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Federal Ministry of Health & Social Welfare
Federal Republic of Nigeria

NCDC
NIGERIA CENTRE FOR DISEASE CONTROL AND PREVENTION

One Health
ANTIMICROBIAL RESISTANCE
National Action Plan 2.0
2024–2028

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One Health Antimicrobial Resistance

National Action Plan 2.0

2024–2028

Contents

Foreword

Antimicrobial resistance (AMR) is no longer an emerging global challenge. It is an established global crisis that requires urgent action and innovative approaches to encourage the prudent use of antimicrobials, promote infection prevention measures, and improve access to diagnostics and therapeutics.

This National Action Plan (NAP) 2.0 establishes the Nigerian government's commitment to tackle AMR over the next five years from 2024 to 2028. It is designed to build upon and sustain the achievements made in the AMR NAP 1.0, which was implemented from 2017 to 2023. The AMR NAP 2.0 also seeks to address areas where we did not attain our desired goals over the last five years, directly focusing on barriers to progress.

Collectively, as Nigeria's One Health Ministries, we recognise that the success of this action plan requires deep, consistent, and coordinated collaboration across sectors, and thus we are committed to supporting its implementation through our mandates. This multisectoral and multidimensional AMR NAP 2.0 provides strategic direction and guidance on addressing AMR, developed through the successful synthesis of AMR stakeholders' expertise, data, information, experiences, and best practices; this makes it a comprehensive nationwide blueprint to maximise efforts and reduce fragmentation. It also addresses gaps and challenges, priority interventions, and the scope of investments so that every stakeholder can join hands in containing and reducing the impact of AMR across Nigeria.

The AMR NAP 2.0 cannot be implemented successfully without contributions from all sectors and partners. Therefore, we call on all ministries, agencies, and departments as well as development partners, the private sector, civil society, and other non-governmental actors to come together and align their interventions and activities to directly support the effective implementation of this plan.

Further, the AMR NAP 2.0 aligns with and supports the fulfilment of other national strategic plans including the Health Sector Renewal Investment Initiative Agenda and the National Action Plan for Health Security (NAPHS) of the Federal Ministry of Health; the National Agricultural Technology and Innovation Policy 2022–2027 of the Federal Ministry of Agriculture and Food Security; and the National Policy on AMR and its corresponding Strategic Plan of the Federal Ministry of Environment.

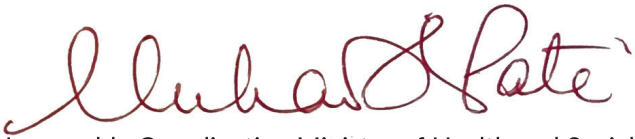
While we acknowledge that the complexity of the AMR crisis cannot be fully addressed in a five-year plan, we look forward to achieving our goals and set targets over this period to build on our existing achievements and strengthen Nigeria's progress against the global threat of AMR.

Honourable Minister of Agriculture and Food Security

Senator Abubakar Kyari, CON

Honourable Minister of Environment

Mr Balarabe Abbas Lawal



Honourable Coordinating Minister of Health and Social Welfare

Dr Muhammad Ali Pate, CON

Acknowledgements

The Government of Nigeria recognises and appreciates the technical and financial support provided by multisectoral national and international stakeholders in the development of this One Health National Action Plan (NAP) for Antimicrobial Resistance (AMR) 2.0. We express our immense gratitude to all those who played a role in providing the nation with a clear, prioritised, costed, and measurable road map to tackling the challenge of antimicrobial resistance.

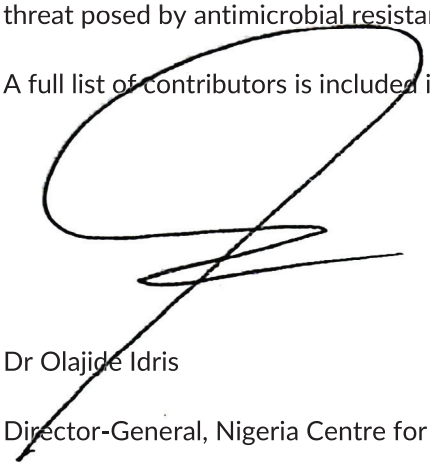
We thank the former Director-General, Dr Ifedayo Adetifa, for his leadership in the planning and development of this AMR NAP 2.0. We recognise the enormous support from our parent ministry, the Federal Ministry of Health and Social Welfare. Special accolades go to Dr Tochi Okwor (NCDC) who ensured effective multisectoral coordination and collaboration throughout the AMR NAP 2.0 development process as the AMR Coordinating Committee (AMRCC) Chairperson (Representing the Director-General) alongside Co-Chairs Dr Columba Teru Vakuru (Federal Ministry of Agriculture and Food Security) and Mr Olubunmi Olusanya (Federal Ministry of Environment) whose continuous support and cooperation reaffirmed the commitment to Nigeria's effort at containing AMR using the One Health approach. We also acknowledge the contributions of Dr Sikiru Badaru (Director of Planning Research and Statistics, NCDC), Dr Ridwan Yahaya (AMR Lead and his team, NCDC), Dr Mwapu Ndahi (Federal Ministry of Agriculture and Food Security), Mrs Rita Okea (Federal Ministry of Environment), and Pharm James Yakubu (Federal Ministry of Health and Social Welfare) who worked tirelessly to ensure the successful production of a new NAP for Nigeria.

We acknowledge the unwavering support from the United Nations Quadripartite agencies, namely the World Health Organization (WHO), World Organisation for Animal Health (WOAH), Food and Agriculture Organization (FAO), and United Nations Environment Programme (UNEP), and we especially appreciate the WHO team including Dr Laxmikant Chavan (WHO Nigeria Country Office), Mr Anand Balachandran and Dr Nienke Bruinsma (WHO Headquarters), and Dr Yahaya Ali Ahmed and Mr Yidnekachew Mazengiya (WHO African Regional Office) for the technical guidance and major financial support for all the AMR NAP 2.0 development workshops; Dr Ayodele Majekodunmi of the United Nations FAO; Dr Passoret Vounba of WOAH; and Levis Kavagi of UNEP. We are mindful of the immense contributions of our esteemed partners, including Pharm Babatunde Akinola and his team from USAID's Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program and Niniola Williams who facilitated the entire development process of the AMR NAP 2.0. We appreciate WHO consultants Mr Enos Omondi and Ms Chanceline Bilounga for the expertise and insight they brought from other countries alongside Pharm Estelle Mbadiwe, Erta Kalanxhi, and the One Health Trust (OHT) team for their work on the One Health AMR Situational Analysis. We also thank Dr Solomon Olorunleke (Dr Ameyo Stella Adadevoh Health Trust), Dr Zainab Abdulkareem and Mrs Maureen Kajo who provided technical support throughout the process.

We sincerely appreciate all members of the National AMR Coordinating Committee (AMRCC), the Chair of the AMR Technical Working Groups (TWGs) Professor Aaron Aboderin, and the Co-chair Professor Kabir Junaid for their contribution to the development of the AMR NAP 2.0. Finally, we thank all members of the academia, associations, national experts, civil society organisations, the private sector, and all other consultants who were engaged and made contributions to make this robust plan a reality.

In summary, the collaborative efforts of visionary leaders, dedicated individuals, expert coordinators, reviewers, and external contributors have collectively shaped a comprehensive and forward-thinking AMR NAP 2.0. Their top-notch commitment and diverse expertise have been pivotal in addressing the threat posed by antimicrobial resistance in Nigeria.

A full list of contributors is included in Annex 2.



Dr Olajide Idris

Director-General, Nigeria Centre for Disease Control and Prevention (NCDC)

Abbreviations and Acronyms

AHSTWG	Animal Health Sector AMR Technical Working Group
AM	Antimicrobial
AMC	Antimicrobial consumption
AMR	Antimicrobial resistance
AMR TWG	AMR Technical Working Group
AMRIS	Antimicrobial Resistance Information System
AMS	Antimicrobial stewardship
AMU	Antimicrobial use
ARG	Antibiotic resistance genes
ARP	Antimicrobial resistance pattern
AST	Antimicrobial susceptibility testing
ATLASS	Assessment Tool for Laboratories and AMR Surveillance Systems
AWaRe	Access, Watch, and Reserve
CDS	Community development service
CLSI	Clinical and Laboratory Standards Institute
CMD	Chief medical director
COP	Community of practice
CPD	Continuing professional development
CSO	Civil society organisation
EH	Environmental health
EML	Essential medicines list
F&DS	Food and Drug Services
FAO	Food and Agriculture Organization of the United Nations
FAS	Food and agricultural systems
FCT	Federal Capital Territory
FDVPCS	Federal Department of Veterinary and Pest Control Services
FMAFS	Federal Ministry of Agriculture and Food Security
FMEnv	Federal Ministry of Environment
FMOH&SW	Federal Ministry of Health and Social Welfare
FMWR	Federal Ministry of Water Resources
GBD	Global burden of disease

GLASS	Global Antimicrobial Resistance and Use Surveillance System
HAI	Healthcare-associated infection
HMB	Hospital Management Board
HTR	Hard To Reach
IHR	International Health Regulations
INEHSS	Integrated National Environmental Health Surveillance System
IPC	Infection prevention and control
KABP	Knowledge, attitudes, beliefs, and perceptions
LCMU	Logistics Management Coordination Unit
LGA	Local government area
LIMS	Laboratory information management system
LMIC	Low- and middle-income country
LUTH	Lagos University Teaching Hospital
M&E	Monitoring and evaluation
MDAs	Ministries, departments, and agencies
MDCN	Medical and Dental Council of Nigeria
MDR	Multidrug resistant
MDRO	Multidrug-resistant organisms
MLSCN	Medical Laboratory Science Council of Nigeria
MOU	Memorandum of understanding
MTaPS	Medicines, Technologies, and Pharmaceutical Services
NAFDAC	National Agency for Food and Drug Administration and Control
NAP	National Action Plan
NAQS	Nigerian Agricultural Quarantine Service
NBMA	National Biosafety Management Agency
NBTE	National Board for Technical Education
NCCE	National Commission for Colleges of Education
NCDC	Nigeria Centre for Disease Control and Prevention
NCH	National Council on Health
NERICC	National Emergency Routine Immunization Coordination Centre
NESREA	National Environmental Standards and Regulations Enforcement Agency
NGF	Nigeria Governors' Forum
NGO	Non-governmental organisation

NHIA	National Health Insurance Authority
NIMR	Nigerian Institute of Medical Research
NOA	National Orientation Agency
NPHCDA	National Primary Health Care Development Agency
NRCTWG	National Risk Communication Technical Working Group
NRL	National reference laboratory
NUC	National University Commission
NVRI	National Veterinary Research Institute
NYSC	National Youth Service Corps
OHT	One Health Trust
PCN	Pharmacy Council of Nigeria
PDR	Pan-drug resistant
PHC	Primary health care
PHCDA	Primary Health Care Development Agencies
PMG-MAN	Pharmaceutical Manufacturers Group of Manufacturers Association of Nigeria
PPS	Point prevalence survey
R&D	Research and development
SAPHS	State Action Plan on Health Security
SBCC	Social and behaviour change communication
SERICC	State Emergency Routine Immunisation Coordination Centre
SEs	State Epidemiologists
SHIA	State Health Insurance Agency
SMA	State Ministry of Agriculture
SMOH	State Ministry of Health
SOP	Standard operating procedures
SPHCDA	State Primary Health Care Development Agency
SSI	Surgical site infection
STG	Standard treatment guidelines
SWOT	Strengths, weaknesses, opportunities, and threats
TETFUND	Tertiary Education Fund
ToR	Terms of reference
TOT	Training of trainers
TWG	Technical working group

UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
VCN	Veterinary Council of Nigeria
VTH	Veterinary teaching hospital
VTH	Veterinary teaching hospital
WAAW	World AMR Awareness Week
WASH	Water, sanitation, and hygiene
WHO	World Health Organization
WOAH	World Organisation for Animal Health
XDR	Extensively drug resistant

Executive Summary

In the ever-evolving landscape of global health, antimicrobial resistance (AMR) poses a significant threat to all nations. As resistant microorganisms and genes conferring resistance continue to spread among humans, animals, and the environment, the efficacy of the antimicrobial drugs available to treat the infections they cause diminishes. This has far-reaching effects on the health of populations and economies.

Nigeria is number 19 of 204 countries with the highest age-standardised mortality rate per 100,000 population associated with AMR.[1] In 2019, there were 64,500 deaths attributable to AMR and 263,400 deaths associated with AMR, making the number of AMR deaths in Nigeria higher than those from enteric infections, respiratory infections and tuberculosis, maternal and neonatal disorders, neglected tropical diseases and malaria, and cardiovascular diseases.[1] However, this is likely underestimated considering the gaps that exist in national AMR surveillance. In addition to the impact on mortality, loss of gross domestic product (GDP) attributable to AMR in developing countries like Nigeria has been forecast to reach 5 - 7% by 2050.[2]

Addressing the factors that promote AMR and worsen its impact is challenging and requires both multisectoral coordination and dedicated sector-specific approaches. Hence, this AMR National Action Plan (NAP) 2.0 was developed through consultation and technical insights from health, agriculture and environment stakeholders - the One Health sectors. It includes the consensus of these stakeholders on the necessary evidence-based, context-specific actions Nigeria must take in the next five years. Further, it seeks to address AMR in the context of health inequities and vulnerable populations - such as women, children, and displaced people - as it includes interventions to address gender inequalities, promote equitable access to preventive measures, and increase access to diagnosis and treatment.

This AMR NAP 2.0 was designed using the WHO manual for NAP development, WHO implementation handbook for national action plans on antimicrobial resistance: guidance for the human health sector (2022); People-centred approach (PCA) to addressing antimicrobial resistance in human health: WHO core package of interventions to support national action plans (2023); WHO strategic and operational priorities to address drug-resistant bacterial infections 2025-2035 endorsed by the 77th World Health Assembly (2024); as well as the 2015 Global Action Plan (GAP) on AMR with five core strategic objectives. However, this plan includes a sixth strategic objective – governance – which is deemed critical for Nigeria.

The plan provides comprehensive, integrated strategies for the human, food, animal, plant, and environmentatal sectors. It builds on Nigeria's first AMR national action plan (AMR NAP 1.0) and is informed by the 2023 One Health Situational Analysis of AMR in Nigeria. It provides the vision and priority actions required to accelerate Nigeria's response to AMR and incorporates lessons learned from the implementation for the previous five-year strategy as well as available local evidence. This five-year

plan includes the highest priority interventions alongside their cost and the mechanisms through which progress can be measured at all levels. The AMR NAP 2.0 is focused on ensuring that successful interventions continue while prioritising new evidence-based solutions. The plan consists of 6 strategic objectives with 40 strategic intervention areas, 143 activities and 451 sub-activities with costing and a monitoring and evaluation framework.

The comprehensive and integrated strategies included in this document showcase Nigeria's commitment to safeguarding the health, well-being, and livelihoods of its population. The implementation of this plan will mitigate the impact of AMR and ensure we prolong the efficacy of antimicrobials, which are critical medications. To support the resource mobilisation efforts towards the realisation of this plan, short-term prioritised plans will be developed at intervals to direct funding opportunities to the priority interventions that can drive immediate impact.

Through intense collaboration, education, and innovation this AMR NAP 2.0 fosters a One Health approach that can effectively address the evolving challenges posed by AMR across the country.

The National Action Plan (NAP) 2.0 Development Process

The development of this Antimicrobial Resistance (AMR) National Action Plan (NAP) 2.0 used a One Health approach, integrating efforts across the human, animal, and environmental health domains.

Nigeria used a collaborative development process as shown in Figure 1 for the AMR NAP 2.0, which began with a review of the AMR NAP 1.0 and ended with the successful launch of the AMR NAP 2.0. Throughout the process, which was driven by the AMR Coordinating Committee (AMRCC), national stakeholders, domestic partners, and quadripartite UN partners and experts were engaged and involved to ensure an inclusive and thorough process.

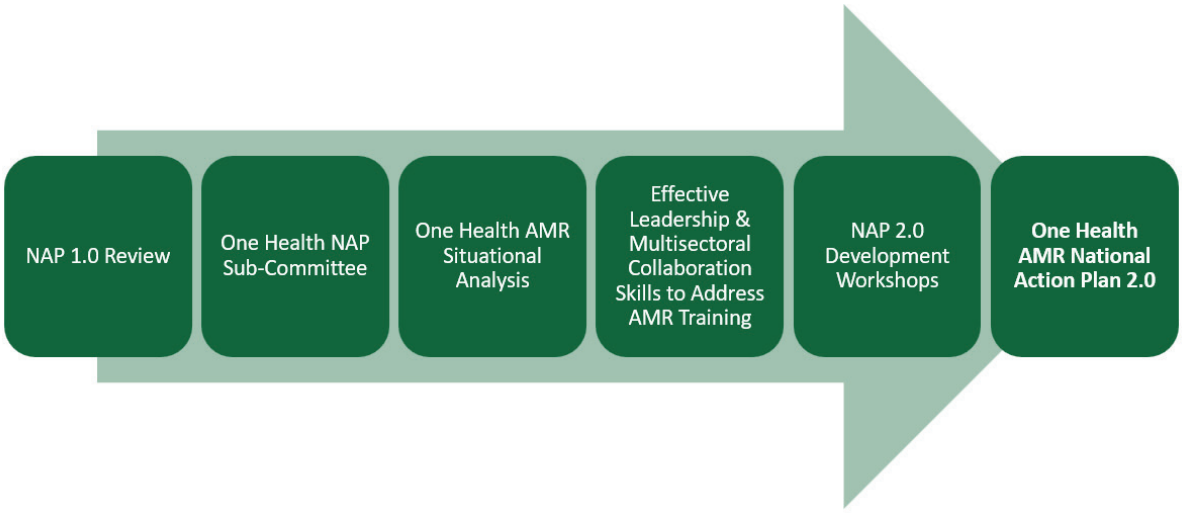


Figure 1: The AMR NAP 2.0 development process

Review of AMR NAP 1.0: Building Foundations for Progress

The journey towards the AMR NAP 2.0 commenced in July 2022 with a critical evaluation of the implementation of the prior plan, AMR NAP 1.0. To ensure a thorough assessment a consultant was engaged to assess the country's progress in implementing the AMR NAP 1.0 and a convergent parallel mixed methods approach was used for the review. This methodological framework encompassed a desk review, survey, and interviews with key informants from the tripartite surveys and other sectors involved. Data collection tools were developed, validated, and used to assess policy documents, progress reports, updates, and minutes, as well as reports from the AMR National Technical Working Group (AMR-NTWG) and the Nigeria Centre for Disease Control (NCDC) database.

The consultant's investigations included five face-to-face and in-depth virtual interviews with stakeholders, ensuring a comprehensive understanding of diverse perspectives. To support the evaluation, internal and external reports such as the Joint External Evaluation (JEE), Tripartite AMR

Country Self-Assessment Surveys (TrACSS), Performance of Veterinary Services (PVS) evaluation report, FAO's Progressive Management Pathway (PMP) report, and NAP Monitoring and Evaluation (M&E) were collated and reviewed. The culmination of these efforts resulted in the AMR NAP 1.0 Review Report, which was disseminated to the AMR Coordination Committee (AMRCC), NTWG, and the relevant sectors.

Constitution of a One Health Subcommittee: Synergising Efforts

In August 2022, recognising the complexity of the task at hand, a One Health AMR subcommittee was established to lead the development of AMR NAP 2.0. This collaborative venture included representatives from the Quadripartite (FAO, WHO, WOAH, and UNEP) and the Africa Centres for Disease Control and Prevention. A workplan for the AMR NAP 2.0 process was developed in November 2022, providing a road map for subsequent activities.

Engagement with One Health Trust (OHT): Technical Expertise Amplified

In March 2023, a strategic alliance was formed between Nigeria's AMRCC and the One Health Trust (OHT), a World Health Organization (WHO) coordinating centre, facilitated through the WHO Geneva and Nigeria country offices. This partnership aimed to leverage technical expertise for the development of Nigeria's comprehensive One Health AMR Situational Analysis. To facilitate seamless collaboration, a data sharing memorandum of understanding (MOU) was drafted and endorsed by the collaborating One Health sectors.

The methodology employed involved sharing documents already in the public domain with the OHT to kick-start the analytical process. More than 40 key informant interviews were conducted virtually on thematic and strategic pillars of the AMR response and weekly progress review meetings continued from March 2023, ensuring a constant flow of information from stakeholders across the three sectors and regular updates, fostering a dynamic and iterative process.

Recruitment of Consultants: Expertise Amplified for In-Depth Analysis

To bolster the depth and breadth of the AMR NAP 2.0 development, various entities engaged consultants with specialised expertise. USAID/MTaPS enlisted the support of a consultant to lead the process of developing the AMR NAP 2.0, while WHO and FAO engaged consultants to conduct systematic reviews of AMR and antimicrobial usage in the human health sector and the food and agricultural system, respectively. Simultaneously, in-country consultants collaborated with relevant sectors, sourcing additional information and documents vital for a comprehensive understanding. The findings from these reviews were incorporated into the One Health Situational Analysis, ensuring a synthesis of both global and local perspectives. The draft Situational Analysis underwent rigorous scrutiny by the AMRCC members and other key stakeholders, enriching the comprehensive foundation laid for the development of the AMR NAP 2.0.

AMR Leadership and Multisectoral Collaboration Training: Strengthening Capacities

In March 2023, the WHO Nigeria Country Office, WHO Regional Office for Africa, and WHO Headquarters, in collaboration with the AMRCC, organised a crucial capacity-building initiative with the aim of equipping representatives from the three One Health sectors, the Quadripartite, and consultants with essential leadership skills requisite for the NAP development process. Recognising the importance of leadership in navigating the AMR response, this capacity-building initiative fostered a holistic understanding of AMR and promoted effective collaboration among diverse stakeholders. Overall, 39 participants from 13 agencies actively participated and aligned on the AMR NAP 2.0 development process as a common goal and mission for Nigeria.

Figure 2: Inputs to the AMR NAP 2.0

Road Map for NAP Development: Charting the Course for Success

To produce the AMR NAP 2.0, five development workshops were held to focus on various aspects of the NAP. These were Stakeholder Mapping; One Health Situational Analysis and SWOT Analysis; Strategic Plan and Operational Plan; Monitoring and Evaluation; and Budgeting and Costing. The full list of participants and group photographs from each workshop are included in Annex 2.

In August 2023, the first of four AMR NAP 2.0 development workshops was conducted. This first workshop focused on Stakeholder Mapping to gain a collective understanding of the diverse stakeholders required to participate and contribute to the AMR NAP 2.0 development process and its

implementation. The 42 stakeholders who participated included 28 representatives of ministries, agencies, and departments; 5 partner organisations; and 9 representatives of private groups. Among this group were 25 human health experts, 13 animal health experts, and 4 environmental health experts to ensure the approach was inclusive.

The second workshop was held in September 2023 and focused on the draft One Health Situational Analysis, which was shared with 59 stakeholders for their feedback. During this workshop, a strengths, weaknesses, opportunities, and threats (SWOT) analysis was conducted, laying the groundwork for the development of the strategic and operational plan sections of the AMR NAP 2.0. Also, as the recommendations from the AMR NAP 1.0 Review and the Situational Analysis were available, there was a need to harmonise and prioritise all the recommendations. This was done through multisectoral stakeholder engagement in breakout groups during this second workshop, where a larger number of 24 ministries, agencies, and departments were represented by 44 people, alongside 7 partner agencies and 4 private groups. The human health sector was represented by 32 people, the animal health sector by 19 people and the environmental health sector by 8 people.

To maximise stakeholder engagement, the third and fourth workshops were combined. Thus, the third workshop addressed both the Strategic Plan and Operational Plan as well as Monitoring and Evaluation. The focus of the fourth and final workshop was Budgeting and Costing of the AMR NAP 2.0, and these final two workshops spanned from October to November 2023. A total of 64 people attended the third workshop, making it the largest of all four with strong representation from all three sectors as well as participation from cross-cutting ministries such as the Federal Ministry of Finance and the Federal Ministry of Water Resources. The fourth and final workshop had in attendance a total of 37 people representing 10 organisations across the One Health sectors.

Output of the Stakeholder Mapping Workshop: Validated stakeholder mapping including stakeholders to engage in the AMR NAP 2.0 development process and implementation; launch of the AMR stakeholder's database tool. In all, 145 stakeholder groups were identified and mapped against their levels of interest and influence, their proposed participation in the NAP development process, and the strategic objective areas they align with.

Output of One Health AMR Situational Analysis and SWOT Workshop: Structured feedback on the Situational Analysis; validated SWOT analysis for all NAP strategic areas; prioritised AMR NAP 2.0 recommendations for all NAP strategic areas; identified barriers, solutions, and next steps. Collectively, 157 recommendations were prioritised across all six strategic objective areas and 148 solutions to barriers/next steps towards tackling AMR in Nigeria were identified.

Output of Strategic and Operational Plan Workshop: A well-defined strategic plan including Nigeria's goals, strategic objectives, and priority intervention areas; a draft theory of change for Nigeria's AMR NAP 2.0; an operational plan outlining high-impact interventions, with clear activities, timelines, and responsible parties; a draft monitoring and evaluation framework.

Output of Costing and Budgeting Workshop: Training on the WHO NAP Costing and Budgeting Tool; costed operational plan with indicative budget amounts for all activities and sub-activities.

Conclusion

The journey towards the One Health AMR National Action Plan 2.0 is a testament to the collaborative spirit, meticulous planning, and dedication of the diverse stakeholders involved. From the critical review of AMR NAP 1.0 to the strategic engagement with consultants, Nigeria's AMR NAP 2.0 development process reflects a commitment to a comprehensive and holistic One Health approach. The collective efforts of the nation's One Health community has resulted in an adaptable strategy that can effectively combat the growing threat of AMR in a coordinated and comprehensive manner.

Introduction

Antimicrobials are natural, semi-synthetic, and synthetic drug compounds used to treat bacterial, viral, fungal, and other unicellular parasitic infections in human and veterinary medicine.[3] The discovery and introduction of antimicrobials caused a fundamental change not only in the treatment of infectious diseases but also in the fate of humanity by increasing life expectancy significantly from less than 20 years to 58 years.[4] Similarly, the discovery of antimicrobials revolutionised the management of infections in animals and to some extent crops, hence improving global food security as evidenced by increased yields of animal- and crop-sourced foods.[3]

The world is currently grappling with a formidable challenge, known as antimicrobial resistance (AMR), which threatens the effectiveness of antimicrobials and poses an escalating threat to public health worldwide.[5] Unfortunately, AMR has already taken a considerable toll, with an estimated 1.27 million human fatalities attributed to it in 2019.[6] More disconcerting are projections indicating that by 2050, the annual death toll due to AMR may surge to a staggering 10 million and AMR is expected to cost the world $100 trillion in lost revenue if immediate and concerted global precautionary measures are not taken.[1] With this in mind, it is important to acknowledge that the burden of AMR-related mortality will be disproportionately borne by low- and-middle-income countries (LMICs).[7] These nations, grappling with a higher prevalence of infectious diseases, continue to confront a substantial share of preventable deaths stemming from infectious diseases.[1] Recent estimates show that the western sub-Saharan African region has the highest AMR burden, with 27.3 deaths attributable to AMR per 100,000 overall deaths.[2] In 2019, the mortality rate due to AMR in Nigeria surpassed that of deaths resulting from enteric infections, respiratory infections, tuberculosis, maternal and neonatal disorders, neglected tropical diseases, malaria, and cardiovascular diseases.[1] Furthermore, the study identified five pathogens, along with their associated AMR-related deaths: *Streptococcus pneumoniae* (54,300), *Klebsiella pneumoniae* (44,300), *Escherichia coli* (38,200), *Staphylococcus aureus* (32,300), and Group B *Streptococcus* (16,600). These pathogens are frequently implicated in lower respiratory infections, as well as other infections affecting the thorax, meningitis, bacterial central nervous system infections, bloodstream infections, and peritoneal and intra-abdominal infections.[1] Amid the AMR crisis lies the pervasive issue of selective pressure from antimicrobial overuse and misuse, a phenomenon intrinsically intertwined with the emergence of antimicrobial resistance.[8]

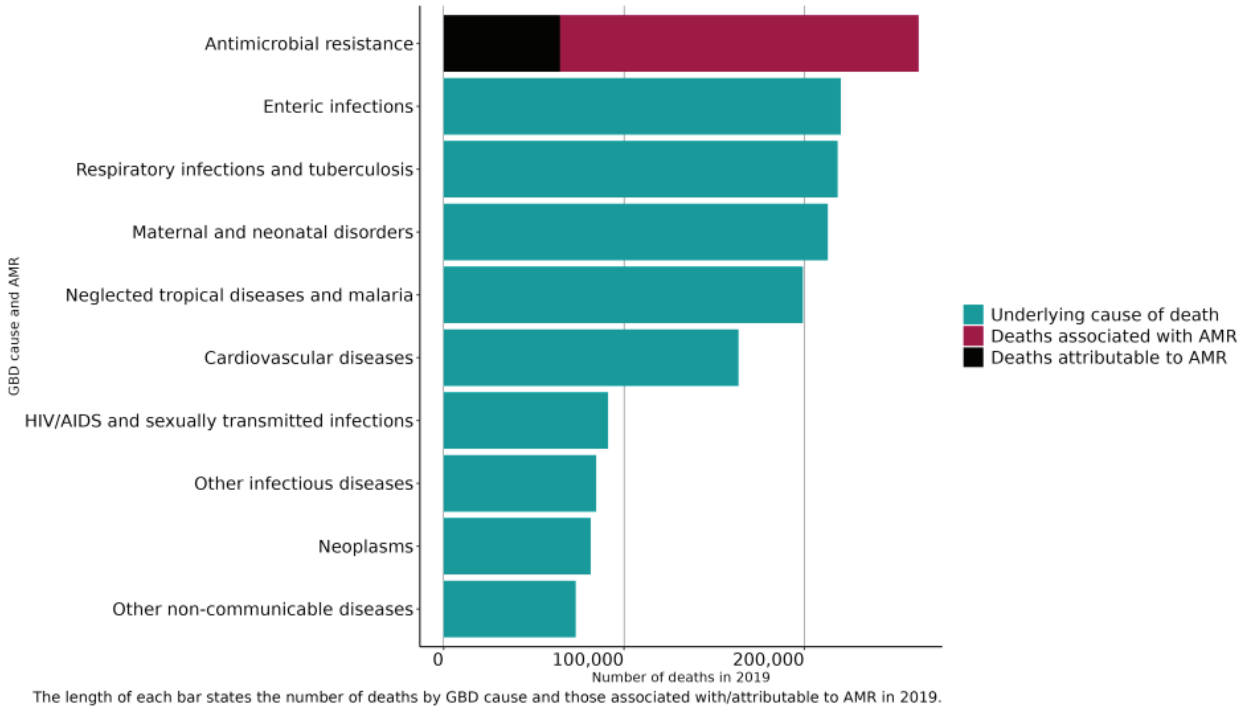


Figure 3: Placing AMR in context with other causes of death in Nigeria in 2019

(Source: Global Research on Antimicrobial Resistance (GRAM) project)

The multifaceted nature of AMR involves a diverse array of interconnected drivers, from shifts in human demographics and the threat of climate change to the complexities of international trade.[3] Furthermore, it is essential to recognise that AMR is not limited to human health alone.[4,9] It affects both animal and environmental health, creating a triangle of interrelated challenges. For example, the misuse of antibiotics in animal husbandry (in feed as growth promoters, prophylaxis, and metaphylaxis), agriculture, and aquaculture contributes to the development of resistant bacteria in terrestrial, aquatic, and wild animals and the environment, creating a reservoir of resistant pathogens that can spill over to humans.[4] The interface of human–animal–environmental health underscores the need for a One Health approach, recognising the inextricable link between these sectors in the context of AMR.[66]

Nigeria, being one of Africa's most populous and culturally diverse nations, is confronted with a unique and daunting challenge in its fight against AMR due to its rapidly growing population and wide variety of healthcare and agricultural practices. A full appreciation of the intensity of the burden of AMR in Nigeria may be undermined by the lack of accurate, robust data on phenotypic and genotypic AMR profiles from human and animal health sectors.[10] However, there is no doubt that if left unchecked, AMR will increase the likelihood that common infections will become more difficult to treat, affecting healthcare costs and livelihoods and jeopardising socioeconomic development.[9,11] Hence the need for the AMR National Action Plan (NAP) 2.0 for Nigeria – a meticulously formulated strategic response

aimed at addressing the multifaceted aspects of AMR within the context of the nation's One Health landscape.

Nigeria's AMR NAP serves as a pivotal instrument in the nation's holistic approach to combatting AMR. It underscores Nigeria's unwavering commitment to curbing AMR in a way that encompasses awareness creation, surveillance, regulation, infection prevention and control including vaccination, stewardship, and the principles of One Health. The overarching goal extends beyond safeguarding the health and well-being of Nigeria's populace to encompass a broader commitment to contribute to the global mission of combating AMR through a One Health approach, recognising the vital roles of animal and environmental health in the intricate web of AMR.

Numerous studies conducted in Nigeria have shed light on the dire consequences of infections caused by resistant bacteria. These infections are associated with heightened morbidity, increased mortality rates, and elevated medical expenses when compared to those caused by susceptible strains.[12] An unchecked proliferation of resistant bacteria could potentially usher in a post-antibiotic era, reminiscent of the pre-antibiotic age characterised by high levels of illness and death resulting from common infections and minor injuries.[13]

The AMR crisis in Nigeria is a longstanding issue with profound implications for the whole of society. The rise of resistant microorganisms has led to increased morbidity, mortality, and healthcare costs. To tackle this crisis effectively, it is imperative to put all effort towards the successful implementation of this AMR NAP 2.0.

The One Health AMR Situational Analysis

Nigeria developed her first five-year, One Health National Action Plan on AMR (AMR NAP 1.0) in 2017, in line with the 2015 World Health Assembly recommendation. This plan included well-defined strategic objectives for a coordinated AMR response, involving the human and animal health, environment, and agro-food sectors, and was implemented over five years. As a prerequisite to development of the AMR NAP 2.0, there was a need to develop a One Health AMR Situational Analysis 2.0.

The process of developing Nigeria's One Health AMR Situational Analysis 2.0 was collaborative under the coordination of the AMRCC and guided by a consultant-led approach. It involved stakeholders such as the One Health Trust, FAO, and WHO. This inclusive method integrated a wealth of data from diverse sources, including documents, reports, and information from ministries, departments, and agencies (MDAs), partners, programmes, and peer-reviewed literature, and consultation with AMR experts in the country to highlight the status of AMR in Nigeria. A systematic review of literature, coupled with key informant interviews and comprehensive AMR assessments, laid the groundwork for a thorough understanding of the current landscape of AMR across the country and across sectors. The process also included a collaborative review workshop, where diverse perspectives converged to refine and enhance the proposed strategies, ensuring a robust and well-informed framework.

Outline of the Situational Analysis

The Situational Analysis comprises key components that collectively paint a vivid picture of the AMR scenario in Nigeria: from a detailed examination of the country profile, which offers insights into the national context, to the existing evidence related to AMR, the ongoing responses and interventions, and the implementation status of the National Action Plan 1.0. This comprehensive analysis aims to strategically examine AMR and its challenges across the nation.

Human Health Sector

Misuse of antimicrobials is common in Nigeria, with many studies citing irrational use stemming from high levels of poverty and infectious disease burdens, limited local manufacturing, poor regulation of the quality of antibiotics in circulation, and indiscriminate antibiotic consumption. Six compounds – metronidazole, amoxicillin, amoxicillin/clavulanic acid, cefuroxime, and ciprofloxacin – comprised more than 55% of all antibiotics used in the country, which may contribute to their loss of effectiveness. Only 54% of antibiotics used were in the WHO Access category, which was lower than the recommended threshold of 60%, and this was coupled with overuse of antibiotics from the Watch category (46%). Data available places the national Drug Resistance Index at 65.9%, a percentage that is significantly higher than the threshold of 25% which indicates that AMR is being controlled.[14,15]

Antibiotic prescription rates remain high in Nigerian hospitals, with point prevalence survey (PPS) rates of 60–98% in hospitals across the country.[16,17,18] Paediatric wards show similar results with PPS rates of

77–92%.[19,20,21] Prescriptions remain largely empirical, with few backed by microbiological evidence. The most prescribed compounds were third-generation cephalosporins. Poor awareness among healthcare workers, lack of guidelines, and pressure from patients were some risk factors associated with high prescription rates.

Between 2017 and 2022, out of 12,251 samples from the national AMR surveillance network, 5,601 returned bacterial isolates, with high resistance levels of most isolates to most antibiotics tested. The most prevalent resistant profiles were extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae in 19% of total isolates, methicillin-resistant *Staphylococcus aureus* (MRSA) in 19% of total isolates and carbapenem-resistant Enterobacteriaceae in 4% of total isolates. Multidrug-resistant (MDR), extensively drug-resistant (XDR), and pan-drug-resistant (PDR) isolates of *S. aureus*, *Escherichia coli*, and *Klebsiella pneumoniae* were also found. Retrospective data from 23,963 positive cultures from 25 laboratories between 2016 and 2018 suggest high levels of third-generation cephalosporin-resistant Enterobacteriaceae (67–73%) and MRSA (58–82%). The same study also reported moderate to high levels of carbapenem-resistant *Pseudomonas aeruginosa* (30–53%), and fluoroquinolone-resistant *Salmonella* species (46–75%).[14]

Peer-reviewed research reveals similar trends. The most frequently studied pathogens were *E. coli* (21 studies, 30.4%), followed by *Klebsiella* spp. (13 studies, 18.8%), and *Staphylococcus aureus* (11 studies, 15.9%). The studies assessed resistance to 52 antibiotics, including gentamicin (8.8%), ciprofloxacin (8.0%), and ceftazidime (7.3%). The studies showed moderate to high levels of resistance to all antibiotics, including Watch category compounds such as cefotaxime (5–100%), cefixime (18–100%), and meropenem (2–79%), and those in the Reserve category such as ceftazidime and avibactam (59%) and linezolid (5–36%). Of concern are high levels of resistance to Access and Watch category antibiotics and MDR at the community level. Of the 46 studies reviewed, 16 (34.8%) were funded by international organisations, while 30 (65%) received no funding, highlighting the lack of dedicated domestic funding for AMR research in Nigeria. Studies have also reported clarithromycin resistance in *Helicobacter pylori* (a WHO high priority pathogen) in Nigeria, ranging from 14.4.% in 2017, to 25% in 2020.[22,23]

Animal Health

Key findings in animal health include resistance profiles of bacteria in food animals (notably *E. coli*, *Salmonella*, *Pseudomonas*, *Aeromonas*, *Staphylococcus* spp., *Enterococcus*, *Campylobacter*) against more than 50 antimicrobials. High levels of resistance to aminoglycosides (gentamicin), macrolides (erythromycin), cephalosporin, quinolones, and tetracycline were observed. Meta-analysis reveals that 10.9% of bacteria reported were MDR and 2.3% were XDR. The distribution of studies shows a bias towards poultry (49%). Thus, more attention to other food animal species (pigs, ruminants, fish) is required.

Poor awareness of AMR and misuse and abuse of antimicrobials are widespread among farmers in animal and crop production, including the use of antimicrobials banned for use in animals, not registered for use

by the World Organisation for Animal Health (WOAH), and critically important antimicrobials for human health. Eleven classes of antimicrobials were imported for animal use in Nigeria between 2014 and 2017. The most frequently imported classes of antimicrobial agents were tetracyclines (629,236 kg), polypeptides (148,974 kg), and macrolides (132,712 kg).[24]

Environmental Health

Environmental data is only available from research. High levels of Enterobacteriaceae caused by faecal contamination of soil, water, and effluents point to the environment as a major contributor to AMR due to open defecation and poor WASH (water, sanitation, and hygiene). Bacteria of clinical relevance, such as *Aeromonas*, *Streptococcus*, *Staphylococcus*, *Bacillus subtilis*, and *Vibrio*, showed resistance to 106 antibiotics representing 19 different classes of antimicrobials. High levels of resistance were observed to aminoglycosides, tetracyclines, and amphenicols.[25,26]

Bacterial tolerance to heavy metals (copper, lead, cadmium, zinc, chromium, silver, and nickel) at concentrations above the maximum recommended limits has been reported in *Staphylococcus aureus*, *Streptococcus*, *Bacillus*, *Salmonella*, *Shigella*, *Vibrio*, *Citrobacter*, *E. coli*, *Pseudomonas*, and *Klebsiella*.[27,28,29]

Resistance to commonly used disinfectants has also been recorded in bacteria of clinical relevance such as *S. aureus*, *P. aeruginosa*, *Bacillus subtilis*, *Enterococcus* spp., *Klebsiella*, *E. coli*.[30,31] These bacteria showed varying levels of resistance to disinfectants commonly used in hospitals, farms, and food-processing environments such as saponated cresols, chloroxylenol, sodium hypochlorite, and chlorhexidine. One study reported the detection of disinfectant resistance genes *qac*E and *sit*ABCD in XDR *E. coli* strains isolated from chickens.[32] These genes are known to confer resistance to quaternary ammonium compounds and hydrogen peroxides respectively. It is therefore recommended to routinely monitor resistance to commonly used disinfectants.

Plant Health

The increased demand for food and other agricultural produce, due to exponential population growth, have placed a heavy burden on the use of agrochemicals. These pesticides, some of which contain antimicrobials, play a pivotal role in reducing losses due to bacteria, fungi, viruses, insects, and rodents.[33] Although the quantity of antimicrobials used in crops is considerably less than the amount used in livestock,[34] the potential hazards associated with antimicrobial resistance should not be ignored. The residues of antimicrobial pesticides (fungicides and antibiotics) in crops can influence the evolution of resistant strains of bacteria and fungi in the environment and ultimately impede exportation of crops with residues above the maximum residue limits (MRL).[35]

Nigeria is one of the largest importers of pesticides in Africa, with insecticides, fungicides, and rodenticides as the three most used categories in crop value chains. Antimicrobials approved for use in the control of bacterial diseases of plants include oxytetracycline, streptomycin, gentamicin,

kasugamycin, and oxolinic acid. Oxytetracycline and streptomycin are the most widely used.[36] These have potential to pose public health and environmental challenges due to their high usage.

Up to half of the pesticides used in Nigeria are highly hazardous compounds banned for use in other parts of the world.[37] Pesticide-associated poisonings from food consumption are a regular occurrence, but morbidity and mortality are not systematically reported.[37] After a review and reclassification exercise in 2023, NAFDAC's Green Book product database lists 30 banned pesticides, only three of which are antimicrobial pesticides (fungicides) – captafol (tetrahydrophthalimide, toluene, and chlorinated substances), binapacryl (ester derivative of dinoseb) and hexachlorobenzene (chlorinated hydrocarbon). Unfortunately, weak regulation and porous borders mean that even banned pesticides still find their way into the country. As a consequence of this, Nigeria records losses of up to 362.5 million USD annually as it is unable to export beans, fish, and honey among other agricultural products to the EU market.[38] For example, beans were banned in 2015 because of dichlorvos pesticide residue of 0.3–4.6 mg/kg, exceeding the maximum acceptable residue limit of 0.01 mg/kg. Unfortunately, most studies on pesticide safety and residue limits have focused on the herbicidal and insecticidal compounds, with no investigation of their antimicrobial activity. These agricultural pesticides persist in the environment and bioaccumulate in the tissues of plants and animals, contaminating foods and the environment.[39,40,41,42] Apart from antimicrobial use for plant health within Nigeria, there is also a risk of antimicrobial residues in imported foods.

Situational Analysis Outcome

The result of the Situational Analysis was a comprehensive review of AMR in the country and a road map for addressing AMR, with clear recommendations for each strategic objective area.

The Situational Analysis 2.0 not only identified critical areas for intervention as outlined below in Table 1, but also laid the foundation for a coordinated, evidence-driven strategy in the ongoing battle against AMR in Nigeria.

Table 1: Critical intervention areas from the Situational Analysis 2.0

Key area	Critical intervention areas identified
National Action Plan development	• Include all relevant stakeholders in the early stages of development of the NAP on AMR. • Identify targets and indicators for all sectors; define specific and AMR-sensitive interventions through collaborations with other programmes converging with AMR. • Design SMART objectives (specific, measurable, achievable, realistic, time-bound); develop broader goals and specific and measurable objectives, which can be monitored to evaluate progress. • Engage experts from cross-cutting areas and programmes to inform and guide the selection of priority indicators to include in the plan's objectives. • Develop national-level guidelines and tools across all pillars of the NAP on AMR, which can be adapted and leveraged by all sectors. • Develop an operational plan with clear short-term and long-term objectives. • Cost the NAP on AMR to inform the economic case for financing and budget allocations.
Governance	• Develop a governance operational plan, outlining the actors and their roles and responsibilities, decision making, implementation, and monitoring frameworks. • Advocate for creating a sector-independent governing body overseeing AMR activities in the One Health context or adopt rotating leadership to increase ownership and accountability by all sectors. • Support the development of state-level AMR structures to coordinate the implementation of AMR activities. • Increase collaborations with the government, private sector, and civil societies.
Awareness	• Improve grassroots awareness of AMR through closer collaboration with civil societies and community leaders. • Improve AMR awareness in the government and private sectors. • Include AMR in the educational curricula of all relevant professions in all sectors. • Use available evidence to increase the political visibility of AMR and engage with other health programmes that address AMR.
Antimicrobial resistance and consumption surveillance	• Strengthen laboratory capacity to detect AMR in human, animal, food production, and environmental sectors. • Expand AMR surveillance to remote areas and leverage existing infrastructure from other programmes. • Establish an AMR surveillance reference laboratory for the environment.

	• Establish standard parameters for monitoring and controlling antimicrobials in the environment. • Assess current antimicrobial consumption data according to the AWaRe categories (Access, Watch, and Reserve). • Identify priority actions to improve data collection and reporting.
Infection prevention and control (IPC)	• Create a legal framework for infection prevention control and biosecurity to increase resource mobilisation. • Address geographical disparities in IPC interventions. • Establish closer collaborations with immunisation and WASH groups to increase AMR visibility in these programmes. • Include measurable IPC, immunisation, and WASH objectives in the AMR NAP 2.0 as interventions that address AMR.
Access and optimal use	• Establish national antimicrobial stewardship guidelines. • Advocate for increasing Universal Healthcare Coverage to improve access to appropriate diagnostics and medicines. • Improve the pathways and processes for registration, procurement, and distribution of antibiotics. • Advocate for an increase in the domestic production of pharmaceuticals to overcome issues with access to quality antimicrobials. • Support the enforcement of regulations around antimicrobial procurement, dispensing, and use.
Research and development	• Identify priority AMR research questions in Nigeria. • Conduct AMR research in areas with significant AMR surveillance gaps. • Utilise available data to estimate the AMR burden and its impact on health and the economy in Nigeria.

AMR Governance Framework

To support the fight against AMR in Nigeria, the nation has established a strong, multisectoral governance structure that demonstrates a One Health approach to addressing AMR activities. This structure – which showcases the commitment of the Federal Government to ensuring effective communication, collaboration, and coordination among sectors – provides a comprehensive model for operationalising interventions that prevent and reduce AMR in Nigeria.

The One Health AMR Governance Framework, illustrated in Figure 4, includes the following entities:

- **The National One Health Steering Committee (NOHSC)**: As the overall decision-making and policy-setting body for AMR in Nigeria, the NOHSC oversees the National One Health Technical Committee (NOHTC) and the Antimicrobial Resistance Coordinating Committee (AMRCC) listed below. It is comprised of the Coordinating Minister of Health and Social Welfare, Minister of Agriculture and Food Security, Minister of Environment, Minister of Finance, and Minister of Information.
- **The Antimicrobial Resistance Coordinating Committee (AMRCC)**: The AMRCC provides direct leadership and coordination of interventions from the multisectoral technical working groups. It is comprised of focal points from the Federal Ministry of Health, the Federal Ministry of Agriculture and Food Security, the Federal Ministry of Environment, and the chairs of the National AMR TWG.
- **The National AMR Technical Working Group (NTWG)**: The NTWG is comprised of five sub-TWGs with a focus on awareness/education, surveillance, stewardship, infection prevention and control (including vaccination), and research. These TWGs have mixed membership including experts from ministries, departments, and agencies (MDAs), academia, civil societies, regulatory bodies, and research institutions.

The complete governance structure, roles and responsibilities, and standards of operation are available in the *2019 One Health Governance Manual*.

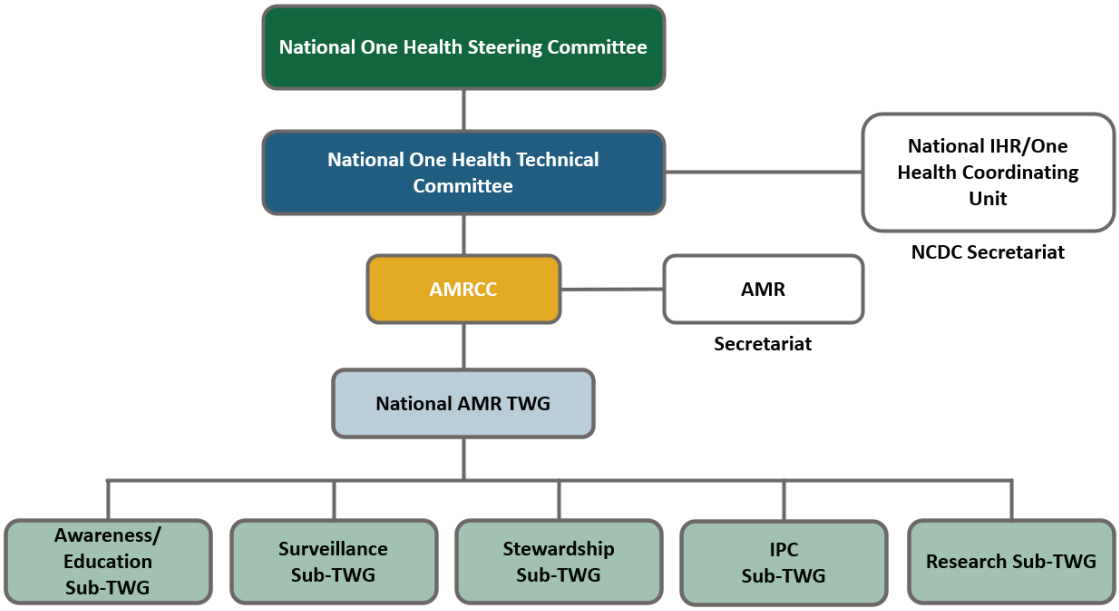


Figure 4: One Health AMR governance structure

Source: Nigeria One Health Governance Manual for AMR and AMU (2019)

Strategic Plan

Mission

To use a whole-of-society, One Health approach to safeguard the prudent use of antimicrobial medicines, and to strengthen evidence-based policy making and action to protect health.

Vision

A healthy nation where AMR prevention and response is prompt and evidence based.

Goal

To reduce, prevent, and slow the evolution of resistant organisms and their impact on humans, animals, and the ecosystem while ensuring optimal use and improved access to effective, safe, and quality-assured antimicrobials and diagnostics for continued successful management of infections.

Guiding Principles

These eight guiding principles underpin the foundation of this AMR NAP 2.0 and its implementation.

1. One Health approach and inclusive governance
2. Private sector collaboration
3. Community engagement
4. Ensuring access while avoiding excess
5. Prevention first
6. Evidence-based decision making
7. Sustainable interventions
8. Incremental targets for implementation

Strategic Objectives

Nigeria has outlined the following six strategic objectives which must be operationalised to achieve our goal and vision for AMR.

These objectives focus on ensuring that there are strong governance structures to drive the AMR response at the national and subnational levels, improving understanding of AMR to drive behaviour change, strengthening the nation's AMR evidence base through surveillance and research, preventing and controlling infections, ensuring optimal use of antimicrobials across the One Health sectors, and fostering development of therapeutics and diagnostics.

Although each strategic objective has its own specific intervention areas, activities, and sub-activities which are listed in the Operational Plan section, they have been developed as a set of actions that will have the greatest impact when implemented together.

Strategic Objective 1: Strengthen leadership, collaboration, coordination, and AMR governance structures at national and subnational levels

To effectively address AMR in Nigeria, a robust governance structure within the One Health framework is essential as strong, coordinated commitment is a requirement for the success of this AMR NAP 2.0.

The complex challenge of AMR demands domestic governance mechanisms which enable all required stakeholders to collaborate towards a collective impact in Nigeria's AMR response, while ensuring the response is in line with other national policies and plans. This includes consistent intersectoral collaboration mechanisms, national and subnational structures that reflect the One Health approach, and integration of AMR into other national plans and strategies.

Furthermore, to drive the AMR governance structure at the national and subnational levels, political will is paramount, especially in implementing regulatory measures. Clear leadership, streamlined roles and responsibilities, and data sharing to ensure the funding, resources, and monitoring required to achieve the goal of AMR NAP 2.0 will be put in place at the national and subnational levels.

Strategic Objective 2: Improve antimicrobial resistance (AMR) awareness, education, understanding, and behaviour change among all relevant stakeholders

Tackling AMR in Nigeria demands a holistic approach towards collective responsibility and behavioural change. To communicate the risks of AMR and the proper use of antimicrobials, targeted, standardised, and evidence-based behaviour change communications must reach the public, patients, and producers. Also, targeted communication materials should be disseminated to policy makers at both national and subnational levels while baseline surveillance data should be widely shared, with campaigns extending to farmers, feed millers, and drug vendors, emphasising responsible antibiotic use and alternatives.

Education plays a pivotal role, from integrating AMR into continuing professional education to embedding it in secondary school curricula. This ensures a gradual understanding of the issue as individuals progress through their careers in the One Health sectors or beyond.

Awareness research initiatives should focus on multisectoral stakeholder mapping and routine studies to comprehend the knowledge, attitudes, beliefs, and perceptions of the public on AMR. In particular, policy development requires repeating awareness assessments, comparing results, and incorporating outcomes into future campaigns, fostering a continuous and adaptive approach to combat AMR effectively.

Strategic Objective 3: Improve evidence base through strengthening One Health AMR surveillance systems and operational research for decision making

Accurate and timely data on antimicrobial use and resistance are imperative for shaping AMR policies, programmes, and decisions in Nigeria. This data must be comprehensive, reliable, and representative of the entire country, enabling close monitoring of the impact of emerging infections, identification of disproportionately affected population groups, and informed decision making for prevention and containment measures. Strengthening laboratory capacities across One Health sectors, including private sector involvement, is essential for a holistic approach to data collection.

National policies, developed within legal and ethical frameworks, should ensure uniform data collection and quality control through established guidelines and standard operating procedures (SOPs), drawing on methodologies such as the Tricycle Project and WHO GLASS. Further, integrating AMR-related indicators into existing surveillance systems fosters collaboration among diverse stakeholders, including government health departments, veterinary services, pharmaceutical industries, academic institutions, and international organisations. Comprehensive country mapping of AMR surveillance, spanning clinical cases, environment, food, plants, and animals, is foundational.

Capacity building for surveillance is also integral, addressing geographical disparities and involving private laboratories. Resource allocation, region-specific training programmes, and investment in laboratory capacity based on identified needs in each geopolitical zone will contribute to the success of surveillance efforts.

Strategic Objective 4: Improve implementation of infection prevention and control (IPC) programmes, biosecurity, and vaccination uptake including access to WASH across the One Health sectors

Prioritising the reduction of infections and curbing the spread of resistant microbes is crucial in the fight against AMR. From farms to communities and healthcare facilities, consistent application of hygiene, vaccination, and infection prevention measures is essential to mitigate the impact of AMR. Ensuring improved access to clean water, adequate sanitation, proper waste management, and increased vaccination uptake are vital aspects to prevent the transmission of antimicrobial-resistant pathogens.

In healthcare settings, particularly amid emerging threats and outbreaks, infection prevention and control (IPC) plays a pivotal role. Comprehensive strategies are required to enhance biosecurity and IPC measures, encompassing key recommendations such as advocacy, infrastructure improvement, policy adherence, financial resource alignment, awareness training, and effective governance.

Advocacy serves a central role in reinforcing biosecurity and IPC measures. Regular, high-quality training for healthcare workers and farmers on best practices is essential, and private sector as well as informal sector involvement in programme design and execution brings valuable perspectives and resources. A holistic approach emphasising basic measures such as hygiene, sanitation, waste management, and

personal protective equipment is crucial. Advocating for these measures at all levels is imperative for reducing hazards and risks.

Strategic Objective 5: Improve access to quality antimicrobials and optimise their use across One Health sectors

The inappropriate use and abuse of antimicrobials poses a significant threat to public health, driving the spread and dissemination of AMR. To combat this, a comprehensive strategy is imperative, involving prescribers, producers, and patients in safeguarding the effectiveness of antimicrobials. This requires the provision of knowledge, guidelines, and tools for proper antimicrobial use in both humans and animals. Key measures include improved drug labelling, stringent enforcement of prescription policies, distribution, regulations, and comprehensive data collection on consumption. Additionally, efforts to reduce the importation of substandard and falsified drugs contribute to ensuring the availability of quality antimicrobials.

In human health, the development of an antimicrobial use/stewardship policy is crucial, integrating the AwaRe classification into national standard treatment guidelines and establishing antimicrobial stewardship committees nationwide. Similar initiatives are essential in veterinary practice, emphasising the creation of stewardship committees and ensuring extensive vaccination coverage for animals.

Regulatory enhancements are pivotal, focusing on strengthened pathways for antibiotic registration, procurement, and distribution. Strict regulations against drug hawking, rigorous enforcement of drug labelling, and the prohibition of antibiotics as growth promoters in animals are indispensable for controlling AMR. Political commitment is crucial for relocating players in the open drug market to coordinated wholesale centres and instituting a compensation programme for adherence to withdrawal periods in the animal sector.

Strengthening procurement and supply chains in both human and animal health sectors ensures the availability of quality antimicrobials. The inclusion of antimicrobial stewardship programmes as accreditation criteria for hospitals and the implementation of evidence-based programmes in primary healthcare and ambulatory settings are vital steps.

Strategic Objective 6: Build knowledge and capacity of relevant stakeholders to improve local innovations, research and development in antimicrobials, diagnostics, and vaccines

Given the complexity and rapid progression of AMR, significant progress relies on innovation and research into new products, interventions, and methods. Strengthening local research and providing platforms for stakeholder training and knowledge exchange are vital approaches to fostering innovation for AMR.

For example, an annual AMR research fair could serve as a catalyst to enhance research awareness, training, and education, providing scholars nationwide with a platform to present findings and innovative solutions. Conducting Knowledge, Attitude, and Practice surveys becomes crucial for identifying

knowledge gaps and training needs among stakeholders, ensuring the reproducibility and validation of scientific results. Within the policy, guidelines, and financial resources domain, it is imperative to integrate AMR/AMU funding into the National Research Agenda priority areas. This integration should involve developing an operational plan with a detailed budget, outlining activities, responsibilities, and funding sources. Collaborative coordination among research institutes, the National Health Research Council, and other relevant bodies can identify and prioritise research areas, emphasising the One Health approach.

The strategic development of antimicrobial alternatives should be pursued through research agendas. Prioritising vaccine research for infectious diseases in animals, along with exploring alternatives such as water treatment, pre- and probiotics, and effective vaccination, aligns with the One Health perspective. Implementing a governance mechanism for strategic and operational planning can facilitate the realisation of research agendas.

Strengths, weaknesses, opportunities, and threats (SWOT) analysis

Each strategic objective area has its own strengths, weaknesses, opportunities, and threats (SWOT). During the second AMR NAP 2.0 development workshop, One Health stakeholders worked together in groups to analyse the SWOT for each strategic area. The output from that workshop is presented below.

Governance

Strengths	Weaknesses

• Pre-existing One Health governance and coordination structure that aligns with the National and Global One Health organogram
• High-level political commitments for the implementation of AMR NAP 2.0, for instance the Minister's Chair in the One Health steering committee that is rotated
• Buy-in and technical working groups in the MDAs
• Experience with implementation of AMR NAP 1.0
• Pre-existing institutional and professional capacities (e.g. establishment of NAFDAC)
• Sector-specific AMR activities
	• Disparity in strength across the sectors
	  ○ Not all sectors had funds to implement the AMR NAP 1.0
	  ○ Skewed and disproportionate availability of funds in the three sectors
	• One Health technical committee operational but not linked to AMR
	• Less institutional prioritisation of AMR in agencies
	• Poor coordination and synergy among institutions
	• No clearly defined AMR governance structures at the subnational level
	  ○ Inability to step down NAP to the subnational level
	• The roles of the private sector and communities are not clearly defined in AMR governance structure
	• Absence of governance in the listed NAP pillars
	• The AMR NAP 1.0 did not capture specific sectoral needs, e.g. transboundary animal diseases that cannot be transmitted to humans

Opportunities	**Threats**
• Involve the subnational in the national governance structure • Partners (FAO, WHO, WOAH, and UNEP) are on board • Key stakeholders have acquired leadership and conflict resolution skills to lead AMR governance • Sustained interest of donors to support AMR • Ability to leverage Muscat declaration to strengthen AMR governance	• Interprofessional rivalry • Existence of other sectoral priorities that can distract focus from AMR (e.g. insecurity, climate change, epidemics) • Inconsistencies in government policies

Awareness

Strengths	Weaknesses

• One Health expertise and professionals who can facilitate education, awareness, and training
• One Health sector journalists trained on AMR reporting
• Trained spokespersons for AMR media engagement
• Yearly commemoration of the National AMR Awareness Week to sensitise the public with strong leadership backing
• Multisectoral One Health collaborations during World AMR Awareness Week (WAAW) activities
• Awareness and sensitisation activities on AMR and ways to mitigate it for relevant stakeholders in the animal health sector
• AMR School Clubs model piloted and ready to scale
• Existing One Health AMR Community of Practice platform
• Existing One Health newsletter on AMR
• Social media handles for all One Health MDAs
• Availability of civil society organisations (CSOs) conducting public engagement activities aimed at educating the public and promoting ownership of the AMR response
• Developed training modules on stewardship
• Developed and disseminated AMR IEC materials to states
• Global priority – hence there is an availability of partners to support awareness and education activities and plans
	• No comprehensive national baseline survey/data on the status of awareness in Nigeria
	• Little to no data to quantify/qualify the impact of AMR, including M&E framework to quantify impact of behavioural change
	• No One Health awareness strategy/framework
	• Inadequate implementation at grassroots/subnational level
	  ○ AMR messages are not adapted for local stakeholder groups or translated into local languages
	• Lack of a comprehensive national database of World AMR awareness week activities
	  ○ Limited AMR awareness activities outside WAAW
	• Trained media spokespersons on AMR only available in human health sector
	• Lack of sustainable funding lines for AMR awareness activities
	• Awareness campaigns have focused on the human and animal health sectors, with fewer activities targeting stakeholders in other sectors
	  ○ Absence of awareness activities in plant health
	• Lack of SBCC materials in environmental health sector
	• AMR not yet included in veterinary curricula or approved by the National University Commission

Opportunities	**Threats**
• Availability of partners with interest in supporting AMR awareness activities ○ International organisations and experts that can enhance effective awareness and education programmes • Advocacy to educational stakeholders (primary, secondary, and tertiary) to review AMR curriculum • Leverage on learning programme in schools and tertiary institutions to create AMR champions and ambassadors • Inclusion of AMR in continuous professional development • Digital tools, innovation, and leveraging technology, including social media to reach a broader audience • KABP surveys on AMR and AMU among prescribers, dispensers, and users of antimicrobials in human and animal sectors	• Limited political will for awareness • Resource mobilisation inadequate for implementation • Misinformation and disinformation – spread of inaccurate information on AMR can affect awareness and education efforts • Other conflicting health emergencies may divert resources from AMR awareness • Constantly evolving knowledge and data of AMR, therefore SBCC material becoming redundant • Inadequate One Health pre-service training may lead to poor prescribing and dispensing practices

• A comprehensive database for collation of AMR activities (WHO interactive map) • Existence of health journalists' association • Existing community structures such as youth groups, village elders' forum, faith-based groups • Community engagement, to involve community One Health stakeholders in awareness campaigns to promote responsible antibiotic use • Digital tools, innovation, and leveraging technology, such as mobile apps and online courses to reach a broader audience	

Surveillance

Strengths	Weaknesses

• AMR surveillance networks exist in human, animal, and environment sectors
  ○ There is a national surveillance network in human health
  ○ Surveillance data available for human sector (monthly)
• Presence of national reference laboratories (NRLs) for human, animal, and environmental sectors
  ○ Animal health sector NRL is ISO17025 certified
• AMR reporting on AMRIS, GLASS
  ○ A few human health laboratories are already generating and submitting data to GLASS
• Presence of skilled laboratory personnel across the sectors
• Sequencing of organisms in human and animal health sectors
• Laboratory infrastructure in human, animal, and environmental health sectors
• Laboratory information management system (LIMS) in some human health sector labs
• Accredited laboratories for priority pathogens in human, animal, and private health sectors
• Presence of working documents (SOPs and Job aids) across three sectors
  ○ AMR surveillance guidelines and checklist exist in human health sector
  ○ Integrated Foodborne Disease Surveillance and Response Guideline
  ○ AMR surveillance network and documents (animal health, environmental health, human health)
• National/Fleming fund standardised methods available for surveillance in animal health
• Existence of epidemiological unit for human and animal health sectors
• Existence of One Health coordination committee linked to AMR surveillance
	• There are no established national surveillance networks in animal, environmental, and plant health sectors
	  ○ Lack of surveillance data in animal, environmental, and plant health sectors
	• There are no NRLs for the plant health sector
	  ○ Limited NRLs in human and animal health sectors
	  ○ Human and environmental health NRLs are not ISO certified
	• Animal, environmental, and plant health laboratories are yet to start generating and submitting data to GLASS (although VTHs are expected to start generating and submitting data by the end of September 2023)
	• Inadequate number of skilled laboratory personnel across the sectors
	• Capacity at sentinel labs not widely available in animal health and human health, especially in genetics
	• Sequencing of organisms not available in environmental and plant health sectors
	• Inadequate laboratory infrastructure in human, animal, and environmental health sectors
	  ○ No laboratory infrastructure in plant health
	• Laboratory information management system (LIMS) not available in animal, environmental, and plant health sectors
	  ○ LIMS not sufficient in human health sectors
	• No sufficient accredited laboratories for priority pathogens in human, animal, and private health sectors
	• No accredited laboratories for priority pathogens in environment and plant health sectors
	• Partial adherence to the available SOPs and Job aids across the sectors
	  ○ Use of obsolete SOPs and Job aids across the sectors
	• AMR surveillance guidelines and checklist are not

• Presence of sentinel laboratories for human, animal, and environment sector
  ○ Availability of capacity at sentinel laboratories (not environmental health)
  ○ NESREA sentinel labs have high capacity for residue testing
• Laboratory managers have been trained for WHONET and AMRIS
• Trained AMR/AMU fellows across animal and human health sectors
• Access to external quality assurance in human and animal health labs
• Existence of INEHSS (Integrated National Environmental Health Surveillance System) in environment sector, operational in 12 states
	available in animal, environmental, plant, and private health sectors
	• Epidemiological unit not available in environment and plant health sectors
	  ○ Limited epidemiologists in human and animal health sectors
	• Non-participation of plant health sector in the One Health coordination
	• ATLASS comprehensive assessment of AMR surveillance systems including human resources has only covered some relevant labs
	• Lack of AMR surveillance protocol, guidelines, and standards in environment sector
	• Limited funds across all sectors for national surveillance
	• Need to standardise AMR testing, methods, and equipment among laboratories
	• Limited access to diagnostics (equipment and reagents) for AMR surveillance in humans, animals, and the environment
	• Inadequate sentinel labs in human (14), animal (6), and environmental health (2) sectors
	  ○ Sentinel sites in environmental health sector have poor capacity to detect AM residues, ARPs, ARGs
	• Lack of policy on AMR regulation and antimicrobial discharge into the environment in the environment sector

Opportunities	**Threats**

• Establish national surveillance network within the animal, environmental, and plant health sectors
• Expand human health national surveillance network to other geopolitical zones and other levels of healthcare
• Expand NRLs across the sectors in the country
  ○ Establish NRL within the plant health sector
  ○ Attract grants to support and strengthen activities at the NRLs
• Advocate for budgetary allocation
• Build the capacity of animal, environmental, and plant health laboratories to start generating and submitting data to GLASS
• Use MOU to enhance confidence in laboratories to submit data
• Conduct training and retraining for skilled personnel
• Establish sequencing facilities in environmental and plant health sectors
• Increase the number of facilities performing sequencing in human and animal health sectors
• Attract grants to support establishment and strengthening of laboratory infrastructure in human, animal, environmental, and plant health sectors
  ○ Strengthen laboratory infrastructure in
	• Limited funding
	  ○ Limited domestic funding for laboratory infrastructure and capacity maintenance
	• Emergence of new strains due to mutations
	• Government policy and changes in government
	  ○ Inconsistencies in government policies and programmes (e.g. PHEM for SEs)
	• Attrition
	• Rivalry
	• Bureaucracy
	• Lack of political will and interest
	• Health insurance coverage low in human population, which affects funding for AMR diagnostics and surveillance
	• Limited access to veterinary services, which affects access to AMR diagnostics and surveillance
	• Counterfeit and substandard diagnostic materials and reagents on the market
	• Tendency to hide sensitive information

human, animal, and environmental health sectors ○ Establish laboratory infrastructure in plant health sector • Establish laboratory information management system (LIMS) in animal, environmental, and plant health sectors ○ Improve LIMS in human health sector • Equip and enrol laboratories for accreditation for priority pathogens in environmental and plant health sectors • Develop and disseminate AMR surveillance guidelines and checklists that are specific for animal, environmental, plant, and private health sectors ○ Constantly update available SOPs and Job aids ○ Harmonise standards • Create epidemiological units in environmental and plant health sectors ○ Engage additional epidemiologists in the human and animal health sectors • Engage plant health sector (food safety) in the One Health coordination of AMR surveillance • Link AMR surveillance to existing food safety surveillance with respect to common priority pathogens • Validate and obtain ministerial approval of existing draft residue monitoring plan for food of animal origin • Availability of external quality assurance or proficiency testing programmes • Advocate for external funding to strengthen and expand AMR surveillance system ○ Mobilise resources for surveillance from academic sources such as TETFUND • Opportunity to include surveillance data in monthly reporting from 12 states in environment sector • ATLASS assessment including human resource assessment of surveillance systems has started within the country – opportunity to extend to cover all relevant labs	

IPC/Biosecurity/WASH/Vaccines

Strengths	Weaknesses
• Existence of active national IPC programme domiciled at NCDC with trained human resource • The hub of participatory approach to learning in systems (PALS) • Well established network of state IPC and health facilities IPC focal points • Availability of committees on IPC in the federal,	• Suboptimal buy-in and political will on IPC especially at the subnational level • Inadequate funding for IPC, WASH, biosecurity, and vaccines • Minimal or no IPC programme in private healthcare and animal health facilities • Low level of awareness of IPC

state, and health facilities • Multidisciplinary collaboration on IPC by One Health partners • National IPC manual available • National strategic plan for IPC available • Budget/funds for vaccine production • Researchers available for vaccine development ○ Trained personnel in vaccine production • Availability of vaccine production by National Veterinary Research Institute, Vom • National vaccination strategic plan • National mass vaccination campaign against TAD (transboundary animal disease) in the six geopolitical zones • Eradication of PPR (peste des petit ruminants) for small animals (e.g. goats) • Existence of National Biosecurity Management Agency • Availability of National Biosecurity Policy and Action Plan 2021 • Strategic action plan using the One Health approach in 24 thematic areas • Collaboration with other stakeholders and agencies • Availability of WASH policy and guidelines • Availability of TWG of National Task Group on Sanitation (NTGS) • Availability of WASH trained personnel • Availability of guidelines on wastewater management, excreta and sewage management • Existence of Integrated National Environmental Health Surveillance System (INEHSS) with WASH tool as an indicator • Strong link between WASH and other sectors (e.g. health, agriculture, water resources, environment) • Existence of National Primary Health Care Development Agency (NPHCDA), state PHCDA, local PHC departments • Existence of national programme on immunisation, maternal newborn and child health, strong community structures in all 770 local government areas (LGAs) • Existence of effluent management plan in some farm facilities • Policy and guideline for routine vaccination • Strong tool for tracking vaccination • Trained personnel in vaccination channel • Funding/budget line for immunisation at national level while states have counterpart funding	• Poor attitude of health workers on IPC, WASH, biosecurity, and vaccine-related issues • Rivalry between healthcare workers and other professions • Most facilities do not have IPC dedicated staff • No defined career pathway for IPC personnel • Poor adherence to guidelines and regulations on IPC, WASH, etc. • Insufficient availability of vaccines nationwide • Lack of cold storage vans for national distribution • Lack of facilities for bio-incineration of unused, expired vaccines • Poor built environment including WASH infrastructure • Inadequate implementation of biosecurity measures in farms • Inadequate record keeping in farms • Poor tagging and identification of animals for tracking purposes • Inadequate quarantine facilities • Unavailability of IPC legal framework • Inadequate funding for biosecurity policy implementation • Inadequate vaccination coverage • Vaccine hesitancy and suboptimal coverage • Misconceptions and lack of awareness about vaccines • No linkage of vaccination policies with AMR • Suboptimal investments in genomic sequencing and linkage to vaccine manufacturing • No defined policies for healthcare workers on IPC • Poor healthcare waste management • No regulators of private healthcare facilities in some states • Inadequate number of trained personnel for IPC, WASH, biosecurity at all levels
Opportunities	**Threats**
• Expanded scope of Ministries in Health, Agriculture, Water presents a new opportunity for the AMR response • Interest of partners and multilateral agencies	• Insecurity • Continuous gene mutation in microbes • Internal and external brain drain

• Funding mechanisms (e.g. Global Fund COVID-19 Response Mechanism, GAVI, Pandemic Fund) • Collaborations with other MDAs • Global IPC strategy • Global R&D agenda for AMR has an IPC section to further understand our local context • Large market for vaccine exportation	• Corruption • Donor fatigue

Stewardship

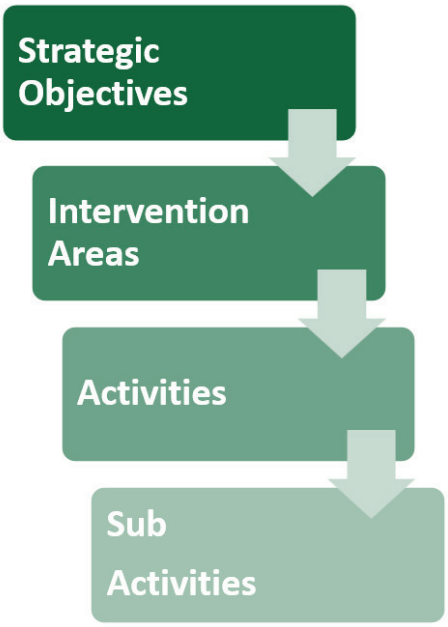
Strengths	Weaknesses
• One Health National Antimicrobial Stewardship (AMS) plan • Availability of budget line on National AMR Programme (AMS) in human health • Gazetted regulations on antimicrobial products • Animal Disease Control Act • Drug and Related Products Registration Regulations 2021 • Availability of national drug policy • Availability of national distribution guidelines • Availability of STG for both animal and human health • National veterinary formulary • Data on antimicrobial consumption (AMC) • Good Distribution Practice Guidelines for Pharmaceutical Products • Draft national drug formulary for human health • Counterfeit and Fake Drugs and Unwholesome Processed Food Act 1999 • National AMS network • Veterinary Surgeons Act • Essential medicines list (EML) with a draft AWaRe categorisation • Subnational AMR technical working group • AMS guidelines for facilities • AMU PPS manual • AMC surveillance manual • National pharmacovigilance policy • Pharmaceutical traceability strategy policy document published by the FMOH&SW in May 2020 • Availability of draft prescription policy for human health • Drug and Related Products Registration Regulations 2021 • Drug and Related Products Labelling Regulations 2021 • Good Manufacturing Practice for Medicinal Products Regulations 2021 • Recall, Handling and Disposal of Substandard and Falsified Medicinal Products Regulations 2021 • Strengthened NHIA laws	• Inadequate human resources • Inadequate funding of the budget line for human health and absence of budget line in the animal health sector • Poor adherence to the national standard treatment guidelines • Poor dissemination of policies, regulations, and guidelines • Poor understanding of the policies, regulations, and guidelines by stakeholders • Inadequate human capacity for AMS programmes • Absence of stewardship committee in the animal sector • Absence of appropriate compensation programme to encourage the observance of withdrawal period in the animal health sector • Poor labelling of drugs • Poor diagnostic stewardship • Inadequate diagnostic equipment and instruments • Inadequate laboratory capacity • Inadequate qualified laboratory personnel • Low coverage and services of NHIA • Need to incorporate the AwaRe classification into standard treatment guidelines for animals • Need to develop antimicrobial stewardship guidelines and a toolbox to facilitate their implementation in facilities with different capacities in animal health • Non-availability of AMU PPS data

• Draft regulations prohibiting the use of antibiotics as growth promoters	
Opportunities	**Threats**
• AMS can be incorporated into the existing continuous development curriculum • Phasing out open drug market: developing coordinated wholesale centres • Collaboration with development partners • One Health conferences and workshops	• Uncoordinated distribution of drugs • Porous national borders that facilitate imports of substandard and falsified drugs into the country • Overlapping functions/conflicting laws and regulations • Open drug market in human and animal health • Proliferation of drug hawkers • Poverty and low purchasing power of a large population of Nigerians • Use of antibiotics as growth promoters • Use of critically important antimicrobials in animal health • Access to antimicrobials without prescriptions in both human and animal health • Use of animal manure in agriculture without treatment

Research and Development

Strengths	**Weaknesses**
• Availability of skilled personnel across the One Health sectors • Availability of research infrastructures (university and research institutes) • Existence of a research and development pillar in the NAP • Existence of national and international funding agencies (e.g. TETFund) • 5% of national budget allocated for R&D • Established research centres of excellence for the One Health sectors	• There are no national priorities in AMR R&D • There is no research agenda for AMR ○ Absence of research implementation agenda in the NAP • Lack of clear research objectives • Inability to institutionalise or operationalise mechanisms for data sharing across sectors and government agencies • Limited funding for research • Limited support for research output • Lack of dedicated research institute for environmental health
Opportunities	**Threats**
• The presence of national health research provides a good platform of R&D • Cross-sectoral research collaboration • Availability of global research agenda document for research in AMR, which can be adapted for domestic purposes in Nigeria	• Personal and academic interest • Limited data/information sharing • Insecurity • Economic crunch • Interprofessional rivalry • No national commitment to fund research • Lack of commitment from donor agencies • Lack of trust in policies • No feedback mechanism • Donors are more interested in implementation than research • Dwindling research culture due to lack of incentives and motivation

Operational Plan



Nigeria's AMR National Action Plan 2.0 provides a coordinated set of activities and actions that must be implemented to achieve the goal to reduce, prevent, and slow the evolution of resistant organisms and their impact on humans, animals, and the ecosystem.

These activities cut across the six strategic objectives, and the AMR NAP 2.0 Operational Plan includes the strategic intervention area, quantity, lead implementer, timeframe, and cost for each activity and sub-activity. In total, across the six strategic objectives there are 40 strategic intervention areas, 143 activities, and 451 sub-activities which are all costed.

Strategic Objective 1: Strengthen leadership, collaboration, coordination, and AMR governance structures at national and subnational levels

Activity/Sub-activities	Quantity	Responsible entity	Timeframe					Cost
			2024	2025	2026	2027	2028	
Strategic intervention 1.1. Ensure all relevant sectors (including plant health, food production, food safety, and private sector) are represented in the functional governance structure with adequate funding and coordinating structure in place								
Activity 1.1.1. Review AMR governance manual to include vaccines, WASH, plant health, rotational leadership, and terms of reference (ToR) for subnational levels								
1.1.1.1. Review stakeholder mapping	3	AMRCC	■		■		■	4,884,748.94
1.1.1.2. Conduct workshop for 50 participants to review the AMR governance manual	3	AMRCC	■		■		■	95,280,227.97
Activity 1.1.2 Develop and sign MOUs to strengthen intersectoral collaboration								
1.1.2.1. Organise meeting of legal officers to develop MOUs	2	AMRCC	■					2,010,000.00
1.1.2.1. Organise a workshop for presentation of the MOU and signing by the ministers	1	AMRCC	■					1,650,000.00
1.1.2.3 Draft and sign MOU on data sharing	1	AMRCC	■					50,000,000.00
Activity 1.1.3. Establish/reactivate a functional AMR working group in One Health sectors including plant health								
1.1.3.1. Conduct advocacy visits (using advocacy briefs) to relevant stakeholders for buy-in and support from the leadership across One Health sectors	4	AMRCC, National One Health AMR Secretariat, AMR Programme managers across sectors	■	■	■	■		3,318,796.25
1.1.3.2. Define/review ToR for the working groups. (Include WASH, vaccines, and biosecurity in IPC pillar and private sector membership)	1	AMRCC, National One Health AMR Secretariat,	■					750,000.00

		AMR Programme managers across sectors						
1.1.3.3. Conduct workshop for development of Annual Operation Plan for AMR intervention	5	National One Health AMR Secretariat, AMR Programme managers across sectors						58,102,012.59
1.1.3.4. Conduct sensitisation for the working group across all sectors	1	National One Health AMR Secretariat, AMR Programme managers across sectors						1,800,000.00
Activity 1.1.4. Functionalise AMRCC, AMR TWG, sub-AMR TWGs								
1.1.4.1. Convene quarterly AMRCC, TWG, and sub-AMR TWG meetings for participants across One Health sectors	196	AMRCC, National One Health AMR Secretariat, AMR Program managers across sectors						1,903,579,965.63
1.1.4.2. Create platforms for regular communication (in websites) across the AMR governance structures	1	AMRCC						18,092,217.00
Activity 1.1.5. Set up a national One Health AMR secretariat with required space, human resources, and budget line to coordinate AMR NAP 2.0 implementation								
1.1.5.1. Appoint at least one dedicated person per sector with clear ToR including dedicated personnel for AMRCC support	10	National One Health AMR Secretariat						590,000.00
1.1.5.2. Provide a dedicated furnished office that will accommodate 10 persons for secretariat operation	1	National One Health AMR Secretariat						79,250,000.00
1.1.5.3. Allocate budgetary provision for secretariat operations (link to 1.1.5.2)	5	National One Health AMR Secretariat						32,048,661.25
Activity 1.1.6. Conduct training on leadership and multisectoral skills on AMR for subnational structures								
1.1.6.1 Conduct training of state AMR/One Health programme managers on leadership and multisectoral skills for AMR	37	AMRCC						154,428,750.00

1.1.6.2. Conduct training of AMR/One Health programme managers on programme management of AMR at national and subnational level	2	AMRCC		■				65,765,700.00
Strategic intervention 1.2 Monitor and evaluate progress of the AMR NAP 2.0 implementation								
Activity 1.2.1. Conduct annual review of AMR NAP 2.0 implementation								
1.2.1.1. Conduct workshop for M&E officers across sectors and other participants to develop annual monitoring tools	1	AMRCC, AMR TWG	■					6,697,500.00
1.2.1.2. Collect data across pillars	5	AMRCC, AMR TWG	■	■	■	■	■	20,721,117.19
1.2.1.3. Conduct data analysis and produce/disseminate multisectoral annual report	5	AMRCC, AMR TWG	■	■	■	■	■	27,490,015.47
Activity 1.2.2. Conduct mid-term AMR NAP 2.0 implementation evaluation								
1.2.2.1. Conduct a desk review and interviews/assessment across sectors	1	AMRCC, AMR TWG			■			19,431,562.50
1.2.2.2. Conduct workshop to present findings to stakeholders	1	AMRCC, AMR TWG			■			6,284,250.00
Activity 1.2.3. Conduct end-term AMR NAP 2.0 implementation evaluation								
1.2.3.1. Conduct a desk review and interviews/assessment across sectors	1	AMRCC, AMR TWG					■	7,141,099.22
1.2.3.2. Conduct workshop to present findings to stakeholders	1	AMRCC, AMR TWG					■	8,526,776.34
Activity 1.2.4. Improve AMR data harmonisation and sharing								
1.2.4.1. Develop guidelines/SOPs for AMR data sharing and use	1	AMRCC	■					15,170,000.00
1.2.4.2. Conduct data coordination and harmonisation meetings at national level involving state AMR coordinators	20	AMRCC	■	■	■	■	■	486,697,600.50
1.2.4.3. Optimise AMRIS (AMR integrated data analytics) platform	1	AMRCC	■					30,725,000.00

Strategic intervention 1.3. Strengthen AMR-related regulatory frameworks and policies across sectors								
Activity 1.3.1. Support development/review/finalisation of AMR-related policies, legislation, and regulatory frameworks across sectors								
1.3.1.1. Conduct desk review/assessment of current state of policies, legislation, and regulatory frameworks across sectors	1	AMRCC, AMR TWG						3,062,500.00
1.3.1.2. Conduct advocacy to mobilise resources to address identified gaps in the assessment	5	AMRCC, AMR TWG						1,381,407.81
Strategic intervention 1.4. Strengthen subnational engagement on AMR response								
Activity 1.4.1. Support establishment/revitalisation of state AMR programmes								
1.4.1.1. Engage states and identify AMR focal person per state	37	AMRCC, AMR TWG						109,612,500.00
1.4.1.2. Conduct advocacy for buy-in and support of the subnational stakeholders (include NGF, NCH, Nigeria Health Commissioners' Forum, Perm. Secs, Ministry of Finance, partners)	5	AMRCC, AMR TWG						50,559,525.94
Strategic intervention 1.5. Align AMR with other health plans and strategies								
Activity 1.5.1. Engage relevant stakeholders to mainstream AMR into the country's health security, health insurance, primary healthcare, and other related plans								
1.5.1.1. Conduct advocacy to relevant stakeholders, to improve understanding of AMR and the need for integration in relevant infectious disease programmes and response plans across MDAs	1	AMRCC, AMR TWG						9,500,000.00
1.5.1.2. Conduct workshop with relevant MDAs to agree on areas of alignment	1	AMRCC, AMR TWG						9,675,000.00
Strategic intervention 1.6. Ensure availability of required resources for implementation of AMR NAP 2.0								
Activity 1.6.1. Develop resource mobilisation strategy								
1.6.1.1. Map funding sources	5	AMRCC, AMR TWG						4,144,223.44
1.6.1.2. Develop advocacy brief annually	5	AMRCC, AMR TWG						4,420,505.00

1.6.1.3. Conduct advocacy to the quadripartite sector annually to establish budget line	5	AMRCC, AMR TWG						1,105,126.25
1.6.1.4. Establish donors, funders, and partners coordination platform to mobilise and align external funding sources for implementing NAP 2.0 including development of NAP 3.0	5	AMRCC, AMR TWG						12,432,670.31
1.6.1.5. Convene workshop to develop resource mobilisation strategy	5	AMRCC, AMR TWG						6,630,757.50
1.6.1.6 Conduct advocacy to policy makers, decision makers, and government officials to mobilise resources	5	AMRCC, AMR TWG						1,381,407.81

Strategic Objective 2: Improve antimicrobial resistance (AMR) awareness, education, understanding, and behaviour change among all relevant stakeholders

Activity/Sub-activities	Quantity	Responsible entity	Timeframe					Cost
			2024	2025	2026	2027	2028	
Strategic intervention 2.1. Generate evidence on the knowledge, attitudes, beliefs, and perceptions (KABP) of AMR across all target stakeholder groups								
Activity 2.1.1. Identify partners and stakeholders to support the survey								
2.1.1.1. Map all relevant partners and stakeholders who will support the implementation of the KABP survey	**3**	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC	■		■		■	56,621,776.66
2.1.1.2. Conduct outreach and advocacy meetings to solidify partner participation	**3**	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC	■		■		■	87,827,625.44
Activity 2.1.2. Conduct nationwide KABP surveys (baseline, midline, and endline)								
2.1.2.1. Hold meetings to develop the survey tools according to the identified stakeholder groups and implementation plan, including target audience mapping	**1**	AMR TWG, NRCTWG, NCDC, FMAFS, FMOH&SW & FMEnv, academia	■					37,382,500.00
2.1.2.2. Conduct 3-day training of trainers (TOT) for data collectors	**1**	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC	■					18,767,500.00
2.1.2.3. Conduct 3-day training for data collectors at subnational level	**111**	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC, state governments	■		■		■	648,573,999.69
2.1.2.4. Conduct KABP survey among targeted stakeholders including policy makers	**3**	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC, state governments	■		■		■	170,960,272.03
2.1.2.5. Analyse results (for midline and endline, track changes from baseline)	**3**	Consultant, AMR TWG	■		■		■	13,471,105.38

Activity 2.1.3. Create social and behavioural change communication (SBCC) messages and materials for identified target audiences in local languages								
2.1.3.1. Conduct a debriefing meeting to discuss findings from survey and build consensus on awareness, education, and communication priorities	3	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC						45,904,616.47
2.1.3.2. Conduct a content development workshop to develop AMR SBCC messages which are culturally appropriate and tone appropriate, based on identified target audiences	6	AMR TWG, NRCTWG, FMAFS, FMOH&SW & FMEnv, NCDC						166,165,753.00
2.1.3.3. Develop/revise SBCC materials using the agreed messages	1	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC						2,125,000.00
2.1.3.4. Translate developed SBCC materials into Igbo, Hausa, Yoruba, Pidgin, and other languages	5	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC						22,434,062.88
2.1.3.5. Pretest developed SBCC materials in six geopolitical zones	5	AMR TWG, NRCTWG, FMAFS, FMOH&SW & FMEnv, NCDC, state governments						40,613,389.69
2.1.3.6. Incorporate feedback and finalise SBCC materials	4	AMR TWG, NRCTWG, FMAFS, FMOH&SW & FMEnv, NCDC, state governments						62,793,133.59
2.1.3.7. Based on the findings, develop a communications plan to include identification of types as well as channels/media of dissemination (e.g. posters, radio and/or TV jingles, short videos, social media)	1	Consultant, AMR TWG						18,795,000.00
Activity 2.1.4. Develop a timeline for the review of communications messages and materials								
2.1.4.1. Conduct periodic review of SBCC message/materials every two years	**2**	NRCTWG, AMR TWG						43,914,628.41

Activity 2.1.5. Disseminate the survey findings								
2.1.5.1. Publish findings in scientific journals, articles, social media, and other relevant channels	**3**	AMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC, academia and state governments						70,673,533.13
2.1.5.2. Conduct shareback sessions with surveyed communities in each geopolitical zone	**111**	Officers trained at subnational level						484,005,866.70
2.1.5.3. Share findings with national and subnational policy/decision makers and stakeholders	**3**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						57,567,408.44
2.1.5.4. Collaborate with other relevant sectors in using the outcomes to update or review future campaigns and measure impact	**5**	FAMR TWG, FMAFS, FMOH&SW & FMEnv, NCDC, NGOs						95,538,164.31
Activity 2.1.6. Develop a methodology to measure AMR behavioural change outcomes, as seen in the national reporting requirements								
2.1.6.1. Implement the M&E plan and submit annual reports to the governance pillar	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						20,000.00
Strategic intervention 2.2. Ensure AMR awareness activities are conducted throughout the year								
Activity 2.2.1. Develop a national AMR awareness strategy to outline annual awareness activities and target groups								
2.2.1.1. Engage a consultant to develop an annual AMR awareness strategy	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						7,810,000.00
2.2.1.2. Conduct a workshop to validate annual AMR awareness strategy	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						173,120,000.00
Activity 2.2.2. Advocate for the inclusion of AMR in state awareness activities, to sustain AMR awareness activities beyond WAAW								
2.2.2.1. Identify stakeholders that need to be engaged in developing and implementing the state plans including communication and behaviour change experts	**1**	NRCTWG, AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, NOA, state One Health Ministries						11,355,000.00

2.2.2.2. Engage identified stakeholders for the development and implementation of the plan	**9**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						15,848,352.19
Activity 2.2.3. Develop a centralised platform for reporting of AMR awareness activities								
2.2.3.1. Revamp the existing Community of Practice to include a section for reporting AMR awareness activities during WAAW and beyond – a standardised template tied to M&E for awareness	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						4,060,000.00
2.2.3.2. Conduct a sensitisation programme for One Health stakeholders regarding the AMR awareness activities and knowledge sharing on the platform	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						28,070,206.75
Activity 2.2.4. Conduct coordinated World AMR Awareness Week (WAAW) activities								
2.2.4.1. Conduct official National WAAW launch	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						25,859,954.25
2.2.4.2. Support 10 health facilities in each of the 6 geopolitical zones to host seminars and awareness activities	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						361,818,334.25
2.2.4.3. Support outreach/engagement with 10 communities in each of the 6 geopolitical zones	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						749,275,597.50
2.2.4.4. Conduct annual innovation competition for AMR	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						37,021,729.38
Strategic intervention 2.3. Engage multisectoral technical and non-technical target audiences/stakeholders across all sectors and subsectors to broaden AMR awareness campaign reach								
Activity 2.3.1. Conduct multisectoral stakeholder mapping across One Health technical and non-technical target audiences in all sectors and subsectors								
2.3.1.1. Map all relevant stakeholders including federal and state MDAs; public and private associations across sectors including human health, animal health, environmental health, plant health, education, etc.	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						59,613,750.00
2.3.1.2. Conduct advocacy visits to associations	**15**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						53,846,117.19

- human health sector agencies and associations - livestock, crops, and aquaculture (cattle, sheep, goats, pigs, poultry, etc.), farmers' associations, livestock marketers, feed millers, drug vendors, dog breeders, and consumer associations - environmental health agencies and associations, including plant life								
2.3.1.3. Conduct advocacy visits to federal and state MDAs	**10**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						40,438,289.06
Activity 2.3.2. Map CSOs to ensure the voices of the communities are heard, ensure CSO support with awareness and outreach, patient advocacy, map their funding, and ensure accountability								
2.3.2.1. Conduct advocacy visits to CSO networks	**4**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, State One Health Ministries						22,924,289.06
2.3.2.2 Conduct orientation training for CSOs on AMR to support awareness strategy implementation	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, State One Health Ministries						13,589,625.00
Strategic intervention 2.4. Improve engagement with and use of various media channels (traditional mass media and social/new media) and content								
Activity 2.4.1. Identify and train AMR spokespersons across the One Health sectors								
2.4.1.1. Identify and train media spokespersons across the One Health sectors/MDAs	**5**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						48,874,208.41
2.4.1.2. Develop a database of trained media spokespersons across the One Health sectors/MDAs including roles and responsibilities	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						1,875,000.00
2.4.1.3. Regularly update the database to align with current conditions and requirements	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						532,500.00
2.4.1.4. Conduct quarterly One Health media appearances (radio, TV, newspapers, social media)	**4**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						57,566,029.50

Activity 2.4.2. Identify additional media channels and content for target audiences to share AMR messages								
2.4.2.1. Utilise social media platforms, including Facebook, Twitter, and WhatsApp, to disseminate information on AMR to healthcare workers (HCWs) and the general public, with a particular focus on engaging and educating youth	**8**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						27,153,787.50
2.4.2.2. Engage telecommunication companies to enhance awareness through the distribution of free text messages and other communications methods such as call back audio to the Nigerian population	**40**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						11,051,262.50
2.4.2.3. Develop edutainment material including films, animations, radio dramas, etc.	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						42,584,062.50
2.4.2.4. Set up a committee to identify and engage potential influential Nigerians and patients as AMR champions from different disciplines	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						7,181,685.00
2.4.2.5. Conduct a workshop to onboard and train selected AMR champions, including equipping them with roles and responsibilities, terms of reference, etc.	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						22,052,756.25
2.4.2.6. Conduct a workshop to onboard and train selected AMR patients, including equipping them with roles and responsibilities, terms of reference, etc.	**1**	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						7,116,637.50
Strategic intervention 2.5. Create/increase AMR awareness in unreached/hard-to-reach locations (subnational, LGA, grassroots level, etc.)								
Activity 2.5.1. Strengthen AMR risk communication of the subnational risk communication TWGs								
2.5.1.1. Conduct training of trainers for National Risk Communication Technical Working Group (NRCTWG) on AMR	**1**	AMR TWG, NCDC, FMAFS, FMEnv, FMOH&SW						76,046,775.00
2.5.1.2. Conduct workshops with subnational risk communication TWGs	**1**	AMR TWG, NRCTWG, NCDC, FMAFS, FMEnv, FMOH&SW						37,338,367.50

2.5.1.3. Review progress on AMR risk communication activities biannually	**12**	AMRCC, AMR-NTWG, NCDC, FMAFS, FMEnv, FMOH&SW						29,646,059.63
2.5.1.4. Develop an HTR engagement strategy for AMR – using One Health	**1**	AMR TWG, NRCTWG, NCDC, FMAFS, FMEnv, FMOH&SW						23,632,087.50
Activity 2.5.2. Increase collaborations with existing One Health sector health programmes and structures, agencies, development partners, religious and community leaders to increase grassroots awareness of AMR and disseminate information to communities and the public								
2.5.2.1. Identify One Health stakeholders, programmes, such as NPHCDA, malaria, TB programmes, etc.	**1**	AMR TWG, NRCTWG, NCDC, FMAFS, FMEnv, FMOH&SW						9,437,500.00
2.5.2.2. Conduct advocacy visits to One Health agencies, programmes such as NPHCDA, malaria, TB programmes, etc., for AMR activities	**4**	AMR TWG, NRCTWG, NCDC, FMAFS, FMEnv, FMOH&SW						104,419,889.83
2.5.2.3. Conduct trainings on AMR with selected programmes and structures such as Community Health Influencers Promoters and Services (CHIPS), Community Volunteers, Community Health Workers, Community Animal Health Workers, Community Health Extension Workers, Ward Development Committees (WDCs), town announcers, etc., to leverage their existing structures to access the unreached	**5**	AMR TWG, NRCTWG, NCDC, FMAFS, FMEnv, FMOH&SW, State One Health Ministries						430,220,123.49
2.5.2.4. Develop an AMR awareness campaign programme to disseminate information during village meetings, at mosque and church services, and in antenatal and immunisation clinics	**1**	AMR TWG, NRCTWG, NCDC, FMAFS, FMEnv, FMOH&SW						2,294,250.00
2.5.2.5. Review progress on AMR risk communication activities biannually	8	AMR TWG						90,420,000.00
Strategic intervention 2.6. Engage decision makers, policy makers, and government officials on AMR and the role they play								
Activity 2.6.1. Target policy makers and government officials – including Nigeria Governors' Forum – to advocate for high-level political commitment and support and to increase AMR awareness								
2.6.1.1. Map relevant policy makers and government stakeholders	3	AMR TWG						45,247,500.00

2.6.1.2. Synthesise evidence to develop relevant AMR materials for decision makers (policy briefs, slide decks, etc.) and produce materials	3	AMR TWG						5,400,000.00
Strategic intervention 2.7. Build the technical capacity of targeted One Health professionals on AMR								
Activity 2.7.1. Develop/increase uptake of continuous professional development (CPD) and education for targeted One Health professionals								
2.7.1.1. Develop AMR training courses for plant health professionals	3	AMR TWG, FMAFS, NAQS, academia, FMAFS, VCN						11,250,000.00
2.7.1.2. Develop AMR training courses for aquaculture	3	AMR TWG, FMAFS, NAQS, academia, FMAFS, VCN						11,250,000.00
2.7.1.3. Develop AMR training courses for small-scale coaching of veterinarians, veterinary paraprofessionals, and farmers in priority FAS to guide them to good AMU practices	3	AMR TWG, FMAFS, NAQS, academia, FMAFS, VCN						11,250,000.00
2.7.1.4. Improve existing and develop new AMR training courses for human health	3	AMR TWG, NCDC, FMOH&SW, FMEnv, FMAFS, councils, CSOs, NGOs						5,625,000.00
2.7.1.5. Obtain accreditation for existing One Health AMR courses to ensure they can serve as CPD (pre-service, in-service, and others) and integrate them onto an e-learning platform	1	AMR TWG, councils						36,927,500.00
Activity 2.7.2. Leverage annual professional council events to hold side events, pre-event workshops, etc.								
2.7.2.1. Advocacy to all national and subnational One Health professional councils and associations for inclusion of AMR in their events and conferences	4	AMR TWG, NCDC, FMOH&SW, FMEnv, FMAFS, councils, CSOs, NGOs						7,880,000.00
Strategic intervention 2.8. Enhance youth engagement with AMR								
Activity 2.8.1. Partner with the National Youth Service Corps (NYSC) for the creation of AMR One Health community development service (CDS)								
2.8.1.1. Conduct advocacy to the NYSC leadership	5	AMR TWG, NCDC, FMAFS, FMEnv, FMOH&SW						8,000,000.00

2.8.1.2. Integrate AMR into existing relevant CDS	1	NCDC, FMAFS, FMEnv, FMOH&SW, NYSC						1,305,000.00
2.8.1.3. Engage subnational AMR support structures to conduct training of CDS groups	1	AMR TWG, NRCTWG, NYSC						500,000.00
2.8.1.4. Conduct monitoring visits with one NYSC AMR CDS group from each geopolitical zone, per year	36	AMR TWG, NRCTWG, NYSC						44,820,000.00
Activity 2.8.2. Integrate AMR into secondary school curricula across the 774 LGAs in Nigeria, leveraging existing structures								
2.8.2.1. Scale up AMR curriculum in the Health and Hygiene Clubs in 30 secondary schools to 10 in each geopolitical zone (60 total)	60	AMR TWG, NCDC, FMAFS, FMOH&SW, FMEnv, NGOs, Federal Ministry of Education, State Ministries of Education, National Secondary School Education Commission (NSSEC), Nigerian Educational Research and Development Council						89,742,500.00
2.8.2.2. Use results to inform the integration of AMR into school curricula	4	AMR TWG, NCDC, FMAFS, FMOH&SW, FMEnv, NGOs, Federal Ministry of Education, State Ministries of Education, National Secondary School Education Commission (NSSEC), Nigerian Educational Research and Development Council						37,630,000.00
2.8.2.3. Conduct a national needs assessment for AMR in schools	1	AMRC TWG, NCDC, FMAFS, FMOH&SW, FMEnv, NGOs						11,560,000.00
2.8.2.4. Conduct advocacy meetings with Federal Ministry of Education (Department of Basic and Secondary School Education), the National Secondary School Education Commission (NSSEC), and Nigerian Educational Research and Development Council	6	AMRC TWG, NCDC, FMAFS, FMOH&SW, FMEnv, NGOs						11,700,000.00

2.8.2.5. Finalise AMR curriculum content	1	AMR TWG, NCDC, FMAFS, FMOH&SW, FMEnv, Federal Ministry of Education, State Ministries of Education, National Secondary School Education Commission (NSSEC), Nigerian Educational Research and Development Council						22,810,000.00
2.8.2.6. Pilot and validate the revised curricula to integrate AMR in 12 schools (2 per geopolitical zone) - Map and identify the pilot schools to validate the revised curricula in each of the six geopolitical zones - Pilot the revised curricula in the identified schools	5	AMR TWG, NCDC, FMAFS, FMOH&SW, FMEnv, Federal Ministry of Education, State Ministries of Education, National Secondary School Education Commission (NSSEC), Nigerian Educational Research and Development Council						59,554,000.00
2.8.2.7. Validate the revised curricula based on findings from the pilot interventions	2	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC						16,000,000.00
2.8.2.8. Conduct teacher training on the new AMR component of the curriculum	38	FMAFS, FMOH&SW, FMEnv, NCDC, Federal Ministry of Education, State Ministries of Education, National Secondary School Education Commission (NSSEC), Nigerian Educational Research and Development Council						621,198,500.00
Activity 2.8.3. Integrate AMR into undergraduate and postgraduate curricula for One Health professionals in collaboration with National University Commission (NUC) and the relevant regulatory bodies								
2.8.3.1. Map all NGOs and CSOs involved in AMR education at tertiary institutions and involve them	6	AMR TWG, NCDC, FMAFS, FMOH&SW, FMEnv, NBTE, NCCE						67,705,000.00

2.8.3.2. Joint advocacy to NUC and other relevant regulatory bodies to include AMR in relevant curricula	10	AMR TWG, NCDC, FMAFS, FMOH&SW, FMEnv, Federal Ministry of Education						11,000,000.00
2.8.3.3. Map and identify various course curricula to include AMR	1	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, One Health Councils						5,935,000.00
2.8.3.4. Adapt global recommendations and best practices for inclusion of AMR in tertiary curricula	1	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, NGOs, NUC, One Health Councils						33,417,500.00
Activity 2.8.4. Integrate AMR in undergraduate and postgraduate curricula for One Health paraprofessionals in collaboration with National Board for Technical Education (NBTE), National Commission for Colleges of Education (NCCE), and the relevant regulatory bodies								
2.8.4.1. Joint advocacy to NBTE, NCCE, and other relevant regulatory bodies to include AMR in relevant curricula	6	AMR TWG, FMAFS, FMOH&SW, FMEnv, Federal Ministry of Education						10,500,000.00
2.8.4.2. Map and identify various course curricula to include AMR	1	AMR TWG, FMAFS, FMOH&SW, FMEnv, Federal Ministry of Education, One Health Councils, academia						6,555,000.00
2.8.4.3. Adapt global recommendations and best practices for inclusion of AMR in tertiary curricula	1	AMR TWG, FMAFS, FMOH&SW, FMEnv, Federal Ministry of Education, One Health Councils, academia						22,207,500.00
Activity 2.8.5. Pilot and validate the revised curricula to integrate AMR								
2.8.5.1. Map and identify the pilot tertiary institutions to validate the revised curricula in each of the six geopolitical zones	1	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, NUC, One Health Councils, NBTE, NCCE, universities						5,935,000.00

2.8.5.2. Pilot the revised curricula in the identified tertiary institutions	2	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, NUC, One Health Councils, NBTE, NCCE, universities						65,024,000.00
2.8.5.3. Validate the revised curricula based on findings from the pilot interventions	3	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, NUC, One Health Councils, NBTE, NCCE, universities						47,030,000.00
2.8.5.4. Conduct workshops to sensitise faculties on integrated AMR curriculum	4	AMR TWG, FMAFS, FMOH&SW, FMEnv, NCDC, NUC, One Health Councils, NBTE, NCCE, universities						135,290,000.00

Strategic Objective 3: Improve evidence base through strengthening One Health AMR surveillance systems and operational research for decision making

Activity/Sub-activities	Quantity	Responsible entity	Timeframe 2024	2025	2026	2027	2028	Cost
Strategic intervention 3.1. Strengthen and expand AMR surveillance capacity to address geographical disparities within the six geopolitical zones in Nigeria and disparities among the One Health sectors								
Activity 3.1.1. Increase participation of private laboratories in the national surveillance networks (easily accessible to the community)								
3.1.1.1. Identify and assess private facilities with high clientele which are approved and aligned with national requirements. NHIA or MLSCN (Human) approved – 12	95	NCDC, FMOH&SW						228,263,826.90
3.1.1.2. Engage and enrol private facilities with high clientele which are approved and aligned with national requirements. NHIA or MLSCN (Human) approved – 12	60	NCDC, FMOH&SW						62,902,448.44
3.1.1.3. Identify and assess private facilities with high clientele which are approved and aligned with national requirements. WOAH/FAO (animal) – 6	50	FMAFS, NVRI						57,742,846.56
3.1.1.4. Engage and enrol private facilities with high clientele which are approved and aligned with national requirements. WOAH/FAO (animal) – 6	30	FMAFS, NVRI						28,843,795.13
3.1.1.5. Identify and assess private facilities with high clientele which are approved and aligned with national requirements. NESREA (environment) certified – 6	50	FMEnv, NESREA						48,072,991.88
3.1.1.6. Engage and enrol private facilities with high clientele which are approved and aligned with national requirements. NESREA (environment) certified – 6	30	FMEnv, NESREA						28,843,795.13

Activity 3.1.2. Strengthen AMR laboratory capacity for the environment and establish a national AMR surveillance network (spatiotemporal insight into possible burden of AMR in the community)								
3.1.2.1. Identify and assess public/university environment laboratories from universities in the remaining four geopolitical zones (North Central, South East, South West, North East)	6	FMEnv, NESREA, NCDC						82,167,869.66
3.1.2.2. Engage and enrol public environment laboratories from universities in the remaining four geopolitical zones (North Central, South East, South West, North East)	4	FMEnv, NESREA, NCDC						19,229,196.75
3.1.2.3. Upgrade the laboratory infrastructure (procure laboratory and data management equipment and consumables for AMR surveillance)	1	FMEnv, NESREA, NCDC						440,000,000.00
3.1.2.4. Train staff in AMR laboratory methods and data sharing	1	FMEnv, NESREA, NCDC						6,434,000.00
Activity 3.1.3. Identify priority pathogens for environment and include AMR-related indicators in existing environmental surveillance structures, including the Integrated National Environmental Health Surveillance System (stakeholder engagement)								
3.1.3.1. Conduct workshops to identify priority pathogens, review indicator matrix, reference sheets, and surveillance data collection tools to develop the AMR Surveillance Guidelines in Environmental Health	3	FMEnv						48,465,000.00
3.1.3.2. Train the laboratory staff in the reviewed tools	2	FMEnv						29,420,000.00
3.1.3.3. Print and disseminate the updated INEHSS surveillance guidelines	1	FMEnv						4,500,000.00
Activity 3.1.4. Monitor antimicrobial resistance and antimicrobial residues in wastewater from hospitals, agricultural farms, and pharmaceutical industries								
3.1.4.1. Mapping of sampling hotspots, which should include wastewater from hospitals, agricultural farms, pharmaceutical industries, abattoirs, manure from farms, farm settlements and oil spill sites	1	FMEnv, NESREA						3,350,000.00

3.1.4.2. Regular sampling of wastewater and soil and data reporting from the identified hotspots	185	FMEnv, NESREA						207,321,684.50
Activity 3.1.5. Capacity building for existing and additional labs to join the surveillance network and consolidate a nationwide network of high-capacity labs with a quality assurance system								
3.1.5.1. Identify the capacity needs for animal, environmental, and human health surveillance laboratories and their personnel	55	NCDC, FMOH&SW, FMAFS, FMEnv						596,750,000.00
3.1.5.2. Upgrade the laboratory infrastructure	25	NCDC, FMOH&SW FMAFS, FMEnv						1,785,000,000.00
3.1.5.3. Procure laboratory and data management equipment and consumables for AMR surveillance	55	NCDC, FMOH&SW, FMAFS, FMEnv						1,275,000,000.00
3.1.5.4. Train staff in AMR laboratory methods and data sharing	20	NCDC, FMOH&SW, FMAFS, FMEnv						405,912,871.63
Activity 3.1.6. Include clinical cases in AMR surveillance for human and animal health								
3.1.6.1. Harmonise and update the national surveillance protocol in food animals to include AMR clinical samples	1	NCDC, FMOH&SW, FMAFS, FMEnv						15,649,987.50
3.1.6.2. Update the national surveillance protocol in human health to include AMR clinical samples and syndromic data	1	NCDC, FMOH&SW, FMAFS, FMEnv						15,649,987.50
3.1.6.3. Install laboratory management information systems (LIMS, WHONET) at AMR surveillance sites with in-country training and on-site supervision	75	NCDC, FMOH&SW, FMAFS, FMEnv						446,683,611.63

3.1.6.4. Develop and deploy online training modules on installing LIMS, WHONET, and AMRIS	1	NCDC, FMOH&SW, FMAFS, FMEnv						6,231,750.00
Activity 3.1.7. Bolster the National Diagnostic Stewardship Programme in humans including implementation of clinical decision support systems within healthcare facilities								
3.1.7.1. Develop and disseminate guidelines and toolkit for appropriate diagnostic stewardship	4	NCDC, FMOH&SW						69,990,500.00
3.1.7.2. Develop and disseminate online training programmes for healthcare professionals, emphasising the importance of targeted testing and interpretation of results	1	NCDC, FMOH&SW						no cost
3.1.7.3. Implement standardised reporting mechanisms for diagnostic stewardship and correlate AMR data with diagnostic practices on AMRIS	210	NCDC, FMOH&SW						201,906,565.88
3.1.7.4. Conduct annual diagnostic stewardship audits including tracking of diagnostic stewardship activities during AMS programme assessments	210	NCDC, FMOH&SW						201,906,565.88
3.1.7.5. Implement and monitor monthly AST result feedback for bacterial and fungal isolates from sentinel labs and NRLs in clinical and outbreak settings	60	NCDC, FMOH&SW						3,978,454.50
Activity 3.1.8. Integrate molecular characterisation for microbial identification and detection of AMR during surveillance								
3.1.8.1. Procure equipment for molecular characterisation and bioinformatics at four labs selected: NVRI, NRL, UI, Environment	1	NCDC, FMOH&SW, FMAFS, FMEnv						56,140,000.00
3.1.8.2. Prioritise specific samples for molecular characterisation. In environmental sector, prioritise samples from farms, abattoirs, and pharmaceutical industries for molecular identification and metagenomics at least twice yearly; in animal health, prioritise *Staphylococcus aureus*, *Escherichia coli*, *Streptococci* for molecular	20	NCDC, FMOH&SW, FMAFS, FMEnv						40,779,158.63

identification and metagenomics; in human health, send all blood culture isolates and priority isolates from other samples for molecular identification and metagenomics								
3.1.8.3. Train and/or recruit staff in each lab in genomics and bioinformatics techniques	1	NCDC, FMOH&SW, FMAFS, FMEnv						16,484,000.00
Activity 3.1.9. Establish a national reference laboratory (NRL) within the plant health sector and identify priority pathogens in plant health sector								
3.1.9.1. Hire a consultant to map and assess high-capacity plant health laboratories across the country	1	FMAFS, FMEnv, NESREA, NCDC (capacity-building support)						5,935,000.00
3.1.9.2. Identify a national reference laboratory for plant health	1	FMAFS, FMEnv, NESREA, UNEP, NCDC (capacity-building support)						17,625,500.00
3.1.9.3. Conduct workshops to develop, validate, and disseminate surveillance protocols for plant health including the priority pathogen list	4	FMAFS, FMEnv, NESREA, NCDC (capacity-building support)						45,558,125.00
Activity 3.1.10. Train surveillance and lab officers to understand their role in surveillance to strengthen the link between the labs and focal managers and surveillance officers								
3.1.10.1. Conduct national orientation workshop on networking and collaboration between the surveillance actors	1	NCDC, FMOH&SW FMAFS, FMEnv						17,058,000.00
3.1.10.2. Conduct zonal training workshops on networking and collaboration between the One Health surveillance actors. Develop and deploy a quarterly assessment tracking for beneficiaries of training	12	NCDC, FMOH&SW, FMAFS, FMEnv						288,302,388.63

Activity 3.1.11. Expand healthcare-associated infection (HAI)/multidrug-resistant organisms (MDRO)/zoonotic surveillance system								
3.1.11.1. Develop priority pathogen list for bacterial HAIs and zoonotic/MDRO	1	NCDC, FMOH&SW,FMAFS, FMEnv						11,625,000.00
3.1.11.2. Expand HAI point prevalence sites (leveraging HAInet and antimicrobial stewardship networks)	6	NCDC, FMOH&SW, FMAFS, FMEnv						20,434,799.19
3.1.11.3. Develop and deploy surveillance protocol for zoonotic and resistant pathogens in animal handlers (occupational health)	4	NCDC, FMOH&SW, FMAFS, FMEnv						43,008,125.00
3.1.11.4. Update HAI surveillance protocol	1	NCDC, FMOH&SW, FMAFS, FMEnv						4,682,500.00
Activity 3.1.12. Expand routine AMR surveillance to include gonococci								
3.1.12.1. Review the AMR surveillance protocol to include AMR in gonococci	1	NCDC, FMOH&SW						5,162,456.25
3.1.12.2. Operationalise surveillance of AMR in gonococci in AMR surveillance labs	6	NCDC, FMOH&SW						33,435,572.63
Activity 3.1.13. Support distribution of samples, consumables, and reagents between field sites, AMR sentinel labs, and the central procurement units								
3.1.13.1. Procure consumables and sample shipment materials for AMR sentinel labs	5	NCDC, FMOH&SW, FMAFS, FMEnv						276,281,562.50
3.1.13.2. Engage logistics companies to transport AMR samples from the field to AMR sentinel sites	5	NCDC, FMOH&SW, FMAFS, FMEnv						38,679,418.75

3.1.13.3. Engage logistics companies to transport procured consumables and reagents to the AMR sentinel labs	5	NCDC, FMOH&SW, FMAFS, FMEnv						38,679,418.75
Strategic intervention 3.2. Ensure standardisation and quality control for data across the One Health sectors at national and subnational levels								
Activity 3.2.1. Develop and disseminate guidelines and standard operating procedures for AMR data collection in all sectors at national and subnational levels								
3.2.1.1. Harmonise and update the AMR surveillance guidelines (to include animal health, aquaculture, environmental, and food safety samples), reference strains (to include antibiotics of clinical relevance), and SOPs for safe waste disposal)	1	NCDC, FMOH&SW, FMAFS, FMEnv						10,690,000.00
3.2.1.2. Disseminate the updated AMR lab surveillance guide to all labs contributing to AMR surveillance – single document to all labs	1	NCDC, FMOH&SW, FMAFS, FMEnv						4,500,000.00
3.2.1.3. Train lab managers or quality assurance managers on the new guidelines and SOPs	2	NCDC, FMOH&SW, FMAFS, FMEnv						81,310,000.00
3.2.1.4. Enrol AMR surveillance labs into quality assurance scheme and conduct periodic quality control assessment	276	NCDC, FMOH&SW, FMAFS, FMEnv						287,625,000.00
3.2.1.5. Conduct biannual quality assurance and control review meetings for feedback from AMR labs	10	NCDC, FMOH&SW, FMAFS, FMEnv						290,450,000.00
Activity 3.2.2. Update and deploy systems for standardised data entry and reporting								
3.2.2.1. Conduct quarterly virtual AMRIS training for AMR surveillance stakeholders (lab and epidemiology)	20	NCDC, FMOH&SW, FMAFS, FMEnv						400,000.00

3.2.2.2. Provide periodic technical support to AMR labs on data management and reporting	100	NCDC, FMOH&SW, FMAFS, FMEnv						87,000,000.00
Activity 3.2.3 Develop frameworks for data analysis and dissemination								
3.2.3.1. Hire IT consultants to optimise the human and animal data collection forms, develop modules on environment, genomic surveillance, diagnostic stewardship, public information bulletin, and offline modules on AMR Information System – it already produces and reports	1	NCDC						5,935,000
3.2.3.2. Procure server space for AMRIS platform and laptops for the One Health AMR surveillance network sites	5	NCDC						125,000,000.00
3.2.3.3. Train facility IT specialists in the maintenance of electronic devices (laptops, platform, server spaces, etc.)	2	NCDC						39,655,000.00
3.2.3.4. Upgrade AMRIS platform to be interoperable with the existing databases on AMR (WHONET, SORMAS, NADIS, ACORN for diagnostic stewardship, SEDRI LIMS for laboratory, INEHSS for environment, TB resistance data, malaria resistance data, HIV resistance data, Microreact for genomic surveillance data, eN-LIS) and customise AMRIS to capture clinical data	1	NCDC						11,560,000
3.2.3.5. Hold at least two meetings with all relevant stakeholders per data system for integration	18	NCDC						14,850,000.00
3.2.3.6. Hold two multi-partner multi-stakeholder integration meetings to develop a road map for data platform integrations	2	NCDC						25,525,000.00
3.2.3.7. Disseminate the AMR public information bulletin monthly through the Community of Practice website	124	NCDC						no cost

Activity 3.2.4. Use of AMR surveillance data for decision making at national and subnational level								
3.2.4.1. Develop national/local antibiograms that define priority drug–bug combinations for priority/most common bacterial infections in an antibiotic handbook	1	NCDC, FMOH&SW, FMAFS, FMEnv						no cost
3.2.4.2. Biannually disseminate/publish the antibiograms to experts in the One Health space to update standard treatment guidelines, EML, and other relevant documents in One Health sectors	10	NCDC, FMOH&SW, FMAFS, FMEnv						no cost
Activity 3.2.5. Expand and establish surveillance focal points in clinical settings, food chain, terrestrial and aquatic production value chains, and the environment								
3.2.5.1. Map organisations and the departments in those institutions that require national surveillance points	1	NCDC, FMOH&SW, FMAFS, FMEnv						56,100,000.00
3.2.5.2. Designate state-level AMR surveillance focal points in human, animal, and environmental health	108	NCDC, FMOH, FMAFS, FMEnv						no cost
3.2.5.3. Train the state-level AMR surveillance focal points and develop ToR	12	NCDC, FMOH, FMAFS, FMEnv						same as 3.1.10.2
Activity 3.2.6. Integrate AMR data from special research and development projects with high AMR risk profiles								
3.2.6.1. Biannual meetings with relevant stakeholders to capture high AMR risk projects planned for Nigeria (MDA planning departments, partner agencies, academia)	8	NCDC, FMOH&SW, FMAFS, FMEnv						195,720,000.00
3.2.6.2. Create a module in AMRIS to integrate data from these projects into AMR surveillance	1	NCDC, FMOH&SW, FMAFS, FMEnv						captured in 3.2.3.4
3.2.6.3. Disseminate annual reports on these special projects through AMR COP and TWG forums	16	NCDC, FMOH&SW, FMAFS, FMEnv						no cost

Activity 3.2.7. Strengthen the implementation of standards for AST breakpoints to enhance data quality in the laboratory								
3.2.7.1. Pay national fees to access the CLSI and CLSI-Vet standards for the national AMR surveillance network	5	NCDC, FMAFS						12,500,000.00
3.2.7.2. Organise quarterly webinars to promote use of standards via AMR/AMU COP	20	NCDC, FMAFS						no cost
3.2.7.3. Conduct on-site hands-on training sessions for laboratory professionals on integrating the standards as part of internal quality assurance actions	8	NCDC, FMAFS						151,410,000.00
Strategic intervention 3.3. Enhance surveillance data with further studies and mapping exercises								
Activity 3.3.1. Conduct periodic systematic reviews and meta-analysis of existing publications of surveillance studies on AMR, AMU, and antimicrobial residue in One Health sectors								
3.3.1.1. Identify a team of experts to conduct annual systematic reviews of existing AMR/AMU/antimicrobial residue data in Nigeria	5	NCDC, FMOH&SW, FMAFS, FMEnv						90,000,000.00
3.3.1.2. Disseminate the review report as policy briefs and other communication materials	1	NCDC, FMOH&SW, FMAFS, FMEnv						4,500,000.00
3.3.1.3. Publish in a reputable journal in compliance with publication guidelines	1	NCDC, FMOH&SW, FMAFS, FMEnv						5,000,000.00
Activity 3.3.2. Develop or review and validate the national residue monitoring and control plans for food of animal origin and in the environment								
3.3.2.1. Conduct a workshop to review and validate national residue monitoring and control plans for food of animal origin	2	FMOH&SW, FMAFS, FMEnv, NCDC						46,825,000.00

3.3.2.2. Conduct a workshop to develop and validate national residue monitoring and control plans for the environment sector	2	FMOH&SW, FMAFS, FMEnv, NCDC						46,825,000.00
Activity 3.3.3. Build capacity of field officers on residue monitoring and control in food of animal origin and in environment								
3.3.3.1. Conduct TOT for national officers from animal sector on residue monitoring and control	1	FMOH&SW, FMAFS, FMEnv, NCDC						24,855,000.00
3.3.3.2. Conduct cascade training of field officers from animal sector on residue monitoring and control	6	FMOH&SW, FMAFS, FMEnv, NCDC						146,862,000.00
3.3.3.3. Conduct TOT of national officers from environmental sector on residue monitoring and control	1	FMOH&SW, FMAFS, FMEnv, NCDC						24,855,000.00
3.3.3.4. Conduct cascade training of field officers from environmental sector on residue monitoring and control	6	FMOH&SW, FMAFS, FMEnv, NCDC						151,410,000.00
Activity 3.3.4. AMR prevalence survey in human health facilities								
3.3.4.1. Develop and deploy rapid assessment protocol for national AMR prevalence survey	1	NCDC						5,935,000.00
3.3.4.2. Perform biennial rapid survey of 75 non-sentinel sites (two in each state)	76	NCDC						180,135,000.00
Activity 3.3.5. Assess status of AMR surveillance activities in plant health and develop strategy and protocol								
3.3.5.1. Map AMR hotspots along the plant production value chain (using varied methods)	1	FMAFS						11,560,000.00

3.3.5.2. Conduct meetings to review draft, validate and finalise hotspots report	2	FMAFS						28,275,000.00
3.3.5.3. Print and disseminate a validated AMR surveillance in plant health report	1	FMAFS						6,750,000.00
3.3.5.4. Develop AMR surveillance strategy for plant health sector	1	FMAFS						same consultant as in 3.3.5.1
3.3.5.5. Develop AMR surveillance protocol for plant health sector	1	FMAFS						same consultant as in 3.3.5.1
Activity 3.3.6. Conduct annual One Health surveillance system assessment/evaluation for continuous improvements								
3.3.6.1. Conduct site-driven surveillance system assessment using FAO ATLAS tool annually	4	NCDC, FMAFS, FMEnv						5,020,000.00
3.3.6.2. Set up a team and train assessors	1	NCDC, FMAFS, FMEnv						8,305,000.00
3.3.6.3. Review reports and give feedback	4	NCDC, FMAFS, FMEnv						77,100,000.00
Strategic intervention 3.4. Implement the residue monitoring and control plan in animal health and environment								
Activity 3.4.1. Upgrade sentinel laboratories to detect AM residues								
3.4.1.1. Designate the NVRI, NESREA labs (Kano and Rivers), and Federal Fisheries Laboratory as AMR residue surveillance sites	1	FMAFS, FMEnv						same as 3.3.6.1
3.4.1.2. Develop SOPs and protocols for AM residue testing and reporting in Nigeria	1	FMAFS, FMEnv						same as 3.3.6.1
3.4.1.3. Procure and install necessary equipment (HPLC and others)	1	FMAFS, FMEnv						50,000,000.00
3.4.1.4. Consultative meetings with private sector professionals on how to leverage the laboratory resource	2	FMAFS, FMEnv						19,275,000.00

Activity 3.4.2. Conduct residue monitoring and control in animal and environment sector								
3.4.2.1. Conduct residue monitoring in food of animal origin	4	FMAFS						115,652,500.00
3.4.2.2. Conduct residue monitoring in environment	4	FMEnv						115,652,500.00
3.4.2.3. Support field officers with sample collection, transportation, and analysis at the subnational level	4	FMAFS, FMEnv						already captured in 3.4.2.1 and 3.4.2.2
Strategic intervention 3.5. Obtain ISO17025 certification of One Health NRLs								
Activity 3.5.1. Attain ISO17025 accreditation for AMR reference laboratories in One Health sector for bacteriology and mycology								
3.5.1.1. Hire a qualified consultant for the national reference labs to drive the accreditation process according to the appropriate ISO	1	NCDC, FMOH&SW, FMAFS, FMEnv						34,370,000.00
3.5.1.2. Address identified gaps in accreditation through appropriate accreditation programme	4	NCDC, FMOH&SW, FMAFS FMEnv						same as 3.5.1.1 above
Strategic intervention 3.6. Strengthen One Health surveillance implementation plan								
Activity 3.6.1. Expand integrated surveillance for index bacterial organism(s) across One Health sectors								
3.6.1.1. Hold three consultative meetings to review findings from the Tricycle pilot project in Osun State and adapt protocol for integrated AMR surveillance – validate this at the last meeting	3	NCDC, FMOH&SW, FMAFS, FMEnv						10,597,500.00
3.6.1.2. Print and disseminate the integrated bacteria/AMR surveillance implementation plan	1	NCDC, FMOH&SW, FMAFS, FMEnv						1,350,000.00
3.6.1.3. Expand pilot to six additional zonal sites within the surveillance network (fieldwork)	5	NCDC, FMOH&SW, FMAFS, FMEnv						23,532,500.00

Activity 3.6.2. Establish integrated surveillance for index fungal organisms in health sector								
3.6.2.1. Designate and upgrade NRL for fungal surveillance (LUTH)	5	NCDC, FMOH&SW						15,000,000.00
3.6.2.2. Hold three consultative meetings to review findings from pilot project in Lagos State and adapt protocol for fungal AMR surveillance – validate this at the last meeting	3	NCDC, FMOH&SW						10,597,500.00
3.6.2.3. Print and disseminate the fungal AMR surveillance protocol in health sector	1	NCDC, FMOH&SW						1,350,000.00
3.6.2.4. Expand pilot to two additional sites within the surveillance network	9	NCDC, FMOH&SW						7,890,000.00
Strategic intervention 3.7. Strengthen AMR surveillance within the aquaculture sector								
Activity 3.7.1. Improve laboratory capacity for AMR surveillance in aquaculture								
3.7.1.1. Map and assess current capacity for AMR surveillance in aquaculture sector (review of existing labs)	1	FMAFS						5,935,000.00
3.7.1.2. Update laboratory infrastructure	1	FMAFS						60,000,000.00
3.7.1.3. Procure laboratory and data management equipment and consumables for AMR surveillance	1	FMAFS						5,000,000
3.7.1.4. Train staff in AMR surveillance protocol in aquaculture and data sharing	4	FMAFS						27,940,000.00

Strategic Objective 4: Improve implementation of infection prevention and control (IPC) programmes, biosecurity, and vaccination uptake including access to WASH across the One Health sectors

Activity/Sub-activities	Quantity	Responsible entity	Timeframe					Cost
			2024	2025	2026	2027	2028	
Strategic intervention 4.1. Use of national data for decision making								
Activity 4.1.1. Gather available national data on IPC, WASH, and biosecurity								
4.1.1.1. Conduct a meeting to engage with relevant stakeholders to identify data sources for IPC, WASH, and biosecurity	1	AMRCC, FMEnv, FMAFS						10,035,000.00
4.1.1.2 Hire a national consultant to anchor the process	5	AMRCC, FMEnv, FMAFS						50,766,737.11
4.1.1.3 Collate and analyse available data quarterly on IPC, WASH, and biosecurity (part of the ToR of the national consultant in 4.1.1.2)	5	AMRCC, FMEnv, FMAFS						no cost
Activity 4.1.2. Advocate for political and financial support to improve IPC and WASH infrastructure in healthcare facilities by highlighting the extensive health and economic burden of HAI including infectious disease outbreaks driven largely by the current poor infrastructure (Post-COVID gains for IPC advocacy)								
4.1.2.1. Conduct stakeholder mapping and classification	1	AMRCC, FMEnv, FMAFS						10,035,000.00
Activity 4.1.3. Expand IPC capacity gap assessments to address disparities (and initiate risk assessments for health facilities and assessments for IPC, WASH, and biosecurity) for (identification of) areas of improvement gaps and needs across the 36 states in Nigeria (Leverage on IT and existing structures)								
4.1.3.1. Conduct quarterly pillar meeting for IPC, WASH, biosecurity, and vaccine TWG	4	AMRCC						175,715,073.75
4.1.3.2. Leverage the AMRIS platform to collect and manage data across relevant sectors	4	AMRCC						130,817,327.50
4.1.3.3. Develop/adopt relevant IPC, WASH, and biosecurity tools and incorporate these tools into the AMRIS platform	1	AMRCC						7,950,000.00

4.1.3.4. Conduct training on the use of the AMRIS platform to collect and manage data on IPC, WASH, and biosecurity	1	NCDC						12,270,000.00
4.1.3.5. Conduct annual IPC and biosecurity risk assessment at the facility level	5	AMRCC						43,652,486.88
4.1.3.6. Conduct annual IPC and biosecurity risk assessment for tertiary facilities and farms (20 farms per state annually; this is usually a routine activity)	5	NCDC, FMAFS						no cost
4.1.3.7. Conduct assessments for IPC, WASH, and biosecurity at national and subnational levels	5	AMRCC						43,652,486.88
4.1.3.8. Analyse data from assessments, generate reports, and share feedback to stakeholders for decision making	1	AMRCC						6,431,250.00
Activity 4.1.4. Strengthen IPC/laboratory surveillance structure to detect continuous gene mutation in microbes (Strengthen laboratory capacity for IPC and HAI surveillance)								
4.1.4.1. Capacity-building training for laboratory personnel on diagnostics and IPC measures	1	AMRCC, FMEnv, FMAFS						13,408,500.00
4.1.4.2. Procurement of automated diagnostic equipment	1	AMRCC, FMEnv, FMAFS						1,417,500,000.00
Activity 4.1.5. Conduct surveys (baseline and repeat survey) to assess the current immunisation coverage for bacterial and key viral diseases in animals								
4.1.5.1. Engage a consultant to develop assessment toolkit and mapping of target vaccination sites for immunisation coverage in animals	4	AMRCC, FMAFS, NPHCDA						43,575,000.00
4.1.5.2. Review and validation workshop on assessment toolkit. Organise two workshops firstly to review, then subsequently validate the consultant's outputs and developed assessment tools	2	AMRCC, FMAFS, NPHCDA						32,163,731.25
4.1.5.3. Mapping of target sites where assessment will be done. Planning meeting to identify process for administration of data tools for animal vaccination	1	AMRCC, FMAFS, NPHCDA						157,500.00
4.1.5.4. Mapping of veterinary personnel to be trained.	1	AMRCC, FMAFS, NPHCDA						157,500.00

Planning meeting to identify personnel for administration of data tools for animal vaccination				■				
4.1.5.5. Training of data collectors on the assessment tools for animal immunisation coverage	1	AMRCC, FMAFS, NPHCDA			■			1,058,400.00
4.1.5.6. Deployment of trained personnel to target sites. Procurement of tablets for data collection	2	AMRCC, FMAFS, NPHCDA		■	■			65,900,625.00
Strategic intervention 4.2. Increase collaborations across other health and disease programme areas								
Activity 4.2.1. Link IPC and AMS activities at all levels – leverage the Orange Network and other existing IPC structures in Nigeria								
4.2.1.1. Leverage the development of the IPC legal framework	2	AMRCC, FMOH&SW, NCDC		■	■			6,780,375.00
4.2.1.2. Leverage the SAPHS processes to strengthen IPC and AMS at subnational level. Hire a subnational consultant to conduct desk reviews and assessments and develop draft IPC plan documents for the states	111	AMRCC, FMOH&SW, NCDC		■	■	■		817,946,430.00
4.2.1.3. Establish the Nigeria HAI surveillance network linked to the AMRIS platform – Naija HAINet	1	AMRCC, FMOH&SW, NCDC	■					10,400,000.00
Activity 4.2.2. Establish closer collaborations with vaccination and WASH groups to increase AMR visibility in these programmes (Existence of platforms to foster collaboration, e.g. NERICC, SERICC)								
4.2.2.1. Incorporate vaccination TWG/NPHCDA into the AMRCC meetings to achieve a shared understanding of AMR and activities of the pillar	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA	■					5,475,000.00
Activity 4.2.3. Enhanced collaboration and identification of measurable IPC, vaccination, and WASH interventions that address AMR								
4.2.3.1. Conduct meetings to identify measurable IPC, vaccination, and WASH interventions that improve AMR	1	AMRCC, National AMR TWG Secretariat, AMR		■				4,987,500.00

		Programme managers across sectors						
Activity 4.2.4. Strengthen WASH programme and hand hygiene infrastructure across selected healthcare facilities								
4.2.4.1. Conduct annual assessment of WASH infrastructure using the WASH-FIT or other relevant tools	2	NCDC						10,473750.00
4.2.4.2. Scale up hand hygiene compliance monitoring across all public and private healthcare facilities	75	NCDC						760,968,000.00
Activity 4.2.5. Strengthening IPC, WASH, biosecurity, and vaccination and ensure structures are multidisciplinary								
4.2.5.1. Create a mechanism to review existing IPC structures and establishment of structures for WASH, biosecurity, and vaccination	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						210,000.00
4.2.5.2. Constitute TWGs across sectors to develop operational plans	60	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						94,902,716.72
4.2.5.3. Identify and appoint focal points at the sectoral level that will liaise with the national AMR TWG	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						no cost
Activity 4.2.6. Link vaccination policies with AMR								
4.2.6.1. Stakeholder mapping of relevant ministries and agencies in charge of vaccination	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						21,089,250.00
4.2.6.2. Integration of AMR-related targets and objectives into vaccination plans and framework	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						13,297,593.75
Strategic intervention 4.3. Ensure improvements in and access to WASH and other related infrastructure								
Activity 4.3.1. Develop standards for built environment including WASH to enhance safety of healthcare environment (Expertise exists in-country)								
4.3.1.1. Engage consultants to facilitate the process of developing safety standards for environment including WASH across sectors	1	AMRCC, FMEnv						9,712,500.00

4.3.1.2. Organise review workshop for the developed safety standards across sectors	1	AMRCC, FMEnv						9,591,750.00
4.3.1.3. Conduct final validation workshop for the reviewed safety standards across sectors	1	AMRCC, FMEnv						9,988,650.00
4.3.1.4. Mapping of stakeholders in safety and training on standards	1	AMRCC, FMEnv						37,414,440.00
4.3.1.5. Disseminate safety standards to health facilities, farms, abattoirs, and other stakeholders and set as prerequisites for accreditation.	1	AMRCC, FMEnv						13,836,375.00
4.3.1.6. Develop operational framework across sectors	6	AMRCC, FMEnv						74,854,342.50
Activity 4.3.2. Provide bio-incineration facilities to incinerate waste at healthcare facilities, farms, food production facilities, and other industries								
4.3.2.1. Mapping of availability and functionality of bio-incinerators across sectors	1	AMRCC, FMEnv, FMWR						9,500,000.00
4.3.2.2. Provision and/or rehabilitation of bio-incinerators where they are not available across sectors	1	AMRCC, FMEnv, FMWR						1,110,000,000.00
4.3.2.3. Training of personnel on use of bio-incinerators across sectors	1	AMRCC, FMEnv, FMWR						18,620,000.00
4.3.2.4. Assessment of operations and maintenance of the bio-incinerators across sectors	6	AMRCC, FMEnv, FMWR						73,500,000.00
Activity 4.3.3. Provide quarantine facilities on farms and isolation rooms for health facilities								
4.3.3.1. Map availability of quarantine/isolation facilities	2	AMRCC, FMOH&SW, NCDC, FMAFS, FMEnv						11,750,000.00
4.3.3.2. Develop guidelines for the establishment of quarantine facilities for farms and isolation facilities for hospitals where they do not exist	1	AMRCC, FMOH&SW, NCDC, FMAFS, FMEnv						20,870,000.00

Activity 4.3.4. Improve waste management in healthcare waste settings, farms, abattoirs, veterinary hospitals, and communities								
4.3.4.1. Engage consultants across sectors to develop waste management assessment tools for human, animal, and environment sectors	1	AMRCC, FMEnv, FMWR						23,375,000.00
4.3.4.2. Review and validation workshop on assessment tools	1	AMRCC, FMEnv, FMWR						23,375,000.00
4.3.4.3. Capacity-building training on the assessment tools	1	AMRCC, FMEnv, FMWR						23,375,000.00
Strategic intervention 4.4. Improve IPC/biosecurity/WASH practice across the country								
Activity 4.4.1. Scale up IPC programme implementation to 75% of public and private healthcare facilities and establish WASH and biosecurity programmes in health and animal facilities across the country (meagre resources, political will and buy-in are suboptimal)								
4.4.4.1. At subnational level: map healthcare facilities across private and public sectors in the states	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						5,875,000.00
4.4.4.2. Train health workers on IPC core components and standard precautions	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						30,900,000.00
4.4.4.3. Engage with facility management on creation of IPC programmes with ToR/plan and adoption of National IPC guidelines	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						205,000.00
4.4.4.4. Align and integrate national and subnational WASH programmes in the FMWR and FMEnv with the AMR TWG and IPC, biosecurity, and WASH pillar	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						10,850,000.00
4.4.4.5. Develop a WASH improvement plan across levels	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						11,750,000.00
Activity 4.4.2. Provide funding for the implementation of the National Biosecurity Policy and Action Plan (2022–2026) (Even though government is interested, it is difficult to get funds released)								
4.4.2.1. Review the existing Biosecurity Policy and Action Plan with a view to addressing gaps in farm biosecurity	1	AMRCC, FMAFS						6,125,000.00

Activity 4.4.3. Finalise the national HAI surveillance strategy and scale up its implementation to involve secondary healthcare facilities (Limited expertise on HAI surveillance, paucity of funding, and inadequate lab infrastructure to support HAI surveillance)								
4.4.3.1 Organise validation workshop to finalise national strategy on HAI surveillance	1	AMRCC, FMOH&SW, NCDC						19,425,000.00
4.4.3.2. Deploy and operationalise HAI surveillance strategy to subnational levels	3	AMRCC, FMOH&SW, NCDC						18,375,000.00
4.4.3.3. Disseminate HAI strategy to stakeholders including health facilities	1	AMRCC, FMOH&SW, NCDC						9,875,000.00
Activity 4.4.4. Deploy multimodal strategies and participatory approach to learning in systems (PALS) to foster culture change in healthcare facilities, farms, abattoirs, and veterinary facilities in order to scale up implementation								
4.4.4.1. Use of multimodal strategy to foster adherence to implementation of guidelines on IPC, WASH, and biosecurity	1	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						16,700,000.00
4.4.4.2. Support the implementation of multimodal improvement strategies to reduce HAIs in healthcare facilities at all levels according to local priorities	1	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						62,250,000.00
4.4.4.3. Conduct periodic promotional campaigns on key global days for IPC, WASH, and biosecurity	4	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						139,320,000.00
4.4.4.4. Celebrate national weeks for IPC, WASH, vaccines, and biosecurity	4	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						143,320,000.00
4.4.4.5. Conduct annual stakeholder engagement meetings with FMOH&SW, NPHCDA, SMOH, HMB, SPHCDA, Hospital CEOs and CMDs	4	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						120,300,000.00
4.4.4.6. Train master trainers involved in IPC, WASH, biosecurity on implementation science, behaviour change communication, project management, safety, and social marketing	3	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						55,980,000.00
4.4.4.7. Develop a state-level training schedule for adoption and implementation of multimodal strategies to be deployed by the master trainers across 37 states	37	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						252,987,500.00

4.4.4.8. Monitor and follow up the adoption and implementation of multimodal strategies in health facilities	24	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						46,200,000.00
4.4.4.9. Create awards of excellence for best performing health facilities in the implementation of IPC programmes using multimodal strategies	3	AMRCC, FMOH&SW, NCDC, FMEnv, FMWR						61,200,000.00
Activity 4.4.5. Develop SOPs on vaccine administration in animals								
4.4.5.1. Conduct a stakeholder workshop to develop SOPs on vaccine administration in animals	1	AMRCC, FMAFS						19,487,500.00
4.4.5.2. Conduct a workshop to review and validate the developed SOPs	1	AMRCC, FMAFS						13,050,000.00
4.4.5.3. Training of veterinarians and para-veterinarians on use of the SOPs	4	AMRCC, FMAFS						35,525,000.00
4.4.5.4. Dissemination of the validated SOPs	1	AMRCC, FMAFS						14,700,000.00
Activity 4.4.6. Development of biosecurity guidelines for terrestrial and aquatic animals								
4.4.6.1. Engage a consultant to develop biosecurity guidelines for terrestrial animals	1	AMRCC, FMAFS						5,875,000.00
4.4.6.2. Engage a consultant to develop biosecurity guidelines for aquatic animals	1	AMRCC, FMAFS						5,875,000.00
4.4.6.3. Conduct a workshop to review and validate the guidelines	1	AMRCC, FMAFS						14,700,000.00
4.4.6.4. Workshop for the dissemination of biosecurity guidelines for aquatic and terrestrial animals	2	AMRCC, FMAFS						16,025,000.00
Activity 4.4.7. Monitor IPC, WASH, and biosecurity practices using validated indicators. Establish/strengthen national IPC, WASH, and biosecurity monitoring system and ensure healthcare and relevant facilities participate in the national IPC monitoring networks								
4.4.7.1. Establishment of an integrated national and subnational M&E system for IPC, WASH, and biosecurity practices, analyse and feedback data to facilities for decision making	3	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						32,250,000.00

4.4.7.2. Engage a consultant to facilitate the review of existing assessment/M&E tools	2	AMRC 1C, FMEnv, FMAFS, FMWR, NPHCDA						22,450,020.00
Activity 4.4.8. Identify non-financial incentives or penalties for IPC policies used across human, animal, and environmental health								
4.4.8.1. Develop the Orange Dot criteria for outstanding healthcare facilities, farms, veterinary clinics, and abattoirs	1	AMRCC, FMEnv, FMWR						6,125,000.00
4.4.8.2. Recognise outstanding healthcare facilities based on IPC and biosecurity assessments using the Orange Dot criteria	2	AMRCC, FMEnv, FMWR						18,945,000.00
4.4.8.3. Publish the IPC/AMR annual One Health bulletin with a section dedicated to the recognition of outstanding facilities and individuals	2	AMRCC, FMEnv, FMWR						8,075,000.00
Strategic intervention 4.5. Increase availability of human resources for IPC/WASH/biosecurity								
Activity 4.5.1 Improve staffing and review legal instruments to enhance enforcement of environmental laws								
4.5.1.1. Review of existing legislation in the environment, WASH, and biosecurity sector	2	AMRCC, FMEnv, FMWR						12,250,000.00
Activity 4.5.2. Training and retraining of healthcare workers on IPC, WASH, etc.								
4.5.2.1. Develop training curriculum and guidelines for IPC/WASH	2	AMRCC, FMEnv, FMWR						12,250,000.00
4.5.2.2. Facilitate training of healthcare workers on IPC/WASH	1	AMRCC, FMEnv, FMWR						11,475,000.00
Activity 4.5.3. Capacity building of farmers on biosecurity measures, record keeping, tagging and identification of animals, and quarantine facilities								
4.5.3.1. Mapping of farms/farmers across the geopolitical zones	3	AMRCC, FMAFS						17,625,000.00
4.5.3.2. Organise workshops, seminars, conferences, etc. on biosecurity measures, record keeping, tagging and identification of animals, and quarantine facilities	1	AMRCC, FMAFS						11,475,000.00

4.5.3.3. Conduct periodic supervisory visits to farms to assess compliance of the trained farms/farmers with biosecurity measures, record keeping, tagging and identification of animals, and quarantine facilities	48	AMRCC, FMAFS						19,440,000.00
Activity 4.5.4. Develop a national training plan for IPC, WASH, biosecurity at all levels								
4.5.4.1. Conduct needs assessment on the status of IPC, WASH, biosecurity professionals; document gaps and identify training approaches	3	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						17,625,000.00
4.5.4.2. Adapt the national training plan on IPC for local use in the states and subnationally	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						14,700.00
4.5.4.3. Conduct review of training plan	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						11,475,000.00
Strategic intervention 4.6. Include IPC/WASH/biosecurity in pre-service curricula across the One Health departments								
Activity 4.6.1. Strengthening and improving the pre-service IPC, WASH, biosecurity curricula (NUC approval and stakeholder engagement)								
4.6.1.1. Develop curricula for biosecurity for animal sector and IPC for veterinarians	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						12,250,000.00
4.6.1.2. Develop curricula for WASH for health workers	1	AMRCC, FMEnv, FMAFS, FMWR, NPHCDA						12,250,000.00
Strategic intervention 4.7. Advocate and continuously engage (annually) with the Nigeria Governors' Forum, Nigeria Health Commissioners' Forum, State Forum for Health Permanent Secretaries, Governors' Wives Forum, Committee of the CMDs, and Directorates of Medical Services for Military and Paramilitary, etc.								
Activity 4.7.1. Conduct advocacy to animal health, veterinary professional bodies and groups on the need to incorporate IPC as part of their training. IPC training materials are yet to be developed for animal health professionals								
4.7.1.1. Mapping of professional bodies and institutions	1	AMRCC, FMAFS						6,125,000.00
4.7.1.2. Adopt/review human health IPC training materials for animal health	2	AMRCC, FMAFS						27,820,000.00

Strategic intervention 4.8. Improve awareness of IPC, biosecurity, and WASH								
Activity 4.8.1 Improve access to vaccines and intensify risk communication and community engagement activities								
4.8.1.1. Conduct capacity training for the Veterinary Research Institute, Vom.	1	AMRCC, FMAFS						25,365,000.00
Strategic intervention 4.9. Increase vaccine manufacturing								
Activity 4.9.1. Improve suboptimal investments in genomic sequencing and linkage to vaccine manufacturing (improve investments in genomic sequencing)								
4.9.1.1. Develop a plan for local manufacturing of vaccines in-country	2	AMRCC, FMAFS, FMEnV, FMWR						3,798,500,000.00
Strategic intervention 4.10. Review the national vaccination policy to include healthcare worker vaccination								
Activity 4.10.1. Conduct advocacy and engage with NPHCDA, FMOH&SW, and other relevant stakeholders								
4.10.1.1. Develop a policy on healthcare worker vaccination and seek approval from the national council on health	1	AMRCC, FMOH&SW						25,950,000.00
4.10.1.2. Develop a policy on vaccination of veterinarians	1	AMRCC, FMAFS						25,950,000.00

Strategic Objective 5: Improve access to quality antimicrobials and optimise their use across One Health sectors

Activity/Sub-activities	Quantity	Lead implementer	Timeframe 2024	2025	2026	2027	2028	Cost
Strategic intervention 5.1. Improve implementation of stewardship policies and guidelines across all sectors and enforce their regulation								
5.1.1. Incorporate the AWaRe classification in therapeutic tools (for human health)								
5.1.1.1. Incorporate the AWaRe classification in standard treatment guidelines (for human health)	2	F&DS, FMOH&SW, NCDC	■			■		39,872,910.00
5.1.1.2. Incorporate the AWaRe classification in essential medicines list (for human health)	2	F&DS, FMOH&SW, NCDC	■			■		39,872,910.00
5.1.1.3. Incorporate the AWaRe classification in the national drug formulary (for human health)	2	F&DS, FMOH&SW, NCDC	■			■		39,872,910.00
Activity 5.1.2. Print and disseminate the antimicrobial stewardship guidelines and a toolbox to facilitate their implementation in human healthcare facilities								
5.1.2.1. Print and disseminate the antimicrobial stewardship programme tool for primary, secondary, and tertiary healthcare facilities and ambulatory healthcare services	7	F&DS, FMOH&SW, NCDC	■					337,620,000.00
5.1.2.2. Print and disseminate the protocols for antimicrobial use audits and antimicrobial consumption audits	7	F&DS, FMOH&SW, NCDC	■					337,620,000.00
5.1.2.3. Print and disseminate training modules for antimicrobial stewardship activities in primary, secondary, and tertiary healthcare settings	7	F&DS, FMOH&SW, NCDC	■					408,426,000.00
5.1.2.4. Disseminate the antimicrobial stewardship programme development tool and training modules for antimicrobial stewardship activities through the prescription companion (SPARC App)	8	F&DS, FMOH&SW, NCDC		■				146,696,500.00

5.1.3. Support the expansion of AMS programmes in human healthcare facilities nationwide								
5.1.3.1. Advocacy to state governments and healthcare facilities (public and private)	37	NCDC		■				270,493,125.00
5.1.3.2. Support the establishment of AMS committees in secondary and tertiary healthcare facilities	37	NCDC		■	■	■		301,790,140.31
5.1.3.3. Conduct training of AMS committees in various healthcare facilities	37	NTWG, NCDC	■	■	■	■	■	384,354,499.38
5.1.3.4. The AMS programme should be included as a criterion for hospital accreditation	-1	Regulatory bodies (MDCN, PCN), FMOHFMOH&SW, FMEnv, Postgraduate Medical College	■					11,535,000.00
5.1.4. Develop a prescription policy for veterinary medicinal products, biologicals, and vaccines								
5.1.4.1. Engage a consultant to develop a prescription policy for veterinary medicinal products, biologicals, and vaccines	1	FDVPCS, FMAFS	■					34,000,000.00
5.1.4.2. Conduct three workshops to review and validate the prescription policy	3	FDVPCS, FMAFS	■	■				55,365,125.00
5.1.4.3. Print and disseminate the policy (both hard and soft copies through websites)	7	FDVPCS, FMAFS		■		■		411,627,746.25
5.1.5. Establish antimicrobial stewardship programmes in veterinary hospitals and clinics (public and private)								
5.1.5.1. Advocacy to state governments, veterinary teaching hospitals (VTHs), and private clinics	37	FMAFS, NTWG		■		■		553,992,823.13
5.1.5.2. Develop guidelines for establishing AMS committees in veterinary teaching hospitals	3	FMAFS, VTHs		■	■			89,348,700.00

5.1.5.3. Support the establishment of the AMS committees in veterinary teaching hospitals, state veterinary hospitals, and private clinics	18	VCN, FMAFS, VTHs, SMA						143,017,481.25
5.1.5.4. Conduct trainings of AMS committees in the hospitals and clinics (public and private)	18	FMAFS, VCN, VTHs, SMA						181,375,031.25
5.1.5.5. The AMS programme should be included as a criterion for animal hospital accreditation	-							11,535,000.00
5.1.6. Enforce appropriate labelling of drugs								
5.1.6.1. Advocacy to NAFDAC, VCN, and FMAFS to ensure compliance with labelling regulations of antimicrobials for use in animals	4	NTWG						3,591,906.25
5.1.6.2. Train NAFDAC surveillance officers to conduct post-marketing surveillance of antimicrobials for use in animals	1	NAFDAC						69,218,625.00
5.1.6.3. Strengthen (training) port inspection activities	1	NAFDAC						30,018,318.75
5.1.6.4. Conduct consultative meetings with sister agencies to integrate veterinary medicines and other related products into the traceability project	8	NAFDAC, FMAFS, VCN						67,199,000.00
5.1.7. Develop antimicrobial use/stewardship policy in human health								
5.1.7.1. Engage a consultant to develop antimicrobial use/stewardship policy in human health	1	NCDC, F&DS, FMOH&SW						34,000,000.00
5.1.7.2. Conduct three workshops to review and validate the antimicrobial use/stewardship policy	2	FMOH&SW, NCDC						35,145,000.00
5.1.7.3. Print and disseminate the antimicrobial use/stewardship policy (both hard and soft copies)	1	NCDC, FMOH&SW						406,917,000.00

5.1.8. Support the enforcement of policy around antimicrobial procurement, distribution, prescription, sale, dispensing, and use in human and animal health								
5.1.8.1. Develop a national prescription policy in human health	3	FMOH&SW						61,839,750.00
5.1.8.2. Conduct engagement meetings to establish modalities of task force to ensure implementation of policies, laws, and regulations on the procurement, distribution, sale, prescription, dispensing, and use of antimicrobials in human and animal health	9	FMAFS, NAFDAC, VCN, MDCN, FMOH&SW, Nigerian Custom Service						85,647,750.00
5.1.8.3. Develop guidelines on the implementation of policies, laws, and regulations on the procurement, prescription, distribution, sale, and use of antimicrobials in human and animal health	8	FMAFS, NAFDAC, VCN, MDCN, FMOH&SW, Nigerian Custom Service						180,788,000.00
5.1.8.4. Build capacity of relevant stakeholders for the implementation of policies, laws, and regulations on the procurement, distribution, sale, prescription, dispensing, and use of antimicrobials in human and animal health	2	FMAFS, NAFDAC, VCN, MDCN, FMOH&SW, Nigerian Custom Service						20,523,037.50
5.1.8.5. Improve awareness of relevant professionals, farmers, and other stakeholders on policies, laws, and regulations towards promoting the responsible use of antimicrobials in human and animal health	1251	FMAFS, NAFDAC, VCN, PCN, MDCN, FMOH&SW, Nigerian Custom Service						470,042,284.87
5.1.9. Develop a road map to phase out the use of antimicrobials as growth promoters in animals								
5.1.9.1. Finalise the regulation and enforce the prohibition of the use of antibiotics as growth promoters in animals	1	NAFDAC						9,307,500.00
5.1.10. Develop a road map to reduce the amount of critically important antimicrobials used in animal health								
5.1.10.1. Engage a consultant to develop a road map for phasing out critically important antimicrobials in animals	1	FMAFS, VCN						17,125,000.00
5.1.10.2. Conduct three workshops to review and validate the road map for phasing out critically important antimicrobials in animals	3	FMAFS, VCN						55,365,125.00

5.1.10.3. Print and disseminate the road map for phasing out critically important antimicrobials in animals	2	FMAFS, VCN						320,719,125.00
5.1.11. Develop policies that ensure animal manure is treated before it is used in agriculture								
5.1.11.1. Engage a consultant to develop a policy that ensures animal manures are treated before they are used in agriculture	1	FMAFS						34,000,000.00
5.1.11.2. Sensitise farmers on the need to treat manure before use in agriculture	6	FMAFS						448,008,435.00
5.1.11.3. Conduct three workshops to review and validate the policy	3	FMAFS						52,895,000.00
5.1.11.4. Print and disseminate the policy (both hard and soft copies on websites)	1	FMAFS						300,000,000.00
5.1.12. Implement the regulation for disposal of unused and expired products								
5.1.12.1. Advocacy to NAFDAC to create a budget line for disposal of unused and expired products	1	NCDC, FMAFS, NAFDAC						1,012,500.00
5.1.12.2. Create awareness in hospitals and the public of processes and procedures for disposal of unused and expired medicinal products	8	NCDC, FMAFS, NAFDAC						159,749,569.56
5.1.13. Institute appropriate compensation programme to promote the observance of withdrawal period for animal sector								
5.1.13.1. Advocacy to government for budgetary provision	4	FMAFS						4,151,250.00
5.1.13.2. Sensitisation of farmers on effective disease preventive measures	12	FMAFS						1,044,460,501.88
5.1.14. Develop national guidelines on SSI in animal and human sectors that will also incorporate antibiotics for surgical prophylaxis								
5.1.14.1. Develop a national guideline for surgical antibiotics for prophylaxis	4	NCDC, FMOH&SW, FMAFS						406,040,250.00
5.1.14.2. Disseminate guideline and train on its use	7	NCDC, FMOH&SW,						72,276,750.00

		FMAFS						
5.1.14.3. Awareness, education, and training of prescribers on the prophylaxis guideline	37	NCDC, FMOH&SW, FMAFS						350,156,205.00
5.1.14.4. Include recommended antibiotics in the essential medicines list	1	NCDC, FMOH&SW, FMAFS						21,392,910.00
Strategic intervention 5.2. Gather data for stewardship								
5.2.1. Strengthen the functionality of AMRIS for PPS data capture								
5.2.1.1. Conduct PPS to obtain baseline data in all tertiary hospitals	37	NCDC						288,879,150.00
5.2.1.2. Conduct PPS to obtain baseline data in four secondary hospitals per state	37	NCDC						391,660,950.00
5.2.1.3. Use outcome of PPS data to update the action plan	37	NCDC						372,220,000.00
5.2.2. Develop a national system for reporting of antimicrobial consumption data at all levels including hospitals, both public and private, and community pharmacies								
5.2.2.1. Conduct three workshops to coordinate with the existing national and state platforms (e.g. LMCU) for calculating consumption data and to establish system for data gathering	6	NCDC						484,700,000.00
5.2.2.2. Train AMS committees in hospitals, both public and private, to calculate antibiotic consumption data (all tertiary hospitals and four secondary hospitals)	37	NCDC						484,700,000.00
5.2.2.3. Train community pharmacists to calculate antibiotic consumption data	37	NCDC						323,380,000.00
5.2.2.4. Train AMS communities and community pharmacies on the use of AMRIS and data submission	37	NCDC						349,280,000.00

5.2.3. Generate an annual report on antimicrobial consumption data in animal health								
5.2.3.1. Training of animal health professionals on AMC data collection and analysis	1	FMAFS						5,622,000.00
5.2.3.2. Prepare and disseminate periodic reports on AMC to all stakeholders	5	FMAFS						11,500,000.00
5.2.4. Map routes and flow of antimicrobial sales, use, and disposal for all food and agricultural systems (FAS), starting with sales in poultry and aquaculture								
5.2.4.1. Conduct mapping of wholesale and retail veterinary drug outlets in 36 states and FCT	38	FMAFS						2,170,045,000.00
5.2.4.2. Conduct mapping of poultry and fish farms in 36 states and FCT	3	FMAFS						85,025,000.00
5.2.4.3. Conduct an engagement meeting with the Veterinary Council to implement guidelines for the registration of veterinary pharmacists	1	FMAFS, VCN						600,000
5.2.5. Develop and implement systematic data collection to monitor quantities of antimicrobials sold to individual end users for priority FAS: aquaculture and poultry								
5.2.5.1. Develop a tool for AMU data collection from poultry and fish farms	1	FMAFS						11,682,500.00
5.2.5.2. Train field epidemiology officers on AMU data collection	1	FMAFS						11,430,000.00
5.2.5.3. Collect, analyse, and disseminate AMU data from poultry and aquaculture farms	37	FMAFS						3,581,090,000.00
Strategic intervention 5.3. Ensure access to diagnostics, infrastructure, and quality antimicrobials								
5.3.1. Improve the pathways and processes for registration and distribution of antibiotics (imported and locally manufactured)								
5.3.1.1. Advocacy to NAFDAC to ensure inspections of pharmaceutical manufacturing outlets are conducted as scheduled	1	AMRCC						405,000.00

5.3.1.2. Increase the frequency of post-marketing surveillance by the regulatory bodies	60	NAFDAC						no cost
5.3.2. Strengthen procurement and supply chain systems in both the human and animal health sectors to guarantee the availability of quality antimicrobials								
5.3.2.1. Advocacy to procurement entities to adhere to good procurement practices	1	AMRCC						22,495,000.00
5.3.2.2. Conduct WHO basic test at entry points and central medical stores for quality control and assurance	1	NAFDAC						577,440,000.00
5.3.2.3. Conduct inspection to ensure proper monitoring at porous borders	7	NAFDAC						2,555,000,000.00
5.3.2.4. Increase the frequency of post-marketing surveillance for human and veterinary antimicrobial agents	1	NAFDAC						392,600,000.00
5.3.2.5. Speed up action on completion and operationalisation of coordinated wholesale centres for traceability	3	NAFDAC, FMOH&SW, state governments, PCN						19,912,500.00
5.3.2.6. Advocacy to NAFDAC to enforce the prohibition of drug hawking	3	AMRCC						19,912,500.00
5.3.3. Advocate to national assembly and NHIA to increase universal healthcare coverage to increase access to appropriate diagnostics and medicines								
5.3.3.1. Advocate to national assembly, NHIA, and SHIA to increase coverage and services by NHIA and SHIA	5	NCDC						2,025,000.00
5.3.3.2. Advocate to state health contribution agency to increase coverage by operationalising various plan options	37	NCDC						36,445,000.00
5.3.4. Advocate for an increase in the domestic production of pharmaceuticals to overcome issues with access to quality antimicrobials								
5.3.4.1. NHIA to speed up and operationalise the branded medicine initiative	1	NHIA						21,970,000.00

5.3.4.2. Conduct process quality control for the distribution of the branded medicines	7	NHIA, NAFDAC, PMG-MAN						no cost
5.3.4.3. NAFDAC to conduct good manufacturing practice (GMP) inspection of facilities	6	NAFDAC						55,974,400.00
5.3.4.4. Engagement of PMG-MAN by NAFDAC to strengthen their capacity	2	NAFDAC, PMG-MAN						31,035,000.00
5.3.5. Mandate that international pharmaceutical companies establish antimicrobial manufacturing outlets in the country so their activities can be monitored by NAFDAC to ensure Nigerians are getting quality-assured antimicrobials								
5.3.5.1. Advocacy to NAFDAC to implement the 5+5 validity drug production policy for manufacturers (migration to local production)	1	AMRCC						1,012,500.00
5.3.6. Tighten national borders to prevent the illegal importation of substandard and falsified drugs into the country								
5.3.6.1. Rejuvenate the counterfeit, fake, unwholesome food, and miscellaneous task force	75	FMOH&SW, NAFDAC, state governments						3,527,610,000.00
5.3.6.2. To approve budget line for the operation of the task force	5	FMOH&SW, Budget Office, Ministry of Finance, National Assembly						2,025,000.00
5.3.6.3. Engage the office of the National Security Adviser and other relevant stakeholders on national border manning and monitoring	6	NAFDAC						70,500,000.00
5.3.7. Strengthen diagnostic stewardship across human and animal sectors								
5.3.7.1. Healthcare facilities (human and animal sector) should conduct pre-service and in-service training periodically on diagnostic stewardship	205 (24 VTH)	Chief medical directors, NCDC						no cost

5.4. Encourage the use of alternatives to antibiotics such as probiotics and prebiotics etc.								
5.4.1. Awareness and sensitisation of farmers on the use of pre and probiotics as alternatives to antimicrobials in animal production	37	FMAFS, AHSTWG						669,385,500.00
5.4.2. Advocacy to the relevant manufacturers of pre and probiotics by NAFDAC to present products for analysis and registration	1	NAFDAC, NTWG						135,000.00
5.4.3. Initiate a regulatory mechanism via stakeholders' meetings for pre and probiotics and allied products	1	NAFDAC, NTWG						2,835,000.00
5.5. Encourage responsible and prudent use of anthelmintic chemicals to help control anthelmintic resistance in grazing livestock species								
5.5.1. Conduct three sensitisation workshops with relevant stakeholders on the responsible and prudent use of anthelmintic chemicals to help control anthelmintic resistance in grazing species	3	FMAFS						82,236,000.00

Strategic Objective 6: Build knowledge and capacity of relevant stakeholders to improve local innovations, research and development in antimicrobials, diagnostics, and vaccines

Activity/Sub-activities	Quantity	Responsible entity	Timeframe					Cost
			2024	2025	2026	2027	2028	
Strategic Objective 6: Build knowledge and capacity of relevant stakeholders to improve local innovations, research and development in antimicrobials, diagnostics, and vaccines								
Strategic intervention 6.1. Develop prioritised national research agenda for AMR with targets and timelines								
Activity 6.1.1. Conduct scoping analyses and systematic reviews to synthesise existing evidence and identify research gaps								
6.1.1.1. Set up an AMR One Health scientific committee to review specific priority and emerging AMR pathogens	3	AMRCC						17,115,000.00
6.1.1.2. Document and share the findings from the review to the relevant stakeholders	1	AMR One Health Scientific Committee						9,150,000.00
Activity 6.1.2. Identify AMR research priorities in Nigeria based on current evidence and needs								
6.1.2.1. Conduct research on environmental sampling (air, water, soil, storm water, wastewater, sludge, and compost) and analysis for the presence of AMR residues and ARGs	10	Research pillar/TWG, FMEnv						155,311,680.36
6.1.2.2. Conduct research on animal products for the presence of AMR residues and ARGs	10	Research pillar/FMAFS						157,383,792.08
6.1.2.3. Conduct research on agricultural products (plants, fruits, and vegetables) for the presence of AMR residues and ARGs	10	Research pillar/FMAFS						157,383,792.08
6.1.2.4. Conduct research on National AMR prevalence in humans	10	Research pillar/ Human health						157,383,792.08

Activity 6.1.3. Create a research agenda to coordinate AMR research in Nigeria								
6.1.3.1. Mapping of research activities from different institutions across the country	2	Research pillar						38,160,375.00
6.1.3.2. Develop an online repository to collate all AMR data from all the different institutions	3	AMR One Health Scientific Committee						28,630,000.00
6.1.3.3. Coordination of activities 6.1.3.1. and 6.1.3.2. and stakeholder engagement by the AMR One Health Scientific committee	10	AMR One Health Scientific Committee						26,744,055.25
Activity 6.1.4. Advocate that AMR/AMU funding be included in the National Research Agenda								
6.1.4.1. Provide evidence-based research outcomes that will inform the reasons why AMR/AMU should be prioritised for funding	10	AMRCC						74,665,092.27
6.1.4.2. Develop translation and dissemination plans for policy dialogue, community engagement, and adequate knowledge in the use of media	15	Research/Awareness pillar						37,643,362.89
Activity 6.1.5. Funding support and incentives for AMR research-related findings								
6.1.5.1. Appropriation of funds for training and retraining of research scientists on emerging and cross-cutting AMR investigation	6	Governance pillar						146,212,950.00
Strategic intervention 6.2. Conduct research to address priority gaps								
Activity 6.2.1. Conduct AMR research (resistance patterns, trends, antimicrobial consumption and use, and laboratory capacity assessments) in areas with significant AMR surveillance gaps to get a better understanding of subnational AMR epidemiology and capacity for surveillance								
6.2.1.1. Conduct in-depth analysis of current state of AMR/AMU and its impact on the economy	4	AMR One Health Scientific Committee						50,512,562.50

6.2.1.2. Conduct research to assess influence of building characteristics, occupancy profile/activities, and architectural designs on indoor air quality and related respiratory conditions	1	Research pillar						18,401,250.00
6.2.1.3. Conduct national laboratory capacity assessment	2	Research pillar						48,410,062.50
6.2.1.4. Conduct national resistance trend assessment on the Nigerian priority pathogens	2	Research pillar						30,065,750.00
Activity 6.2.2. Establish R&D with a focus on plant health (There is a need to strengthen the value of phyto-related antimicrobials and also emphasise antimicrobial residues in plants)								
6.2.2.1. Conduct a scope review and meta-analysis of existing phytochemicals with antimicrobial properties in Nigeria	1	Research pillar						5,875,000.00
6.2.2.2. Prioritise the phytochemicals in indigenous medicinal plants and alternatives (such as ginger) and promote these phytochemicals as alternatives to antimicrobials	1	Research pillar/Trado Medical Association						15,600,000.00
Activity 6.2.3. Conduct research on the emerging disinfectant resistance								
6.2.3.1. Assess disinfectant resistance to the commonly used disinfectants in Nigeria	2	Research pillar						18,250,000.00
6.2.3.2. Assess the quality of disinfectants sold in the open market	4	Research pillar						176,375,000.00
6.2.3.3. Assess the KABPs of individuals on the use of disinfectants	2	Research pillar						18,250,000.00
Strategic intervention 6.3. Support capacity building for AMR research and innovation								
Activity 6.3.1. Support relevant stakeholders in AMR research and innovation								
6.3.1.1. Conduct needs assessments to identify specific skills and expertise in AMR research	2	Research pillar/ Governance/Surveillance pillars						20,175,000.00
6.3.1.2. Develop comprehensive training modules covering AMR research	1	Research/Other pillars						59,450,000.00

6.3.1.3. Facilitate training of the workforce on AMR research, including clinicians, veterinarians, environmental health scientists, environmental epidemiologists, microbiologists, pharmacists, infectious disease specialists, nurses, infection control specialists	4	Research/Other pillars						89,749,000.00
6.3.1.4. Develop capacity for standardised sampling collection protocol	1	Surveillance pillar						8,997,500.00
6.3.1.5. Create a research and innovation hub for AMR solutions (identify and share grant opportunities)	1	Research pillar						750,000.00
6.3.1.6. Organise a periodic AMR conference for scholars to present findings and exhibitions of novel solutions	5	Research/Other pillars						73,048,845.13
Strategic intervention 6.4. Identify alternative antimicrobials, diagnostics, vaccines, and therapeutic innovations								
Activity 6.4.1. Promote research into antimicrobial alternatives, diagnostics, and vaccines across the One Health sector								
6.4.1.1. Organise symposia for stakeholders working in the areas of alternatives to antimicrobials and therapies	5	Research pillar/AMR TWG						60,367,521.41
6.4.1.2. Organise specialised workshops with key agencies and the stakeholders working in alternatives to antimicrobials	5	Research/Awareness pillar						118,110,367.97
Activity 6.4.2. Develop guidelines for biosecurity for animal husbandry								
6.4.2.1. Conduct research to establish the biosecurity zones in livestock farms (red, yellow, and green zones)	3	Research and IPC, NBMA						8,806,875.00
6.4.2.2. Conduct research in collaboration with the existing efforts of other organisations (e.g. F&DS/NVRI/NIMR) to improve indigenous vaccines for prevalent livestock diseases in Nigeria	1	Research pillar, NBMA						18,401,250.00
6.4.2.3. Conduct research in collaboration with the existing efforts of other organisations (e.g. F&DS/NVRI/NIMR) to improve indigenous vaccines for priority infectious diseases in Nigeria	1	Research pillar, NBMA						18,401,250.00

Strategic intervention 6.5. Generate evidence for cost-effective interventions to reduce AMR								
Activity 6.5.1. Development of guidelines for antimicrobial residues								
6.5.1.1. Develop a national standard guideline including permissible limits for AM residue in different environmental media and platforms	1	Research pillar, Surveillance						7,810,000.00
Activity 6.5.2. Conduct cost-effective studies on the use of solid and liquid waste management byproducts								
6.5.2.1. Establish methodology for manure recycling to ensure it is free of antimicrobial-resistant organisms and AMR residue before use (fertigation)	1	Research pillar						10,872,500.00
6.5.2.2. Conduct studies on effective methods of waste treatment	1	Research pillar						16,497,500.00
6.5.2.3. Conduct cost–benefit analysis on generation of biogas from waste	1	Research pillar						no cost (captured in 6.5.2.2.)
Activity 6.5.3. Investigate the contribution of socioeconomic and environmental factors on AMR spread								
6.5.3.1. Conduct meta-analysis to understand existing knowledge on climate change and AMR	1	Research pillar						13,685,000.00
6.5.3.2. Conduct a study to establish the association between the effects of climate change and emergence of new variants of AMR genes in Nigeria	1	Research pillar						13,685,000.00

Monitoring and Evaluation Framework

To track progress of the implementation of the AMR NAP 2.0 and to assess whether it leads to the intended results, a monitoring and evaluation (M&E) framework is needed to monitor inputs, process, and outputs, as well as to measure outcomes and impacts.

The M&E framework presented here is an embodiment of Nigeria's dedication not just to initiate actions against AMR but to consistently measure, assess, and enhance these actions. An effective M&E framework is crucial to ensure that our efforts align with our strategic objectives, leading to tangible outcomes in the battle against AMR.

This framework will:

- establish clear benchmarks that delineate success in endeavours against AMR;
- provide a road map for stakeholders at all levels to understand their roles, responsibilities, and the expectations placed upon them;
- foster an environment of transparency and accountability, where efforts can be scrutinised, evaluated, and refined; and
- encourage a culture of continuous learning, where data-driven insights guide future strategies.

The framework was established in consultation and collaboration with national and international partners and experts, based on their experience and skills across a variety of sectors, and is intended to facilitate understanding of how and why the AMR NAP 2.0 is being implemented. Hence, it comprises two sets of M&E activities.

1. *Monitoring the process and outputs*: This focuses on the NAP's inputs, activities, and outputs and is intended to analyse how to improve the collective response by monitoring the progress of the various stakeholders in its implementation.
2. *Evaluating outcomes and goals*: This focuses on the outcomes and impact objectives of the NAP and is designed to examine the efficacy of NAP implementation initiatives, monitor their outcomes, and evaluate their influence on, for instance, AMR patterns, appropriate use, and disease burden in the country.

The M&E framework is supported by indicators that describe what to measure, when to measure it, and how to measure it. These metrics were created to represent the complexity of evaluating AMR across the numerous sectors and the realities of varying national settings and surveillance capacities. The core indicators were selected because they:

- reflect an important aspect of the AMR response that will yield significant and meaningful information for managing AMR in Nigeria;

- are sensitive to change; and
- are measurable within five years (although measurement systems may require substantial investment and development in many cases, particularly in non-human sectors).

Evaluation of AMR NAP 2.0

Effective implementation of the AMR NAP 2.0 will contribute to achieving the AMR prevention and containment goal of ensuring, for as long as possible, continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used responsibly, and accessible to all who need them.

Midway through and at the end of the AMR NAP 2.0 period, respectively, there will be a mid-term assessment and an end-term evaluation of its implementation. The former will inform the design of future strategic actions and should engage a wide range of stakeholders and partners, while the latter will guide any revisions that may be required. Both quantitative and qualitative methodologies will be used for evaluation, with an emphasis on:

- analysis of the implementation of the activities;
- budgets and finances;
- systematic study of the data from the outputs and outcomes; and
- analysis of the strengths, shortcomings, and opportunities in the context of current policies and strategies.

While the end-term evaluation will be carried out externally, the mid-term review will be carried out internally by a joint team of the One Health Ministries, key partners, and stakeholders. The relevance, responsiveness, efficiency, and efficacy of AMR NAP 2.0 implementation, as well as sustainability after termination, should be examined by the evaluators.

M&E Indicators

The following indicators (Table 2) will be monitored, with appropriate disaggregation in terms of implementation by state, community, gender, and vulnerable groups.

Table 2: Monitoring and evaluation indicators

Objective/Results	Key Performance Indicator
Impact: The prevalence of antimicrobial-resistant infections across human, animal, and environmental sectors significantly reduced thereby enhancing public health security, promoting sustainable agricultural practices, and preserving ecological integrity	Proportion of bloodstream infections due to *E. coli* resistant to third-generation cephalosporins
	Proportion of bloodstream infections due to MRSA in the human population
	Deaths related to AMR infections in human health in Nigeria
	Increase in the proportion of WHO Access group antibiotics consumed to at least 60% in humans by 2030
	Prevalence of antimicrobial resistance in *E. coli* and salmonella in terrestrial and aquatic animals
	Prevalence of antimicrobial resistance in MRSA and listeria in terrestrial animals
	30% reduction in the usage of critically important antimicrobials in the agri-food system
	Concentration of antimicrobial residues and resistance genes (ARGs) in key environmental compartments (water bodies, soil)
Outcome 1: Strengthened AMR governance and multisectoral collaboration on AMR	Proportion of funds mobilised through domestic funding across One Health sectors against total budget needed for that year as per costed AMR NAP 2.0
	Number of states supported to develop multisectoral AMR governance structures through the AMR governance framework
	Number of states supported to develop a state AMR action plan in line with AMR NAP 2.0
	Number of new legal instruments (legislation) developed to address AMR in the One Health sectors
	Number of policy documents (policies, strategies, plans, guidelines) developed/reviewed to address AMR in the One Health sectors
	Proportion of NAP sub-activities implemented according to timeline
	Number of multisectoral AMR initiatives jointly implemented by all relevant sectors annually

Outcome 2: Improved antimicrobial resistance (AMR) awareness, education, understanding, and advocacy among all relevant stakeholders	Percentage of community members reporting improvement in their awareness levels based on surveys conducted before and after engagement
	Percentage of in-service professionals reporting improvement in their awareness levels based on surveys conducted before and after training
	Number of trained AMR personnel for implementation of AMR NAP 2.0
	Number of states that have AMR included in their secondary school curriculum
	Number of secondary schools with functional AMR-related clubs
	Number of tertiary institutions with AMR integrated into pre-service training curriculum, disaggregated by profession
Outcome 3: Improved evidence base from robust 'One Health' AMR surveillance and operations research	Proportion of sentinel sites within the human health AMR surveillance network reporting monthly (reporting sites/total sites x 100)
	Proportion of sentinel sites within the animal health AMR surveillance network reporting monthly (reporting sites/total sites x 100)
	Proportion of sentinel sites within the environment AMR surveillance network reporting monthly (reporting sites/total sites x 100)
	Percentage improvement in data quality assessment (DQA) score per site annually Proportion improvement in DQA score quarterly
	Number of new operational research studies within the One Health spectrum that address current AMR challenges in Nigeria
	Number of laboratories that carry out AST using standard protocols
Outcome 4: Effective IPC and reduced transmission of resistant infections across all sectors	Proportion of registered veterinary clinics that comply with standardised IPC and hygiene protocols across Nigeria (survey)
	Proportion of farms that comply with standardised biosecurity protocols across Nigeria (survey)
	Proportion of registered healthcare facilities that comply with standardised IPC protocols across Nigeria (survey)
	Proportion of healthcare-associated multi-drug-resistant infections recorded across tertiary health facilities in the Orange Network in Nigeria
	Reduction in the number of resistant pathogens reported in at-risk groups (animal and environment) through the integrated One Health AMR surveillance system in Nigeria (survey)
	Change (%) in vaccination coverage for key diseases in both human and animal populations (survey)
	Number of new vaccines given annually
Outcome 5: Improved access to and optimised use of	Percentage of facilities with AMS programmes reporting stock-out of antimicrobials based on AWaRe classification on the essential medicines list annually

quality antimicrobials across One Health sectors	Compliance rate (%) with stewardship protocols, measured through annual compliance audits and reporting mechanisms in healthcare services (data source: AMS core element assessment report)
	Number of registered veterinary teaching hospitals with AMS programme initiated
	Compliance rate (%) with stewardship protocols, measured through annual compliance audits and reporting mechanisms in veterinary services (survey)
	Percentage reduction in use of critically important antibiotics for humans in animals (survey)
	Percentage reduction in the total amount of antibiotics used in the agri-food system (survey)
	Proportion of community pharmacies that meet the target of 60% Access group antibiotics (survey)
	Proportion of hospitals that meet the target of 60% Access group antibiotics (PPS)
	Number of tertiary hospitals supported to conduct quality testing on antibiotics
Outcome 6: Improved local innovations, research and development in antimicrobials, diagnostics, and vaccines	Number of new AMR research projects completed annually
	Number of annual AMR-related publications
	Number of research studies conducted on alternatives to antibiotics, diagnostics, and vaccines annually
	Number of new diagnostics validated in Nigeria annually
	Number of research contributions to the development of new vaccines, antimicrobials, and diagnostics

* The full M&E Framework document is separate from this AMR NAP 2.0 document.

Budget and Costing of AMR NAP 2.0

The successful execution of Nigeria's AMR NAP 2.0 will rely heavily on the availability of sufficient and sustainable resources – human, infrastructural, and financial. The AMR NAP 2.0 was costed using the WHO Costing and Budgeting Tool for AMR National Action Plans. All sub-activities were costed across the six strategic objectives and lead agencies/implementers.

In total, the indicative cost to implement Nigeria's five-year AMR NAP 2.0 operational plan is ₦62,262,379,066.00 (USD 77,633,889.00). The comprehensive budget includes specific unit costs, funding sources, projected funding timelines, and underlying assumptions. The detailed costing breakdown for each strategic objective is included in Annex 1.

Cost by Strategic Objective (2024–2028)

Table 3: Distribution of costs across strategic objectives

Strategic objectives	Cost (USD)
Strategic Objective 1: Strengthen leadership, collaboration, coordination, and AMR governance structures at national and subnational levels	**3,859,665**
Strategic Objective 2: Improve antimicrobial resistance (AMR) awareness, education, understanding, and behaviour change among all relevant stakeholders	**13,655,417**
Strategic Objective 3: Strengthen 'One Health' AMR surveillance and operations research to improve the evidence base	**13,561,891**
Strategic Objective 4: Improve implementation of infection prevention and control (IPC) programmes, biosecurity, and vaccination uptake including access to WASH across the One Health sectors	**13,630,280**
Strategic Objective 5: Improve access to quality antimicrobials and optimise their use across 'One Health' sectors	**30,745,724**
Strategic Objective 6: Build knowledge and capacity of relevant stakeholders to improve local innovations, research and development in antimicrobials, diagnostics, and vaccines	**2,180,922**
Total cost	**77,633,889**

Distribution of Costs by Implementation Year (2024–2028)

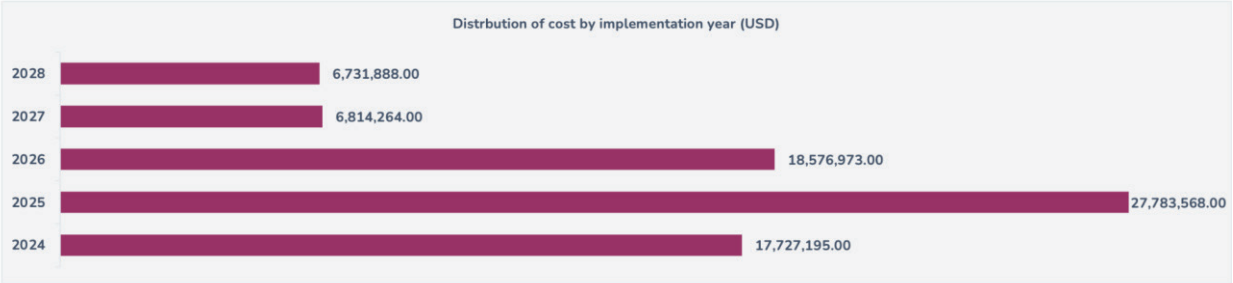


Figure 5: Distribution of costs by implementation year (2024–2028)

In order to realise this indicative budget, Nigeria must leverage both domestic and international resources including the public and private sectors. Innovative funding mechanisms such as public–private partnerships, grants, and international collaborations must be explored while also establishing partnerships to secure essential resources for AMR interventions.

These resource mobilisation efforts must begin with the development of a short-term, prioritised plan that can be used to direct funding opportunities to the priority interventions that can drive immediate impact.

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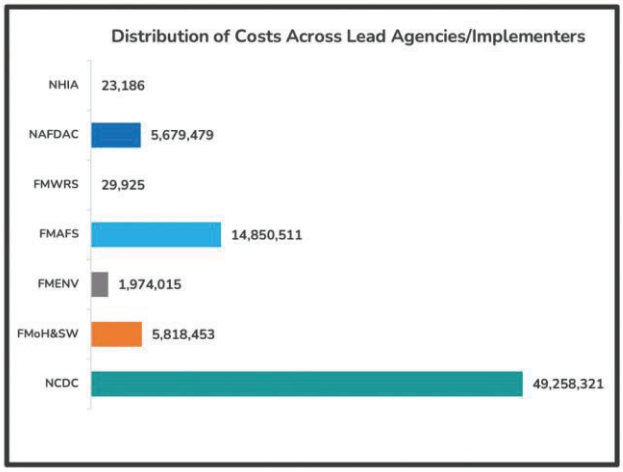
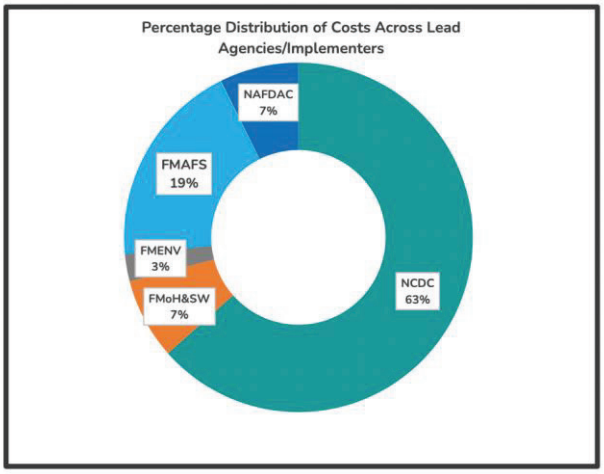
Annex 1: Costing of AMR NAP 2.0

Summary of Distribution of Costs Across Lead Agencies/Implementers in USD (2024–2028)



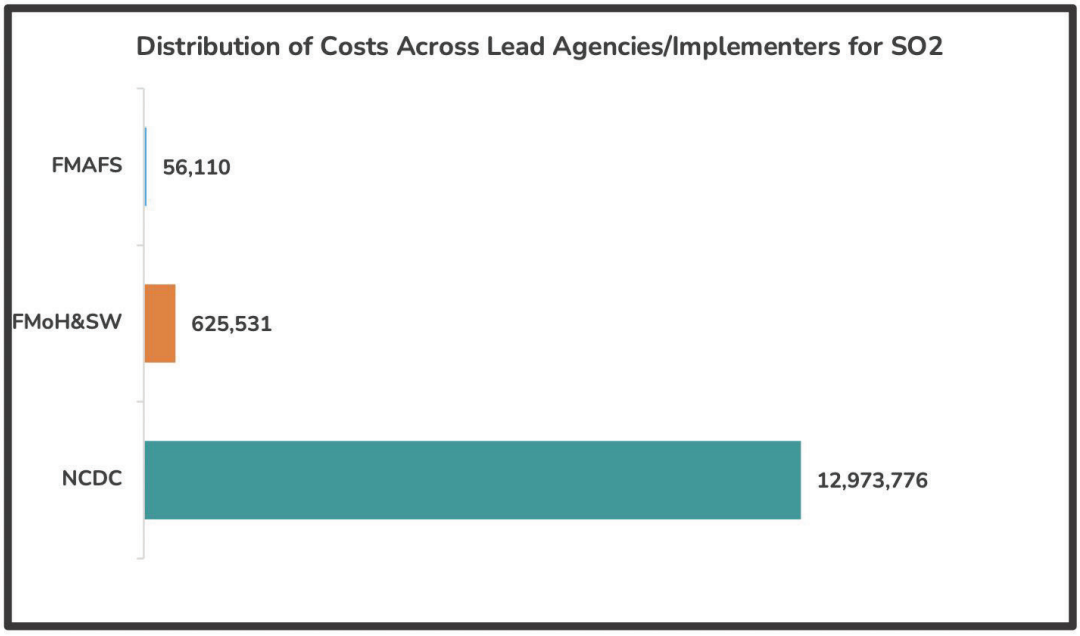


Strategic Objective 1: Strengthen leadership, collaboration, coordination, and AMR governance structures at national and subnational levels

STRATEGIC INTERVENTIONS	LEAD AGENCY (NCDC) COST (USD)
Strategic intervention 1.1: Ensure all relevant sectors (including plant health, food production, food safety, and private sector) are represented in the functional governance structure with adequate funding and coordinating structure in place	2,834,623
Strategic intervention 1.2: Monitor and evaluate progress of the AMR NAP 2.0 implementation	767,778
Strategic intervention 1.3: Strengthen AMR-related regulatory frameworks and policies across sectors	13,336
Strategic intervention 1.4: Strengthen subnational engagement on AMR response	174,664
Strategic intervention 1.5: Align AMR with other health plans and strategies	23,909
Strategic intervention 1.6: Ensure availability of required resources for implementation of AMR NAP 2.0	45,345
Total cost	**3,859,655**

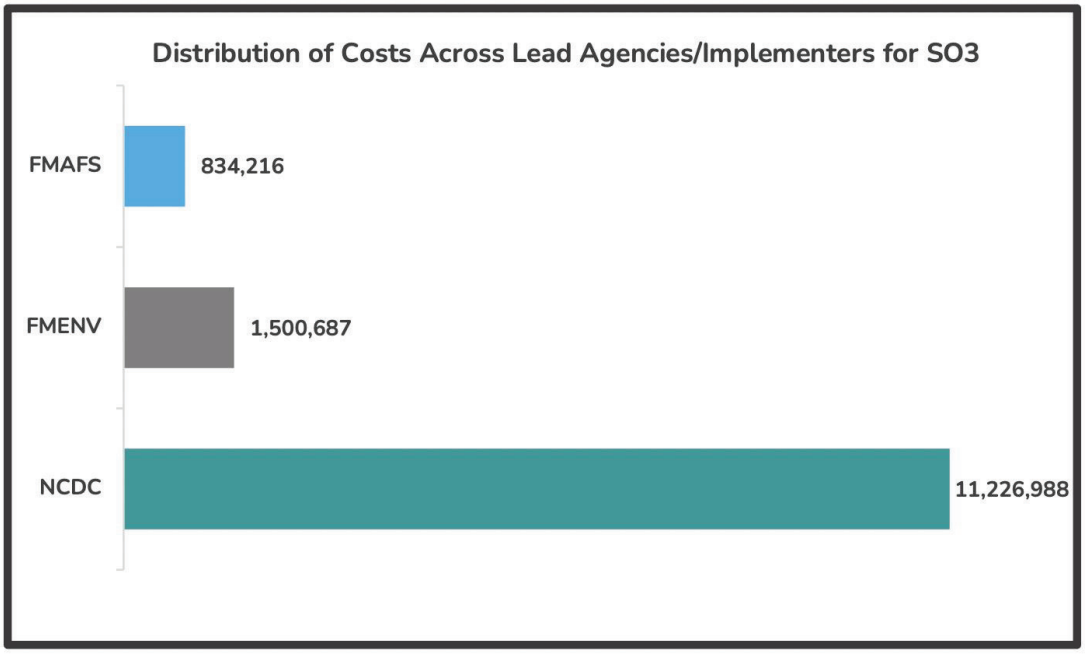
Strategic Objective 2: Improve antimicrobial resistance (AMR) awareness, education, understanding, and behaviour change among all relevant stakeholders

STRATEGIC INTERVENTIONS	COST (USD)
Strategic intervention 2.1: Generate evidence on the knowledge, attitudes, beliefs, and perceptions (KABP) of AMR across all target stakeholder groups	2,771,778
Strategic intervention 2.2: Ensure AMR awareness activities are conducted throughout the year	7,615,825
Strategic intervention 2.3: Engage multisectoral technical and non-technical target audiences/stakeholders across all sectors and subsectors to broaden AMR awareness campaign reach	214,136
Strategic intervention 2.4: Improve engagement with and use of various media channels (traditional mass media and social/new media) and content	274,520
Strategic intervention 2.5: Create/increase AMR awareness in unreached/hard-to-reach locations (subnational, LGA, grassroots levels, etc.)	962,389
Strategic intervention 2.6: Engage decision makers, policy makers and government officials on AMR and the role they play	72,410
Strategic intervention 2.7: Build the technical capacity of targeted One Health professionals on AMR	118,993
Strategic intervention 2.8: Enhance youth engagement with AMR	1,625,367
Total cost	**13,655,417**



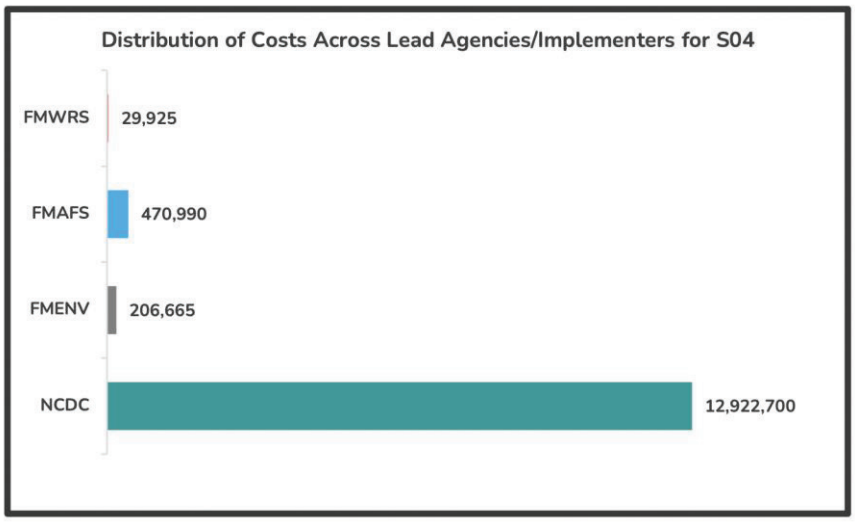
Strategic Objective 3: Strengthen 'One Health' AMR surveillance and operations research to improve the evidence base

STRATEGIC INTERVENTIONS	COST (USD)
Strategic intervention 3.1: Strengthen and expand AMR surveillance capacity to address geographical disparities within the six geopolitical zones in Nigeria and disparities among the One Health sectors	8,853,837
Strategic intervention 3.2: Ensure standardisation and quality control for data across the One Health sectors at national and subnational levels	3,055,991
Strategic intervention 3.3: Enhance surveillance data with further studies and mapping exercises	1,019,840
Strategic intervention 3.4: Implement the residue monitoring and control plan in animal health and environment	379,308
Strategic intervention 3.5: Obtain ISO17025 certification of One Health NRLs	50,181
Strategic intervention 3.6: Strengthen One Health surveillance implementation plan	82,441
Strategic intervention 3.7: Strengthen AMR surveillance within the aquaculture sector	120,293
Total cost	**13,561,891**



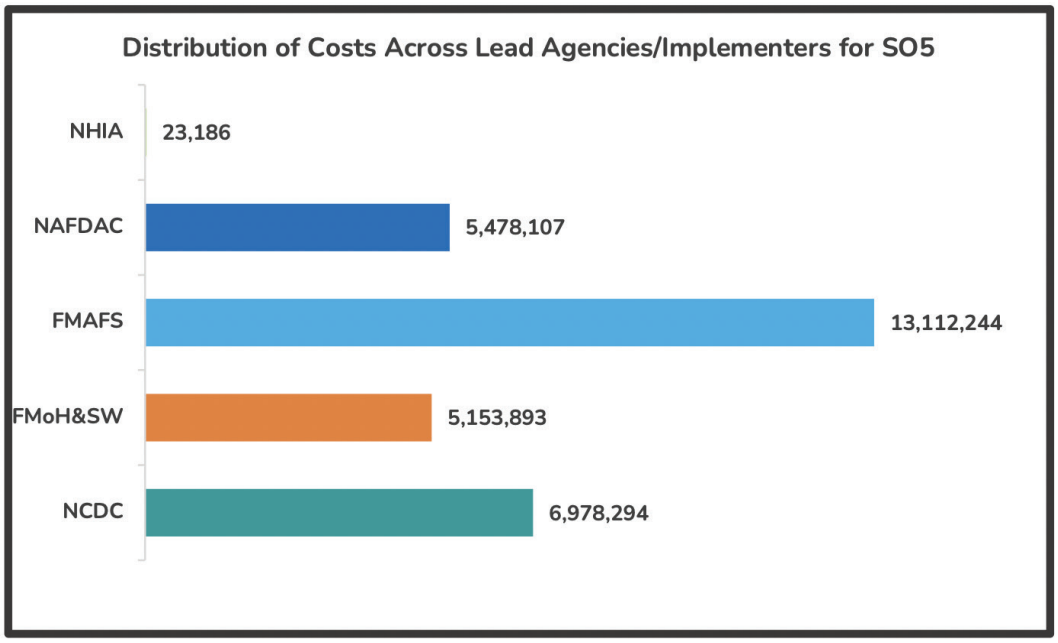
Strategic Objective 4: Improve implementation of infection prevention and control (IPC) programmes, biosecurity, and vaccination uptake including access to WASH across the One Health sectors

STRATEGIC INTERVENTIONS	COST (USD)
Strategic intervention 4.1: Use of national data for decision making	3,271,715
Strategic intervention 4.2: Increase collaborations across other health and disease programme areas	2,037,225
Strategic intervention 4.3: Ensure improvements in and access to WASH and other related infrastructure	1,813,957
Strategic intervention 4.4: Improve IPC/biosecurity/WASH practice across the country	1,457,787
Strategic intervention 4.5: Increase availability of human resources for IPC/WASH/biosecurity	152,512
Strategic intervention 4.6: Include IPC/WASH/biosecurity in pre-service curricula across the One Health departments	30,549
Strategic intervention 4.7: Advocate and continuously engage (annually) with the Nigeria Governors' Forum, Nigeria Health Commissioners' Forum, State Forum for Health Permanent Secretaries, Governors' Wives Forum, Committee of the CMDs, and Directorates of Medical Services for Military and Paramilitary, etc.	39,520
Strategic intervention 4.8: Improve awareness of IPC, biosecurity, and WASH	31,627
Strategic intervention 4.9: Increase vaccine manufacturing	4,734,414
Strategic intervention 4.10: Review the national vaccination policy to include healthcare worker vaccination	60,973
Total cost	**13,630,280**



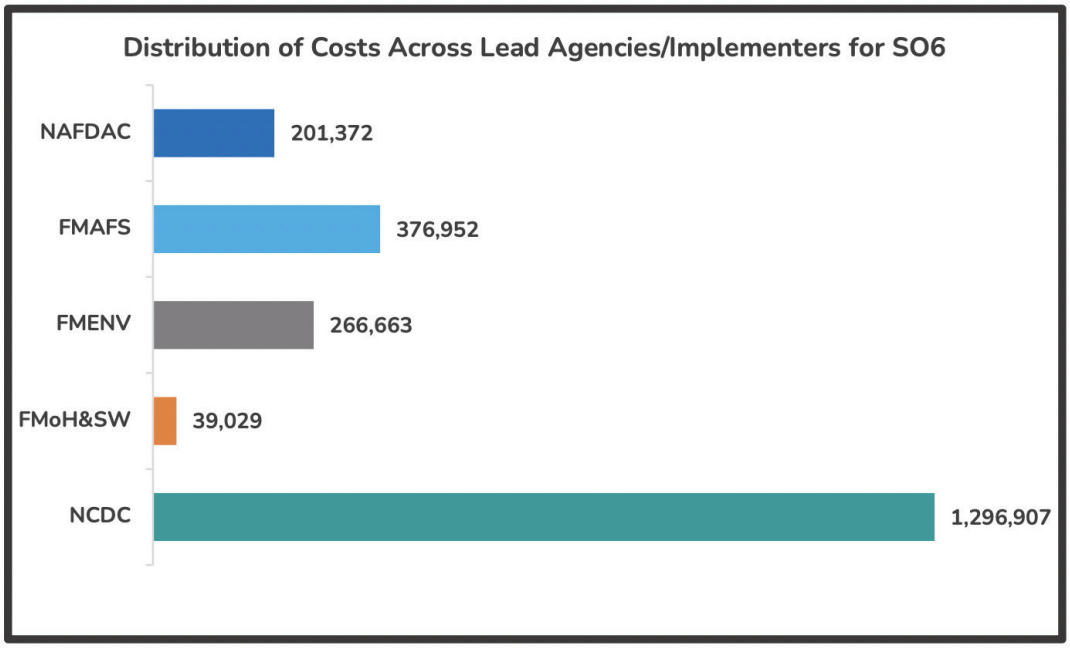
Strategic Objective 5: Improve access to quality antimicrobials and optimise their use across 'One Health' sectors

STRATEGIC INTERVENTIONS	COST (USD)
Strategic intervention 5.1: Improve implementation of stewardship policies and guidelines across all sectors and enforce their regulation	10,122,880
Strategic intervention 5.2: Gather data for stewardship	10,381,912
Strategic intervention 5.3: Ensure access to diagnostics, infrastructure, and quality antimicrobials	10,240,932
Total cost	**30,745,724**



Strategic Objective 6: Build knowledge and capacity of relevant stakeholders to improve local innovations, research, and development of antimicrobials, diagnostics, and vaccines

STRATEGIC INTERVENTIONS	COST (USD)
Strategic intervention 6.1: Develop prioritised national research agenda for AMR with targets and timelines	1,119,187
Strategic intervention 6.2: Conduct research to address priority gaps	455,627
Strategic intervention 6.3: Support capacity building for AMR research and innovation	284,126
Strategic intervention 6.4: Identify alternative antimicrobials, diagnostics, vaccines, and therapeutic innovations	248,664
Strategic intervention 6.5: Generate evidence for cost-effective interventions to reduce AMR	73,317
Total cost	**2,180,922**

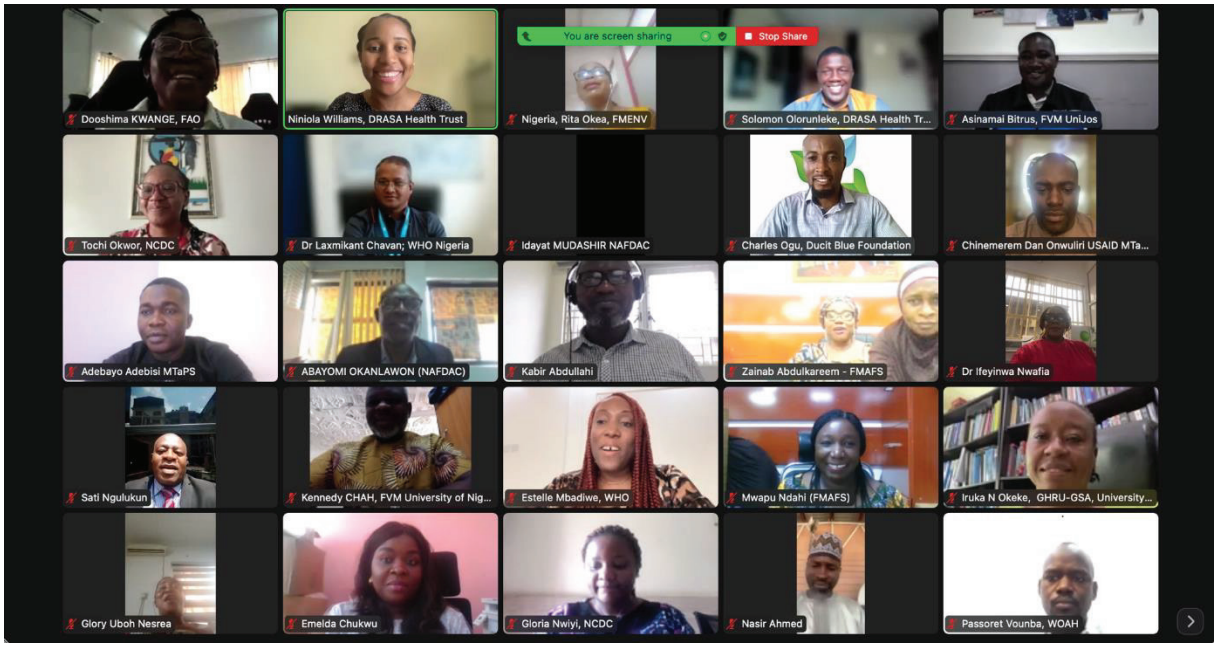


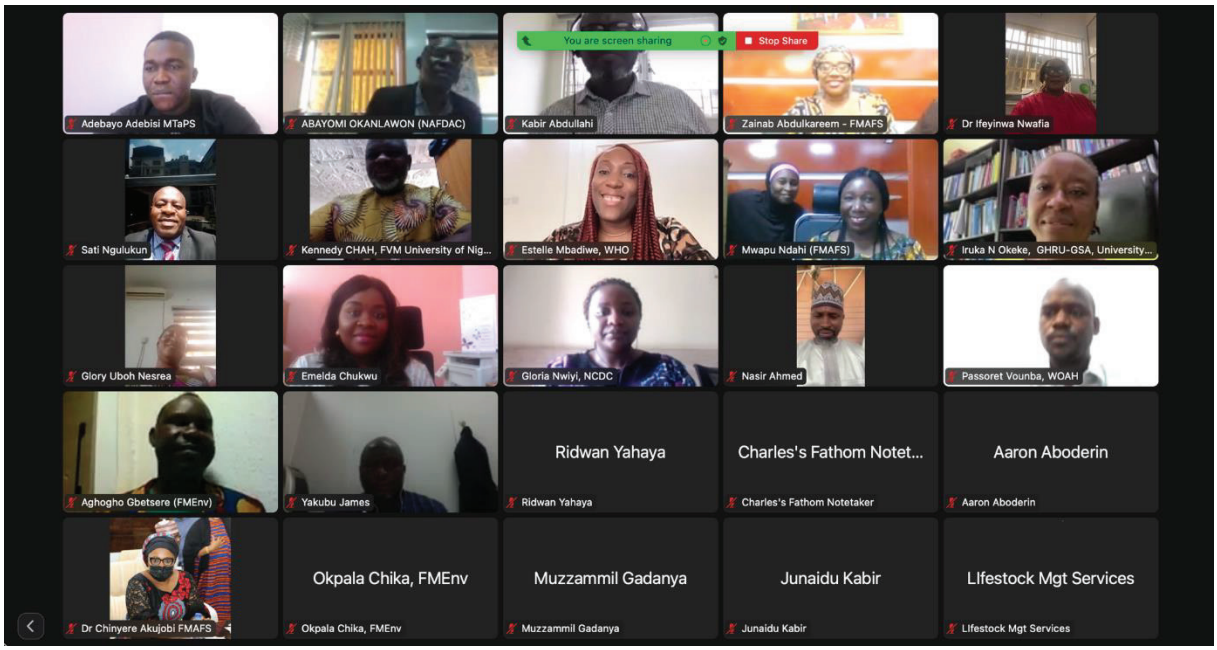
Annex 2: AMR NAP 2.0 Development Workshops

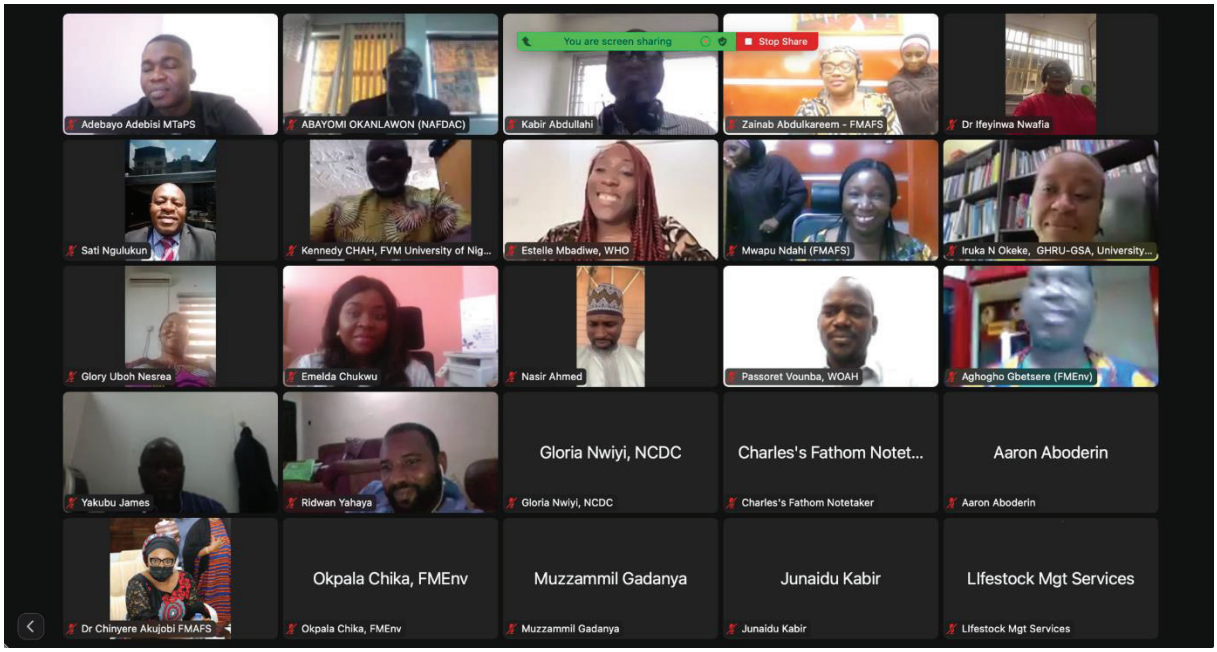
Stakeholder Mapping Workshop: Group Photographs

Location: Virtual

Date: 22 August 2023







Situational Analysis and SWOT Analysis Workshop: Group Photograph

Location: Akwanga, Nasarawa State, Nigeria

Dates: 18–20 September 2023

Strategic Plan, Operational Plan, and M&E Workshop: Group Photograph

Location: Abuja, FCT, Nigeria

Dates: 24–28 October 2023

Budgeting and Costing Workshop: Group Photograph

Location: Abuja, FCT, Nigeria

Dates: 6–10 November 2023

National Action Plan 2.0 Development Workshops: Participants List

S/N	Name	Organisation
1	Dr Modupeoluwa Olakunle Motajo	Afe Babalola University Ado-Ekiti
2	Celestine Ameh	AFENET
3	Prof Junaidu Kabir	Ahmadu Bello University
4	Dr Priscilla Ayodeji Ajetomobi	Asokoro District Hospital
5	Dr Celina Johnson	Association of Nigerian Private Medicare Practitioners (ANPMP)
6	Obinna Onuoha	Breakthrough ACTION (BAN)
7	Obed John	Center for Initiative and Development (CFID)
8	Jennifer Azereh	Christian Health Association of Nigeria (CHAN)
9	Dr Solomon Olorunleke	Dr Ameyo Stella Adadevoh (DRASA) Health Trust
10	Charles Ogu	Ducit Blue Foundation
11	Victor Eborh	Environmental Health Council of Nigeria (EHCON)
12	Antonia Igboin	Federal Ministry of Agriculture and Food Security (FMAFS)
13	Calmday Anita	Federal Ministry of Agriculture and Food Security (FMAFS)
14	Dr Chinyere Akujobi	Federal Ministry of Agriculture and Food Security (FMAFS)
15	Dr Maryam Ibrahim Buba	Federal Ministry of Agriculture and Food Security (FMAFS)
16	Dr Ndahi Mwapu	Federal Ministry of Agriculture and Food Security (FMAFS)
17	Dr Salome Bawa	Federal Ministry of Agriculture and Food Security (FMAFS)
18	Dr Zainab Abdulkareem	Federal Ministry of Agriculture and Food Security (FMAFS)
19	Dupe Hambolu	Federal Ministry of Agriculture and Food Security (FMAFS)
20	Maureen Rumen Kajo-Kokoiwen	Federal Ministry of Agriculture and Food Security (FMAFS)
21	Modupeola Ogunnoiki	Federal Ministry of Agriculture and Food Security (FMAFS)
22	Onojighofia Emmanuel	Federal Ministry of Agriculture and Food Security (FMAFS)
23	Chika Okpala	Federal Ministry of Environment (FMEnv)
24	Dickson Akoh Silas	Federal Ministry of Environment (FMEnv)
25	Faith Gbagidi	Federal Ministry of Environment (FMEnv)
26	Gbetsere Aghogho	Federal Ministry of Environment (FMEnv)
27	John Okotete	Federal Ministry of Environment (FMEnv)
28	Kabiru Akinola	Federal Ministry of Environment (FMEnv)
29	Mrs Rita Okea	Federal Ministry of Environment (FMEnv)
30	Eni Yetunde	Federal Ministry of Finance (FMF)
31	Habu Ikubemi Efi	Federal Ministry of Finance (FMF)
32	Ogbonna G. M	Federal Ministry of Finance (FMF)
33	Okoro V. Onyinye	Federal Ministry of Finance (FMF)

34	Ambrose-Nnaji C. G	Federal Ministry of Health and Social Welfare (FMOH&SW)
35	Ogeh Ajirioghene	Federal Ministry of Health and Social Welfare (FMOH&SW)
36	Pharm James Yakubu	Federal Ministry of Health and Social Welfare (FMOH&SW)
37	Ambrose-Nnaji C. G	Federal Ministry of Water Resources (FMWR)
38	Prof Muhammad Manga	Federal Teaching Hospital Gombe
39	Umar Mohammed Hassan	Federal Teaching Hospital Gombe
40	Dr Asinamai Bitrus	Food and Agriculture Organization of the United Nations (FAO)
41	Dr Ayodele Majekodunmi	Food and Agriculture Organization of the United Nations (FAO)
42	Dr Dooshima Kwange	Food and Agriculture Organization of the United Nations (FAO)
43	Fatima Baba Isa	International Rescue Committee (IRC)
44	Prof Oyinlola Oduyebo	Lagos University Teaching Hospital (LUTH) / College of Medicine, University of Lagos (CMUL)
45	Dr Bala Mohammed	Life Stock Management Services (LMS) / Blue Blood
46	Abdu Enejo	Medical and Dental Council of Nigeria (MDCN)
47	Atuluku A Ruth	Medical and Dental Council of Nigeria (MDCN)
48	Akinwale Akinlabi	Medical Laboratory Science Council of Nigeria (MLSCN)
49	Idayat Mudashir	National Agency for Food and Drug Administration and Control (NAFDAC)
50	Pharm Abayomi Okanlawon	National Agency for Food and Drug Administration and Control (NAFDAC)
51	Tarhemba Philip T	National Agency for Food and Drug Administration and Control (NAFDAC)
52	Yusuf Adamu Muh'd	National Agency for Food and Drug Administration and Control (NAFDAC)
53	Fatimah Jajere	National Agency for the Control of AIDS (NACA)
54	Joy Nnenna Egwuonwu	National Agency for the Control of AIDS (NACA)
55	Agha Ukpai Agha	National Biosafety Management Agency (NBMA)
56	Stephen Ayinbuomwan	National Drug Formulary / Essential Drug List (NDF-EDL) Review Committee
57	Glory Uboh	National Environmental Standards and Regulations Enforcement Agency (NESREA)
58	Teju Adedayo	National Health Insurance Authority (NHIA)
59	Umaru Sani	National Health Insurance Authority (NHIA)
60	Shuaibu Alhassan	National Tuberculosis, Leprosy and Buruli Ulcer Control Programme (NTBLCP)

61	Dr Sati Ngulukun	National Veterinary Research Institute, Vom (NVRI)
62	Gyang Davou Moses	National Veterinary Research Institute, Vom (NVRI)
63	Sati Ngulukun	National Veterinary Research Institute, Vom (NVRI)
64	Albashir Aliyu	Nigeria Centre for Disease Control and Prevention (NCDC)
65	Cyril Nkume	Nigeria Centre for Disease Control and Prevention (NCDC)
66	Dr Abiodun Egwuenu	Nigeria Centre for Disease Control and Prevention (NCDC)
67	Dr Abiodun Ogunniyi	Nigeria Centre for Disease Control and Prevention (NCDC)
68	Dr Fatima Saleh	Nigeria Centre for Disease Control and Prevention (NCDC)
69	Dr Ifedayo Adetifa	Nigeria Centre for Disease Control and Prevention (NCDC)
70	Dr Muzzammil Gadanya	Nigeria Centre for Disease Control and Prevention (NCDC)
71	Dr Muzzammil Gadanya	Nigeria Centre for Disease Control and Prevention (NCDC)
72	Dr Nasir Ahmed	Nigeria Centre for Disease Control and Prevention (NCDC)
73	Dr Olubunmi Olopha	Nigeria Centre for Disease Control and Prevention (NCDC)
74	Dr Oluwaseun Odebajo	Nigeria Centre for Disease Control and Prevention (NCDC)
75	Dr Ridwan Yahaya	Nigeria Centre for Disease Control and Prevention (NCDC)
76	Dr Tochi Okwor	Nigeria Centre for Disease Control and Prevention (NCDC)
77	Ekechi Henry	Nigeria Centre for Disease Control and Prevention (NCDC)
78	Gbenga Joseph	Nigeria Centre for Disease Control and Prevention (NCDC)
79	Gloria Nwiyi	Nigeria Centre for Disease Control and Prevention (NCDC)
80	James Avong	Nigeria Centre for Disease Control and Prevention (NCDC)
81	Oluwadamilare Olowoshile	Nigeria Centre for Disease Control and Prevention (NCDC)
82	Popoola Michael O	Nigeria Centre for Disease Control and Prevention (NCDC)
83	Dr Sikiru O. Badaru	Nigeria Centre for Disease Control and Prevention (NCDC)
84	Tunde Jegede	Nigeria Centre for Disease Control and Prevention (NCDC)
85	Rosemary Uche-Oguneme	Nigerian Agricultural Quarantine Service (NAQS)
86	Dr Emelda Chukwu	Nigerian Institute of Medical Research (NIMR)
87	Prof Stella Smith	Nigerian Institute of Medical Research (NIMR)
88	Dr Olutoyin Adetuberu	Nigerian Veterinary Medical Association (NVMA)
89	Dr Dorothy Oreh	Nursing and Midwifery Council of Nigeria (NMCN)
90	Prof Aaron Oladipo Aboderin	Obafemi Awolowo University (OAU)
91	Dr Erta Kalanxhi	One Health Trust
92	Dr Oluoma Agiri	One Health Trust
93	Oluwatosin Ajayi	One Health Trust
94	Pharm Thomas Omotayo Ilupeju	Pharmacy Council of Nigeria (PCN)
95	Dr Olusola Aruna	UK Health Security Agency (UKHSA)
96	Jerry Panturo	UK Health Security Agency (UKHSA)
97	Levis Kavagi	United Nations Environment Programme (UNEP)

98	Dr Babatunde Ogunbosi	University College Hospital (UCH), Ibadan
99	Dr Unekwuojo Iye Etubi-Ibrahim	University of Abuja Teaching Hospital
100	Prof Ana REE Godson	University of Ibadan
101	Prof Iruka Okeke	University of Ibadan
102	Prof Victoria Adetunji	University of Ibadan
103	Prof Olanike Buraimoh	University of Lagos
104	Prof Kennedy Chah	University of Nigeria Nsukka
105	Dr Chioma Amarachi Onyedunma	University of Nigeria Teaching Hospital
106	Dr Chinelo Ifeoma Okeke	University of Nigeria Teaching Hospital
107	Dr Ifeyinwa Nwafia	University of Nigeria Teaching Hospital
108	Niniola Williams	USAID / Medicines, Technologies, and Pharmaceutical Services (MTaPS) / Dr Ameyo Stella Adadevoh (DRASA) Health Trust
109	Adebayo Adebisi	USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS)
110	Babatunde Akinola	USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS)
111	Chinemerem Dan Onwuliri	USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS)
112	Kabir Abdullahi	USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS)
113	Fadipe Ebenezer Oladotun	Veterinary Council of Nigeria (VCN)
114	Bilounga Ndongo Chanceline	World Health Organization (WHO)
115	Dr Chavan Laxmikant	World Health Organization (WHO)
116	Enos Omondi	World Health Organization (WHO)
117	Kikilope Oluwarore	World Health Organization (WHO)
118	Rose Ogunleye	World Health Organization (WHO)
119	Yidnekachew Mazengiya	World Health Organization (WHO)
120	Zhema Theophilus	World Health Organization (WHO)
121	Pharm Estelle Mbadiwe	World Health Organization (WHO) / Ducit Blue Solutions
122	Dr Passoret Vounba	World Organisation for Animal Health (WOAH)

FEDERAL MINISTRIES OF AGRICULTURE AND FOOD SECURITY; ENVIRONMENT; AND HEALTH AND SOCIAL WELFARE

One Health Antimicrobial Resistance National Action Plan 2024–2028

NIGERIA'S NATIONAL AMR COORDINATING BODY:

Nigeria Centre for Disease Control and Prevention (NCDC)

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