



المركز الوطني لمكافحة الأمراض السارية
JORDAN CENTER FOR DISEASE CONTROL

MONITORING & Evaluation Plan

of the National Action Plan for Combating
Antimicrobial Resistance (2.0)

Framework & Recommended Indicators
2023 - 2025

Hashemite Kingdom of JORDAN

Jordan Center for Disease Control

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Jordan CDC extends its heartfelt thanks to the World Health Organization (WHO), the U.S. Agency for International Development (USAID), the USAID Monitoring, Evaluation, and Learning Activity, the Food and Agriculture Organization of the United Nations (FAO), and the World Organization for Animal Health (WOAH) for their exceptional technical support in the development of this Monitoring and Evaluation Plan.



HIS MAJESTY
KING ABDULLAH II BIN AL HUSSEIN OF JORDAN



HIS ROYAL HIGHNESS
PRINCE HUSSEIN BIN ABDULLAH II, CROWN PRINCE

Contents

Foreword	7
Executive Summary	9
Acronyms	10
Glossary.....	11
I. Introduction	13
II. Background	14
III. Process and Development	15
IV. Intended Users of the National AMR M&E Plan.....	17
V. Result Framework.....	17
VI. Theory of Change (ToC).....	19
VII. National AMR M&E Plan	28
VIII. AMR Governance and Coordination in the Jordanian Context.....	28
IX. Roles and Responsibilities	30
X. Data Flow	32
XI. Monitoring Plan.....	35
XII. Evaluation Plan.....	35
XIII. Learning Plan.....	38
XIV. Reporting and Communication	39
XV. Data Management.....	42
XVI. References	43
XVII. Annexes.....	44



Foreword

The development of the Monitoring and Evaluation (M&E) Plan for the National Action Plan (NAP) for Combating Antimicrobial Resistance (AMR) 2023-2025 would not have been possible without the dedication and collaborative efforts of numerous individuals and organizations.

We sincerely thank the Ministry of Health (MOH), the Ministry of Agriculture (MOA), the Ministry of Environment (MOEnv), the Ministry of Water and Irrigation (MWI), and the Jordan Food and Drug Administration (JFDA). We would also like to acknowledge the invaluable contributions of the *Jordan CDC - Disease Prevention & Control Directorate and the M&E team members*. Their unwavering commitment to this national initiative has been instrumental in advancing Jordan's efforts to combat AMR.

Our sincere thanks go to the National AMR M&E Committee members, the AMR Technical Working Groups, and the various sectoral focal points who provided their expertise, insights, and tireless efforts throughout the planning process. We are also grateful for the support and guidance from international partners, including the World Health Organization Country Office (WCO) - Jordan, the WHO Eastern Mediterranean Regional Office (WHO-EMRO), the United States Agency for International Development (USAID), the USAID Monitoring, Evaluation, and Learning Activity and the expert from leading point - Jordan, the Food and Agriculture Organization of the United Nations (FAO), and the World Organization for Animal Health (WOAH). Their technical support, guidance, global perspectives, and steadfast collaboration throughout developing this M&E Plan have been invaluable. Their expertise and commitment have significantly contributed to the successful creation of this comprehensive plan.

Finally, we thank all stakeholders, including healthcare professionals, researchers, and civil society organizations, whose collaborative spirit and dedication continue to drive the fight against AMR in Jordan.

Jordan CDC President
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Endorsement

This plan has been formally endorsed by His Excellency **Dr. Adel Albelbisi**, the President of the Jordan Center for Disease Control.

Executive Summary

The Monitoring and Evaluation (M&E) Plan for National Action Plan for Combating Antimicrobial Resistance (AMR) 2023-2025 is a comprehensive framework developed to systematically track, assess, and enhance the effectiveness of AMR interventions in Jordan. As AMR continues to pose a significant public health threat globally, this plan aims to align Jordan's national strategies with international standards and ensure a coordinated, multisectoral approach to combating AMR.

Key Objectives and Framework

The AMR M&E Plan is designed to support Jordan's strategic objectives by focusing on six key outcomes: increasing awareness, strengthening surveillance, reducing infection rates, optimizing antimicrobial use, enhancing investment in research, and improving governance and resource mobilization. Specific activities and measurable indicators back each of these outcomes to ensure that progress is tracked accurately and interventions are adjusted as necessary.

Stakeholder Involvement and Governance

The development and implementation of this M&E Plan are underpinned by broad stakeholder engagement involving key sectors such as human health, animal health, environmental health, and agriculture. The Jordan Center for Disease Control (Jordan CDC) leads the plan's implementation, with support from the Ministry of Health (MOH), Ministry of Agriculture (MOA), Ministry of Environment (MOEnv), Ministry of Water and Irrigation (MWI), and the Jordan Food and Drug Administration (JFDA). The governance structure established under this plan ensures accountability and coordination across all sectors, with high-level oversight provided by the national M&E committee.

Data Management and Evaluation

The plan outlines a robust data collection and management system, ensuring that data on AMR initiatives is collected, analyzed, and reported systematically across all sectors. This includes the development of a unified national database and regular M&E activities, as well as using this data to inform decision-making and policy development. The plan also emphasizes the importance of continuous learning and adaptation, with mechanisms in place to evaluate the effectiveness of interventions and adjust strategies as needed.

By instituting this comprehensive M&E framework, Jordan reaffirms its commitment to a sustainable, evidence-based approach to combating AMR. The successful implementation of this plan will significantly contribute to reducing the burden of AMR, improving public health outcomes, and ensuring the continued effectiveness of antimicrobials in Jordan.

Acronyms

AMR	Antimicrobial Resistance
AMR GAP	Antimicrobial Resistant Global Action Plan
AMR NAP	Antimicrobial Resistant National Action Plan
AMS	Antimicrobial Stewardship
AMC	Antimicrobial Consumption
AMU	Antimicrobial Use
ASP	Antimicrobial Stewardship Program
AST	Antimicrobial Susceptibility Testing
AWARE	Access – Watch - Reserve Classification for Antibiotics
BSI	Bloodstream Infection
ESBL-EC	Extended-Spectrum Beta-Lactamases Producing Escherichia coli
FAO	Food and Drug Organization
GLASS	Global Antimicrobial Resistance and Use Surveillance System
HAI	Healthcare-Associated Infection
IPC	Infection Prevention and Control
JARSS	Jordan Antimicrobial Resistance Surveillance System
Jordan CDC	Jordan Center for Disease Control
JFDA	Jordan Food and Drug Administration
M&E	Monitoring and Evaluation
MDROs	Multi-Drug Resistant Organisms
MOA	Ministry of Agriculture
MOEnv	Ministry of Environment
MOH	Ministry of Health
MWI	Ministry of Water and Irrigation
MRSA	Methicillin-Resistant Staphylococcus Aureus
NAP	National Action Plan
PHC	Primary Health Care
TOR	Term of Reference
TOT	Train of Trainer
TrACSS	Tracking AMR Country Self-Assessment Survey
TWG	Technical Working Group
USAID	United States Agency for International Development
WAAW	World Antimicrobial Awareness Week
WAJ	Water Authority of Jordan
WCO	World Health Organization Country Office
WHO	World Health Organization
WOAH	World Organization for Animal Health

Glossary

Accountability	The practice of being responsible for what we do and able to give a satisfactory reason for it or the degree to which this happens.
Activity	Actions and processes undertaken by the program to deliver outputs. Examples include developing a communication campaign, providing technical assistance, running a health facility, or strengthening partnerships among the private sector.
Analysis	The aim of data analysis is to help turn raw data into knowledge, which can then be used for decision-making and other purposes. Data analysis can take place at any stage of a project or programme cycle. There are many different types of data analysis. These include quantitative, qualitative, and participatory analysis.
Baseline	Baseline data is collected before or at the outset of a project (or an activity) to establish the pre-project conditions before any intervention can affect it - against which future changes amongst a target population can be measured. Projects and programs establish a baseline as a comparison and planning base for monitoring changes in the target population.
Data	A series of observations, measurements, facts, or pieces of information.
Data collection Tool	An instrument that enables information to be documented or refers to the devices/instruments used to collect data, such as a paper questionnaire or mobile data questionnaire. It includes case studies, checklists, interviews, observations, and surveys or questionnaires, all tools used to collect data.
Data Workflow	Roles and responsibilities for data collection, data security, quality assurance, analysis, and use.
Evaluation	The process of collecting and analyzing information to assess a project or program's outcomes and the factors that influence results.
Impact	A measurable change for the beneficiary population that can be attributed to an intervention or activity. The term impact is used in many different ways, but in the context of measurement, it should be reserved for studies specifically designed to show impact with a control group as a comparison.
Indicator	Quantitative or qualitative information that enables the measurement of a project's progress and achievements.
Input	Resources provided for program implementation. Examples include money, staff, time, facilities, and equipment.
Intervention	It is a package of activities implemented in a fairly standardized way, designed to contribute to one or more outcomes.
MEAL plan	A Monitoring, Evaluation, Accountability, and Learning (MEAL) plan is created to guide the collection, management, and use of data, including research requirements when relevant. It guides the monitoring processes throughout the life of the program or funding period. It should act as a central resource for documenting the indicators the program will collect, their source of information, the tools and correct approach for collecting



	<p>them, timing and frequency, resources needed to carry out all the monitoring activities, and the processes that support the correct flow of data, from collection to use. The M&E plan should be developed by the M&E Coordinator, in collaboration with program coordinators and relevant TAs and RMAs, during project design or at the startup phase.</p>
Monitoring	<p>The process of regularly and systematically collecting and analyzing information about a project to inform management decision-making. Project monitoring data may be used to adjust project implementation, enable internal and external reporting, inform project design and advocacy, and promote accountability to beneficiaries.</p>
Needs Assessment	<p>Needs assessment is the identification of priority needs through a systematic assessment of the context, risks to life with dignity, and the capacity of the affected people and relevant authorities to respond.</p>
Outcome	<p>A specific change to achieve improvements in people's education, health, economic well-being, safety, or power. These are the short-term and medium-term effects of a program's outputs, changes that contribute to the program's overall goal or higher-level outcome.</p>
Output	<p>The products, goods, services, and immediate results produced directly by the project are required to achieve the project's outcomes. Examples include number of students attended, cash distributions delivered, facilities built, and people trained.</p>
Partnership	<p>A partnership is a formal collaboration toward shared objectives between the Jordan CDC and other organizations.</p>
Stakeholder	<p>A person or group affected by or having an interest in the project or program and who may affect or be affected positively or negatively by the implementation and outcome of it.</p>
Target	<p>A target specifies the desired numeric result (in number or percent terms) within a given timeframe for a specific project. All indicators should have a target in order to provide meaningful information about intentions and performance.</p>
Theory of Change (ToC)	<p>A Theory of Change is essentially a comprehensive illustration of how and why a desired change is expected to happen in a particular context. It pictures the pathways to achieve each outcome. It does this by first identifying the desired long-term outcomes and then working back from these to identify all the conditions (sub-outcomes) that must be in place (and how these related to one another causally) for the outcome to occur. A theory of change also helps to identify the underlying assumptions and risks that will be vital to understand and revisit throughout the process to ensure the approach will contribute to the desired change.</p>
Assumption	<p>It refers to a condition that needs to be met for the successful achievement of objectives. Assumptions describe risks that need to be avoided by restating them as positive conditions that need to hold.</p>

Monitoring and Evaluation of the National Action Plan for Combating Antimicrobial Resistance in JORDAN (2023-2025)

Framework & Recommended Indicators

I. Introduction

Antimicrobial resistance (AMR) has emerged as a global public health threat, characterized by microorganisms that evolve to resist medicinal treatments, complicating the management of infections and undermining the effectiveness of existing antimicrobials. This escalation in resistance contributes to increased morbidity, mortality, and healthcare costs, presenting significant challenges to health care and economic and societal development¹. The emergence of multidrug-resistant (MDR) bacteria extends these implications, jeopardizing efforts to achieve Sustainable Development Goals (SDGs) related to health, poverty, and inequality².

The global response, guided by the World Health Organization's Global Action Plan on Antimicrobial Resistance (GAP AMR), emphasizes a coordinated approach involving multiple sectors and stakeholders to combat AMR. Nationally, Jordan has responded by developing its own tailored National Action Plan (NAP); 2018-2022 (1.0), and its second NAP 2023-2025 (2.0), which followed a One Health approach recognizing the interconnectedness of human, animal, and environmental health, aimed to address AMR through enhanced awareness, surveillance, infection control, rational antimicrobial use, and encouraging research.

Despite these efforts, a comprehensive evaluation of AMR implementation and effectiveness remained absent, necessitating a structured Monitoring and Evaluation (M&E) framework to ensure alignment with global objectives and effective national response strategies.

The primary goals of this M&E Plan are:

- To track the implementation and effectiveness of national interventions to combat AMR in Jordan systematically and on time.
- To provide actionable insights for policymakers, healthcare providers, and other stakeholders to improve the strategic response to AMR.
- To ensure alignment with global objectives and best practices in combating AMR.

By systematically monitoring and evaluating the progress of the NAP, this M&E Plan will ensure that interventions effectively address the spread and impact of AMR, thereby contributing to improved health outcomes and the sustainability of antimicrobial effectiveness.

¹ Majumder, M. A. A., Rahman, S., Cohall, D., Bharatha, A., Singh, K., Haque, M., & Gittens-St Hilaire, M. (2020). Antimicrobial stewardship: Fighting antimicrobial resistance and protecting global public health. *Infection and drug resistance*, 4713-4738.

² Capozzi, C., Maurici, M., & Panà, A. (2019). Antimicrobial resistance: it is a global crisis, "a slow tsunami". *Igiene e sanità pubblica*, 75(6), 429-450.

II. Background

In response to the ongoing AMR crisis, the **Jordan Center for Disease Control (Jordan CDC)** was established in November 2020 following the government's implementation of the Royal Directive under **Article (120)** of the constitution. The Jordan CDC is designated as a dedicated public health institution that promotes public health practices to prevent epidemics and communicable diseases, as outlined in its **Bylaws No. (112)** for the year 2020. Jordan CDC mandates emphasized overseeing the development and implementation of antibiotic resistance control strategies, coordinating monitoring initiatives, and linking with global initiatives. Consequently, a national committee for monitoring and evaluation was formed through an official letter from H.E. the Minister of Health **No. Epidemics/2023/90**, dated 31/5/2023, and to be overseen by the Jordan CDC, with the Center's president heading this Committee (*Annex No. 1*).

Previous evaluations of AMR initiatives in Jordan have highlighted several key achievements and areas for improvement. Notable successes include establishing a national AMR surveillance system and increased awareness campaigns targeting healthcare professionals and the public. However, challenges remain in achieving consistent implementation across sectors, particularly in animal health and environmental monitoring. Enhanced coordination and resource allocation have been identified as critical for future success.

For the period of 2023-2025, the National AMR M&E Plan has been developed to safeguard public health and ensure the efficacy and longevity of antimicrobials. This plan is central to Jordan's strategic response to AMR. It is designed to systematically track and assess the effectiveness of interventions to curb the spread and impact of AMR. The objectives of this M&E Plan include increased AMR awareness through effective communication, education, and training, Strengthen knowledge base and evidence on AMR through surveillance, reduced infection rates through preventive measures, infection control, and general hygiene, optimal use of antimicrobial medicine in the fields of human, animal, and environmental health, Enhance investment in activities, research, and innovations related to AMR and strengthen governance and resource mobilization.

This M&E Plan is intended for multiple stakeholders at the national level, including policymakers, healthcare providers, public health officials, and researchers, who will utilize the insights derived from the M&E activities to make informed decisions that enhance health outcomes and guide resource allocation toward effective AMR interventions.

By instituting a comprehensive M&E framework, Jordan, through the leadership of the Jordan CDC, reaffirms its commitment to a sustainable, evidence-based approach against AMR. This proactive stance enhances public health resilience and ensures that national efforts are aligned with global health objectives, fostering a collaborative environment where health, agriculture, and environmental sectors unite to combat the shared threat of antimicrobial resistance.

III. Process and Development

Developing the National AMR M&E Plan 2023-2025 for Jordan has been a comprehensive and inclusive process underpinned by multisectoral collaboration and stakeholder engagement. This approach ensures the robustness and relevance of the plan and enhances the ownership and commitment of various sectors towards its successful implementation.

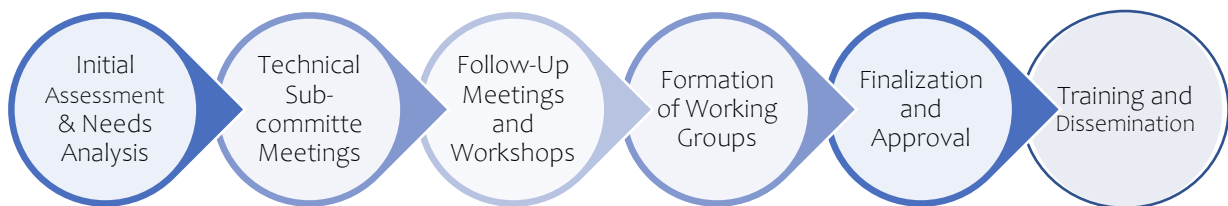


Figure (1). Stages of the National AMR M&E Plan 2023-2025 Development Process

Stage I: Initial Assessment and Needs Analysis

The initial assessment and needs analysis were carried out by AMR focal points from human health, animal health, the JFDA, and the Jordan CDC, with support from a WCO AMR expert. The process began with a WHO assessment questionnaire to evaluate the M&E needs of the AMR NAP.

The assessment comprises three phases: an initial questionnaire, a virtual consultation, and the development of a country assistance plan. Participants completed the questionnaire, followed by a virtual consultation to validate responses and gather additional information. This helps identify the current state of AMR in Jordan by analyzing existing data, surveillance systems, and intervention outcomes. The assessment highlighted several challenges faced during the AMR NAP 2018-2022 implementation.

- Limited resources and funds.
- Lack of expertise, capacity building, and training.
- Weak data collection.
- Absence of surveillance systems in the veterinary sector.
- Difficulty in changing behavior.

These findings provide a basis for the targeted objectives of the M&E Plan, addressing the current response to AMR in Jordan.

Stage II: Technical AMR M&E Sub-committee Meetings

In February, a Training of Trainers (TOT) course was conducted for a selected group of 15 focal points representing various sectors and objectives. This group included the

committee's rapporteur and the disease prevention and control director, who supervised the workflow and provided technical expertise.

The TOT sessions, conducted in collaboration with WHO, equipped participants with skills in results-based management, theory of change, and developing solutions based on AMR NAP activities. Key outcomes included:

- Enhanced understanding of goal-setting and baseline-setting techniques.
- Development of a comprehensive results framework by participants.
- Expertise in identifying and addressing implementation challenges.

Stage III: Formation of Working Groups

Five working groups corresponding to the technical sub-committees of each strategic objective were formed, comprising members from various sectors. These groups prioritized the plan's activities for the upcoming years and developed data collection tools and protocols. Meetings for each objective were held over five days to identify priorities for implementation. The WHO EMRO office developed a tool for prioritizing each activity based on its importance, impact on AMR, implementation difficulty, and financial requirements (Annex No. 2).

Follow-Up Meetings and Workshops

Follow-up meetings and workshops played a critical role in refining the M&E Plan and building the capacities of the national M&E team:

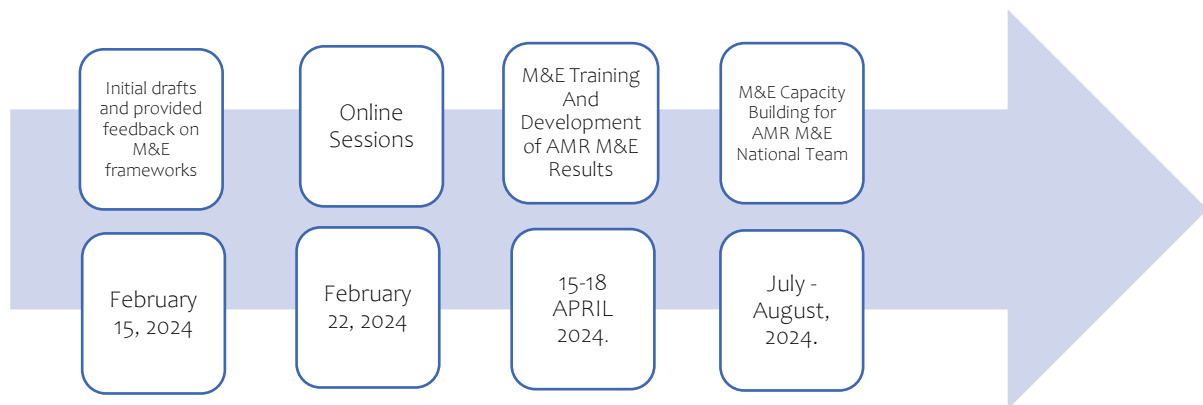


Figure (2). Timeline of Follow-Up Meetings and Capacity-Building Workshops for AMR M&E Plan Development

- February 15, 2024 Meeting: Reviewed initial drafts and provided feedback on M&E frameworks, resulting in recommendations for enhancing data collection methods and setting realistic targets.
- Online Sessions with WHO Experts: These sessions ensured that globally recognized M&E standards were integrated into the plan.
- April 2024 Workshop (supported by WHO): A four-day intensive workshop brought together key stakeholders to synthesized all components into a cohesive M&E

framework, drafting output indicators, baseline data, targets, detailed data collection protocols, and data flow and reporting paths.

- July-August 2024 USAID-Supported Training Workshop: To further enhance the capacity and building competencies of the national M&E team in various areas critical to M&E, including:
 - Introduction to Monitoring, Evaluation, Accountability, and Learning (MEAL) fundamentals
 - Development of Theories of Change (TOC)
 - Crafting effective MEL plans
 - Selecting and utilizing effective indicators
 - Data analysis and visualization techniques
 - Reporting strategies
 - Enhancing collaboration among stakeholders

Stage IV: Finalization and Approval

Following the capacity-building workshops, the M&E Plan was finalized, incorporating all feedback and recommendations. It was then reviewed and approved by the National AMR M&E Committee and other relevant governmental bodies, ensuring that it aligns with both national health policies and international guidelines.

Stage V: Training and Dissemination

Comprehensive training sessions were organized for all stakeholders to facilitate the effective implementation of the M&E Plan. These sessions ensured a clear understanding of the plan's objectives, roles, and the use of tools and methodologies for monitoring and evaluation.

The development process of the National AMR M&E Plan exemplifies Jordan's commitment to a structured, transparent, and participatory approach, which is crucial for tackling the complex challenge of antimicrobial resistance. The plan gains depth and breadth by involving many stakeholders, ensuring cross-sectoral commitment to its successful implementation.

IV. Intended Users of the National AMR M&E Plan

This National AMR M&E Plan is designed for several key groups. It includes members of the National AMR M&E Committee and the AMR Steering Committee, as well as participants from diverse sectors such as human, animal, and environmental health and their respective agencies. It also serves the AMR Sub-Technical Committees, AMR stakeholders, and partners.

V. Result Framework

As depicted in Annex (3), the AMR NAP results framework outlines the initiatives and serves as the foundation for the M&E activities to track the achievement of short to intermediate results and outcomes. This framework illustrates the logical connections among the

intermediate results that the AMR NAP aims to achieve, aligning them with the program's intended outcomes and impact.

By employing selected indicators, results can be consistently measured and reported. Consequently, the framework delineates the overarching program objective (impact) and the five main strategic objectives (intermediate results). Governance has been added to ensure coordination and accountability across all NAP objectives. All initiatives aim to enhance the quality of life and address increasing health demands by 2025. The framework also includes indicators for gauging the achievement of these outcomes.

The objectives of the intermediate results are as follows:

- Implement *Social and Behavior Change Communication* (SBCC) programs focused on antimicrobials to promote public hygiene and responsible use of antibiotics. This includes targeting healthcare providers for both humans and animals, farmers, and school students.
- Enhancing AMR Surveillance System aligns with the One Health approach and improves laboratory capabilities.
- Reduce infection rates by developing and implementing effective IPC programs, enhance and standardize surveillance and evaluation mechanisms for IPC, ensure the availability of evidence-based practices and consistent standards at the national level for IPC in the livestock sector, and improve environmental sanitation programs.
- Amending systems and regulations for antimicrobial dispensing aimed at developing evidence-based guidelines and protocols for prescribing and dispensing antimicrobials, standardizing these practices at the national level, and expanding the program's implementation to ensure the most effective use of antimicrobials in human, animal, and environmental health.
- Develop a Unified National Database for Antimicrobials to assess antimicrobial use and resistance, support research on AMR, and inform policy on containment measures. Additionally, enhances economic studies on the burdens of AMR.
- Establish and enhance partnerships, governance, and resource mobilization at all levels to effectively implement the national strategic plan.

VI. Theory of Change (ToC)

This section is divided into Situation Analysis and the Theory of Change. The Situation Analysis comprehensively examines the current state of AMR in Jordan. This analysis synthesizes findings from several key national documents, including the Jordan CDC's AMR NAP (2018-2022), the Degree of Progress and Implementation Review Report 2023, the National AMR Surveillance System Report 2023, the Tracking AMR Country Self-assessment Survey 2023, and the WHO mission report on Strengthening Jordan's Response to AMR 2024. These sources collectively lay a robust evidence base for understanding the achievements and challenges in combating AMR.

Situation Analysis

The situational analysis of AMR in Jordan is informed by multiple national assessments conducted by various stakeholders, both national and international, providing a comprehensive overview of the current AMR landscape and underscoring the critical need for a coordinated approach to address this growing public health threat.

The Jordan National AMR Surveillance System, established in 2017 by the Jordanian Ministry of Health, operates through a network of 42 clinical microbiology laboratories across all twelve governorates. The *system's second national report*³, published in 2022, covered data from 49,044 patients across 42 surveillance sites (public, RMS, University, and private sectors) from 2018 to 2022. This report provided detailed statistics on antimicrobial resistance, showing current levels and trends of antimicrobial susceptibility and resistance in Jordan, indicating a representative sample of the Jordanian population. However, caution in interpretation is advised. The report highlights the need for national-level coordination in implementing the antimicrobial resistance plan, suggesting more substantial budget allocations and enhanced training across sectors. It emphasizes improving cooperation under the One Health approach, linking national efforts with sector-specific plans, and focusing on training healthcare providers to increase awareness and effective management of antimicrobial resistance.

Under its national public health institute mandate, the **Jordan CDC** has taken on a critical role in overseeing the development and implementation of AMR control strategies and coordinating M&E initiatives to ensure national efforts effectively meet global AMR objectives. Despite challenges in data availability for the 2018-2022 AMR NAP, its comprehensive evaluation was crucial for aligning strategies with international efforts to combat AMR. The Jordan CDC adopted a comprehensive methodology for the *'end-term evaluation' and released its first evaluation report in 2023*⁴, aimed to measure the implementation status of the AMR NAP 2018-2022, track activity progress, and inform future strategic decisions. Key performance indicators aligned with the NAP's five objectives were scrutinized, integrating the 'One Health' concept across multiple sectors, including human health, animal health, plant production, food production, and the environment.

³[https://www.moh.gov.jo/ebv4.0/root_storage/ar/eb_list_page/jordan_national_amr_surveillance_report_2022_\(final\).pdf](https://www.moh.gov.jo/ebv4.0/root_storage/ar/eb_list_page/jordan_national_amr_surveillance_report_2022_(final).pdf)

⁴ Antimicrobial Resistant National Action Plan (2018-2022): Degree of Progress and Implementation- 'End-Term Evaluation Report' (Unpublished)

The evaluation provided significant insights, identifying both achievements and areas needing improvement. Findings include a notable deficit in executing multisectoral activities, particularly in awareness and surveillance, with the animal health sector lagging in involvement and integration. The lack of comprehensive strategies was evident in the absence of national surveys, robust public awareness initiatives, and educational strategies. The evaluation also emphasized the need for a cohesive policy framework, strategic human resource development, enhanced laboratory services, and better infection control practices.

The *WHO mission report on Strengthening Jordan's Response to AMR 2024*⁵ aims to evaluate the quality of AMR surveillance data, assess laboratory systems, expand the Antimicrobial Stewardship Program (ASP), and analyze the integration of IPC with AMS, detail a comprehensive evaluation and provide insights into both achievements and areas needing improvement. The report concludes that Jordan has laid solid foundations for addressing AMR and IPC but notes that enhancing leadership and managerial capacities at both national and facility levels is crucial for further progress. It recommends the development of clear terms of reference for AMR committees, improving M&E systems for AMR and IPC, and strengthening education on IPC and AMS among healthcare professionals.

In terms of specific areas, the report highlights the need for improvements in laboratory services such as training, quality control, and supply chain management. It also suggests better integration and coordination of IPC measures across all healthcare system levels. It emphasizes the importance of revising committee memberships in antimicrobial stewardship programs to include diverse professionals. Additionally, it advocates for the creation of national guidelines for diagnostic stewardship and the enhancement of the use of diagnostic data.

The *Tracking Antimicrobial Resistance (AMR) Country Self-Assessment Survey (TrACSS) 2023 report for Jordan*⁶ highlights the country's efforts and challenges in combating AMR across various sectors. Jordan has made significant progress in developing and implementing its NAP on AMR and is revising it to address emerging needs. The human health sector has integrated AMR awareness and stewardship into training for healthcare workers, and IPC programs are in place nationwide. However, Jordan lacks a robust national monitoring system for AMU and a formalized multisector coordination mechanism, which hinders cohesive action against AMR. Laboratory and diagnostic capacities for AMR surveillance need enhancement. In the animal health sector, AMR awareness is included in veterinary training, but national surveillance systems for animals are not standardized. The agriculture and food production sectors require more investment in training and data generation. Environmental aspects of AMR are not adequately addressed due to insufficient legal and regulatory frameworks. To address these gaps, Jordan needs to strengthen multisector coordination, enhance national monitoring systems, and promote awareness campaigns, which are crucial for effective AMR control and a sustainable 'One Health' approach.

⁵ Strengthening Jordan's National Response to Antimicrobial Resistance – WHO two levels mission – Amman/Jordan – Mission Report

⁶ https://amrcountryprogress.org/download/profiles/2023/english/EN_JOR_TrACSS_2023_Jordan.pdf

In summary, Jordan has made progress in combating AMR but faces critical gaps that need addressing. Key areas for improvement include establishing robust national coordination, enhancing surveillance systems, and promoting a 'One Health' approach. There is a need for better laboratory services, expanded ASP, and improved IPC measures. A coordinated multisectoral effort, supported by strong leadership, adequate funding, and continuous M&E for informing policies and decision-making, is essential for effectively controlling AMR in Jordan. These insights will guide the enhancement of the NAP to meet current and future challenges in AMR management.

Theory of Change (ToC)

The ToC for the AMR NAP 2.0 (2023-2025) is a strategic framework that delineates the pathway from the current situation to the desired outcomes in the fight against AMR in Jordan. This section outlines the linkages between the key components, from the activities to the impact level, and the assumptions supporting achieving the expected outcomes that will eventually lead to the NAP's objectives. The aim is to reduce the incidence of AMR in Jordan by strengthening national and sector-specific capacities, enhancing surveillance systems, promoting rational antimicrobial use, and fostering a 'One Health' approach across human, animal, and environmental health sectors.

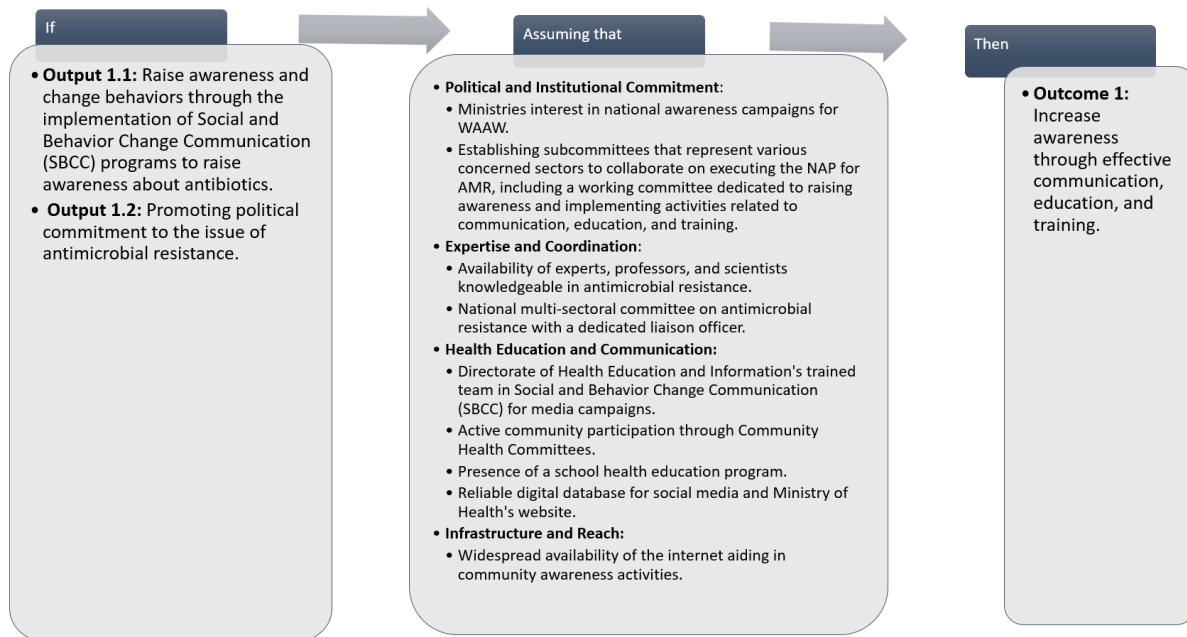
Through an in-depth analysis of the challenges in Jordan, six outcomes have been identified as crucial for achieving long-term impact:

1. Increase awareness through effective communication, education, and training.
2. Strengthen knowledge base and evidence on AMR through surveillance.
3. Reduce infection rates through preventive measures, infection control, and general hygiene.
4. Optimal use of antimicrobial medicine in the fields of human, animal, and environmental health.
5. Enhance investment in activities, research, and innovations related to AMR.
6. Strengthen governance and resource mobilization.

The ToC Statements for each objective at the output-outcome level are as follows:

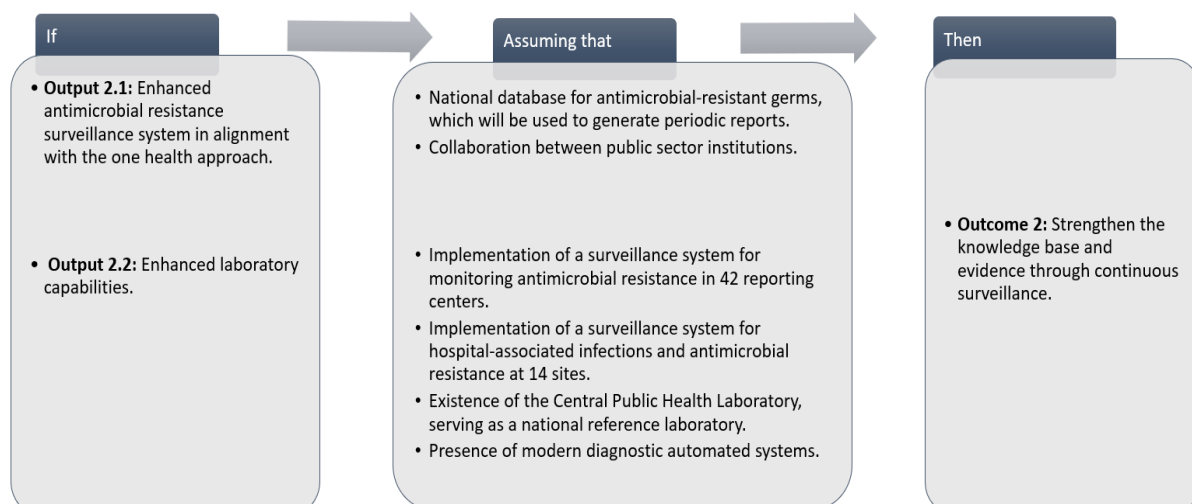


Outcome 1: Increase awareness through effective communication, education, and training.



*If awareness is raised and behaviors are changed through the implementation of SBCC programs about antibiotics, and political commitment to AMR is promoted, **assuming** political and institutional commitment through ministries' interest in national awareness campaigns for World Antimicrobial Awareness Week (WAAW), the establishment of sub-committees representing various sectors to collaborate on executing the NAP for AMR, availability of experts and a national multisectoral committee with a dedicated liaison officer, trained teams in SBCC within the Health Communication and Awareness Directorate, active community participation through Community Health Committees, presence of a school health education program, a reliable digital database for social media and the MOH's website, and widespread internet availability for community awareness activities, **then awareness will be increased through effective communication, education, and training.***

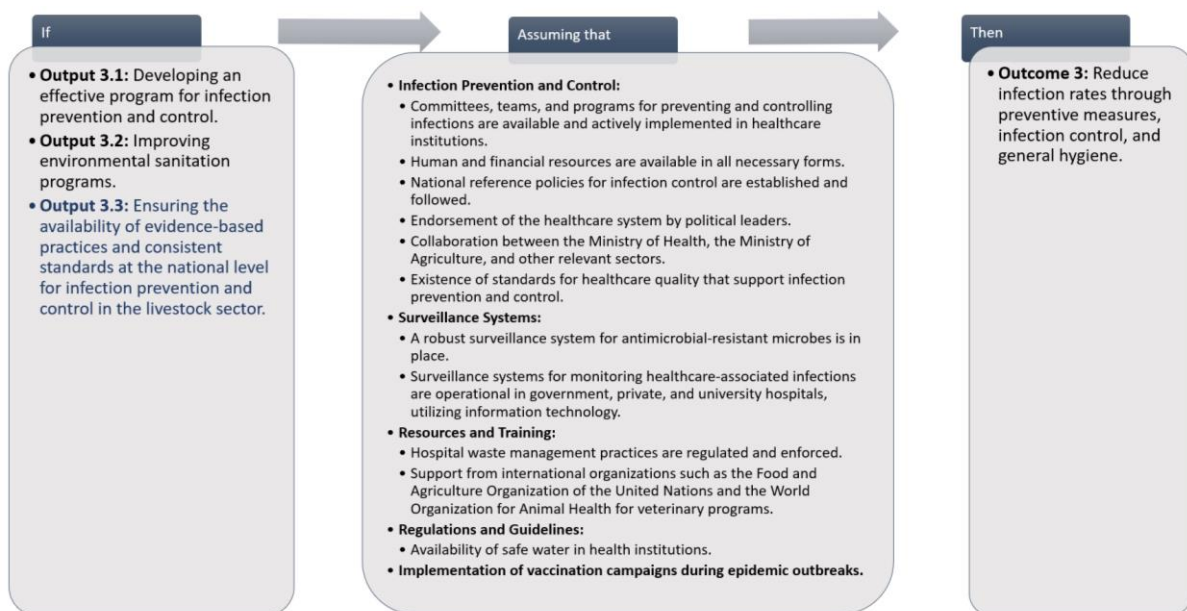
Outcome 2: Strengthen the knowledge base and evidence on AMR through continuous surveillance.





If the antimicrobial resistance surveillance system is in alignment with one health approach is enhanced, **assuming** a national database for antimicrobial-resistant microbes is used to generate periodic reports, the National Coordination Center for Surveillance, which works in collaboration with the Technical Committee for the Surveillance and Research Axis of AMR, is formed, and public sector institutions have collaborated, **and If** enhanced laboratory capabilities are achieved, **assuming** the implementation of a surveillance system for monitoring antimicrobial resistance in 42 reporting centers, a surveillance system for hospital-associated infections and antimicrobial resistance at 14 sites, the existence of the Central Public Health Laboratory as a national reference laboratory, and the presence of modern diagnostic automated systems, **then** the Strengthening of the knowledge base and evidence through continuous surveillance will be achieved.

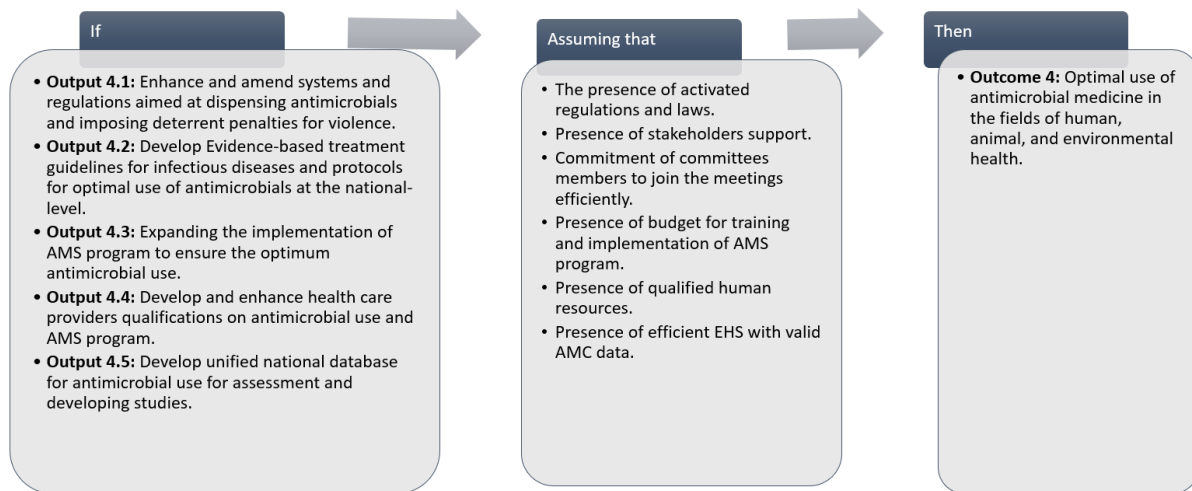
Outcome 3: Reduce infection rates through preventive measures, infection control, and general hygiene.



If an effective program for IPC is developed, environmental sanitation programs are improved, and evidence-based practices and consistent standards for IPC in the livestock sector are ensured at the national level, **assuming** the availability and active implementation of committees, teams, and programs for preventing and controlling infections in healthcare institutions, availability of human and financial resources, established and followed national reference policies for infection control, endorsement of the healthcare system by political leaders, collaboration between the MOH, the MOA, and other relevant sectors, existence of healthcare quality standards supporting IPC, a robust surveillance system for AMR microbes, operational surveillance systems for monitoring HAI in various hospitals utilizing information technology, regulated and enforced hospital waste management practices, support from international organizations for veterinary programs, availability of safe water in health institutions, and implementation of vaccination campaigns during epidemic outbreaks, **then** infection rates will be reduced through preventive measures, infection control, and general hygiene.

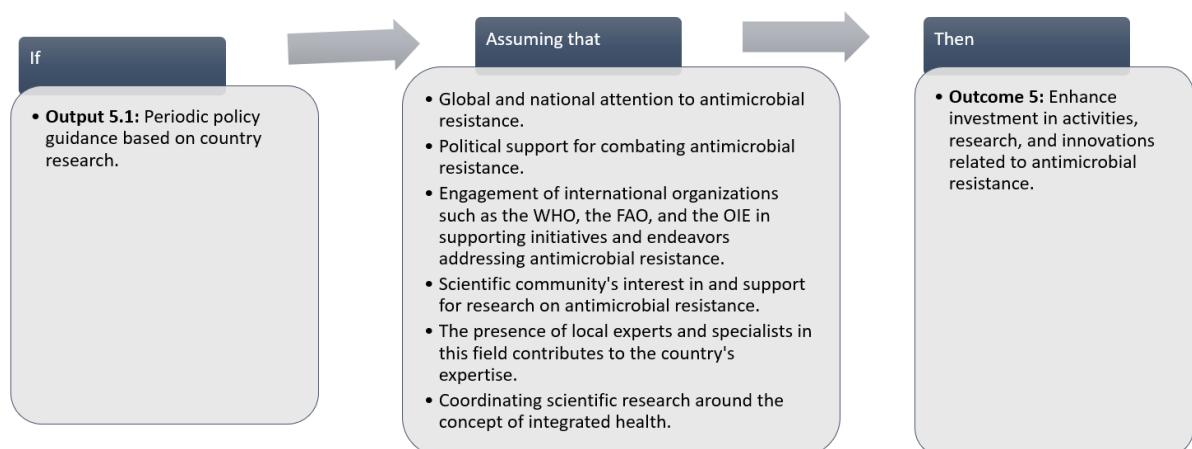


Outcome 4: Optimal use of antimicrobial medicine in the fields of human, animal, and environmental health.



*If systems and regulations aimed at dispensing antimicrobials are enhanced and amended, evidence-based treatment guidelines for infectious diseases and protocols for optimal use of antimicrobials at the national level are developed, the implementation of the AMS program is expanded to ensure optimal antimicrobial use, healthcare providers' qualifications on antimicrobial use and the AMS program are developed and enhanced, and a unified national database for antimicrobial use is developed for assessment and studies, **assuming** the presence of activated regulations and laws, stakeholder support, the commitment of committee members to efficiently join meetings, a budget for training and AMS program implementation, qualified human resources, and an efficient Electronic Health Solutions (EHS) system with valid Antimicrobial Consumption (AMC) data, **then optimal use of antimicrobial medicine in the fields of human, animal, and environmental health will be achieved.***

Outcome 5: Enhance investment in activities, research, and innovations related to AMR.

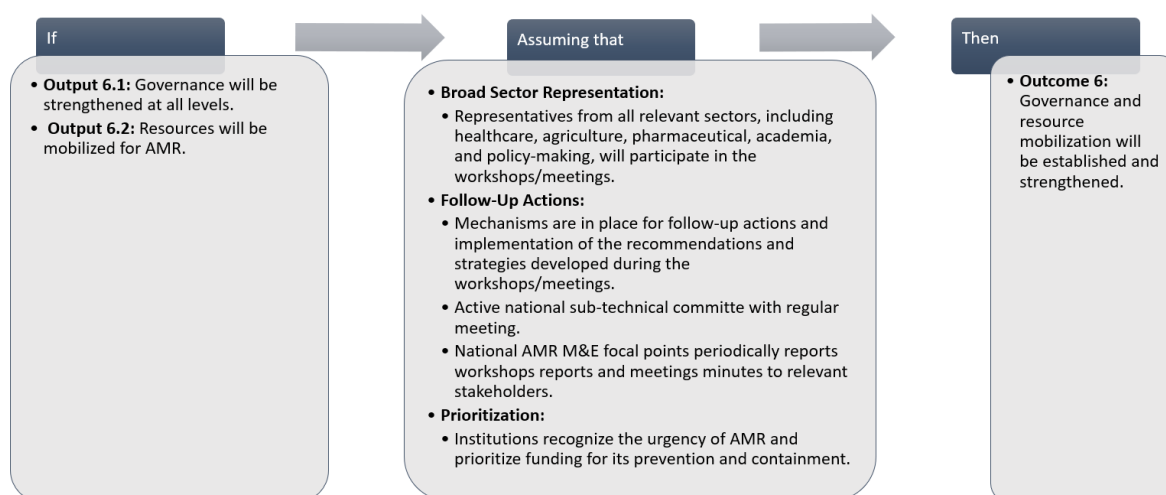


*If periodic policy guidance based on country research is provided, **assuming** global and national attention to AMR, political support for combating AMR, engagement of international*



organizations such as WHO, FAO, and OIE in supporting related initiatives, scientific community interest and support for research, presence of local experts and specialists enhancing national expertise, and coordinated scientific research around integrated health, then investment in activities, research, and innovations related to antimicrobial resistance will be enhanced.

Outcome 6: Governance and resource mobilization will be established and strengthened.

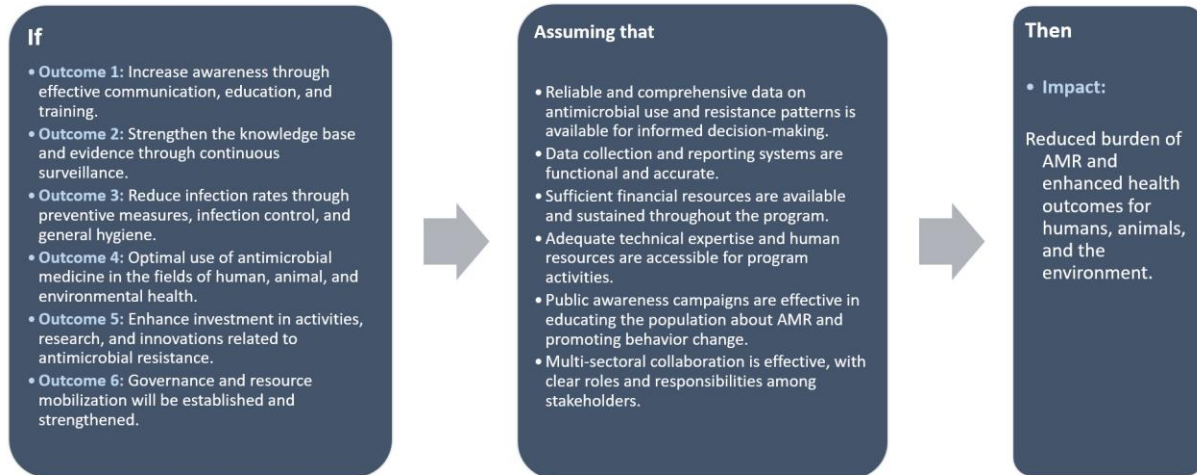


If governance is strengthened at all levels and resources are mobilized for AMR, **assuming** broad sector representation with participation from healthcare, agriculture, pharmaceutical, academia, and policy-making sectors in workshops and meetings, ensuring a comprehensive approach to AMR containment, mechanisms for follow-up actions and implementation of recommendations and strategies, an active national sub-technical committee with regular meetings to track progress and ensure accountability, the national AMR M&E focal points periodically reporting workshop outcomes and meeting minutes to relevant stakeholders, institutions prioritizing funding for AMR prevention and containment, and sustainable funding and global cooperation, including support from FAO and WHO, are essential for effective AMR management, then governance and resource mobilization for AMR will be established and strengthened.

Under each outcome area, specific outputs and interventions (activities) are designed to contribute to the desired outcomes. The pathways of change are detailed in Annex (4).

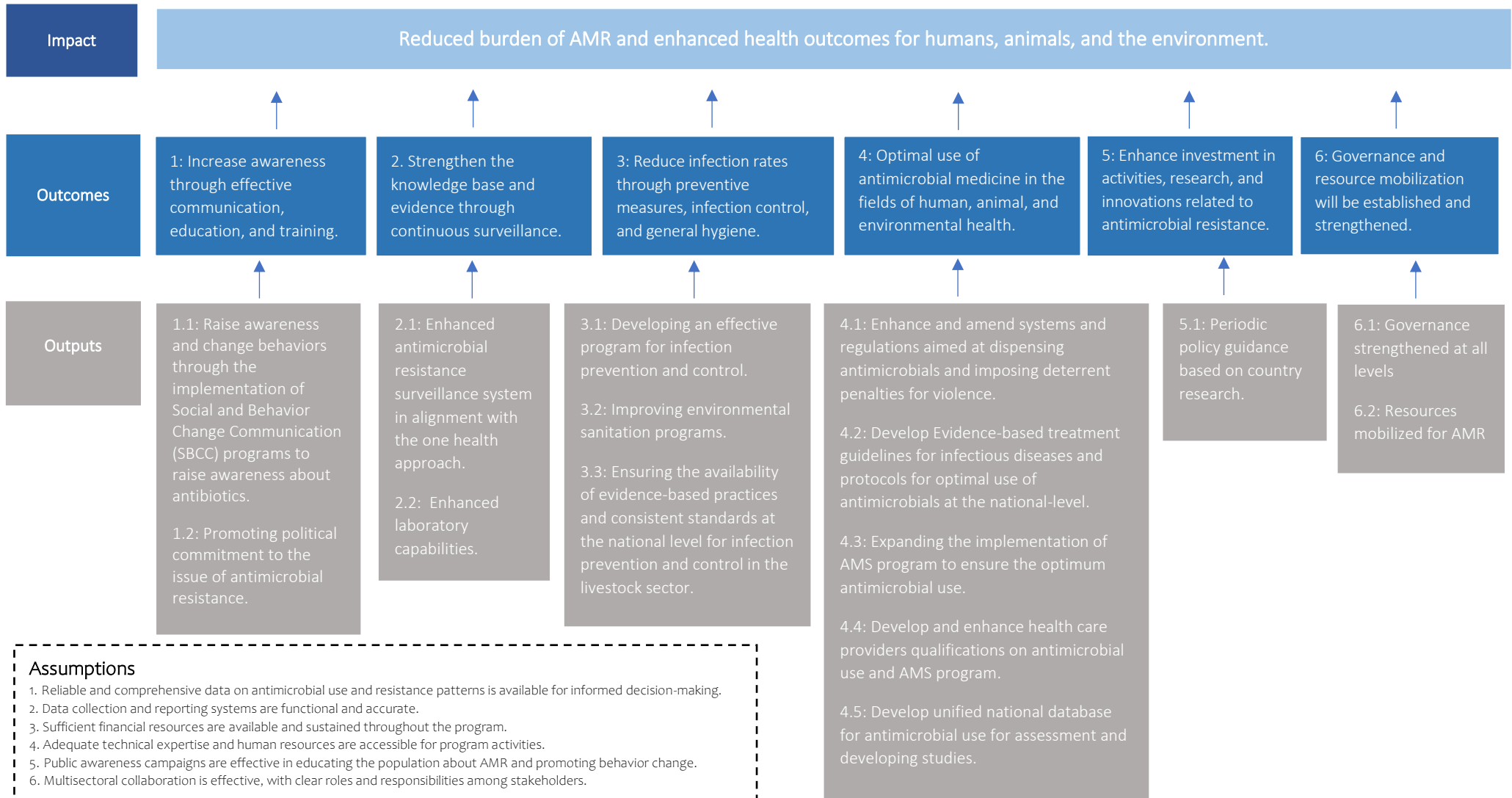
The ToC statement at the outcome-impact level is as follows:

A reduction in the burden of AMR in Jordan contributed to improved public health outcomes, safer healthcare environments, and a robust, sustainable 'One Health' system that effectively addresses AMR.



*If awareness is increased through effective communication, education, and training; and if knowledge base and evidence are strengthened through continuous surveillance; and if infection rates are reduced through preventive measures, infection control, and general hygiene; and if optimal use of antimicrobial medicine is achieved in human, animal, and environmental health; and if investment in activities, research, and innovations related to antimicrobial resistance is enhanced; and If governance and resource mobilization are established and strengthened, **assuming** reliable and comprehensive data on antimicrobial use and resistance patterns is available for informed decision-making, functional and accurate data collection and reporting systems, sufficient and sustained financial resources, adequate technical expertise and human resources, effective public awareness campaigns, and effective multisectoral collaboration with clear roles and responsibilities among stakeholders, **then the burden of antimicrobial resistance will be reduced, and health outcomes for humans, animals, and the environment will be enhanced.***

Figure (3). AMR Theory of Change Diagram for the National Action Plan on Antimicrobial Resistance (AMR) in Jordan



VII. National AMR M&E Plan

- **Leadership and Accountability:** A dedicated national entity should oversee the National AMR M&E Plan, ensuring a sustainable accountability link to a higher government health body. The Jordan CDC will take on this leadership role with its board chaired by the Prime Minister and including relevant ministers (Health, Agriculture, Water and Irrigation, and Environment). The Jordan CDC will monitor, review, and update the National AMR M&E Plan as necessary.
- **Support and Development:** The Jordan CDC will assist the ministries in developing the next multi-year AMR plan, with support from the WHO. This collaboration will ensure the plan is comprehensive and aligned with international standards.
- **Revised NAP:** The revised NAP should identify priority actions tailored to the country's context and needs. Sector-specific activities should be prioritized, cost, budgeted, and financed based on available resources. These activities should be linked to a clear timeline and include indicators for M&E to ensure effective implementation.

Table (1). AMR NAP indicator in Jordan

INDICATOR	YEAR	VALUE
Operational integrated multisectoral AMR plan at One Health approach	2018	Yes
Operational integrated multisectoral plan that includes the integration of specific AMR activities at all levels	2023	Yes

VIII. AMR Governance and Coordination in the Jordanian Context

Effective governance and coordination are critical for successfully implementing Jordan's NAP for Combating AMR. To tackle AMR effectively, Jordan has established a robust governance structure that ensures both vertical (within a sector) and horizontal (between sectors) coordination and collaboration. This structure comprises national and subnational AMR multisectoral coordinating mechanisms that oversee ongoing work and secure the necessary leadership commitment. These multisectoral mechanisms are accountable to an inter-ministerial group, which may also oversee other related issues such as zoonoses and food safety. This inter-ministerial group is responsible for aligning efforts with national One Health approaches, promoting cross-cutting activities, and avoiding duplication of efforts.

IN JORDAN:

High-Level Coordination

High-level coordination has been established among key ministries, including the MOH, MOA, MOEnv, and MWI. This inter-ministerial collaboration ensures a unified approach to addressing AMR challenges and implementing the NAP.

AMR Steering Committee

The MOH established the National AMR technical committee in 2017, which was updated in 2019 to include members from the MOEnv and MWI. This committee meets regularly to discuss progress, challenges, and strategies related to AMR. Including environmental and water sectors in the committee highlights Jordan's commitment to a One Health approach, recognizing the interconnectedness of human, animal, and environmental health.

Focal Points

In 2017, the MOH appointed the national AMR focal point for human health, and the MOA appointed a similar position for animal health. Subsequently, the MOEnv and MWI nominated their AMR focal points in response to a request from the MOH. The focal point for human health also heads the IPC department in the MOH and the Technical Working Group (TWG) on IPC. Additionally, there are focal points from international organizations such as WHO and FAO, ensuring global best practices are integrated into national efforts.

National Technical Sub-committees

Established in 2018, the MOH formed technical sub-committees focusing on awareness, surveillance, IPC, and the rational use of antimicrobials. These sub-committees work under the guidance of the national AMR technical committee to ensure sector-specific activities are aligned with the overall NAP objectives.

Committee Mandates

The mandates, authority, reporting, and terms of reference (TORs) of the National Committee are linked to targets and key performance indicators (KPIs). This linkage ensures accountability and facilitates the monitoring of progress against the defined goals of the NAP.

National AMR M&E Committee

The National AMR M&E Committee led and hosted by Jordan CDC, is responsible for overseeing the implementation of the AMR NAP. This committee ensures that activities are on track, outcomes are measured, and any necessary adjustments are made based on monitoring data.

Jordan has achieved significant milestones in AMR governance, as indicated by the following key indicators:

Table (2). Key Indicators of Milestones Achieved in AMR Governance and Coordination.

INDICATOR	YEAR	VALUE
Operational national multisectoral commission, agency, or mechanism to oversee AMR engagement	2017	YES
National multisectoral commission, agency, or mechanism to oversee AMR engagement, policy coherence, and accountability of sectors beyond health	2022	YES
National multisectoral commission, agency, or mechanism to oversee AMR had a well-identified TOR and met regularly	2023	YES
AMR National focal point for human health	2016	YES

AMR National focal point for animal health	2016	YES
AMR National focal point for environmental health and the water sector	2023	YES
A unit/branch/department with responsibility for AMR M&E	2023	YES
Working group focal point for each objective	2023	YES
Working group for each objective had identified its TOR	2023	YES
Working group for each objective active and met regularly	2023	YES

IX. Roles and Responsibilities

Implementing the M&E Plan for the AMR NAP 2023-2025 entails clearly defined roles and responsibilities for all collaborators. National stakeholders across various sectors collaborate to establish routine systems for collecting relevant data on established indicators.

Table (3). Roles and Responsibilities of Key Entities in Implementing the AMR M&E Plan.

Entity	Responsibilities
Jordan CDC Team	<ul style="list-style-type: none"> - Provide guidance on implementing the M&E Plan. - Train the country's technical working groups in M&E processes, including data collection, analysis, usage, and presentation.
M&E Focal Point (Representatives) of the AMR Technical Working Groups	<ul style="list-style-type: none"> - Implement the M&E Plan. - Build the capacity of stakeholder staff. - Revise reports and supervise general M&E approaches, practices, and tools. - Work with the MOA, MOEnv, MWI, and JFDA technical staff to ensure indicators and information are reported as required.
M&E Focal Points (MOA, MOEnv, MWI, JFDA)	<ul style="list-style-type: none"> - Support the AMR technical working group in maintaining a system to monitor performance based on data from performance indicators.
National AMR M&E Committee	<ul style="list-style-type: none"> - Oversee the M&E Plan to ensure it meets the project's needs. - Respond to information requests from the inter-ministerial committee. - Ensure high standards are maintained, and activities align with best practices in the field.

Table (4). Monitoring Activities, Frequency, and Responsible Entities for AMR M&E Implementation.

Activity	Frequency	Responsibility
Collection of data on performance	Continuous	AMR Technical Sub-committees
Provision of data for quarterly meetings to review progress.	Quarterly	National AMR M&E Committee, AMR Technical Sub-committees
Site visits.	As required	National AMR M&E Committee, AMR Technical Sub-committees
Identification of success stories.	Annually	National AMR M&E Committee, AMR Technical Sub-committees
Reporting of performance results to the National M&E AMR Committee, Jordan CDC board, ministries, and related institutes.	Semi-annually	National AMR M&E Committee, AMR Technical Sub-committees

Assessment of data quality.

Annually

Jordan CDC M&E TWG

Table (5). National AMR M&E Committee Roles and Responsibilities

Personnel	Entity	Responsibilities
Chairman of the Committee	Jordan CDC President	<ul style="list-style-type: none"> - Provide leadership to the M&E Committee, ensuring alignment with AMR NAP objectives. - Oversee implementation of M&E activities, ensuring compliance with protocols and standards. - Assure the coordination of efforts with stakeholders, including government agencies, healthcare institutions, research organizations, and other partners. - Approve the develop comprehensive M&E Plans, outlining key performance indicators, data collection methods, timelines, and responsibilities. - Facilitate communication and collaboration among committee members and stakeholders during the committee meetings. - Support the training needs and opportunities for capacity building. - Continuously review and refine M&E processes.
Rapporteur of the Committee	<p>Jointly between Jordan CDC and MOH</p> <p>A representative from the Directorate of Institutional Development and Quality Control - MOH</p> <p>A representative from the Jordan CDC to coordinate cooperation</p>	<ul style="list-style-type: none"> - Prepare agendas and distribute minutes of meetings. - Manage correspondence to and from the Committee. - Follow up on the implementation of Committee decisions. - Prepare quarterly progress reports in coordination with the Chairman. - Maintain all documents related to Committee activities. - Coordinate logistical arrangements for Committee activities.
Vice-Chairman	Director of Epidemiology Administration - MOH	<ul style="list-style-type: none"> - Represent the Committee in the absence of the Chairman. - Communicate with entities on behalf of the Committee.
Key Members	National AMR M&E Committee	<ul style="list-style-type: none"> - Collaborate with stakeholders and coordinate efforts with other teams. - Provide expertise and knowledge in resistance and antimicrobials. - Act as liaison between the Committee and their respective sectors. - Ensure accurate data management for evidence-based decision-making. - Ensure that regular reports on AMR control efforts are prepared, highlighting achievements, challenges, and areas for improvement.

<p>M&E Coordination Group Members</p>	<p>Representatives and focal points from each objective and sector</p>	<ul style="list-style-type: none"> - Act as representatives of the sub-technical committees for each objective and their sectors. - Provide reports on data and activities carried out by the operational technical team. - Contribute to discussions and share experiences.
<p>Jordan CDC M&E TWG</p>	<p>Prevention Directorate, Epidemiological Surveillance Directorate, Research, Policies and Training Directorate, Laboratory Directorate</p>	<ul style="list-style-type: none"> - Develop M&E Plans outlining goals, objectives, methodologies, indicators, and timelines. - Facilitate feedback and learning from M&E activities. - Analyze data to assess progress and identify areas for improvement. - Prepare regular reports on M&E findings. - Ensure data quality through rigorous quality assurance processes.

X. Data Flow

AMR reports and data will flow from the district level through provincial structures to the national level and then to the AMR Focal Person and Technical Working Group. This M&E Plan recognizes that the One Health sectors have different structures, from health facilities to the national level. However, this does not affect the direction and levels through which data and reports flow. The simplified reporting and data flow chart is illustrated in Figure (4).

Human health data for AMR will come from two primary sources: laboratory data and other reports. Laboratory data will be generated from the source (patient) and then sent to the laboratory for processing. After processing, it will be sent back to the clinician for decision-making. Hospitals generate and collect numerous clinical and AMR data for routine patient care. This data can also be utilized to create cumulative antibiograms and monitor antimicrobial resistance locally at the facility level.

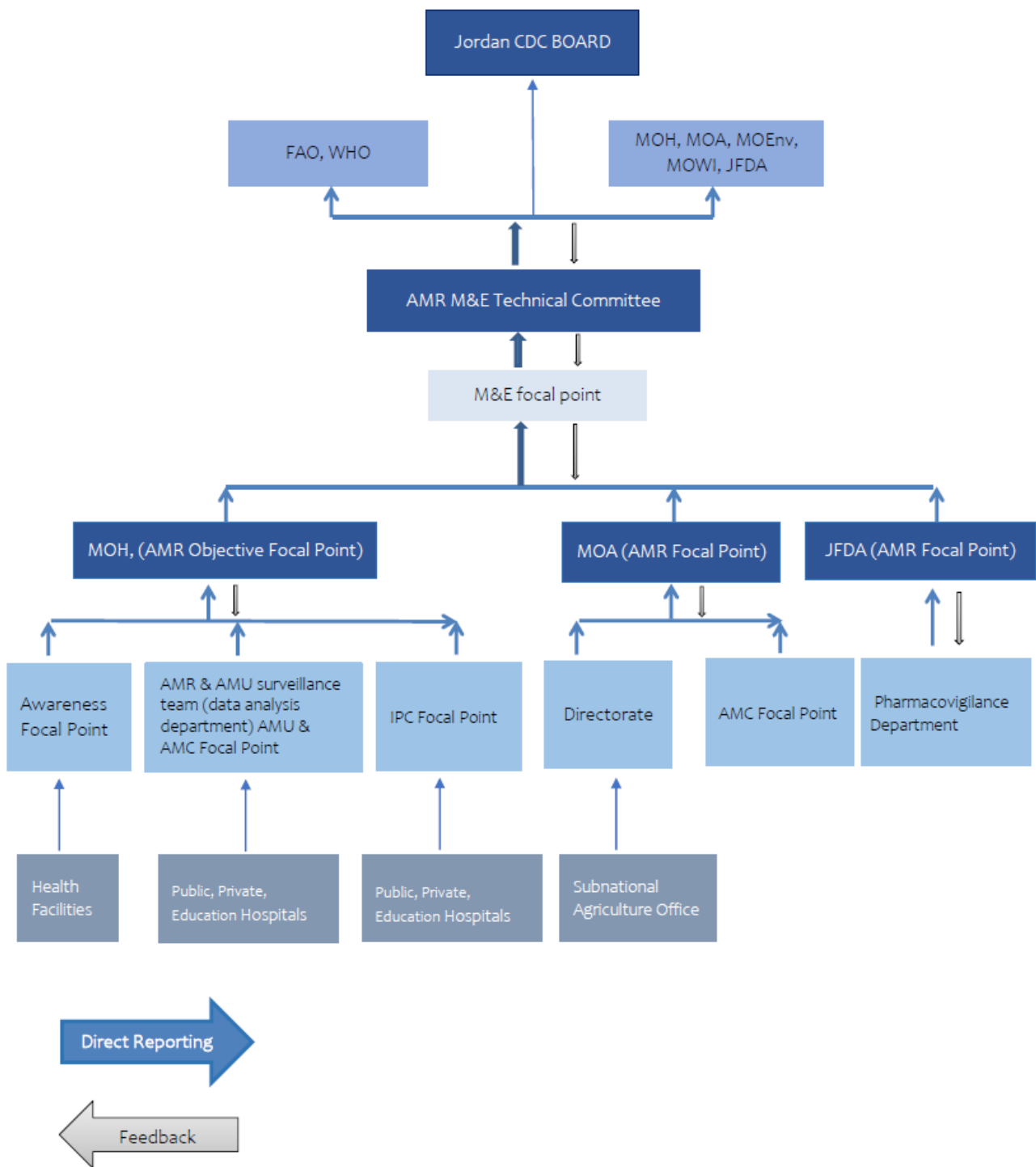


Figure (4). Data Flow and Reporting Structure for AMR National Data

Data Collection:

The Health Data Analytics (HDA) program, developed and implemented by EHS through the Hakeem platform in public and RMS, facilitates the extraction of reliable information on AMR data from hospital electronic medical records (EMR). Additionally, designated focal points at participating surveillance sites, including private and university hospitals, are responsible for submitting AMR data annually to the AMR Surveillance Data Management Department at MOH.

The submitted AMR data encompasses microbiology, clinical information, and demographic details were available and technically feasible. The reporting protocol is in strict alignment with the Jordan National AMR Surveillance Protocol. It adheres to global reporting standards for AMR surveillance as outlined by the WHO Global Antimicrobial Resistance Surveillance System (WHO-GLASS) in 2015⁷.

Table 6 provides an overview of the 42 surveillance sites across various governorates responsible for generating and collecting AMR surveillance data. This data is then reported to the Jordanian Committee for AMR Surveillance. The clinical and microbiology data collected from these surveillance sites serve as the foundation for the national AMR surveillance report.

Table (6). AMR surveillance sites by Governorates (2023)⁸.

Facility Type	Surveillance sites
Amman	17
Irbid	6
Zarqa	2
Jarash	1
Ajlun	2
Mafraq	3
Balqa	3
Madaba	2
Tafileh	1
Karak	2
Ma'an	2
Aqaba	1
TOTAL	42

Laboratory personnel enter data collected at these sites into the national database, where it becomes accessible at the national level. Additional reports on AMR are generated at the facility level and submitted according to established reporting timelines and deadlines. This structured approach ensures comprehensive and timely data collection and reporting, contributing to the ongoing national efforts to monitor and combat AMR.

⁷ World Health Organization. (2015). Global antimicrobial resistance surveillance system: manual for early implementation. World Health Organization.

⁸ [https://www.moh.gov.jo/ebv4.0/root_storage/ar/eb_list_page/jordan_national_amr_surveillance_report_2022_\(final\).pdf](https://www.moh.gov.jo/ebv4.0/root_storage/ar/eb_list_page/jordan_national_amr_surveillance_report_2022_(final).pdf)

XI. Monitoring Plan

The implementation of the AMR NAP will be guided by a comprehensive and systematic monitoring system designed to track progress toward achieving the targets outlined in the results framework. This monitoring system will primarily rely on data from activity implementation reports from various ministries and affiliated institutions. The National AMR M&E Committee will be responsible for compiling, analyzing, and synthesizing this data to ensure accurate tracking of the plan's progress.

Monitoring Activities

The M&E focal point within the AMR TWG will lead the monitoring activities, which are scheduled bi-annually and annually. Additionally, periodic supportive site supervision visits will be conducted to offer technical assistance and verify the data's accuracy and quality. The M&E focal point will be tasked with consolidating and generating bi-annual and annual narrative reports encompassing all reportable indicators and summarizing quantitative achievements. Detailed site visit reports and routine monitoring outputs will complement these reports. The detailed reporting frequency for each indicator is outlined in the results framework table (Annex No. 3). The TWG is responsible for submitting narrative and quantitative performance reports to the National AMR M&E Committee. These reports will highlight key achievements, identify challenges, and provide recommendations for course correction where necessary. Success stories and other communication materials, incorporating personal stories, will be developed to illustrate the program's activities, outcomes, and impact.

Local Monitoring and Data Collection

Effective local monitoring will necessitate the active participation of facility-level personnel and other relevant stakeholders. The M&E focal point within the TWG will oversee data collection on performance indicators, ensuring that interventions are on track to meet their respective targets. This process will be conducted closely with the Jordan CDC's M&E technical team, ensuring consistency and adherence to national standards.

Review Meetings

To ensure continuous improvement and adaptation, the National AMR M&E Committee will convene regular review meetings to evaluate the progress and activities concerning the established targets. These review meetings will be held quarterly and bi-annually, following established guidelines on procedures, areas of focus, and participant involvement. During these meetings, performance will be assessed, and adjustments to the implementation strategies will be made as needed to maintain alignment with the overall goals of the AMR NAP.

XII. Evaluation Plan

The AMR NAP evaluation is a critical process designed to systematically and objectively assess the plan's design, implementation, and outcomes. The primary goal of this evaluation is to determine whether the intended objectives have been achieved and to inform strategic decisions moving forward.

Evaluation Process

Designated M&E experts will evaluate the progress made in Jordan's response to AMR annually. These evaluations will be discussed in management and national committee meetings to ensure that the findings inform ongoing implementation and decision-making. The initial evaluation will include a mid-term assessment, which will provide a comprehensive review of the progress made in the implementation. This mid-term evaluation will enable adjustments to the NAP, the M&E framework, and targets as necessary.

The final evaluation, conducted at the end of the NAP's implementation period, will align with the Global Action Plan on Antimicrobial Resistance (GAP-AMR) objectives. The Jordan CDC will lead this evaluation in collaboration with the National AMR M&E Committee and will apply the following key evaluation criteria:

- **Efficiency:** Assessment of how effectively the NAP's inputs (materials, financial, and human resources) have been transformed into outputs and results, with attention to time and cost efficiency.
- **Effectiveness:** Measurement of the extent to which the NAP has achieved its stated objectives.
- **Relevance:** Evaluation of the alignment between NAP interventions and AMR priorities.
- **Impact:** Analysis of NAP implementation's positive or negative effects on technical, institutional, and environmental factors, including direct, indirect, and multiplier effects.
- **Sustainability:** Determination of the likelihood that the benefits or outcomes of the NAP will continue beyond the implementation period (2023-2025).

Evaluation Timeline

Mid-Term Evaluation: The mid-term evaluation is scheduled for mid-2024. This evaluation will provide an interim assessment of the progress made towards the NAP objectives and will be crucial in making necessary adjustments to the plan, M&E framework, and targets.

Final Evaluation: The final evaluation will take place at the end of the NAP implementation period in 2026. This comprehensive assessment will evaluate the overall effectiveness, impact, and sustainability of the AMR NAP interventions.

Evaluation Focus

The evaluation will focus on several key areas, as outlined in the table below:

Table (7). Evaluation Focus and Responsibilities.

Evaluation Focus	Key Questions	Data Sources	Frequency	Responsibility
Progress toward targets and intermediate results	Were the targets of the AMR NAP achieved? Did the program attain its intermediate results?	Monitoring reports, evaluation data from mid-term and final evaluation	Mid-term and final evaluation	Internal and external evaluators
Reporting requirements	Were all the necessary reporting requirements fulfilled?	Review of reporting plan and schedule	Quarterly	National AMR M&E Committee
Budget management	Was there a budget allocated?	Review of budget spending	Quarterly	National AMR M&E Committee

The evaluation will address the following overarching questions:

Table (8). Proposed Evaluation Questions

a) <i>Relevance</i>	<ul style="list-style-type: none"> - Do the activities and outputs of the program support the overarching objectives and goals of the NAP? - Are the activities appropriate for addressing the challenges of AMR? - Is there sufficient coverage per activity to effectively tackle AMR challenges? - Should specific interventions have been terminated earlier or extended?
b) <i>Effectiveness</i>	<ul style="list-style-type: none"> - To what extent were the objectives of the NAP achieved? - What were the major factors influencing the achievement or non-achievement of the objectives? - Were there any coordination issues impacting the achievement of objectives?
c) <i>Efficiency</i>	<ul style="list-style-type: none"> - Were NAP activities accomplished at minimal cost? - Were NAP objectives achieved within the specified timeframe? - Was the NAP implemented in the most efficient manner compared to alternative approaches, considering both time and cost factors?
d) <i>Impact</i>	<ul style="list-style-type: none"> - What changes occurred as a result of NAP implementation? - Are there discernible differences attributable to NAP implementation compared to the baseline situation? - Who may have been affected by these changes? - What would have been the outcomes if the NAP had not been implemented?
e) <i>Sustainability</i>	<ul style="list-style-type: none"> - To what extent will the benefits or outcomes of the NAP persist beyond its duration in 2025? - Are there measures in place to ensure the sustainability of benefits or outcomes beyond 2025? - What are the primary factors influencing the sustainability or lack thereof of the NAP?

Dissemination of Evaluation Findings

The findings from both the mid-term and final evaluations could be disseminated through the following forms, Evaluation Reports, Executive Summaries, Workshops and Presentations, Publications and Briefings.

Target Audience

The primary recipients of the evaluation findings will include:

- **Jordan CDC Board and National AMR M&E Committee:** To inform strategic decisions and policy adjustments.
- **Relevant Government Ministries (MOH, MOA, MOEnv, MWI, JFDA):** To ensure that findings are integrated into future action plans and policy frameworks.
- **International Partners (WHO, USAID, FAO):** To align Jordan's AMR strategies with global standards and expectations.
- **Healthcare Institutions and AMR Focal Points:** To improve on-the-ground implementation and capacity building.
- **Academic and Research Institutions:** To encourage further research and innovation in AMR management.
- **Public Health Community:** To share best practices and insights for combating AMR globally.

XIII. Learning Plan

The Learning Plan within the AMR NAP is designed to facilitate continuous improvement through systematically collecting, analyzing, and disseminating data related to activities, outputs, and outcomes. This process aims to establish accountability and equip stakeholders with the necessary information to assess the program's effectiveness, efficiency, impact, and sustainability.

Learning Activities and Events

To promote knowledge sharing and collaboration, the AMR NAP will incorporate various learning activities, including bi-annual and annual review meetings, exchange visits, and targeted learning events. These gatherings will be platforms for stakeholders to share key achievements, best practices, challenges, and lessons learned across the One Health sectors.

For instance, the Jordan CDC AMR Review Report 2023 identified several critical areas needing development, such as inconsistent and insufficient funding, which poses a significant barrier to the sustained implementation of AMR strategies. The report emphasizes that local financial capacity is currently inadequate to support national-level activities; however, it also highlights the potential for securing diverse funding sources through international partnerships to support the implementation of the NAP.

Exchange visits within and between sectors will offer valuable opportunities for stakeholders to observe and share successful practices. Depending on the availability of resources, these exchange

visits may also extend to other countries actively implementing AMR NAP interventions, fostering international collaboration and learning.

The National AMR M&E Committee will lead in organizing and managing all learning activities, ensuring that insights gained are effectively integrated into ongoing and future actions.

Table (9). Activities and Approaches for Learning

Knowledge generation and capture	Activities and interventions	Stakeholder consultations, mapping, after-action reviews, reflections, learning networks, learning events, expert panels, assessments, special studies, success stories, reports (training reports, quarterly performance progress reports), newsletters
	Who to involve	MOH, MOA, MOE, MWI, JFDA, Jordan CDC, AMR Technical Working Group
Sharing what is learned	Who will benefit from learning	MOH, MOA, MOE, MWI, JFDA, Jordan CDC, AMR Technical Working Group
	Format	Informal discussions, formal meetings, presentations, reports, briefs or updates, tools, guidance, policy, reports, pictures, stories
Using what is learned	The kind of change to which learning can contribute	Understanding context, development of hypotheses, project design, activity design, mechanisms, partnerships or roles, internal or national policy, impact assessment, M&E, quality of data
Updating learning	Periodicity	Quarterly, semiannual, annual
	Means	Continuous monitoring, surveys, evaluation, after-action reviews, reflections, learning events, expert panels, assessments, special studies, success stories, reports (training reports, quarterly performance progress reports), newsletters

XIV. Reporting and Communication

The reporting and communication plan for the AMR NAP is designed to systematically and effectively document and disseminate progress toward meeting the plan's targets to ensure that all relevant stakeholders, both internal and external, receive timely and accurate information to support decision-making, policy development, and program adjustments.

Reporting Structure and Responsibilities

Internally, AMR NAP implementing entities, including the AMR Sub-committees, MOH, MOA, MOEnv, MWI, and JFDA, will receive data from designated delivery points. The M&E focal point of the AMR Sub-committees will aggregate performance indicators and submit comprehensive reports to the National AMR M&E Committee.

Data collection will focus on 42 surveillance sites across Jordan, encompassing public sector facilities (MOH and RMS), university hospitals, and private hospitals. Due to the necessity of

maintaining data quality and the relatively short implementation timeline, the plan will be executed in stages:

- **Stage One (Ending in 2025):** Focuses on 10-15 hospitals from different sectors.
- **Stage Two:** Expand the implementation to the remaining selected hospitals.

The MOH’s Data Analysis Department will compile and analyze hospital data, producing an annual report with epidemiological insights and recommendations for improvement. Additionally, data on antimicrobial use will be integrated from the Pharmacy Directorate and the JFDA. Technical staff, including epidemiologists, will analyze this data to generate reports that inform national policies, protocols, systems, and legislation.

Collaboration with other sectors, such as the animal and environmental sectors, will include collecting and uploading data to designated global platforms. The environmental sector, in particular, will implement recommendations from previous monitoring projects during the 2018-2022 action plan.

Table (10). Reporting Schedule

TARGET	REPORT TYPE	PURPOSE OF USE	FREQUENCY
Jordan CDC board	Summary of progress on milestones and targets, next steps	Promote coordination, collaboration, and evidence-based policy guidance	Semi-annual
International Organizations	Summary of progress in achieving milestones and targets, next steps	Facilitate coordination and collaboration and assess progress in meeting targets	Quarterly
Ministries and Institution Team	Progress in achieving all outputs and outcome indicators	Program monitoring, evaluation, reporting, and internal assessment of data quality	Quarterly
National AMR M&E Committee	Progress in achieving all output indicators	Program monitoring, evaluation, reporting, and internal assessment of data quality	Quarterly

The National M&E Sub-coordination Committee of the AMR Technical Working Group will be responsible for submitting quarterly reports to the National AMR M&E Committee and semi-annual reports to the Ministries and committees. These reports will include details on progress toward defined outputs and outcomes, next steps, and any emerging issues. Ensuring timely dissemination of these reports is critical to maintaining momentum and enabling prompt decision-making.

Communication Strategy

Effective communication is essential for conveying clear and consistent messages regarding the AMR NAP’s targets and progress. The communication strategy will utilize various channels, including written reports, success stories, quarterly summary reports, speaking events, and social

media platforms. The TWG will analyze data in context, identify influencing factors, and assess outputs to support informed decision-making aimed at improving AMU.

Reports will integrate both quantitative and qualitative data, accompanied by narratives that provide a comprehensive picture of activities, outcomes, and impacts. These narratives will highlight key achievements, challenges, and lessons learned, helping to contextualize the numerical data.

Final NAP Evaluation report

The final evaluation report at the conclusion of the NAP will include:

- An assessment of performance throughout implementation, measured against established indicators.
- An analysis of whether progress or results met, surpassed, or fell short of expectations, with explanations.
- Recommendations for future actions, including considerations for program continuation and sustainability.
- Lessons learned during the implementation period.

AMR NAP Reporting Template

Data on AMR NAP implementation will be collected and reported using specifically designed tools. Data collected at service delivery points will be centrally compiled and reported using the AMR NAP reporting template, which will include:

- Implementing government institution
- Sector (human, animal, or environment)
- Reporting period

Narrative Summary Components

Each narrative summary report will include:

- **Achievements:** A detailed account of accomplishments during the reporting period, including any unplanned activities.
- **Challenges:** An overview of constraints that limited progress, along with actions taken to address them.
- **Lessons Learned:** Insights that validated or necessitated modifications to the implementation approach.
- **Success Stories:** Illustrative examples of successful interventions or outcomes.
- **Upcoming Activities:** A preview of significant activities planned for the next reporting period.
- **Completed Activities:** A summary of completed activities during the reporting period.
- **Concluding Remarks:** Final observations and recommendations for future support or changes.

Performance Indicator Reporting

For each performance indicator, the reports will include:

- **Reporting Frequency:** Specification of how often the data is reported.
- **Results:** Summary of results for the current reporting period.
- **Explanations:** Clarification for any unmet targets.
- **Actions:** Strategies to ensure future targets are met.

XV. Data Management

This section outlines the processes and protocols for data sourcing, analysis, privacy, utilization, and quality assurance to ensure that the data collected is accurate, secure, and effectively used for decision-making.

Data Sources

Data will primarily be sourced from service delivery point registers across participating institutions. All stakeholders involved in AMR prevention and containment will have controlled access to relevant data. In cases where secondary data sources do not align directly with indicator definitions, the team may conduct assessments and surveys to gather primary data. Standardized templates will be developed to ensure consistency in data recording, storage, and aggregation. Additionally, all reports and evaluations will be systematically documented, with a plan in place to capture and disseminate lessons learned to both internal and external audiences.

Data Analysis

AMR data will be regularly analyzed to generate actionable insights for policymakers and other stakeholders. The analysis will employ a variety of quantitative and qualitative techniques tailored to specific information needs. These techniques will include, but are not limited to, descriptive statistics, comparative analysis, and trend analysis. The goal is to provide comprehensive and timely information that supports evidence-based decision-making.

Data Privacy

To safeguard the privacy of AMR data, access will be restricted to authorized users as determined by the National AMR M&E Committee. Strict protocols will be implemented to ensure that data is handled in accordance with national privacy standards, with access granted only to individuals with a legitimate need to know.

Data Utilization

A key objective of the AMR NAP is to foster a culture of data-driven decision-making at all levels. The AMR M&E Committee will establish mechanisms to promote the effective use of data across the various stakeholders involved in the plan's implementation. Regular meetings will be held to

interpret data, prioritize issues, develop solutions, and enhance overall performance. This approach will support the development of multi-level, multi-stakeholder teams dedicated to continuous improvement.

Data Quality Assurance

Ensuring data quality is a central component of the AMR NAP's data management strategy. The National AMR M&E Committee will integrate data quality assessments into its technical support activities for implementing institutions. These assessments will focus on key dimensions of data quality, including timeliness, accuracy, completeness, and validity. During supportive supervision visits to both human and animal health facilities, the AMR M&E team, along with the Jordan CDC technical team, will monitor data quality regularly in a participatory manner. Additionally, the AMR M&E team will conduct at least one rapid data quality assessment annually at selected facilities. This assessment will evaluate the completeness, consistency, and accuracy of reported data, identify potential issues in data collection, reporting, or entry, and recommend corrective actions as needed.

Data Storage and Security

Data collected from service delivery points will be centrally stored in a secure, password-protected system. Access to the data will be limited to personnel responsible for data management, including surveillance focal points, data analysts, and information technology staff. These individuals will be trained in the appropriate handling and management of sensitive data to ensure its integrity and security.

XVI. References

- *Ethiopia: Third One Health strategic plan on antimicrobial resistance prevention and containment 2021-2025*, https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/nap-library/ethiopia-amr-strategic-plan-2021_2025.pdf?sfvrsn=8ef921ca_3&download=true
- World Health Organization, UNEP United Nations Environment Programme, & World Organisation for Animal Health. (2023). *Guidance to facilitate monitoring and evaluation for antimicrobial resistance national action plans*. World Health Organization.
- World Health Organization. (2019). *Monitoring and evaluation of the global action plan on antimicrobial resistance: framework and recommended indicators*.
- World Health Organization. (2022). *Malawi national action plan on antimicrobial resistance: review of progress in the human health sector*.

Annex No. 2

National AMR Activity Prioritization Tool for Jordanian Context

Activity	Importance (The importance assigned by stakeholders to prioritize and implement the activity)	Impact (The impact the activity has on reducing the development and spread of AMR)	Difficulty to implement (The level of difficulty to implement the activity)	Cost (The costs required to implement the activity)	Total score	Ranking
	1 - Low importance assigned by stakeholders 2 - Medium importance assigned by stakeholders 3 - High importance assigned by stakeholders	1 - Low impact to reduce AMR 2 - Medium impact to reduce AMR 3 - High impact to reduce AMR	1 - High difficulty to implement activity 2 - Medium difficulty to implement activity 3 - Low difficulty to implement activity	1 - High cost to implement activity 2 - Medium costs to implement activity 3 - Low cost to implement activity	The activities with the <u>highest total scores</u> should be the ones to prioritize for implementation.	Once the total scores have been calculated, the activities will automatically be categorized into "High," "Medium," and "Low." Activities categorized as "High" should be prioritized for implementation, followed by "Medium"-categorized activities.
					0	Low
					0	Low
					0	Low
					0	Low
					0	Low
PRIORITIZATION MATRIX FOR AMR NAP ACTIVITIES						
STRATEGIC OBJECTIVE:						

Annex No. 3

AMR NAP Result Frameworks

Monitoring Matrix Tool										
Results statement	Indicators	Data source(s)	Data collection method(s)	Period and frequency	Baseline (2023)	Target 2024 (non-accumulative)	Target 2025 (non-accumulative)	Target 2024-2025 (End of project/program, cumulative, total)	Responsible agency or organization + relevant unit and person in charge of the indicator. Means and resources to support data collection and processing	Users (audience) and use of the information generated
Impact: Reduced burden of AMR and enhanced health outcomes for humans, animals, and the environment										
	Annual trends for percentage of isolates multidrug-resistant (%MDR) for non-fermenting Gram-negative rods, r Acinetobacter spp.	AMR surveillance annual report	Surveillance	Annually	82%	Reduction TBD	Reduction TBD	Reduction TBD	MOH	Decision makers, Ministries, Jordan CDC National AMR M&E Committee
	Annual trends for percentage of isolates multidrug-	AMR surveillance annual report	Surveillance	Annually	38%	Reduction TBD	Reduction TBD	Reduction TBD	MOH	Decision makers, Ministries,

	resistant (%MDR) for Gram-positive bacteria, e. facie um									Jordan CDC National AMR M&E Committee
	Prevalence of ESBL genes of E-coli in poultry	Tricycle report	Survey	Annual ly		Reduction TBD	Reduction TBD	Reduction TBD	MOA	
Objective no. 1										
Outcome 1: Increase awareness of AMR through effective communication, education, and training.	Number of people who interacted with the digital campaign's awareness materials on social media conducted on the HCAD social media page through (likes, views, shares, comments, etc...)	HCAD Facebook Page	Social Media Reports	Annual ly	No. of posts: 3, Reach: 11817, Engagement: 150	No. of posts: 8, Reach: 150.000, Engagement: 2500	No. of posts: 12, Reach: 200.000, Engagement: 3500	No. of posts: 20, Reach: 350.000, Engagement: 6000	MOH: Awareness design and production unit – Head of the Unit	Decision makers, MOH – HCAD, National AMR M&E Committee
	Number of schools (within the age group 12-17 years) in which the topic of AMR was included in their routine	Report from School Health Directorate	Reports provided by school health service providers to directorate	Annual ly	0	100	150	250	MOH: School health directorate	Decision makers, MOH – HCAD, School health

	health education topics									directorate , National AMR M&E Committee .
	Number of advocate recommendations and community listening reports on the issue of AMR.	Report from MOH – HCAD	Social Media Reports, Focus group	Bi-annual	Listening reports: 1, Number of advocate recommendations: 1	Listening reports: 2 reports, Number of advocate recommendations: 2 rec.	Listening reports: 2 reports, Number of advocate recommendations: 2 rec.	Listening reports: 4 reports, Number of advocate recommendations: 4 rec.	MOH - HCAD	Decision makers, MOH – HCAD, National AMR M&E Committee
Output 1.1: Raise awareness and change behaviors through the implementation of Social and Behavior Change Communication (SBCC) programs to raise awareness about antibiotics.										
	Prepared communication plan on AMR.	Report from HCAD	Report	Annualy	0	0	1	1	Health Communication and Awareness Directorate, Awareness committee	MOH – HCAD, National AMR M&E Committee
	Number of digital awareness campaigns about AMR conducted on the social media platforms of the	Report from HCAD	Report	Annualy	1	1	1	2	Health Communication and Awareness Directorate, Awareness committee	MOH – HCAD, National AMR M&E Committee

	MOH/HCAD and partners' social media pages.									
	Number of awareness lectures conducted by community health committees about hygiene and the rational use of antibiotics in human and animal health fields.	Report from HCAD	Electronic Report	Bi-annual	6569	6300	6500	12800	Health Communication and Awareness Directorate, Awareness committee	MOH – HCAD, National AMR M&E Committee
	Number of awareness activities targeting schools.	Report from the School Health Directorate	Report	Bi-annual	0	100	200	300	School health directorate	MOH – HCAD, National AMR M&E Committee
Output 1.2: Promoting political commitment to the issue of antimicrobial resistance.										
	Number of reports prepared included the results of community listening and monitoring of social media rumors about antimicrobials.	Health communication and awareness Directorate / community health committees and social	Report	Bi-annual	0	1	1	2	Health Communication and Awareness Directorate, Awareness committee	MOH – HCAD, National AMR M&E Committee

		media platform								
	Number of lists of experts and partners was identified to help advocate, develop, and enforce policies and legislation on antimicrobial resistance.	Health Communication and Awareness Report Directorate / Awareness Committee report	Report	Bi-annual	0	1	One same list	2	Health Communication and Awareness Directorate, Awareness committee	MOH – HCAD, National AMR M&E Committee
Implementation of field orientation visits for farmers regarding vaccination, biosecurity, feed additives, water purification, and the use of antibiotics, among other topics.	Number of farmers educated about the rational use of antibiotics and the importance of good animal husbandry practices.	MOA directorate / field visit report	Report on the awareness form for the optimal use of antibiotics by Email-WhatsApp for 2024/ for 2025 EIDSS	Annually	0	50	200	250	MOA: One Health and Zoonotic Diseases Department, Animal Health Department, Poultry Health Departments	Minister, Assistance S.G in animal sectors, S.G (to assess awareness capacity in each directorate , redirect awareness effort, cross-reference this data with the data collected for the

										surveillance)
Objective no. 2										
Outcome 2: Strengthen the knowledge base and evidence through continuous surveillance .	Number of facilities that implemented the recommendation derived from the Tricyclic Project		Tricyclic Project report recommendations	Annually	0	TBD	TBD	TBD	MOH: CPHL MWI: laboratories and quality affairs MOA: laboratory	NGOs, Policy makers
	Percentage of the non-duplicate diagnostic isolates Percentage of samples analyzed for detection of AMR pathogens from human health sentinel site	MOH surveillance	Surveillance	Annually	33.10%	TBD	TBD	TBD	Data analysis department	
Output 2.1: Enhanced antimicrobial resistance surveillance system in alignment with the one health approach.										
	Number of recommendations adapted according to the Tricycle project data to enhance multisectoral	MOH, MOE, MOA	Recommendation checklist	Annually	0	0	1	1	MOH: CPHL MWI: laboratories and quality affairs MOA: laboratory	NGOs Policy maker

	collaboration report.									
	Number of Annual reports on resistance patterns developed and disseminated to relevant sectors	Data Management Department, Communicable Disease Directorate	Report dissemination	Annually	1	1	1	2	Data Management Department, Communicable Disease Directorate	Public health professionals and decision-makers
Establishing a system for monitoring antimicrobial-resistant microbes in animals similar to the system existing in humans.	Number of animal sample test results for antibiotic susceptibility reported from the Animal Health Central Lab (passive surveillance).	Animal health central laboratory (microbiology lab) Peripheral labs.	Number of tests is recorded and compiled into annual reports by relevant health and veterinary authorities.	Depend on the frequency of receiving the cases	Around 400 samples	400	400	800	Micro Lab at different directorates	Farmers, veterinarians, animal health workers. & Sharing with other ministries (MOH, MOEnv) and international (WOAH)
Output 2.2: Enhanced laboratory capabilities.										
	Number of labs that adhere to CLSI guidelines in testing performance	CPHL	Developed assessment tool results analysis	Bi-annual		10 sites	18 Sites	28	CPHL, Jordan CDC	MOH National AMR M&E Committee

	and reporting results.									
	Number of labs with an uninterrupted supply chain.	CPHL	Formal letters and template	Bi-annual		10 sites	18 sites	28	CPHL	MOH National AMR M&E Committee
Developing and revising a quality assessment program to be applied to all laboratories participating in the monitoring system (internal and External Quality Assessment EQA participation).	Number of labs implementing the quality assessment program	CPHL	Filled forms for the NEQAS	Annually	PRESENT BUT NOT REVISED (o)	Developed (1)	Developed	Developed	CPHL	MOH National AMR M&E Committee
	Number of labs that were assessed for quality assurance.	CPHL and Surveillance Sites	NEQAS assessment result tool	Bi-annual	TBD	10	18	28	CPHL	MOH National AMR M&E Committee
Standardizing the national laboratory standards	Number of laboratories in the animal sector that have	Data from the Ministry of Agriculture	Regular audits to ensure laboratories	Annually	0	1	1	2	Ministry of Agriculture, Department of	Policymakers, livestock farmers,

<p>and general guidelines according to international standards (Clinical and Laboratory Standards Institute, etc.): Including members from all relevant sectors and holding regular meetings. - Preparing a summary - Printing - Training staff - Providing sites with (CLSI) and monitoring their implementation and application of Vitek system</p>	<p>developed (SOPs) in accordance with (CLSI) guidelines to improve (AMR) detection and surveillance capabilities.</p>	<p>central laboratories</p>	<p>comply with SOP</p>						<p>Microbiology, Department One Health</p>	<p>veterinarians, and public health officials.</p>
<p>Objective no. 3</p>										

Outcome 3: Reduce infection rates through preventive measures, infection control, and general hygiene	Decreased rate of Blood Stream Infection (BSI) caused by Carbapenem-resistant organism (CRO)	AMR Surveillance	Electronic AMR Surveillance	Annual ly	22.7%	0%	3% decrease (0.7 point)	3% decrease (0.7 point)	MOH, Surveillance Focal Point	MOH, Jordan CDC, RMS, University Hospitals
Output 3.1: Effective program for infection prevention and control developed.										
3.1.1 Improving and developing the organizational structure of the personnel in the infection prevention and control program.										
Establishing the presence of infection control units and directly connecting them to higher administrations within the organizational structure of all healthcare institutions.	Percentage increase of the annual score of national IPC program assessment in IPCAT 2 (The average of 3 indicators with 23 sub-indicators)	IPCAT2	Self-Assessment tool – National level	Annual ly	82%	82% (2024)	86% (2025)	4.87% increase (4 points)	MOH - IPC Department	IPC Department, IPC Committee, National AMR M&E Committee
Determining the staffing ratios for	Percentage increase of the annual score of IPC guideline	IPCAT2	Self-Assessment tool –	Annual ly	56%	56% (2024)	81% (2025)	44.64% increase (25 points)	MOH - IPC Department	IPC Department,

the infection control units within healthcare institutions based on the size and nature of the services provided.	assessment in IPCAT 2 (The average of 4 indicators with 16 sub-indicators)		National level							IPC Committee , National AMR M&E Committee
3.1.2 Improving the training and education levels for infection control teams and healthcare personnel.										
Conducting specialized training workshops on infection control procedures.	Percentage increase of the annual score of IPC education and training assessment in IPCAT 2 (The average of 4 indicators with 17 sub-indicators)	IPCAT2	Self-Assessment tool – National level	Annual ly	28%	28% (2024)	37% (2025)	32.14% increase (9 points)	MOH - IPC Department	IPC Department, IPC Committee , National AMR M&E Committee
3.1.3 Expanding the surveillance system for healthcare-associated infections in hospitals.										
Developing unified policies for healthcare-associated infection surveillance processes and aligning them with case definitions.	Percentage increase of the annual score of surveillance assessment in IPCAT 2 (The average of 6 indicators with 30 sub-indicators)	IPCAT2	Self-Assessment tool – National level	Annual ly	80%	80% (2024)	88% (2025)	10% increase (8 points)	MOH - IPC Department	IPC Department, Hospital administration, IPC Committee ,

										National AMR M&E Committee
Output 3.2 Improving environmental sanitation programs										
3.2.1: Improved regulatory programs on water sources and sewage networks.										
Updating guidelines for regulatory programs on water and sewage sources and networks.	Percentage increase of healthcare facilities having basic services of water. (The average of 3 indicators)	Wash Fit assessment / JMP Self-assessment at facility level	Facility level/ all hospitals and PHC at MOH	Annually	69% (Average of all facilities)	69% (2024)	76% (2025)	10% increase (7 points)	Electronic dashboard, Focal point at the hospital level (representatives from the IPC, Public Health & Service Maintenance unit)	At MOH level: (Epi-Administration, Environmental Health Department, IPC department, Services management units), National IPC Committee, National AMR M&E Committee
Issuing annual reports to	Percentage increase of healthcare	Wash Fit assessment / JMP	Facility level/ all hospitals	Annually	22%	22% (2024)	35% (2025)	59% increase (13 points)	Electronic dashboard,	At the MOH level:

indicate the extent of commitment by health directorates to implement control programs.	facilities having basic services of sanitation. (The average of 7 indicators)	Self-assessment at facility level	and PHC at MOH						Focal point at the hospital level (representatives from the IPC, Public Health & Service Maintenance unit)	(Epi-Administration, Environmental Health Department, IPC department, Services management units), National IPC Committee, National AMR M&E Committee
3.2.2: Enhanced safe disposal and management of medical waste to achieve a safe and green environment.										
Updating the instructions related to the management of medical waste.	Percentage increase of healthcare facilities implanting basic services of medical waste management.	Wash Fit assessment/ JMP Self-assessment at facility level	Facility level/ all hospitals and PHC at MOH	Annual ly	22%	22% (2024)	37% (2025)	68% increase (15 points)	Electronic dashboard, Focal point at the hospital level (representatives from the IPC, Public	At the MOH level: (Epi-Administration, Environmental Health Department,

	(The average of 2 indicators)								Health & Service maintenance unit)	IPC department, Services management units), National IPC Committee, National AMR M&E Committee
3.2.3: Improved environmental hygiene in healthcare institutions.										
Involving employees in the infection control field by formulating contracts with service companies.	Percentage increase of healthcare facilities having basic services of hygiene. (The average of 1 indicator)	Wash Fit assessment/ JMP Self-assessment at facility level	Facility level/ all hospitals and PHC at MOH	Annually	57%	57% (2024)	72% (2025)	26.3% increase (15 points)	Electronic dashboard, Focal point at the hospital level (representatives from the IPC, Public Health & Service maintenance unit)	At the MOH level: (Epi-Administration, Environmental Health Department, IPC department, Services management units),

										National IPC Committee , National AMR M&E Committee
	Percentage increase of healthcare facilities having basic services of environmental cleaning. (The average of 2 indicators)	Wash Fit assessment/ JMP Self-assessment at facility level	Facility level/ all hospitals and PHC at MOH	Annually	30%	30% (2024)	50% (2025)	66.6% increase (20 points)	Electronic dashboard, Focal point at the hospital level (representatives from the IPC, Public Health & Service maintenance unit)	At the MOH level: (Epi-Administration, Environmental Health Department, IPC department, Services management units), National IPC Committee , National AMR M&E Committee

Output 3.3 Ensuring the availability of evidence-based practices and consistent standards at the national level for infection prevention and control in the livestock sector.										
Improving hygiene practices in slaughterhouses	Number of slaughterhouse inspections to ensure compliance with Biosafety and biosecurity practices according to slaughterhouse inspection forms.	Reports from MOA-slaughterhouse department inspection reports accepted for biosafety and biosecurity measures.	Inspection from slaughterhouses report	Annual ly	10	10	10	20	Municipalities include private sectors, Greater Amman Municipality , Ministry of Municipal Affairs, JFDA food, microbiology labs, and the slaughterhouse department .	Polycymakers, veterinarians, Jordan CDC, National AMR M&E Committee
Objective no. 4										
Outcome 4: Optimized antimicrobial utilization in human and animal healthcare	Percentage of Antibiotics consumed from WATCH group as per AWaRe classification.	JFDA database	Antimicrobial consumption Excel sheet	Annual ly	TBD	Less than 40%	Less than 40%	Less than 40%	JFDA: AMC team, MOH	JFDA-AMC team, National AMR M&E Committee

	Number of hospitals that have active AMS committees.	PCPD	Formal letters/ communication tools	Annual ly	8	2	5	7	MOH	National AMR M&E Committee
	Percentage of trained Health Care Providers who showed a change in their knowledge post-training.	Pre- and post-training questionnaire (TBD)	Questionnaire	Annual ly	-	75%	85%	80%	MOH	National AMR M&E Committee
Output 4.1: Enhance and amend systems and regulations aimed at dispensing antimicrobials and imposing deterrent penalties for violence.										
	Number of decisions taken regarding rational use of antibiotics.	Meetings minutes (checklist)	Committee meetings	Annual ly	1 decision	1 decision	1 decision	At least 2	JFDA	National AMR M&E Committee
	Number of updates made to the essential medicine list, categorizing antimicrobials according to the global classification, AWaRe classification, and circulating it.	WHO-EML	Through a technical committee based on WHO-EML for registered medications	Every two years	1 list updated	1 list updated	Based on frequency Q 2 years, it will not be updated in 2025	1 list updated	JFDA - RDU department M&E focal point	JFDA, National AMR M&E Committee

	Number of recommendations of the national AMS committee	Meetings minutes (checklist)	Committee meetings	Bi-annual	3	3	4	7	MOH	National AMR M&E Committee
Output 4.2: Develop Evidence-based treatment guidelines for infectious diseases and protocols for optimal use of antimicrobials at the national level.										
	Number of treatment protocols and guidelines developed or updated	MOH database	Formal letters	Annual ly	12	2	4	6	MOH	National AMR M&E Committee
	Number of policies reviewed and updated on prescribing and dispensing antibiotics to standardize procedures at the healthcare institution and national levels.	MOH database	Formal letters	Annual ly	2	2	2	4	MOH	National AMR M&E Committee
Output 4.3: Expanding the implementation of AMS program to ensure the optimum antimicrobial use.										
	Number of electronic tools within EHS/ Hakeem to monitor dispensing antimicrobials on the hospital level.	Hakeem system	Formal letter	Annual ly	0	1	0	1	MOH	National AMR M&E Committee

	Number of healthcare hospitals that have AMS committees.	Clinical pharmacy directorate records	Formal letters	Annual ly	15	5	10	15	MOH: Clinical pharmacy directorate	National AMR M&E Committee
Output 4.4: Develop and enhance health care providers' qualifications on antimicrobial use and AMS program.										
	Number of training sessions and workshops	Clinical pharmacy directorate records	Formal letters	Annual ly	6	3	4	7	MOH	National AMR M&E Committee
	Number of HCPs received the training. (Emphasizing the demographical characteristic)	Clinical pharmacy directorate records	Attendance sheet	Annual ly	500	200	200	400	MOH: Clinical pharmacy directorate	National AMR M&E Committee
Output 4.5: Develop unified national database for antimicrobial use for assessment and developing studies.										
	Number of scientific studies published regarding AMC and AWaRe classification to assess compliance with recommendations and guidelines.	JFDA database, AWaRe classification	Report	Annual ly	0	1	1	2	JFDA	National AMR M&E Committee
Objective no. 5										

Outcome 5: Enhanced investment in activities, research, and innovations related to antimicrobial resistance	Percentage of funding investments for AMR implementation and research provided through the national budget	National budget documents, ministries or departments responsible for research, national research institutes, and international organizations.	Review of financial records.	Annually	0	0	0	0	M&E focal persons of sector institutions and AMR TWG	Decision makers, Jordan CDC, National AMR M&E Committee
Output 5.1: Periodic policy guidance based on country research.										
	Number of annual AMR-related publications for research studies conducted in Jordan	Academic research	Count of research studies published	Bi-annual	4	6	8	14	M&E focal persons of sector institutions and AMR TWG	Decision makers, Jordan CDC, National AMR M&E Committee
	Number of training sessions provided to researchers to support methodical scientific	Director of Research, policy and training directorate in Jordan CDC	Review of Attendance registers, pre- and post-training surveys, interviews or focus	Bi-annual	0	1	2	3	M&E focal persons of sector institutions and AMR TWG	Decision makers, Jordan CDC,

	research in the field of AMR		groups, participant certificates, training reports, quarterly performance progress report							National AMR M&E Committee
	Number of multisectoral meetings conducted to facilitate AMR-related data access	AMR Research Committee in Jordan CDC	Review of meetings minutes	Bi-annual	0	2	4	6	M&E focal persons of sector institutions and AMR TWG	Decision makers, Jordan CDC, National AMR M&E Committee
	Number of editorial boards contacted	AMR Research Committee in Jordan CDC	Email Tracking System, Contact Log Forms, or meetings minutes.	Bi-annual	0	2	2	4	M&E focal persons of sector institutions and AMR TWG	Decision makers, Jordan CDC, National AMR M&E Committee
Objective no. 6										
Outcome 6: Governance and resource mobilization established										

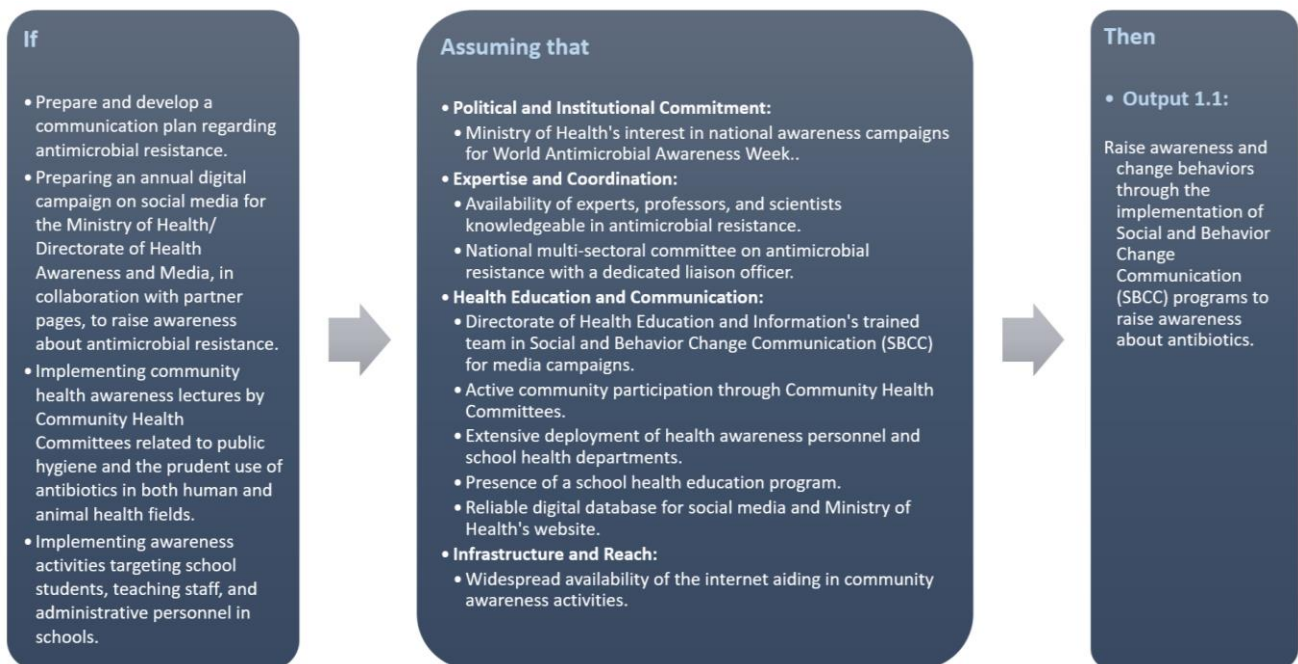
and strengthens										
Output 6.1: Governance strengthened at all levels.										
	Percentage of valid and relevant recommendations adopted from advocacy workshops/meetings and shared with all sectors in AMR containment.	Relevant sectors MOH, MOA, Jordan CDC, JFDA, MOEnv, and MWI.	Governance checklist	Annually	o	TBD	TBD	TBD	AMR Focal point for each sector (WHO, MOA, JFDA, MWI, MOE, Jordan CDC)	Decision makers, Jordan CDC National AMR M&E Committee
Output 6.2: Resources mobilized for AMR.										
	Percentage of institutions & international organizations allocate budget for AMR prevention and containment.	Relevant sectors MOH, MOA, Jordan CDC, JFDA, MOEnv, and MWI.	Financial checklist	Annually	o	TBD	TBD	TBD	AMR Focal point for each sector (WHO, MOA, JFDA, MWI, MOE, Jordan CDC)	Decision makers, Jordan CDC National AMR M&E Committee

Annex No. 4

ToC statements at the Activity-Output level

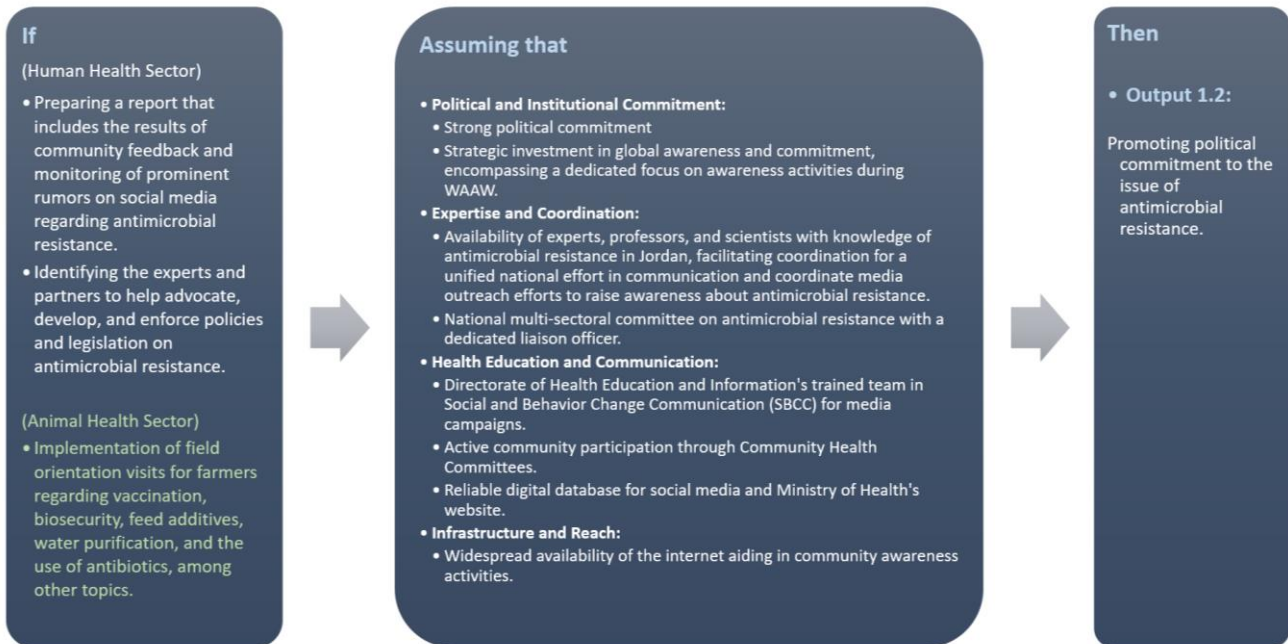
Objective 1: Increase awareness through effective communication, education, and training.

Output 1.1: Raise awareness and change behaviors through the implementation of SBCC programs to raise awareness about antibiotics.



*If a communication plan regarding antimicrobial resistance is prepared and developed, an annual digital campaign on social media in collaboration with the MOH/HCAD is launched, community health awareness lectures through Community Health Committees focusing on public hygiene and the responsible use of antibiotics are implemented, and awareness activities targeting school students, teaching staff, and administrative personnel are conducted, **assuming** the MOH's vested interest in national awareness campaigns for WAAW, knowledgeable experts, professors, and scientists are available, a national multisectoral committee on antimicrobial resistance with a dedicated liaison officer is established, a trained team in SBCC within the Directorate of Health Education and Information is available, active community participation through Community Health Committees is ensured, health awareness personnel are extensively deployed, a school health education program exists, a reliable digital database for social media and the MOH's website is available, and the internet is widely available to aid in community awareness activities, **then** awareness can be effectively raised and behaviors changed through the implementation of SBCC programs, ultimately increasing awareness about antibiotics and promoting their responsible use.*

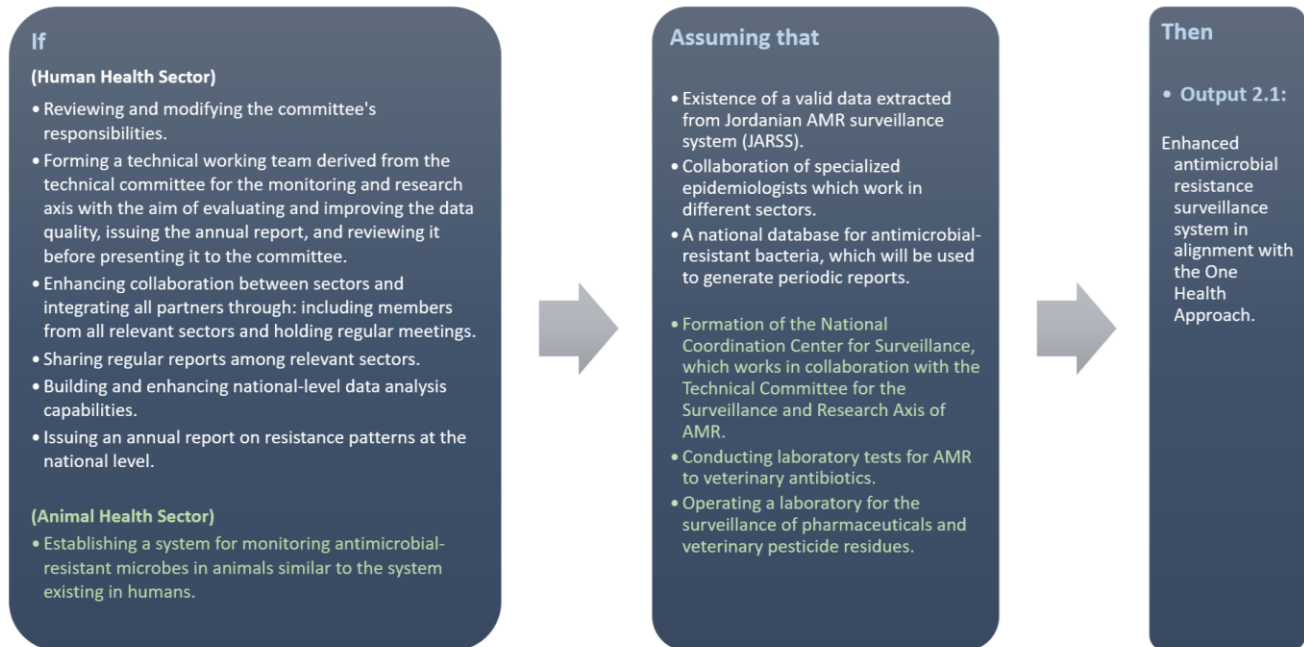
Output 1.2: Promoting political commitment to the issue of antimicrobial resistance.



If in the human health sector, a report is prepared that includes the results of community feedback and monitoring of prominent rumors on social media regarding AMR, and experts and partners are identified to help advocate, develop, and enforce policies and legislation on AMR, and if in the animal health sector, field orientation visits for farmers regarding vaccination, biosecurity, feed additives, water purification, and the use of antibiotics, among other topics, are implemented, **assuming** strong political commitment, strategic investment in global awareness and commitment with a dedicated focus on awareness activities during WAAW, availability of experts, professors, and scientists knowledgeable in AMR in Jordan, facilitating coordination for a unified national effort in communication and media outreach to raise awareness, a national multisectoral committee on AMR with a dedicated liaison officer, a trained team in SBCC within the Directorate of Health Education and Information for media campaigns, active community participation through Community Health Committees, a reliable digital database for social media and the MOH's website, and widespread internet availability aiding in community awareness activities, **then** political commitment to the issue of AMR will be promoted.

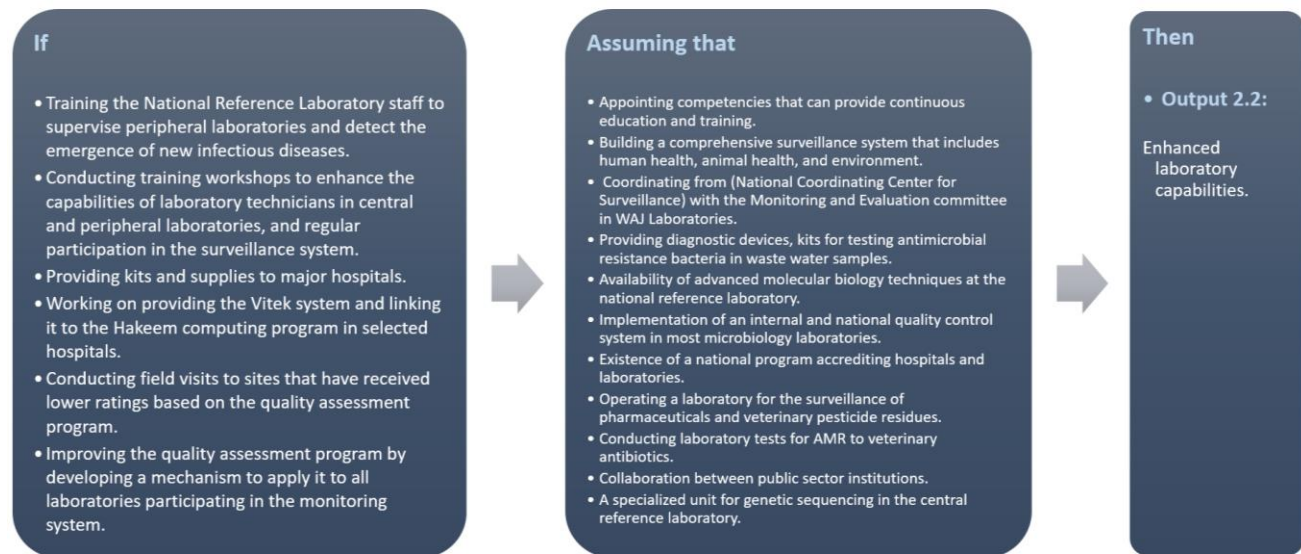
Objective 2: Strengthen the knowledge base and evidence through continuous surveillance.

Output 2.1: Enhanced antimicrobial resistance surveillance system in alignment with the One Health Approach.



*If in the human health sector, the committee's responsibilities are reviewed and modified, a technical working team is formed to evaluate and improve data quality, issue and review the annual report before presenting it to the committee, collaboration between sectors is enhanced and all partners are integrated through regular meetings, regular reports are shared among relevant sectors, national-level data analysis capabilities are built and enhanced, and an annual report on resistance patterns at the national level is issued, **assuming** the existence of valid data from the Jordanian AMR surveillance system (JARSS), collaboration of specialized epidemiologists from different sectors, and a national database for antimicrobial-resistant bacteria to generate periodic reports, **and if** in the animal health sector, a system for monitoring antimicrobial-resistant microbes in animals similar to the one in humans is established, **assuming** the formation of the National Coordination Center for Surveillance in collaboration with the Technical Committee for the Surveillance and Research Axis of AMR, conducting laboratory tests for AMR to veterinary antibiotics, and operating a laboratory for the surveillance of pharmaceuticals and veterinary pesticide residues, **then** an enhanced antimicrobial resistance surveillance system in alignment with the One Health Approach will be achieved.*

Output 2.2: Enhanced laboratory capabilities.

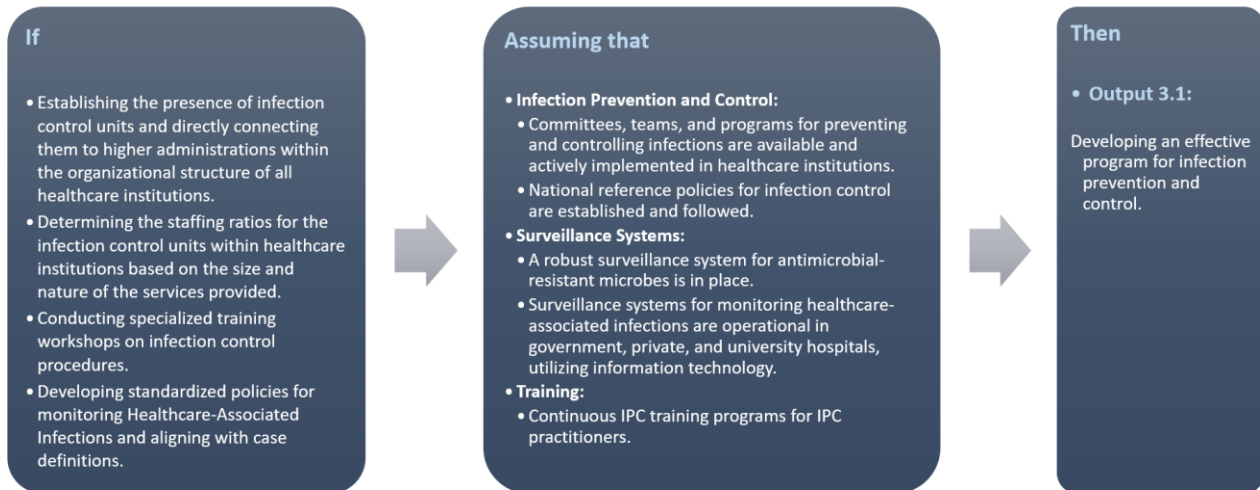


*If National Reference Laboratory staff are trained to supervise peripheral laboratories and detect new infectious diseases, training workshops are conducted to enhance the capabilities of laboratory technicians in central and peripheral laboratories, kits and supplies are provided to major hospitals, the Vitek system is provided and linked to the Hakeem computing program in selected hospitals, field visits are conducted to sites with lower quality assessment ratings, and the quality assessment program is improved by developing a mechanism to apply it to all participating laboratories, **assuming** the appointment of competent staff for continuous education and training, building a comprehensive surveillance system that includes human health, animal health, and the environment, coordination from the National Coordinating Center for Surveillance with the Monitoring and Evaluation committee in WAJ Laboratories, provision of diagnostic devices and kits for testing antimicrobial resistance bacteria in wastewater samples, availability of advanced molecular biology techniques at the national reference laboratory, implementation of an internal and national quality control system in most microbiology laboratories, existence of a national program accrediting hospitals and laboratories, operation of a laboratory for the surveillance of pharmaceuticals and veterinary pesticide residues, conducting laboratory tests for AMR to veterinary antibiotics, collaboration between public sector institutions, and the presence of a specialized unit for genetic sequencing in the central reference laboratory, **then** laboratory capabilities will be enhanced.*



Objective 3: Reduce infection rates through preventive measures, infection control, and general hygiene.

Output 3.1: Developing an effective program for infection prevention and control.



If infection control units are established and directly connected to higher administrations within the organizational structure of all healthcare institutions, staffing ratios for these units are determined based on the size and nature of services provided, specialized training workshops on infection control procedures are conducted, and standardized policies for monitoring HAIs are developed and aligned with case definitions, **assuming** the availability and active implementation of committees, teams, and programs for IPC in healthcare institutions, established and followed national reference policies for infection control, a robust surveillance system for AMR microbes, operational surveillance systems for monitoring HAIs in government, private, and university hospitals utilizing information technology, and continuous IPC training programs for IPC practitioners, **then** an effective program for infection prevention and control will be developed.

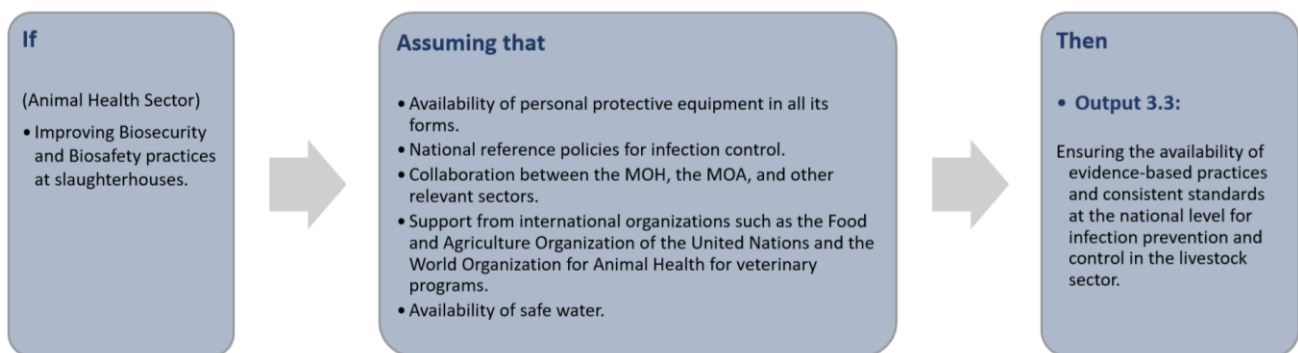
Output 3.2: Improving environmental sanitation programs.





If guidelines for regulatory programs on water and sewage sources and networks are updated, annual reports are issued to assess health directorates' commitment to implementing these regulatory programs, instructions related to the management of medical waste are updated, and infection control professionals are involved in the development of contracts with service providers, **assuming** that committees, teams, and programs for preventing and controlling infections are available and actively implemented in healthcare institutions, national reference policies for infection control are established and followed, the healthcare system is endorsed by political leaders, collaboration exists between the MOH, the MOA, and other relevant sectors, standards for healthcare quality that support infection prevention and control are in place, and hospital waste management practices are regulated and enforced, **then** environmental sanitation programs can be significantly improved.

Output 3.3: Ensuring the availability of evidence-based practices and consistent standards at the national level for infection prevention and control in the livestock sector.



If biosecurity and biosafety practices at slaughterhouses are improved, **assuming** the availability of PPE in all its forms, national reference policies for infection control are established, collaboration between the MOH, the MOA, and other relevant sectors, support from international organizations such as the FAO and WOA for veterinary programs, and the availability of safe water, **then** evidence-based practices and consistent standards at the national level for IPC in the livestock sector will be ensured.

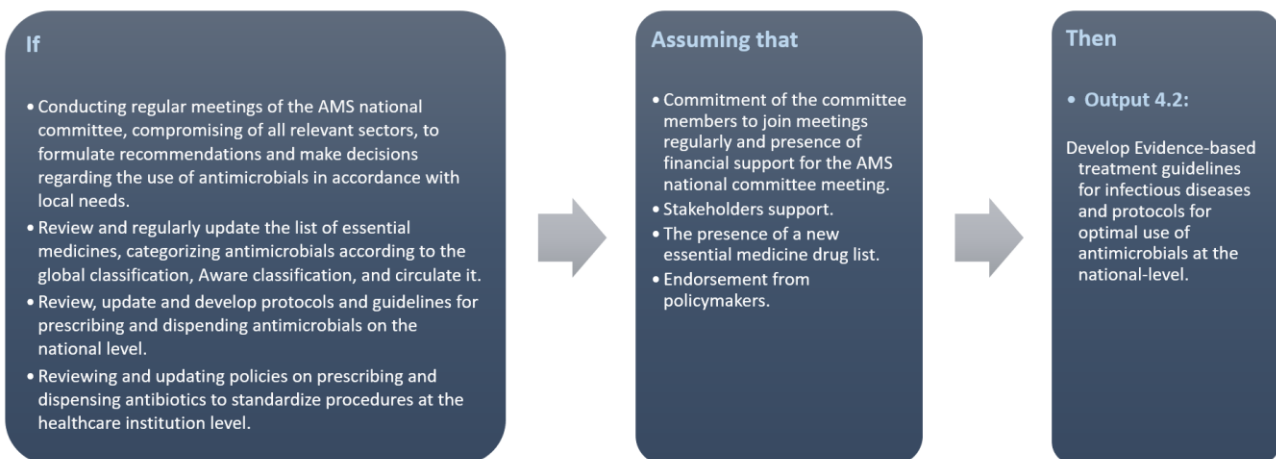
Objective 4: Optimal use of antimicrobial medicine in the fields of human, animal, and environmental health.

Output 4.1: Enhance and amend systems and regulations aimed at dispensing antimicrobials and imposing deterrent penalties for violence.



If the previously established regulations for dispensing antibiotics without a prescription are reviewed and amended, making compliance mandatory across all sectors, and compliance with antimicrobial manufacturing residue disposal instructions is monitored with enforced penalties for violations, **assuming** the presence of active laws and regulations to control the prescription and dispensing of antibiotics, the existence of a committee to review and update these regulations, and available human resources to conduct audit visits to pharmacies, **then** systems and regulations aimed at dispensing antimicrobials and imposing deterrent penalties for violations will be enhanced and amended.

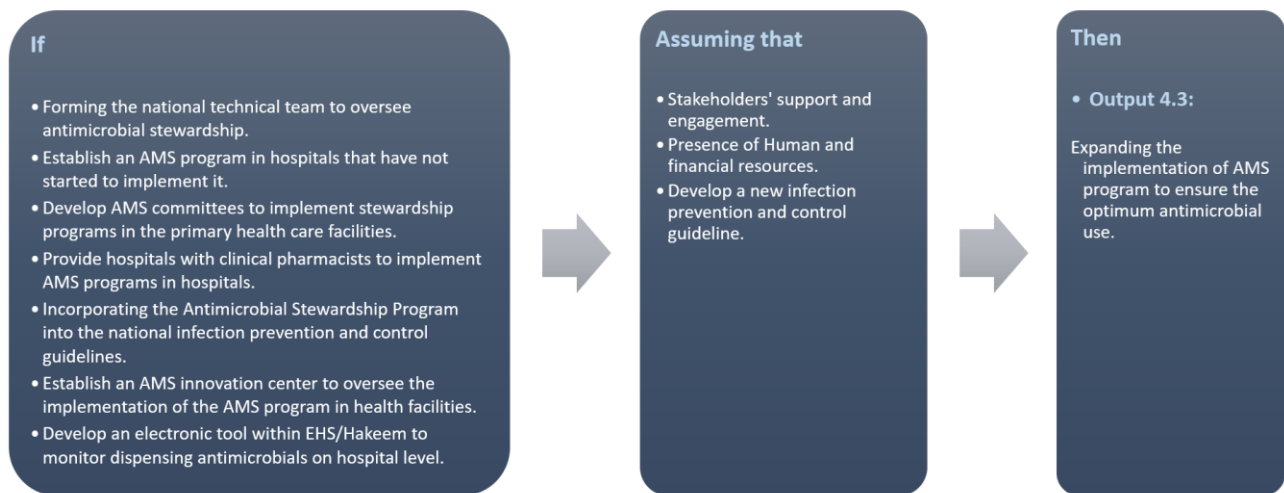
Output 4.2: Develop Evidence-based treatment guidelines for infectious diseases and protocols for optimal use of antimicrobials at the national-level.



If regular meetings of the AMS national committee, comprising all relevant sectors, are conducted to formulate recommendations and make decisions regarding the use of antimicrobials in accordance with local needs; the list of essential medicines is reviewed and regularly updated, categorizing antimicrobials according to global and Aware classifications and circulated; protocols and guidelines for prescribing and dispensing antimicrobials are reviewed, updated, and developed at the national level; and policies on prescribing and dispensing antibiotics are reviewed and updated to standardize procedures at the healthcare institution level, **assuming** the commitment of committee

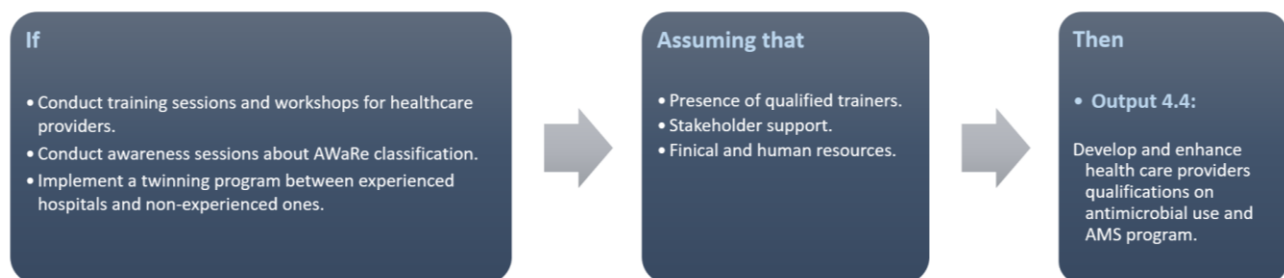
members to attend meetings regularly, the presence of financial support for the AMS national committee meetings, stakeholder support, the presence of a new essential medicine drug list, and endorsement from policymakers, **then** evidence-based treatment guidelines for infectious diseases and protocols for optimal use of antimicrobials at the national level will be developed.

Output 4.3: Expanding the implementation of AMS program to ensure the optimum antimicrobial use.



If the national technical team to oversee AMS is formed, an AMS program is established in hospitals that have not yet implemented it, AMS committees are developed to implement stewardship programs in primary healthcare facilities, hospitals are provided with clinical pharmacists to implement AMS programs, the ASP is incorporated into the national infection prevention and control guidelines, an AMS innovation center is established to oversee the implementation of the AMS program in health facilities and an electronic tool within EHS/Hakeem is developed to monitor antimicrobial dispensing at the hospital level, **assuming** stakeholders' support and engagement, the presence of human and financial resources, and the development of a new infection prevention and control guideline, **then** the implementation of the AMS program will be expanded to ensure optimal antimicrobial use.

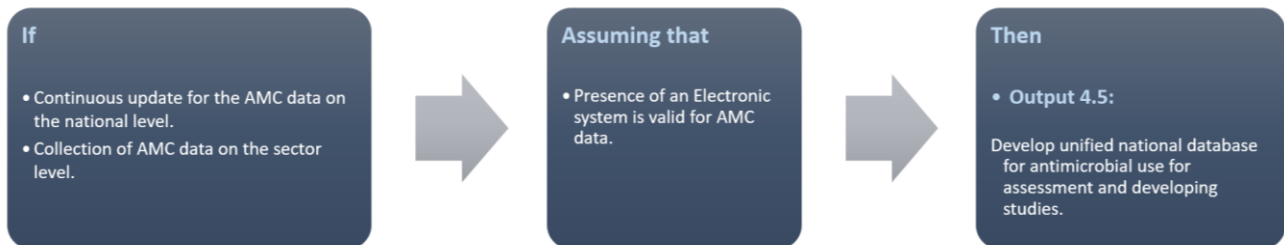
Output 4.4: Develop and enhance health care providers qualifications on antimicrobial use and AMS program.



If training sessions and workshops for healthcare providers are conducted, awareness sessions about the AWaRe classification are implemented, and a twinning program between experienced and

non-experienced hospitals is established, **assuming** the presence of qualified trainers, stakeholder support, and the availability of financial and human resources, **then** healthcare providers' qualifications on antimicrobial use and the AMS program will be developed and enhanced.

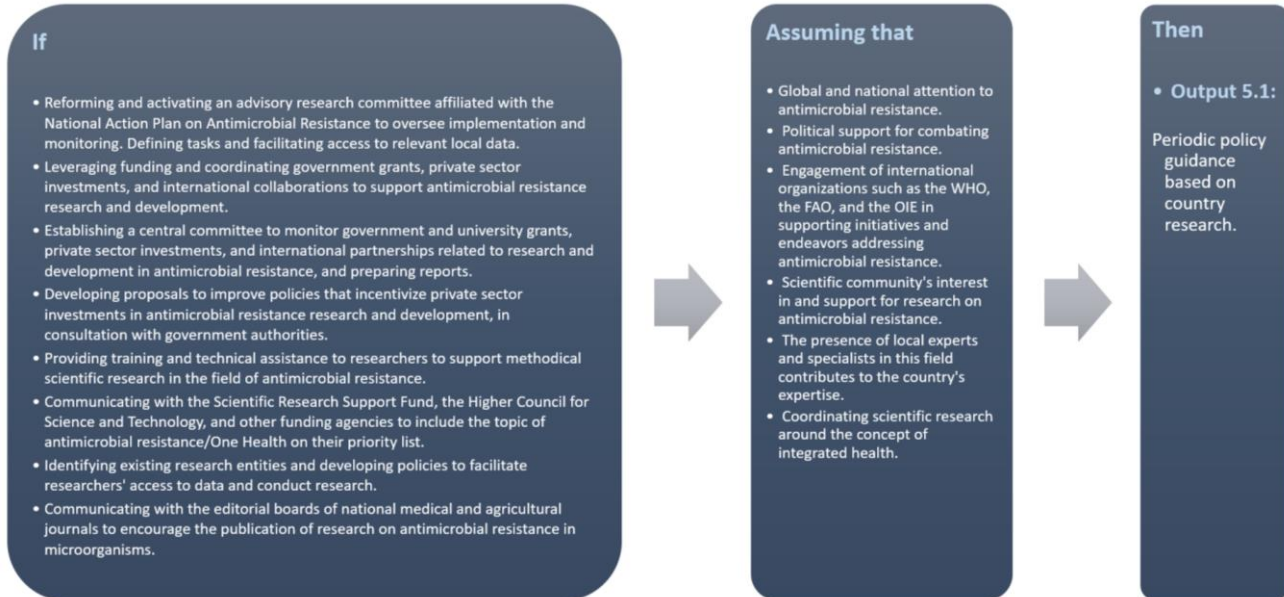
Output 4.5: Develop unified national database for antimicrobial use for assessment and developing studies.



If AMC data is continuously updated at the national level and collected at the sector level, **assuming** the presence of a valid electronic system for AMC data, **then** a unified national database for antimicrobial use for assessment and developing studies will be developed.

Objective 5: Enhance investment in activities, research, and innovations related to antimicrobial resistance.

Output 5.1: Periodic policy guidance based on country research.



If an advisory research committee affiliated with the AMR NAP is reformed and activated to oversee implementation and monitoring, tasks are defined and access to relevant local data is facilitated, funding is leveraged and government grants, private sector investments, and international collaborations are coordinated to support AMR research and development, a central committee is established to monitor grants, investments, and partnerships, and to prepare reports, proposals are developed to improve policies that incentivize private sector investments in antimicrobial resistance research and development in consultation with government authorities, training and technical

assistance are provided to researchers, communication with funding agencies is established to prioritize AMR/One Health, existing research entities are identified and policies are developed to facilitate researchers' access to data, and communication with editorial boards of national medical and agricultural journals is maintained to encourage the publication of research, **assuming** global and national attention to AMR, political support for combating antimicrobial resistance, engagement of international organizations such as WHO, FAO, and OIE, scientific community interest and support, presence of local experts, and coordination of scientific research around integrated health, **then** periodic policy guidance based on country research will be provided.

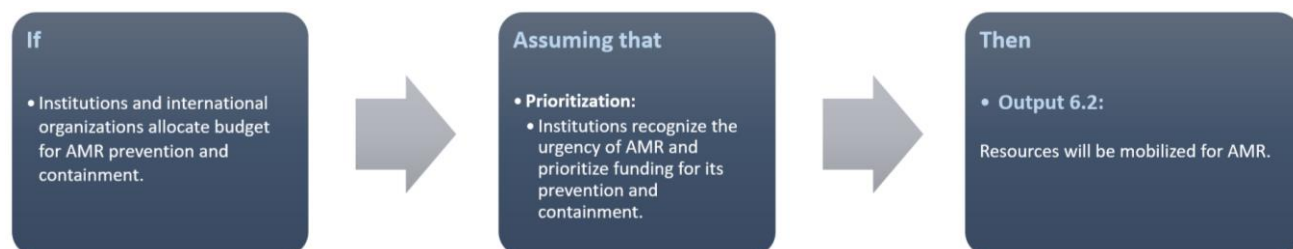
Objective 6: Governance and resource mobilization will be established and strengthened.

Output 6.1: Governance will be strengthened at all levels.



If advocacy workshops and meetings are conducted, and reports and meeting minutes are shared with all sectors related to AMR containment, **assuming** broad sector representation with participation from healthcare, agriculture, pharmaceutical, academia, and policy-making sectors, mechanisms for follow-up actions and implementation of recommendations and strategies developed during the workshops and meetings, an active national sub-technical committee with regular meetings, and periodic reporting by national AMR monitoring and evaluation focal points to relevant stakeholders, **then** governance will be strengthened at all levels.

Output 6.2: Resources will be mobilized for AMR.



If institutions and international organizations allocate budgets for AMR prevention and containment, **assuming** the urgency of AMR is recognized and prioritized for funding by these institutions, **then** resources will be mobilized for AMR.