measured in the process of its implementation. The framework will incorporate both objective and outcome indicators. Responsible ministries/ departments/agencies will monitor and evaluate interventions identified in the NAP. A mid-term review will be done after two years to monitor the implementation of the NAP. End of term evaluation will be conducted in 2027.

In addition, annual operational plans and a Communication and Surveillance Strategy has been developed to support further implementation of the NAP.

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BIBLIOGRAPHY

Global Antibiotic Resistance Partnership-Kenya Working Group (2011): Situational Analysis; Antibiotic Use and Resistance in Kenya (http://www.cddep.org/sites/default/files/garp/sitan/img/ screen_shot_2015-12-15_at_12.06.41_pm.png)

Global Framework for Development & Stewardship to Combat Antimicrobial Resistance. WHO. 2018

Global research agenda for antimicrobial resistance in human health. Policy brief. WHO. June 2023

GLASS manual for antimicrobial resistance surveillance in common bacteria causing human infection. WHO. 2023 Situation Analysis on Antibiotic Use and Resistance in Kenya (2016)

Guidance to facilitate monitoring and evaluation for antimicrobial resistance national action plans. World Health Organization, Food and Agriculture Organization of the United Nations, United Nations Environment Programme and World Organisation for Animal Health, 2023

Guidelines for the prudent use of antimicrobials in animals Nairobi, Kenya: Government of Kenya, October 2018.

Kenya National Action Plan on Antimicrobial Resistance: Review of Progress in The Human Health Sector. Geneva: World Health Organization; 2022

Ministry of Health, Kenya National Infection Prevention and Control Policy for Health Care Services. Third Edition. Nairobi, Kenya: Government of Kenya, May 2021

Murray, Christopher JL; Ikuta, Kevin Shunji; Sharara, Fablina; Swetschinski, Lucien; Aguilar, Gisela Robles; al., et (2022) Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. The Lancet. Volume 399, Issue 10325, 629-655

National antimicrobial stewardship guidelines for health care settings in Kenya. 2020

National Policy for the Prevention and Containment of Antimicrobial Resistance, Nairobi, Kenya: Government of Kenya, May 2017.

O'Neill, 2014, Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations

(https://amr-review.org/Publications)

World Health Organization 2015, Global Action Plan on Antimicrobial Resistance

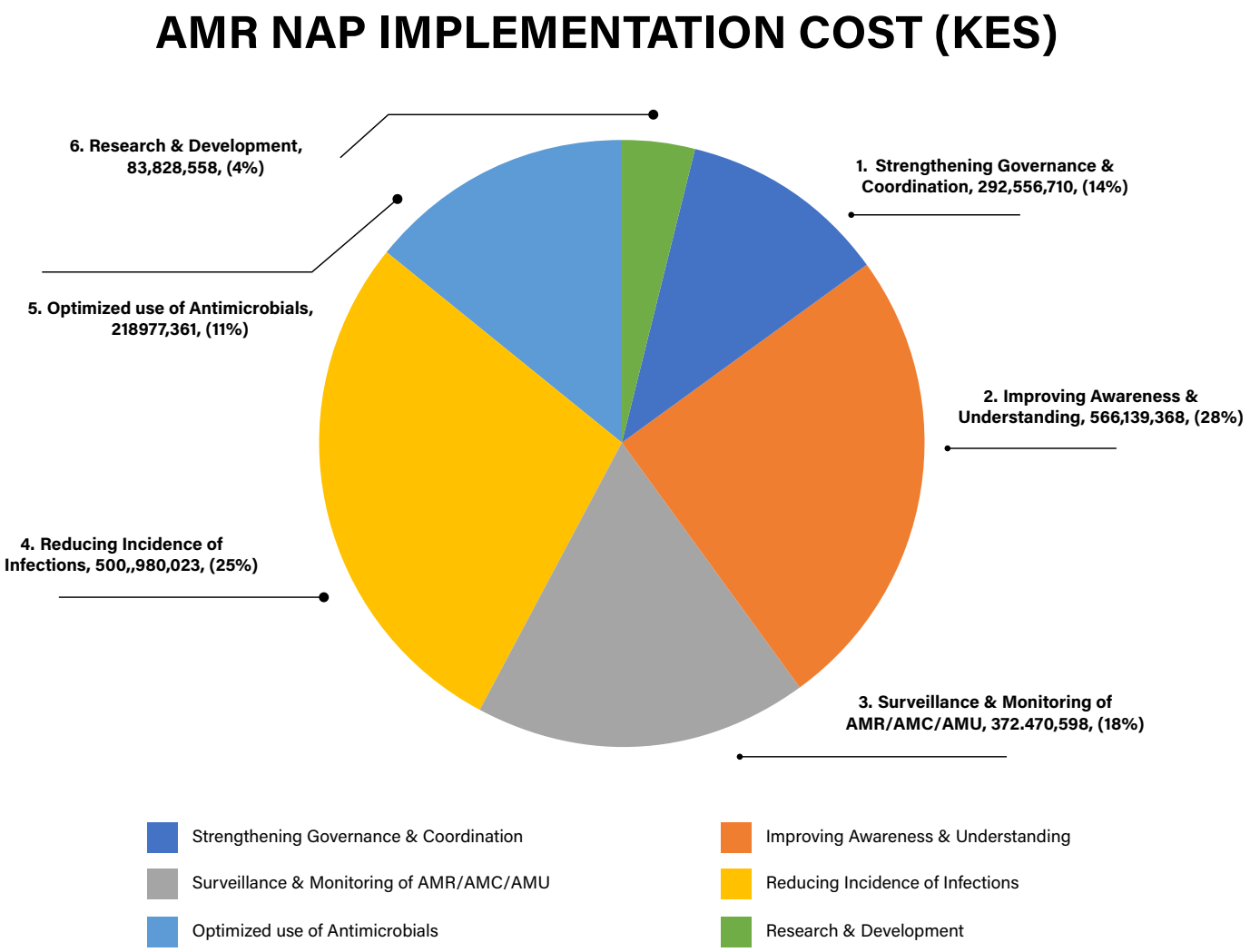
World Health Organization 2015, Global Antimicrobial Resistance Surveillance System: Manual for Early Implementation.

World Health Organization 2015, Worldwide country situation analysis: response to antimicrobial resistance. (http://www.who.int/drugresistance/documents/situationanalysis/en/).

WHO implementation Handbook for National Action Plans on Antimicrobial Resistance: Guidance for the Human Health Sector. 2022

ANNEXES

COSTING OF AMR NAP 2023-2027 ACTIVITIES



Strategic Objective 1: Strengthening Governance and Coordination Mechanisms

	MOH	NASIC	Total
Objective 1: Strengthen governance and coordination mechanisms	**68,909,635**	**223,647,075**	**292,556,710**
Intervention 1.1: Establish and strengthen governance and coordination mechanism at national and county levels	**68,909,635**	**159,116,364**	**228,025,999**
Activity 1.1.1: Review of relevant policies and strategies related to AMR		1,126,800	1,126,800
Activity 1.1.2: Review National Antimicrobial Stewardship Interagency Committee membership and structure to incorporate all the relevant sector		420,000	420,000
Activity 1.1.3: Capacity development (technical, Operational and financial) of the NASIC secretariat for effective coordination and implementation of the NAP	68,909,635		68,909,635
Activity 1.1.4: Support establishment of County Antimicrobial Stewardship Interagency Committees (CASICs) in all counties		36,731,395	36,731,395
Activity 1.1.5: Support development of CASIC Work Plans on AMR		120,838,169	120,838,169
Intervention 1.2: Strengthen and Sustain Collaborations in AMR		**10,737,580**	**10,737,580**
Activity 1.2.1: Conduct mapping of stakeholders involved in implementation of AMR National action plan		586,660	586,660
Activity 1.2.2: Formalize partnership and collaborations with stakeholders		5,443,200	5,443,200
Activity 1.2.3: Develop a framework for cross-sectoral collaborations		4,707,720	4,707,720
Intervention 1.3: Monitor Implementation of the National Action Plan		**53,793,131**	**53,793,131**
Activity 1.3.1: Develop the Monitoring and evaluation framework for AMR National Action Plan		39,987,131	39,987,131
Activity 1.3.2: Establish an M&E system		13,806,000	13,806,000
Total	**68,909,635**	**223,647,075**	**292,556,710**

Strategic Objective 2: Improving Awareness and Understanding of AMR through Effective Communication, Education & Training

	MOE	NASIC	MOEd	Total
Objective 2: Improve awareness & understanding of AMR through effective communication, education & training	**146,665**	**565,992,703**	**0**	**566,139,368**
Intervention 2.1: Enhance Public Awareness, Knowledge and Understanding of AMR	**146,665**	**458,697,018**		**458,843,683**
Activity 2.1.1: Develop, review and disseminate IEC materials and sensitization packages		10,031,200		10,031,200
Activity 2.1.2: Undertake studies to assess the level of awareness and intervention strategies on AMR among the public		56,947,549		56,947,549
Activity 2.1.3: Review the communication strategy for AMR		12,495,760		12,495,760
Activity 2.1.4: Conduct AMR awareness campaigns at national, county and international levels)		325,627,808		325,627,808
Activity 2.1.7: Create awareness on environmental dimensions of AMR	146,665	16,881,512		17,028,177
Activity 2.1.5: Conduct periodic AMU and AMR messaging and dissemination on existing and emerging issues to targeted groups		293,330		293,330
Activity 2.1.6: Develop and disseminate periodic policy briefs for policy makers across all sectors on AMR		32,442,304		32,442,304
Activity 2.1.8: Disseminate evidence-based AMR findings to leadership, professionals and general public		3,977,555		3,977,555
Intervention 2.2: Promote Education and Training on AMR and IPC		**101,965,379**	**0**	**101,965,379**
Activity 2.2.1: Conduct training and sensitization of professionals and extension workers on AMR		61,427,082		61,427,082
Activity 2.2.2: Review and disseminate AMR training modules to include environmental dimensions, aquaculture and crop health		24,897,142		24,897,142
Activity 2.2.3: Incorporate AMR and IPC training modules as part of continuous professional development (CPD)			0	0
Activity 2.2.4: Incorporate AMR as component of in-service and pre-service training curriculum for professionals		15,641,155		15,641,155
Intervention 2.3: Build capacity of Media Personnel on AMR		**5,330,306**		**5,330,306**
Activity 2.3.1: Coordinate media personnel trainings on AMR/AMU and identify champions		4,080,720		4,080,720
Activity 2.3.2: Engage media to cover AMR events and occurrences		1,249,586		1,249,586
Total	**146,665**	**565,992,703**	**0**	**566,139,368**

Strategic Objective 3: Strengthen the Knowledge & Evidence-Base Through Surveillance and Research

	MOE	MOH	NASIC	MIBEMA	MoALD	Total
Objective 3: Strengthen the knowledge & evidence base through surveillance and research	**3,943,531**	**329,317,408**	**25,576,589**	**6,421,015**	**7,212,054**	**372,470,598**
Intervention 3.1: Strengthen the National AMR Surveillance System	**3,943,531**	**329,317,408**	**1,012,126**	**6,421,015**	**7,212,054**	**347,906,135**
Activity 3.1.1: Establish AMR Surveillance sites in environment, crop and aquaculture sectors	3,943,531					3,943,531
Activity 3.1.2: Increase AMR Surveillance Sentinel Sites		235,385,631				235,385,631
Activity 3.1.3: Integrate information management system for AMR and AMU/AMC		4,300,480				4,300,480
Activity 3.1.4: Scale up the AMR information management system to include data from all sectors		56,592,000	1,012,126			57,604,126
Activity 3.1.5: Review the AMR Surveillance Strategy using a one health approach		1,012,731		6,421,015	7,212,054	14,645,800
Activity 3.1.6: Publish annual AMR surveillance report		8,819,391				8,819,391
Activity 3.1.7: Conduct AMR data analysis and utilization to optimize use of data for decision making		23,207,176				23,207,176
Intervention 3.2: Strengthen Laboratory capacity for AMR Surveillance			**24,564,463**			**24,564,463**
Activity 3.2.1: Assess capacities of existing laboratories on AMR surveillance including environment, food, crop and aquaculture			4,911,291			4,911,291
Activity 3.2.2: Establish and Maintain laboratory Quality Management System in all the surveillance sites			13,903,764			13,903,764
Activity 3.2.3: Standardize laboratory testing methods and reporting tools for Antimicrobial Resistance surveillance			613,685			613,685
Activity 3.2.4: Conduct training on AMR testing methods across all sectors			5,135,724			5,135,724
Total	**3,943,531**	**329,317,408**	**25,576,589**	**6,421,015**	**7,212,054**	**372,470,598**

Strategic Objective 4: Reduce the Incidence of Infection Through Effective Sanitation, Hygiene, and IPC Measures

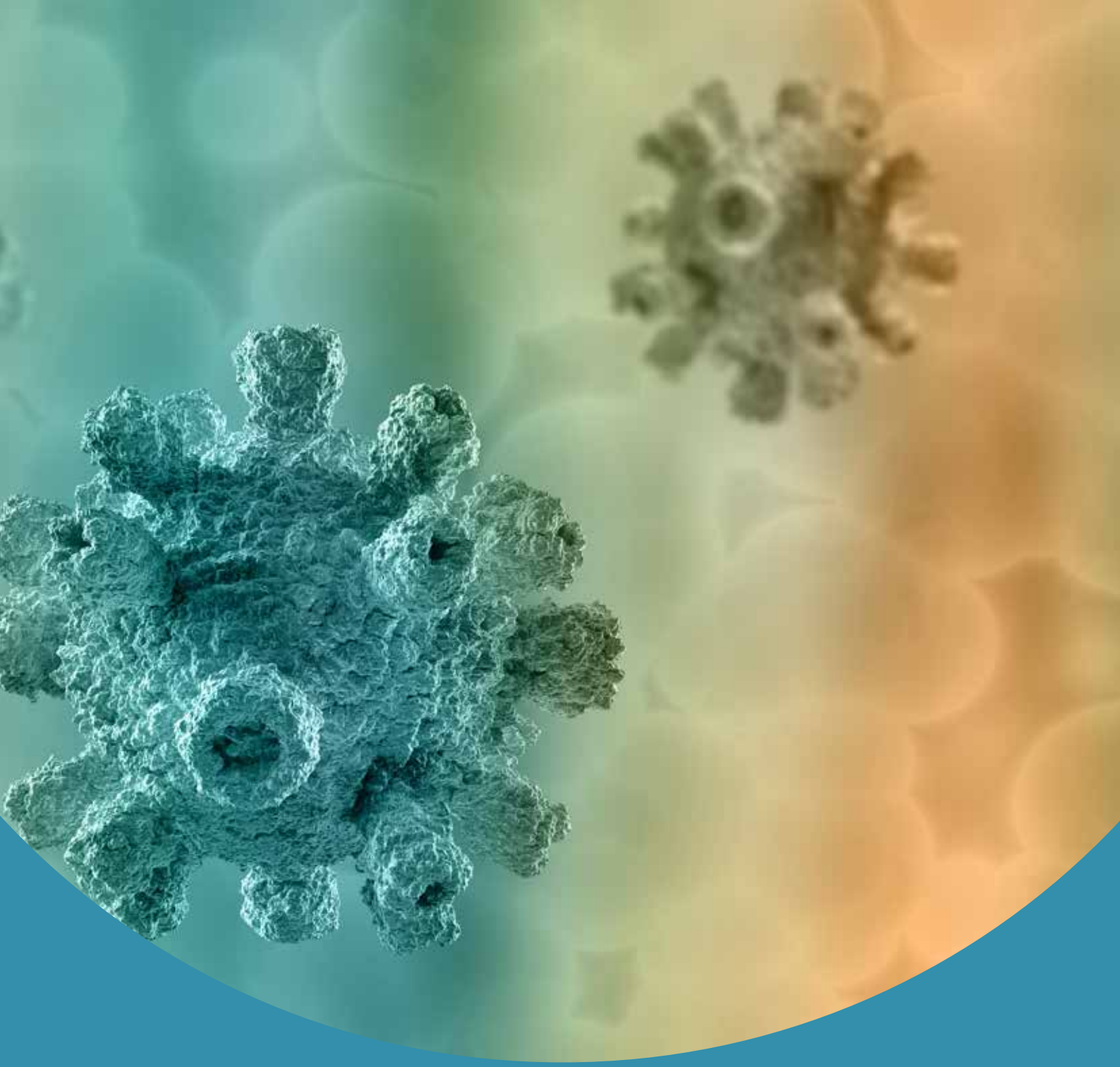
	MOE	MOH	MoALD	MIBEMA	Total
Objective 4: Reduce the incidence of infection through effective sanitation, hygiene and IPC measures	**87,901,006**	**109,618,210**	**292,138,087**	**11,322,720**	**500,980,023**
Intervention 4.1: Strengthen infection prevention and control measures		**109,618,210**	**292,138,087**		**401,756,297**
Activity 4.1.1: Improve hand hygiene compliance in healthcare facilities		5,141,000			5,141,000
Activity 4.1.2: Coordinate continuous in-service IPC training for healthcare workers		71,744,410			71,744,410
Activity 4.1.3: Establish a national HAI surveillance system		27,980,800			27,980,800
Activity 4.1.4: Incorporate IPC and AMS indicators into the NHIF accreditation checklist		4,752,000			4,752,000
Activity 4.1.5: Disseminate and implement farm biosecurity guidelines			56,301,312		56,301,312
Activity 4.1.6: Advocate for vaccination and immunization to reduce incidences of preventable diseases			59,389,920		59,389,920
Activity 4.1.7: Strengthen hygiene and food safety measures in food value chains			29,344,840		29,344,840
Activity 4.1.8: Strengthen good agricultural practices along the food value chain			52,617,859		52,617,859
Activity 4.1.9: Conduct continuous Biorisk management training for professionals under One-Health			94,484,156		94,484,156
Intervention 4.2: Reduce and Minimize environmental contamination by antimicrobials	**87,901,006**			**11,322,720**	**99,223,726**
Activity 4.2.1: Map key sources of contamination / high risk facilities that have an impact on AMR in the environment.	14,419,500			11,322,720	25,742,220
Activity 4.2.2: Develop and disseminate guidelines, procedures and protocols on waste disposal from diffe	58,053,360				58,053,360
Activity 4.2.3: Enhance compliance to proper waste management, treatment and safe disposal	15,428,146				15,428,146
Total	**87,901,006**	**109,618,210**	**292,138,087**	**11,322,720**	**500,980,023**

Strategic Objective 5: Optimise the Use of Antimicrobials

	MOH	MoALD	Total
Objective 5: Optimize the use of antimicrobials	**177,091,833**	**41,885,528**	**218,977,361**
Intervention 5.1: Support implementation of strategies and guidelines to optimize the use antimicrobials	**140,298,607**	**21,185,600**	**161,484,207**
Activity 5.1.1: Conduct baseline assessment on AMU/AMC	12,052,400	3,362,000	15,414,400
Activity 5.1.2: Develop, review and disseminate strategies, guidelines and interventions to optimize use of antimicrobials	10,545,400	16,551,400	27,096,800
Activity 5.1.3: Establish a monitoring system for AMU and AMC	42,463,324	1,272,200	43,735,524
Activity 5.1.5: Monitor compliance to antimicrobial use guidelines and strategies	62,334,908		62,334,908
Activity 5.1.6: Promote adoption of Point of Care diagnostics tools	12,902,575		12,902,575
Intervention 5.2: Strengthen the regulatory system of antimicrobials	**30,252,802**	**20,699,928**	**50,952,730**
Activity 5.2.1: Conduct routine joint risk-based post marketing surveillance and quality surveys of antimicrobials	4,324,380		4,324,380
Activity 5.2.2: Engage regulatory bodies on market authorization process of antimicrobials	7,743,264		7,743,264
Activity 5.2.3: Hold annual engagements with regulatory bodies, including on Good Distribution Practice	2,285,561		2,285,561
Activity 5.2.4: Review laws and regulations related to AMU/AMC	15,899,597		15,899,597
Activity 5.2.5: Periodic review of antimicrobials classified as critical for use in human and animal health		20,699,928	20,699,928
Intervention 5.3: Strengthen Laboratory Capacity for Quality Control (QC) of Antimicrobials	**6,540,424**		**6,540,424**
Activity 5.3.1: Enhance laboratory capacity to assess the quality of antimicrobial agents	6,540,424		6,540,424
Total	**177,091,833**	**41,885,528**	**218,977,361**

Strategic Objective 6: Develop an Economic Case for Sustainable Investment

	MOE	MOH	Total
Objective 6: Develop an economic case for sustainable investment	**795,187**	**83,033,371**	**83,828,558**
Intervention 6.1: Promote research on AMR	**795,187**	**83,033,371**	**83,828,558**
Activity 6.1.1: Consolidate and inventorize ongoing and completed research on AMR	795,187	2,195,640	2,990,827
Activity 6.1.2: Develop AMR research agenda		12,153,242	12,153,242
Activity 6.1.3: Promote research on alternative therapies		45,665,466	45,665,466
Activity 6.1.4: Prioritize research on economic impact of AMR		23,019,023	23,019,023
Activity 6.1.6: Promote research on the environmental dimension of AMR	0		0
Total	**795,187**	**83,033,371**	**83,828,558**



REPUBLIC OF KENYA