









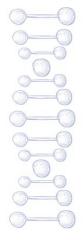




# **The Philippine National Action** Plan on Antimicrobial **Resistance 2024-2028**

A One Health Approach

Inter-Agency Committee on Antimicrobial Resistance



## The Philippine National Action Plan on Antimicrobial Resistance 2024-2028: A One Health Approach

Inter-Agency Committee on Antimicrobial Resistance (ICAMR)

Developed through the support of the Food and Agriculture Organization of the United Nations (FAO) World Health Organization (WHO) World Organisation for Animal Health (WOAH)







and technical assistance by
Ateneo de Manila University School of Medicine and Public Health (ASMPH)



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### Message from the Secretary of Agriculture

Antimicrobial resistance (AMR) does not only threaten the health of livestock. It poses a serious risk to human health. Resistant pathogens can be transmitted from animals to humans through direct contact or the food chain, potentially leading to infections that are harder, and sometimes impossible, to treat.

AMR also impacts food security, rural livelihoods, and our ability to produce safe, high-quality food for the Filipino people. For over a decade, the Department of Agriculture, through the Philippine National Action Plan (PNAP) on AMR 2015-2018 and 2019-2023, has worked diligently to monitor and control AMR within our animal health sector.

Significant progress has been made in surveillance for bacterial pathogens across healthy and diseased animals, especially through the efforts of all our agencies. However, challenges remain, particularly in strengthening coordination across the various bureaus involved and expanding data collection to create a more comprehensive AMR profile.

The PNAP 2024-2028 builds on these achievements and reflects the dedication of numerous stakeholders who worked together over the past year to create a cohesive and effective strategy. A key addition to this third iteration is the monitoring and evaluation framework, which will help us track progress, identify gaps, and adapt our strategies over time. This framework will enable us to assess the effectiveness of our efforts across all agencies involved.

This plan aims to enhance our surveillance efforts, improve responsible antimicrobial practices, and address gaps in coordination to establish a unified approach to AMR in agriculture. Together, with the support of our partners across sectors, we can protect the health of our animals, the safety of our food supply, and the livelihoods of our agricultural communities.

My gratitude goes to everyone involved for their hard work. I look forward to continuing our joint efforts to combat AMR in agriculture.

FRANCISCO P. TIU LAUREL., JR.

Secretary

### **Message from the Secretary of Health**

Antimicrobial resistance (AMR) remains one of the greatest challenges to human health, threatening our ability to treat infections and safeguard public health. In the Philippines, we have made significant strides in addressing AMR over the past five years, recognizing the critical role of proper antimicrobial use and effective stewardship in preserving the efficacy of these life-saving medicines. Through the Philippine National Action Plan (PNAP) 2019-2023, we focused on reducing resistance rates in key pathogens and implementing antimicrobial stewardship programs across various levels of the healthcare system. While we have achieved progress in lowering resistance for specific pathogens, many indicators show increasing resistance, underscoring the complex and evolving nature of this issue.

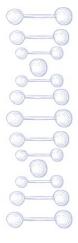
The PNAP on AMR 2024-2028 represents a renewed and strengthened commitment to protecting human health through the One Health approach. Recognizing the interconnectedness of human, animal, and environmental health, this PNAP underscores that AMR cannot be addressed in isolation; rather, it requires close collaboration between the healthcare, agricultural, and environmental sectors.

This plan is a product of rigorous collaboration and coordination among stakeholders across multiple sectors, and I am proud of the teamwork displayed over the past year to bring it to fruition. Moving forward, we strengthen our commitment to deepening our focus on monitoring, responsible use, and community awareness, working to improve data-sharing systems and surveillance to better track antimicrobial usage. I am grateful to all our partners for their dedication to this effort, and I encourage continued collaboration as we strive to curb AMR's impact on public health, ensure access to effective treatments for future generations, and accelerate progress toward achieving and sustaining the Department's 8-Point Action Agenda and, ultimately, Universal Health Care.

Sa Bagong Pilipinas... bawat buhay mahalaga!

TEODORO J. HERBOSA, MD

Secretary of Health





## **Index of Abbreviations**

3GCRE/	Third-generation cephalosporin-resistant	DepEd	Department of Education
	Enterobacterales	DENR	Department of Environment and Natural
ACB /	ASEAN Centre for Biodiversity		Resources
ACRI	Ateneo de Manila University - School of Medicine	DICT	Department of Information and Communications
	and Public Health Center for Research and		Technology
	Innovation	DILG	Department of the Interior and Local Government
ADDRL	Animal Disease Diagnosis and Reference	DOH	Department of Health
	Laboratory	DOLE	Department of Labor and Employment
AGISAR	Advisory Group on Integrated Surveillance of	DOST	Department of Science and Technology
	Antimicrobial Resistance	DM	Department Memorandum
AH	Animal Health	DPCB	Disease Prevention and Control Bureau
AMC	Antimicrobial Consumption	DPO	Department Personnel Order
AMR	Antimicrobial Resistance	DTI	Department of Trade and Industry
AMS	Antimicrobial Stewardship	EB	Epidemiology Bureau
AMU	Antimicrobial Use	EMB	Environmental Management Bureau
AO	Administrative Order	EDPMS	Electronic Drug Price Monitoring System
AOP	Annual Operational Plan	EQA	External Quality Assurance
ARB	Antimicrobial-Resistant Bacteria	EMR	Electronic Medical Records
ARGs	Antimicrobial Resistance Genes	FAO	Food and Agriculture Organization of the United
ATLASS	Assessment Tool for Laboratories and AMR		Nations
	Surveillance Systems	FDA	Food and Drug Administration
ASF	ASEAN Strategic Framework	FGD	Focus Group Discussions
AMOZ	5-methyl-morpholino-3-amino-2-oxazolidinone	FQ	Fluoroquinolone
AMRLAB-CoP	Community of Practice on Antimicrobial Resistance	GAP	Good Agricultural Practices
	Laboratory	GAHP	Good Animal Husbandry Practices
AOZ	3-amino-2-oxazolidinone	GAqP	Good Aquacultural Practices
APEC	Asia Pacific Economic Cooperation	GDP	Gross Domestic Product
ARSP	Antimicrobial Resistance Surveillance Program	GHP	Good Health Practices
ARSRL	Antimicrobial Resistance Surveillance Reference	GIDA	Geographically Isolated and Disadvantaged Areas
	Laboratory	GLASS	Global AMR Surveillance System
ASEAN	Association of Southeast Asian Nations	GMP	Good Manufacturing Practices
ATM-AVI	Aztreonam- Avibactam	HAI	Healthcare-associated infection or
AVP	Audio-visual presentation		Hospital-acquired infections
BAI	Bureau of Animal Industry	HFDB	Health Facility Development Bureau
BFAR	Bureau of Fisheries and Aquatic Resources	HFSRB	Health Facilities And Services Regulatory Bureau
ВМВ	Biodiversity Management Bureau	НРВ	Health Promotions Bureau
вос	Bureau of Customs	HPDPB	Health Policy Development and Planning Bureau
BSWM	Bureau of Soils and Water Management	HRH	Human Resources for Health
CCC	Climate Change Commission	HACCP	Hazard Analysis Critical Control Point
cGMP	Current Good Manufacturing Practice	ICAMR	Inter-Agency Committee on Antimicrobial
CHD	Center for Health Development		Resistance
CHED	Commission on Higher Education	IEC	Information, Education, and Communication
CLSI	Clinical & Laboratory Standards Institute	InFARM	International FAO Antimicrobial Resistance
CML	Central Meat Laboratory		Monitoring
CPE	Continuing Professional Education	ISPs	Industry Strategic S&T Programs
CRAB	carbapenem-resistant Acinetobacter baumannii	IPC	Infection Prevention and Control
CRE	carbapenem-resistant Enterobacter baumannii carbapenem-resistant Enterobacterales	IT	Information Technology
CSO	Civil Society Organization	JAO	Joint Administrative Order
CWHS	City-Wide Health System	KAP	Knowledge, Attitudes, and Practices
DA	Department of Agriculture	KS	Knowledge, Attitudes, and Practices Key Strategy
DBM			Local Government Unit
DC	Department Circular	LGU	Low-middle Income Countries
DC	Department Circular	LMIC	Low-initiate income countries

M&E	Monitoring and Evaluation	PMAS	Post-Market Alert System
MAH	Marketing Authorization Holder	PMIS	Pharmaceutical Management Information Systen
MBL	Metallo-B-Lactamase	PNAP	Philippine National Action Plan
MDR	Multidrug Resistant	PNF	Philippine National Formularies
MDRO	Multidrug Resistant Organisms	PNVDF	Philippine National Veterinary Drug Formulations
MDRP	Maximum Drug Retail Price	PPS	Point Prevalence Surveys
MER±COL	Meropenem±Colistin	PPS	Policy and Planning Services
MFDS	Ministry Food and Drug Safety	PRC	Professional Regulation Commission
MOA /	Memorandum of Agreement	PSA	Philippine Statistics Authority
MRSA	Methicillin-resistant Staphylococcus aureus	PSCM	Procurement, supply chain, and management
MTZ	Metronidazole	PSMID	Philippine Society for Microbiology and Infectious
NAG	National Antibiotic Guidelines		Diseases
NAGCom	The National Antibiotic Guidelines Committee	PMIS	Pharmaceutical Management Information Systen
NAPHS	National Action Plan for Health Security	PHPs	Public Health Pharmacists
NCBP	National Committee on Biosafety of the	PO	People's Organization
	Philippines	PVMA	Philippine Veterinary Medical Association
NCDPC	National Center for Disease Prevention and Control	PWHS	Provincial-Wide Health System
NCI-SRD	National Convergence Initiative for Sustainable	R&D	Research and Development
	Rural Development	RADDL	Regional Animal Disease Diagnostic Laboratory
NCPAM	National Center for Pharmaceutical Access &	RDE	Research, Development and Extension
	Management	RITM	Research Institute for Tropical Medicine
NEC	National Epidemiology Center	SEAMEO	Southeast Asian Ministers of Education
NEDA	National Economic and Development Authority	0220	Organization
NEHAP	National Environmental Health Action Plan	SEAOHUN	Southeast Asian One Health University Network
NDA	National Dairy Authority	S&T	Science and Technology
NDPCO	National Drug Policy Compliance Officers	SBC	Social Behavioral Change
NGO	Non-Government Organization	SCMS	Supply Chain Management Service
NMIS	National Meat Inspection Service	SCSC	Sub-Committee on Standards and Conformance
NRCP	National Residue Control Program	SO	Special Order
NTS	Non-typhoidal Salmonella	SOM	Senior Officials Meeting
NUHRA	National Unified Health Research Agenda	SPMS	Strategic Performance Management System
OHL	Office for Health Laboratories	SUC	State university and college
OHHLEP	The One Health High-Level Expert Panel	SFVP	Substandard and Falsified Veterinary Products
PCC		TA	Technical Assistance
PCAARRD	Philippine Carabao Center	TESDA	Technical Education And Skills Development
PCAARRD	Philippine Council for Agriculture, Aquatic and	TESDA	' '
DCLIDD	Natural Resources Research and Development	T=4.000	Authority
PCHRD	Philippine Council for Health Research and	TrACSS	Tripartite AMR Country Self-Assessment Survey
DOW	Development	TWG	Technical Working Group
PCW	Philippine Commission on Women	UK-DEFRA	United Kingdom-Department for Environment
PD	Pharmaceutical Division		Food and Rural Affairs
PhATSS	Philippine Approach to Sustainable Sanitation	UNEP	United Nations Environment Programme
PHC	Primary Healthcare	UPLB	University of the Philippines Los Baños
PHIC	PhilHealth Insurance Corporation	VDAP	Veterinary Drugs and Products
PhilCZ	Philippine Inter-Agency Committee on Zoonoses	VMPs	Veterinary Medicinal Products
Phil-AHIS	Philippine Animal Health Information System	WAAW	World Antimicrobial Awareness Week
PhilHealth	Philippine Health Insurance Corporation	WASH	Water, Sanitation, and Hygiene
PhilOHUN	Philippine One Health University Network	WFP	Work and Financial Plans
PHP	Public Health Pharmacist	WHO	World Health Organization
PIA	Philippine Information Agency	WOAH	World Organization for Animal Health
PIC/S	Pharmaceutical Inspection Cooperation Scheme	WSP	Water Safety Plan
PMP-AMR	Progressive Management Pathway for AMR		

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### **Department of Health (DOH)**

- Pharmaceutical Division (PD)
- Epidemiology Bureau (EB)
- Research Institute for Tropical Medicine (RITM)
- Disease Prevention and Control Bureau (DPCB)
- Health Promotion Bureau (HPB)
- Health Policy Development and Planning Bureau (HPDPB)
- Bureau of International Health Cooperation (BIHC)
- Health Human Resource Development Bureau (HHRDB)
- Health Facility Development Bureau (HFDB)
- Office for Health Laboratories (OHL)
- Knowledge Management Information and Technology Service (KMITS)
- Food and Drug Administration (FDA)
- Supply Chain Management Service (SCMS)
- Philippine Health Insurance Corporation (PhilHealth)
- Metro Manila Center for Health Development (MMCHD)

### **Department of Agriculture (DA)**

- Bureau of Animal Industry (BAI)
- National Meat Inspection Service (NMIS)

- Bureau of Fisheries and Aquatic Resources (BFAR)
- Bureau of Soils and Water Management (BSWM)
- Philippine Carabao Center (PCC)
- National Dairy Authority (NDA)
- Livestock Biotechnology Center
- Bureau of Plant Industry (BPI)

## Department of Environment and Natural Resources (DENR)

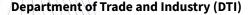
• Environmental Management Bureau (EMB)

### Department of Education (DepEd)

## Department of the Interior and Local Government (DILG)

### Department of Science and Technology (DOST)

- Philippine Council for Health Research and Development (PCHRD)
- Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD)



Technical Education and Skills Development Authority (TESDA)

National Economic and Development Authority (NEDA)

#### **Professional Societies**

- Provincial, Cities, Municipal Veterinarians' League of the Philippines (PCMVLP)
- Philippine Veterinary Drug Association

 Philippine Society for Microbiology and Infectious Diseases, Inc.

#### **Academic Partners**

- University of the Philippines Manila
- Philippine College of Veterinary Public Health
- Philippine College of Veterinary Epidemiology
- Association of Southeast Asian Nations Centre for Biodiversity
- Philippine One Health University Network
- Philippine General Hospital
- Adult Infectious Disease and Tropical Medicine Department (San Lazaro Hospital)

### **International Organizations**

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### 1. Background

### 1.1. What is Antimicrobial Resistance?

Antimicrobials encompass a broad range of medications, including antibiotics, antivirals, antiparasitics, and antifungals, designed to prevent and treat infectious diseases across humans, animals, and plants. Antimicrobial resistance (AMR) arises when these medications lose their effectiveness against infections, allowing pathogens to persist and spread. While AMR is a natural process driven by genetic changes in pathogens over time, its progression is significantly accelerated by irrational practices such as the misuse and overuse of antimicrobials (World Health Organization, 2023; 2024).

### 1.2. AMR as a growing global threat

AMR is a global health challenge that threatens the well-being of humans, animals, and the environment. Beyond its devastating impact on health, AMR endangers economic progress and food security, disproportionately affecting vulnerable populations. In 2023, the World Health Organization (WHO) recognized AMR as one of the top 10 global health threats (United Nations Environment Programme, 2024). Annually, approximately 700,000 deaths are attributed to infections caused by drug-resistant pathogens (O'Neill, 2016). Simulations on the impact of AMR on global gross domestic product (GDP) from 2017-2050 estimate economic losses of 1.1% (USD \$2 trillion annually) in low-AMR scenarios and 3.8% (USD \$6.1 trillion annually) in high-AMR scenarios by 2050, further highlighting its far-reaching consequences (Jonas et al., 2017).

In low- and middle-income countries (LMICs), limited healthcare resources and fragile health systems amplify the challenges of AMR. The rise of resistant strains not only increases treatment costs but also leads to higher morbidity and mortality, reducing workforce productivity and economic stability (Kanan et al., 2023; Otaigbe & Elikwu, 2023). In the agricultural sector, AMR exacerbates untreatable diseases in livestock, impacting the production and export of animal byproducts such as meat, milk, and eggs. For LMICs, many of which are agriculturally driven, the implications on food security and economic stability are particularly severe (Jonas et al., 2017).

These global trends are also evident in the Philippines. In 2019, the Department of Health (DOH) reported 15,700 deaths linked directly to AMR and 56,700 associated deaths (Lansang, 2024). Cultural practices and weak regulatory systems contribute to inappropriate antimicrobial use. Self-medication and antibiotic sharing are widespread, with individuals often accessing antibiotics through informal sources such as sari-sari stores (Barber et al., 2017; Robredo et al., 2022).

The animal sector also faces significant challenges. Weak regulation and enforcement of veterinary medicinal products (VMPs) jeopardize food safety and increase AMR-related health risks (Gundran et al., 2020). Clinical antimicrobials commonly used in human medicine are also extensively used in poultry and swine farms (Barroga et al., 2020). However, there is a critical lack of comprehensive data on antimicrobial use in both human and animal health sectors, further complicating mitigation efforts (Saito et al., 2018). Addressing AMR in the Philippines requires a coordinated, multisectoral approach that strengthens surveillance, regulation, and education to protect public health and food security.

### 1.3. AMR as a One Health problem

AMR affects the human, animal, and environmental sectors through multiple pathways, which may occur directly or indirectly. The complex interplay of pathways across these sectors significantly contributes to the development and spread of AMR (**Figure 1**).

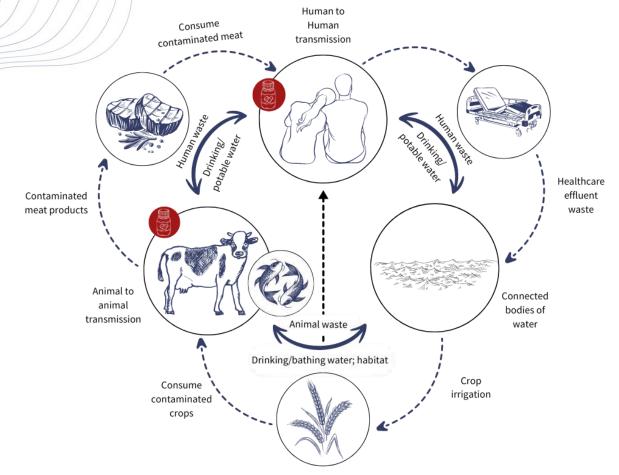


Figure 1. Pathways of antimicrobial resistance between the human-animal-environment interface.

Improper antimicrobial use, poor control of infectious diseases among human and animal populations, and effluent waste from the human healthcare facilities increase the risk of mutating pathogens (Samtiya et al., 2022). Antimicrobial-resistant infections can spread directly through physical contact, especially in healthcare settings, or indirectly via contaminated surfaces, medical instruments, or environments. Poor hand hygiene and inadequate sterilization further facilitate the spread of resistant bacteria.

Misuse and overuse of antimicrobials in animals remain a critical public health concern. The agricultural sector frequently uses antibiotics for non-therapeutic purposes due to inadequate regulation, enforcement, and public awareness, with potentially devastating consequences (Xu et al., 2022). Animal-to-animal transmission occurs through close contact or shared resources, while humans are exposed to AMR through direct contact with animals, manure, or contaminated meat products (Kasimanickam et al., 2021). Evidence also suggests AMR can develop from consuming contaminated animal products (Samtiya et al., 2022).

The environment plays a crucial role in AMR transmission and development. Antibiotic residues and AMR microbes from human and animal waste use the environment as a reservoir and vector for drug-resistant bacteria. Improper disposal of antibiotics and infectious wastes introduces AMR into the environment, where contaminated waterways and soil can harbor resistant bacteria that re-enter human or animal populations through water, crops, and aquaculture (Kaiser et al., 2022). Wastewater treatment plants, pharmaceutical manufacturing, and animal farms are significant sources of these residues and bacteria.

Recognizing the interconnectedness of human, animal, and environmental health, the One Health framework is essential for addressing AMR (Velazquez-Meza et al., 2022). The One Health approach emphasizes the multi-sectoral interdependence and promotes collaborative efforts to develop robust strategies to address AMR. By integrating perspectives and expertise from multiple sectors, One Health facilitates more effective surveillance, research, and intervention measures to curb the spread of AMR (White & Hughes, 2019).

In the Philippines, the current state of engagement with the environmental sector in AMR surveillance and activities is in its infancy stages. Notably, the Department of Environment and Natural Resources (DENR) has yet to become an official member of the Inter-Agency Committee on Antimicrobial Resistance (ICAMR) (ICAMR et al., 2019). However, the DENR regularly attends ICAMR meetings and is involved in select AMR surveillance projects, including the Tricycle Project. A deeper and formally institutionalized engagement of the DENR in ICAMR activities is essential for a whole-of-society approach to combat antimicrobial resistance.

### 1.4. Initiatives to combat AMR

The Philippine government has made significant progress in combating AMR through a combination of broad and localized strategies (**Table 1**). Key efforts include establishing multi-sectoral mechanisms like the ICAMR and implementing the PNAP on AMR, which is updated every five years.

Globally, international organizations lead efforts by promoting best practices, developing new antibiotics, and strengthening surveillance systems. Notable initiatives include the WHO's Global AMR Action Plan, the Global Antimicrobial Resistance and Use Surveillance System (GLASS), and the Tricycle Project (World Health Organization, 2015; WHO, n.d.). The World Organization for Animal Health (WOAH) has introduced the Terrestrial and Aquatic Animal Health Codes (World Organization for Animal Health, 2023). The UN has formed the Interagency Coordination Group on AMR and the Environment Programme (UNEP) (UNEP, 2024; United Nations, 2019), while the FAO's initiatives include the AMR Action Plan, the Assessment Tool for Laboratories and AMR Surveillance Systems (ATLASS), and the Progressive Management Pathway for AMR (PMP-AMR) (UN FAO, n.d.). The Fleming Fund also supports AMR efforts in low- and middle-income countries.

Regionally, efforts focus on strengthening national action plans, enhancing cooperation, and building capacity to address local challenges. ASEAN countries collaborate with international organizations and engage in global frameworks like the Asia Pacific Economic Cooperation (APEC) AMR Network, ensuring their initiatives align with global efforts to combat AMR (Association of Southeast Asian Nations, 2019).

**Table 1.** Milestones in combating AMR in the Philippines

	Key Milestones in Combating AMR in the Philippines
Year	Milestone Milestone
1988	Committee on ARSP established by virtue of DOH Department Order 339-J
2009	Establishment of the Philippine Animal Health Information System (Phil-AHIS)
2013	Joint Administrative Order between DOH and Department of Agriculture (DA) for Registration of Veterinary Drugs
/	and Products
2014	ICAMR/formed, along with Laboratory Networks, and Antimicrobial Resistance Surveillance Program (ARSP)
2015	PNAP to Combat AMR 2015-2017 launched, first Philippine/World Antimicrobial Awareness Week (P/WAAW) celebrated, Pilot training on AMS conducted, No Prescription No Dispensing Policy, and ARSP initiatives expanded
2016	Manila Declaration on UNEA 3 Resolution on Environmental Health, National Policy on Infection Prevention in Healthcare, AMS Hospital Manual of Procedures, and Food Safety Act of 2016 enacted
2016	DOH AO 2016-0002 National Policy on Infection Prevention and Control in Health Care Facilities
2017	DOH-PD Point Prevalence Survey, DA Laboratories Rationalization, and National Unified Health Research Agenda (NUHRA) 2017-2022 published, DA BAI Hands-on Training on the Isolation and Identification of bacterial species of <i>Salmonella, Enterococcus</i> , and <i>E. coli</i> as Sentinel organisms for the AMR Surveillance Program conducted
2018	PhilHealth Circular No. 2018-0009 Use of Restricted Antimicrobials in PhilHealth-Accredited Health Care Institutions in Accordance with the ARSP, DA BAI Hands-on Training on the Identification of Target Respiratory Bacterial Pathogens in Swine conducted, DA ARSP-Animal Health (AH) developed
2018	ARSP in Animals developed, IAMResponsible Campaign launched, One Health module initiated, and National Antibiotic Guidelines released
2019	PNAP to Combat AMR 2019-2023 launched and AMS Primary Care Manual of Procedures
2020	DENR joined AMR efforts
2021	Tripartite AMR Country Self-Assessment Survey (TrACSS) Country Report on AMR National Action Plan implementation, UN FAO Student Forums
2022	DA BAI RADDL Refresher Training and Parallel Testing on Bacterial Isolation, Identification, and Antimicrobial Susceptibility Testing piloted
2023	National Environmental Health Action Plan (NEHAP) 2023-2030 introduced, UN FAO Regional Laboratory Coordinators' Workshop in the Implementation of BAI AMR Surveillance Guidelines, UN FAO Student Forums, National Poultry Salmonella Prevention and Control Surveillance Program piloted, Hands-on Training for AMR Laboratory Technicians conducted
2024	WOAH Workshop on Mapping of Stakeholders and Data Sources to Facilitate Monitoring of the Quantities and Usage Patterns of Antimicrobial Agents Used in Animals and Workshop on Enhancing Private Sector Awareness on AMR, WOAH Regional Animuse Training for WOAH Focal Points for Veterinary Products, WOAH 1st Workshop on Substandard and Falsified Veterinary Products (SFVP), WOAH Pilot Veterinary Monitoring and Surveillance System for SFVP (WOAH-VSAFE) for WOAH focal points for veterinary products and regulators of veterinary medicinal products in Asia and Pacific, WHO Media workshop for journalists, WHO Global Consultation for Awareness Raising on AMR, UN FAO Regional Laboratory Coordinators' Workshop in the Implementation of BAI AMR Surveillance Guidelines, UN FAO Student Forums, Seminar on Good Animal Husbandry Practices (GAHP) for Poultry and Swine Farms in Region X, Seminar-Workshop on Understanding GAHP-Related Standards for Inspectors, Regional Benchmarking workshop on AMR surveillance in Human Health, Animal Health and Environment Sector conducted.

## 2. Approach to Developing the PNAP

### 2.1. Description of Approach

The development of the new Philippine National Action Plan (PNAP) on Antimicrobial Resistance (AMR) for 2024-2028 was guided by three main objectives (**Figure 2**). The first objective was to review the implementation of the previous PNAP 2019-2023 by conducting a desk review of relevant documents, reports, and literature, complemented by consultations with implementing agencies. The second objective involved drafting the new medium-term plan based on the findings from the implementation review and aligning it with updates from the global action plan on AMR. The third objective focused on building a logical framework that organized the goals, indicators, and monitoring and evaluation (M&E) instruments, using benchmarking and research on global frameworks to develop measurable indicators for key strategies. These efforts culminated in a multisectoral stakeholder consultation to finalize and consolidate the outputs into the 2024-2028 PNAP on AMR.



Figure 2. PNAP on AMR through One Health Approach 2024-2028

#### 2.2. Desk Review

A comprehensive desk review was conducted, which included published literature (i.e., peer-reviewed journal articles), gray literature (i.e., action plans, advisories, guidelines, country assessments, policies, administrative orders, regulatory frameworks) and documents from relevant government agencies (i.e., DOH, DENR, DA, DILG, DTI, FDA, NAGCom, ASC, MWSS, CPD, DOLE, DepED, DOST, NDA). The objective was to identify the successes and challenges in implementing the 2019-2023 PNAP to Combat AMR through the One Health Approach, including achieved and unachieved goals and targets.

Internet databases such as Google Scholar, PubMed, and ScienceDirect were utilized using a combination of keywords including: "action plan" AND "antibiotic resistance" OR "antimicrobial resistance" AND "Philippines"; "antibiotic resistance" OR "antimicrobial resistance" OR "guidelines, laws, policy, regulations" AND "Philippines"; "One Health" AND "antimicrobial use", "antimicrobial surveillance", "antimicrobial stewardship", "World Antimicrobial Awareness Week" OR "WAAW", and "Infection Prevention Control". Documents that did not include specific provisions on key strategies and activities in the PNAP were excluded from the review.

Unpublished documents were also included in the study, which were submitted and provided by implementing government agencies. The list of documents were validated subsequently through a consultative process.

2.3. Qualitative Data Gathering

Focal point persons from each agency and division were provided with a self-assessment worksheet to evaluate their involvement in implementing the 2019-2023 PNAP. They rated their activities using a traffic light system: green for fully implemented, yellow for ongoing with good progress, orange for started but needing more work, red for not started, and gray for forgone. ICAMR member agencies and offices had four weeks to complete the assessment. The results were then collated, summarized, and verified during the 33rd ICAMR Meeting on May 21, 2024, at the Luxent Hotel in Quezon City, attended by 45 participants from 19 departments and bureaus.

The meeting sought to build consensus among implementing agencies on the progress of PNAP objectives and activities. It also identified the factors that facilitated or hindered the completion of these activities. To structure this analysis, a modified version of the Framework for Results-based Public Sector Management (Asian Development Bank, 2012) was used. This framework categorized the elements of implementation into "pain points" (major problems and frustrations) and "good practices" (successful strategies and activities).

### 2.3.1. Key-Informant Interviews

Key-informant interviews were conducted with selected representatives, including focal persons from ICAMR, to assess current implementation and coordination models and identify best practices for achieving the PNAP objectives. Additionally, benchmarking interviews with local and global stakeholders ensured that the PNAP aligned with current global standards. The key informants included representatives from the Research Institute for Tropical Medicine (RITM), the Department of Agriculture (DA) Bureau of Animal Industry (BAI), the DA National Meat Inspection Service (NMIS), the DA Bureau of Fisheries and Aquatic Resources (BFAR), the Department of Environment and Natural Resources (DENR), and the Food and Drug Administration (FDA). The interviews were recorded, transcribed verbatim, and analyzed manually using deductive thematic analysis to extract key themes and insights.

### 2.3.2. Consultations with Key Government and Non-Governmental Stakeholders

A technical vetting consultation with key stakeholders was conducted on 19 July 2024 at the Park Inn Hotel, Quezon City, Philippines, bringing together key government and non-governmental stakeholders. The workshop featured focus group discussions (FGDs) to brainstorm and workshop the main strategies and components of the PNAP to combat AMR. Participants shared their insights and suggestions, which were crucial in shaping comprehensive recommendations for the PNAP. Each thematic discussion was facilitated, with group insights reported and discussed collectively. Consent was obtained from the participants, and their confidentiality and privacy were strictly maintained throughout the process.

On 22 October 2024, a stakeholder consultation for the M&E framework was conducted at the Shangri La Hotel, Mandaluyong City. The 2-day workshop aimed to develop and finalize the M&E framework, baselines, targets, and means of verification. The framework was crafted to help track AMR initiatives' progress, effectiveness, and impact across sectors, ensuring accountability and alignment with national and international AMR goals, including the One Health Approach.

From November 6–11, 2024, a series of online validation meetings were held with ICAMR members and implementing agencies to review and finalize the proposed activities, implementing partners, timelines, assumptions, and detailed budget summaries for each Key Strategy in the PNAP. During these sessions, outstanding questions were addressed, and any unresolved issues were clarified and finalized. In addition, the draft PNAP was made available for asynchronous review from September to November 2024. This allowed implementing agencies the flexibility to review and refine their respective sections of the plan at their own pace, particularly for those unable to attend the scheduled meetings.



**Figure 3**. Documentation of Key Informant Interviews, 33rd Meeting of the Inter-Agency Committee on AMR (ICAMR), M&E Stakeholder Consultation, Online Validation Meetings

### 2.4. Implementation Review Summary

The implementation review was done according to each Key Strategy (KS) in the PNAP for AMR. Across all traffic light colors, KS 7 (57.9%), KS 1 (54.5%), and KS 5 (46.7%) had activities that were mostly rated as ongoing with good progress. KS 3 and KS 6 had most of their corresponding activities rated as started but needed more work, with 41.7% and 57.9% respectively. "Not started" was the most common rating for KS 2 and 4, with 38.4% and 31.3% of their respective activities presenting with this rating.



## Key Strategy 1. Commit to the Philippine Action Plan through multisectoral engagement and accountability

- · Elevate AMR as a national priority
- · Upholding accountability among various sectors



### Key Strategy 2. Strengthen surveillance and laboratory capacity

- · Improving diagnostic capabilities
- Capacitating health workers
- Institutionalizing robust reporting and surveillance systems



## Key Strategy 3. Ensure uninterrupted access to safe and qualityassured antimicrobials

 Improve regulatory frameworks, monitoring, and supply chain management



## Key Strategy 4. Regulate and promote the rational use of antimicrobials

- Fully implement guidelines for prudent antimicrobial use
- Track policy enforcement across various sectors.



## Key Strategy 5. Implement appropriate measures to reduce infection across all settings

- · Enhancing the capacities of health personnel
- · Improving infection control in facilities
- Promote sanitation and hygiene in communities



### Key Strategy 6. Promote innovation and research on AMR

- Create a supportive and sustainable environment for research
- Disseminate information
- · Foster technological advancements



### Key Strategy 7. Improve awareness and understanding of antimicrobial resistance through effective communication and education

- · Increasing public awareness of AMR
- Integrating AMR prevention and reduction into the pre-service training of health and agriculture professionals

**Figure 4.** Key Strategies of the PNAP 2019-2023

Comparing across key strategies, the KS with the highest percentage of fully implemented activities was KS 5 (26.7%), followed by KS 1 (18.2%), and KS 6 (5.3%). The KS's with the highest percentages of activities that were on-going and with good progress were KS 7 (57.9%), KS 1 (54.5%), and KS 5 (46.7%). Some activities were identified to have started and needed more work, with the highest percentages from KS 6 (57.9%), KS 3 (41.7%), and KS 7 (31.6%). The most number of activities that had not yet started belonged to KS 2 (38.5%), KS 6 (26.3%), and KS 4 (31.3%). A total of four activities were foregone from Key Strategy 3 (1/24 activity, 4.2%) and Key Strategy 4 (3/32 activities, 9.4%). The descriptive results of the implementation status of the activities from the last PNAP to Combat AMR can be found in **Figure 5**.



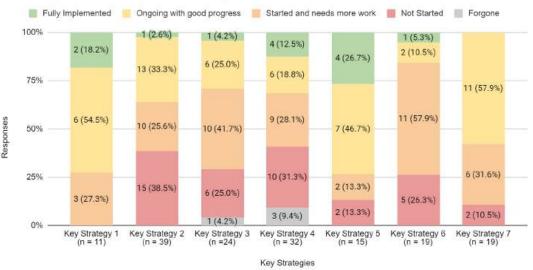


Figure 5. Quantitative results of traffic light color analysis of the implementation review

### 2.4.1. Highlights Across Sectors

- The human health sector in the Philippines demonstrates strong AMR capacity, with the Department of Health (DOH) leading effectively, however, increased involvement and synergy between sectors can be further strengthened.
- Significant progress has been made in the animal health sector's AMR surveillance, though challenges exist in coordination, financing, and enforcement of early-stage regulations on veterinary antimicrobial drugs.
- Environmental AMR surveillance is underdeveloped, with the DENR lacking an institutional mandate, limited specialization in AMR detection, and with no international monitoring protocols for guidance.

The results highlight the strong capacity in AMR policy, regulation, surveillance, and infrastructure within the human health sector in the Philippines. The DOH is leading AMR efforts effectively, while other agencies, such as the Department of Agriculture (DA), may still increase in synergy between bureaus to optimize human and financial resources.

In the animal health sector, significant progress has been made over the past five years in AMR surveillance and program implementation. The DA has played a crucial role in ICAMR and international collaborations, establishing surveillance protocols and laboratory methods. Despite these advancements, challenges remain, including a lack of a monitoring and evaluation framework, insufficient training, and limited budget allocations for surveillance beyond the national level. Fragmented efforts among various DA bureaus and early-stage regulations on veterinary antimicrobial drugs further complicate the situation. The sector remains committed to AMR prevention through educational campaigns and sector-wide engagement. Improved coordination within the DA and enhanced governance are essential for sustained progress.

The environmental sector's AMR surveillance is still developing. The DENR is not an official ICAMR member and has not prioritized AMR in its medium-term RDE projects (2023-2028). Although the DENR participates in AMR initiatives and engages in World Antimicrobial Awareness Week (WAAW), its lack of an institutional mandate limits its effectiveness. The recent establishment of environmental surveillance laboratories, with limited specialization in AMR detection, and the absence of international protocols for monitoring antimicrobial-resistant bacteria (ARB) and antimicrobial resistance genes (ARGs) are significant barriers. Currently, environmental surveillance data is limited to the UN Tricycle Project led by RITM. A more integrated and mandated approach is necessary for effective environmental AMR management.

### 2.4.2. Good Practices Across Key Strategies

- Regular multi-sectoral consultation meetings have improved coordination and communication, helping to elevate AMR as a key issue across sectors, with AMS devolved to local healthcare levels.
- Funding for AMR-related research is available through DOST and international organizations, but a lack
  of unified research agendas and underutilized resources hinder full impact.
- Public awareness campaigns such as the Philippine Antimicrobial Resistance Awareness Week (PAAW)
  and the DA's iAMResponsible campaign have successfully promoted AMR prevention, though more
  collaboration with local government units (LGUs) is needed.
- Better integration of the private sector, academe, professional organizations, and government agencies is required to create a true One Health approach in combating AMR across sectors.

Across the seven key strategies of the PNAP against AMR, the data analysis revealed common themes among the different good practices and pain points in implementing the outlined activities:

Multisectoral Coordination and Communication. The regular conduct of multisectoral consultation meetings led by the ICAMR has been effective in enhancing coordination. These meetings have facilitated avenues for better communication among various stakeholders to bring forward AMR as a key issue to be tackled, across all levels and sectors. An achievement in the human health sector is devolving antimicrobial stewardship (AMS) to the primary health care settings at the local and regional levels. Such progress is consistent with other countries in the region such as Malaysia, who have successfully integrated AMS in all levels of healthcare management (Ministry of Health Malaysia, 2022). More can be improved, however, in the collaboration of government agencies, with both the private sector and the academe in conducting AMR-related activities. While these meetings serve as coordination platforms, synergy between agencies remains limited due to individualized approaches to tackling the issue of AMR, which undermines a truly One Health Approach.

Research and Development. With the support of the Department of Science and Technology (DOST), international organizations, and research agencies, substantial funding has been made available for AMR-related research. This presents opportunities for advancing knowledge and developing innovative technologies. Despite this, challenges include inadequate dissemination of funding opportunities, a lack of a unified AMR research agenda, and limited integration of AMR in strategic roadmaps for the animal and environmental sectors. These issues have led to underutilization of available resources.

Community Engagement and Advocacy. There are continued opportunities for international support and collaborations for AMR programs and activities and a high-level of participation from the Philippines in AMR-related ASEAN events and initiatives, including the World Antimicrobial Resistance Awareness Week. The Department of Health's Philippine Antimicrobial Resistance Awareness Week, with public education campaigns and research forums, has made significant strides in raising AMR awareness. Additionally, the Department of Agriculture's iAMResponsible campaign has promoted good animal husbandry and responsible antimicrobial use. However, increasing capacity-building and collaborating with LGUs can enhance these campaigns by tailoring information, education, and communication (IEC) materials to local needs.

### 2.4.3. Pain Points across Key Strategies

- Insufficient financing is a major barrier across all sectors, with agencies having to reallocate funds due
  to the absence of dedicated AMR funding for resources, capacity-building, and surveillance.
- Surveillance efforts are fragmented, with gaps in antimicrobial use (AMU) data collection and sharing in both human and animal health sectors, leading to underdeveloped data management systems.
- The environmental sector has minimal involvement in AMR surveillance, lacking baseline data, priority agendas, and formalized mechanisms for intersectoral partnerships.
- Many PNAP-AMR activities remain unstarted, especially in the environmental sector, reflecting broader coordination and infrastructure challenges in implementing a unified AMR strategy.

Despite these notable achievements, several areas of concern have been identified, necessitating further improvement, such as the need for increased financing, limited capacity for surveillance and information sharing, lack of a firm commitment to the One Health approach:

Financing. Insufficient financing is a major hurdle affecting all sectors, which hampers the progress of activities outlined in the national action plan. Currently, agencies must reallocate funds from other budget items due to the absence of a dedicated fund specifically for AMR-related objectives, particularly in areas such as human resources, capacity-building, and surveillance. While international organizations like the WHO have provided financial support through initiatives such as the Tricycle Project, the establishment of a dedicated AMR fund mandated by the government is essential for sustainable implementation. Despite commitments to prioritize AMR, the environmental sector has noted that its leadership has not integrated AMR into its medium-term agenda, creating a significant barrier for policymakers advocating for increased funding. Given the longstanding recognition of AMR as a global threat, substantial investments are crucial for all AMR initiatives. Thailand (Sumpradit, 2021) serves as a notable example, where the implementation of its national strategic plan is primarily supported by a pooled funding mechanism from the government's fiscal budget and donor contributions (Sumpradit et al., 2021). Japan's inclusion of finance ministers in discussions on AMR priorities is also a good practice to emulate in planning for the activities' sources of financing (The Government of Japan, 2023).

Surveillance and Data Management. Fragmented information sharing among agencies for AMR-related research and surveillance poses a significant challenge. While AMR surveillance has made progress in data collection at local, regional, and national levels, the Philippines has yet to establish a comprehensive system for AMU surveillance in the human health sector. This issue mirrors the challenges faced by other ASEAN countries, where AMU data is not routinely discussed, and established systems are lacking (Association of Southeast Asian

Nations, 2022). In the animal sector, limited capacity for AMU and AMR surveillance and difficulties in accessing veterinary AMU data persist, with residual antimicrobial levels being monitored in meat samples similar to other ASEAN countries. There is a need for a comprehensive, accessible database integrating AMU and AMR data in the human and animal health sectors. The Japanese National AMR Action Plan's emphasis on a unified database could serve as a model for addressing fragmented data management issues in the Philippines (The AMR One Health Surveillance Committee, 2023). The evaluation of the PNAP-AMR 2019-2023 indicates that activities aimed at strengthening surveillance and laboratory capacity have the highest percentage of unstarted tasks, reflecting persistent surveillance challenges (Inter-Agency Committee on Antimicrobial Resistance et al., 2019).

Strengthening the One Health Approach. The PNAP-AMR 2019-2023 committed to integrating the health aspects of the human, animal, and environmental sectors through the One Health approach. However, five years later, the environmental sector's involvement remains minimal, with a lack of baseline data, non-inclusion of AMR in the department's priority agenda, and limited institutional mechanisms to formalize partnerships. The environmental sector is solely involved in the key strategy addressing surveillance, with the status of all related activities yet to be started. This situation is not unique to the Philippines; other countries like Vietnam face similar challenges in integrating the environmental sector into their AMR action plans (Ministry of Health Vietnam, 2013). In comparing countries from the WHO South East Asian Region, the environmental sector's progress in combating AMR is also noted to have the last amount of progress compared to its human and animal health counterparts (World Health Organization, 2022). Inadequate infrastructure for environmental monitoring, such as laboratories and training programs, and a lack of awareness among practitioners about the mechanisms connecting AMR and the environment are common issues.

### 2.4.4. Recommendations

In response to the identified cross-cutting challenges and opportunities across the seven key strategies, the following recommendations have been formulated for incorporation into the creation and implementation of the 2024-2028 PNAP on AMR:

Increased capacitation of ICAMR Members. Surveillance and laboratory capacity are critical gaps that need addressing through enhanced capacity-building activities aligned with international guidelines and reflective of the current AMR situation in the country. Implementation of surveillance monitoring plans are challenged by limited budget, infrastructure, and manpower due to multiple roles. The animal sector is particularly constrained by the lack of international standards and protocols for AMR in aquaculture and animal products. Increased resources are needed to see through the full implementation of surveillance plans at the national and regional level.

Improved coordination among local and national agencies. Despite the success of multisectoral meetings through regular ICAMR sessions, there is a need for an improved collaborative mechanism among key agencies managing different strategies. Prior to implementing the new PNAP, it is crucial to ensure that the scope of work and expectations are discussed, co-created, and committed to by concerned agencies, allowing for the department heads to designate the appropriate personnel. Given the decentralized health system in the country, enhanced involvement of LGUs is essential to ensure targeted promotion and local implementation of AMR campaigns and programs especially in geographically isolated and disadvantaged areas (GIDAs). This extends to ensuring that IEC materials are tailor-fit to regional and community contexts (Public Health Agency of Canada, 2023).

Strengthening accountability and reporting mechanisms. In line with the capacitation and improved collaboration, there needs to be strengthened accountability among concerned agencies through an organized reporting mechanism. Benchmarking from the National Action Plans of Thailand (World Health Organization, 2017), Singapore (Agri-Food & Veterinary Authority of Singapore et al., 2017), and the FAO Action Plan on AMR (Food and Agricultural Organization of the United Nations, 2021), there must be an established point of assessment in order to identify action plans that need to be prioritized and/or need recalibration of strategies.

Increased involvement of the environmental health sector. To achieve the One Health Approach, it is imperative to strengthen the capacity and involvement of the environmental health sector concerning AMR. There is a need to create a policy, mandate, or official inclusion of the DENR as an ICAMR member to allow stronger commitment and allocation of resources to AMR-related activities. There should be clear delineation of roles and responsibilities and established protocols and methods within the environmental sector, then focusing on preparatory activities and capacity building for surveillance and baseline data collection. This includes providing adequate infrastructure for environmental monitoring, training workers on the relationship between AMR and the environment, and prioritizing AMR within the environmental health sector's agenda.

Adopting a gendered-lens approach on AMR. AMR risk varies between genders, and gender intersects with other socio-behavioral factors such as socio-economic status, disability, and age, impacting individuals differently. Surveillance data should be disaggregated according to gender and other socio-economic variables, so that baseline data can be developed as support to evidence-based policies and activities. Research on AMR may also collect data on how gender roles and biological differences influence AMR dynamics and how environmental factors contribute to resistance spread. These studies would lay the groundwork on risk communication and education strategies to better engage communities and vulnerable populations. Gender-inclusive AMR strategies tend to be more people-centered and effective; thus, capacity-building activities such as infection prevention and control and surveillance training must be gender-responsive (WHO Regional Office for Europe, 2022). Recognizing these factors can help tailor more responsive recommendations, ultimately contributing to better health outcomes for humans, animals, and the environment.

Integrating socio-economic and gender determinants of health. Integrating socio-economic and gender determinants of health into plans and activities for AMR is imperative, as these factors play a significant role in influencing antibiotic use patterns and the spread of resistant infections. Studies show that AMR occurs more frequently in lower- to middle-income countries (Samtiya et al., 2022). Research on gender data and antibiotic use is scarce, but there are existing studies from other countries suggesting significant gender differences (Jones, et al., 2022). For instance, men may be more likely to purchase unprescribed antibiotics, influenced by socioeconomic status, health-seeking behavior, and other contextual factors (Pham-Duc & Sriparamananthan, 2021). Additionally, certain diseases may exhibit higher antibiotic resistance rates in specific genders, further emphasizing the need for gender-informed AMR strategies (Brandl, et al., 2021). In the Philippines, socio-economic barriers such as poverty, inadequate education, poor living conditions, and limited access to healthcare lead to the misuse and overuse of antibiotics, with individuals often resorting to self-medication or seeking treatment from unregulated sources (Basu et al., 2022). Lack of sanitation and overcrowded living environments in both animal and human environments exacerbate the spread of resistant pathogens (Laxminarayan et al., 2016). Addressing these determinants through improved healthcare access, rigorous education on antibiotic use, and enhanced living conditions can significantly bolster antibiotic stewardship,

strengthen infection control, and ultimately reduce the AMR burden. Similarly, smaller-scale animal farming usually exists in resource-limited settings, which have less biosecurity and biosafety measures. Backyard farms and smaller-scale animal and aquaculture farms, especially in rural areas have less access to resources and information on AMR due to unregulated Good Animal Husbandry Practices (GAHP) & Good Aquaculture Practices (GAQP) (Hedman et al., 2020). This holistic approach acknowledges that health behaviors and outcomes are deeply rooted in social and economic contexts, which must be addressed to effectively combat AMR (United Nations Environment Programme, 2023; World Health Organization, 2023).

### 2.4.5. Conclusion

This study reviewed the implementation progress of the PNAP (2019-2023) through a comprehensive desk review of both published and gray literature within the Philippines and internationally benchmarked standards and documents from leading international development organizations. Consultations across the government, academic, and development sectors were also conducted.

The results indicated ongoing progress with several notable milestones achieved over the past five years. Policies, plans, and mandates are well-established within the human and animal health sectors. However, full implementation requires additional resources, timely and accessible budget allocation, additional manpower, capacity building, and improved cohesive communication among local and national agencies. Strengthening the mandates for regulating and monitoring the prudent use of animal antimicrobials is crucial. The environmental sector also awaits official inclusion in the ICAMR to take a more active role in the One Health approach against AMR and begin its preparatory stages for surveillance and baseline data. Data collection protocols and methodologies need to be well-defined and established. Integrating data-sharing platforms, conducting supply chain studies across departments, and disaggregating data by gender and other socio-economic variables will increase equity and responsiveness to different sectoral needs. Awareness efforts, although having actively participated in internationally-led campaigns, would benefit from a more devolved, tailor-fit approach to effectively reach animal and health workers at the community level beyond social media. Overall, while substantial progress has been made, sustained efforts and refinements are essential to fully realize the goals of the National Action Plan.

A full copy of the Implementation Review can be found in the Annex.

### 3. What's new in this PNAP?

The PNAP on AMR has evolved through phases, each demonstrating a growing commitment to a comprehensive, multisectoral approach in addressing AMR. The initial PNAP (2015-2017) focused on establishing a strong national foundation, emphasizing surveillance, laboratory capacity, and rational use of medicines. The subsequent PNAP (2019-2023) expanded efforts by increasing accountability, enhancing infection prevention, and fostering innovation through strategic research initiatives.

The PNAP (2024-2028) further builds on these achievements, incorporating the One Health approach and international best practices. It aligns with international agreements and recommendations, including the WHO recommendations for addressing gender inequalities in national action plans on AMR, the 2024 UN General Assembly Political Declaration agreement, and the on-going agreements from the Philippines National Action Plan on Health Security (WHO, 2024). Most importantly, the third iteration of the PNAP has introduced an M&E framework, with outcome and output indicators for each Key Strategy. This is designed to ensure the effective implementation and continuous improvement of the key strategies being implemented. A full description of the M&E framework can be found in **Section 4**.

Table 2. Comparison of Key Strategies between 1st, 2nd, and 3rd PNAP to Combat AMR

PNAP to Combat AMR 2015-2017	PNAP to Combat AMR 2019-2023	PNAP on AMR 2024-2028
Commit to a comprehensive, financed	Commit to the PNAP through	Enhance awareness and commitment
national plan with accountability and	multisectoral engagement and	to multi-sectoral engagement,
civic society engagement	accountability	governance, and accountability in
		implementing the Philippine Action
		Plan through the One Health Approach
Strengthen surveillance and	Strengthen surveillance and	Strengthen <i>multisectoral</i> surveillance,
laboratory capacity	laboratory capacity	<i>monitoring</i> , and laboratory capacity
Ensure uninterrupted access to	Ensure uninterrupted access to safe	Ensure uninterrupted access to safe and
essential medicines of assured quality	and quality-assured antimicrobials	quality-assured antimicrobials
Regulate and promote rational use of	Regulate and promote the optimal	Regulate and promote the <i>rational use</i>
medicines, including in animal	use of antimicrobials	of antimicrobials across all sectors
husbandry and ensure proper patient		
care		
Enhance infection prevention and	Implement appropriate measures to	Implement appropriate regulatory
control across all settings	reduce infection across all settings	measures to reduce <i>drug-resistant</i>
		infections across all settings
Foster innovations, research and	Promote innovation and research on	Promote and invest in innovation and
development	AMR	research <i>initiatives</i> on AMR <i>through</i>
		strong partnerships and multisectoral
		collaboration
Development of a Risk Communication	Improve awareness and	Improve awareness and understanding
Plan to Combat AMR	understanding of antimicrobial	of AMR through <i>established programs</i>
	resistance through effective	for dissemination and education across
	communication and education	all levels and sectors

**Note:** Revisions to the key strategies in this iteration of the PNAP are in bold and italics for better visibility in grayscale or print.

### 3.1. Vision and Mission of PNAP 2024-2028

#### Vision

A nation protected against the threats of antimicrobial resistance.

#### Mission

To implement an integrated, comprehensive, and sustainable national program to address antimicrobial resistance geared towards safeguarding human and animal health, and preventing interference in agricultural, food, trade, communication, and environmental sector activities.

### 3.2. Targets for 2028

- **Target 1:** Reduce by 10% carbapenem-resistant Enterobacterales (CRE) (E. coli and Klebsiella) and third-generation cephalosporin-resistant Enterobacterales (3GCRE)\*
- Target 2: Reduce by 10% carbapenem-resistant *Acinetobacter baumannii* (CRAB) healthcare-associated infections\*
- Target 3: Reduce by 10% Methicillin-resistant Staphylococcus aureus (MRSA) infections
- **Target 4:** Target < 1% prevalence rate of ceftriaxone-resistant gonorrhea
- Target 5: Reduce by 10% ciprofloxacin-resistant non-typhoidal Salmonella infections compared to 2023
- Target 6: Reduce bacterial AMR related deaths by 6% by 2028\*
- Target 7: Establish baseline AMR and AMU rates in the agricultural sector.
- Target 8: Formalize the role of the environmental sector in AMR\*
- Target 9: All health care facilities have basic water, sanitation, hygiene and waste services

**Note:** New additions to the targets in this iteration of the PNAP are highlighted in green and marked with an asterisk (\*) for visibility in grayscale or print.

Target 1 now includes third-generation cephalosporin-resistant Enterobacterales (3GCRE) as a priority for the human health sector, alongside carbapenem-resistant Enterobacterales (CRE). These bacteria collectively pose the highest estimated burden among multi-drug resistant (MDR) gram-negative bacteria (Kaye & Belley, 2022). Target 2 introduces Carbapenem-resistant *Acinetobacter baumannii* (CRAB), which is a critical addition due to its limited treatment options and alarmingly high mortality rates. Local data reveals that *Acinetobacter baumannii* remains over 50% resistant to most antibiotics, underscoring the urgency of addressing this issue (Ahuatzin-Flores, et al., 2024).

Target 6 was added to align with the Political Declaration on Antimicrobial Resistance, signed during the 2nd High-Level Meeting on AMR on September 26, 2024, at the United Nations General Assembly (WHO, 2024). In this declaration, UN member states committed to a set of actionable targets, including reducing human deaths associated with bacterial AMR by 10% by 2030.

Target 7, carried over from the previous PNAP, has been significantly enhanced by expanding the list of priority populations and microbes under surveillance, as detailed in **Table 7**. This expansion now includes key

aquaculture species under healthy animal AMR surveillance, as well as additional microbes associated with diseased livestock, reflecting a more comprehensive and targeted approach to AMR monitoring.

In line with the One Health Approach, Target 8 has been created to formally integrate the Department of Environment and Natural Resources (DENR) into the ICAMR. This institutional inclusion will remove existing barriers and enable DENR to access the financial and human resources needed to conduct comprehensive and rigorous environmental AMR surveillance.

 Table 3. Population and microbes under surveillance for animal AMR from the PNAP for AMR 2019-2023

HEALTHY ANIMALS	DISEASED LIVESTOCK	DISEASED AQUATIC ANIMALS
Zoonotic bacteria	Swine	Tilapia
1. Salmonella spp.	1. Actinobacillus pleuropneumoniae	1. Streptococcus agalactiae
2. Campylobacter spp.	2. Pasteurella multocida	2. Streptococcus iniae*
	3. Bordetella bronchiseptica	
Commensal bacteria	4. Streptococcus suis	Milkfish and shrimp
1. Escherichia coli	5. Escherichia coli*	1. Vibrio parahaemolyticus
2. Enterococcus faecium	6. Haemophilus parasuis*	
3. Enterococcus faecalis	7. Salmonella spp.*	
	8. Staphylococcus aureus*	
Tilapia, Milkfish, Shrimp*	. •	
1. Escherichia coli	Poultry	
	1. Escherichia coli*	
	2. Staphylococcus aureus*	
	3. Pasteurella multocida	
	4. Avibacterium paragallinarum	
	5. Salmonella spp.*	
	. ,	
	Dairy Cattle & Water Buffaloes	
	1. Staphylococcus aureus	
	2. Streptococcus agalactiae	
	3. Escherichia coli	
	4. Klebsiella pneumoniae*	
	5. Pasteurella multocida*	

**Note:** New additions to the list of population and microbes under AMR surveillance in this iteration of the PNAP are highlighted in green and marked with an asterisk (\*) for visibility in grayscale or print.

### 3.3. Monitoring and Evaluation Framework

This PNAP offers, for the first time, a clear Monitoring and Evaluation (M&E) framework to understand the theory of change that will occur as a result of the inputs and outputs, leading to desired outcomes. The logical framework (log frame) defines specific indicators to measure progress, highlighting the relationships between the plan components and key assumptions, such as political will, adequate funding, and multi-sectoral cooperation. By doing so, the framework ensures that progress can be systematically tracked, and adjustments can be made based on measurable outcomes.

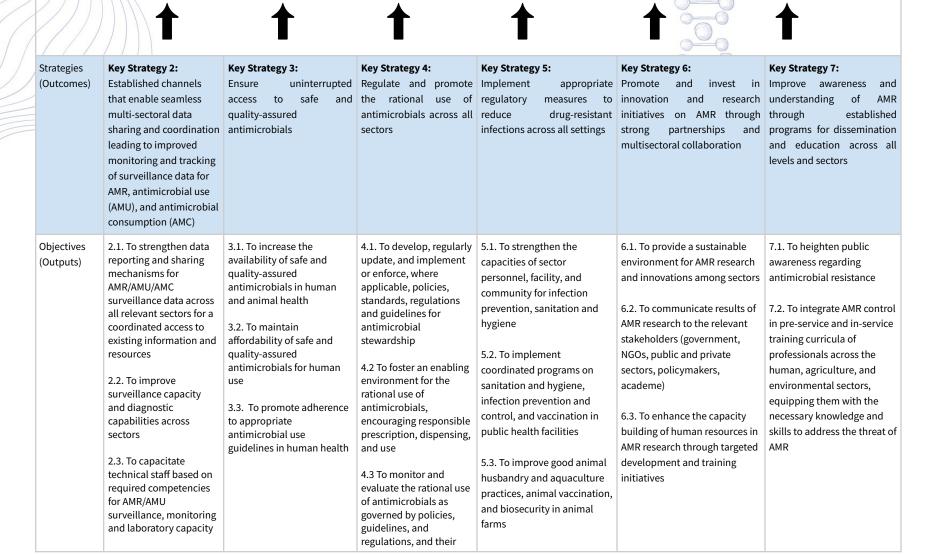
The M&E framework aligns with national and international laws, including the Philippine Food Safety Act, the National Environmental Health Action Plan (NEHAP), Good Aquaculture and Animal Husbandry Practices (GAqP and GAHP), the WHO Global Action Plan on AMR, the ASEAN Strategic Framework to Combat AMR, the WHO recommendations for addressing gender inequalities in national action plans on AMR the 2024 UN General Assembly Political Declaration agreement, and the ongoing agreements from the Philippines National Action Plan on Health Security. This alignment not only strengthens national and regional standards but also fosters collaboration across sectors and addresses existing gaps in AMR prevention and control efforts.

A visual guide to the M&E Framework is provided in **Figure 6**, and the complete list of Outcome and Output indicators can be found in **Section 4**. These indicators include baselines, targets, and means of verification, ensuring that implementing agencies can monitor progress effectively and make data-driven adjustments.

Figure 6. Monitoring and Evaluation Framework of the PNAP 2024-2028

Vision	A nation protected against the threats of antimicrobial resistance.
Mission	To implement an integrated, comprehensive, and sustainable national program to address AMR geared towards safeguarding human and animal health, and preventing interference in agricultural, food, trade, communication, and environmental sector activities.
Targets	Target 1: Reduce by 10% carbapenem-resistant Enterobacterales (CRE) (E. coli and Klebsiella) and third-generation cephalosporin-resistant Enterobacterales (3GCRE)  Target 2: Reduce by 10% carbapenem-resistant <i>Acinetobacter baumannii</i> (CRAB) healthcare-associated infections  Target 3: Reduce by 10% Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) infections  Target 4: Target < 1% prevalence rate of ceftriaxone-resistant gonorrhea  Target 5: Reduce by 10% ciprofloxacin-resistant non-typhoidal <i>Salmonella</i> infections compared to 2023  Target 6: Reduce bacterial AMR related deaths by 6% by 2028  Target 7: Establish baseline AMR and AMU rates in the agricultural sector.
	Target 8: Formalize the role of the environmental sector in AMR







	2.4. To institutionalize well-developed	implementation or enforcement	
	reporting, and data management systems at	emoreement	
	the national,		
1//	subnational, and local		
	levels in the health,		
	agriculture and environment sectors		



Key Strategy	Key Strategy 1: Enhance awareness and commitment to multi-sectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach		
Objectives (Outputs)	<ul> <li>1.1. To elevate AMR as a key priority issue at the national and subnational level</li> <li>1.2. To establish a functional and multisectoral coordinating mechanism for implementing the NAP, involving national and subnational agencies, civil society, private sector, academe and development partners</li> </ul>		
	<ul><li>1.3. To establish clear accountability mechanisms among various sectors in the monitoring and evaluation of the implementation of the National Action Plan, emphasizing transparency and responsiveness.</li><li>1.4. To allocate adequate resources (financial, human, and material) and expertise for AMR initiatives in all relevant sectors.</li></ul>		

#### 3.4. The Road Ahead

The PNAP is set to be implemented from 2024 to 2028, serving as the third iteration of the Philippines' comprehensive response to AMR. **Figure 7** illustrates the timeline of milestones that will support the Monitoring and Evaluation (M&E) framework throughout the plan's implementation.

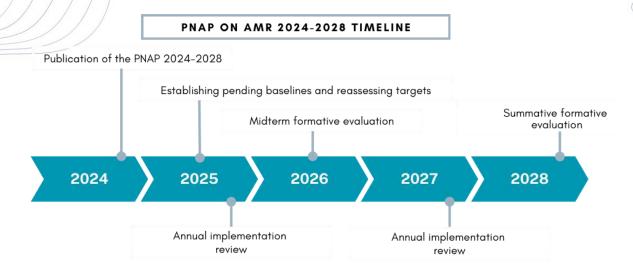


Figure 7. Timelines and Milestones for the PNAP 2024-2028

The M&E framework, detailed in **Chapter 4**, offers outcome and output indicators with baselines, targets, and identified means of verification, enabling implementing agencies to effectively track progress. However, due to data availability constraints and ongoing AMR activities, some baselines and targets remain pending at the time of publication. To address this, the second year of implementation (2025) will prioritize **establishing the missing baseline data and reassessing and adjusting targets** to align with AMR goals. This phased approach provides implementing agencies with the opportunity to recalibrate targets based on identified baselines, ensuring realistic and achievable objectives. By the end of 2025, the ICAMR Secretariat will consolidate the pending baseline data and finalize target adjustments as necessary.

**Annual implementation reviews** will commence in 2025, conducted during the year-end ICAMR meetings, to document short-term progress and ensure accountability. In 2026, a **Midterm Formative Evaluation** will replace the annual review, analyzing progress from the first three years, identifying barriers and facilitators, and refining strategies to address gaps and enhance implementation for the remaining two years. Annual reviews will resume in 2027 to monitor ongoing activities and assess outcomes.

Finally, at the conclusion of the PNAP in 2028, a comprehensive **End-of-Term Summative Evaluation** will be conducted. This evaluation will document accomplishments, assess performance against key targets, identify best practices, analyze barriers and opportunities encountered, and provide evidence-based recommendations for future iterations of the PNAP. This structured approach ensures continuous learning, improvement, and alignment with AMR goals.

### 3.5. Institutional Arrangements for Implementing PNAP 2024-2028



### Department of Health (DOH)

- Lead agency for PNAP-AMR implementation and coordination
- Establish National AMR Surveillance System
- Develop antimicrobial stewardship guidelines for healthcare
- Conduct AMR public awareness campaigns
- Regulate human antimicrobial use



### **Department of Environment and Natural Resources (DENR)**

- Monitor environmental antimicrobial residues
- Enforce regulations on antimicrobial disposal
- Research environmental AMR impacts



### **Department of Agriculture (DA)**

- Regulate antimicrobial use in livestock, aquaculture, and agriculture
- Implement AMR surveillance in animals and food products
- Promote good animal husbandry practices
- Develop veterinary antimicrobial use guidelines



### **Department of the Interior and Local Government (DILG)**

- Coordinate PNAP-AMR implementation with local government units (LGUs)
- Provide guidelines for local health, agriculture, and environmental **AMR** policies
- Ensure local compliance with national AMR directives
- Facilitate AMR-related capacity building for local officials
- Support the conduct of AMR awareness campaigns for LGUs



## Department of Trade and Industry

- Regulate antimicrobial marketing and sales
- Enforce labeling requirements for antimicrobial products
- Promote responsible antimicrobial use in industries



### **Department of Education (DepEd)**

- Integrate AMR education into K-12 curriculum
- Develop AMR awareness programs for schools



### **Technical Education and Skills Development Authority (TESDA)**

- Integrate AMR prevention and reduction skills in the training programs of relevant professions
- Develop certification programs on AMR prevention



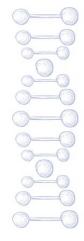
### **Commission on Higher Education** (CHED)

- Incorporate AMR modules in health professions education curricula
- Ensure AMR competencies in health professional training programs



## Department of Science and Technology (DOST)

- Fund AMR research initiatives
- Promote innovation in antimicrobial alternatives
- Facilitate collaboration between research institutions on AMR



### **Professional Regulation Commission**

- Develop profession-specific AMR guidelines
- Provide AMR-focused continuing education
- Advocate for responsible antimicrobial use among members

### **Private Sector**

- Implement antimicrobial stewardship in private healthcare
- Invest in AMR-related research and development
- Adopt responsible practices in food and pharmaceutical industries
- Support public-private partnerships for AMR initiatives

### **Civil Society**

- Participate in AMR awareness campaigns and communication
- Monitor PNAP-AMR implementation
- Advocate for policy improvements and public engagement

#### **Academe**

- Conduct AMR research
- Provide technical expertise to government agencies
- Offer specialized AMR training programs
- Collaborate on AMR surveillance and data analysis

**Table 9**. Key Stakeholders per Key Strategy 2024-2028

Strategy	KEY STAKEHOLDERS		
Key Strategy 1:	HUMAN	AGRICULTURAL	ENVIRONMENTAL
Commit to the Philippine Action Plan through increased awareness and multisectoral engagement and accountability through the One Health Approach	Department of Health (DOH) Pharmaceutical Division (PD) Bureau of International Health Cooperation (BIHC) Food and Drug Administration (FDA) Philippine Health Insurance Corporation (PhilHealth)	Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources (BFAR) National Meat Inspection Service (NMIS) Bureau of Animal Industry (BAI) National Dairy Authority (NDA) Philippine Carabao Center (PCC) Office of the Undersecretary for Regulations and Infrastructure Bureau of Agriculture and Fisheries Standards (BAFS) Agricultural Training Institute (ATI) Bureau of Soils and Water Management (BSWM)	Department of Environment and Natural Resources (DENR) Environmental Management Bureau (EMB)  ASEAN Centre for Biodiversity (ACB)  RELEVANT SECTORS  Department of the Interior and Local Government (DILG) Department of Trade and Industry (DTI) Department of Education (DepEd) Commission on Higher Education

		Food and Agriculture Organization of the United Nations (FAO)	(CHED) National Economic and Development Authority (NEDA) Technical Education and Skills Development Authority (TESDA) Food and Drug Administration (FDA) Philippine Commission on Women (PCW) Climate Change Commission (CCC) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Academe Private Sector
Key Strategy 2:	HUMAN	AGRICULTURAL	ENVIRONMENTAL
Strengthen multisectoral surveillance, monitoring, and laboratory capacity	Department of Health (DOH) Pharmaceutical Division (PD) Epidemiology Bureau (EB) Disease Prevention and Control Bureau (DPCB) Health Human Resource Development Bureau (HHRDB) Health Facility Development Bureau (HFDB) Office for Health Laboratories (OHL) Knowledge Management Information and Technology Services (KMITS) Research Institute for Tropical Medicine (RITM) Philippine Health Insurance Corporation (PhilHealth) Food and Drug Administration (FDA)	Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources (BFAR) National Dairy Authority (NDA) National Meat Inspection Service (NMIS) Bureau of Animal Industry (BAI) Philippine Carabao Center (PCC) Bureau of Soils and Water Management (BSWM)	Department of Environment and Natural Resources (DENR) Environmental Management Bureau (EMB)  RELEVANT STAKEHOLDERS  Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association)
Key Strategy 3:	HUMAN	AGRICULTURAL	ENVIRONMENTAL
Ensure uninterrupted	<b>Department of Health (DOH)</b> Pharmaceutical Division (PD)	<b>Department of Agriculture (DA)</b> Bureau of Animal Industry (BAI)	N/A
access to safe	Supply Chain Management Services (SCMS)	Bureau of Fisheries and Aquatic Resources (BFAR)	RELEVANT STAKEHOLDERS
quality-assured antimicrobials	Food and Drug Administration (FDA) Disease Prevention and Control (DPCB) FDA - Center for Drug Regulation and Research (CDRR) Philippine Health Insurance	National Meat Inspection Service (NMIS)  Food and Drug Administration (FDA)	Department of Trade and Industry (DTI) Hospitals Local Government Units (LGUs) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association)

	Corporation (PhilHealth) National Antibiotics Guideline Committee		Private sector
Key Strategy 4:	HUMAN	AGRICULTURAL	ENVIRONMENTAL
Regulate and promote the	<b>Department of Health (DOH)</b> Pharmaceutical Division (PD)	<b>Department of Agriculture (DA)</b> Bureau of Animal Industry (BAI)	N/A
judicious practice of antimicrobial stewardship across all sectors	Health Facility Development Bureau (HFDB) Health Facilities and. Services Regulatory Bureau (HFSRB) Human Health Resource Development Bureau (HHRDB) Knowledge Management Information and Technology Services (KMITS) Food and Drug Administration (FDA) Centers for Health Development (CHDs)	Bureau of Fisheries and Aquatic Resources (BFAR) Bureau of Agriculture and Fisheries Standards (BAFS) Bureau of Soils and Water Management (BSWM) National Meat Inspection Service (NMIS) National Dairy Authority (NDA) Philippine Carabao Center (PCC) Food and Drug Administration (FDA)	Commission on Higher Education (CHED) Department of the Interior and Local Government (DILG) Department of Budget and Management (DBM) Department of Trade and Industry (DTI) DTI - Board of Investments (BOI) Department of Labor and Employment (DOLE) Philippine Veterinary Medical Association (PVMA) Professional Regulation Commission (PRC) Hospitals Local Government Units (LGUs) Professional societies or
Key Strategy 5: Implement appropriate regulatory	HUMAN  Department of Health (DOH) Centers for Health Development (CHDs) Health Facility Development	AGRICULTURAL  Department of Agriculture (DA) Agricultural Training Institute (ATI) Bureau of Animal Industry (BAI)	organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Private sector Academe  ENVIRONMENTAL
			N/A
			RELEVANT STAKEHOLDERS
measures to reduce drug-resistant infections across all settings	Bureau (HFDB) Health Facilities And Services Regulatory Bureau (HFSRB) Disease Prevention and Control Bureau (DPCB) Health Promotion Bureau (HPB) Pharmaceutical Division (PD) Research Institute for Tropical Medicine (Center for Disease Control)	Bureau of Ailmat Industry (BAI) Bureau of Fisheries and Aquatic Resources (BFAR) National Dairy Authority (NDA)	Local Government Units (LGUs) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Private sector Academe
Key Strategy 6:	HUMAN	AGRICULTURAL	ENVIRONMENTAL

Promote and invest in	Department of Health (DOH) Health Policy Development and	Department of Agriculture (DA) Bureau of Agricultural Research	ASEAN Centre for Biodiversity (ACB)	
innovation and research initiatives on	Planning Bureau (HPDPB)  Philippine Council for Health	(BAR) Bureau of Animal Industry (BAI)	RELEVANT STAKEHOLDERS	
AMR rooted in strong partnerships and multisectoral collaboration	Research and Development (DOST-PCHRD)	Bureau of Animal Industry (BAI) National Fisheries Research Development Institute (NFRDI) Philippine Carabao Center (PCC)  Department of Trade and Industry (DTI) Department of Science and Technology (DOST)	Development Institute (NFRDI) Philippine Carabao Center (PCC)  Department of Trade and Industry (DTI) Department of Science and	Department of Science and Technology (DOST) Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) Philippine Council for Health Research and Development (DOST-PCHRD) Professional societies or organizations (i.e., Philippine Veterinary Medical Association, Philippine Medical Association) Private sector Academe
Key Strategy 7:	HUMAN	AGRICULTURAL	ENVIRONMENTAL	
Improve			naceutical Division (PD) Bureau of Agricultural Research	
awareness and	Pharmaceutical Division (PD)	Bureau of Agricultural Research	ASEAN Centre for Biodiversity (ACB)	
•			1 .     .	

# 4. Philippine National Action Plan & Monitoring and Evaluation Framework

This chapter presents a detailed structure of the Key Strategies (Outcomes), Objectives (Outputs), and Activities required to achieve the goals of the PNAP. The framework is divided into collaborative activities, which require multi-sectoral coordination, and sectoral activities, which focus on specific health, agriculture, or environmental goals. Below is a guide on how to navigate and interpret the M&E framework effectively.

#### **Parts of the Outcome and Output Indicators**

- **Baseline.** The initial data available to track progress toward the target. If no baseline data is currently available, it must be identified by the end of 2025. Detailed guidance on pending baselines is provided in **Chapter 3.3 ("The Road Ahead")**.
- Target. The measurable goal to be achieved within the set timeline. Pending targets must also be finalized by the end of 2025 (see Chapter 3.3).
- **Means of Verification (MOV).** Documentation required to verify progress. These documents are to be submitted by the designated implementing agency.
- **Implementing Agency.** The lead agency responsible for collecting and submitting baseline data for their respective activities. They must ensure the accuracy, relevance, and timeliness of the data provided.
- Assumptions. Key conditions or factors presumed to hold true or remain constant for the target to be achieved.

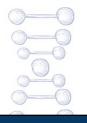
#### **Types of Activities**

- **Collaborative Activities.** These require multi-sectoral coordination, leveraging the expertise, resources, and participation of multiple sectors to achieve shared goals.
- **Sectoral Activities.** These focus on activities specific to individual sectors, such as health, agriculture, or environmental health.

#### **Parts of the Activities**

- Implementing Agency. The agency tasked with leading and executing the activity.
- **Timeline.** The year(s) when the activity is planned to be initiated. Progress will be monitored against this schedule.
- Estimated Budget. The projected funding required to carry out the activity, inclusive of technical assistance (if indicated).
- **Assumptions.** Key conditions or enabling factors necessary for the successful implementation of the activity.

**Table 10** provides a sample format for the action plan and M&E plan, including definitions of terms used.



**Table 10**. Sample format for the PNAP and M&E framework with definitions of terms and acronyms.

**Outcome:** The longer-term changes or effects resulting from the project's activities, often measured in terms of behavior, systems, or conditions.

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
X.1. Specific, measurable values that show progress toward the outcome or output. Used to track the success of the objective.	This serves as a reference for measuring progress.	The desired or expected level of achievement by 2028.		responsible for carrying out the	Conditions believed to be true but are outside the direct control of the team

**Strategic objective X.1 (Output)**: A specific goal or aim that the project is trying to achieve. It is tied to the outputs and outcomes of the project.

and outcomes of the project.					
X.1. Specific, measurable values that show progress toward the outcome or output. Used to track the success of the objective.	Same as above	Same as above	Same as above	Same as above	Same as above
X.1.C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
X.1.C.1. Joint efforts between various agencies or partners to implement parts of the project or achieve a specific goal.		Same as above	Year the activity will be initiated.	Approximate budget	Same as above
X.1.H. HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
X.1.H.1. Actions or initiatives focused on imposell-being of individuals or communities.	roving the health or	Same as above	Same as above	Same as above	Same as above
X.1.A. AGRICULTURAL SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
X.1.A.1. Actions related to improving or supporting agricultural practices.		Same as above	Same as above	Same as above	Same as above
X.1.E. ENVIRONMENTAL SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
X.1.E.1. Actions related to improving or suppopractices.	orting environmental	Same as above	Same as above	Same as above	Same as above



## 4.1. Key Strategy 1: Enhance awareness and commitment to multisectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach

This strategy focuses on establishing a collaborative framework to combat AMR through the One Health Approach, integrating efforts from various sectors. The primary objectives include forging a joint action plan for 2024-2028, ensuring AMR is a national priority, and establishing accountability mechanisms. Activities under this strategy involve conducting strategic planning and developing the action plan, publishing annual progress reports, and briefing key sector representatives on AMR issues. Additionally, the strategy emphasizes the need for sufficient funding, incorporating AMR into national policies, and fostering international cooperation. By delineating roles and responsibilities, conducting regular assessments, and ensuring the active participation of all stakeholders, this strategy aims to build a cohesive and effective response to AMR across the health, agricultural, and environmental sectors.

## **Outcome:** Increased awareness and commitment to multisectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
1.1. Number of national policies and regulations that reference AMR as a priority.	Pending baseline	NAP-AMR is linked to relevant national policies, existing action plans (e.g. PDP, NAPHS, NEHAP) and strategies of relevant sectors	Review of policy documents, legislative acts, and strategic plans at national and subnational levels	ICAMR	Sufficient political will exists to integrate AMR concerns into broader health and governance agendas.  There is a clear
1.2. Establishment of cross-sectoral accountability and One Health coordination mechanisms for AMR initiatives.	Existing ICAMR	ICAMR expanded with additional members to ensure representation from relevant sectors and extending to the regional levels, with clear governance and accountability framework	Issuance of a policy instrument that establishes a One Health governance and accountability framework that includes AMR	ICAMR	understanding of roles and responsibilities among agencies. Agencies have the capacity and resources to conduct regular M&E activities and produce high-quality reports.



1.3. Frequency and quality of M&E progress reports submitted annually by various agencies, in response to their specific commitments to the PNAP-AMR	Not available/ currently not being done	At least one M&E report from involved agencies per year	Submitted M&E progress reports  Evaluation summary of report quality by an independent review panel	ICAMR	There is a transparent and efficient budget allocation process.
1.4. Adequacy of budget allocation for the implementation of AMR-related initiatives across relevant agencies and sectors.	Pending baseline	At least 85 % obligation of funds for the implementation of the PNAP	Annual budget records	ICAMR	
Strategic objective 1.1 (Output	t): To elevate AMR a	s a key priority iss	ue at the nation	al and subnation	nal level
1.1.1. Number of coordination meetings convened annually by ICAMR	3 times/year	At least 4 times/ year	ICAMR meeting minutes	ICAMR	Meetings are scheduled at
1.1.2. Number of formalized ICAMR members	DOH, DA, DTI, DILG, DOST	ICAMR expanded to officially include DENR, DepEd, TESDA, CHED, and NEDA; with regular engagement of relevant agencies and offices from the security, DRRM, and climate change sector.	Updated list of official members of the ICAMR through an administrative order  ICAMR meeting minutes	ICAMR	convenient times with appropriate resources allocated for facilitation.  Relevant sectors and organizations are willing to formalize their participation in ICAMR.  There is adequate support and guidance from the national level to facilitate local engagement.



1.1. 3. Percentage of regions with functional inter-agency committees involved in AMR control, including BARMM	Pending baseline	100%	Meeting minutes of regional inter-agency committees	ICAMR; Regional counterparts of DOH, DA, and DENR	
1.1.4. Percentage of regions that reflect AMR as a priority in their local action and/or sectoral plans, including BARMM	Pending baseline	100%	Regional Development and/or sectoral Plans	ICAMR; Regional counterparts of DOH, DA, and DENR	
1.1.C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
1.1.C.1.Mainstream AMR agenda and commit interagency committees' strategic plans and		ICAMR	2025	PHP 88,000 per meeting	6 meetings in a year <b>Total: PHP 528, 000</b>
1.1.C.2. Jointly conduct AMR awareness oried different levels and branches of governance governors)	•	ICAMR, DILG	2026, 2028	PHP 200,000 per orientation/forum	2 orientations/forums  Total: PHP 400,000
1.1.C.3. Regularly conduct high-level media forums and publicity events to demonstrate commitment of leaders and authorities to AMR control and prevention		ICAMR	2025, 2026, 2027, 2028	PHP 200,000 per event	4 media forums  Total: PHP 800,000
1.1.C.4. Jointly advocate for the explicit incluand control in the implementation of nation policy review, development of guidelines)	•	FDA, DA	2028 onwards	PHP 2,000,000 per technical assistance	2 technical assistance Total: PHP 4,000,000
1.1.C.5. Jointly advocate for the explicit incluand control in the implementation of WASH development of guidelines)	•	DOH, DENR	2028 onwards	PHP 2,000,000 per technical assistance	2 technical assistance Total: PHP 4,000,000
1.1.C.6. Leverage national and international events to demonstrate Philippine commitme approaches in AMR prevention and control	•	ICAMR	2025, 2026, 2027, 2028	PHP 200,000 per event	4 national forums 1 international event  Total: PHP 1,000,000
1.1.H. HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
1.1.H.1 Conduct learning and alignment sess the different bureaus and agencies with rega in the PNAP		DOH	2025, 2026, 2027, 2028	PHP 80,000 per session	16 quarterly sessions in the span of 4 years <i>Total: PHP 1, 280,000</i>
1.1.H.2 Advocate for and issue a policy that for AMR program within DOH based on the NAP-	•	DOH	2025	PHP 1,000,000 per session/workshop	1 executive session and 1 workshop <i>Total: PHP 2,000,000</i>



1.1.H.3 Establish an intra-agency coordinating mechanism to ensure a whole-of-agency response to PNAP implementation–ensuring commitment and participation from various DOH units and attached agencies	DOH	2028	PHP 500,000 per meeting	1 intra-agency meeting Total: PHP 500,000
1.1.H.4. Advocate for the explicit inclusion of AMR prevention and control in the standards governing licensing and regulation of health facilities (i.e. policy review, revise licensing and regulation standards)	DOH	2028	PHP 2,000,000 per technical assistance	2 technical assistance Total: PHP 4,000,000
1.1.H.5. Advocate for strengthened programming for AMR prevention and control in the Local investment plans for health in P/CWHS (i.e. investment plan review, development of new investment plans)	DOH	2028 onwards	PHP 1,000,000 per technical assistance	2 technical assistance Total: PHP 2,000,000
1.1.A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.1.A.1 Conduct learning and alignment sessions and opportunities for the different bureaus and agencies with regards to AMR and their role in the PNAP	DA	2025, 2026, 2027, 2028	PHP 50,000 per session	4 learning and alignment sessions <b>Total: PHP 200,000</b>
1.1.A.2 Strengthen and expand the intra-agency coordinating mechanism to ensure a whole-of-agency response to PNAP implementation– ensuring commitment and participation from various DA units and attached agencies	DA	2025, 2026, 2027, 2028	PHP 50,000 per meeting	4 intra-agency meetings Total: PHP 200,000
1.1.A.3. Advocate for and issue a policy for the inclusion of provincial and municipal agricultural officers in the implementation of AMR prevention and control activities	DA, DILG	2025	PHP 1,000,000 per session/workshop	1 executive session and 1 workshop Total: PHP 2,000,000
1.1.A.4. Onboard and assess the willingness and readiness of Provincial and municipal agricultural officers to participate in AMR prevention and control.	DA, DILG	2025, 2026, 2027, 2028	PHP 20,000 per meeting PHP 2, 0000, 000 per technical assistance	2 meetings, 1 technical assistance  Total: PHP 2, 040, 000
1.1.A. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.1.E.1. Conduct learning and alignment sessions and opportunities for the different bureaus and agencies with regards to AMR and their role in the PNAP	DENR, ICAMR	2025, 2026, 2027, 2028	PHP 50,000 per session	4 sessions Total: PHP 200,000  2025-2026 sessions are dedicated for initial sensing among

				different bureaus and agencies
1.1.E.2. Establish an intra-agency coordinating mechanism (e.g. TWG) to ensure a whole-of-agency response to PNAP implementation–ensuring commitment and participation from various DENR units and attached agencies	DENR	2027, 2028	PHP 50,000 per meeting	2 meetings Total: PHP 100,000
1.1.E.3. Advocate for the explicit inclusion of AMR prevention and control in the implementation of national policies in the water and waste management sector (i.e. policy review, updating of water and waste management policies)	DENR, DOH	2028 onwards	PHP 3,000,000 per technical assistance	2 technical assistance Total: PHP 6,000,000
1.1.E.4. Advocate for and issue a policy for the inclusion of provincial and municipal environmental officers in the implementation of AMR prevention and control activities	DENR, DILG	2028 onwards	PHP 1,000,000 per session/workshop	1 executive session and 1 workshop <b>Total: PHP 2,000,000</b>
1.1.E.5. Onboard and assess the willingness and readiness of Provincial and municipal environmental officers to participate in AMR prevention and control	DENR, DILG	2028 onwards	PHP 20,000 per meeting  PHP 2, 0000, 000 per technical assistance	2 meetings, 1 technical assistance  Total: PHP 2, 040, 000

**Strategic Objective 1.2 (Output)**: To establish a functional and multisectoral coordinating mechanism for implementing the NAP, involving national and subnational agencies, civil society, private sector, academe and development partners

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
1.2.1. Percent increase in participation of national and subnational agencies, civil society, private sector, academia, and development partners in AMR initiatives.	Pending baseline	25% increase from baseline	Records of attendance and participation in activities and/or meetings	ICAMR	All national and subnational agencies, civil society, private sector, academe, and development partners
1.2.2. Degree of alignment of agency annual plans (e.g. WFP, AOP) with their annual commitments to the PNAP	Pending baseline	85% alignment of PPAs with annual commitments in the PNAP	Annual plans (AOP, WFP)	ICAMR, relevant agencies	signed their participation in the joint action plan.  The Philippine Action Plan for AMR is



1.2.3. Increase in collaborative AMR projects jointly implemented by two or more agencies	Pending baseline	25% increase from baseline	Reports on collaborative projects and activities	ICAMR	accepted and approved by the member agencies of the ICAMR.
1.2.4.Establishment of a Multi-sectoral network and/or public-private partnership mechanism and/or technical working groups formally involving national and subnational agencies, civil society, private sector, academia, and development partners for AMR initiatives.	Pending baseline	Multi-sectoral, public-private network at the national level established	Stakeholder and accountability mapping  Signed agreements (e.g. Memoranda of Understanding) formalizing the engagement of other agencies, civil society and other private actors  Financial records and agreements detailing private sector contributions.	ICAMR, Private sector	Different sectors and agencies are committed to the implementation of collaborative projects.  Private sectors provide resources (i.e., financial and other technical assistance) support to AMR efforts.
1.2.C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
1.2.C.1 Conduct a comprehensive stakeholder and accountability mapping of relevant actors (national and subnational agencies, civil society, private sector, academe and development partners) involved in AMR Control and Prevention		ICAMR	2025	PHP 2,000,000 per technical assistance	2 technical assistance  Total: PHP 4,000,000
1.2.C.2. Jointly draft and approve an updated policy, that formalizes the inclusion of other relevant stakeholders in the ICAMR (e.g. DENR, DepEd, CHED, TESDA, NEDA, PCW, CCC, etc)		ICAMR	2025 onwards	PHP 200,000 per workshop	1 stakeholder workshop <b>Total: PHP 200,000</b>
1.2.C.3. Coordinate the operational planning involved as they fulfill their commitments to		ICAMR	2025, 2026, 2027, 2028	PHP 160,000 per session/year	4 sessions Total: PHP 640,000



ICAMR	2025 onwards	PHP 250,000 per meeting	1 stakeholder meeting  Total: PHP 250,000
ICAMR	2025, 2026, 2027, 2028	PHP 50,000 per year	4 sessions Total: PHP 200,000
Implementing Agency	Timeline	Estimated Budget	Assumptions
DOH	2025, 2026, 2027, 2028	PHP 130,000 per year for 4 meetings	16 meetings in a span of 4 years Total: PHP520,000
DOH	2025, 2026, 2027, 2028	PHP 140,000 per year	4 operational plans <i>Total: PHP 560,000</i>
DOH	2025, 2026, 2027, 2028	PHP 120,000 per year	4 annual reports  Total: PHP 480,000
Implementing Agency	Timeline	Estimated Budget	Assumptions
DA	2025, 2026, 2027,	PHP 130,000 per	16 meetings in a span of 4 years
	2028	year for 4 meetings	Total: PHP520,000
DA	2028 2025, 2026, 2027, 2028	PHP 140,000 per year	Total: PHP520,000 4 operational plans Total: PHP 560,000
DA DA	2025, 2026, 2027,	PHP 140,000 per	4 operational plans
	2025, 2026, 2027, 2028 2025, 2026, 2027,	PHP 140,000 per year  PHP 120,000 per	4 operational plans <i>Total: PHP 560,000</i> 4 annual reports
DA Implementing	2025, 2026, 2027, 2028 2025, 2026, 2027, 2028	PHP 140,000 per year PHP 120,000 per year	4 operational plans Total: PHP 560,000  4 annual reports Total: PHP 480,000
	ICAMR  Implementing Agency  DOH  DOH  DOH  Implementing Agency	ICAMR   2025, 2026, 2027, 2028     Implementing Agency   Timeline	ICAMR         2025 onwards         meeting           ICAMR         2025, 2026, 2027, 2028         PHP 50,000 per year           Implementing Agency         Timeline         Estimated Budget           DOH         2025, 2026, 2027, 2028         PHP 130,000 per year for 4 meetings           DOH         2025, 2026, 2027, 2028         PHP 140,000 per year           DOH         2025, 2026, 2027, 2028         PHP 120,000 per year           Implementing Agency         Timeline         Estimated Budget           DA         2025, 2026, 2027, PHP 130,000 per

			Php 560, 000 for the review of the baseline roadmap	
1.2.E.3. Contribute to the PNAP-AMR annual report by providing necessary implementation progress monitoring in the sector	DENR	2027, 2028	PHP 120,000 per year	2 annual reports <i>Total: PHP 240,000</i>

**Strategic Objective 1.3 (Output)**: To establish clear accountability mechanisms among various sectors in the monitoring and evaluation of the implementation of the National Action Plan, emphasizing transparency and responsiveness.

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
1.3.1. Defined roles and responsibilities within inter-agency AMR plans and initiatives.	Roles and responsibilities found in PNAP 2019-2023	Expanded roles and responsibilities within the agencies involved	Review of sectoral AMR initiatives implementation framework and roles documentation.	ICAMR	All agencies within the inter-agency are clear with their roles and
1.3.2. Number of PNAP implementation monitoring reviews conducted annually (self assessment and reporting)	None	2 reviews for PNAP annual implementation	PNAP monitoring reports	ICAMR	responsibilities.  All sectors have the
1.3.3. Number of PNAP implementation evaluation conducted	One implementation review at the end of each PNAP	2 reviews for PNAP implementation (mid-point formative evaluation, final summative evaluation)	PNAP formative evaluation reports	ICAMR	political commitment and willingness to adopt and implement accountability frameworks.
1.3.4. Number of corrective actions taken annually based on M&E findings and recommendations.	Not available	100% of all corrective actions taken	Progress reports on corrective actions implemented.  Documentation of corrective action plans with	ICAMR	Stakeholders are committed to implementing corrective actions based on M&E findings.



			implementation timelines.	0—0	
1.3.5. Number of strategic objectives with complete, validated baseline data and evidence-based targets endorsed by sectors	Pending baseline	100%	Updated PNAP M&E Framework  Technical reports of baseline data collection and validation process  Documentation of baseline validation and target-setting process	ICAMR	All sectors have the commitment and capacity to provide accurate and timely baseline data.
1.3.C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
	1.3.C.1.Jointly establish and validate baseline data for each PNAP strategic objective and reassess and readjust the targets, as necessary, through coordinated sectoral reporting		2025	PHP 85,000 per meeting	1 intersectoral meeting <b>Total:</b> PHP 85,000
1.3.C.2. Jointly organize a workshop to brief the Monitoring and Evaluation (M&E) framew	O .	ICAMR	2025	PHP 160,000 per stakeholder workshop	1 stakeholder workshop <i>Total: PHP</i> 160,000
1.3.C.3. Collectively establish standard templensure seamless and timely submission, con	9	ICAMR	2025, 2026	PHP 130,000 per planning workshop	2 strategic planning <b>Total: PHP 260,000</b>
1.3.C.4. Jointly carry out biannual reviews of to identify priority action plans and recalibra incorporate catch-up plans for activities as no	te strategies and	ICAMR	2025, 2026, 2027, 2028	PHP 85,000 per review	8 biannual reviews <b>Total: PHP 680,000</b>
1.3.C.5 Conduct a baseline gender analysis addocuments to assess gender-responsiveness	-	ICAMR	2026	PHP 1,500,000 per technical assistance	1 technical assistance Total: PHP 1,500,000
1.3.C.6. Jointly carry out a mid-term formative evaluation of PNAP and end of term summative evaluation of the PNAP.		ICAMR	2026, 2028	PHP 1,000,000 per formative evaluation with TA	2 formative evaluations <i>Total: PHP 2,000,000</i>
1.3.H. HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
1.3.H.1. Onboard and train relevant focal per and implement the M&E framework.	sonnel to effectively use	DOH	2025, 2026, 2027, 2028	PHP 140,000 per year with TA	4 M&E workshop Total: PHP 560,000

1.3.H.2. Coordinate the timely submission and consolidation of reports across various bureaus and agencies under the health sector, including private health institutions.	DOH	2025, 2026, 2027, 2028	PHP 160,000 per year/ PHP 40,000 per quarter	16 quarterly reporting Total: PHP 640,000
1.3.A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.3.A.1. Onboard and train relevant focal personnel to effectively use and implement the M&E framework.	DA	2025, 2026, 2027, 2028	PHP 140,000 per year with TA	4 M&E workshop  Total: PHP 560,000
1.3.A.2. Develop a strategy to collect and consolidate reports from different bureaus and agencies under the agricultural sector, including private stakeholders.	DA	2025	PHP 150,000 per workshop	1 strategic planning workshop <b>Total: PHP 150,000</b>
1.3.A.3. Coordinate the timely submission and consolidation of reports across various bureaus and agencies under the agricultural sector, including private stakeholders.	DOH	2025, 2026, 2027, 2028	PHP 160,000 per year/ PHP 40,000 per quarter	16 quarterly reporting Total: PHP 640,000
1.3.E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.3.E.1. Establish a policy that formalizes the DENR's roles and commitment to implementing and monitoring the progress of the PNAP.	DENR, ICAMR	2026	PHP 10, 000, 000 with TA	1 executive session  Total: PHP 10, 000,000
1.3.E.2. Organize learning and alignment sessions for different bureaus and agencies regarding AMR and their role in the PNAP.	DENR, ICAMR	2026, 2027, 2028	PHP 90,000 per session	6 learning and alignment sessions <b>Total: PHP 540,000</b>
1.3.E.3. Develop a strategy to collect and consolidate reports from different bureaus and agencies under the environmental sector, including private stakeholders.	DENR	2027	PHP 160,000 per workshop	1 strategic planning workshop <b>Total: PHP 160,000</b>
1.3.E.4. Onboard and train relevant focal personnel to effectively use and implement the M&E framework.	DENR	2027, 2028 onwards	PHP 280,000 per year with TA	2 M&E workshop Total: PHP 560,000
1.3.E.5. Coordinate the timely submission and consolidation of reports across various bureaus and agencies under the environmental sector, including private stakeholders.	DOH	2027, 2028 onwards	PHP 160,000 per year/ PHP 40,000 per quarter	8 quarterly reporting Total: PHP 320,000

## **Strategic Objective 1.4 (Output)**: To allocate adequate resources (financial, human, and material) and expertise for AMR initiatives in all relevant sectors.

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
1.4.1. Number of agencies with a detailed	None	Human resource	Policy and budget	DOH, DA	Training programs are
and approved human resource masterplan	None	master plan	for the human		accessible and

					,
for AMR (personnel complement, organizational structure, and competency model)		established for DOH and DA	resource masterplan		effectively designed to build necessary skills and expertise.
1.4.2. Number of personnel with relevant training on AMR control and risk reduction	Pending baseline	At least 85% of relevant units in each agency with at least 1 fully trained staff in AMR control and risk reduction	Training attendance records and certificates.	DOH, DA, DENR, TESDA	Adequate funding and efficient procurement processes are in place for acquiring necessary resources.
1.4.3. Availability of and access to a pool of experts engaged for AMR control	None	Pool of experts/ advisors established	Database/ directory of experts/ advisors	ICAMR	Government and external partners are
1.4.4 Number of relevant agencies with an internal secretariat to coordinate and convene intra-agency One Health collaboration for AMR	Pending baseline	AMR Secretariat established within DOH, DA and DENR	Formal policy (AO) on the secretariat established	DOH, DA, DENR	committed to providing sufficient funding for AMR initiatives.
1.4.5. Adequacy and availability of material resources and facilities (e.g., diagnostic tools, laboratory equipment) for AMR programs	Pending baseline	25% increase from baseline	Inventory lists of material resources for AMR programs.  Procurement records for equipment and tools	ICAMR	Private sector stakeholders recognize the value of contributing to AMR initiatives and are willing to engage.
1.4.6. Increased funding support from external partners (Civil society, development partners, private sector)	Pending baseline	25% increase of external partners engaged for funding support	Funding agreements with external partners  Records of financial contributions and in-kind support.	DOH, DA, DENR, DILG, Academe,	
1.4.7. Number of private sector and development partners engaged in providing technical support for PNAP	Pending baseline	25% increase from baseline	Partnership agreements with private sector entities.	ICAMR, Private Sector	



implementation and broader AMR				
initiatives		Reports documenting private sector involvement and contributions to AMR activities		
1.4.C. COLLABORATIVE ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.4.C.1. Perform a comprehensive assessment of the costs and resources required to implement the National Action Plan.	ICAMR	2025	PHP 180,000 per workshop	1 workshop Total: PHP 180,000
1.4.C.2. Jointly explore international partnerships and innovative financing mechanisms to support AMR initiatives across all sectors.	ICAMR	2025, 2026, 2027, 2028	PHP 100,000 per fellowship event	4 international fellowship attended <i>Total: PHP 400,000</i>
1.4.C.3. Advocate for adequate funding from all concerned agencies and external partners to support the implementation of the PNAP for AMR.	ICAMR	2025, 2026	PHP 560,000 per summit	2 annual summit Total: PHP 1,120,000
1.4.C.4. Collaboratively develop a Costed Implementation Plan for PNAP implementation that clearly delineates financing roles and obligations among involved agencies, including opportunities for support from external funders.	ICAMR	2025, 2026	PHP 2,000,000 per technical assistance	2 annual technical assistance  Total: PHP 4,000,000
1.4.H. HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.4.H.1. Ensure AMR is included in annual budget planning, with sufficient costing to account for necessary funds for secretariat functions.	DOH	2025, 2026, 2027, 2028	PHP 140,000 per review	4 annual budget review <b>Total: PHP 560,000</b>
1.4.H.2. Explore additional resources and innovative financing mechanisms in collaboration with private actors in the health sector.	DOH	2025, 2026, 2027, 2028	PHP 160,000 per meeting	4 public-private partnership meetings <i>Total: PHP 640,000</i>
1.4.A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.4.A.1. Include AMR in annual budget planning, ensuring sufficient costing for effective implementation.	DA	2025, 2026, 2027, 2028	PHP 140,000 per review	4 annual budget review <b>Total: PHP 560,000</b>



1.4.A.2. Explore additional resources and innovative financing mechanisms in collaboration with private actors in the agriculture sector.	DA	2025, 2026,2027, 2028	PHP 160,000 per meeting	4 public-private partnership meetings <b>Total: PHP 640,000</b>
1.4.E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
1.4.E.1. Conduct strategic planning to incorporate AMR, particularly antimicrobial pollution and management, in the prioritization of projects, programs, and annual budget allocations.	DENR, ICAMR	2027, 2028 onwards	PHP 300,000 per workshop	2 strategic planning workshop <b>Total: PHP 600,000</b>
1.4.E.2. Explore additional resources and innovative financing mechanisms in collaboration with private actors in the environmental sector.	DENR, ICAMR	2027, 2028 onwards	PHP 280, 000 per meeting	2 public-private partnership meetings <b>Total: PHP560,000</b>
1.4.E.3. Ensure AMR is included in annual budget planning with adequate financial support.	DENR	2028 onwards	PHP 200,000 per review	1 annual budget review <b>Total: PHP 200,000</b>



### 4.2. Key Strategy 2: Strengthen multisectoral surveillance, monitoring, and laboratory capacity

This strategy aims to enhance the surveillance and laboratory capabilities to effectively monitor and respond to antimicrobial resistance (AMR) through a multisectoral approach. Objectives include developing a comprehensive AMR surveillance system, improving diagnostic capabilities, capacitating health workers, and institutionalizing robust reporting mechanisms. Activities under this strategy involve establishing a National Antimicrobial Consumption Surveillance System, integrating data from all sectors, and ensuring regular publication of reports. It also includes expanding surveillance to cover private health facilities, animal production sectors, and environmental monitoring. Capacity-building activities will be conducted across hospitals, laboratories, and relevant sectors to ensure adequate resources and skilled personnel. Furthermore, this strategy emphasizes harmonizing laboratory methodologies, developing strategic plans for data reporting, and fostering international cooperation for AMR initiatives. By institutionalizing well-developed reporting, monitoring, and surveillance systems at all levels, this strategy aims to create a coordinated and responsive framework to combat AMR effectively.

**Outcome:** Established channels that enable seamless multi-sectoral data sharing and coordination leading to improved monitoring and tracking of surveillance data for antimicrobial resistance (AMR), antimicrobial use (AMU), and antimicrobial consumption (AMC)

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
2.1. Frequency and comprehensiveness of AMR/AMU surveillance data sharing among sectors	None	Quarterly	Meeting minutes from intersectoral committees, proof of activities	ICAMR	All relevant sectors are committed to regular, transparent data sharing with
2.2. Percentage of national and regional agencies with established AMR/AMU reporting and data management systems, and local agencies with established AMU reporting and data management systems.	Pending baseline	40% increase	AMR/AMU Surveillance reports, training certificates of personnel, registry of AST-capable labs	ICAMR	robust communication channels and protocols. Laboratories and training programs receive sustained funding and support, enabling compliance with



2.1.2. Number of intersectoral meetings annually on AMR/AMU surveillance data sharing and discussions	Pending baseline	4	Meeting minutes	ICAMR	international standards through ongoing guidance and capacity building, with stakeholders engaged in standardizing methodologies under strong leadership.
		,			surveillance system with adequate coordination and resources. National practices align with
2.1.1. Number of relevant agencies with sustained AMR/AMU surveillance systems	Pending baseline	DOH, DA, RITM, NMIS, BAI, BFAR, PCC, DENR-EMB	Participation records, user access logs	ICAMR	All sectors actively participate in the multisectoral AMR
<b>Strategic objective 2.1 (Output)</b> : To strengthe across all relevant sectors for a coordinated ac				MR/AMU/AMC su	rveillance data
					AMR standards and skill application. National and local agencies are equipped to maintain AMR reporting and data management systems.



Agency

**Estimated Budget** 

2.1.C.1. Institutionalize regular AMR/AMU/AMC data sharing across sectors by establishing consistent data-sharing protocols, and responsibilities, as elaborated in the revised AO No. 42 s. 2014	ICAMR	2025	PHP 300,000 per coordination activity	2 coordination activities <b>Total: PHP 600,000</b>
2.1.H. HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.1.H.1. Expand antimicrobial use (AMU) data collection and reporting to primary care facilities	DOH-RITM	2027 onwards	PHP 1,200,000 per surveillance expansion initiative	3 surveillance expansion initiative <b>Total: PHP</b> <b>3,600,000</b>
2.1.H.2. Ensure adequate financing for sustainable AMU data collection and reporting in human health facilities	RITM	2027, 2028	PHP 7,000,000	There are specific line items approved in the annual General Appropriations Act (GAA).  Total: PHP 7,000,000
2.1.H.3. Establish standardized system for AMC data collection and reporting	DOH-PD	2025	PHP 3,000,000	Technical assistance Total: <b>PHP3,000,000</b>
2.1.A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.1.A.1. Develop strategic plans for comprehensive and regular AMR/AMU data reporting across bureaus and agencies in the animal sector at all levels	DA-OUSL	2026, 2027	PHP 1,500,000 per strategic plan	4 strategic plans  Total: PHP6,000,000
2.1.A.2. Establish streamlined data sharing initiatives between agricultural and animal sector bureaus and international organizations (i.e. FAO, WOAH)	DA-OUSL, BAI, NMIS, BFAR	2026	PHP 1,000,000 per data sharing initiative	2 data sharing initiative <b>Total: PHP2,000,000</b>
2.1.E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.1.E.1. Conduct a comprehensive needs assessment to establish an environmental AMR surveillance system	DENR	2026	PHP 1,000,000 per needs assessment	2 needs assessment activity through technical assistance <i>Total: PHP</i> 2,000,000

Strategic Objective 2.2 (Output): To improve surveillance capacity and diagnostic capabilities across sectors



Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
2.2.1. Percentage of hospitals with capacity to perform standard methods for culture & susceptibility testing and generate facility specific antibiograms	TBD	75%	Registry of hospitals on levels of labs, external quality assurance (EQA)	рон	Hospitals and laboratories receive consistent funding,
2.2.2. Increased investment in AMR surveillance infrastructure such as facility, equipment, and technology	TBD	50% increase	Investment plan, work and financial plan, operational equipment	ICAMR	training, and resources to strengthen AMR surveillance and
2.2.3. Increased scoring on FAO-ATLASS assessment tool	TBD	50% of labs with ATLASS PIP score of at least 3 or above	External audit, Annual self-assessment reports, agency action plans to address gaps	DA	diagnostics. Investments in advanced diagnostics and streamlined processes reduce
2.2.4. Increased number of ARSP surveillance sites in the human health sector	26	34	ARSP annual report	DOH-RITM	diagnosis times. Strong financial and
2.2.5. Percentage of laboratories participating in AMR surveillance that meet and implement local and international requirements on the standard methods for culture and susceptibility	TBD	80%	Accreditation reports, external audit results, compliance certificates, external quality assurance reports (EQA)	ICAMR	political commitment ensures dedicated resources and personnel for AMR surveillance across all levels."
2.2.C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
2.2.C.3 Conduct sector-wide capacity and needs assessments to identify gaps in AMR surveillance and diagnostics for improved support and resource allocation		RITM, NMIS, DA-OUSL, DOH-PD, DOH-OHL, DENR-EMB	2025, 2026	PHP 2,000,000 per assessment	4 comprehensive needs assessment <b>Total: PHP</b> <b>8,000,000</b>
2.2.C.1. Implement targeted capacity-building initiatives among laboratories across all relevant sectors, ensuring the integration contoninto existing training programs	•	RITM, DOH-OHL, DA-OUSL, DENR-EMB	2027, 2028	PHP 3,000,000 per capacity-building initiative	4 capacity-building activities

				Total: PHP12,000,000
2.2.H. HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.2.H.1. Develop strategies to promote the adoption of standardized laboratory methods for AMR surveillance from local to national levels	RITM	2026, 2027	PHP 1,500,000 per protocol development and implementation	2 strategy development and implementation <b>Total: PHP</b> <b>3,000,000</b>
2.2.H.2. Develop and implement a nationwide programmatic training program on aerobic bacteriology with focus on AST and generation of antibiogram	RITM, DOH-PD, DOH-OHL	2026	PHP 2,500,000 per training and accreditation expansion	8 training and accreditation expansion Total: PHP 20,000,000
2.2.H.3. Expand ARSP surveillance sites in Luzon, Visayas and Mindanao to detect and monitor AMR trends	RITM	2026	PHP 3,000,000 per surveillance site	Establishment of 8 surveillance sites Total: PHP 24,000,000
2.2.H.4. Explore financing opportunities and coverage of microbiologic tests in public health facilities	RITM, DOH-PD, DOH-EB, DOH-DPCB, DOH-SCMS, PhilHealth	2026, 2027	PHP 3,500,000 per financing initiative	2 annual financing initiative Total: PHP 7,000,000
2.2.H.5. Establish capacity of selected laboratories in setting up rapid molecular diagnostic tests that will facilitate fast and accurate identification of microorganisms to aid antimicrobial stewardship programs	RITM, DOST, Selected level 3 laboratories	2027, 2028	PHP 20,000,000 per laboratory	2 laboratories per year for 2 years Total: <b>PHP</b> <b>80,000,000</b>
2.2.A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.2.A.1. Conduct routine ATLASS country self-assessments, including training for country assessors to ensure consistency and accuracy	DA-OUSL, Country ATLASS assessors	2025, 2026, 2027, 2028	PHP 2,000,000	4 ATLASS country self-assessment <b>Total: PHP 8,000,000</b>



2.2.A.2. Assess compliance of sampling and testing analysis for antibiotic susceptibility testing in food and agriculture laboratories with international standards (i.e., Clinical & Laboratory Standards Institute (CLSI))	DA-BAI, BFAR, NMIS	2025, 2026, 2027, 2028 onwards	PHP 800,000 per assessment	4 annual assessment on the quality of antibiotic susceptibility testing <b>Total: PHP 3,200,000</b>
2.2.A.3. Conduct regular assessments and inventory of laboratory resources and price references for AMR surveillance, monitoring, and testing activities	DA-OUSL	2025, 2026, 2027, 2028	PHP 1,500,000 per assessment and inventory cycle	8 assessment and inventory cycle <b>Total: PHP 12,000,000</b>
2.2.A.4. Refine surveillance protocols for AMU in livestock, poultry, and fishery products	DA-OUSL, BAI, BFAR, NMIS	2027, 2028	PHP 1,500,000 per protocol refinement	3 protocol refinement <b>Total: PHP</b> <b>4,500,000</b>
2.2.A.5. Finalize, institutionalize, and implement ARSP in livestock (Cattle, Carabao, Goat, Sheep, Swine), poultry and aquaculture sectors	DA-OUSL, BAI, NMIS, BFAR, PCC, NDA	2025, 2026	PHP 3,500,000 per implementation	3 ARSP implementation <b>Total: PHP 10,500,000</b>
2.2.A.6. Conduct sampling, testing, and analysis of veterinary drug residues in fish and meat products and link findings to AMR data	BFAR, NMIS	2025, 2026, 2027, 2028 onwards	PHP 2,500,000 per activity	8 bi-annual conduct of studies on veterinary drug residues in fish and meat products in relation to AMR <b>Total: PHP 20,000,000</b>
2.2.A.7. Generate evidence through benchmarking studies, needs assessment studies, and expert consultations to expand the list of target species and microbes in fishery outcome indicators	BFAR	2025, 2026	PHP 14,400,000	4 benchmarking and needs assessment study and expert consultations  Total: PHP 3,600,000
2.2.A.8. Enact a policy for the expansion of outcome indicators for fishery products	BFAR	2026, 2027	PHP 4,000,000	2 policy enactment Total: PHP2,000,000
2.2.A.9. Identify and establish a regional laboratory network for aquatic AMR surveillance	BFAR	2027, 2028	PHP 900,000	2 meetings and stakeholder



		0-	-0	workshop Total: PHP 1,800,000
2.2.A.10. Develop an annual investment plan for the modernization of laboratory facilities and equipment for enhanced research and operational efficiency	DA-OUSL, NMIS	2025, 2026, 2027, 2028	PHP 7,500,000 per investment plan development and implementation	4 investment plan development and implementation <i>Total: 30,000,000</i>
2.2.A.11. Conduct regular AMR Technical Working Group meetings within the Department of Agriculture bureaus and attached agencies for continuous coordination and progress monitoring	DA-OUSL	2025, 2026, 2027, 2028	PHP 1,000,000 per meeting cycle	4 meeting cycle  Total: PHP  4,000,000
2.2.E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.2.E.1. Perform assessment and inventory of resources needed for monitoring, surveillance, and testing in environmental laboratories	DENR	2025	PHP 3,000,000 per assessment and inventory cycle	2 assessment and inventory cycle <b>Total: PHP 6,000,000</b>
2.2.E.2. Initiate targeted capacity-building programs to establish the ability of environmental laboratories to conduct AMR surveillance and testing	DENR, DOH	2027, 2028	PHP 6,500,000 per year	4 targeted capacity-building programs in the span of 2 years  Total: PH P13,000,000
2.2.E.3. Develop an environmental monitoring program for AMR focusing on key indicators such as resistance bacteria, resistance genes, and antimicrobial residues	DENR, DOH	2027, 2028	PHP 5,500,000 per year	2-year implementation of environmental monitoring program for AMR Total: PHP11,000,000
2.2.E.4 Conduct an initial canvassing of available environmental technologies and capabilities for use in establishing environmental laboratories for AMR surveillance	DENR, DOH	2027, 2028	PHP 3,500,000	2 canvassing activities  Total: PHP  7,000,000

**Strategic Objective 2.3 (Output):** To capacitate technical staff based on required competencies for AMR/AMU surveillance, monitoring and laboratory capacity



Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
2.3.1. Percentage of relevant personnel trained in aerobic bacteriology with focus on AST and generation of antibiogram	TBD	100%	Training attendance records, competency assessment results	ICAMR	Adequate and continuous institutional
2.3.2. Regularity of continuing education and training programs on AMR/AMU for relevant personnel	TBD	Annual	Training schedules, attendance logs / certificates of participation in conferences, course completion certificates	ICAMR	support, funding, and resources are available to provide regular training, refresher courses, and capacity development
2.3.3 Proficiency of relevant personnel in AMR/AMU surveillance and laboratory capacity through targeted training programs	TBD	100% passing rate on proficiency tests	Proficiency testing scores, post-evaluation reports	ICAMR	programs for personnel engaged in AMR surveillance, monitoring, and
2.3.4. Increased resource allocation for specialized laboratory personnel supporting AMR/AMU surveillance efforts	TBD	50%	Work and financial plan, AMR programming as reflected in duties and responsibilities of the Position Description Form (PDF)	DOH, DA, DENR	laboratory diagnostics. These training programs are consistently designed and updated to meet evolving standards and needs of the AMR surveillance system.
2.3.C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
2.3.C.1. Facilitate the strategic delegation of personnel and allocation of resources to strengthen AMR surveillance efforts across sectors      2.3.C.2. Create plantilla positions for designated personnel on AMR/AMU monitoring and surveillance across relevant sectors		RITM, DOH-PD, DA-OUSL, DENR	2025, 2026	PHP 1,500,000	1 strategic planning Total: PHP 1,500,000
		DBM	2026		There are specific line items approved in the annual General



		0-		
			-0	Appropriations Act (GAA).
2.3,C.3. Create and implement a standardized skill assessment tool to evaluate the competencies of all relevant workers in AMR surveillance, monitoring, and lab capacity	ICAMR	2025, 2026	PHP 1,500,000 per activity	1 technical assistance 1 workshop for the pilot-testing of standardized skill assessment tool, including pre-test and post-test Total: PHP 3,000,000
2.3.H. HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.3.H.1. Implement regular proficiency testing for human health surveillance and laboratories (i.e. medical technologists, other laboratory personnel) to ensure standardization of practice and competencies	рон	2026	PHP 1,200,000 per proficiency testing cycle	2 proficiency testing cycle <b>Total: PHP 2,400,000</b>
2.3.H.2.Continue to provide opportunities for technical personnel to attend relevant local and international trainings on AMR monitoring, surveillance, testing methods and laboratory operations	DOH	2025, 2026, 2027, 2028	PHP 2,000,000 per training	8 bi-annual trainings <b>Total: PHP 16,000,000</b>
2.3.H.3. Create and integrate additional training modules in microbiology and infectious disease management courses or programmes specifically designed for primary healthcare workers	Medical Societies, Academe, PIDS-P, PSMID	2025, 2026, 2027, 2028	PHP 1,800,000 per training module developed	2 training modules updated each year <b>Total: PHP</b> <b>3,600,000</b>
2.2.H.4. Develop strategic plans to maintain an adequate number of skilled laboratory personnel and ensure the availability of necessary resources	RITM, DOH-PD, DOH-EB, DOH-HHRDB, DOH-HFDB	2026, 2027	PHP 2,500,000 per strategic plan development	4 strategic plan development <b>Total: PHP 10,000,000</b>
2.3.A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.3.A.1. Assess animal health workforce capacity and distribution to ensure adequate skills and staffing for surveillance to meet national and regional needs	DA-BAI, BFAR, NMIS	2026, 2027	PHP 2,500,000 per assessment	2 skill mix assessment Total: PHP 5,000,000

2.3.A.2. Increase number of staff in priority national and regional laboratories	DA-BAI, BFAR, NMIS	2027, 2028	PHP 2,000,000 per staff expansion initiative	4 staff per regional laboratory annually as part of the staff expansion initiative <b>Total: PHP 4,000,000</b>
2.3.A.3. Implement laboratory workforce development at national and regional levels through training and regular capacity-building activities for AMR testing, surveillance, and data analysis in accordance with accreditation standards	DA-OUSL, DA-BAI, BFAR, NMIS	2025, 2026, 2027, 2028	PHP 2,500,000 per training of 50 personnel with TA	6 regional laboratory capacity-building activities conducted per island group <b>Total: PHP 15,000,000</b>
2.3.A.4. Develop and implement training programs for LGU veterinary service staff focusing on animal husbandry, aquaculture, sampling techniques, and AMR surveillance	DA-BAI, BFAR, NMIS	2027, 2028	PHP 2,500,000 per training program with TA	2 training programs  Total: PHP  5,000,000
2.3.A.5. Conduct specialized technical trainings for personnel within the aquaculture sector to enhance their capabilities in AMR detection and management	DA-BFAR	2027, 2028	PHP 2,500,000	4 specialized technical trainings <b>Total: PHP</b> <b>6,000,000</b>
2.3.A.6. Participation of laboratories in proficiency tests for AMR diagnostic testing	DA-BAI, BFAR, NMIS	2025, 2026, 2027, 2028	PHP 600,000 per laboratory with TA	4 laboratories participating in proficiency testing annually Total: PHP 2,400,000
2.3.E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.3.E.1. Orient and initiate the training of staff to monitor environmental residues and other AMR indicators in the environment	DENR-EMB, DA-BSWM	2025, 2026, 2027, 2028	PHP 3,000,000 per training program	2 training programs conducted annually (8 activities in the span of 4 years) <b>Total: PHP</b> <b>24,000,000</b>
2.3.E.2. Provide specialized training for technical and/or laboratory personnel capable to collect antimicrobial resistance data from various environmental sources (i.e. water, soil, industrial effluent, and sewage)	DENR-EMB, DA-BSWM	2025, 2026, 2027, 2028	PHP 3,500,000 per specialized training	4 specialized training program



Total: PHP 14,000,000

**Strategic Objective 2.4 (Output):** To institutionalize well-developed reporting, and data management systems at the national, subnational, and local levels in the health, agriculture and environment sectors

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions	
2.4.1. Establishment of standardized reporting protocols, and provision of AMR/AMU surveillance data to relevant end-users	Not available	Reporting Protocol	Standardized reporting protocols of AMR data across sectors	ICAMR	There is collaborative commitment and sufficient resources	
2.4.2. Establishment of an integrated online repository of AMR/AMU surveillance data across all sectors	Not available	Integrated AMR Data Repository Platform	Integrated AMR Data Repository Platform	ICAMR	to ensure standardized reporting,	
2.4.3. Frequency of AMR surveillance data reports published across sectors	TBD	Annual	Agency annual reports	DOH, DA, DENR	monitoring, and secure data	
2.4.4. Frequency of data-sharing initiatives to disseminate AMR surveillance data to end-user stakeholders	TDB	Annual	Meeting minutes, event details	ICAMR		
2.4. C. COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions	
2.4.C.1. Jointly initiate the development of an IT platform to com AMR to stakeholders	DOH-PD, DOH-EB, RITM,	2025, 2026, 2027, 2028	PHP 5,000,000	1 continuous technical assistance		



	DA-BAI, DA-BFAR, DA-NMIS			Total: PHP 5,000,000
2.4.C.2. Publish available AMR/AMU surveillance reports and ensure public accessibility	DOH-PD, DOH-EB, RITM, DA-BAI, DA-BFAR, DA-NMIS	2025, 2026, 2027, 2028	PHP 800,000 per publication and dissemination effort	4 annual publication and dissemination effort <b>Total: PHP3,200,000</b>
2.4.C.3. Disseminate and communicate proactively AMR/AMU surveillance data findings to key end-users	DOH-PD, DOH-EB, RITM, DA-BAI, DA-BFAR, DA-NMIS	2025, 2026, 2027, 2028	PHP 800,000 per publication and dissemination effort	4 annual publication and dissemination effort <b>Total: PHP3,200,000</b>
2.4. H. HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.4.H.1. Strengthen the capacity of hospitals to implement and utilize electronic medical records (EMR) systems, ensuring seamless integration with AMR surveillance and reporting	RITM, DOH-OHL	2025, 2026, 2027, 2028	PHP 900,000 per activity	4 capacity-building activities <i>Total: PHP</i> 3,600,000
2.4.H.2. Incorporate AMR surveillance and management strategies into the operational frameworks of the National and Regional Health Laboratory Networks	рон	2025, 2026, 2027, 2028	PHP 600,000 per workshop	4 strategic and operational planning workshop <b>Total: PHP 2,400,000</b>
2.4.H.3. Designate RITM as the national coordinating center for AMR surveillance within the human health sector, responsible for oversight, coordination and data management	RITM	2025	PHP 500,000 per workshop	1 National AMR Surveillance Stakeholder Consultation Workshop Total: PHP 500,000
2.4.H.4. Establish and implement case-based AMR surveillance across all AMR activities to generate quantifiable burden of disease, by sex and age, and where feasible, other social stratifiers including gender identity, income, ethnicity, geographic location, educational attainment and employment status	DOH, RITM	2026, 2027	PHP 600,000 per activity	1 design workshop and 1 pilot testing Total: PHP 1,200,000
2.4.H.5. Initiate the development of an integrated information sharing system for the surveillance of AMR, AMU, and HAI	DOH, RITM	2026, 2027	PHP 1,200,000 per activity	1 development workshop and 1 pilot testing Total: PHP 2,400,000

2.4.H.6. Create standardized protocols to monitor, manage, analyze, and utilize HAI data across the local, regional, and national levels  2.4.H.7. Broaden the scope of annual point prevalence surveys (PPS) by incorporating	DOH, RITM	2025, 2026, 2027, 2028	PHP 400,000 per manual developed	4 protocol manuals developed  Total: PHP  1,600,000  2 annual review
prescription data to better understand patterns of antimicrobial use and resistance, with gender-disaggregated data	DOH, RITM	2027, 2028	PHP 500,000 per workshop	workshop  Total: PHP 500,000
2.4.H.8. Develop an e-prescription system that will include the comprehensive collection of data on antimicrobial use	DOH, RITM, PD	2027, 2028	PHP 900,000 per technical assistance	Technical assistance on the development of e-prescription system  Total: PHP 1,800,000
2.4.H.9. Conduct targeted training programs for hospital personnel on the use of the e-prescription system, ensuring integration with pharmacovigilance practices	DOH - PD	2028 onwards	PHP 400,000 per activity	4 training programs <b>Total: PHP 1,600,000</b>
2.4.H.10. Adopt e-prescription system in DOH hospitals	DOH - PD	2028 onwards	PHP 800,000 per activity	2 full-scale rollout plan <b>Total: PHP</b> <b>1,600,000</b>
2.4. A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.4.A.1.Develop a comprehensive registry of all veterinary feed suppliers, farms, aquafarms, and drug establishments	DA-BAI, BFAR, FDA	2025, 2026, 2027, 2028	PHP 500,000 per activity	8 bi-annual profiling activity in the span of 4 years  Total: PHP 4,000,000
2.4.A.2. Establish a national coordinating center for AMR within the animal health sector to ensure consistent data collection and reporting standards	DA-OUSL, DA-BAI, BFAR, NMIS	2025, 2026, 2027, 2028	PHP 700,000 per activity	1 executive meeting, 2 annual strategic planning workshop <b>Total: PHP</b> <b>2,100,000</b>
2.4.A.3. Conduct a consultative workshop to formulate and endorse a comprehensive AMR and AMU data reporting from local to national levels for the animal health sector	DA-BAI, BFAR, NMIS	2026, 2027	PHP 500,000 per workshop	1 annual consultative workshop

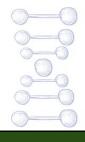


2.4.A.4. Create a standardized master document for tracking and analyzing AMR and AMU trends across all food-producing animals	DA-BAI, BFAR, NMIS	2027, 2028	PHP 500,000 per workshop	Total: PHP 1,000,000  1 design workshop and 1 consultative workshop Total: PHP 1,000,000
2.4.A.5. Implement robust AMR and AMU surveillance and monitoring systems for food-producing animals and their products, including meat, fish and fishery products, milk, eggs, and honey	DA-BAI, BFAR, NMIS	2027, 2028	PHP 800,000 per surveillance	2 annual surveillance and monitoring for AMR and AMU <b>Total: PHP</b> <b>1,600,000</b>
2.4. E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
2.4.E.1. Identify major sources and pathways of emissions of antibiotic residues and antimicrobial resistance to the environment	DENR-EMB	2025, 2026, 2027, 2028	PHP 5,000,000	4 assessment studies <i>Total: PHP</i> 20,000,000
2.4.E.2. Initiate capacity-building for collecting antimicrobial resistance data from the environment, including but not limited to water, soil, industrial effluent and sewage.	DENR-EMB, DA-BSWM	2025, 2026, 2027, 2028	PHP 7,500,000	4 capacity-building activities <i>Total: PHP</i> <b>30,000,000</b>

### 4.3. Key Strategy 3: Ensure uninterrupted access to safe and quality-assured antimicrobials

This strategy aims to guarantee continuous access to safe, effective, and quality-assured antimicrobials. This strategy focuses on improving regulatory frameworks, monitoring drug quality, and ensuring sustainable supply chains. Objectives include enhancing the post-marketing surveillance of antimicrobials, monitoring their availability and affordability, and developing efficient supply chain management systems. Collaborative activities involve reviewing and enforcing policies, communicating about substandard and falsified drugs, and creating agreements between regulatory bodies for oversight responsibilities. Sector-specific activities include monitoring the quality of antimicrobials in both human and veterinary markets, conducting availability surveys, and analyzing supply chains. Additionally, efforts will be made to develop antimicrobial stewardship programs and improve logistics and procurement systems to prevent drug stock outs in government health facilities. By ensuring adherence to updated guidelines and fostering coordination among stakeholders, this strategy aims to maintain a reliable supply of essential antimicrobials across all levels of care.





**Outcome:** Improved availability, affordability, and adherence to use of safe and quality-assured antimicrobials in human and animal health

/	Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
	3.1. Reduced stockouts of antimicrobials for priority human and animal diseases	Pending baseline	25% decrease	Inventory Reports	DOH, DA	Antimicrobials remain accessible and available for consumption at all levels of care in the treatment of priority human and animal diseases
	3.2. Reduced out-of-pocket spending of antimicrobials	Pending baseline	25% decrease	National Health Accounts/PhilHealth Reimbursement Data/Researches	DOH	Access to priority antimicrobials remains affordable. There is financial risk protection in the use of priority antimicrobials.

## **Strategic objective 3.1 (Output)**: To increase the availability of safe and quality-assured antimicrobials in human and animal health

3.1.1. Percentage of registered antimicrobials that have undergone Health Technology Assessment for human use or expert panel review for animal use, that are in the national formularies	Pending baseline	To be established	Updated Philippine National Formularies (PNF) and Philippine National Veterinary Drug Formulations (PNVDF)	DOH; DOST; DA	Adequate resources (financial, human, and technical) are available. Cooperation and coordination between regulatory agencies (FDA, DOH, DA) are maintained.
3.1.2. Percentage of health facilities per level with available essential antimicrobials for TB, HIV, Malaria	Pending baseline	25% increase	Stockout rates; Inventory reports	DOH	Effective monitoring of inventory levels of priority antimicrobials in all levels of care for humans.
3.1.3. Percentage of substandard and falsified antimicrobials detected from all antimicrobials subjected to post-market surveillance	Pending baseline	To be established	FDA Records/reports	FDA	Government-procured and inspected/subjected to PMS antimicrobials are assured safe, efficacious, and of good quality



3.1. C. COLLABORATIVE ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
3.1.C.1. Collaboratively review, update, and harmonize policies and regulations on antimicrobial access and use across human and animal health sectors	DA, DOH, DILG, DOST, Professional societies, BOC	2025, 2026	PHP 2,000,000 per technical assistance	4 joint review and updating of current policies/4 technical assistance  Total: PHP 8,000,000
3.1. H. HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
3.1.H.1.Update the Philippine National Formulary according to current needs and align with WHO Model Lists of Essential Medicines	DOH, DOST	2025 onwards	PHP 1,000,000 per update of PNF	Annual updating of PNF  Total: PHP 4,000,000 for 4  years
3.1.H.2. Implement post-marketing surveillance to identify and address falsified and substandard antimicrobials in the market.	FDA	2025, 2026	PHP 1,000,000 per surveillance	4 post-marketing surveillance Total: PHP 4,000,000
3.1.H.3. Monitor the quality of registered human antimicrobials in the market	DOH, FDA, Professional societies	2025	PHP 5,000,000 per monitoring	4 monitoring activities conducted quarterly <i>Total: PHP 20,000,000</i>
3.1.H.4. Update batch certification regulations to encompass all antimicrobials	FDA	2025, 2026	PHP 5,000,000 per regulation updating	2 batch certification regulation updating  Total: PHP 10,000,000
3.1.H.5. Continue to conduct annual meetings to analyze drug availability results	DOH, FDA	2025, 2026, 2027, 2028 onwards	PHP 200,000 per meeting	4 meetings conducted annually until 2028  Total: PHP 800,000
3.1.H.6. Integrate supply chain studies (from forecasting to distribution) for all registered antimicrobials	DOH-SCMS	2026, 2027	PHP 3,000,000 per activity	2 lessons learned workshop and strategic planning <b>Total: PHP 6,000,000</b>
3.1.H.7. Strengthen the capacity of the regulatory functions of the veterinary drugs	FDA	2025, 2026, 2027, 2028 onwards	PHP 3,000,000 per meeting	4 executive meetings  Total: PHP 12,000,000
3.1.H.8. Improve supply management of antimicrobials for public health programs, especially for HIV, TB, malaria to ensure minimal stockout rates	DOH	2026, 2027	PHP 10,000,000 per review	2 supply management assessment and review <i>Total: PHP 20,000,000</i>
3.1. A. AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
3.1.A.1. Establish regulatory framework and policies for veterinary medicinal products and non-medicated antimicrobials in animal and food production	FDA, DA	2025, 2026	PHP 3,000,000 per policy	2 annual policy writing workshop, 2 annual policy review workshop <b>Total: PHP 12,000,000</b>

3.1.A.2. Implement post-marketing surveillance on identified falsified and substandard antimicrobials in the market	BOC, Regulatory and enforcement agencies	2026, 2027	PHP 7,000,000 per surveillance	4 post-marketing surveillance  Total: PHP 28,000,000
3.1.A.3. Create a policy to require the submission of quantitative production and importation of all registered veterinary antimicrobials	FDA	2027, 2028	PHP 1,000,000 per workshop	1 policy writing workshop, 1 policy review  Total: PHP 2,000,000
3.1.A.4. Update batch certification regulations to include all antimicrobials	FDA	2027, 2028	PHP 3,000,000 per updating	2 batch certification regulation updating <b>Total: PHP 6,000,000</b>
3.1.A.5. Develop a policy to forge an agreement on regulatory control over antimicrobials used in aquaculture	FDA, DA	2026, 2027	PHP 3,000,000 per policy	1 meeting to develop policy  Total: PHP 3,000,000
3.1.A.6. Strengthen the regulatory capacity of the FDA on veterinary antimicrobials (i.e. policy issuance, revise regulations)	FDA	2027, 2028	PHP 3,000,000 per meeting	2 meetings conducted in the span of 2 years  Total: PHP 6,000,000

## Strategic Objective 3.2 (Output): To maintain affordability of safe and quality-assured antimicrobials for human use

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
3.2.1. Percentage of essential antimicrobials in PhilHealth's case rates/primary care benefits that meet both price enforcement regulations and fall within the Drug Price Reference Index (DPRI)	Pending baseline	25% increase	Annual compliance reports; Procurement records and audits; DPRI compliance monitoring reports	ICAMR, DTI, DOH, FDA	Public and private sector collaboration to ensure price regulation compliance.
3.2.2. Percentage of minimum daily wage spent on out-of-pocket costs for WHO AWaRe Access group antibiotics	Pending baseline	25% increase	National Health Accounts; Reports from PhilHealth on out-of-pocket spending trends	DOH, PSA	Health insurance coverage is expanded and effectively reduces out-of-pocket expenses. Economic conditions remain stable, allowing for accurate assessment of wage-based expenditure percentages.
3.2. H. HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
3.2.H.1. Continue monitoring drug prices of human antimicrobials annually		DOH, FDA	2025, 2026, 2027, 2028 onwards	PHP 2,000,000 per year	Annual monitoring of drug prices



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	3.2.H.2. Update the Maximum Drug Retail Price (MDRP) List	DOH	2025 onwards	PHP 400,000 per year	Annual updating of MDRP list Total: PHP 1,600,000 for 4 years
/	3.2.H.3, Expand the number of antimicrobials included in PhilHealth benefit packages	PHIC	2026, 2027	PHP 3,000,000 per initiative	Annual expansion initiative  Total: PHP 6,000,000 for 2  years

### Strategic Objective 3.3 (Output): To promote adherence to appropriate antimicrobial use guidelines in human health

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Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions	
3.3.1. Percentage of healthcare providers adhering to national antimicrobial prescribing guidelines	Pending baseline	25% increase	Audit reports, electronic health records and prescription reviews	DOH	Healthcare providers have access to updated guidelines and training. There is institutional support for adherence to guidelines, including resources for training and monitoring.	
3.3.2. Percentage of facilities conducting regular audits on antimicrobial use and compliance with policies, standards, regulations and guidelines	Pending baseline	25% increase	Audit reports and records, facility compliance documentation	DOH	Facilities have the capacity and resources to conduct regular audits. There is a commitment from facility leadership to prioritize antimicrobial stewardship.	
3.3. H. HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions	
3.3.H.1.Establish a system for regular prescription audits of antimicrobial prescribing practices in healthcare facilities.		DOH	2027, 2028	PHP 10,000,000 for system development and initial implementation with TA	2 years of implementation  Total: PHP 20,000,000	
3.3.H.2. Integrate adherence to antimicrobial prescribing guidelines into performance evaluations and quality improvement initiatives for healthcare facilities.		DOH, PHIC	2027, 2028	PHP 3,000,000 per integration phase	2 phases of integration  Total: PHP 6,000,000	



### 4.4. Key Strategy 4: Regulate and promote the rational use of antimicrobials across all sectors

This strategy focuses on establishing and enforcing regulatory frameworks to promote responsible antimicrobial stewardship. This strategy aims to develop standardized guidelines reflecting the latest evidence and best practices, foster an enabling environment for judicious antimicrobial use, and monitor and enforce policies to deter misuse and overuse. Collaborative activities involve reviewing existing regulations, developing prescription audit systems, and creating regional committees to tackle AMR. Health, agricultural, and environmental sector-specific activities include revising national antibiotic guidelines, developing antimicrobial stewardship programs, and ensuring proper waste management. Additionally, this strategy emphasizes strict enforcement of regulations, incentivizing prudent use, and documenting best practices. By establishing resilient monitoring and enforcement mechanisms, this strategy aims to ensure the rational use of antimicrobials across all sectors, ultimately reducing the risk of antimicrobial resistance.

### Outcome: Enhanced oversight and advocacy for responsible antimicrobial use across sectors

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
4.1. Number of new or revised policies, standards, regulations and guidelines developed	Pending baseline	3 new or revised policies, standards, regulations and guidelines developed	Official policies, standards, regulations, and guidelines	ICAMR	There are established baseline measurements of antimicrobial use in each sector and a clearly defined meaning of "inappropriate use" and its standard unit of measurement within each context.  There is accurate and consistent monitoring, reporting, and enforcement of antimicrobial use practices.  There is sufficient capacity, resources, and commitment to conduct regular audits and inspections, and healthcare
4.2. Develop a surveillance system for inappropriate antimicrobial use across sectors	Pending baseline	Surveillance system per sector	Surveillance system with manual of procedures	ICAMR	
4.3. Number of facilities conducting regular monitoring on antimicrobial use and compliance with policies, standards, regulations and guidelines	Pending baseline	123 facilities conducting regular monitoring on antimicrobial use and compliance	Monitoring reports on antimicrobial use and compliance	ICAMR	

facilities and farms have the necessary support and incentives.

## **Strategic objective 4.1 (Output)**: To develop, regularly update, and implement or enforce, where applicable, policies, standards, regulations and guidelines for antimicrobial stewardship

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4.1.1. Assessment of regulations and controls related to the registration, advertising, and end-use of antimicrobials reviewed and updated	Pending baseline	3 assessments	Assessment reports	FDA FDA	Adequate institutional capacity, expertise, and political will to review, revise, and update regulations and controls related to
4.1.2. Development and launch of a prescription monitoring system	Initial effort of pilot projects (not fully implemented)	Developed prescription monitoring system	Prescription monitoring program system	DOH, PhilHealth, DA, FDA	antimicrobials, and stakeholders that would involve all sectors.  Sufficient technical expertise, financial resources, and stakeholder collaboration to design, develop, and implement the prescription audit system.  Effective collaboration among key stakeholders to develop and endorse updated guidelines; there is sufficient capacity and resources to disseminate and implement these guidelines nationwide  There is consensus among surgical experts, infectious disease specialists, and policymakers on the best practices for antibiotic use in surgical prophylaxis.  Veterinarians, Fish Health Offices, and regulatory bodies are committed to adopting and implementing the Philippine
4.1.3. Updated National Antibiotic Guidelines published across sectors	National Antibiotic Guidelines 2017 None for Animal Health	Updated and revised National Antibiotic Guidelines	Document on National Antibiotic Guidelines  Document on National Antibiotic Guidelines for Animal Health	DOH, Medical Societies, RITM, DA, PVMA	
4.1.4. Development of guidelines for antibiotic use in surgical prophylaxis	Currently integrated into National Antibiotic Guidelines	Separate guidelines for antibiotic use in surgical prophylaxis for both human and animal sectors	Document on the guidelines regarding surgical prophylaxis for both human and animal sectors	DOH, Medical Societies, DA, PVMA	
4.1.5. Development and distribution of the Monitoring and Evaluation (M&E) toolkit for the Antimicrobial Stewardship (AMS) program	Pending baseline	Monitoring and Evaluation (M&E) toolkit for the Antimicrobial Stewardship (AMS) program	Documentation of the M&E Toolkit	DOH	
4.1.6. Development of the Philippine Practice Standards for Veterinarians based on the	Pending baseline	Philippine Practice Standards for	Document on the Philippine Practice	PVMA	



following categories: production, companion, and aquatic animals	Veterinarians: Production, Companion, and Aquatic Animals	Standards for Veterinarians Production, Companion, and Aquatic Animals		Practice Standards for Veterinarians.  Regulatory authorities have the expertise and resources to develop and publish guidelines for environmental antimicrobial regulation.
4.1.C.COLLABORATIVE ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
4.1.C.1. Jointly conduct a comprehensive review of existing regulations and controls related to the registration, advertising, and end-use of antimicrobials, informed by the results of regulatory stock-taking (i.e. Coordination meetings)	ICAMR	2025, 2026, 2027, 2028	PHP 110,000 per session	Annual reviews of existing regulations (4 sessions in the span of 4 years)  Total: PHP 440,000
4.1.H.HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
4.1.H.1. Update the National Antibiotic Guidelines to reflect latest evidence and best practices (i.e. Expert consultations and dissemination)	DOH, Medical Societies	2025	PHP 5,000,000 with TA	Total: PHP 5,000,000
4.1.H.2. Develop a policy and implementing guidelines for the use of antibiotics as surgical prophylaxis (i.e. Policy drafting, and training)	DOH, Medical Societies	2025	PHP 2,000,000 with TA	Total: PHP 2,000,000
4.1.H.3. Develop a prescription monitoring system for antimicrobials, including a monitoring system to identify unconscious gender biases or inequalities in prescribing practices (i.e. System design, pilot testing, and consultation)	DOH, PhilHealth	2026	PHP 10,000,000 with TA	Development and pilot implementation  Total: PHP 10,000,000
4.1.H.4. Develop a comprehensive Monitoring and Evaluation (M&E) toolkit for the Antimicrobial Stewardship (AMS) program (i.e. Design, toolkit development, and training)	DOH	2026 PHP 7,000,000 with TA		Total: PHP 7,000,000
4.1.H.5. Conduct a thorough stock-taking of current regulations and practices related to antimicrobial use (i.e. meetings, and stakeholder consultations)	DOH	2025, 2026, 2027, 2028 onwards	PHP 110,000 per meeting	1 stock-taking activity conducted annually <b>Total: PHP 440,000</b>
4.1.A.AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions



4.1.A.1. Develop the National Antibiotic Guidelines, including Antimicrobial Stewardship Program, tailored for Animal Health (i.e. Stakeholder reviews, expert consultations, and dissemination)	DA, PVMA	2025	PHP 15,000,000 with TA	Total: PHP 15,000,000
4.1.A.2. Develop Philippine Practice Standards for Veterinarians to promote rational antimicrobial prescribing (i.e. Training programs) based on the following categories: production, companion, and aquatic animals	DA, DA-BAI, DA-BFAR, PVMA	2025	PHP 3,000,000 with TA	Total: PHP 3,000,000
4.1.A.3. Review, update, and expand the regulations on Good Animal Husbandry Practices (GAHP), Good Agricultural Practices (GAP), and Good Aquaculture Practices (GAqP) to include a ladderized system. (i.e. certification system)	DA, DA-BAI, DAI-BFAR, DA-BPI	2025	PHP 2,000,000	Total: PHP 2,000,000
4.1.A.4. Issue and enforce a regulation on the prudent use of veterinary drugs	DA, PVMA	2025	PHP 400,000	Total: PHP 400,000
4.1.A.5. Enact a regulation prohibiting the use of antimicrobials for growth promotion in animals.	DA	2025	PHP 400,000	Total: PHP 400,000
4.1.A.6. Conduct a thorough stock-taking of current regulations and practices related to antimicrobial use in agriculture.	DA	2025, 2026, 2027, 2028 onwards	PHP 110,000 per meeting	1 stock-taking activity conducted annually <b>Total: PHP 440,000</b>
4.1.H.7. Development of a prescription monitoring system for antimicrobials, including a monitoring system to identify inequalities in prescribing practices (i.e. System design, pilot testing, and consultation)	DA	2026	PHP 10,000,000 with TA	Development and pilot implementation  Total: PHP 10,000,000
4.1.E.ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
4.1.E.1. Revise guidelines on Water, Sanitation, and Hygiene (WASH) practices, waste management, and waste disposal to specifically include antimicrobials (i.e. policy review, development of guidelines)	DENR	2026	2, 000,000 with TA	Total: PHP 2,000,000
include antimicrobials (i.e. policy review, development of	DENR	2026		Total: PHP 2,000,000

**Strategic Objective 4.2 (Output):** To foster an enabling environment for the rational use of antimicrobials, encouraging responsible prescription, dispensing, and use

Indicators	Baseline (2024)	Target (2028)	моу	Implementing Agency	Assumptions	
4.2.1. Formalization of expanded multisectoral members for AMS and AMU	Pending baseline	Formalized, expanded list of	DPO (Department Personnel Order) or SO (Special Order)	ICAMR	Regional stakeholders are committed to forming and maintaining operational	



		members for AMS and AMU			multisectoral committees for AMS and AMU
4.2.2. Percentage of trained hospitals and primary care facilities in AMS	83.80% trained hospitals and 16.8% trained primary care facilities	100% trained hospitals and primary care facilities	Masterlist of trained hospitals and primary care facilities	DOH	Hospitals and primary care facilities have the resources and support to implement AMS programs effectively.
4.2.3. Number of registered GAHP and GAqp farms, feed mills, and processing plants	30 swine and poultry farms 200 feed mills 141 processing plants 575 aquafarms	10% increase in registered swine and poultry farms 10% increase in registered feed mills and processing plants 10% increase in registered aquafarms	Registration inventory/list of livestock, aquaculture, and raw material sources	DA	Aquafarms, feed sources, and processing plants are compliant with registration requirements and regulatory standards.  There is support from stakeholders to develop and implement an effective incentive scheme for antibiotic stewardship in farms.
4.2.4. Development of an incentive scheme to recognize and promote certified farms demonstrating prudent use of antibiotics	Pending baseline	Developed Incentive scheme	Incentive scheme	DA	Stakeholders are committed to developing and funding a strategic plan for improving waste management and reducing antimicrobial contamination.
4.2.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
4.2.C.1. Jointly establish and operationalize reg committees to address antimicrobial stewardsh antimicrobial use (AMU) challenges.		DOH-PD, RITM, DA-BAI	2025	PHP 500,000 per region	17 regions Total: PHP 8,500,000
4.2.C.2. Implement a systematic approach to document, evaluate, and disseminate best practices in AMS across all sectors.		DOH-PD, DA-BAI	2025	PHP 550,000 per meeting / workshop	4 meetings / workshops Total: PHP 2,200,000
4.2.H.HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
4.2.H.1. Expand and strengthen the implemental programs in Level 1 and 2 hospitals and primary nationwide		DOH	2025, 2026, 2027, 2028 onwards	PHP 500,000 per training hub/Center for	17 CHDs and 5 training hubs  Total: PHP 11,000,000



		Health and Development (CHD)	
DOH, Professional Societies, DBM	2027	PHP 1,000,000	Total: PHP 1,000,000
Implementing Agency	Timeline	Estimated Budget	Assumptions
DA	2025, 2026, 2027, 2028 onwards	PHP 160,000 per registration initiative	16 registration initiatives (to be conducted quarterly in the span of 4 years)  Total: PHP 2,560,000
DA	2025, 2026	PHP 1,000,000 per incentive scheme	2 incentive schemes  Total: PHP 2,000,000
Implementing Agency	Timeline	Estimated Budget	Assumptions
DENR	2027	PHP 1,000,000	Total: PHP 1,000,000
DENR	2026, 2028	PHP 1,000,000 per advocacy campaign	2 advocacy campaigns  Total: PHP 2,000,000
	DA  Implementing Agency  DA  Implementing Agency  DA  DA  Implementing Agency  DENR	Implementing Agency  DA  DA  2025, 2026, 2027, 2028 onwards  DA  2025, 2026  Implementing Agency  Timeline  Timeline  2027	Development (CHD)  DOH, Professional Societies, DBM  Implementing Agency  DA  DEVELOPMENT (CHD)  Timeline  Estimated Budget  PHP 1,000,000 per registration initiative  DA  DA  DA  DA  DA  DA  DENR  DENR  Development (CHD)  PHP 1,000,000  PHP 1,000,000 per incentive scheme  Estimated Budget  PHP 1,000,000 per incentive scheme  PHP 1,000,000  PHP 1,000,000  PHP 1,000,000  PHP 1,000,000 per advocacy

**Strategic Objective 4.3 (Output):** To monitor and evaluate the rational use of antimicrobials as governed by policies, guidelines, and regulations, and their implementation or enforcement

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
4.3.1. Development of an integrated, cross-sectoral reporting system for antimicrobial use	Pending baseline	Developed reporting system for antimicrobial use	ed g system Reporting system for		Stakeholders will collaborate effectively to develop and maintain a comprehensive, cross-sectoral
4.3.2. Number of health facilities with regularly audited Antimicrobial Stewardship (AMS) programs.	Pending baseline	123 facilities with regularly audited Antimicrobial Stewardship (AMS) programs.	Annual reports on the implementation of the AMS program	DOH	reporting system for antimicrobial use.  The tracking mechanism is functional and stakeholders are committed to monitoring and

4.4.3. Number of registered veterinarians actively participating in the antimicrobial prescription reporting system		1000 registered veterinarians	Prescription reporting system reports	DA	updating antimicrobial-related regulations and guidelines regularly; Joint M&E regulatory framework for regulations are separated each sector  Health facilities have the resources and support to implement and evaluate AMS programs effectively and consistently.  Veterinarians are motivated and have the resources to actively participate in the antimicrobial prescription reporting system		
4.3.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions		
4.3.C.1. Establish an integrated, cross-sectoral reporting system for antimicrobial use across all sectors		ICAMR	2027	PHP 5,000,000 per year, with TA	Development of a cross-sectoral reporting system, including annual review of its mechanisms  Total: PHP 10,000,000 for 2 years		
4.3.C.2. Develop a comprehensive tracking mechanism to monitor the implementation status of antimicrobial-related regulations, policies, and guidelines		ICAMR	2026	PHP 3,000,000 per year, with TA	Development of a tracking mechanism, including annual review of its efficiency  Total: PHP 9,000,000 for 3 years		
4.3.H.HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions		
4.3.H.1. Monitor and evaluate the implementation of Antimicrobial Stewardship (AMS) programs in all trained health facilities nationwide		DOH-PD, DOH-HFSRB	2025, 2026, 2027, 2028 onwards	PHP 500,000 per year, with TA	4 monitoring and evaluation activities <i>Total: PHP 2,000,000</i>		
4.2.A.AGRICULTURAL SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions		
4.3.A.1. Advocate for the prohibition of antimicrobial use for growth promotion in animal husbandry		DA	2025, 2026, 2027, 2028 onwards	PHP 100,000 per year	Annual advocacy campaigns  Total: PHP 400,000		



4.3.A.2. Enhance coordination and establish efficient data-sharing protocols between the Food and Drug Administration (FDA) and the Department of Agriculture (DA)	DA, FDA	2025, 2026	PHP 110,000 per meeting	2 meetings  Total: PHP 220,000
4.3.A.3. Differentiate and categorize veterinary antimicrobial registration data for terrestrial and aquatic animals to improve targeted interventions	DA	2025, 2026	PHP 110,000 per initiative	4 differentiation and categorization initiative  Total: PHP 440,000
4.3.A.4. Integrate veterinarians into the antimicrobial prescription reporting system to ensure comprehensive oversight	DA, PVMA	2025, 2026, 2027, 2028	PHP 110,000 per year	4 integration initiatives <b>Total: PHP 440,000</b>
4.3.A.5. Maintain and strengthen the registration process for veterinary drugs and products (VDAP) establishments	DA	2025, 2026	PHP 100,000 per review	2 review of the registration process for VDAP establishments <b>Total: PHP 200,000</b>
4.3.A.6. Monitor and evaluate existing regulations on medicated feeds to prevent misuse and overuse of antimicrobials	DA	2025, 2026, 2027, 2028 onwards	PHP 100,000 per year	Annual monitoring of existing regulations  Total: PHP 400,000
4.3.A.7. Assess the impact of PNS, Good Animal Husbandry Practices (GAHP) and Good Aquaculture Practices (GAQP) on Antimicrobial Use (AMU) and Antimicrobial Resistance (AMR) through ongoing monitoring and evaluation	DA-BAI, DA-BAFS, DA-NMIS, DA-BFAR	2027, 2028	PHP 2,200,000 per M&E activity, with TA	2 M&E activities  Total: PHP 4,400,000

#### 4.5. Key Strategy 5: Implement appropriate regulatory measures to reduce drug-resistant infections across all settings

This strategy aims to reduce the prevalence of infections across the health, agricultural, and environmental sector. The objectives under this strategy are to strengthen the capacities of sector personnel, facilities, and communities in infection prevention, sanitation, and hygiene, execute coordinated programs focused on sanitation, hygiene, and infection prevention and control in hospitals, health facilities, animal clinics, farms, and the environment, and enhance biosecurity measures in all settings. The collaborative activities of this strategy involve community-level education and promotion of infection prevention and control (IPC) practices and antimicrobial stewardship at the community level, comprehensive training programs for personnel (e.g. healthcare workers, veterinary staff, and other relevant professionals) on IPC, and rigorous monitoring and enforcement of national IPC policies and food hygiene and safety standards. Human health-specific activities include the integration of IPC standards, boosting vaccination rates, monitoring hospital-acquired infections, and managing AMR-related outbreaks. The agricultural sector is focused on the implementation of GAHP and GAqP and adoption of Hazard Analysis Critical Control Point (HACCP) systems and Good Manufacturing Practice (GMP) in the food supply chain. Environmental health-specific efforts include enhancing sanitation, waste management, food safety, assessing antimicrobial handling, piloting monitoring systems, and establishing a biosecurity office at DENR. This multi-faceted approach ensures that all potential entry points and vectors of infection are addressed, significantly reducing the likelihood of outbreaks.

The combined efforts of training, resource allocation, awareness campaigns, and stringent biosecurity measures create a comprehensive and resilient framework for infection prevention.

**Outcome:** Reduced incidence of infections in human, animal, and environmental health sectors through enhanced regulatory measures, improved sector capacities, and biosecurity programs, leading to decreased antimicrobial usage across all settings

I	ndicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
	5.1. Percentage reduction in healthcare-associated nfection rates in hospitals and healthcare facilities	Pending Baseline	25% decrease	HAI Rate in Hospital Scorecard Rating Scale Reporting of HAIs and emerging AMRs through reports submitted by RITM	DOH	There is continuous and effective monitoring and surveillance of infections across
	5.2. Percentage reduction in reported infectious disease outbreaks in registered animal farms	Pending Baseline	25% decrease	Infection surveillance data and reports	DA	sectors.

**Strategic objective 5.1 (Output)**: To strengthen the capacities of sector personnel, facility, and community for infection prevention, sanitation and hygiene

5.1.1. Increased capacity of sector personnel and facilities in implementing IPC regulatory measures	Pending Baseline	Targets to be established	Pre-assessment report  Pre-and post-training assessment reports	DOH, DA, DENR	There is ongoing financial and institutional support for the
5.1.2. Proportion of communities with trained community health workers on basic infection prevention and hygiene practices	Pending Baseline	Targets to be established	Reports on training programs and outreach activities conducted for infection prevention, sanitation, and hygiene among sector personnel and communities	DOH, DA	implementation of AMR initiatives, including training, public awareness, and compliance monitoring.



5.1.3. Percentage of facilities (registered farms/aquafarms, and hospitals and primary care facilities) compliant with IPC practices	Pending Baseline  19 GAHP certified farms on 1st semester of 2024; 5 farms pending for certification	25% increase for human sector 50% increase in GAHP certified farms	Hospitals and primary care facilities compliant to AMR and HAI regulation  GAHP Accredited and Registered Farms	DOH) DA	Governments and relevant authorities are committed to adopting, enacting, and enforcing new or updated
	575 GAqP registered farms (none certified yet)	30 GAqP certified aquaculture farms	GAqP Accredited and Registered Aquafarms	DA	regulations across all sectors
5.1.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
1	5.1.C.1. Jointly coordinate and deliver cross-sectoral community campaigns on IPC and antimicrobial stewardship to reduce drug-resistant infections		2025, 2026	PHP 250,000 per event	2 annual collaborative IPC campaigns at the community level <b>Total: PHP 500,000</b>
5.1.H.HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
5.1.H.1. Conduct needs assessment for healthcare personnel and facilities to identify priority areas on IPC and AMR training		DOH	2025, 2026	PHP 250,000	2 annual needs assessment activities Total: PHP 500,000
5.1.H.2. Deliver continuous IPC training programs for personnel with focus on healthcare-associated infection (HAI) and communicable disease surveillance with gender-sensitive approaches		DOH	2025, 2027	PHP 650,000 per training	6 trainings conducted in Luzon, Visayas, and Mindanao Total: PHP 3,900,000
5.1.A.AGRICULTURAL SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions



DA	2025, 2026	PHP 250,000	2 annual needs assessment activities <b>Total: PHP 500,000</b>
DA	2025, 2027	PHP 650,000 per training	4 biannual training for different actors within the animal health system  Total: PHP  2,600,000
Implementing Agency	Timeline	Estimated Budget	Assumptions
DENR	2028 onwards	PHP 300,000 per assessment	2 annual needs assessment <b>Total: PHP 600,000</b>
DENR	2028 onwards	PHP 650,000 per training	2 workshop and training sessions <b>Total: PHP</b> <b>1,300,000</b>
	DA  Implementing Agency  DENR	DA 2025, 2027  Implementing Agency  DENR 2028 onwards	DA 2025, 2027 PHP 650,000 per training  Implementing Agency Timeline Estimated Budget  DENR 2028 onwards PHP 300,000 per assessment  PHP 650,000 per

**Strategic Objective 5.2 (Output)**: To implement coordinated programs on sanitation and hygiene, infection prevention and control, and vaccination in public health facilities

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
5.2.1. Increase compliance to biosecurity regulations across hospitals and primary care facilities	Pending Baseline for human sector  Pending Baseline	100% compliance for health sector  25% increase of licensed/ certified establishments	Compliance rate of health facilities through accreditation or license of the Health Facility  Compliance of the food industry to food hygiene and safety standards through license to Operate for Food Establishments	DOH DOH, DA	Facilities and personnel across sectors have the necessary resources, knowledge, capacity and commitment to enforce and sustain implementation programs.



5.2.2. Increase immunization coverage through vaccination programs for human population	Pending Baseline	95% coverage for human population	Vaccination coverage reports	DOH	
5.2.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
5.2.C.1. Jointly enhance and enforce national food hygiene and safety standards to prevent contamination and microbial growth (i.e. policy review, revision of guidelines)		FDA, DA, DOH	2025 onwards	PHP 2,000,000 per technical assistance	4 annual technical assistance Total: PHP 8,000,000
5.2.H.HUMAN SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
5.2.H.1 Increase vaccination compliance rates, focusing on vulnerable populations to reduce drug-resistant infections		DOH	2025, 2026	PHP 500,000 per program	2 annual immunization program implementations <i>Total: PHP</i> 1,000,000
5.2.H.2. Establish adequate gender-responsive water, sanitation, and hygiene (WASH) infrastructure in all health facilities for infection control (i.e. assessment of WASH facilities, improvements, training of staff)		DOH	2025, 2026, 2027, 2028	PHP 650,000 per activity	4 annual activities on availability and maintenance of WASH infrastructures <b>Total: PHP 2,600,000</b>
5.2.H.3. Strengthen enforcement of licensing standards related to IPC across health facilities (i.e. inspections, compliance checks, and enforcement mechanisms)		DOH	2025, 2026	PHP 250,000	2 annual implementation activities <i>Total: PHP 500,000</i>
5.2.H.4. Facilitate mentoring programs for health facilities on IPC, led by professional societies and model hospitals, to promote best practices		DOH	2025, 2027	PHP 650,000	4 biannual mentoring programs  Total: PHP 2,600,000
5.2.H.5. Develop and implement a standardized protocol fo outbreaks and multidrug-resistant organisms (MDRO) conta and healthcare facilities		DOH	2025, 2026, 2027, 2028	PHP 300,000 per activity/workshop	1 session for development of the protocol on year 1;

				3 annual workshop for implementation <b>Total: PHP</b> <b>1,200,000</b>
5.2.H.6.Implement IPC measures into public health programs specific to community-level and primary healthcare facilities	DOH	2025, 2026	PHP 1,000,000	2 annual workshop sessions <i>Total: PHP</i> 2,000,000
5.2.H.7. Continuously monitor and ensure health facility compliance with the National Infection Prevention and Control Policy	DOH	2025, 2026, 2027, 2028 onwards	PHP 400,000	4 annual assessment and monitoring activities Total: PHP 1,600,000
5.2.E.ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
5.2.E.1. Conduct a baseline assessment of current infectious waste management practices in hospitals and primary care facilities	DENR, DOH	2028 onwards	PHP 500,000	4 annual baseline data collection and assessment  Total: PHP 2,000,000

## **Strategic Objective 5.3 (Output)**: To improve good animal husbandry and aquaculture practices, animal vaccination, and biosecurity in animal farms

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
5.3.1. Percentage of farms certified for Good Animal Husbandry Practices (GAHP) and Good Aquaculture Practices (GAqP)	575 GAqP registered farms (none certified yet)  19 GAHP certified farms on 1st semester of 2024;	30 GAqP certified aquaculture farms  50% increase in GAHP certified farms	GAqP certified farms  GAHP certified farms	DA DA	Facilities and personnel have the necessary resources, knowledge, capacity and commitment to enforce and sustain implementation programs.



	5 farms pending for certification				
5.3.3. Increase immunization coverage through vaccination programs for animal populations	Pending Baseline	TBD for animal population	Reports on volume of vaccines imported/distributed for each indicator vaccine	DA	
5.3.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
5.3.C.1. Jointly coordinate and deliver cross-sectoral traini prevention and control to increase compliance of farms	ng on infection	ICAMR, DA, DENR	2027, 2028	PHP 650,000 per training	4 training sessions  Total: PHP  2,600,000
5.3.A.AGRICULTURAL SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
5.3.A.1.Review and update GAHP standards to include comprehensive guidelines for ruminant livestock		DA	2025, 2026 PHP 350,000		2 annual review and planning meeting sessions <b>Total: PHP 700,000</b>
	5.3.A.2. Enhance knowledge and capacity for hygiene and disease prevention among veterinary and aquaculture professionals (i.e. training for veterinarians, aquaculture operators, and support staff)		2025, 2026	PHP 650,000 per training	4 training sessions  Total: PHP 2,600,000
5.3.A.3. Implement the certification scheme of GAHP, GAqP, and Good Agricultural Practice (GAP) (i.e. development and dissemination of certification guidelines and training)		DA	2025, 2026	PHP 450,000	2 development and dissemination initiatives <b>Total: PHP 900,000</b>
5.3.A.4. Enforce Good Manufacturing Practices (GMP) for feed mills, importers, manufacturers, and suppliers to minimize contamination and antimicrobial resistance (i.e. training, certification, and compliance checks)		DA, DTI	2025, 2026, 2027, 2028	PHP 400,000	4 GMP implementation and monitoring activities Total: PHP 1,600,000
5.3.A.5. Expand the coverage of vaccination programs for li and aquatic animals focusing on indicators to prevent dise	DA	2025, 2026, 2027, 2028	PHP 500,000	4 annual animal immunization programs  Total: PHP 2,000,000	



	5.3.A.6. Develop and implement a Food Safety Monitoring System for Locally Registered Meat Establishments with Local Government Units (LGUs)	DA	2025, 2026	PHP 625,000	4 biannual planning and development meeting sessions <i>Total: PHP</i> 2,500,000
5	5.3.E.ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
/ /	5.3.E.1. Conduct a baseline assessment of current infectious waste nanagement practices in animal farms and food production facilities	DENR, DA	2028 onwards	PHP 500,000	4 annual baseline data collection and assessment  Total: PHP 2,000,000

### 4.6. Key Strategy 6: Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration

This strategy aims to promote multisectoral collaboration on antimicrobial resistance (AMR) and innovation by leveraging the diverse expertise and resources across all sectors to accelerate the development of novel, creative solutions. The primary objectives of this strategy are the cultivation of a supportive and sustainable environment for AMR research and the dissemination and translation into innovative technologies of the fruits of this research. Collaborative activities involve developing interdisciplinary, national research agendas aligned with global priorities, and addressing the needs of the local context (e.g. local research gaps, risk assessments, need for cost-effective diagnostics). This also includes the engagement of both public and private research institutions through the establishment of an inter-institutional knowledge network and the mobilization of resources in support of AMR research and innovation. Each sector is tasked to conduct research aligned to these national agendas and to communicate new discoveries and data to their stakeholders, including the public. By fostering collaboration across various sectors, this strategy ensures a comprehensive approach to tackling AMR, driving advancements in research, and facilitating the practical application of new knowledge and technologies.

**Outcome:** Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration



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Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
6.1. Number of collaborative AMR research projects, publications and policy framework (including policies, guidelines, congressional laws, executive and administrative orders, policy guidelines for government agencies, LGUs and other policy making bodies)	Pending baseline	30% increase	Annual reports and databases from research institutions and funding agencies tracking AMR research initiatives  Publication records in scientific journals	ICAMR, Academic and Research Institutions	Relevant sectors maintain a strong commitment to collaborative efforts, and sufficient funding and resources are consistently allocated to support multi-sectoral AMR research and policy development initiatives.  Effective and sustained
			Policy briefs and reports.		communication strategies are
6.2. Dissemination and engagement metrics of AMR research findings across public platforms and sectoral events	Pending baseline	50% increase in people reached	Analytics from public communication channels (e.g. website traffic, social media engagement, etc.), and records of sectoral conferences and workshops	ICAMR, Academic and Research Institutions	implemented, ensuring that AMR research findings are regularly shared across public platforms and sectoral events, with active participation from all stakeholders.  Continuous support is provided for
6.3. Number of professionals capacitated in AMR research among stakeholders through targeted capacity-building initiatives.	Pending baseline	40% increase in trained participants	Training and certification records including training attendance records, preand post-training assessments, and participant feedback.	ICAMR, Academic and Research Institutions	capacity-building activities, including training, mentorship, and access to innovative technologies, ensuring that stakeholders are regularly engaged in AMR research skill development initiatives.
Strategic objective 6.1 (Output)	: To provide a	sustainable	environment for AMR	research and inno	vations among sectors
6.1.1. Formation of a collaborative technical working group to develop a national research	No existing joint technical working group to develop a national AMR	1 joint technical working group established; 1 national	Meeting minutes and reports  Research agenda	ICAMR, Research and Academic Institutions	All relevant sectors are committed to actively participating in the technical working group and contributing to the development of a comprehensive national research
agenda aligned with the Global One Health Research priorities on AMR.	research agenda	research agenda developed and aligned with	document  Attendance records	Academic institutions	agenda.  There is sustained interest and willingness among research

	Provisional research agenda by DOH (PNAP 2019-2023, Annex H)	global standards			institutes and stakeholders to engage in collaborative efforts, and mechanisms are in place to facilitate effective communication and coordination.
6.1.2. Number of joint projects, partnerships, or collaborative events among research institutes and key stakeholders	Pending baseline	70% increase in partnerships	Partnership agreements and MOUs  Meeting minutes, reports, and records of collaborative activities	ICAMR, Research and Academic Institutions	Funding agencies and sponsors are motivated to invest in AMR research, and clear strategies are implemented to attract and secure resources from diverse sources.
6.1.3.Allocated and mobilized resources to strengthen AMR research and innovation initiatives.	Pending baseline	50% increase in mobilized resources and funding approvals	Financial reports and funding allocation documents  Records of resource mobilization events and activities  Grant application records and funding approvals	ICAMR, Research and Academic Institutions	Continuous technical support and adequate resources are provided for the development, maintenance, and regular updating of the database, ensuring active participation and contribution from all stakeholders.
6.1.4. Establishment and maintenance of a comprehensive collaborative AMR research database	Not available	Fully operational joint database with regular updates and high user satisfaction	Database access logs and usage reports  Database entries and update records  User feedback and database performance assessments	ICAMR, Research and Academic Institutions	
6.1.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
6.1.C.1. Organize a collaborative technical work develop a national AMR research agenda that a Global One Health Research Agenda on AMR		DOH, DOST, DA, DENR, LGUs	2025	PHP 800,000 per meeting	4 planning sessions with TWG <b>Total: PHP 3,200,000</b>



6.1.C.2. Develop an integrated AMR research agenda focused on local gaps, prioritizing new antimicrobials, therapies, genetic research, and solutions across systems, supply chains, economics, policies, and behavioral factors.	DOH, DOST, DA, DENR	2025, 2026	PHP 1,250,000 per year of agenda development project with TA	1 research agenda developed  Total: PHP 2,500,000
6.1.C.3. Strengthen inter-agency collaboration by coordinating networking with research institutes across the public and private sectors, including academia, professional societies, and key industries, to reinforce inter-sectoral research areas on AMR	DOH, DOST, DA, DENR	2025, 2026, 2027	PHP 1,200,000 per event	3 intersectoral networking events implemented <b>Total: PHP 3,600,000</b>
6.1.C.4. Establish an AMR R&D and Innovation fund to allocate and mobilize adequate resources for AMR research projects that align with the developed research agenda	DOH, DOST, DTI, DA, DENR	2025, 2026, 2027, 2028	PHP 4,500,000 per year of fund allocation	4 years of fund allocation for AMR R&D and innovation <b>Total: PHP 18,000,000</b>
6.1.C.5. Establish an integrated comprehensive, and up-to-date database containing all AMR research initiatives and studies	DOST, DOH, DA, DENR, LGUs	2025, 2026, 2027, 2028	PHP 1,800,000 per year for database maintenance and updates	4 annual database maintenance and updating  Total: PHP 7,200,000
6.1.C.6. Incentivize the local development of novel antimicrobials and vaccines through research grants and market-based rewards for successful innovations	DTI, DOH, DOST, DA, DENR	2025, 2026, 2027, 2028	PHP 2,000,000 per grant cycle and innovation competition	2 grant cycles and innovation competitions  Total: PHP 4,000,000
6.1.C.7. Increase investment in AMR-reducing vaccine candidates and establish innovative financing mechanisms for late-stage trials, impact evaluations, and scalable manufacturing, engaging governments, NGOs, academia, pharmaceutical companies, and other industry sponsors.	DOH, DOST, DA, DENR	2025, 2026, 2027, 2028	PHP 3,000,000 per year of financing mechanism development and stakeholder consultation	4 stakeholder consultations for financing mechanism development <b>Total: PHP 12,000,000</b>
6.1.C.8. Strengthen methodologies and expand data collection and analysis to assess vaccine impact on AMR and antimicrobial use.	DOH, DOST, DA, DENR	2025, 2026, 2027, 2028	PHP 1,500,000 per year for data instructure and training with TA	4 annual data collection and analysis enhancement sessions <b>Total: PHP 6,000,000</b>



6.1.C.9. Estimate value of vaccination in averting the health and socioeconomic burden of AMR.	DOH, DOST, DA, DENR	2025, 2026, 2027, 2028	PHP 1,000,000 per year for economic modeling and analysis with TA	4 annual economic modeling and impact estimation sessions  Total: PHP 4,000,000
6.1.C.10. Identify AMR and antimicrobial research fields with potential for translation into practical applications and commercialization.	DOH, DOST, DA, DENR	2025, 2026	PHP 2,500,000 per project	4 annual research and development projects  Total: PHP 10,000,000
6.1.H.HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
6.1.H.1. Identify a focused AMR research agenda for human health, emphasizing the epidemiology and burden of resistant infections, as well as strategies for infection prevention and controlling the emergence of resistance.	DOH, DOST	2025, 2026	PHP 2,000,000 per project with TA	4 annual research and development projects  Total: PHP 8,000,000
6.1.A.AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
6.1.A.1. Identify a specialized AMR research agenda for animal health, focusing on antibiotic resistance in farm and aquatic farm products (e.g. meats, dairy, honey), and their impact on animal health and related areas	BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD	2025, 2026	PHP 2,500,000 per study	1 R&D project  Total: PHP 2,500,000
6.1.A.2. Identify a specialized research agenda on antibiotic residue contaminants in farm products (e.g., meats, dairy, honey) and their impact on animal health and related areas.	BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD	2025, 2026	PHP 2,500,000 per study	1 R&D project  Total: PHP 2,500,000
6.1.A.3. Integrate AMR initiatives into the Industry Strategic S&T Programs roadmap for the livestock, poultry, and inland aquatic sectors.	BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD	2026	PHP 1,500,000	2 roadmaps - research output for both livestock & poultry and inland aquatic sectors <b>Total: PHP 1,500,000</b>
6.1.A.4. Conduct comprehensive AMR research across various fields including microbiology, genetics, molecular studies, agriculture, animal production and husbandry, behavioral sciences, market analysis, innovation, and supply chain management.	BAI, NMIS, BFAR, PCC, NDA, NFRDI, Research	2025, 2026, 2027, 2028	PHP 5,000,000 per research	1 program with 4-5 research projects  Total: PHP 25,000,000

	Institutes and Academe		<u> </u>	
6.1.A.5. Conduct research on best practices in animal husbandry and explore alternatives to antimicrobial agents	BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST, Research Institutes and Academe	2025, 2026	PHP 2,000,000 per research project	2 research projects  Total: PHP 4,000,000
6.2.A.6. Develop an inventory of AMR-related research on animals and their products (e.g., meats, milk, eggs, honey) and establish a dedicated team with sufficient resources to manage the inventory	BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD	2025, 2026	PHP 1,200,000	1 digital inventory website for research  Total: PHP 1,200,000
6.1.E.ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
6.1.E.1. Conduct an initial assessment to identify research gaps in environmental health, involving all relevant agencies in the environmental sector	DENR	2025	PHP 800,000 per assessment	2 assessment and consultation workshop sessions  Total: PHP 1,600,000
6.1.E.2. Develop a focused AMR research agenda for environmental health based on assessment findings, prioritizing water, sanitation, hygiene, waste management, and food safety	DENR	2025, 2026	PHP 2,500,000 per project	4 annual research and development projects  Total: PHP 10,000,000
6.1.E.3. Investigate the role of the environment and wildlife as reservoirs for AMR and zoonotic disease transmission through initial assessment studies	DENR-BMB	2025, 2026	PHP 2,000,000 per study	2 initial assessment studies  Total: PHP 4,000,000
6.1.E.4. Review existing research related to AMR and identify novel findings that can serve as the baseline for future R&D initiatives	DENR, DOST	2025, 2026, 2027, 2028	PHP 2,500,000 per review and analysis	2 literature review and analysis initiatives  Total: PHP 5,000,000

**Strategic Objective 6.2 (Output)**: To communicate results of AMR research to the relevant stakeholders (government, NGOs, public and private sectors, policymakers, academe)

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
6.2.1. Number of research findings and recommendations effectively communicated	Pending baseline	100% increase in stakeholder presentations	Communication channels, reports and minutes of meetings	ICAMR, Research and Academic Institutions	Stakeholders across all sectors remain actively engaged and are willing to incorporate AMR research



networks					
formation. Disseminate AMR research to professionals, policymakers, and the general public through accessible communication channels such as social media and news		LGUs, DENR		dissemination campaign	Total: PHP 4,000,000
		DOH, DA, DOST,	2025, 2026	PHP 2,000,000 per presentation and	2 dissemination campaigns
collectively to stakeholders and industry to sup				DUD 2 000 000	
6.2.C.1. Present research findings and recomme	endations	Agency			
6.2.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
6.2.4. Number of supported risk assessment studies on indirect AMR exposure through animal consumption and environmental factors.	1 project (Tricycle Project)	75% increase in studies conducted and recommendatio ns made	Risk assessment reports Study findings and recommendations	ICAMR, Research and Academic Institutions	innovations, diagnostics, and alternatives to antimicrobials.  There is sufficient collaboration among sectors and availability of funds to conduct comprehensive risk assessment studies, and stakeholders are committed to implementing the recommendations derived from these studies.
6.2.3. Facilitated access to new innovations, diagnostics, and alternatives to antimicrobials in a sustainable manner.	Pending baseline	50% increase in adoption of innovations and alternatives	Adoption records  Evaluation reports	DOH, DTI, FDA, Private Institutions	Sufficient funding, stakeholder engagement, and regulatory support are in place to encourage the adoption and integration of new
6.2.2. Number of research findings published in peer-reviewed scientific journals, in compliance with CLSI standards.	Pending baseline	50% increase in publications	Journal publication records  Peer review documentation	ICAMR, Research and Academic Institutions	Sufficient funding is available to support the publication process, and researchers have access to the necessary resources and platforms for publishing their work in reputable scientific journals.
to stakeholders and industry to inform and support policy development.			Policy recommendations documents		findings into policy discussions and decisions.



6.2.C.2. Publish research findings in peer-reviewed scientific	DOH, DOST, DA, Academic	2025, 2026	PHP 300,000,00 per	2 published research findings
journals, adhering to CLSI Standards	Institutions	2023, 2026	publication	Total: PHP 600,000.00
6.2.C.3. Support risk assessment studies on indirect exposure to AMR through animal consumption and environmental exposure	DA, DENR, DOH	2025, 2026, 2027, 2028	PHP 1,800,000 per risk assessment study	3 risk assessment studies  Total: PHP 5,400,000
6.2.C.4. Facilitate evidence-based access to new innovations, diagnostics, and alternatives to antimicrobials in a sustainable manner	DTI, DOH, DOST, DA	2025, 2026, 2027, 2028	PHP 10,000,000 diagnostics and 15,000,000 for drug discovery	2 initiatives (drug discovery and diagnostics)  Total: PHP 25,000,000
6.2.A.AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
6.2.A.1. Incorporate new discoveries and data into the iAMResponsible campaign, ensuring the information is accessible to the general public.	BAI, BFAR, DOH, Academic institutions	2025, 2026	PHP 800,000 per campaign update	2 campaigns  Total: PHP 1,600,000
6.2.A.2. Initiate AMR R&D in the livestock, poultry, and inland aquatic sectors to develop science-based solutions for industry-identified problems	BAI, NMIS, BFAR, PCC, NDA, NFRDI, DOST-PCAARRD	2025, 2026, 2027, 2028	PHP5,000,000.00 per R&D project	2 R&D projects (livestock & poultry and inland aquatic)  Total: PHP 10,000,000.00
6.2.E.ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
6.2.E.1.Update localized Information, Education, and Communication (IEC) materials on AMR research, ensuring translation into local languages	DENR, DOH	2025, 2027	PHP 1,000,000 per IEC update	2 IEC updates  Total: PHP 2,000,000

**Strategic Objective 6.3 (Output)**: To enhance the capacity building of human resources in AMR research through targeted development and training initiatives

Indicators	Baseline (2024)	Target (2028)	моч	Implementing Agency	Assumptions
6.3.1. Number of researchers trained through targeted training and development initiatives	Pending baseline	100% increase in trained personnel	Training attendance records  Pre- and post-training assessments and Participant feedback	ICAMR, Research and Academic Institutions	There is continuous commitment from institutions to support capacity-building programs, and skilled trainers and necessary resources are consistently available to conduct effective training sessions.



6.3.2. Number of stakeholders involved in mentorship and exchange programs  6.3.3. Number of researchers capable of accurate pathogen identification and antibiotic sensitivity testing within diagnostic facilities.	Pending baseline  Pending baseline	involved in mentorship and exchange programs  80% of researchers capable of pathogen identification and antibiotic sensitivity testing within diagnostic facilities	reedback from training participants and mentors  Proficiency Testing report  Research project reports  Diagnostic technique validation records	ICAMR, Research and Academic Institutions  ICAMR, Research and Academic Institutions	willing to participate in mentorship and exchange programs, and sufficient funding is provided to support these initiatives.  Adequate funding is secured for diagnostic research, and there is consistent access to advanced diagnostic tools and technologies necessary for research projects.  Smallholder farmers are open to collaborating with researchers and adopting new practices, and sufficient resources are available to
6.3.4. Increased adoption of antimicrobial alternatives and Philippine national standards on agricultural production practices among small-scale agricultural producers, supported by research initiatives.	Pending baseline	50% increase in diagnostic research projects  50% of small-scale agricultural producers adopting new practices	Adoption surveys or field reports Impact assessment and training records	DA, DOST	conduct field research and implement the findings.
6.3.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions



6.3.C.1. Conduct a needs assessment to identify research capacity gaps across sectors	DOH, DOST, DA, DENR	2025	PHP 1,200,000 per assessment with TA	1 needs assessment  Total: PHP 1,200,000
6.3.C.2. Support universities, think tanks, and experts in developing antimicrobials and innovative technologies for AMR	DOST, DOH, DA, Academic Institutions, Private sector	2025, 2026	PHP 500,000 per research	4 project support  Total: PHP 2,000,000
6.3.C.3. Establish research mentorship and exchange programs for researchers and scientists specializing in AMR	DOH, DOST, DA, Academic Institutions, Research Institutes, WHO, ASEAN SEAMEO	2026, 2028	PHP 2,000,000 per mentorship/exchange program	2 mentorship/exchange programs  Total: PHP 4,000,000
6.3.C.4. Initiate capacity-building activities to enhance personnel's skills in R&D and the One Health approach, benchmark against ASEAN countries with expertise in AMR test methods, and adapt these methods to the local context.	DENR, DA, DOST, ACB, FAO, Private Institutions	2025, 2026, 2027, 2028 onwards	PHP 2,000,000 per capacity-building activity with TA	4 capacity building initiatives  Total: PHP 8,000,000
6.3.H.HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
6.3.H.HUMAN SECTOR ACTIVITIES  6.3.H.1. Conduct training sessions, seminars, and workshops on human-health AMR research topics.		<b>Timeline</b> 2025, 2027	PHP 1,800,000 per training session/seminar/work shop	Assumptions  2 trainings  Total: PHP 3,600,000
6.3.H.1. Conduct training sessions, seminars, and workshops	Agency DOH, DOST, Academic Institutions, WHO, ASEAN		PHP 1,800,000 per training session/seminar/work	2 trainings
6.3.H.1. Conduct training sessions, seminars, and workshops on human-health AMR research topics.  6.3.H.2.Increase funding for the development of diagnostic techniques that enable quicker and more efficient	Agency DOH, DOST, Academic Institutions, WHO, ASEAN SEAMEO DOH, DOST, Research Institutes, Academic	2025, 2027	PHP 1,800,000 per training session/seminar/work shop	2 trainings  Total: PHP 3,600,000  1 research for diagnostic techniques

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		DA-NDA,			
I		DA-NFRDI, DOST			
	C 2 F ENVIRONMENTAL CECTOR ACTIVITIES	Implementing	Time aline	Estimated Dudget	A
	6.3.E.ENVIRONMENTAL SECTOR ACTIVITIES	Agency	Timeline	Estimated Budget	Assumptions
	6.3.E.1. Assess available test methods for AMR in the				
/	environment, focusing on pathogens and antimicrobial			PHP 2,500,000 per	1 assessment of research methods
/	residues, and establish standardized AMR test methods for	DENR, DOST	2025	assessment of	Total: PHP 2,500,000
	environmental analysis			research methods	

### 4.7. Key Strategy 7: Improve awareness and understanding of antimicrobial resistance through established programs for dissemination and education across all levels and sectors

This strategy focuses on improving awareness and understanding of antimicrobial resistance (AMR) by leveraging established programs for dissemination and education across all educational levels starting from primary to tertiary and vocational education, and relevant professionals working on human, animal, and environmental health. The primary objectives are to heighten patients, agricultural workers, and general public's awareness regarding antimicrobial stewardship and to integrate AMR control into the pre-service and in-service training of professionals. Heightening public awareness regarding antimicrobial stewardship is essential to ensure that individuals understand the consequences of antibiotic misuse and the role they can play in preventing AMR. Similarly, integrating AMR control into the training of human health, veterinary and environmental health professionals is important for equipping them with the necessary knowledge and skills to address AMR effectively. This comprehensive educational approach ensures that future professionals are well-prepared to implement best practices in antimicrobial stewardship from the outset of their careers. Continuing education and interdisciplinary training further enhance the capabilities of current professionals, promoting a collaborative and informed response to AMR. By focusing on these objectives, these activities can foster a well-informed public and a proficient workforce, both of which are essential components in mitigating the threat of AMR. This strategy not only empowers individuals to make responsible choices but also ensures that health professionals are adequately prepared to tackle AMR through coordinated and informed efforts.



# **Outcome:** Enhanced public awareness and cross-sector understanding of antimicrobial resistance through comprehensive education and dissemination programs

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
7.1. Percentage of patients, agricultural workers, and general public who demonstrate adequate knowledge and awareness on AMR	Pending baseline	5% annual rate to reach the 25% increase			Educational materials and campaigns across involved agencies are based on
7.2. Percentage of professionals across health, agriculture, and environment sector who demonstrate improved knowledge on AMR control	Pending baseline  Note: DOH AMR training is available for public hospitals.	5% annual rate to reach the 25% increase	Reports of pre- and post- assessment surveys  KAPs reports on AMR  Capacity-development activities reports	DOH, DA, DENR	accurate, up-to-date information that is easily understandable and relatable to various audiences  The general public and professionals across health, agriculture, and environment sectors are willing to collaborate with agencies on their campaigns and use their educational materials.

Strategic objective 7.1 (Output): To heighten public awareness regarding antimicrobial resistance



7.1.1. Number of public awareness and education campaigns conducted on AMR awareness and advocacy (e.g., social media, radio, TV, webinars, community engagement activities, etc.)	Pending baseline	5 Activities (different formats) per Agency Annually	Advisories on AMR activities especially for LGUs Reports on above-the-line	ICAMR and Regional	Media and communication platforms are willing to
7.1.2. Number of people reached with public awareness and education campaigns on AMR awareness and advocacy through various channels. (e.g., social media, radio, TV, webinars, publications, IEC outreach activities, etc.)	Pending baseline	35% increase in both above-the-line and below-the-line communication reach	campaign metrics  Reports on below-the-line community awareness metrics  Online monitoring system reports	Offices of Respective Agencies, Philippine Information Agency (PIA), DICT, Academe, Development Partners	disseminate the campaign materials.  Communities are willing to participate in the awareness campaign.
7.1.3. Percentage of educational institutions that integrate AMR control into curricula from primary to tertiary education levels and vocational.	Pending baseline	5% annual rate to reach the 25% increase	Evaluation on the depth of AMR content in curricula Guidelines on integration of AMR in the school curricula Assessment of curricula Evaluation of activities and engagements towards AMR control	ICAMR, TESDA, CHED, DepEd, Academe, Development Partners	There is a Technical Working Group (TWG) who will ensure the quality and harmonization of the curricula.  Academic institutions are willing to integrate AMR into their curricula based on the technical guidelines developed.
7.1.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions



7.1.C.1. Design and conduct a joint comprehensive baseline assessment survey to evaluate the patients, agricultural workers, and general public's knowledge, attitudes, and practices related to antimicrobial resistance (AMR)	ICAMR	2026, 2028	PHP 2,000,000 per phase of the baseline assessment, with TA	2 phase baseline study With Technical Assistance Total: PHP 4,000,000
7.1.C.2. Develop a One Health Communication and visibility plan on AMR awareness and advocacy through targeted messaging on social media and diverse social behavioral change (SBC) materials for broad public engagement	ICAMR and Regional Offices of Respective Agencies, Philippine Information Agency (PIA), DICT, Academe, Development Partners	2025, 2026	PHP 1,000,000 for plan development	1 Communicatio n and Visibility Plan <b>Total: PHP</b> <b>1,000,000</b>
7.1.C.3. Develop clear and understandable campaign materials that use research findings for patients, agricultural workers, and the general public.	ICAMR, Academe, Development Partners	2025, 2026, 2027, 2028	PHP 600,000 per workshop	4 workshop Total: PHP 2,400,000
7.1.C.4. Launch an information campaign in coordination with agencies and LGUs focused on understanding the contributing factors of AMR, its consequences, and promoting the prudent use of antibiotics.	ICAMR, CHDs, DILG	2025, 2026	PHP 800,000 per year	2 annual extensive campaigns <b>Total: PHP 1,600,000</b>
7.1.C.5. Strengthen AMR awareness campaign strategies by expanding platforms and channels (e.g., social media) and engaging influential figures and organizations to increase public engagement.	DA, DTI, PIA, DICT, and their Regional Offices	2025, 2026, 2027, 2028	PHP 700,000 per meeting	1 workshop or strategic planning per year Total: PHP 2,800,000
7.1.C.6. Increase the frequency and scope of meetings aimed at promoting and discussing AMR-related issues with stakeholders	DOH, DA, DILG, TESDA, DepEd, CHED	2025, 2026	PHP 600,000 per meeting	4 meetings Total: PHP 2,400,000
7.1.C.7. Jointly conduct culturally-sensitive community engagement activities in rural areas to educate communities about AMR	ICAMR, CHDs, Academe	2025, 2026, 2027, 2028	PHP 800,000 per year, PHP 200,000 to be allocated quarterly	4 community outreach programs per year



	1			
				Total: PHP
				3,200,000
7.1.C.8. Jointly create an AMR educational toolkit for government agencies,	ICAMB	0005	505 700 000	1 workshop
and partners to standardize materials for public awareness and education	ICAMR	2025	PHP 700,000	Total: PHP
efforts				700,000
				4 planning and
7.1.C.9. Collaboratively coordinate with the education sector in creating				development
and appropriating AMR materials to school curricula, ensuring content is	ICAMR	2025, 2026	PHP 600,000	meeting
age-appropriate and relevant to the different educational stages		Í	ĺ	sessions
				Total: PHP
//				2,400,000
				16 quarterly
7.1.C.10. Conduct regular dialogue with officials from DepEd, CHED and				meeting and
TESDA to advocate for and support the integration of AMR content in	ICAMR	2025, 2026, 2027, 2028	PHP 300,000	planning
educational programs		onwards	,	sessions
				Total: PHP
				4,800,000
				2 annual
7.1.C.11. Jointly conduct an assessment of the barriers and/or challenges				curriculum
hindering the complete integration of AMR awareness and control in school	ICAMR	2025, 2026	PHP 400,000	assessment
curriculum		,	,	activities
				Total: PHP
				800,000
				2 strategic
				planning and
7.1.C.12. Jointly establish a strategic plan on how to incorporate AMR in the				development
education curriculum of DepED and CHED through the contributions of	ICAMR	2025	PHP 700,000	meeting
relevant sectors (i.e., DOH, DENR, DA)				sessions
				Total: PHP
				1,400,000
				4-year
7.1.C.13. Incorporate basic infection prevention and control (IPC) concepts				implementatio
and AMR awareness across all levels from early education to tertiary	ICAMR	2025, 2026, 2027, 2028	PHP 700,000	n
education				Total: PHP
				2,800,000



7.1.H.HUMAN SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
7.1.H.1. Create social behavioral change (SBC) materials on AMR, ensuring region-specific versions translated into major local languages and adapted to the different cultural contexts.	DOH, CHDs, DILG	2025, 2026	PHP 700,000 per workshop with TA	2 workshop with technical assistance from experts Total: PHP 1,400,000
7.1.H.2. Create a comprehensive advocacy and health promotion plan focused on raising awareness of AMR, each of which targeting audiences at the national, regional, and local level	DOH, DTI, CHED, DepEd, TESDA, DILG	2025	PHP 800,000	1 workshop Total: PHP 800,000
7.1.H.3. Develop and implement general SBC and advocacy activities about AMR awareness that promote gender equality.	DOH, CHDs, PIA, DICT	2025, 2026, 2027, 2028 onwards	PHP 750,000 per year	4-year implementatio n Total: PHP 3,000,000
7.1.H.4. Implement targeted health promotion and communication initiatives, including different consumer groups.	DOH, DTI, CHED, DepEd, TESDA, PIA, DICT, DILG	2025, 2026, 2027, 2028 onwards	PHP 1,000,000 per year	4-year implementatio n Total: PHP 4,000,000
7.1.H.5. Develop a monitoring and evaluation mechanism to assess the effectiveness of AMR, AMU and AMS promotion and communication initiatives, ensuring continuous improvement and impact measurement	DOH, CHDs, DILG	2025	PHP 600,000 per workshop	2 workshop Total: PHP 1,200,000
7.1.H.6. Conduct the monitoring and evaluation mechanisms, including regular assessments and stakeholder feedback sessions, to gauge the impact of AMR, AMU, and AMS promotion efforts.	DOH, CHDs, DILG	2025, 2026, 2027, 2028 onwards	PHP 600,000 per year	4-year implementatio n Total: PHP 2,400,000
7.1.H.7. Collaborate with LGUs to support and enhance AMR, AMU, and AMS advocacy efforts, ensuring alignment with national strategies and local needs and addressing the specific context and requirements of geographically isolated and disadvantaged areas (GIDAs).	DOH, DILG, PIA, DICT	2025, 2026	PHP 700,000 per meeting	2 stakeholder meetings <b>Total: PHP</b> <b>1,400,000</b>
7.1.H.8. Develop a risk communication plan for AMR, outlining strategies for effectively communicating preventive measures to the public and stakeholders	DIH, DILG, PIA, DICT	2026	PHP 800,000 per workshop	2 workshop <b>Total: PHP</b> <b>1,600,000</b>

7.1.H.9. Conduct community education sessions to promote positive behavior towards vaccination in preventing AMR	DOH, CHDs, Academe	2025, 2026	PHP 800,000 per year, PHP 200,000 to be allocated quarterly	4 community outreach programs per year (8 activities in total)  Total: PHP 1,600,000
7.1.A.AGRICULTURAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
7.1.A.1. Update regularly the iAMResponsible campaign with the latest discoveries and data to ensure comprehensive coverage of AMR issues, ensuring key areas like the fisheries sector are also addressed.	DA	2025, 2026, 2027, 2028 onwards	PHP 700,000 per year	4-year implementatio n Total: PHP 2,800,000
7.1.A.2. Conduct KAP studies targeting farmers, nutritionists, feed millers, and other relevant stakeholders to assess their understanding of prudent antimicrobial use and the impacts of uncontrolled antimicrobial use	DA, DOST	2025, 2028	PHP 1,000,000 per KAP study with TA	4 KAP studies With Technical Assistance Total: PHP 4,000,000
7.1.A.3. Develop and continuously implement the IAMResponsible campaign for different sectors including but not limited to consumers, farmers, and veterinarians	DA	2025, 2026, 2027, 2028	PHP 900,000 per yearly implementation	4-year implementatio n Total: PHP 3,600,000
7.1.A.4. Conduct a nationwide advocacy campaign on prudent use of antimicrobials for agricultural workers and ensure food safety for consumers.	DA, DTI, PIA, DICT, and their Regional Offices	2025, 2026, 2027, 2028	PHP 1,000,000	4-year implementatio n Total: PHP 4,000,000
7.1.A.5. Organize and conduct training sessions for local government units (LGUs) and farmers to enhance their understanding and management of AMR, fostering informed decision-making at the local level	DA and Regional Offices,DILG	2025, 2026	PHP 800,000 per training session	2 training session Total: PHP 1,600,000
7.1.A.6. Produce and distribute targeted social behavioral change (SBC) materials, including social media documentary films on food production,	DA, DTI, DILG, PIA, DICT	2025, 2026, 2027, 2028	PHP 1,000,000 per year	4-year implementatio



safety, and AMR implications, to educate stakeholders and the public with accurate and relevant information.		0=	——————————————————————————————————————	n Total: PHP 4,000,000
7.1.A.7. Design and implement targeted communication initiatives to adopt proactive vaccination practices in livestock and aquaculture farms.	DA	2025, 2026, 2027, 2028	PHP 500,000 per year	4-year implementatio n Total: PHP 2,000,000
7.1.E.ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
7.1.E.1. Develop SBC materials that communicate the risks of AMR linked to environmental factors, including the importance of proper waste disposal management.	DENR, DTI, DICT	2028	PHP 400,000	2 information dissemination campaign Total: PHP 800,000
7.1.E.2. Increase the frequency and scope of consultation meetings with stakeholders to gather insights for developing an AMR awareness campaign that highlights the environmental aspect of the One Health Approach.	DENR	2025, 2026	PHP 700,000 per meeting	2 stakeholder meetings <b>Total: PHP</b> <b>1,400,000</b>
7.1.E.3. Develop and launch an initial AMR awareness campaign that highlights the environmental aspect of the One Health Approach, educating the public on the relevance of environmental factors in combating AMR	DENR	2028	PHP 800,000	1 initial campaign Total: PHP 800,000

**Strategic Objective 7.2 (Output)**: To integrate AMR prevention and reduction in the training curricula of professionals across the human, agriculture and environmental sectors, equipping them with the necessary knowledge and skills to address the threat of AMR

Indicators	Baseline (2024)	Target (2028)	MOV	Implementing Agency	Assumptions
7.2.1. Number of guidelines and policies or memoranda that integrate AMR in pre-service and in-service training programs for relevant professionals in human, animal, and environmental health.	Pending baseline	2-3 Policies or Guidelines approved and implemented	Guidelines and Policies on the Integration of AMR in training programs and curricula per sector Integrated Online Monitoring System	ICAMR, DA, DOH, TESDA, CHED, DepEd, DENR, Academe, Development Partners, Private Sector, and CSOs	Access to AMR experts for technical guidelines.  Institutions are willing to integrate AMR



7.2.2. Number of training programs that integrate AMR control at various institutions (public, and private), government, NGOs, CSOs, and POs	Pending baseline	3-5 training programs per sector	Participation and feedback reports from attendees on effectiveness of training  Evaluation on the depth of AMR content in curricula  Guidelines on integration of AMR in the school curricula  Assessment of curricula  Evaluation of activities and engagements towards AMR control		into their curricula based on the technical guidelines developed.  There is a Technical Working Group (TWG) who will ensure the quality and harmonization of the training programs
7.2.C.COLLABORATIVE ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
7.2.C.1. Jointly ensure inclusion of AMR, and IF components in the pre-service trainings (incl on-the-job trainings, vocational and technical t veterinary and environmental health professional	uding but not limited to rainings) of human health,	DOH, DENR, DA, TESDA, CHEd, Civil Service Commission	2025, 2026	PHP 800,000	2 curriculum review and development activities Total: PHP 1,600,000
7.2.C.2. Include AMR education in post-gradual professional development courses of human environmental health professionals		ICAMR, PVMA Special Colleges	2025, 2026	PHP 500,000	2 curriculum review and development activities Total: PHP 1,000,000
7.2.A.AGRICULTURAL SECTOR ACTIVITIES		Implementing Agency	Timeline	Estimated Budget	Assumptions
7.2.A.1. Develop and implement risk commu anchored on promoting good veterinary practic feed millers, and farm owners to ensure responsi	ces targeting veterinarians,	DA, DTI, FAO	2025, 2026, 2027, 2028	PHP 700,000 per year	4-year implementatio n

		<u> </u>	-0	Total: PHP 2,800,000
7.2.A.2. Assess current steps to determine opportunities for integrating AMR awareness and control strategies in the school curriculum for pre-service training of professionals in the land and aquatic animal health sector (veterinarians, agriculturists, etc.)	DA, DOST, DTI, TESDA, CHED, PVMA Special Colleges	2025, 2026	PHP 400,000	2 assessment activities <i>Total: PHP 800,000</i>
7.2.E. ENVIRONMENTAL SECTOR ACTIVITIES	Implementing Agency	Timeline	Estimated Budget	Assumptions
7.2.E.1. Conduct a pilot study to explore effective methods for integrating AMR control into the training programs for sanitation officers and sanitary engineers, with a focus on enhancing their role in combating AMR in the environment	DENR, TESDA, CHED	2028	PHP 1,000,000 per KAP study with TA	2 pilot study projects with Technical Assistance Total: PHP



KEY STRATEGY	APPROX. BUDGET
Key Strategy 1: Enhance awareness and commitment to multisectoral engagement, governance, and accountability in implementing the Philippine Action Plan through the One Health Approach	₱73,593,000.00
Strategic objective 1.1: To elevate AMR as a key priority issue at the national and subnational level	₱35,288,000.00
Strategic Objective 1.2: To establish a functional and multisectoral coordinating mechanism for implementing the NAP, involving national and subnational agencies, civil society, private sector, academe and development partners	₱10,030,000.00
Strategic Objective 1.3: To establish clear accountability mechanisms among various sectors in the monitoring and evaluation of the implementation of the National Action Plan, emphasizing transparency and responsiveness.	₱18,815,000.00
Strategic Objective 1.4: To allocate adequate resources (financial, human, and material) and expertise for AMR initiatives in all relevant sectors.	₱9,460,000.00
Key Strategy 2: Strengthen multisectoral surveillance, monitoring, and laboratory capacity	₱574,000,000.00
Strategic objective 2.1: To develop a multisectoral AMR surveillance system for a coordinated access to existing information and resources	₱23,200,000.00
Strategic Objective 2.2: To improve the surveillance capacity of laboratories and diagnostic capabilities across sectors	₱342,600,000.00
Strategic Objective 2.3: To capacitate skilled workers based on required competencies for AMR surveillance, monitoring and laboratory capacity	₱119,900,000.00
Strategic Objective 2.4: To institutionalize well-developed reporting, and data management systems at the national, subnational, and local levels in the health, agriculture and environment sectors	₱88,300,000.00
Key Strategy 3: Ensure uninterrupted access to safe and quality-assured antimicrobials	₱183,400,000.00
Strategic objective 3.1: To increase the availability of safe and quality-assured antimicrobials	₱141,800,000.00
Strategic Objective 3.2: To maintain affordability of safe and quality-assured antimicrobials for human use	₱10,500,000.00
Strategic Objective 3.3: To increase the acceptability of antimicrobial use	₱8,000,000.00
Key Strategy 4: Regulate and promote the rational use of antimicrobials across all sectors	₱113,880,000.00
Strategic objective 4.1: To develop, regularly update, and implement or enforce, where applicable, policies, standards, regulations and guidelines for antimicrobial stewardship	₱56,120,000.00
Strategic Objective 4.2: To foster an enabling environment for the rational use of antimicrobials, encouraging responsible prescription, dispensing, and use	₱4,400,000.00



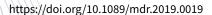
Strategic Objective 4.3: To monitor and evaluate the rational use of antimicrobials as governed by policies, guidelines, and regulations, and their implementation or enforcement	₱27,500,000.00
Key Strategy 5: Implement appropriate regulatory measures to reduce drug-resistant infections across all settings	₱46,300,000.00
Strategic objective 5.1 (Output): To strengthen the capacities of sector personnel and facilities in infection prevention, sanitation, and hygiene	₱9,900,000.00
Strategic Objective 5.2 (Output): To implement coordinated programs on sanitation and hygiene, infection prevention and control, and vaccination in public health facilities	₱21,500,000.00
Strategic Objective 5.3 (Output): To improve good animal husbandry and aquaculture practices, animal vaccination, and biosecurity in animal farms	₱14,900,000.00
Key Strategy 6: Promote and invest in innovation and research initiatives on AMR through strong partnerships and multisectoral collaboration	₱236,100,000.00
Strategic objective 6.1: To provide a sustainable environment for AMR research and innovations among sectors	₱79,300,000.00
Strategic Objective 6.2: To communicate results of AMR research to the relevant stakeholders (government, NGOs, public and private sectors, policymakers, academe)	₱149,700,000.00
Strategic Objective 6.3: To enhance the capacity building of human resources in AMR research through targeted development and training initiatives	₱216,100,000.00
Key Strategy 7: Improve awareness and understanding of antimicrobial resistance through established programs for dissemination and education across all levels and sectors	₱80,900,000.00
Strategic objective 7.1: To heighten public awareness regarding antimicrobial resistance	₱72,700,000.00

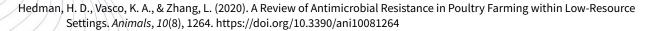
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# Annex A. Situational Analysis and Implementation Review of PNAP 2019-2023

### Annex A.1. Situational Analysis of the Key Sectors

The table below presents the key outcome indicators for the health sector, from 2014-2023. The data through the Antimicrobial Resistance Surveillance Reference Program (ARSRP) (**Table A-1**). The targets are categorized by priority level, specific microbe, antibiotic of concern, and target population. Resistance rates in the human health sector are derived from the annual reports of the Antimicrobial Resistance Surveillance Reference Laboratory (ARSRL).

In the last five years, only few indicators have demonstrated improvement. Only the indicators for *Acinetobacter baumanii* for imipenem and meropenem were met, representing 2/12 (16.67%) of all indicators. Resistance for *S. aureus* for its Methicillin-resistant *Staphylococcus aureus* (MRSA) rate showed a 28.89% decrease since 2017, which was only less than 1% short of its 2023 target. The rest of these indicators (9/12 indicators, 75%) showed increased rates for antimicrobial resistance (AMR). The largest increased rates compared to 2017 data included *S. Pneumoniae*, which was 61.8% more resistant to penicillin; *N. gonorrhoeae*, which was 31.10% more resistant to ciprofloxacin; and non-typhoidal *Salmonella*, which was 22.44% more resistant to ciprofloxacin. The status of these human indicators can be found in **Table A-1.** 

Resistance rates for *Acinetobacter baumannii* remained above 50% for most antibiotics. However, there was a significant decrease in resistance to ceftazidime, ceftriaxone, meropenem, imipenem, co-trimoxazole, and amikacin. Invasive *Pseudomonas aeruginosa* strains showed lower resistance to most antibiotics compared to the overall *P. aeruginosa* population. However, multi-year analysis revealed increasing resistance to piperacillin-tazobactam and imipenem. The target for reducing MRSA rates was not reached, but rates are on a downward trend. Resistance to erythromycin and clindamycin has remained stable. However, vancomycin resistance has significantly increased over the past decade, with this trend being statistically significant. Non-typhoidal *Salmonella* (NTS) has maintained a resistance rate to ciprofloxacin between 10% and 12% over the past seven years.

Table A-1. Key indicators for human AMR from the PNAP to Combat AMR 2019-2023 and its changes over time.

PRIORITY	MICROBE	RESISTANCE	<b>2014</b> <sup>1</sup>	<b>2017</b> <sup>1</sup>	2023 (Target)¹	2023 (Actual)²	% change since 2017
Critical	Acinetobacter baumannii	Imipenem Meropenem	N/A N/A	57% 56%	51.3% 52.2%	50.12% 50.00%	-12.07% -10.71%
Chicat	Pseudomonas aeruginosa	Imipenem Meropenem	N/A 45.30%	17% 14%	15.3% 12.6%	18.97% 15.12%	11.59% 8%
	Staphylococcus aureus	MRSA rate Vancomycin	60.30% N/A	57% 2%	39.9% 1.4%	40.53% 2.01%	-28.89% 0.5%
High	Salmonella (nontyphoidal)	Ciprofloxacin	21%	9%	6.75%	11.02%	22.44%
	Neisseria gonorrhoeae	Penicillin Ciprofloxacin	89.1% 84.8%	85% 67%	76.5% 60.3%	Not in ARSP 87.84%	N/A 31.10%
	Streptococcus pneumoniae (using meningitis breakpoints)	Penicillin	7%	10%	8.9%	16.18%	61.8%
Medium	Haemophilus influenzae	Ampicillin	12%	14%	12.6%	14.48%	3.43%
	Shigella spp.	Fluoroquinolo ne-resistant	13.8%*	11%	9.9%	16.95%	54.09%
<ul><li>Fully Im</li></ul>	plemented Or	n-going with good	progress	<ul><li>Started</li></ul>	d and needs mo	ore work	Not started

Animal AMR surveillance has been on-going with significant progress across the types of animals, which was conducted accounting to jurisdiction of the implementing bureaus within the Department of Agriculture (DA). Monitoring and surveillance of antimicrobial resistance in bacteria from healthy food animals intended for consumption is being done by the National Meat Inspection Service (NMIS), diseased livestock is covered by the Bureau of Animal Industry (BAI), Philippine Carabao Center (PCC) and National Dairy Authority (NDA); and diseased aquatic animals are monitored by the Bureau of Fisheries and Aquatic Resources (BFAR). The key indicators from the last PNAP for AMR can be found in **Table A-2**.

 $<sup>1\,</sup>Philippine\ Inter-agency\ Committee\ on\ Antimicrobial\ Resistance.\ (2019).\ Philippine\ National\ Action\ Plan\ on\ Antimicrobial\ Resistance\ 2019-2023.$ 

 $<sup>\</sup>underline{https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/nap-library/philippine-national-action-plan-on-amr-2019-2023-final.pdf?sfvrsn=8bbe1fdb\_1$ 

 $<sup>{\</sup>tt 2\,Antimicrobial\,Resistance\,Surveillance\,Reference\,Laboratory.\,(2023).\,ARSP\,2023\,Annual\,Report.}$ 

**Table A-2.** Population and microbes under surveillance for animal AMR from the PNAP for AMR 2019-2023

HEALTHY ANIMALS	DISEASED LIVESTOCK	DISEASED AQUATIC ANIMALS
Zoonotic bacteria	Swine	Tilapia
1. Salmonella spp.	1. Actinobacillus pleuropneumoniae	1. Streptococcus agalactiae
2. Campylobacter spp.	<ul><li>2. Pasteurella multocida</li><li>3. Bordetella bronchiseptica</li></ul>	2. Streptococcus iniae*
Commensal bacteria	4. Streptococcus suis	Milkfish and shrimp
1. Escherichia coli	,	1. Vibrio parahaemolyticus
2. Enterococcus faecium	Poultry	
3. Enterococcus faecalis	1. Mycoplasma	
	2. Pasteurella multocida	
	3. Avibacterium (Haemophilus) paragallinarum	
	Dairy Cattle & Water Buffaloes	
	1. Staphylococcus aureus	
	2. Streptococcus agalactiae	
	3. Escherichia coli	

Under the Antimicrobial Resistance Surveillance Program (ARSP) in 2022 of the National Meat Inspection Service (NMIS), a total of 328 samples from 214 broiler chickens and 114 healthy swine were collected for Antimicrobial Susceptibility Testing (AST). The samples were collected from Region II, Region III, Region IVA, Region V, Region VI and Region X Satellite Laboratories. Microbial samples from across all regions were submitted and analyzed at the Central Meat Laboratory (CML) and were analyzed using the Clinical Laboratory Standards Institute (CLSI) references. Food and Agriculture Organization of the United Nations (FAO) customized regional plates for microbroth dilution were used for the antibiotic panels. The 2022 AMR first semester report in animal health included results for bacteria such as Escherichia coli, Salmonella, and Staphylococcus aureus in swine and poultry, which were chosen due to their prevalence in livestock and their potential for antibiotic resistance. E. coli isolates (n = 77) from swine showed 100% resistance to azithromycin, with high resistance to tetracycline (94.81%) and ampicillin (88.31%), while poultry isolates (n = 92) exhibited 98.91% resistance to azithromycin and 89.13% to sulfamethoxazole. Salmonella spp. Isolates from swine (n = 15) and poultry (n = 28) showed 100% resistance to Streptomycin and Gentamicin. Enterococcus spp. Isolates from both poultry (n = 64) and swine (n = 36) also exhibited 100% resistance to Streptomycin and Gentamicin. However, these resistance rates cannot serve as reliable baseline indicators due to data collection constraints, small sample sizes, and evolving monitoring systems. Data collection and expanded surveillance must be further strengthened to derive trends and scientifically-sound target indicators.

The National Veterinary Drug Residue Monitoring Program of the NMIS screens for banned growth promoters (95 Beta Agonists and 8 Stilbenes) and banned antimicrobials (140 Nitrofurans AOZ, 90 Nitrofurans AMOZ, 32 Chloramphenicol) in food products meant for consumption. While this program does not specifically study antimicrobial resistance, increased presence of banned antimicrobials may give more insight into the veterinary use of antibiotics, contributing to antimicrobial resistance. A total of 21,145 analyses were conducted in 2022, including 7,228 from the Central Meat Laboratory and 13,917 from the Regional Meat Laboratories (Regions I, III,

IV-A, XI and XII). A small percentage of identified veterinary drug residues (0.048%) were regulated antimicrobials (23 Beta lactams, 23 Aminoglycosides, 9 Sulfa drugs, 3 Quinolones, 3 Macrolides and 2 Tetracyclines).

The Antimicrobial Resistance Surveillance Program for Animal Health (ARSP-AH) is conducted by the Bureau of Animal Industry (BAI), particularly for Diseased Livestock (Component 2). This program follows a passive surveillance scheme, aiming to create a coordinated system for monitoring AMR in prevalent bacterial pathogens found in sick animals within the regions. Initially, only isolates for respiratory pathogens were collected from the Regional Animal Disease Diagnostic Laboratories (RADDLs) of Regions I, III, IV-A, VI, and X, and the Animal Disease Diagnosis and Reference Laboratory (ADDRL), but the inclusion of other bacterial pathogens had eventually been integrated in their surveillance program. The target bacterial pathogens included in the ARSP-AH in Livestock, and Poultry are based on priority bacterial diseases and the capabilities of the diagnostic laboratories (**Table A-3**). Livestock are composed of swine, and ruminants (cattle, carabao, goat, and sheep). The inclusion of samples from ruminants was a particularly novel change in the samples of BAI, which was initially only processed by PCC and NDA. Samples were sourced through cases from syndromic surveillance, an approach which identifies health-related data or a group of clinical signs in order to detect abnormal patterns of signs that may be due to one of a larger number of diseases. Other sources include walk-in samples from diagnostics & disease investigations, and stored laboratory bacterial isolates.

Table A-3. Target bacterial pathogens included in the ARSP-AH in Livestock and Poultry

RUMINANTS	SWINE	POULTRY
<ol> <li>Escherichia coli</li> <li>Staphylococcus aureus</li> <li>Streptococcus agalactiae</li> <li>Klebsiela pneumoniae</li> <li>Pasteurella multocida</li> </ol>	<ol> <li>Actinobacillus pleuropneumoniae</li> <li>Pasteurella multocida</li> <li>Bordetella bronchiseptica</li> <li>Streptococcus suis</li> <li>Escherichia coli</li> <li>Haemophilus parasuis</li> <li>Salmonella spp.</li> <li>Staphylococcus aureus</li> </ol>	<ol> <li>Escherichia coli</li> <li>Staphylococcus aureus</li> <li>Avibacterium paragallinarum</li> <li>Pasteurella multocida</li> <li>Salmonella spp.</li> </ol>

For diseased aquatic animals, BFAR conducted a pilot study focused on *Streptococcus agalactiae* and *Vibrio parahaemolyticus* from diseased populations of milkfish (*Chanos chanos*), tilapia (*Oreochromis niloticus*) and shrimp (*Penaeus vannamei*) from 10% of the BFAR registered aquaculture farms in Luzon. Resistant and intermediately resistant strains of the investigated bacteria were found for several antimicrobials (**Table A-4**). As the pilot study has been completed, BFAR intends to review the challenges experienced by the pilot study and create a more robust, continuous surveillance plan with the BFAR Technical Working Group for AMR.

**Table A-4**. Results of the pilot study of AMR in aquatic animals conducted by BFAR.

Resistance	Strep. agalactiae in Tilapia		ahaemolyticus in shrimp
Amoxicillin Intermediate	16.67%	33.33%	
Resistant	83.33%	66.66%	

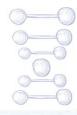
Erythromycin (Intermediate)	100%	83.33%
Norfloxacin (Intermediate)	33.33%	0%
Doxycycline (Intermediate)	0%	33.33%
Trimethoprim-sulfamethoxazole	0%	0%
Rifampicin (Resistant)	100%	83.33%
Florfenicol	0%	0%

<sup>\*</sup> Results are based on 10% of the BFAR registered aquaculture farms

While active in ICAMR meetings, the Department of Environment and Natural Resources (DENR) is currently not an official member and does not have an established environmental AMR surveillance program. The DENR is part of the Tricycle Project for AMR surveillance, in partnership with the Department of Health (DOH) and Department of Agriculture (DA), however, current data and surveillance mechanisms are insufficient to establish environmental AMR baselines and targets. The environment plays a critical role in antimicrobial resistance surveillance, as it serves as both a reservoir and a transmission pathway for resistant microorganisms (Berendok et al., 2015; Karkman et al., 2019). Lack of environmental baseline data, limits the ability to track resistant pathogens in ecosystems like water, soil, and wildlife that spillover from the human health and agricultural sectors. Through active efforts in institutionalizing DENR as a member of the ICAMR, establishing baselines for environmental monitoring and active AMR surveillance to better track the spread of resistant pathogens and mitigate their impact on public health and ecosystems will become more feasible in the years to come.

### Annex A.2. Implementation Review per Key Strategy

The following section of this report will provide an in-depth discussion of each key strategy outlined in the PNAP on AMR 2019-2023. Each strategy was examined in detail, highlighting its scope, milestones achieved, notable good practices, and the challenges or pain points encountered during implementation. Coupled with the situational analysis, this review illustrates what has worked, what hasn't, and how the journey toward addressing AMR in the Philippines can be further strengthened.





#### **KEY STRATEGY 1**

# Commit to the Philippine Action Plan through multisectoral engagement and accountability

#### SCOPE

The first key strategy entails forging a joint action plan to combat AMR across sectors, elevating AMR as a national priority, upholding accountability among various sectors in fulfilling their roles in the prevention and reduction of AMR, and allocating adequate resources and expertise for AMR initiatives. Key achievements include the development and publications of the Philippine National Action Plan (PNAP) to Combat AMR 2019-2024.

#### **MILESTONES**

The PNAP for AMR's second iteration strengthened multisectoral engagement, established new objectives for baseline data on AMR in the agricultural sector and veterinary medicines, and emphasized safe antimicrobial use, innovation in AMR research, and public awareness. Despite challenges like overlapping mandates and resource limitations, the Philippines remains a leader in ASEAN with antimicrobial stewardship at the primary healthcare (PHC) level and a robust ICAMR Secretariat facilitating effective multi-sectoral coordination.

#### **GOOD PRACTICES**



Strong representation in the international and regional communities for AMR initiatives

Presence of many development partners providing funding and technical assistance





The only country in the ASEAN with antimicrobial stewardship at the PHC level

#### **PAIN POINTS**



Difficulty engaging other sectors apart from the traditional One Health sectors (e.g. Education, Trade, etc)

Weak policy directives and accountability mechanisms to translate national policies to local policy and programming





Limited budgets for AMR initiatives, especially in the LGU-level

Development and Implementation of AMR Policies and

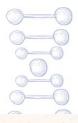
Plans. Significant progress has been made in creating key agreements among national agencies. In 2019, the ICAMR published and disseminated the PNAP to Combat AMR 2019-2023. This second iteration of the PNAP improved upon the first PNAP and included key changes, such as strengthening multi-sectoral engagement and creating new objectives for baseline data on AMR in the animal sector and veterinary medicines. The objectives were revised to emphasize the importance of safe and quality-assured antimicrobials, implementation of infection control measures across all settings, promoting innovation and research on AMR, and improving awareness and understanding of AMR through communication and education. Despite activity interruptions during the COVID-19 pandemic, ICAMR convened and conducted regular meetings one to three times per year since 2019, both online and face-to-face, with a well-represented number of attendees. Although there was no official ICAMR annual report, the DOH Pharmaceutical Division (DOH-PD) publishes annual reports that include coverage of AMR-related

activities. Additionally, institutes like RITM publish the Antimicrobial Resistance Surveillance Program (ARSP) Annual Report, and the FDA's annual report is submitted to the Policy and Planning Services (PPS) during the Strategic Performance Management System (SPMS), which evaluates the office's performance annually.

Elevating AMR as a national priority. Elevating AMR as a national priority is ongoing and making significant progress. Activity to draft and approve updated/revised joint policy and issue an administrative order to include additional government stakeholders in ICAMR has progressed, with approval at the 31st ICAMR Meeting to officially include Department of Environmental Resources (DENR), Department of Education (DepEd), Technical Education and Skills Development Authority (TESDA), Commission on Higher Education (CHED), and National Economic and Development Authority (NEDA). Efforts to streamline a "One Health Policy" led by DOH are also underway. Meetings and submissions by DENR, issuance of special orders, and discussions with CHED are ongoing, complemented by Department of the Interior and Local Government's (DILG) policy cascades and the recognition of healthy community roles. Following the increased involvement of the agricultural sector in AMR-related activities, advocating AMR as a food safety issue has advanced with inclusion in the draft National Action Plan for Health Security, National Environmental Health Action Plan (NEHAP) 2030, and the 5-Year One Health Agenda. Primary concerns are addressed by the Food and Drug Authority (FDA) Food Safety Unit, as well as incorporation into food safety programs by (Department of Agriculture - Bureau of Fisheries and Aquatic Resources) DA-BFAR, although additional resources are required to fulfill AMR plan activities.

Ensuring accountability and coordination. Ensuring accountability across diverse sectors in preventing and reducing AMR shows ongoing positive progress. Key representatives from each agency were submitted to the ICAMR secretariat as focal point persons for each Key Strategy, tasked with monitoring implementation of corresponding activities. The ICAMR secretariat exercises authority in AMR coordination between agencies to ensure goals are met. Challenges include overlapping mandates, difficulties in engaging non-traditional One Health sectors, frequent changes in authorities, weak policy directives, and hesitancy among agencies to commit to specific efforts. Despite these, the presence of focal persons for interagency AMR programming is well-established, and the Philippines remains the only ASEAN country with antimicrobial stewardship at the Primary Health Care (PHC) level. The ICAMR Secretariat's approachability and consistent communication efforts facilitate effective multi-sectoral coordination, though enhanced synergy in data analysis, information sharing, and coordination at the Local Government Unit (LGU) level is needed. Establishing a Monitoring and Evaluation Framework (M&E framework) for accountability and streamlining approval processes and document routing timelines across agencies also require attention.

Allocating Resources and Expertise. Efforts to allocate sufficient resources and expertise for AMR initiatives across sectors have made significant strides but require further development. AMR has been included in the budget plans of ICAMR members, but these budgets are insufficient to support the range of activities, especially for AMR surveillance, testing, and specific projects. International involvement in AMR initiatives has increased in the last five years, with the Philippines consistently participating in ASEAN AMR initiatives. The Philippines participates in the yearly Tripartite AMR Country Self-Assessment Survey (TrACSS), World Antimicrobial Awareness Week (WAAW), and the UN Tricycle Project for inter-regional cooperation in AMR surveillance. In 2021, the Philippines became members of the Southeast Asian One Health University Network (SEAOHUN) and established the Philippine One Health University Network (PhilOHUN) to facilitate private and academic stakeholder involvement in One Health initiatives, including AMR. The Philippines will also participate in the ASEAN Strategic Framework (ASF) to Combat AMR Implementation Plan 2019-2030, currently awaiting endorsement. Support from development partners providing funding and technical assistance bolsters AMR initiatives, while ongoing efforts to integrate AMR into Industry Strategic S&T Programs (ISPs) in livestock and poultry sectors and expand private sector engagement in Research and Development (R&D) signify promising steps forward.





# KEY STRATEGY 2 Strengthen surveillance and laboratory capacity

#### SCOPE

This key strategy focuses on improving diagnostic capabilities, capacitating health workers with necessary competencies, and institutionalizing robust reporting and surveillance systems. Key activities include developing an investment plan, expanding training and accreditation, strengthening regional reference laboratories, and integrating AMR into national health strategies.

#### **MILESTONES**

In human health, the AMR surveillance system continues with good progress, with baseline assessments across Philippine government hospitals completed and an increasing percentage of hospitals trained in Antimicrobial Stewardship (AMS). The agricultural sector has also seen substantial progress, with strong surveillance mechanisms established and capacity-building activities conducted for both national and regional laboratories.

#### **GOOD PRACTICES**

Surveillance methods in human AMR are up to par with international standards and regularly undergo quality monitoring





Adequate support from international development partners

Initiation of the TriCycle project further encouraged collaboration among the human, animal and environmental sector



#### **PAIN POINTS**

Lack or quick turnover of lab personnel, and local training personnel in surveillance and lab capacity resources





Limited budget allotment in AMR surveillance and are highly dependent on international funders.

Limited testing for diseased livestock and aquatic animals due to awareness and lab capacity



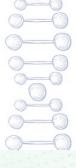
Well-established AMR surveillance and stewardship programs in human health. Robust AMR surveillance and stewardship programs have been established in human health. For the last 30 years, data collection for the Antimicrobial Resistance Surveillance Program (ARSP) in human health has continued and the results have been reported and published yearly. Surveillance methods are up to par with international standards and regularly undergo monitoring for quality. Additionally, as of 2022, 100% of all level III hospitals, 92% of level II hospitals, and 58% of level I hospitals have received training in Antimicrobial Stewardship (AMS). However, the frequent turnover and shortage of laboratory personnel, along with limited local training resources for surveillance and lab capacity, have necessitated the retraining of staff, which has yet to be done.

On-going implementation of animal AMR surveillance. The Department of Agriculture's (DA) antimicrobial resistance surveillance program in animal health covers three components, including bacteria from healthy food animals, disease livestock, and aquaculture and fishery

products, which is conducted by various bureaus within the DA. Surveillance of healthy animals is done by the National Meat Inspection Service (NMIS), diseased livestock is covered by the Bureau of Animal Industry (BAI), Philippine Carabao Center (PCC) and National Dairy Authority (NDA); and diseased aquatic animals are monitored by the Bureau of Fisheries and Aquatic Resources (BFAR). Final Surveillance & Monitoring Plans from BFAR, NMIS, and BAI were developed and published. Due to the COVID-19 pandemic, AMR surveillance was temporarily halted. Once operations resumed in 2022, the NMIS regular AMR surveillance was continued. Proficiency tests on antimicrobial susceptibility testing were regularly conducted among laboratory staff. The master list of officially registered farms, veterinary feeds, approved veterinary drugs, and establishments was published and is available online through the FDA's verification portal. The guidelines for Antimicrobial Resistance Surveillance Reference in animals were also published, however, financial and human resources were insufficient to support its full implementation.

Limited laboratory capacity and fragmented information systems. A multi-sectoral strategic framework for a laboratory network was developed by the DOH and DA. However, almost all testing is still transferred and carried out in the national laboratories, as regional laboratories have limited expertise and capacity. Data sharing and collaboration mechanisms for surveillance results also need to be institutionalized. Each agency under the DA has its own market surveillance on the laboratory supplies and equipment needed in AMR surveillance and testing, but there is no policy that mandates a systematic collection of data on their prices across agencies. There is regular AMR surveillance of healthy animals in meat products as part of the Antimicrobial Resistance Surveillance Program and National Veterinary Drug Residue Monitoring Program with good collection of samples; however, the NMIS reported a shrinking budget for AMR-related initiatives, lack of sample collectors and analysts, and increasing prices for plates and other materials procured from the European Union (EU) to ensure that they are up to international standards. For diseased animals, livestock, poultry, and aqua farms are registered by BAI and BFAR but are still voluntary and not mandatory, which has hindered sample submissions. There is also a lack of awareness that farms may submit samples for disease investigation. There are ongoing initiatives to develop and pilot e-AMS systems in hospitals to streamline information sharing, however, the roll-out to wider implementation is currently constrained by limited resources and capacities. Technical personnel have received adequate training in sequencing and bioinformatics, both of which are crucial for AMR surveillance. However, due to the current state of the country's facilities, international certifications and standards have not been achieved.

Strong international support for training opportunities and laboratory support. Several divisions in the DA have conducted training and continued learning opportunities for their staff. In 2022, the DA attended the 2nd Ministry Food and Drug Safety (MFDS) Global conference on Food borne AMR and the 3rd meeting of the AMR technical advisory for the group of Southeast Asia. They participated in International FAO Antimicrobial Resistance Monitoring (InFARM) and the APEC's Sub-Committee on Standards and Conformance (SCSC) Senior Officials Meeting (SOM). There was international collaboration with the United Kingdom-Department for Environment Food and Rural Affairs (UK-DEFRA) on using whole genome sequencing for detecting AMR in E.coli. In 2022, the NMIS Laboratory sent one hundred six (106) E.coli isolates sourced from the stored isolates from UPLB's AMR Pilot Surveillance. From 2021-2023, several divisions under the DA, including BAI, NMIS, and BFAR, participated in the FAO Assessment Tool for Laboratories and AMR Surveillance Systems (ATLASS) Mission, during which assessors in the region evaluated and provided technical assistance in strengthening AMR surveillance and the capacity-building of national laboratories for the collection of AMR data.





# KEY STRATEGY 3 Ensure uninterrupted access to safe and quality-assured antimicrobials

#### SCOPE

This key strategy aims to ensure uninterrupted access to safe and quality-assured antimicrobials through improved regulatory frameworks, monitoring, and supply chain management. Key activities include issuing relevant administrative orders, creating regulatory units, developing databases for registered antimicrobials, and improving public medicine logistics and procurement systems.

#### **MILESTONES**

Regulation of human drugs is well-established and handled by the FDA, and there has been continued collaboration between the DA & FDA for the regulation of veterinary drugs and biologicals. Post-marketing surveillance for all registered human and animal drugs is robust and human drug price and availability is well-documented and widely accessible.

#### **GOOD PRACTICES**



Good coordination between the
Department of Agriculture and Food
and Drug Administration

Human antimicrobials are wellregulated and its guidelines are welldeveloped and well-implemented.





Leveraged digital platforms for human antimicrobial drug information.

#### **PAIN POINTS**



Data analytics and forecasting for supply chains are fragmented, leading to lack of unified supply chain studies.

Regulation for veterinary drugs is just beginning and is poorly implemented.





Lack of engagement in the private sector in the digital platforms for antimicrobial drug information. Maximized use of online databases for human drugs. Over the last few years, the DOH has maximized the use of online databases to make human drug information widely accessible. These include the Pharmaceutical Management Information System (PMIS) for drug inventory, Drug Price Reference Index and Electronic Drug Price Monitoring System (EDPMS) for drug price transparency, and Drug Price Watch Interface for informed consumer purchasing. Human drug availability is well-documented with Drug Availability Surveys conducted in 2009, 2011, 2012, 2013, 2016, and 2019. To control the level of mark-up of essential medicines, the DOH regularly conducts random monitoring of medicine prices at DOH hospitals. Currently, there are on-going plans to update the 2018 National Antibiotic Guidelines (NAG) as well as the development of a NAG application for mobile devices, which will be linked to the Philippine National Formulary.

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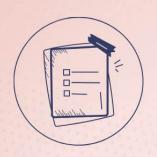
Well-regulated procurement, supply chain, and access mechanisms for human antimicrobials. The DOH-Public Health Pharmacists (PHPs) under the Human Resources for Health Program (HRH) manages the supply chain of medicines in all access sites across all regions. They provide monthly consumption and inventory reports to the Pharmaceutical Division, which are encoded in the Pharmaceutical Management Information System (PMIS). They are also tasked with ensuring proper procurement, supply chain, and management (PSCM) guidelines, including dispensing, utilization, and inventory management. In terms of storage and distribution up to the regional offices, the Department of Health Supply Chain Management Service (DOH-SCMS) makes sure that all drugs and medicines are well-handled, stored, and distributed according to the warehouse operations manual. Reporting of quality of registered antimicrobials is part of the FDA mandate, DOH DC 2011-0101, and this is done regularly as part of the ASEAN PMA system and WHO rapid alert system.

Inter-agency collaboration for regulating veterinary drugs. There is a unit within FDA that handles registration of veterinary drugs, and the creation of the Animal Health Product Division is currently for DOH approval. One of the major accomplishments for this Key Strategy was the renewal of the Joint Administrative Order (JAO) and creation of a memorandum of agreement (MOA) between the DOH and FDA, transferring the jurisdiction of the regulation of veterinary antimicrobial drugs from DA to FDA. This policy, which is currently being finalized, delineates the jurisdiction on the licensing and regulation of veterinary vaccines and biologicals. There is, however, no system in place yet for testing by the FDA or DA that confirms quality assurance of veterinary drugs.

Need to strengthen veterinary antimicrobial regulations. Regulations for veterinary antimicrobials are neither as well-developed nor as well-implemented as antimicrobials for human use. While advisories and guidelines on the proper use of veterinary antimicrobials have been released and updated, these are not fully implemented. Current antimicrobial batch notification mandates need revision to include more classes of veterinary antimicrobials and require Marketing Authorization Holders (MAH) to provide production and importation data. Implementing foreign audits for imported products and local inspections for domestically produced veterinary drugs would ensure quality and safety. Progress has been made in using technology to enhance quality monitoring, including database maintenance, developing a post-market surveillance system, increasing laboratory capabilities, and rapidly disseminating advisories. If unregistered or substandard falsified medicines are detected in the market, the FDA primarily addresses this through communication or public notices.

Lack of baseline data for supply chain studies. Supply chain data analytics and forecasting are fragmented due to the involvement of various divisions in different components, leading to misaligned budget schedules and over- or under-procurement of certain antimicrobials. FDA has a surveillance system in place for veterinary drugs in the market; while quality monitoring is a requirement for drug registration to ensure safety and efficacy, specific efforts dedicated to monitoring antimicrobial data post-market are needed. Although post-market surveillance occurs across all veterinary drugs, there is currently no compilation specifically for antimicrobial data. Limited stockroom space in government hospitals underscores the need for centralized data sharing and forecasting, including a priority list of antimicrobials to be monitored. In the animal sector, the regulation and establishment of baseline data for AMR testing in veterinary drugs are still in the early stages, with no government policy on quantitative production and importation data. This lack of data hampers comprehensive supply chain studies for veterinary antimicrobials.





# **KEY STRATEGY 4 Regulate and promote the rational use of antimicrobials**

#### SCOPE

This key strategy aims to fully implement guidelines for prudent antimicrobial use, create an enabling environment for rational practices, and track policy enforcement across various sectors. Key activities include developing national guidelines and coordinating with local governments to promote and implement prudent use through regulations and education.

#### **GOOD PRACTICES**

Ongoing plans for the development of national antibiotic guidelines and an antimicrobial stewardship program





Regulations on antibiotic prescription is strictly enforced in the human sector (but not in the animal sector).

AMR and AMS principles have started to be integrated in higher education curricula of relevant fields



#### **PAIN POINTS**

Lack of continuity due to high turnover of staff and low prioritization from highlevel leadership





Lack of funding to conduct activities for implementation of regulations, esp. in the animal sector

Difficulty enforcing animal-use antibiotic regulations and cascading knowledge of prudent use of antimicrobials to primary producers



#### **MILESTONES**

Achievements under this strategy include the on-going Antimicrobial Stewardship (AMS) program, which has achieved near completion in hospitals. Best practices of AMS in hospitals are documented and publicly disseminated. In the agricultural sector, monitoring and surveillance of animal feeds and veterinary drug establishments are actively conducted. There are also ongoing discussions to develop a national antibiotic guideline for animal health, which will provide a standardized framework for antimicrobial use in animals.

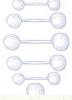
On-going development of National Guidelines and Stewardship Programs. Plans are in progress to develop National Antibiotic Guidelines and an Antimicrobial Stewardship Program for Animal Health. However, the Department of Agriculture (DA) and the Philippine Veterinary Medical Association (PVMA) have yet to integrate existing veterinary and regional guidelines into a cohesive national framework, as discussed in the 33rd ICAMR Meeting. Additionally, efforts to revive the National Formulary of Veterinary Medicines, which began in 2020, aim to enhance the regulation of antimicrobial use in animal health.

Implementation and enforcement of antimicrobial regulations. The implementation of guidelines for the prudent use of antimicrobials through Good Aquaculture Practices (GAqP) and Good Animal Husbandry Practices (GAHP) is ongoing but remains voluntary. Some aquaculture farms have already adopted GAqP protocols, enabling them to access international markets. There is also a need to update national meat labeling guidelines to include information on antimicrobial use in both fresh and processed meat products. Enhanced monitoring systems, particularly at the regional level, are necessary and will require additional resources, data collectors, and

personnel. Enforcement of antibiotic prescription and usage regulations is ongoing but insufficient, especially in the animal health sector. Notably, the enforcement of guidelines has become more consistent in recent years, with continuous monitoring of banned antibiotics through the National Residue Control Program (NRCP).

Developments in capacity-building, education, and community engagement. The integration of AMR and AMS principles in higher education curricula and continuing professional education (CPE) has started and is continuously being developed. The Department of Health Pharmaceutical Division has been actively coordinating with LGUs on the dissemination and implementation of policies through the National Drug Policy Compliance Officers (NDPCO) per region. While there is developed capacity in terms of education on AMR in the veterinary sector, limited capacity remains in the environmental sector. Training on AMS for Level 1 and Level 2 hospitals, as well as primary healthcare facilities, has been conducted in multiple batches. Best practices from different facilities were documented and shared.

Need for monitoring, evaluation, and inter-Agency collaboration. Improved monitoring of GAHP and GAqP-certified establishments and meat production facilities is needed. To strengthen current regulations and initiatives on the rational use of antibiotics, inter-agency collaboration is essential for reviewing regulations and controls related to registration, advertising, importation, and end use of antimicrobials in animal health. It is recommended to create Philippine Practice Standards for Veterinarians related to prescribing antimicrobials and to develop technical standards with experts. Moreover, increasing efforts to track policy enforcement on the rational use of antimicrobials in markets, farms, and communities is crucial. Conducting dialogues and consultations with stakeholders will help determine concrete action steps to foster community involvement in regulations, specifically on AMR. Additionally, enhancing the capacity of implementing bureaus for engagement with LGUs is needed to enforce existing policies more effectively. In the environmental sector, there is a need to include antibiotic resistant bacteria (ARB) and antibiotic resistance genes (ARG) testing guidelines in existing regulations for drinking water, potable water, and other bodies of water, as mandated water quality testing is largely limited to physical, chemical, faecal contamination parameters. This further emphasizes the need to institutionalize the role of the environmental sector in AMR initiatives to develop and implement more proactive water quality testing guidelines for AMR.





### **KEY STRATEGY 5**

# Implement appropriate measures to reduce infection across all settings

#### SCOPE

The fifth key strategy focuses on implementing appropriate measures to reduce infection across all settings by enhancing the capacities of health personnel, facilities, and communities in infection prevention, sanitation, and hygiene. This includes establishing and implementing standards to reduce infection in different settings and monitoring compliance in these facilities.

#### **GOOD PRACTICES**



GAHP and GAqP are adopted into Philippine context and disseminated as national standards

Implementation of the online Health
Facility Profiling System to monitor
and collect data from health facilities





Technical Assistance is available for farmers during infections and biosecurity incursions

#### **PAIN POINTS**



GAHP and GaqP are not mandatory and are currently done on a voluntary basis

High turnover of staff who received training because they transition to other facilities or to other countries





Limited funding for implementation of standards

#### MILESTONES

The DOH implemented IPC training and education, disseminated the 3rd edition of the National IPC Standards, and conducted capacity training of trainers and professional societies. Policies and digital infrastructure have been established to monitor health facilities' compliance with the National IPC Policy. In the agricultural sector, the promotion of GAqP and GAHP led to increased biosecurity measures. Furthermore, the Hazard Analysis Critical Control Point (HACCP) system has been fully implemented in agricultural processing plants, ensuring safer food production and handling.

Implementation and Training in Infection Prevention and Control (IPC). Infection prevention and control (IPC) training and education are identified as core components of IPC programs by the WHO, which the Department of Health has actively implemented in recent years. In 2021, the 3rd edition of the National Standards in Infection Prevention and Control in Facilities, including orientation materials, was disseminated by the Health Facility Development Bureau (HFDB) to reduce healthcare-associated infections and operationalize performance accountability. Continuous capacity training has been conducted through training of trainers for regional focals of DOH, in partnership with multiple development partners. Regular IPC training is also provided by professional societies. An e-learning course is being developed for inclusion in the online DOH Academy Platform. Multiple DOH programs, including the Patient Safety and Health Care Waste Management Manual and Antimicrobial Stewardship training, have integrated IPC components. An Antimicrobial Resistance Surveillance Report Form is also included in the Manual for the Antimicrobial Stewardship Program for Hospitals and Primary Health Care Facilities.

Need to improve policy and monitoring structures. Policies, organizational structures, and digital infrastructures are in place to monitor health facilities' compliance with the National IPC Policy. The licensing division of DOH requires all hospitals to have IPC committees and policies for annual license renewal. Although existing standards and guidelines for IPC licensing are unclear, a Department Memorandum (DM 2022-0020) mandates facilities to submit annual HAI ratings through the hospital scorecard for licensing. There is a need to delineate licensing responsibilities from HFDB to the Health Facilities And Services Regulatory Bureau (HFSRB). Furthermore, there is a proposal to the Health Promotions Bureau (HPB) to include AMR topics in Healthy Learning Institutions priority areas. In the animal sector, there is a need to enhance monitoring structures and policies for Good Aquaculture Practices (GAqP) and Good Animal Husbandry Practices (GAHP) as regulations for antibiotic prescription are not strictly enforced nor is it currently required to register livestock, poultry, and aquaculture farms with the Bureau of Animal Industry (BAI) and the Bureau of Fisheries and Aquatic Resources (BFAR).

Integrating community and sector-specific AMR education and promotion. Currently, there are no community-level education and promotion programs on antimicrobial resistance. The department actively participates in the annual World AMR Awareness Week (WAAW). Despite these efforts, there is a need to further integrate AMR into other public health programs, especially in community settings. Multiple guidelines in the animal sector promote the Philippine National Standard on GAqP and GAHP to increase farm biosecurity measures. However, these practices remain voluntary, with limited GAHP and GAqP-certified farms. Data on farms implementing sufficient biosecurity is lacking.

Animal health system capacity and biosecurity measures. In terms of Animal Health System Capacity, there is a need to enhance disease diagnostics in aquaculture farms for early disease detection and prevention measures, aligning with terrestrial farms' capacity. Revisiting GAHP and GAqP certification requirements is necessary, as farms find compliance challenging. Technical assistance is available during infections and biosecurity incursions, but there is a need for a certification verification system for farmer and fisherman training. The Hazard Analysis Critical Control Point (HACCP) system for agricultural processing plants is fully implemented but faces challenges in delineating functions between FDA and BFAR. Good Manufacturing Practices (GMP) for local feed mills and suppliers are required only for imports, not domestically. Concrete measures to reduce infections across settings are in place, but further capacity building and workforce sustainability are needed.





# KEY STRATEGY 6 Promote innovation and research on AMR

#### SCOPE

The sixth key strategy focuses on promoting innovation and research to create a supportive and sustainable environment, disseminate information, and foster technological advancements. This includes developing research agendas, calls for proposals. and financing mechanisms for new research on AMR.

#### **GOOD PRACTICES**

DA collaboration with the DOST through its AMR Surveillance and Research Project





Identified priority AMR research areas for the 2024 Call For Proposals

Fund for AMR-related research is available.



#### **PAIN POINTS**

Few identified research areas and lack of coordination between research institutions for aquaculture research





Sharing of information between institutions is limited and is not readily available to the public.

Lack of shared database or IT hub system for AMR-related research



#### **MILESTONES**

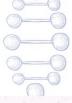
Mobilizing budget and resources for AMR research and development has been fully implemented. There have also been significant efforts in integrating the existing AMR research agenda with animal health and products to support AMR research in the agricultural sector. Additionally, an AMR AMR innovation fund was established to support universities, research institutions, and think tanks. Encouraging and incentivizing private sector collaboration in research and development (R&D) for antimicrobials has yet to be done.

Challenges and Coordination in AMR Research. The development of an integrated AMR Research Agenda for animal health and products with AMR initiatives has not yet been integrated into Industry Strategic S&T Programs (ISPs) roadmaps for livestock and poultry sectors. Coordination and cohesive research efforts on aquaculture commodities among research institutions and regulatory bodies remain lacking. Implementing agencies have emphasized the need for a unified AMR research agenda, endorsed by DOST, with future engagement of DOST-PCAARRD. AMR research databases and IT systems remain fragmented, lacking a centralized hub. Pain points persist, including identifying appropriate focal persons, clarifying documents needed for commercializing AMR research fields, limited public availability of information, measurement of progress considering ongoing projects, and the need to encourage private sector collaboration in R&D for antimicrobials.

On-going progress on AMR information dissemination and public awareness. Initiatives like the iAMResponsible campaign have begun incorporating new discoveries and data to enhance public understanding, but further development is needed to broaden awareness effectively. Webinars and workshops on AMR have been conducted by various agencies, yet achieving comprehensive public awareness remains a priority. Highlighting the absence of a centralized repository for AMR research underscores the need for improved coordination and dissemination efforts. Efforts to present research findings to stakeholders and inform policy formation have commenced, with ongoing needs for additional research and public consultations. Although efforts to update local research databases related to AMR have started through platforms like HERDIN, the absence of a centralized database limits accessibility and dissemination of critical health information. Publications in peer-reviewed journals by DOST-PCAARRD's partners, such as studies on whole-genome sequencing and phage-host interactions, demonstrate progress, but AMR initiatives still require integration into ISPs for livestock and poultry sectors.

Development and Translation of AMR Technologies. Initiatives to prioritize research benefiting smallholder farmers, such as vaccine development as alternatives to antimicrobial treatments, have begun, although they require additional refinement to optimize applicability on farms. Research on GAHP and alternatives to antimicrobial agents has also commenced, focusing on vaccine development, but more studies are needed to evaluate GAHP effectiveness in this context. Inter-agency collaboration for AMR research involving DOST-PCAARRD, DOH, and industry has started, yet AMR initiatives are absent from ISPs in livestock and poultry sectors, underscoring the need for enhanced collaboration and integration. The identification of fields for AMR and antibiotic research with potential for translation and commercialization is progressing well under initiatives like DOST's "Inter-Regional Network Through One Health Approach to Combat AMR," spanning diverse components from socio-cultural dimensions to biotechnology-based interventions.

Resource Allocation and Collaboration. Despite these challenges, DOST has approved 22 research projects spanning drug discovery, therapeutics, biotechnology, and environmental surveillance, totaling 435 million pesos in support. These initiatives, supported by international programs like The AHEAD and 1NET Programs, align with national agendas to develop innovations and preventive strategies against AMR. Notably, regular multi-sectoral consultation meetings are conducted by DOH PD, and DA collaborates with DOST through its AMR Surveillance and Research Project. DOST-PCHRD has identified priority AMR research areas for the 2024 Call For Proposals and collaborates with international funding and research agencies such as UK Research and Innovation (UKRI) and e-ASIA Joint Research Program (JRP). The establishment of a Philippine AMR fund to support multi-sectoral research remains pending, requiring clarification on jurisdiction and policy framework of the "AMR innovative fund" targeted in the last PNAP. Support for universities and think tanks in developing innovative technologies for AMR, led by institutions like UP Manila's College of Public Health and other universities with DOST-funded research, is ongoing with promising results. However, broader engagement with the private sector to increase investments in R&D for antimicrobials has not yet commenced, highlighting an area for future development and collaboration.





#### **KEY STRATEGY 7**

# Improve awareness and understanding of antimicrobial resistance through effective communication and education

#### SCOPE

This key strategy involves increasing public awareness of AMR and integrating AMR prevention and reduction through various communication materials and education. Activities include integrating AMR in the pre-service training of health and agriculture professionals, improving communication methods and channels, and holding advocacy meetings with stakeholders.

#### **GOOD PRACTICES**



Creation of AMR IEC materials annually, which are disseminated monthly to the general public and its stakeholders

Conduction of student forums for health and agriculture professionals to promote AMR awareness, and reduction





Increasing commitment from LGUs with some CHDs having already established committees for AMS

#### **PAIN POINTS**



Localization of IEC materials for human AMR remains a challenge as local CHDs require approval from their Pharmaceutical Unit.

No M&E framework to evaluate the promotion and communication initiatives on AMR and AMU





AMR education is mainly delivered through short-term courses and activities

#### **MILESTONES**

The IAMResponsible campaign, a nationwide advocacy campaign on prudent antimicrobial use and food safety, was launched, targeting general consumers, farmers, and veterinarians. IEC and advocacy materials were published on social media, and LGUs were also engaged to participate in PAAW. AMR awareness, prevention, and reduction modules were incorporated into the academic curriculum for health and agriculture professionals. Dialogues between DepEd and CHED officials were done to support these integrations.

Implementation and evaluation of AMR awareness campaigns. KAP studies for farmers, nutritionists, feed millers, and other stakeholders on prudent antimicrobial use were planned and was observed to be implemented in 2024, which falls outside the 2019-2023 PNAP timeline (DA-BAI, 33rd ICAMR Meeting). The iAMResponsible campaign is continuously being implemented by DA-BAI, with impact data still pending. However, DA-BFAR noted that the fisheries sector is not included in the iAMResponsible campaign. Campaign materials on animal AMR awareness were developed and disseminated, particularly on the iAMResponsible website. Despite these efforts, there is a lack of a concrete AMR Health Promotion Plan to guide AMR awareness campaigns, as indicated by DA-BFAR. In the agricultural sector, awareness among sample collectors, business owners, and small-scale farmers about the prudent use of antimicrobials remains low, often confused with concepts like veterinary drug residue.

Conducted stakeholder engagement and education. Student forums, GAHP training seminars, and food safety caravans are being conducted by stakeholders across the Philippines. Social media platforms are being maximized to spread awareness campaigns, particularly during the World/Philippine Antimicrobial Resistance Awareness Week (WAAW/PAAW) celebrations. Regional government units and LGUs are encouraged to participate in WAAW celebrations, with four out of the Metro Manila LGUs having established committees on AMS. However, production and dissemination of IEC materials need more work. These materials are posted annually but are limited to specific activities such as student forums and are not streamlined to other stakeholders. LGUs and CHDs should be able to create their own localized IEC materials.

Use of various communication channels and strategies. Promotion and communication initiatives are mostly done through social media. There are efforts to include television, print media, and other targeted efforts towards consumers, but the inclusion of AMR in DTI campaigns year-round is difficult as AMR campaigns are not their sole mandate. In the last five years, only one AVP on GHP and AMR has been produced. DTI is unable to assist significantly in dissemination as they can only distribute IEC materials provided by key agencies.

Integration of AMR into educational curricula. In human health, progress reports show active efforts and the development of different courses and One Health training opportunities with integrated AMR courses. However, for the animal health sector, there needs to be an increased number of dialogues with DepEd and CHED to address barriers to the complete integration of AMR into the school curriculum. While animal AMR training regulations have been integrated into veterinary schools, and activities such as student forums for veterinarians are conducted, complete integration into the school curricula of the fisheries sector is yet to be started and implemented.

## Annex B. Policies and Guidelines on AMR in the Philippines

This compilation of policies and guidelines on AMR in the Philippines serves as a resource for understanding the regulatory and strategic framework guiding the country's efforts to combat AMR. This section is organized into four key sections, reflecting the interconnected nature of AMR across sectors: animal health, human health, environmental health, and multisectoral collaboration. The list represents key documents identified during the implementation review, key informant interviews, and government stakeholder consultations. While not exhaustive, these policies reflect the primary frameworks and regulations that emerged as significant in addressing AMR challenges. This compilation aims to support stakeholders by providing a consolidated reference to inform decision-making, implementation, and advocacy efforts.

#### **Annex B.1. Animal Health**

Year	Policy Number	Policy Name	Agency
1988	Republic Act No. 6675	Generics Act of 1988	Food and Drug Administration
1991	DA A.O. #40 and DOH A.O. #111-C, s. 1990	Rules and Regulations on Dispensing of Veterinary Drugs and Products	Department of Agriculture
1991	DA A.O. #33 and DOH A.O. #111-A, s. 1991	Rules and Regulations on Registration of Veterinary Drugs and Products	Department of Agriculture
1991	DA A.O. #39 and DOH A.O. #111-B, s. 1991	Rules and Regulations to Implement Prescribing Requirements for the Veterinary Drugs and Products	Department of Agriculture
1998	Republic Act No. 8550	An Act providing for the development and conservation of the fisheries and aquatic resources, integration all laws pertinent hereto, and for other purposes	Department of Agriculture
2006	DA Administrative Order No. 14 s.2006	Implementation of the national veterinary drug residues control program and creation of the interagency committee	Department of Agriculture
2006	DA Administrative Order No. 14 s.2006	Implementation of the national veterinary drug residues control program and creation of the interagency committee	Department of Agriculture
2009	Republic Act No. 9711	Food and Drug Administration (FDA) Act of 2009	Food and Drug Administration
2009	DA Administrative Order No. 24 s. 2009	Implementation of the veterinary drug residues control program in foods	Department of Agriculture

/ /	Joint Administrative Order 2013-0026	Rules on the Regulation of Veterinary Drugs and Products, Veterinary Biological Products, and Veterinary Drugs Establishments	Department of Agriculture & Food and Drug Administration
2013	FDA Advisory No. 2013-006	The Risk of Indiscriminate Use of Antimicrobials in Animals	Food and Drug Administration
2013	Republic Act No. 10611	Food Safety Act of 2013	Food and Drug Administration
2014	Republic Act No. 10654	An act to deter and eliminate illegal unreported and unregulated fishing amending Republic Act 8550	Department of Agriculture
2015	DA Administrative Order No. 43 s. 2015	Guidelines on the Registration of Veterinary Drugs and Products	Department of Agriculture
2017	DA Administrative Order No. 50 s. 2017	Ban on the Use of Antibiotic Growth Promoters in Animal Feeds	Department of Agriculture
2018	Fisheries Office Order No. 104 s. 2018	Designation of BFAR Antimicrobial Resistance (BFAR-AMR) Coordinators for better engagement a smooth implementation of programs and activities to address issues of AMR.	Department of Agriculture
2019	DA Administrative Order No. 22 s. 2019	Guidelines on the Registration of Veterinary Antimicrobial Products	Department of Agriculture
2019	FDA Circular No. 2019-003	Guidelines on the Implementation of New Labels for Medically Important Antimicrobials	Food and Drug Administration
2020	DA Special Order No. 343 s, 2020	Creation of Technical Working Group on AMR in the Agriculture Sector	Department of Agriculture

### Annex B.2. Human Health

Year	Policy Number	Policy Name	Agency
1988	Republic Act No. 6675	Generics Act of 1988	DOH
1990	Executive Order No. 1990-430	Constituting the National Committee on Biosafety of the Philippines (NCBP) and For Other Purposes	Office of the President

1999	DOH Administrative Order No. 1999-43	Current Good Manufacturing Practice Guidelines for Drugs, Philippines	DOH
2006	Philhealth Circular No. 15, s-2006	Reimbursement of Claims for PNDF Drugs Used only in Hospitals Accredited Under the DOH Antimicrobial Resistance Surveillance Program	PHIC
2008	Republic Act No. 9502	Universally Accessible Cheaper and Quality Medicines Act of 2008	DOH
2009	Republic Act No. 9711	Food and Drug Administration (FDA) Act of 2009	FDA
2011	DOH Department Circular No. 2011-0101	The Rules and Regulations Implementing Republic Act No. 9711-The Food and Drug Administration Act of 2009	DOH
2012	FDA Advisory No. 2012-017	Antimicrobial Resistance	DOH-FDA
2012	DOH Administrative Order No. 2012-0008	Adoption and Implementation of the Pharmaceutical Inspection Cooperation Scheme (PIC/S) Guides for the Good Manufacturing Practice (GMP) for Medicinal Products	DOH-FDA
2012	DOH-FDA Advisory N0. 2012-017	Antimicrobial Resistance	DOH, FDA
2012	FDA circular 2012-012	Guidelines for Handling Rapid Alerts Arising from Quality Defects	FDA
2013	Republic Act 10536	Amendment to the Meat Inspection Code of the Philippines	
2013	Joint DOH-DA Administrative Order No. 2013-0026	Rules on the Regulation of Veterinary Drugs and Products, Veterinary Biological Products, and Veterinary Drug Establishments	DOH-DA
2013	DOH Administrative Order No. 2013-0022	Guidelines for Current Good Manufacturing Practice (cGMP) Clearance and Inspection and Inspection of Foreign Drug Manufacturers	DOH

2013	FDA Circular No. 2013-008-A	Amendment to FD Circular No. 2013-008 on A. Process and Communication under Section IV. Details/Directives	DOH-FDA
2013	FDA Advisory No. 2013-069	Consumer Tips on Buying Medicines from Drug Outlets	FDA
2013	FDA Advisory No. 2013-057	Consumer Warning in self-medication	FDA
2013	FDA Advisory No. 2013-054	Guidelines for Donors of Medicines Public Tips on Using Meds	FDA
2013	FDA Advisory No. 2013-006	The Risk of Indiscriminate Use of Antimicrobials in Animals	FDA
2013	FDA circular 2013-008	Adoption of the Association of the Southeast Asian Nations (ASEAN) Post-Marketing Alert System (PMAS) for Defective or Unsafe Processed Food Products, Pharmaceutical Products, Traditional Medicines and Health Supplements, and Cosmetic and Household Hazardous Products and Devices	FDA
2014	FDA Memorandum Circular No. 2014-015	Display of Antimicrobial Resistance (AMR) Infomercial	DOH-FDA
2014	DOH Administrative Order No. 2014-0027	National Policy on Water Safety Plans (WSPs) for All Drinking-Water Service Providers	рон
2014	DDB Board Regulation No. 2014-1	Comprehensive Amendments to Board Regulation No. 3 Series 2003, "Comprehensive Guidelines on Importation, Distribution, Manufacture, Prescription, Dispensing and Sale of, and Other Lawful Acts in Connection with Any Dangerous Drugs, Controlled Precursors and Essential Chemicals and Other Similar or Analogous Substances", as Amended, and Other Related Board Issuances	Office of the President-DDB
2014	Pres. AO 2014- 42	Creating and Inter-agency Committee for the Formulation and Implementation of a National Action Plan To Combat Antimicrobial Resistance in the Philippines	Office of the President

2014	AO No. 2014-4245	Creation of the National Antibiotic Guidelines Committee (NAGCom)	DOH
2014	FDA Memorandum Circular No. 2014-015	Display of Antimicrobial Resistance (AMR) Infomercial	FDA
2014	FDA Advisory No. 2014-057	Patient Counselling by Physicians and Pharmacists	FDA
2014	AO 2014-0006	Guidelines on the establishment of laboratory networks	DOH
2015	DOH Administrative Order No. 2015-0049	Rules and Regulations Governing the Antimicrobial Resistance Surveillance Program Accreditation of Bacteriology Laboratories in the Philippines for the PhilHealth Reimbursement of Select Antibiotics in the Philippine National Drug Formulary	DOH
2015	DOH Administrative Order No. 2015-0049-A	Amendment to AO 2015-0049 entitled "Rules and Regulations Governing the Antimicrobial Resistance Surveillance Program Accreditation of Bacteriology Laboratories in the Philippines for the PhilHealth Reimbursement of Select Antibiotics in the Philippine National Drug Formulary"	DOH
2015	AO No. 2015-0049	Rules and Regulations Governing the Antimicrobial Resistance Surveillance Program Accreditation of Bacteriology Laboratories in the Philippines for the PhilHealth Reimbursement of Select Antibiotics in the Philippine National Drug Formulary	DOH
2016	Republic Act No. 10918	No Prescription No Dispensing Policy	FDA
2016	AO No. 2016-0002	National Policy on Infection Prevention and Control in Healthcare Facilities	рон
2018	PhilHealth Circular No. 2018-0009	Use of Restricted Antimicrobials in PhilHealth-Accredited Health Care Institutions in Accordance with the Antimicrobial Resistance Surveillance Program (ARSP)	PHIC



2018		National Antibiotic Guidelines 2018	DOH
2018	Republic Act No.11332	Mandatory Reporting of Notifiable Diseases and Health Events of Public Health Concern Act	Philippine Congress
2018		Department of Health Training Guide on Warehousing and Distribution of Family Planning, TB, and other Health Commodities in the Philippines	Cristan Agaceta, Isaac Ireneo Linatoc
2018	PhilHealth Circular No. 2018-0009	Use of Restricted Antimicrobials in PhilHealth-accredited Health Care Institutions in Accordance with the requirements of the Antimicrobial Resistance Surveillance Program (ARSP)	PhilHealth
2018	Philhealth Circular No. 2018-0009	Use of Restricted Antimicrobials in Philhealth-accredited Health Care Institutions in Accordance with the Antimicrobial Resistance Surveillance Program (ARSP)	PHIC
2019	DOH Administrative Order No. 2019-0002	Implementing Guidelines on the Philippine Antimicrobial Stewardship (AMS) Program for Hospitals	рон
2019	DOH Administrative Order No. 2019-0054	Guidelines on the implementation of the Philippine Approach to Sustainable Sanitation (PhATSS)	DOH
2019	FDA Advisory No. 2019-154	Internet Sales and Access to Safe Medicine	DOH-FDA
2020	DOH Administrative Order No. 2020-0043	Guidelines on Ensuring the Affordability of Essential Medicines in DOH Facilities Through the Regulation of Price Mark-ups	рон
2020		Health Care Waste Management Manual (4th Edition)	рон
2020		National Standards in Infection Prevention and Control for Health Facilities (Third Edition)	DOH-HFDB



2020	DOH Administrative Order No. 2020-0007	National Policy on Patient Safety in Health Facilities	DOH
2020		Electronic Drug Price Monitoring System (EDPMS)	рон
2020		Due average Device at 2020	
2020		Progress Report 2020	DOH-PD
2021	DOH Department Memorandum No. 2021-0127	Designation of Select Hospitals as the Training Hubs for the Implementation of the Antimicrobial Stewardship (AMS) Blended Learning Program Framework for Hospitals	DOH
2021		2021 TrACSS Country Report on the Implementation of National Action Plan on Antimicrobial Resistance (AMR)	wнo
2022	DOH Department Memorandum No. 2022-0043	Rational Use of Antimicrobial Agents and Investigational Drugs for the Management of COVID-19	DOH
2022	DOH Administrative Order No. 2022-0051	Revised National Policy on Infection Prevention and Control in All Public and Private Health Facilities	DOH
2022	DOH Administrative Order	Revised Guidelines on the Licensing of Veterinary. Establishments, Registration and Post-Market Surveillance of Veterinary Drug Products	DOH
2022	FDA Circular No. 2022-004	Implementing Guidelines on the Abridged and Verification Review Pathways of New Drug Registration Applications in accordance with AO. No 2020-0045 "Established Facilitated Registration Pathways for Drug Products including Vaccines and Biologicals."	DOH-FDA
2022	DOH-HFDB Department Memorandum No. 2022-0020	Implementation of the 2021 Hospital Scorecard Rating Scale	DOH-HFDB
2023	DOH Administrative Order No. 2023-0011	Implementing Guidelines on the Philippine Antimicrobial Stewardship (AMS) Program for Primary Care Facilities	DOH

2023	DOH Department Circular No. 2023-0314	Conduct of the 2023 Antimicrobial Stewardship (AMS) Blended Learning Framework Program for Primary Health Care (PHC) facilities through online platform-10Jul2023
2023	DOH Department Circular No. 2023-0522	Invitation to Attend the 2023 National Dissemination Forum of the Antimicrobial DOH Use - Point Prevalence Survey in the Philippines
2023	DOH Department Circular No. 2023-045	Dissemination of the National Environmental Health Action Plan (NEHAP) 2030 DOH

### **Annex B.3. Environmental Health**

Year	Policy Number	Policy Name	Agency
2000	Republic Act No. 9003	Ecological Solid Waste Management Act of 2000	DENR
2004	Republic Act No. 9275	Philippine Clean Water Act of 2004	DENR
2023	DOH Department Circular No. 2023-0452		Inter-agency Committee on Environmental Health; Ateneo de Manila University - School of Medicine and Public Health Center for Research and Innovation (ACRI)

### Annex B.4. Multisectoral

Year	Policy Number	Policy Name	Agency
1990	Joint DA-DOH Administrative Order No. 1990-40	Rules and Regulations on Dispensing of Veterinary Drugs and Products	DA, DOH

2005	DENR-DOH Administrative Order No. 02-2005	Policies and Guidelines on Effective and Proper Handling, Collection, Transport, Treatment, Storage, and Disposal of Health Care Wastes	DENR, DOH
2014	Administrative Order No. 42 s. 2014	Creating an Inter-Agency Committee for the Formulation and Implementation of a National Action Plan to Combat Antimicrobial Resistance in the Philippines	ICAMR
2015		Philippine National Action Plan to Combat Antimicrobial Resistance 2015-2018	ICAMR
2019		Philippine National Action Plan to Combat Antimicrobial Resistance 2019-2023	ICAMR
2020	O Joint DOH-DA-DENR Administrative Order No. 2020-02 Guidelines to Operationalize the Philippine Inter-Agency Committee on Zoonoses (PhilCZ)		DOH, DA, DENR
2020	Joint DOST-DA-DENR-DOH-DILG Department Circular No. 2021-01	Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Genetically Modified Plant and Plant Products Derived from the Use of Modern Biotechnology	DOST, DA, DENR, DOH, DILG
2021	Joint Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Department Circular No. 2021-01 Biotechnology		DOST, DA, DENR, DOH, DILG
2022	Joint DTI-DA-DOH-DENR-IPO-NP C Administrative Order No. 22-01:	Guidelines for Online Businesses Reiterating the Laws and Regulations Applicable to Online Businesses and Consumers	DTI, DA, DOH, DENR, IPO, NPC

# **Annex C. Related Research on AMR in the Philippines**

This compilation of related research on AMR in the Philippines presents a curated selection of studies conducted from **2019 to 2024**, offering a focused lens on recent advancements and insights. Organized into four key sections—animal health, human health, environmental health, and multisectoral approaches—it reflects the interconnected dimensions of AMR and the critical role of a One Health perspective. By consolidating research across these domains, this compilation aims to provide stakeholders with a valuable resource for understanding current trends, challenges, and opportunities in AMR research, contributing to informed decision-making and policy development.



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Year	Title	Author/s	Institution/s	Source		
Published						
2019	Prevalence and distribution	Gundran, R.S., Cardenio, P.A.,	College of Veterinary Science and	BMC Veterinary Research		
2013	of blaCTX-M, blaSHV, blaTEM	Villanueva, M.A., Sison, F.B.,	Medicine Central Luzon State University,	https://doi.org/10.1186/s1291		
	genes in extended- spectrum	Benigno. C.C., Kreausukon, K.,	Livestock Biotechnology Center	<u>7-019-1975-9</u>		
	beta-lactamase producing E	Picjpol, D., and	Department of Agriculture, Food and			
	coli isolated from broiler	Punyapornwithaya, V.	Agriculture Organization of the United			
	farms in the Philippines		Nations Regional Office for Asia and the			
	idinis in the ramppines		Pacific, Faculty of Veterinary Medicine			
			Chiang Mai University			
2019	Draft genome sequence of	Saloma, C.P., Penir, S.M.U.,	National Institute of Molecular Biology	Microbiol resource		
	multidrug- resistant Vibrio	Azanza, J.M.r., dela Pena, L.D.,	and Biotechnology University of the	Announcements		
	parahemolyticus strain	Usero, R.C. et al	Philippines Diliman, Philippine genome	https://doi.org/10.1128/		
	PH698, infecting penaeid		Center University of the Philippines	MRA.01040-19		
	shrimp in the Philippines		Diliman, Southeast Asia Fisheries			
			Development Center Aquaculture			
			Development Center, Negros Prawn			
			Producers Cooperative			
			College of Veterinary Science and			
			Medicine Central Luzon State University,			
			Livestock Biotechnology Center			
		Considerate D.C. Consideration D.A.	Department of Agriculture	Missakial Dusa Dasistanas		
2019	Prevalence, antibiogram,	Gundran, R.S., Cardenio, P.A., Salvador, R.T., Sison, F.B.,	College of Veterinary Science and Medicine Central Luzon State University,	Microbial Drug Resistance https://doi.org/10.1089/mdr.2		
	and resistance profile of	Benigno, C.C., Kreausukon, K.,	Livestock Biotechnology Center	019.0019		
	extended-spectrum beta	Pichpol D., Punyapornwithaya, V.	Department of Agriculture, Food and	019.0019		
	lactamase producing E. coli	Theripot b., i uniyapoiniwitilaya, v.	Agriculture Organization of the United			
	isolates from pigs farms in		Nations Regional Office for Asia and the			
	Luzon, Philippines		Pacific, Faculty of Veterinary Medicine			
			Chiang Mai University			
		Karp, B.E., Leeper, M.M.,	Centers for Disease Control and	Emerging Infectious Diseases		
2020	Multidrug resistant	Chen, J.C., Tagg, K.A., Frencois	Prevention, Atlanta, Georgia, USA	https://doi.org/10.3201/eid260		
		1 3.16.1, 3.6., 1466, 14.7., 1 16116013	i revention, ritarità, deorgia, dori	inchesil animal Transcort Clare		

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	Salmonella serotype anatum in travelers and seafood from Asia, United States	Watkins, L.K., and Friedman, C.R.		<u>5.190992</u>
2020	Antimicrobial used in backyard and commercial poultry and swine farms in the Philippines: A qualitative pilot study	Barroga, T.R,M, Morales, R.G., Benigno, C.C., Castro, S.J.M., Caniban, M.M., Cabullo, M.F.B., Agunos, A., de Barlogh, K., and Dorado- Garcia, A.	United Nations (GCP/GLO/710/UK), Bureau	Frontiers of Veterinary Science https://doi.org/10.3389/fvets.2 020.00329
2020	Isolation and molecular Characterization of streptococcal species recovered from clinical infections in farmed Nile tilapia species (Oreochromis niloticus) in the Philippines	Legario, F.S., Choresca, C.H., Turnbull, J.F., and Crumlish, M.	, ,	Journal of Fish Disease https://doi.org/10.1111/jfd.13 247
2020	Status of Aquaculture Component of the Philippine National Action Plan on Antimicrobial Resistance	Simeone E. Regidor, Sonia S. Songs, and Jose O. Paclibare	Bureau of Fisheries and Aquatic Resources,	Asian Fisheries Society https://doi.org/10.33997/j.afs. 2020.33.S1.014
2022	Emergence of resistance genes in fecal samples of antibiotic-treated Philippine broilers emphasizes the need to review local farming practices	C Imperial, P M Pabustan, K A Valencia, M A Nicdao, and J Ibana	Immunopharmacology Research Laboratory, Institute of Biology, College of Science, University of the Philippines, Diliman, Quezon City, Metropolitan Manila, 1101, Philippines.  Department of Sciences, College of Arts and Sciences, Pampanga State Agricultural University, Magalang, Pampanga, 2011, Philippines.	Tropical Biomedicine https://doi.org/10.47665/tb.39 .1.020

2024		Maria Ruth B. Pineda-Cortel, Elner	The Graduate School, University of Santo	Journal of Veterinary Science
2024	Use of veterinary medicinal	H. del Rosario and Oliver B.	Tomas, España Boulevard, Sampaloc,	https://doi.org/10.4142/jvs.23
<i>4////</i>	products in the Philippines: regulations, impact,	Villaflores		134
/////	challenges, and		0-0	
	recommendations		Research Center for the Natural and	
	Tecommendations		Applied Sciences, University of Santo	
			Tomas, España Boulevard, Sampaloc,	
			Manila 1008 Metro Manila, Philippines.	
			Department of Medical Technology, Faculty	
			of Pharmacy, University of Santo Tomas,	
			España Boulevard, Sampaloc, Manila 1008	
			Metro Manila, Philippines.	
			Department of Biochemistry, Faculty of	
			Pharmacy, University of Santo Tomas,	
			España Boulevard, Sampaloc, Manila 1008	
		Javanan Paul D Lumahaa Maria	Metro Manila, Philippines.	Scientific reports
2024	An antimicrobial resistance	Jerouen Paul D Lumabao, Maria Catherine B Otero, Joan T Acaso,	Department of Biological Sciences and Environmental Studies, University of the	https://doi.org/10.1038/s4159
	gene situationer in the	Pedro A Alviola 4th, Caroline	Philippines Mindanao, Davao del Sur,	8-024-77124-z
	backyard swine industry of a	Marie B Jaraula, Lyre Anni E	Davao City, 8000, Philippines.	0 02+ 1112+2
	Philippine City	Murao		
			College of Biology, Davao Medical School	
			Foundation, Inc, Davao del Sur, Davao City,	
			8000, Philippines.	
			School of Management, University of the	
			Philippines Mindanao, Davao del Sur,	
			Davao City, 8000, Philippines.	
			27	
			Marine Science Institute, University of the	
			Philippines, Diliman, Quezon City, 1101,	
			Philippines.	
			Department of Biological Sciences and	

/		Environmental Studies, University of the
/		Philippines Mindanao, Davao del Sur,
/		Davao City, 8000, Philippines.
/		

### Annex C.2. Human Health

Year Published	Title	Author/s	Institution/s	Source
2019	A Multicenter, Randomized, Double-blind, Parallel-group Clinical Study of S-649266 Compared with Meropenem for the Treatment of Hospital- acquired Bacterial Pneumonia, Ventilator-associated Bacterial Pneumonia, or Healthcare- associated Bacterial Pneumonia Caused by Gram negative Pathogens	Ronald Allan R. Payumo, MD; Lalaine Llamido Mortera, MD; Malbar G. Ferrer, MD; Joel M. Santiaguel, MD; Marie Grace Dawn T. Isidro, MD; Ronnie Z. Samoro, MD; Joven Roque V. Gonong, MD; Albert Albay, Jr. MD; and Myla M. Castillo, MD	Mary Johnston Hospital, Manila Central University - Filemon D. Tanchoco Medical Foundation, St. Paul's Hospital Iloilo, Quirino Memorial Medical Center, West Visayas State University Medical Center, West Visayas State University Medical Center, Lung Center of the Philippines, Philippine General Hospital, and Dr. Jose N. Rodriguez Memorial Hospital	ClinicalTrials.gov https://doi.org/10.25934/PR00 009791
2019	The global point prevalence survey of antimicrobial consumption and resistance: Quantity and quality of antimicrobial prescribing for inpatients with pneumonia in the Philippines in 2018.	Mari Rose Aplasca De los Reyes, Maria Charmian M. Hufano, Ines Pauwels, Ann Versporten, Herman Goossens	Research Institute for Tropical Medicine - Department of Health and St. Luke's Medical Center - Bonifacio Global City	Open Forum Infectious Disease https://doi.org/10.1093/ofid/of 60.1698
2020	See and sequence: Integrating whole-genome sequencing within the National Antimicrobial	Silvia Argimón, Melissa A. Masim, June M. Gayeta, Marietta L. Lagrada, Polle K. Macaranas, Victoria Cohen, Marilyn T. Limas,	Centre for Genomic Pathogen Surveillance, Wellcome Genome Campus, Philippines Antimicrobial Resistance Surveillance	Nature https://doi.org/10.1038/s4146 7-020-16322-5

	Resistance Surveillance program in the Philippines	Holly O. Espiritu, Janziel C. Palarca, Jeremiah Chilam, Manuel C. Jamoralín Jr., Alfred S. Villamin, Janice B. Borlasa, Agnettah M. Olorosa, Lara F. Hernandez, Karis D. Boehme, Benjamin Jeffrey, Khalil Abudahab, Charmian M. Hufano, Sonia B. Sia, John Stelling, Matthew T. Holden, David . Aanensen, Celia C. Carlos	Reference Laboratory, Research Institute for Tropical Medicine - Department of Health, Muntinlupa, Metro Manila, Philippines	
2021	Rational use of polymyxins against multi-drug resistant gram-negative bacteria.	Paul Sherwin O. Tarnate, Cecilia C. Maramba-Lazarte	Division of Infectious and Tropical Diseases in Pediatrics Department of Pediatrics, Philippine General Hospital, University of the Philippines-Manila, Metro Manila, Philippines Department of Pharmacology and Toxicology, University of Philippines Manila, Manila, Metro Manila, Philippines	Pediatric Infectious Disease Society of the Philippines Journal
2022	Zoochemical analyses and in vitro antimicrobial activity of crude methanolic extract of <i>Perna viridis</i> .	Joenilo E. Paduhilao II and Leni G. Yap-Dejeto	Department of Natural Sciences and Mathematics, Tacloban College, University of the Philippines Visayas, Tacloban City, Leyte, Philippines	Acta Medica Philippina https://doi.org/10.47895/amp. vi0.3136
2020	Antimicrobials Used in Backyard and Commercial Poultry and Swine Farms in the Philippines: A Qualitative Pilot Study	Barroga Toni Rose M., Morales Reildrin G., Benigno Carolyn C., Castro Samuel Joseph M., Caniban Mardi M., Cabullo Maria Fe B., Agunos Agnes, de Balogh Katinka, Dorado-Garcia Alejandro	United Nations—Philippine Component on the Global Efforts to Combat Antimicrobial Resistance Using One Health Approach (GCP/GLO/UK/710), Quezon City,	

			Food and Agriculture Organization of the United Nations Regional Office of Asia and the Pacific, Bangkok, Thailand Food and Agriculture Organization of the United Nations, Rome, Italy	
2022	Antimicrobial activity of endophytic and rhizospheric fungi associated with soft fern (Christella sp.) and cinderella weed (Synedrella nodiflora) inhabiting a hot spring in Los Baños, Laguna, Philippines	Rio Janina B. Arenas, Ren Mark D. Villanueva, Jessica F. Simbahan, Marie Christine . Obusan	Institute of Biology, National Science Complex, University of the Philippines Diliman, Quezon City	Acta Medica Philippina https://doi.org/10.47895/amp.v .1417
2024	A Phase 3 Prospective, Randomized, Multicenter, Open-Label, Central Assessor- Blinded, Parallel Group, Comparative Study to Determine the Efficacy, Safety and Tolerability of Aztreonam- Avibactam (ATM-AVI) ±Metronidazole (MTZ) versus Meropenem±Colistin (MER±COL) for the Treatment of Serious Infections due to Gram-Negative Bacteria, Including Metallo-B-Lactamase (MBL) – Producing Multidrug Resistant Pathogens, for Which There Are Limited or No Treatment Options	Camilo C. Roa Jr., MD; Albert Albay, Jr. MD; Lalaine Llamido Mortera, MD; and Marie Grace Dawn T. Isidro, MD	Philippine General Hospital, Manila Central University - Filemon D. Tanchoco Medical Foundation Hospital, and West Visayas State University Medical Center	ClinicalTrials.gov https://clinicaltrials.gov/study /NCT03580044
2024	Antimicrobial consumption and resistance of restricted antibiotics in a Level III	Mary Anne Abeleda, Imelda Peña, Roderick Salenga, Francis Capule, Shiela Mae Nacabu-an, Pamela	College of Pharmacy, University of the Philippines Manila, Manila, Metro Manila, Philippines, and Department of	Acta Medica Philippina https://doi.org/10.47895/amp. vi0.8056

	government hospital	Nala	Pharmacy, Philippine General Hospital - University of the Philippines Manila, Manila, Metro Manila, Philippines	
2024	Antimicrobial resistance profile of <i>Escherichia coli</i> isolated from raw chicken meat in a selected wet market in Manila City, Philippines.	Lyder Kyle A. Dimaapi, Angela Lorraine G. Dela Cruz, Roger Andrei D. Francisco, Rei Gilian D. Noble, Hayley Emerald G. Sabangan, Azita Racquel Gavino-Lacuna, Maria Margarita M. Lota		Acta Medica Philippina https://doi.org/10.47895/amp. vi0.8383
2024	Drug utilization review of monitored parenteral antimicrobials in a Tertiary Care Private Hospital in Cebu City.	Jan Steven P. So, RPh, MS; Francis R. Capule, RPh, MS, PhD; Imelda G. Peña, RPh, MS, DrPH; Shiela May J. Nacabuan, RPh, MHPEd; Frances Lois U. Ngo, RPh, MHSS; Yolanda R. Robles, RPh, MPharm, PhD; Nelly Nonette M. Ouano, RPh, MSc; and Ron R. del Mar, MD	College of Pharmacy, University of the Philippines Manila, Manila, Metro Manila, Philippines	Acta Medica Philippina https://doi.org/10.47895/amp. vi0.7249

### **Annex C.3. Environmental Health**

Year Published	Title	Author/s	Institution/s	Source
2020	Integrating whole-genome sequencing within the National Antimicrobial Resistance Surveillance Program in the Philippines	Masim, June M. Gayeta, Marietta L. Lagrada, Polle K. V. Macaranas, Victoria Cohen, Marilyn T. Limas, Holly O. Espiritu, Janziel C. Palarca, Jeremiah Chilam, Manuel C. Jamoralin Jr., Alfred S. Villamin, Janice B. Borlasa, Agnettah M.	Antimicrobial Resistance Surveillance Reference Laboratory, Research Institute for Tropical Medicine, Muntinlupa, The	Nature Communications https://doi.org/10.1038/s4146 7-020-16322-5

		Jeffrey, Khalil Abudahab, Charmian M. Hufano, Sonia B. Sia, John Stelling, Matthew T. G. Holden, David M. Aanensen & Celia C. Carlos	MA, USA University of St Andrews School of Medicine, St Andrews, Scotland, UK Big Data Institute, Li Ka Shing Centre for Health Information and Discovery, University of Oxford, Oxford, UK	
2022	Strengthening health systems resilience using environmental surveillance for COVID-19 and antimicrobial resistance in the Philippines	Miguel Antonio Salazar, Leslie Michelle M Dalmacio, Aileen H Orbecido c, Ruth C Abanador, Michael Angelo Promentilla, Arnel B Beltran, Renan Ma T Tanhueco, and Marilen Parungao Balolong	Alliance for Improving Health Outcomes, Inc., Quezon City, Philippines.  Department of Biochemistry and Molecular Biology, College of Medicine, University of the Philippines, Manila, Philippines.  Department of Chemical Engineering, Gokongwei College of Engineering, De La Salle University, Manila, Philippines.  Department of Biology, College of Arts and Science, University of the Philippines, Manila, Philippines.  Waste and Chemicals Management Unit, Center for Engineering and Sustainable Development Research, De La Salle University, Manila, Philippines.  Department of Civil Engineering, Gokongwei College of Engineering, De La Salle University, Manila, Philippines.	Western Pac Surveill Response Journal doi:10.5365/wpsar.2022.13.2.9 30

Annex C.4. Multisectoral

Year Published	Title	Author/s	Institution/s	Source
2022	The challenges of combatting antimicrobial resistance in the Philippines	Michelle Ann B Eala, Joseph Alexander Paguio, Mari Sonia S Salamat, and Leo Anthony G Celi	de Manila University, Pasig City, Philippines	The Lancelet Microbe https://doi.org/10.1016/ \$2666-5247(22)00029-5
2022	A Qualitative Study on the Design and Implementation of the National Action Plan on Antimicrobial Resistance in the Philippines	Maria Margarita M. Lota, Alvin Qijia Chua,Karen Azupardo, Carlo Lumangaya, Katherine Ann V. Reyes, Sharon Yvette Angelina M. Villanueva, Helena Legido-Quigley and Evalyn A. Roxas		Antibiotics 2022 https://doi.org/10.3390/antibi otics11060820