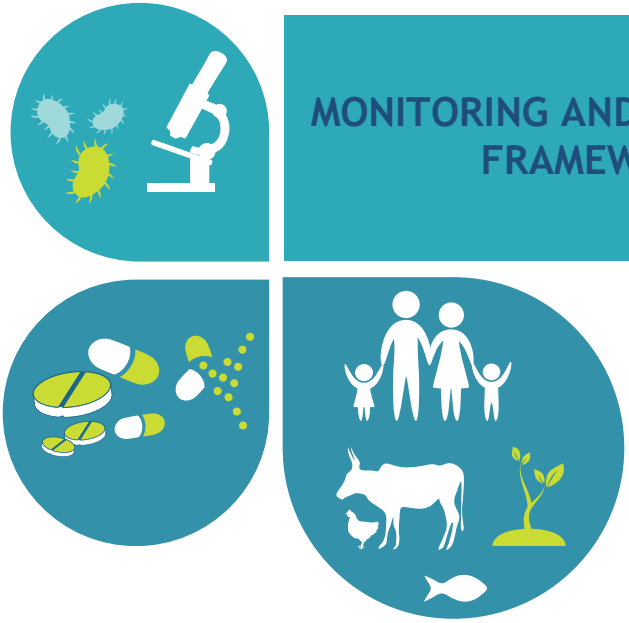
REPUBLIC OF KENYA

NATIONAL ACTION PLAN FOR THE CONTAINMENT AND PREVENTION OF ANTIMICROBIAL RESISTANCE



MONITORING AND EVALUATION FRAMEWORK

JULY 2021

National Action Plan for the Prevention and Containment of
Antimicrobial Resistance – Monitoring and Evaluation Framework,
Nairobi, Kenya: Government of Kenya, April 2021.

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ACRONYMS

AOP	annual operational plan
AMR	antimicrobial resistance
AMS	antimicrobial stewardship
AMU	antimicrobial use
ASP	antimicrobial stewardship programme
AWaRe	Access, Watch, and Reserve
CASIC	County Antimicrobial Stewardship Inter-Agency Committee
CIMES	County Integrated Monitoring and Evaluation System
CPD	continuous professional development
DVS	Directorate of Veterinary Services
HACCP	hazard analysis and critical control point
HAI	healthcare associated infection
IPC	infection prevention and control
IPPC	International Plant Protection Convention
KAP	knowledge, attitudes, and practices
M&E	monitoring and evaluation
MDAs	ministries, departments, and agencies
MENR	Ministry of Environment and Natural Resources
MoALFC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
MOEST	Ministry of Education, Science and Technology
MOH	Ministry of Health
MTEF	Medium-Term Expenditure Framework
NAP	National Action Plan
NASIC	National Antimicrobial Stewardship Inter-Agency Committee
NEMA	National Environment Management Authority

NIMES	National Integrated Monitoring and Evaluation System
NMRA	National Medicines Regulatory Authority
NPHL	National Public Health Laboratories
NPHLS	National Public Health Laboratories Services
OIE	World Organisation for Animal Health
PPB	Pharmacy and Poisons Board
R&D	research and development
SOPs	standard operating procedures
TWG	technical working group
VMD	Veterinary Medicines Directorate
WHO	World Health Organizaton

FOREWORD

Antimicrobial resistance (AMR) is a global threat that requires urgent collaborative action within and among countries. As a result of the worldwide reports of the increasing rates of AMR to hospital and community-acquired infections and in the agricultural sector, the Global Action Plan on AMR was adopted in 2015. This followed decisions made by the World Health Organization Assembly, the Food and Agriculture Organization of the United Nations' Governing Conference, and the General Session of the World Organisation for Animal Health Delegates to jointly combat AMR. The Member states committed to develop national action plans on AMR that are consistent with the Global Action Plan, and to implement relevant policies and plans to prevent, control and monitor AMR.

In Kenya, the ministries responsible for health and agriculture appointed the National Antimicrobial Stewardship Advisory Committee. This provided a multi-sectoral coordination platform for the development of the Kenya National Policy and National Action Plan on Antimicrobial Resistance Prevention and Containment, which were launched in 2017.

AMR can occur in the different settings where antimicrobials are used. These include antimicrobial use in human health, animal health, crop production, and in food production. Therefore, the National Action Plan (NAP) on Antimicrobial Resistance Prevention and Containment outlines strategic objectives, strategic interventions, and activities across all these sectors in line with the One Health approach.

This National Action Plan Monitoring and Evaluation (M&E) Framework is aligned to the NAP in line with the One Health Approach and will be used to monitor NAP implementation and evaluate the outcomes. It also outlines the key indicators and the roles and responsibilities for the different partners and stakeholders in the M&E process. The framework is to be implemented in conjunction with the annual operational plans and the Communication Strategy for the Prevention and Containment of Antimicrobial Resistance.

The M&E framework is intended to guide all the stakeholders at both levels of government and across all the sectors by requiring these entities to provide the information, data, and results from their implementation activities, thereby enabling the National Antimicrobial Stewardship Inter-Agency Committee to track the NAP implementation progress, compile the M&E reports, make management decisions, and fulfil their national and international reporting obligations. All stakeholders are advised to align their internal M&E systems to this M&E framework and commit to reporting on it, as outlined.

This document provides a harmonized framework to monitor and evaluate the NAP through the One Health approach. So, we call upon all those with responsibilities to act in order to help Kenya realize the objectives for the prevention and containment of AMR. Without an integrated action, diseases that were once treatable will again present a threat to Kenya and the world at large.

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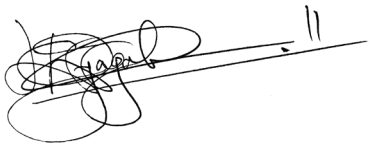

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ACKNOWLEDGMENTS

This document was developed through a consultative process with inputs from various stakeholders and partners across the human health sector and the animal health and crop sector in line with the One Health approach. The National Antimicrobial Stewardship Inter-Agency Committee (NASIC) wishes to acknowledge the Ministerial leadership and the contribution of all those who participated in the development of this document.

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We acknowledge the members of the NASIC Secretariat, Dr Evelyn Wesangula and Dr Allan Azegele, for providing the overall leadership and guidance during the development of this framework.

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1 Introduction

1.1 Background

This monitoring and evaluation (M&E) framework document was developed to monitor the implementation of the Kenya National Action Plan (NAP) on Prevention and Containment of Antimicrobial Resistance (2017 – 2022). The NAP provides a common framework for action by all stakeholders in Kenya from different sectors, including human health, animal health, agriculture, fisheries, and environmental sectors, together with the civil society, in managing and implementing appropriate antimicrobial resistance (AMR) control activities. Therefore, the M&E framework is critical in guiding the measurement of the results of the proposed NAP interventions. The indicators for monitoring will be derived from the results framework as per the interventions outlined in the NAP.

AMR prevention and containment actions bring together various stakeholders, and the interventions described in the NAP are divided broadly into two parts: human health sector and animal health and crop sector. The responsible ministries / departments / agencies (MDAs) will monitor and evaluate the interventions identified in the NAP and will also develop annual operational plans (AOPs) to further support NAP implementation. This M&E framework document also provides an implementation plan with the details and guidelines required for its implementation.

The Government of Kenya considers M&E an essential component of its efforts to improve the effectiveness and quality of its functions. The National Integrated Monitoring and Evaluation System (NIMES) recommends monitoring and evaluating the implementation of all government policies, programs, and projects. The NIMES guidance document further states that every institution or body that is spending public resources in the public interest has a responsibility to facilitate the M&E of its programs. This facilitation is required at all levels of the government including the devolved units of the county governments. At the country level, the guidelines for the development of County Integrated Monitoring and Evaluation Systems (CIMES) have been launched.

The alignment to the NIMES and CIMES documents is especially important for this AMR M&E framework because the human health and agriculture sectors are part of the functions that have been devolved to counties (schedule four of the Kenya Constitution). Therefore, the county government departments of health and agriculture will be important stakeholders in the implementation of both the NAP and the M&E framework. This document should thus provide a common approach for the NAP performance M&E across both the human health sector and animal health and crop sector as well at both levels of government.

1.2 Rationale for the M&E Framework

To achieve the goal and objectives as set out in the NAP (2017 – 2022), it is necessary to have an M&E framework to monitor implementation progress and results. Against this background, the National Antimicrobial Stewardship Inter-Agency Committee (NASIC) developed this framework as the basis for monitoring and evaluating the results of antimicrobial resistance AMR containment and prevention activities. The framework outlines the processes, methods, and tools that will be used for the collection, compilation, reporting, and use of data and to provide feedback. The framework also includes an implementation plan that describes the processes for implementing the costed annual activities with assigned responsibilities. The M&E framework should provide the basis for:

- Improving efficiency and accountability for NAP implementation
- Coordinating activities
- Measuring performance
- Improving decision-making

As the first M&E framework for the first Kenya NAP (2017-2022), this framework will guide the provision of information and feedback from stakeholders for the development of future AMR policies and action plans. It is formulated according to government procedures for M&E. The framework is necessary for guiding public sector funding, resource mobilization, and reporting commitments.

1.3 Current Status of M&E

This M&E document is to be implemented across the human health and animal health and crop sectors. Therefore, the NAP framework should be developed within the context of the M&E status in the two sectors.

The health sector has made concerted efforts to improve its M&E environment. It has developed systems and guidelines for data collection, data flow, and reporting and feedback across the sector and at all levels of government. Most notably, in line with the Kenya Health Policy (2014 – 2030) requirement, it developed the Guidelines for the Institutionalization of Monitoring and Evaluation (M&E) in the Health Sector. The health sector has also developed the Health Sector Indicator Manual and Standard Operating Procedures (SOPs), currently in its third edition. In 2014, the Health Sector Monitoring and Evaluation Framework was developed for the Kenya Health Sector Strategic and Investment Plan of July 2014 – June 2018. There are still several challenges in health sector M&E such as fragmented reporting systems and limited funding, but there are continuous steps being made to improve the situation. In the Ministry of Agriculture, Livestock and Fisheries, there is the Central Planning and Monitoring Unit, which uses the electronic project management information system (e-PROMIS) for monitoring various projects and programs in the ministry. The laboratories are linked through the laboratory information management system for data collection, data flow, and reporting from regional laboratories. There are also linkages with the county-level Directors in the county agriculture and livestock departments, from whom they receive quarterly reports according to set templates.

This M&E framework identifies the key results the sector is committing to and is aligned to devolution, regional, national, and global agreements. It is expected that the NAP M&E framework indicators will be incorporated into the M&E systems and AOPs at both the national and county levels to enable national and county-level implementers reporting.

1.4 Alignment of the M&E Framework to Existing Laws and Policies

The NAP AMR is a government document and is aligned to government policies, laws, regulations, and structures as necessary or relevant to AMR

prevention and containment for performance monitoring and evaluation. These are defined in the National Policy on Prevention and Containment of Antimicrobial Resistance and are drawn from policies of animal and human health and environment sectors. The policies, laws, and regulations are as listed in Annex 1.

1.5 The NAP Results Chain and Implications for the M&E Framework

An effective M&E framework should be aligned with the NAP's result chain. Figure 1 illustrates how the activities and outputs are related to the outcome(s) and impact(s) and provides the basis for defining indicators and monitoring levels for the action plan. The impact relates to the goal of the NAP, the outcomes to the five strategic objectives, and the outputs to the strategic interventions.

Figure 1: NAP Results Chain

It is expected that the implementation of the activities listed in the NAP will result in the outputs (strategic interventions). The achievement of the outputs will lead to the realization of the outcomes (strategic objectives). If the objectives are realized, then the project will contribute to the policy goal (impact).

The NAP on AMR prevention and containment has the following five strategic objectives:

1. Improve public awareness and understanding and promote education and training of professionals
2. Continuously monitor antimicrobial resistance and use of antimicrobials and appropriately understand the trends and spread of antimicrobial resistance

3. Prevent the spread of antimicrobial-resistant organisms by implementing appropriate infection prevention and control measures
4. Promote appropriate use of antimicrobials in the fields of healthcare, livestock production, agriculture, and aquaculture
5. Promote research on antimicrobial resistance and foster research and development to secure the means to prevent, diagnose, and treat antimicrobial-resistant infections.

These strategic objectives as indicated in the NAP were adapted and incorporated into the M&E framework. These strategic objectives (outcomes) are expected to contribute to the achievement of the overall goal of the government's National Action Plan on the Prevention and Containment of Antimicrobial Resistance which 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 are accessible to all who need them"*.

2 Overview of the NAP M&E Framework for AMR Prevention and Containment

2.1 Purpose of the M&E Framework

The purpose of the M&E framework is to provide standard guidance to NAP stakeholders on the procedures for tracking the progress of proposed interventions in the NAP. It also lays out the basis for assessing effectiveness, efficiency, and relevance of NAP requirements to the attainment of the overall goal. The framework outlines processes, methods, and tools that will be used to guide data collection, compilation, reporting, and use and to provide feedback. The data collected will inform implementing stakeholders and decision-makers as to whether they are on track and where changes can be made in the present time or in future action planning. It thus provides a common platform across the different sectors and levels of government for monitoring and evaluating performance.

The evaluation plan is listed in the M&E framework implementation activities. This will include the mid- and end-term evaluation of the NAP, as well as the periodic performance surveys and special research that may be used to complement the routine monitoring data. These will be determined by the indicator matrix, which prescribes the data source, frequency of measuring, and reporting obligations. Some of the indicators will require measurement through surveys or assessments.

2.2 The Process of Developing the M&E Framework

The M&E framework was developed through a process organized by the NASIC Secretariat, through the technical assistance provided by the partner organisation. The process was consultative under the leadership of the One Health AMR Secretariat and incorporated desktop reviews, key informant interviews, and focus group discussions. The stakeholders and partners from across the different sectors and both levels of government (national and county), provided inputs to the document before finalization of the framework.

2.3 M&E Team

The NASIC and the County Antimicrobial Stewardship Inter-Agency Committees (CASICs) will be responsible for coordinating the M&E framework implementation activities at the national and county levels, respectively. They will be required to work closely with their respective M&E units at national and county levels to ensure that their functions are integrated into those of their respective MDAs.

The CASICs will conduct joint performance reviews at county level and prepare the quarterly reports in collaboration with other county-level stakeholders. The NASIC unit will organize the annual forum, which will bring together all stakeholders to jointly review the performance of the NAP for the year under review.

2.4 Components of the Framework

The national action plan M&E framework describes the following:

- Results framework
- Indicators to be monitored
- Type of data to be collected
- Methods / process for collecting and using data
- Frequency of data collection
- Responsibility for data collection
- Types of reports to be prepared
- M&E roles and responsibilities

Data collection and analysis are not an end in themselves; they must be useful for a purpose such as enhancing performance and decision-making. Therefore, the implementers of this framework will also use the Communication Strategy on Prevention and Containment of Antimicrobial Resistance (2018 – 2022). The strategy outlines how the NAP strategic objective one on creation of awareness will be achieved throughout all the audience groups.

3 Results Framework

As described in section 1.5 above, the underlying structure of the NAP M&E framework is based on the NAP results chain. The results chain / framework provides the basis for the selection of indicators to be used to track NAP implementation. Figures 2 and 3 outline the results framework for the human health sector and animal health and crop sectors, respectively.

In project management, the inputs and activities are **how** to achieve the intent of the NAP, while the outputs are **what** results from the use of the resources (inputs), and the outcomes and impact are **why** the NAP is being implemented. The purpose of M&E is to determine not only how well the NAP priorities are being addressed, but whether they are achieving change in the target audience. The change is either short term (outputs); medium term (outcomes); or long term (impact).

Therefore, the M&E framework will not monitor the activities. For these, the NASIC will develop AOPs that will list all the activities and liaise with the different implementing partners and government MDAs to include the activities for which they are responsible in their respective AOPs.

The M&E framework selects key indicators from and related to outputs and for the outcomes and impact levels to measure whether the intended change is occurring.

Figure 2: Human Health Sector Results Framework

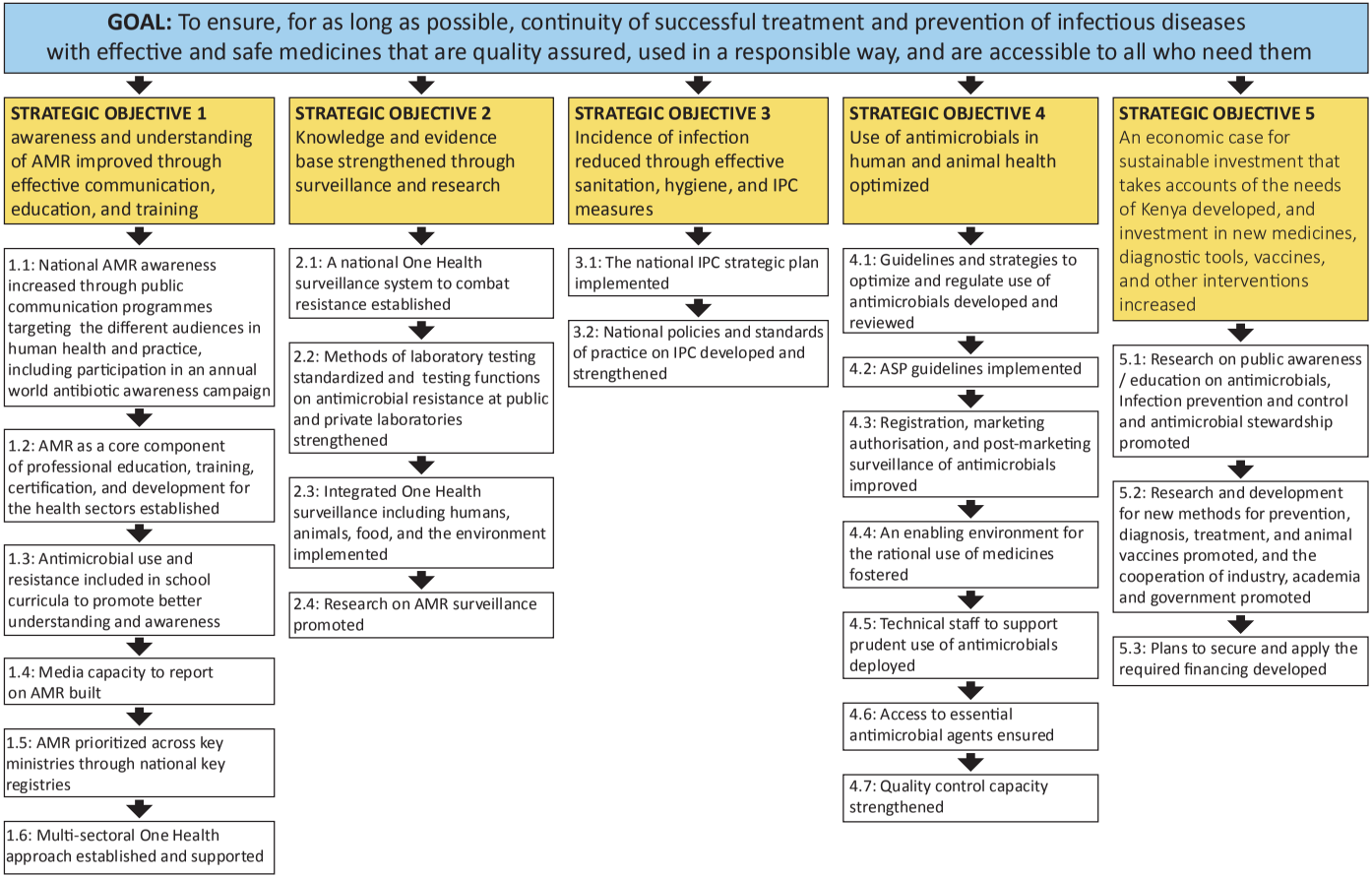
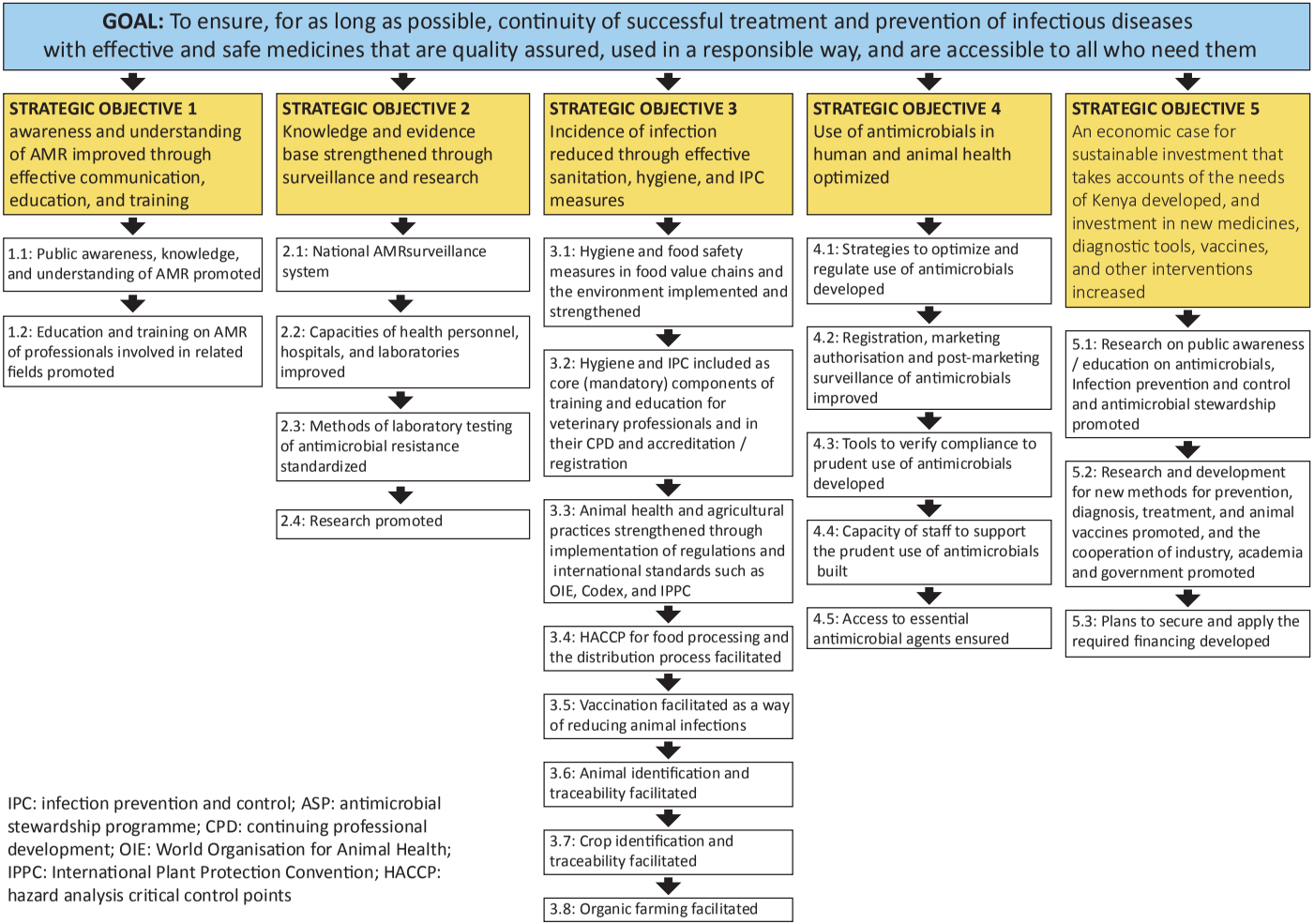


Figure 3: Animal Health and Crop Sector Results Framework



IPC: infection prevention and control; ASP: antimicrobial stewardship programme; CPD: continuing professional development; OIE: World Organisation for Animal Health; IPPC: International Plant Protection Convention; HACCP: hazard analysis critical control points

4 Key NAP Indicators

4.1 Introduction

This section describes the indicators designated to be used to monitor and evaluate the NAP outputs, outcomes, and impact as outlined in the results frameworks in section 3 for both the human health sector and the animal and crop sector. The selected indicators measure the performance of the NAP in line with the set goal, strategic objectives, and strategic interventions.

However, it is to be noted that all the strategic interventions will be monitored by output indicators through the annual work/operational plans.

The M&E framework indicators are tabulated for both the sectors under each outcome as linked to the targeted results for each of the five strategic objectives.

4.2 NAP Outcome and Output Level Indicators

For each of the outcomes (linked to the strategic objective), the measurements are the outputs (for the strategic interventions) whose implementation of the interventions contributes to achievement of the outputs and the outcomes. Then for each measurement, there are selected indicators that will be monitored to track their implementation.

To complete the table, the following information will be required for each indicator:

- Baseline — What is the current value?
- Target — What is the target value?
- Data source — Where will it be found?
- Frequency — How often will it be measured?
- Responsibility — Who will measure it?
- Reporting — Where will it be reported?

The answers to these questions will guide the formulation of the implementation plan for the M&E framework. The responses will define the

activities and the roles and responsibilities for the NASIC and the stakeholders at all levels of government and across the different sectors.

For purposes of clarity, the output and outcome statements in the tables below are condensed. However, the full result statements for the impact (goal), outcomes (strategic objectives), and outputs (strategic interventions) are included in Annex 2.

4.2.1 Outcome 1

Awareness and Understanding of AMR Improved through effective Communication, Education, and Training: Outcome Indicators

Indicator	Baseline	Targets by 2022	Data Source	Frequency	Responsibility	Reporting
1. Proportion of stakeholders who are aware of AMR and antimicrobial use (AMU)	Human sector - 24% Animal sector - 1%	100% of target audience	Knowledge, attitudes, and practices (KAP) survey	3 times ▪ Start ▪ Mid-term ▪ End-term	Ministry of Health (MOH) / Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC)	Secretariat annual performance report
2. Total consumption of antimicrobials in human sector	—	5% Reduction	Antimicrobial consumption surveillance system report	Annually	MOH/National Medicines Regulatory Agency (NMRA)	Annual performance report
3. Total consumption of antimicrobials in animal sector		5% Reduction	Antimicrobial consumption surveillance system report	Annually	MoALFC / NMRA	Annual performance report
4. Volume of antibiotics used in animals used for food production	—	5% Reduction (for human & animal health)	Antimicrobial consumption surveillance system report	Annually	MOH / MoALFC / NMRA	Annual performance report

Human Health Sector

The current level of public awareness and understanding of AMR and AMU is limited in both the human health and the animal health and crop sectors. Some of the mitigation measures proposed include incorporating the two concepts into pre- and in-service education curricula; developing targeted information, education, and communication materials; and conducting awareness campaigns with targeted messages.

Awareness and Understanding of AMR Improved through effective Communication, Education, and Training: Sub-objectives for Human Health

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
1.1 Increased public awareness and understanding of AMR						
1.1.1 Percentage of AMR communication strategy components on human health that are implemented	0%	50%	Communication strategy annual report	Annually	MOH / MoALFC	Secretariat annual performance report
1.1.2 Proportion of counties where AMR awareness campaigns are conducted	2%	50%	CASIC and NASIC annual reports	Annually	MOH / MoALFC	Secretariat annual performance report
1.2 AMR as a core component of health professional training						
1.2.1 AMR curriculum with modules for (a) pre- and in-service professional trainings and (b) school health	0%	100%	Annual performance report	Once in 5 years	MOH/MoALFC/ Ministry of Education, Science and Training (MOEST) Professional bodies Training institutions	Secretariat annual performance report
1.3 Education and training on AMR of professionals involved in related fields						

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
1.3.1 Proportion of professionals trained on AMR	0%	25%	NASIC / CASIC training plan	Annually	MOH/MoALFC/MOEST Kenya Institute of Curriculum Development Professional bodies Training institutions	Secretariat annual performance report
1.3.2 Number of AMR events that are reported in public media	4	10	Media monitoring system	Annually	NASIC	CASIC reports Secretariat annual performance report
1.4 AMR prioritized across key ministries						
1.4.1 Inter-ministerial agency committee established	1	1	Committee minutes & reports, appointment reports	Once in 5 years	NASIC	Secretariat annual performance report
1.4.2 Number of inter-ministerial annual reports on AMR	0	5 (1 every year)	Ministerial annual reports	Annually	MOH/MoALFC / Relevant agencies	Secretariat annual performance report
1.5 Multi-sectoral One Health committees established						
1.5.1 Number of national and county antimicrobial stewardship advisory committees established	1	25	NASIC / CASIC annual reports	Annually	NASIC	Annual NASIC / CASIC reports
1.5.2 Number of counties with AMR focal point assigned	0	24	NASIC / CASIC annual reports	Annually	NASIC / CASIC	Secretariat annual performance report

Animal Health and Crop Sector

The current situation in the country is that antimicrobials for human and animal use can be accessed without prescription. To change this, there is need to educate both the suppliers; the users (farmers, animal keepers); and the general public to encourage behaviour change. This is to be done through pre- and in-service education, general public awareness campaigns, and targeted information materials.

Awareness and Understanding of AMR Improved through effective Communication, Education, and Training: Sub-objectives for Animal Health and Crop Sector

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
1.1 Public Awareness Knowledge and Understanding of AMR						
1.1.1 Percentage of AMR communication strategy components on animal health and crop sector that are implemented	0	100%	Communication strategy annual report	Annually	MoALFC	Directorate of Veterinary Services (DVS) / Permanent Secretary annual performance report
1.1.2 Proportion of general public with awareness and understanding of AMU and AMR	2%	100%	KAP survey	3 times: ▪ start ▪ mid-term ▪ end-term	MOH / MoALFC	NASIC annual performance report
1.2 Education and training on AMR of professionals involved in related fields promoted						
1.2.1 Number of AMR and AMU training sessions conducted with professionals	0	4	NASIC training plan	Annually	MOH/MoALFC Professional bodies Training institutions	NASIC annual performance report DVS annual training report

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
1.2.2 AMR curriculum with modules for (a) pre- and in-service professional trainings and (b) school of health*	0	100%	NASIC training plan	Once	MOH/MoALFC/ MOEST Professional bodies Training institutions	NASIC annual performance report

* Developed jointly across the sectors

4.2.2 Outcome 2

Knowledge and Evidence Base Strengthened through Surveillance and Research: Outcome Indicators

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
Establishment of a national 'reference centre (for AMR information)	1	1	Centre establishment report	Once	NASIC Secretariat / National Public Health Laboratories (NPHL)	Annual NASIC Reports
Prevalence of AMR in selected priority pathogens	0	5%	National AMR surveillance reports	Annually	NASIC Secretariat / NPHL / AMR surveillance technical working group (TWG)	AMR surveillance report
Number of surveillance sites reporting to the national AMR surveillance database	0	22	National AMR surveillance reports	Annually	NASIC Secretariat / NPHL / AMR surveillance TWG	AMR surveillance report

Human Health Sector

Surveillance systems to detect and report resistant pathogens as well as the consumption of antimicrobials play a critical role in developing evidence-based policies and guidelines to control the overuse of antimicrobials, which is a major driver of AMR. To enhance the collection of data on AMR, there is need to build capacity of professionals and laboratories and surveillance system structure to enhance the sharing of surveillance studies on the spread and emergence of pathogens with AMR. These interventions will be carried out across the two sectors under the One Health approach.

Knowledge and Evidence Base Strengthened through Surveillance and Research: Sub-objectives for Human Health

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
2.1 National One Health surveillance system developed						
2.1.1 National public health laboratory network established	0	1	Annual AMR reports	Once	MOH/MoALFC, National Public Health Laboratory Services / Pharmacy and Poisons Board (PPB)	AMR surveillance report
2.2 Standardized laboratory testing methods developed						
2.2.1 Number of microbiology laboratories with the capacity to perform AMR surveillance	10	22	Capacity assessment report	Annually	MOH	NASIC / CASIC annual report
2.2.2 National AMR surveillance training curriculum developed	0	1	NASIC training plan	Once	MOH/MoALFC/MOEST Professional bodies, Training institutions	NASIC annual report
2.2.3 Number of AMR surveillance laboratories implementing AMR SOPs	0	22	National database	Annually	NASIC / NPHL	NASIC annual report

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
2.2.4 Number of technical personnel at AMR surveillance site trained	60	660	NASIC training plan	Annually	NASIC /CASIC	—
2.3 Integrated One Health surveillance implemented						
2.3.2 Multi-sectoral AMR technical working groups established at national and county levels	4	101	NASIC annual report	Annually	NASIC / Council of Governors / county g overnments	NASIC / CASIC annual report
2.3.2 AMR data-sharing information technology platform established	0	1	NASIC annual report	Once	MOH/MoALFC/Ministry of Environment and Natural Resources (MENR) WHO/ World Organisation for Animal Health (OIE)/ Food and Agriculture Organization	NASIC annual report
2.4 Research promoted						
2.4.1 AMR research agenda database for human health established	—	—	NASIC Secretariat	Annually	MOH/MoALFC/MENR / MOEST /NMRA Research institutions and agencies	—
2.4.2 Number of AMR research studies that are completed	—	—	NASIC Secretariat	Annually	MOH/MoALFC/MENR / MOEST /NMRA Research institutions and agencies	—

Animal Health and Crop Sector

The extent and impact of AMR in the agricultural sector are not yet well defined. This necessitates the establishment of an effective system to monitor trends in AMR, enhance the capacity of personnel and laboratories, and implement surveillance systems focusing on AMR mitigation strategies in animals.

Knowledge and Evidence Base Strengthened through Surveillance and Research Sub-objectives for Animal Health and Crop Sector

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
2.1 National AMR surveillance system developed						
2.1.1 AMU and AMR integrated Information management system established	0	1	Integrated information management system establishment report	Once	MoALFC	DVS annual performance report
2.1.2 AMU and AMR data surveillance plan developed*	0	1	NASIC Secretariat	Once	MoALFC Development partners	DVS annual performance report
2.2 Capacities of animal health personnel, hospitals, and laboratories improved						
2.2.1 Proportion of national and regional laboratories conducting quality antimicrobial susceptibility testing	25%	100%	Laboratory capacity assessment report	Annually	MoALFC	DVS annual performance report
2.2.2 Number of technical personnel trained on surveillance and laboratory operations	20	230	NASIC training plan	Annually	MoALFC Development partners	DVS annual performance report
2.3 Methods of laboratory testing of AMR standardized						

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
2.3.1 Number of SOPsforstandardtests reviewed	0	15	Diagnostic services and efficacy trials report	Annually	MoALFC Development partners	DVS annual performance report
2.3.2 Number of personnel trained on internal quality control for tests	5	40	Diagnostic services and efficacy trials report	Annually	MoALFC Development partners	DVS annual performance report
2.4 Research promoted						
2.4.1 AMR research agenda database for animal health established	0	—	NASIC Secretariat	Annually	MOH/MoALFC/ MENR / MOEST / NMRA Research institutions and agencies	—
2.4.2 Proportion of animal health prescribers / facilities using laboratory data in clinical decision-making	—	—	Survey / annual reports	Annually	MoALFC Development partners	—

*Established across the sectors

4.2.3 Outcome 3

Incidence of Infection Reduced through Effective Sanitation, Hygiene, and IPC Measures: Outcome Indicators

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
1. Incidence rate of healthcare associated infections (HAIs)	30%	25%	HAI surveillance reports	Annually	MOH	Annual surveillance report
2. Prevalence rate of animal diseases	—	—	DVS Reports	Annually	MoALFC	—
3. Proportion of food business operators applying hazard analysis and critical control point (HACCP) principles in food production	—	—	Survey / MoALFC reports	Annually	MoALFC Food processing industry	—
4. Levels of environmental contamination with antimicrobials as defined by MoALFC and National Environment Management Authority (NEMA)	—	—	Public health laboratories reports	Annually	MOH/MoALFC/ NPHLS/ NEMA	NPHL annual report

Human Health Sector

Improved hygiene practices and infection control are essential to limit the development and spread of antimicrobial-resistant infections and multidrug-resistant bacteria. IPC including surveillance of HAIs, should be instituted and strengthened. The NAP proposes the implementation of the Kenya IPC strategy across the country. This will include training healthcare workers on IPC and establishing a HAI surveillance system to monitor progress of the IPC interventions.

Incidence of Infection Reduced through Effective Sanitation, Hygiene, and IPC Measures: Sub-objectives for Human Health

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
3.1 National IPC strategy implemented						
3.1.1 Number of counties with functional IPC committees	0	24	Annual IPC reports	Quarterly	MOH / county governments	Annual IPC reports
3.1.2 Proportion of facilities with IPC coordinators	0	50%	Annual IPC reports / county supervision reports	Quarterly	MOH / county governments	Annual IPC reports
3.1.3 Proportion of healthcare workers trained on IPC	5%	50%	IPC training database	Quarterly	MOH / county governments	Annual IPC reports
3.1.4 Proportion of healthcare workers trained on HAI surveillance	0%	10%	IPC training database	Quarterly	MOH / county governments	Annual IPC reports
3.2 National IPC policies and practice standards developed						
3.2.1 National HAI surveillance system established	0	1	HAI surveillance reports	Once	MOH	Annual HAI surveillance report
3.2.2 National training curriculum on IPC developed	0	1	Annual IPC reports	Once	MOH	Annual IPC reports
3.2.3 National training curriculum on HAIs developed	0	1	Annual IPC reports	Once	MOH	Annual IPC reports

Incidence of Infection Reduced through Effective Sanitation, Hygiene, and IPC Measures: Sub-objectives for Human Health

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
3.1 National IPC strategy implemented						
3.1.1 Number of counties with functional IPC committees	0	24	Annual IPC reports	Quarterly	MOH / county governments	Annual IPC reports
3.1.2 Proportion of facilities with IPC coordinators	0	50%	Annual IPC reports / county supervision reports	Quarterly	MOH / county governments	Annual IPC reports
3.1.3 Proportion of healthcare workers trained on IPC	5%	50%	IPC training database	Quarterly	MOH / county governments	Annual IPC reports
3.1.4 Proportion of healthcare workers trained on HAI surveillance	0%	10%	IPC training database	Quarterly	MOH / county governments	Annual IPC reports
3.2 National IPC policies and practice standards developed						
3.2.1 National HAI surveillance system established	0	1	HAI surveillance reports	Once	MOH	Annual HAI surveillance report
3.2.2 National training curriculum on IPC developed	0	1	Annual IPC reports	Once	MOH	Annual IPC reports
3.2.3 National training curriculum on HAIs developed	0	1	Annual IPC reports	Once	MOH	Annual IPC reports

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
3.1.2 Guidelines on effective agricultural and food industry waste management (a) developed and (b) disseminated	0	1	NASIC	Once	MOH / MoALFC / MENR NMRA	—
3.2 Hygiene and IPC as core (mandatory) components of training / registration / CPD for veterinary professionals						
3.2.1 Number of veterinary profession pre- and in-service IPC (good veterinary and hygiene practices) modules developed	0	2	NASIC training plan	Once	MoALFC Kenya Veterinary Board	—
3.3 International guidelines and standards (OIE, Codex, International Plant Protection Convention [IPPC]) harmonized with national policy and legislation						
3.3.1 Number of good veterinary, agricultural, aquaculture, and hygienic practice guidelines developed	0	2	NASIC	Once	MoALFC Professional organisations	—
3.3.2 Proportion of veterinary, agricultural, aquaculture, and hygienic practitioners aware of the guidelines	0	70%	MoALFC assessment reports	Annually	MoALFC Professional organisations	—
3.4 HACCP for food processing and the distribution process facilitated						
3.4.1 Number and percent of food processing personnel trained on HACCP	5%	80%	NASIC training plan	Annually	MoALFC Food processing industry	—

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
3.4.2 Number and percent of establishments complying with biosecurity and food safety standards	5%	80%	MoALFC assessment reports	Annually	MoALFC Food processing industry	—
3.5 Vaccination facilitated as a way of reducing animal infections						
3.5.1 Develop and disseminate national vaccination schedules National vaccination schedules (a) developed and (b) disseminated	0	1	MoALFC	—	—	—
3.5.2 Number of farmers sensitized onthe importance of vaccinations	0	200	DVS reports	Annually	MoALFC Development partners	—
3.5.3 Number of animal health professionals sensitized on proper vaccine handling, use, and storage	0	100	MoALFC	—	—	—
3.6 Animal identification and traceability facilitated						
3.6.1 Number of counties having livestock identification and traceability systems programs	0	4	DVS reports	Annually	MoALFC / county governments	—
3.6.2 Proportion of farmers with identifiable animals	0.5%	5%	DVS reports	Annually	MoALFC / county governments	—
3.7 Crop identification and traceability facilitated						

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
3.7.1 Number of farmers trained on plant identification and traceability	—	—	Department of Agriculture reports	Annually	MoALFC / county governments Food processing industry	—
3.7.2 Number or proportion of farms with identifiable plants	—	—	Department of Agriculture reports	Annually	MoALFC / county governments Food processing industry	—
3.8 Organic farming facilitated						
3.8.1 Number of farmers trained on organic farming	—	—	Department of Agriculture reports	Annually	MoALFC Partners	—
3.8.2 Database of certified organic farms developed	—	—	Department of Agriculture reports	Annually	MoALFC Partners	—

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
3.7.1 Number of farmers trained on plant identification and traceability	—	—	Department of Agriculture reports	Annually	MoALFC / county governments Food processing industry	—
3.7.2 Number or proportion of farms with identifiable plants	—	—	Department of Agriculture reports	Annually	MoALFC / county governments Food processing industry	—
3.8 Organic farming facilitated						
3.8.1 Number of farmers trained on organic farming	—	—	Department of Agriculture reports	Annually	MoALFC Partners	—
3.8.2 Database of certified organic farms developed	—	—	Department of Agriculture reports	Annually	MoALFC Partners	—

Use of Antimicrobials in Human and Animal Health Optimized: Sub-objectives for Human Health

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
4.1 Guidelines and strategies to regulate the use of antimicrobials developed						
4.1.1 Centralized antimicrobial consumption surveillance system established	0	1	System validation report	Once	MOH Partners	Annual report
4.1.2 Number of antimicrobial stewardship (AMS) guidelines developed and approved by responsible authorities	0	1	NASIC annual report	Once	MOH	NASIC annual report
4.1.3 Number of AMS curricular and training modules developed and approved by the responsible authorities	0	1	NASIC annual report	Once	MOH	NASIC annual report
4.2 ASP guidelines implemented						
4.2.1 Percentage of hospitals with functional antimicrobial stewardship programmes	<1%	25%	NASIC / CASIC reports	Annually	MOH / county departments	NASIC / CASIC reports
4.2.2 Percentage of hospitals reporting antimicrobial use and consumption data	0	25%	Antimicrobial consumption surveillance system report	Quarterly	MOH / NMRA	Consumption reports
4.3 Improved registration, market authorisation, and post-marketing surveillance of antimicrobials						
4.3.1 Number of post-marketing surveillance for new antibiotics conducted	0	10	Post-marketing surveillance reports	Annually	MOH / MoALFC NMRA / PPB Partners	Annual reports

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
4.3.2 Updated scheduling of marketing authorisation for new antibiotics available	0	1	NMRA reports	Once	MOH / MoALFC / NMRA	NMRA reports
Reviewed legislation and regulations on AMU	0	-	NASIC reports / NMRA reports	Annually	MOH / MoALFC / NMRA	NMRA reports
4.4 Rational use of medicines improved						
4.4.1 Regulations on promotion and marketing of antimicrobials updated	0	1	NMRA reports	Once	MOH / MoALFC / NMRA	NMRA reports
4.5 Technical staff to support prudent use of antimicrobials deployed						
4.5.1 Human resources staffing plan	0	1	Staff returns	Quarterly	MOH / MoALFC / county governments	Human resources reports
4.6 Assured access to essential antimicrobial agents						
4.6.2 Proportion of healthcare facilities with selected antimicrobials in stock on day of the survey	16%	25%	Service availability and readiness assessment mapping reports	Annually	MOH / county governments Kenya Medical Supplies Authority	Annual reports
4.7 Quality control capacity strengthened						
4.7.1 Number of laboratories with capacity for antimicrobial quality monitoring	2	5	National Medicines Quality Control Laboratory / MOH	Annually	MOH / National	Annual performance reports

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
			reports		Medicines Quality Control Laboratory / NMRA	

Animal Health and Crop Sector

Antimicrobials are important in protecting the health and welfare of livestock and in enhancing 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 result in an increase in the use of antimicrobial agents.

The OIE, 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.

Use of Antimicrobials in Human and Animal Health Optimized: Sub-objectives for Animal Health and Crop Sector

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
4.1 Strategies to optimize and regulate use of antimicrobials developed						
4.1.1 Database of manufactured and imported antimicrobials established	0	1	Antimicrobial consumption surveillance system	Annually	MOH /MoALFC / NMRA	NASIC annual report

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
4.1.2 National guidelines for AMU in the animal health sector developed	0	1	NASIC	Once	MoALFC / NMRA Stakeholders Development partners	NASIC annual report
4.2 Registration, marketing authorisation ,and post-marketing surveillance of antimicrobials improved						
4.2.1 SOPs for antimicrobials registration and marketing authorisation process developed	0	2	Veterinary Medicines Directorate (VMD) reports	Once	MOH /MoALFC / NMRA	VMD annual performance report
4.2.2 SOPs for post-marketing surveillance of antimicrobials in animals developed	0	1	VMD reports	Once	MOH /MoALFC / NMRA	VMD annual performance report
4.3 Tools to verify compliance to prudent use of antimicrobials developed						
4.3.1 Tool for compliance to prudent use of antimicrobials developed	0	1	Antimicrobial prescription assessments	Annually	MoALFC Professional organisations	VMD annual performance report
4.3.2 Proportion of agrovets using antimicrobial prescription registers	0	100%	Antimicrobial prescription assessments	Annually	MoALFC Professional organisations	VMD annual performance report
4.4 Capacity of staff to support the prudent use of antimicrobials built						

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
4.4.1 Training needs assessment and training plan for animal health professionals on prudent use of antimicrobials developed	0	1	NASIC training plan	Once	MoALFC / county governments Stakeholders	—
4.4.2 Number of animal health professionals trained on prudent use of antimicrobials	0	100	NASIC training plan	Annually	MoALFC / county governments Stakeholders	—
4.4.3 Proportion of ASHP complying with prudent use of antimicrobials	0	50%	Antimicrobial prescription assessments	Quarterly	MoALFC / county governments	—
4.5 Access to essential antimicrobial agents ensured						
4.5.1 Regulations on antimicrobial distribution, sale, and use developed	0	1	VMD reports	Annually	MoALFC / VMD Partners	—

4.2.5 Outcome 5

An Economic Case for Sustainable Investment that Takes Account of the Needs of Kenya Developed, and Investment in New Medicines, Diagnostic Tools, Vaccines, and other Interventions Increased: Outcome Indicators

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
1. Number of new / research and development (R&D) pipeline medicines, vaccines, and diagnostics	—	—	Research database	Annually	MOH / MoALFC / MOEST Partners	MOH, PPB, VMD annual reports
2. Proportion of NAP AMR activities supported	0	100%	Activity reports	Annually	MOH / MoALFC Partners	NASIC annual reports Partner reports

Human Health Sector

Research is required on trends in resistance, practices, and attitudes driving AMR in Kenya to inform appropriate interventions. In addition, investment in the discovery and development of new antimicrobials, diagnostic tools, and vaccines, is required. Research and development (R&D) 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.

An Economic Case for Sustainable Investment that Takes Account of the Needs of Kenya Developed, and Investment in New Medicines, Diagnostic Tools, Vaccines, and other Interventions Increased: Sub-objectives for Human Health

Indicator	Baseline	Target	Data Source	Frequency	Responsibility	Reporting
5.1 Research on public awareness / education on AMR, IPC, and AMS promoted						
5.1.1 Number of surveys on public AMR/IPC/AMS KAP conducted	1	3	KAP survey	3 times: start mid-term, end-term	MOH / MoALFC	NASIC report
5.2 R&D on new methods for prevention and treatment and animal vaccines promoted						
5.2.1 Number of protocols for registration of new antimicrobials, vaccines, and diagnostic methods in human health approved	—	—	Research agenda database	Annually	MOH / MOEST / NMRA Research institutions	—
5.3 Financial security plans developed						
5.3.1 Proportion of AMR activities supported in the public sector medium-term expenditure framework (MTEF)	—	100%	Budget reports	Annually	MOH	Budget item

Animal Health and Crop Sector

The causes, effects, and impacts of AMR in the animal sector require a better and deeper knowledge of the phenomenon'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.

Research is needed to enhance the development of effective strategies and alternatives to combat AMR in food-producing animals. This will require, in addition to research, investment in the development of new antimicrobials and diagnostic

tools and vaccines. The accumulation of new scientific evidence in Kenya will be useful in developing public health interventions and to sharing with society and the international community.

An Economic Case for Sustainable Investment that Takes Account of the Needs of Kenya Developed, and Investment in New Medicines, Diagnostic Tools, Vaccines, and other Interventions Increased: Sub-objectives for Animal Health and Crop Sector

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
5.1 Research on public awareness / education of AMR, IPC, and AMS promoted						
5.1.1 Number of surveys on public AMR/IPC/AMS KAP commissioned*	0	5	NASIC research reports	Annually	MOH / MoALFC	TWG on AMR research
5.1.2 Number of research studies on monitoring AMR patterns and trends commissioned	0	5	AMR research registry / report	Annually	MoALFC / MOEST, Partners Research institutions	NASIC annual report
5.2 R&D on new methods for prevention and treatment and animal vaccines promoted						
5.2.1 Number of research proposals on development of new vaccines for animal diseases approved	1	2	Research institutions annual reports	Annually	MoALFC / MOEST Partners Research institutions	DVS annual reports Research institutions' reports
5.2.2 Number of research proposals on development and use of rapid diagnostic tools in animals approved	1	2	Research institutions annual reports	Annually	MoALFC / MOEST Partners Research institutions	DVS annual reports Research institutions' reports

Indicator	Baseline	Targets	Data Source	Frequency	Responsibility	Reporting
5.2.3 Number of alternative approaches developed or studies conducted for preventing animal diseases	0	1	Research institutions annual reports	Annually	MoALFC / MOEST Partners Research institutions	DVS annual reports, Research institutions' reports
5.3 Plans to secure and apply the required financing developed						
5.3.1 Public sector MTEF for the AMR programme budget prepared and submitted to NASIC Steering Committee for approval and funding	0	1	Budget reports AMR budget line captured in MTEF	Annually	MoALFC / county governments	MoALFC MTEF report
5.3.2 Number of funding proposals developed and submitted to partners	1	4	NASIC reports	Annually	MoALFC Partners	MoALFC MTEF report

*Done jointly with human health sector

5 Implementation of the M&E Framework

The M&E framework will guide the management of the data collected from the implementation of the NAP interventions and the selection of key indicators to track the progress. This relates to data collection, transmission, analysis, presentation, reporting, and utilisation. This will enable data from the various sources to be brought together to enable the NASIC to assess progress in the NAP implementation and inform any strategic or policy shifts that may be required.

5.1 Monitoring Process

The monitoring procedure has four key steps that are necessary to ensure that the NAP is implemented and that its objectives are achieved as intended. This is the process that translates the data collected into information that is useful for decision-making. The steps are:

1. Data collection
2. Data validation
3. Data analysis
4. Dissemination and use

5.1.1 Data Collection

As per the NAP interventions, implementation responsibilities cut across a variety of stakeholders / partners in different sectors and levels of government. This means that there will be multiple data sources, requiring a strong multi-sectoral coordination structure at the national and county levels. According to the NAP, this will be one of the key roles of the NASIC and the CASICs, respectively.

Different types of data will be collected from different sources using a variety of methodologies to monitor the NAP implementation progress. These methods will include routine data reports, surveys, sentinel surveillance, and periodic assessments among others as prescribed in the key indicator tables in section 4. In both the MOH and MoALFC, the data flow from the primary source through the levels of aggregation to the national level will be according to the existing reporting guidelines and

SOPs. Where necessary, new data collection tools will be developed or existing ones revised for new indicators.

5.1.2 Data Validation

The collection of accurate and reliable data is necessary to ensure that the decisions and conclusions derived from them are valid and usable. The process of data validation involves the periodic checking and verification of the quality of the collected data. Several aspects of data quality include accuracy, relevance, completeness, and timeliness, which will be verified through data quality assessments, field visits, and support supervision at all levels. There should be quarterly and annual verification forums to review the data quality across all of the applicable indicators in the given period. A data quality assessment plan should be developed that describes the quality issues and the associated potential risks as well as the corrective measures to be taken.

5.1.3 Data Analysis

The collection of data is not an end in itself; it needs to be converted into a format that allows it to be used for decision-making or for information for stakeholders at all levels. This is the process of data analysis, the results of which are compiled into products such as reports and other information products for different target audiences or stakeholder groups to meet their information needs. These different target audiences have been analysed in the Communication Strategy on Prevention and Containment of Antimicrobial Resistance (2018 – 2022).

The analysis will be guided by new and existing SOPs (from both MOH and MoALFC) and will be done at different levels depending on the information needs. There are three main analysis levels: (i) operational : for day-to-day performance assessment; (ii) managerial : for the assessment of implementation of plans; and (iii) strategic : for policy level consideration.

Data analysis should be done at all implementation levels, although with different frequencies ranging from routinely (daily / monthly); periodically (quarterly / semi-annual / annual) during performance review; and mid- and end-term for evaluation. Data may also be analysed on an as-needed basis

such as for rapid results initiatives or emergency events requiring resource rationalization.

Data users have different information needs, which vary with the levels of detail and complexity in the data and the users' interests and roles in the decision-making process. To ensure that the potential users' needs are met, the data collected from the NAP implementation will be analysed and synthesized into formats that will be disseminated to the targeted individuals or organisations that intend to use them. The formats for dissemination vary and will include meetings, reports, and other information products as necessary for the intended target groups.

The M&E plan should provide for building the capacity of the M&E teams in data management competencies such as data analysis, interpretation, synthesis, presentation, and the development of information products.

5.1.4 Dissemination and Use

To ensure stakeholders' ownership of the NAP implementation process, there is a need to develop a suitable feedback method that keeps them informed of the implementation progress. This can be done through quarterly, biannual, or annual review meetings, which will also provide an opportunity for corrective measures to be made. The reports can be mailed to relevant stakeholders or be made available through website download (NASIC / MOH / MoALFC). In addition, the M&E team can also format the information for different target audiences and distribute it at given intervals using various communication methods such as radio, television, e-bulletins, newsletters, and booklets.

At end-term, the information can be used for evaluation, review of the policy direction, and for learning purposes.

5.2 Evaluation Process

Implementation of the NAP is aimed at achieving the AMR prevention and containment goal of "ensuring, 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 are accessible to all who need them".

The purpose of an evaluation will be to determine whether the intended changes have been realized, as well as to provide evidence and information for future policy formulation. It will also assess whether the changes realized are attributable to the interventions undertaken. It is assumed that the implementation of **strategic interventions (outputs)** will lead to the realization of the **strategic objectives (outcomes),** which will in turn contribute to realizing the **goal (impact)**.

There are two anticipated evaluations for the NAP implementation: mid-term review and end-term evaluation at the midpoint and at the end of the planning period, respectively. The former guides any readjustments that may be necessary, while the latter informs the design of future strategic actions and should involve a wide range of stakeholders and partners.

Evaluation will be done with both quantitative and qualitative methods with a focus on:

- Systematic analysis of the data from the outputs and outcomes
- Analysis of the implementation of the activities, budgets, and finances
- Analysis of strengths, weaknesses, and opportunities in the context of existing policies and strategies

The mid-term review can be conducted internally with a joint team of NASIC members, partners, and stakeholders, but it is recommended that the end-term evaluation be conducted by an external team of independent evaluators. The evaluators should analyse the relevance, responsiveness, efficiency, and effectiveness of NAP implementation, and sustainability after termination.

5.3 Monitoring Reports

As indicated in the key indicator tables in section 4, a column lists where the indicator will be reported. This reporting can be either in a documented format (periodic report) or in a process (such as performance review

meetings or stakeholder forums). These are extracted from the key indicator tables in section 4. Table 1 provides more specifics on monitoring reports and their frequency.

Table 1: Monitoring Reports and their Periodicity

Report / Process	Frequency	Responsibility	Timeline
AOPs	1	NASIC, CASICs	End of June
Data review meetings	4	CASICs	By end of first month of every quarter
Quarterly performance review meetings	4	CASICs	By end of first month of every quarter
Biannual performance review meetings	2	NASIC	End of January End of July
Annual performance review meetings	1	CASIC NASIC	End of July (county) End of August (national)
Quarterly reports	4	CASIC	By end of first month of every quarter
Biannual reports	2	NASIC	End of January End of July
Annual reports	1	CASIC NASIC	End of July (county) End of August (national)
Annual county forum	1	CASIC	August
Annual national forum	1	NASIC	November

6 M&E Implementation Plan

There is need to operationalize the NAP M&E framework by defining an organisational structure and key activities with assigned roles and responsibilities across the different sectors, stakeholders, and all levels of government.

The implementation of the AMR M&E implementation plan will be led by the NASIC M&E team with the collaboration of county-level counterparts and the input of external partners as well as the participation of stakeholders.

6.1 Key Activities

The M&E implementation plan outlines key activities that will be required to realize the framework goals. These include the definition of a coordination structure, design of a data management system, outline of capacity building efforts in data management, and development / review of existing SOPs and other necessary tools for data management.

6.1.1 Establish a Common Data Management System

A common data management system will involve the development of standards and tools that will define the type of data collected and how it is managed, stored, analysed, disseminated, and used. It will also include the SOPs for data flow across the different sectors, stakeholders, and levels of government. The NASIC may develop a new system, but it is advisable to align to the already existing data management systems in the One Health approach.

6.1.2 Performance Monitoring and Review Process

A significant part of implementing the M&E framework is the performance monitoring and review of NAP implementation. This performance monitoring will be conducted at the different implementation levels and by different partners at defined time intervals: monthly /quarterly / biannually / annually depending on the different information needs. This will require the development of supervision checklists either for the different sectors or

jointly. It will also involve convening data and performance review meetings at defined intervals.

6.1.3 Data Dissemination and Use during Implementation

The users of data will have different information needs depending on their interests or roles in the decision-making process. Therefore, the data collected must be analysed and structured into formats that meet the needs of the different partners and stakeholders. For this reason, the M&E implementation plan proposes activities to build capacity in core competencies of data analysis, interpretation, and presentation and the development of targeted information products.

6.2 Other Reference Documents and M&E Tools

The M&E framework does not get implemented in isolation but requires alignment to the various relevant documents / guidelines that exist across the different sectors and levels of government. This alignment is important because the NAP should not be implemented in isolation, but as much as possible within already existing structures. This will avoid duplication, but also allow for leveraging on the limited resources (human and financial). There are also existing tools that are related to data management and that may be used as is or adapted for the purposes of this framework.

6.2.1 Guiding Documents for Successful Implementation

Implementation of the NAP M&E framework is not conducted in isolation but in alignment to relevant national and global guidelines and documents. These include the following:

- National Policy for the Prevention and Containment of Antimicrobial Resistance 2017 - Government of Kenya
- National Action Plan (NAP) for the Prevention and Containment of Antimicrobial Resistance 2017 – 2022 - Government of Kenya
- Kenya Health Policy (2014 – 2030) - Ministry of Health
- National Infection Prevention and Control Policy 2020
- National Infection Prevention and Control Strategic Plan (2020-2025)

- Agriculture Sector Transformation and Growth Strategy (2019 – 2029) – Ministry of Agriculture, Livestock and Fisheries
- Annual operational plans developed for the NAP
- Guidelines for the Institutionalization of Monitoring and Evaluation (M&E) in the Health Sector – Ministry of Health
- Implementation of the National Integrated Monitoring & Evaluation System – Methodological and Operational Guidelines 2015 – Ministry of Devolution and Planning
- Guidelines for the Development of County Integrated Monitoring and Evaluation System 2016 – Ministry of Devolution & Planning and Council of Governors
- Monitoring and Evaluation of the Global Action Plan on Antimicrobial Resistance: Framework and Recommended Indicators - © WHO, FAO and OIE, 2019
- Communication Strategy on Prevention and Containment of Antimicrobial Resistance (2018 – 2022)

6.2.2 M&E Tools

Although data management tools and performance review checklists exist and are used in both the human health and animal health and crop sectors, there may be a need to adapt / review them as part of the implementation. These include:

- Data quality assurance protocols / SOPs
- Data management SOPs
- Annual operational plans templates and guidelines
- Annual performance review templates and guidelines
- Reporting templates
- Data analysis and use guidelines
- Stakeholder coordination plan
- Stakeholder inventory
- Joint supervision checklists
- Issues tracking log
- NAP sector(s) key indicators and targets

6.3 Data Flow

Figure 4 below illustrates the proposed flow of M&E data and reports for the framework.

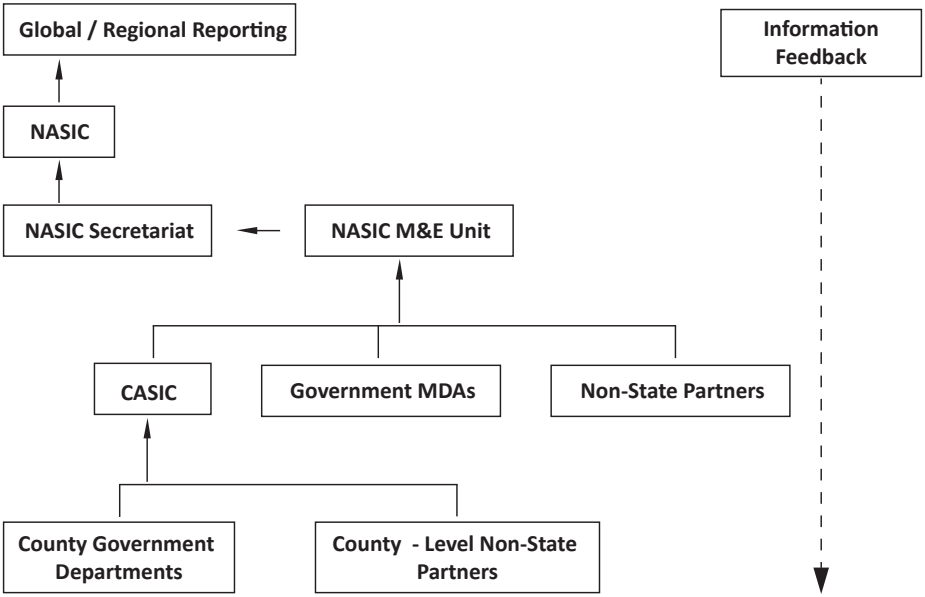


Figure 4: Data Flow Chart

6.4 Key Roles and Responsibilities

The interventions listed in the NAP are to be implemented by a wide variety of partners and stakeholders at the different levels of government. Therefore, the NASIC M&E team will provide the coordination structure for receiving the implementation reports and compiling the M&E reports as required by the plan. For these processes to occur successfully, the roles and responsibilities of the involved stakeholders in the data management must be clearly defined (Table 2).

Table 2: M&E Roles and Responsibilities

Key Activity: Establish a Common Data Management System	
Institution	Functions / Tasks
NASIC	▪ Coordinate the development of the standards and tools for data management ▪ Develop SOPs ▪ Sensitize / train the implementers on the system and tools ▪ Create and maintain a central data repository ▪ Coordinate stakeholders—establish an M&E committee / TWG ▪ Provide oversight for data management across the country ▪ Coordinate the development of the national AOPs
Other Government MDAs	▪ Participate in the development of standards for data management ▪ Commit to the use of the common data management system
National Non-state Partners	▪ Support the NASIC in the development of the data management system ▪ Provide technical support and other resources ▪ Commit to the use of the common data management system
CASIC	▪ Participate in the development of the common data management system ▪ Use the recommended tools and SOPs for implementation ▪ Disseminate the data management standards and tools at county level ▪ Domesticate national guidelines ▪ Coordinate stakeholders—establish M&E committees / TWGs ▪ Provide oversight for data management in the county ▪ Create and maintain a county data repository and link to the national repository ▪ Coordinate the development of the county AOP
County Government Departments	▪ Commit to the use of the common data management system ▪ Participate in relevant CASIC activities
County-level Non-state Partners	▪ Commit to the use of the common data management system ▪ Participate in relevant CASIC activities

Key Activity: Performance Review and Monitoring Process	
Institution	Functions / Tasks
NASIC	▪ Aggregate and analyse all data collected from NAP implementation activities ▪ Coordinate the development of joint supervision checklists ▪ Compile all the relevant national-level reports ▪ Maintain the performance issues tracking tool / log ▪ Assess the quality of all data / reports and ensure follow-up in case of issues ▪ Provide technical support to all national- and county-level NAP implementing institutions ▪ Provide capacity building to the CASICs on data management ▪ Coordinate support supervision for performance
Other Government MDAs	• Provide NAP implementation data • Participate in data and performance review meetings • Participate in joint support supervision
National Non-state Partners	▪ Participate in the joint supervisions ▪ Participate in the data and performance reviews ▪ Provide reports
CASIC	▪ Aggregate and analyse all data collected from NAP implementation activities ▪ Compile all the relevant county-level reports ▪ Maintain the performance issues tracking tool / log ▪ Assess the quality of all data / reports and ensure follow-up in case of issues ▪ Provide capacity building to the county-level implementing institutions ▪ Coordinate the performance support supervision
County Government Departments	• Provide NAP implementation data • Participate in data and performance review meetings • Participate in joint support supervision
County level Non-state Partners	▪ Participate in the joint supervisions ▪ Participate in the data and performance reviews ▪ Provide reports
Key Activity: Data Dissemination and Use	
Institution	Functions / Tasks
NASIC	▪ Prepare and disseminate national biannual and annual performance review reports ▪ Coordinate the preparation of targeted information products ▪ Coordinate the information flow through reporting and feedback chains ▪ Coordinate the preparation of data for international reporting obligations ▪ Provide capacity building

	▪ Coordinate the annual stakeholder forum for NAP implementation progress review
Other Government MDAs	▪ Participate in report compilation ▪ Participate in data dissemination meetings / forums ▪ Participate in the annual national stakeholder forum
National Non-state Partners	▪ Provide technical support and capacity building ▪ Contribute to the development of information products ▪ Participate in data dissemination meetings and forums ▪ Participate in the annual national stakeholder forum
CASIC	• Collate the data reports from all county-level NAP implementing institutions and transmit to NASIC • Provide feedback to the county-level implementing institutions • Disseminate county quarterly and annual reports • Prepare targeted information products • Coordinate the preparation of data for national reporting obligations • Provide county-level capacity building • Coordinate the annual county stakeholder forum for NAP implementation progress review • Participate in the annual national stakeholder forum
County Government Departments	▪ Participate in report compilation ▪ Participate in data dissemination meetings / forums ▪ Participate in the annual county stakeholder forum
County-level Non-state Partners	▪ Contribute to the development of information products ▪ Participate in data dissemination meetings and forums ▪ Participate in the annual county stakeholder forum

7. M&E Framework Implementation Plan and Budget

The table below outlines a set of priority activities and associated costs that are required to implement the NAP M&E framework.

Activity	Responsibility	2017/18	2018/19	2019/20	2020/21	2021/22	Cost (KShs)	Source of Funds
1. Institutionalize Monitoring & Evaluation for NAP								
1.1 Print the NAP M&E framework	NASIC	X					3,000,000	
1.2 Conduct national launch and disseminate the NAP M&E framework	NASIC	X					310,000	
1.3 Disseminate M&E framework at county level	NASIC & CASIC	X					7,050,000	
1.4 Establish M&E units at NASIC and CASICs	NASIC & CASIC	X	X	X	X	X	81,600,000	
1.5 Establish M&E committees—national and county	NASIC & CASIC	X	X	X	X	X	21,600,000	
1.6 Build capacity in M&E teams	NASIC	X	X	X	X	X	3,150,000	
2. Develop the Common Data Management System								
2.1. Develop / define the data management system	NASIC & partners	X					75,000	
2.2 Develop data management tools and SOPs	NASIC & partners	X					125,000	

Activity	Responsibility	2017/18	2018/19	2019/20	2020/21	2021/22	Cost (KShs)	Source of Funds
2.3 Conduct national-level training of trainers on data management system and tools	NASIC & partners	X					105,000	
2.4 Conduct county-level training of trainers on data tools	NASIC & partners	X					270,000	
2.5 Conduct national-level trainings	NASIC	X	X	X	X	X	750,000	
2.6 Conduct county-level trainings	CASIC	X	X	X	X	X	21,150,000	
3. Performance Reporting								
3.1 Develop the AOPs—national and county	NASIC	X	X	X	X	X	20,600,000	
3.2 Compile quarterly reports—county	CASIC	X	X	X	X	X	9,600,000	
3.3 Compile biannual reports—national	NASIC	X	X	X	X	X	300,000	
3.4 Compile annual reports—national and county	NASIC	X	X	X	X	X	26,400,000	
3.5 Mid-term NAP evaluation report	NASIC			X			9,459,000	
3.6 End-term NAP evaluation report	NASIC					X	7,500,000	
3.7 Compile quarterly reports of joint support supervision—county	CASIC & partners	X	X	X	X	X	4,700,000	

Activity	Responsibility	2017/18	2018/19	2019/20	2020/21	2021/22	Cost (KShs)	Source of Funds
3.8 Compile semi-annual reports of joint support supervision—national	NASIC & partners	X	X	X	X	X	300,000	
3.9 Prepare international obligations reports	NASIC	X	X	X	X	X	1,250,000	
3.10 Prepare stakeholder meeting reports—national	NASIC	X	X	X	X	X	4,000,000	
3.11 Prepare stakeholder meeting reports—county	CASIC	X	X	X	X	X	152,750,000	
4. Data Quality Assurance								
4.1 Conduct quarterly data quality audit—county	CASIC & partners	X	X	X	X	X	4,700,000	
4.2 Conduct semi-annual data quality audit—national	NASIC & partners	X	X	X	X	X	150,000	
4.3 Prepare data quality issues tracking and resolution reports—county	CASIC & partners	X	X	X	X	X	0	
4.4 Prepare data quality issues tracking and resolution reports—national	NASIC & partners	X	X	X	X	X	0	
4.5 Disseminate data quality audit reports—national	NASIC & partners	X	X	X	X	X	1,300,000	
4.6 Disseminate data quality audit reports—county	CASIC & partners	X	X	X	X	X	98,700,000	
5. Performance Review								

Activity	Responsibility	2017/18	2018/19	2019/20	2020/21	2021/22	Cost (KShs)	Source of Funds
5.1 Conduct quarterly joint support supervision visits—county	CASIC & partners	X	X	X	X	X	169,200,000	
5.2 Conduct biannual joint support supervision visits—national	NASIC & partners	X	X	X	X	X	8,100,000	
5.3 Conduct quarterly nap implementation progress meetings—county	CASIC & partners	X	X	X	X	X	67,200,000	
5.4 Conduct semi-annual nap implementation progress meetings—national	NASIC & partners	X	X	X	X	X	3,300,000	
5.5 Organize annual county stakeholders forum	CASIC & partners	X	X	X	X	X	430,050,000	
5.6 Organize annual national stakeholders forum	NASIC & CASIC	X	X	X	X	X	50,500,000	
6. Surveys**								
6.1 Conduct KAP survey on AMR	NASIC & partners	X		X		X	45,000,000	
7. Dissemination								
7.1 Develop targeted information products—national	NASIC	X	X	X	X	X	250,000,000	

Activity	Responsibility	2017/18	2018/19	2019/20	2020/21	2021/22	Cost (KShs)	Source of Funds
7.2 Develop of targeted information products—county	CASIC	X	X	X	X	X	1,175,000,000	
7.3 Develop quarterly performance reports—county	CASIC	X	X	X	X	X	0	
7.4 Develop annual performance reports — national	NASIC	X	X	X	X	X	0	
7.5 Develop indicator survey reports	NASIC	X	X	X	X	X	0	
7.6 Develop mid-term evaluation report	NASIC			X			2,590,000	
7.7 Develop end-term evaluation report	NASIC & partners					X	17,135,000	
8. Monitoring of the M&E Framework								
8.1 Organize M&E committee meetings—county	CASIC	X	X	X	X	X	32,900,000	
8.2 8.1 Organize M&E committee meetings—national	NASIC	X	X	X	X	X	600,000	
8.3 Compile quarterly NAP M&E framework implementation report—county & national	NASIC & CASIC	X	X	X	X	X	0	

Activity	Responsibility	2017/18	2018/19	2019/20	2020/21	2021/22	Cost (KShs)	Source of Funds
8.4 Compile annual NAP M&E framework implementation report— county & national	NASIC & CASIC	X	X	X	X	X	0	
8.5 Coordinate the conduct of the evaluations (mid-term and end-term)	NASIC			X		X	200,000	

** For indicator measurements that will require surveys

ANNEXES

ANNEX 1 NAP Policy and Legislative Environment

Laws

- Constitution of Kenya 2010
- Agriculture and Food Authority Act No. 13 of 2013
- Animal Diseases Act (Cap 364)
- Biosafety Act, Number 2 of 2009
- Clinical Officers Act (Cap 260)
- County Government Act (2012)
- Crops Act, 2013
- Dairy Industry Act, Chapter 336
- Environment Management Coordination Act
- Fertilizers and Animal Foodstuffs Act (Cap 345)
- Fisheries Management and Development Act No. 35 of 2016
- Food, Drugs and Chemical Substances Act (Cap 254)
- Health Act (2017)
- Health Records and Information Managers Act No.15 of 2016
- Intergovernmental Relations Act, 2012
- Meat Control Act, Chapter 356
- Medical lab technicians and technologists act (Cap 253A)
- Medical Practitioners and Dentists Act (Cap 253)
- Nurses Act (Cap 257)
- Pest Control Products Board (Cap 346)
- Pharmacy and Poisons Act (Cap 244)
- Prevention of Cruelty to Animals Act, Chapter 360
- Public Finance Management Act, Article 166
- Public Health Act (Cap 242)
- Standards Act, Chapter 496
- Veterinary Surgeons and Veterinary Para-professionals Act (Cap 366)

Policies

- Agriculture Policy
- Health Information System Policy (2010-2030)
- Kenya Health Policy (2014-2030)
- Kenya National Pharmaceutical Policy
- Livestock Policy
- National Infection Prevention and Control Policy
- National Oceans and Fisheries Policy and Aquaculture Policy
- Veterinary Policy

Annex 2 Full Result Statements for the NAP Impact, Outcomes, and Outputs

Human Health Sector

LEVEL	RESULT STATEMENT
IMPACT	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 are accessible to all who need them
OUTCOMES	1. Improve awareness and understanding of AMR through effective communication, education, and training
	2. Knowledge and evidence base strengthened through surveillance and research
	3. Incidence of infection reduced through effective sanitation, hygiene, and IPC measures
	4. Use of antimicrobials in human and animal health optimized
	5. An economic case for sustainable investment that takes accounts of the needs of Kenya developed, and investment in new medicines, diagnostic tools, vaccines, and other interventions increased
OUTPUTS	1.1 Increased national AMR awareness through public communication programmes targeting the different audiences in human health and practice, including participation in an annual world antibiotic awareness campaign
	1.2 AMR as a core component of professional education, training, certification, and development for the health sectors established
	1.3 Antimicrobial use and resistance included in school curricula to promote better understanding and awareness
	1.4 Media capacity on AMR built
	1.5 AMR prioritized across key ministries through national key registers
	1.6 Multi-sectoral One Health approach established and supported
	2.1 A national One Health surveillance system to combat resistance developed
	2.2 Methods of laboratory testing standardized and testing functions of antimicrobial resistance at public and private laboratories strengthened
	2.3 Integrated One Health surveillance including humans, animals, food, and the environment implemented
	2.4 Research promoted
	3.1 National IPC strategy implemented
	3.2 National policies and standards of practice on IPC developed and strengthened
	4.1 Guidelines and strategies to optimize and regulate use of antimicrobials developed and reviewed
	4.2 ASP guidelines implemented
	4.3 Registration, marketing authorisation, and post-marketing surveillance of antimicrobials improved
	4.4 An enabling environment for the rational use of medicines fostered

LEVEL	RESULT STATEMENT
	4.5 Technical staff to support prudent use of antimicrobials deployed
	4.6 Access to essential antimicrobial agents ensured
	4.7 Quality control capacity strengthened
	5.1 Research on public awareness / education on antimicrobials, infection prevention and control, and antimicrobial stewardship promoted
	5.2 Research and development for new methods for prevention, diagnosis, treatment, and animal vaccines promoted and the cooperation of industry, academia and government promoted
	5.3 Plans to secure and apply required financing developed

Animal Health and Crop Sector

LEVEL	RESULT STATEMENT
GOAL	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 are accessible to all who need them
OUTCOMES	1. Improved awareness and understanding of AMR through effective communication, education, and training
	2. Knowledge and evidence base strengthened through surveillance and research
	3. Incidence of infection reduced through effective sanitation, hygiene, and IPC measures
	4. Use of antimicrobials in human and animal health optimized
	5. An economic case for sustainable investment that takes accounts of the needs of Kenya developed and investment in new medicines, diagnostic tools, vaccines, and other interventions increased
OUTPUTS	1.1 Public awareness, knowledge and understanding of AMR promoted
	1.2 Education and training on AMR of professionals involved in related fields promoted
	2.1 National AMR surveillance system developed
	2.2 Capacities of health personnel, hospitals, and laboratories improved
	2.3 Methods of laboratory testing of antimicrobial resistance standardized
	2.4 Research promoted
	3.1 Hygiene and food safety measures in food value chains and the environment implemented and strengthened
	3.2 Hygiene and IPC included as core (mandatory) components of training and education for veterinary professionals and in their CPD and accreditation / registration
	3.3 Animal health and agricultural practices strengthened through implementation of regulations and international standards such as OIE, Codex, and IPPC
	3.4 HACCP for food processing and the distribution process facilitated
	3.5 Vaccination facilitated as a way of reducing animal infections
	3.6 Animal identification and traceability facilitated
	3.7 Crop identification and traceability facilitated

LEVEL	RESULT STATEMENT
	3.8 Organic farming facilitated
	4.1 Strategies to optimize and regulate use of antimicrobials developed
	4.2 Registration, marketing authorisation, and post-marketing surveillance of antimicrobials improved
	4.3 Tools to verify compliance to prudent use of antimicrobials developed
	4.4 Capacity of staff to support the prudent use of antimicrobials built
	4.5 Access to essential antimicrobial agents ensured
	5.1 Research on public awareness / education on antimicrobials, infection prevention and control, and antimicrobial stewardship promoted
	5.2 Research and development for new methods for prevention, diagnosis, treatment, and animal vaccines promoted and the cooperation of industry, academia and government promoted
	5.3 Plans to secure and apply the required financing developed

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