



Food and Agriculture
Organization of the
United Nations

UN
environment
programme

World Health
Organization



World Organisation
for Animal Health
Founded as OIE



©WHO/Quinn Mattingly

Antimicrobial Resistance Multi-Partner Trust Fund annual report 2022

Administered by



United Nations
MPTF Office



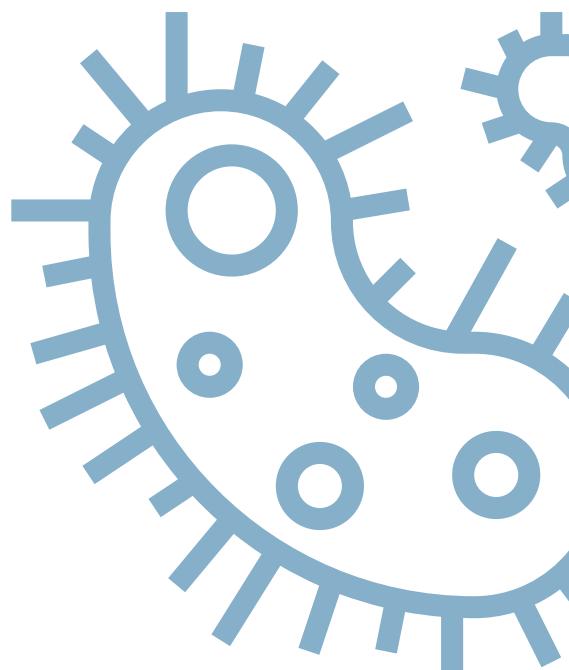


Food and Agriculture
Organization of the
United Nations



World Organisation
for Animal Health
Founded as OIE

Antimicrobial Resistance Multi-Partner Trust Fund annual report 2022



© World Health Organisation, Food and Agriculture Organisation of the United Nations, United Nations Environment Programme and World Organisation for Animal Health, 2022

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo/>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that the World Health Organisation (WHO), the Food and Agriculture Organisation of the United Nations (FAO), United Nations Environment Programme (UNEP) or World Organisation for Animal Health endorse any specific Organisation, products or services. The use of WHO, FAO, UNEP or World Organisation for Animal Health logos is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organisation (WHO), the Food and Agriculture Organisation of the United Nations (FAO), United Nations Environment Programme (UNEP) or World Organisation for Animal Health. WHO, FAO, UNEP and World Organisation for Animal Health are not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organisation <http://www.wipo.int/amc/en/mediation/rules>.

Suggested citation. Antimicrobial Resistance Multi-Partner Trust Fund annual report 2022. Geneva: World Health Organisation, Food and Agriculture Organisation of the United Nations, United Nations Environment Programme and World Organisation for Animal Health; 2022. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

WHO Photographs. WHO photographs are copyrighted and are not to be reproduced in any medium without obtaining prior written permission. Requests for permission to reproduce WHO photographs should be addressed to: http://www.who.int/about/licensing/copyright_form/en/

General Disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO, FAO, UNEP or World Organisation for Animal Health concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products, whether or not these have been patented, does not imply that they are endorsed or recommended by WHO, FAO, UNEP or World Organisation for Animal Health in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO, FAO, UNEP and World Organisation for Animal Health to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO, FAO, UNEP and World Organisation for Animal Health be liable for damages arising from its use.

Contents

Acronyms and Abbreviations	v
Foreword	vii
1. Introduction	1
2. About the MPTF	4
2.1 The Beginning	4
2.2 AMR MPTF Approach	4
2.3 Aiming for Sustainable Development Results	5
3. AMR MPTF Governance	9
3.1 Steering Committee	9
3.2 AMR MPTF Secretariat Coordination	9
3.3 MPTF Office Gateway/Fund Dashboard	11
4. AMR MPTF Progress and Achievements in 2022	12
4.1 Overview of Programme Implementation	12
4.2 The Optimization of the AMR MPTF	24
5. Overview of the Financial Situation	27
6. Key Lessons Learned	30
7. Next Steps and Vision for The Future	32
Annex 1: Theory of change for the Strategic Framework for collaboration on AMR and the AMR MPTF results matrix	33
Annex 2: Consolidated annual financial report of the administrative agent for the AMR MPTF	34
Annex 3: Country and global programme profiles	35
Annex 4: Profiles of new country programmes	105
Annex 5: References	117



Tables

Table 1. Links Between AMR and Achievement of SDGs	6
Table 2. Country Programme Launches	12
Table 3. Country and Global Programmes Contributing to Specific AMR MPTF Outputs	14
Table A3.1. Country and Global Programme Headlines	36

Figures

Fig. 1. Fund Governance and Financing Architecture	10
Fig. 2. Results Matrix for the AMR MPTF	13
Fig. 3. Optimization of the AMR Multi-Partner Trust Fund	25
Fig. 4. Overview of the Financial Situation	27
Fig. A1.1. Theory of Change for the Strategic Framework on AMR	33

Acronyms and Abbreviations

AMC	Antimicrobial consumption
AMR	Antimicrobial resistance
AMR MPTF	Antimicrobial Resistance Multi-Partner Trust Fund
AMR-NAP	National action plan on antimicrobial resistance
AMR TWGs	Technical working groups on antimicrobial resistance
AMU	Antimicrobial use
ASEAN	Association of South-East Asian Nations
AST	Antimicrobial sensitivity testing
ATLASS	Assessment Tool for Laboratories and AMR Surveillance Systems
AWaRe	Access, Watch, Reserve
BARA	Bangladesh AMR Response Alliance
CASIC	Bungoma County AMS Interagency Committee
CDC	Centers for Disease Control and Prevention
CDVs	County Directorates of Veterinary Services
CIVAS	Centre for Indonesian Veterinary Analytical Studies
COVID-19	Coronavirus disease
DHS	Department of Health Services
DVS	Directorate of Veterinary Services
ECTAD	Emergency Centre for Transboundary Animal Disease
EFDA	Ethiopian Food and Drug Authority
ESBL	Extended spectrum -lactamase
FAO	Food and Agriculture Organisation of the United Nations
FDA	Food and Drug Authority
GDAHP	General Directorate of Animal Health and Production
GAP	Global Action Plan
GIZ	German Agency for International Cooperation
GLASS	Global Antimicrobial Resistance and Use Surveillance
GLG	Global Leaders Group
HAIs	Health care-associated infections
IACG	Inter-Agency Coordination Group
IEC	Information, education and communication
IMCC-AMR	Inter-ministerial coordination committee on antimicrobial resistance
InFARM	International FAO Antimicrobial Resistance Monitoring platform/system
INS-MINSA	National Institute of Health of Peru



IPC	Infection prevention and control
IPCAF	Infection prevention and control assessment framework
IVDA	Indonesian Veterinary Drug Association
IVMA	Indonesian Veterinary Medical Association
KAP	Knowledge, attitudes and practices
LMIC	Low- and middle-income country
M&E	Monitoring and evaluation
MCG	Multisectoral Coordination Group
MSAP	Multi-Sectoral Action Plan on AMR
NAP	National action plan
NGO	Nongovernmental Organisation
NUS	National University of Singapore
ONSSA	Moroccan National Office of Food Safety
PHC	Primary health care
PMP-AMR	Progressive Management Pathway for AMR
PPS	Point prevalence survey
RCHLS	Republican Centre for Healthy Lifestyle
SANIPES-PRODUCE	Fishery Health Agency of Peru
SENASA-MIDAGRI	National Agricultural Health Service of Peru
SDGs	Sustainable Development Goals
Sida	Swedish International Development Cooperation Agency
SF	Substandard and falsified
spp.	Species
TISSA	Tripartite Integrated System for Surveillance on AMR and Antimicrobial Use
QJS	Quadripartite Joint Secretariat
ToRs	Terms of Reference
TrACSS	Tripartite AMR Country Self-Assessment Survey
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNSDCF	United Nations Sustainable Development Cooperation Framework
UNDG	United Nations Development Group
VPPs	Veterinary paraprofessionals
VSO	Veterinary service officer
WAAW	World Antimicrobial Awareness Week
WASH	Water, sanitation and hygiene
WOAH	World Organisation for Animal Health (formally OIE)



Foreword

Antimicrobial resistance (AMR) poses a significant global threat to humans, animals, plants, food systems, and the environment. Without investments and commitments from countries worldwide to address this challenge, AMR will continue to spread rapidly. The AMR Multi-Partner Trust Fund (AMR MPTF) has continued to contribute meaningfully to the global response by supporting the implementation of coordinated actions towards building of capacity in ten countries as well as the global programme. Despite the disruptions caused by the COVID-19 pandemic, the Quadripartite Organisations - the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (WOAH), the United Nations Environment Programme (UNEP), and the World Health Organization (WHO) - have sustained strong implementation progress at the global, regional, and country level throughout 2022.

The AMR MPTF has enabled the Quadripartite to continue to operationalize the One Health approach for addressing AMR at the human, animal, plant, and environment interface consistent with the Joint Strategic Framework for Collaboration on AMR. This Framework reflects the joint work of the four organizations to advance a One Health response to AMR at the global, regional and country level. The focus remains largely on supporting the implementation of One Health National Action Plans on AMR (AMR NAPs) to achieve progress towards key Sustainable Development Goal (SDG) targets. As of 2022, a total of US\$10 million has been allocated to support the implementation of AMR NAPs in 10 low-and middle-income countries, while four new countries, Bangladesh, Madagascar, Mongolia, and Tunisia submitted country proposals.

The 3rd Global High-Level Ministerial Conference on AMR held in Oman in November 2022 resulted in the Muscat Ministerial Manifesto which set out AMR targets that have so far been endorsed by 47 countries. This coupled with the prioritization of AMR funding by the Global Leaders Group on AMR (GLG) represents a unique opportunity and lends relevance to the MPTF. Furthermore, the launch of the Partnership Platform in November 2022 provides a remarkable opportunity for the visibility of the AMR MPTF and sharing of best practices.

A key highlight of 2022 was the launch of the Optimization of the AMR MPTF initiative with the goal to take stock of the progress of the AMR MPTF, unlock bottlenecks and put in place tools and interventions to accelerate and scale up the Fund to its next phase of success. As part of this initiative, an independent strategic review of the AMR MPTF was commissioned with the view to reposition it so as to maximize its efficiency, effectiveness, and impact.

To this end, we appreciate the support of the AMR MPTFs' Resource Partners including the Federal Republic of Germany, the Netherlands, Sweden, the United Kingdom of Great Britain and Northern Ireland, and the European Commission, who generously contributed USD 26 million since its inception. These contributions have continued to leverage the collaborative efforts of the organizations involved in the AMR MPTF to make a meaningful impact and complement countries in their efforts to combat this silent pandemic.

Maria Helena Semedo

Deputy Director-General,
Food and Agriculture
Organisation of the United
Nations (FAO)

Montserrat Arroyo Kuribreña

Deputy Director General
"International Standards and
Science", World Organisation
for Animal Health (WOAH)

Jacqueline Álvarez

Chief, Chemicals and
Health Branch, Industry and
Economy Division, United
Nations Environment
Programme (UNEP)

Dr. Hanan Balkhy

Assistant Director-General,
Antimicrobial Resistance
Division, World Health
Organisation (WHO)



World AntiMicrobials Awareness Week



#Stop Antimicrobial Resistance
Spread Awareness

Kenya team members partaking in 2022
World Antimicrobial Awareness Week
(WAAW) events to help raise alertness of
AMR and its dangers.

Introduction

AMR is a grave and pervasive global threat that endangers not only human health (with varying impacts across different genders due to biological and socio-cultural differences), but also animals, plants, food systems, and the environment. Its impact on lives and livelihoods is already being felt, and new evidence suggests that this threat is even more urgent and severe than previously thought. Recent estimates indicate that in 2019 alone, AMR was directly responsible for 1.27 million deaths and contributed to 4.95 million more, with the majority occurring in sub-Saharan Africa and Asia. However, the ongoing COVID-19 pandemic has added another layer of complexity to the issue of AMR. The overuse and misuse of antibiotics in treating COVID-19 patients may have exacerbated the problem of AMR, as well as other issues related to infection control and prevention and pollution. This underscores the urgent need for a coordinated global response to address both the immediate and long-term threats posed by AMR, and prevent further risks. The Sustainable Development Goals (SDGs) cannot be achieved without addressing AMR comprehensively and effectively.

Numerous key inputs and sources of pollution contribute to the emergence, transmission, and spread of AMR. Given the interconnected nature of these systems, a comprehensive One Health response, which recognises the interconnectedness and interdependence of human, animal, plant and environmental health, is required to address this urgent issue. Specifically, only a cross-sectoral One Health approach applied at the national and international levels can promote sustainable consumption and production patterns, effectively reduce the over and misuse of antimicrobials, address the rates of infections requiring treatment with antimicrobials, and increase access to quality, affordable medicines. It is important to recognize, however, that reducing the use of antimicrobials alone will not be enough. We must also address the reduction of key sources of pollution to limit the transmission of antimicrobial resistant infections and exposure pathways, which includes addressing the triple planetary crisis of climate change, biodiversity loss, and pollution. Therefore, a holistic and integrated approach that involves multiple sectors and stakeholders is necessary to combat the threat of AMR and protect global public health.

To address AMR, the AMR Multi-Partner Trust Fund (MPTF), herein the Fund was launched in June 2019 by the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO) and the World Organisation for Animal Health (WOAH, founded as OIE) known as the Tripartite. In mid-2021, the United Nations Environment Programme (UNEP) officially became a co-signatory of the AMR MPTF, and the partnership was formally changed to the Quadripartite in March 2022. Initially set up for a five-year period (2019-2024), the Fund has been extended to 2030 to align with the SDG agenda and timeline. It provides crucial technical assistance and funding to participating countries for relevant programmes aimed at combatting AMR. The Fund has been recognized by the United Nations Secretary-General as the mechanism to secure consistent and coordinated financing to combat AMR through a One Health approach.

This annual report highlights progress made by the Fund in 2022.

The report covers the following:



About the MPTF



AMR MPTF Governance



Progress and Achievements



The Overview of the Financial Situation



Lessons Learned



Looking Forward



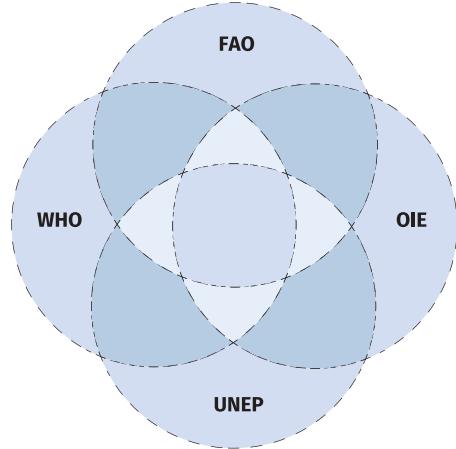
Tajikistan Member of the ESBL E Coli Tricycle protocols implementation preparation mission. The mission aimed to evaluate the current capacity of the laboratories at the national and subnational levels. As a result, 23 human, animals and agricultural laboratories were visited and assessed.

About the MPTF

2.1 The Beginning

The Fund was initially set up for a five-year period (2019-2024) and was then extended to 2030 to align with the SDG agenda and timeline. It provides crucial technical assistance and funding to participating countries for relevant programmes aimed at combatting AMR. The Fund has been recognized by the United Nations Secretary-General as the mechanism to secure consistent and coordinated financing to combat AMR through a One Health approach.

The Fund supports joint and coordinated actions based on the AMR Quadripartite workplans at global, regional and country levels to catalyse national level action and achieve sustainable results. Specifically, countries are provided with policy support and technical assistance in the following areas:



Designing and implementing of One Health National Action Plans (NAPs).

Raising awareness and catalysing behaviour change across all sectors.

Strengthening surveillance and monitoring of AMR and antimicrobial sales and use across all sectors.

Strengthening stewardship and the responsible use of antimicrobials across all sectors.

Building capacity for robust monitoring and evaluation.

2.2 AMR MPTF Approach

Since its launch in 2019, the Fund has supported the Quadripartite in efforts to demonstrate effective One Health approaches to AMR, complementing the Fund's Resource Partners' specific sector-strengthening work. The Fund's prime focus is catalysing and accelerating progress of One Health approaches to AMR in low- and middle-income countries (LMICs), especially by supporting the implementation of AMR-NAPs. The Fund promotes Quadripartite collaboration by adding value at the interface between sectors to enhance learning and reduce duplication of work, coordinating partnerships, and allowing for a more comprehensive understanding of challenges and opportunities in key areas. The Fund currently supports AMR-NAP implementation and technical programmes at the global level to assist country implementation.

Annex 1 presents the "Theory of Change" for the Strategic Framework for Collaboration on AMR along with the results matrix for the Fund, listing ways in which it contributes to the common indicators of success.



Investing in alternatives to antibiotics for animals in Zimbabwe

The misuse and overuse of antimicrobial drugs in human and veterinary practices has placed our future at risk by increasing the resistance of pathogens to antibiotics. This phenomenon is known as antimicrobial resistance (AMR). The World Organisation for Animal Health (WOAH) is a collaborator with the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), and the United Nations Environment Programme (UNEP) on a project in Zimbabwe making significant progress to reduce AMR in the livestock sector. The Zimbabwe Department of Veterinary Services (DVS) reported that 65% of cattle mortality in the country are attributed to Theileria Parva infection (Theileriosis), in addition to other tick-borne diseases (TBD). In order to simultaneously reduce cattle mortality and antibiotic use in the cattle production sector, an alternative solution is needed. Theileriosis vaccines are one such solution.

Infected tick vectors, *Rhipicephalus appendiculatus* also called brown ear tick, transmit the Theileriosis to domestic cattle during feeding. This tick species therefore provides a vital input to the production of vaccines against Theileriosis. In June 2022, Zimbabwe, with the support of the AMR Multi-Partner Trust Fund (AMR MPTF) collected reference tick nymphs from national parks to support the production of 100,000 doses of vaccines. The project aims to produce a viable vaccine by conducting vaccine trials among a target population of cattle through the end of 2022. An initial 20,000 doses have been produced and prioritised for distribution to disease hotspots and an additional 80,000



Personel using the dragging method to collect ticks at Chivero National Park @ DVS 2022

doses are planned for production in 2022. The impact of the vaccine on disease reduction will be measured and monitored over the next two years.

In addition, technical officers from Zimbabwe's Department of Veterinary Technical Services (DPTS) Parasitology Section received Theileria Immunofluorescence Antibody Test (IFAT) training in order to detect an animal's exposure to Theileria parasites and assess their response to the vaccine. The trainings, conducted in June 2022, further empower DPTS to carry out critical quality controls along the Theileriosis vaccine (BOLVAC) production chain. WOAH therefore is supporting every aspect of vaccine development and deployment from conducting laboratory and field trials using the new vaccine, supporting the registration of the vaccine with the Medicinal Control Authority, and training field staff

to implement mass vaccinations.

In summary, Theileriosis vaccine production is a major breakthrough and it means Zimbabwe can now produce vaccines against three out of the four major tick-borne diseases prevalent in the country. With this production capacity, the country is now ready to rollout its Integrated Ticks and Tick-Borne Disease Control Strategy (ITTBDCS).

This effort is just one component of a single project among ten active projects launched globally by the AMR MPTF to apply best practices and scale up joint action in the fight against antimicrobial resistance.

2.3

Aiming for Sustainable Development Goals Results

The Fund aims to achieve AMR indicators for SDG 3¹ on good health and well-being.

- SDG 3.d.2: Percentage of bloodstream infections due to selected antimicrobial-resistant organisms.
- SDG 3.d.3: Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis (where antibiotics will be disaggregated from the core set of data used in the metadata).

Although these indicators refer to human health, AMR is a multisectoral issue and progress in these goals depends on action in other sectors.

The Quadripartite guidance to UN country teams on inclusion of AMR in the Cooperation Framework is an essential and welcome enhancement to the Quadripartite's ability to catalyse country responses to AMR, including through the AMR MPTF, to help achieve the SDGs. Table 1 illustrates the links between AMR and achieving the SDGs.

¹ Target 3.d: Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

Table 1. Links between AMR and achievement of SDGs

CORE SDGs	HOW AMR IMPEDES PROGRESS ON THE SDG	HOW PROGRESS ON THE SDG HELPS TO ADDRESS AMR
1 NO POVERTY 	<ul style="list-style-type: none"> People living in poverty are more prone to infectious diseases, and resistant infections are more likely to spread in poor living conditions. The poor are less able to access effective treatment. Substandard care and partial treatment can drive infection. High costs of treatment and chronic infections will impoverish millions. An additional 28.3 million people could be pushed into extreme poverty by 2050 because of AMR, most of them living in LMIC. 	<ul style="list-style-type: none"> Financial and social protection strategies will allow poor people to access quality services and decrease the impact of AMR.
2 ZERO HUNGER 	<ul style="list-style-type: none"> AMR in animals increases costs of animal health, infections become untreatable, production decreases and working animals cannot carry out their tasks, affecting the livelihood of farmers and food security. Livestock production in low-income countries would decline the most, with a possible 11% loss by 2050 in the high-AMR impact scenario. 	<ul style="list-style-type: none"> Developing sustainable food production systems with less reliance on antimicrobials and with the phasing out of antibiotic use in livestock for growth promotion will be essential for long-term AMR control. Increased professional advice and vaccination of food animals can reduce the emergence and spread of drug-resistant infections.
3 GOOD HEALTH AND WELL-BEING 	<ul style="list-style-type: none"> Globally, drug-resistant diseases currently cause at least 700 000 deaths a year. AMR will increase treatment costs, making effective care unaffordable for many, and UHC unattainable. Emerging and increasing resistance to drugs to treat HIV, TB and malaria is one of the key barriers to eliminating these diseases. Multi-drug resistant TB alone is estimated to cause 230 000 deaths annually. Reducing child and infant mortality relies on effective antibiotics. Currently, 200 000 neonates die each year from drug-resistant infections, such as pneumonia or resistant bloodstream infections. 	<ul style="list-style-type: none"> Strategies to reduce the risks of AMR must be linked to improving care and ensuring access to effective care when needed. Central to addressing AMR is ensuring that health systems are accessible and have a trained workforce providing evidence-based high-quality care in a hygienic setting. Increased vaccine coverage reduces the incidence of disease from resistant pathogens and limits the need for antibiotics; in turn, this prevents the development of AMR. Falsified and poor-quality antibiotics contribute to AMR. Hence, improving access to high-quality antimicrobials and preventing falsified and substandard medicines reaching the market will help to reduce AMR. Reliance on out-of-pocket payment for health care correlates with AMR in LMIC.
6 CLEAN WATER AND SANITATION 	<ul style="list-style-type: none"> Globally, 1 in 4 health care facilities have no access to basic water services, 1 in 10 have no sanitation services available, 1 in 3 do not have adequate facilities to clean hands at the point of care, and 1 in 3 do not segregate waste safely. Lack of the availability of basic WASH services is greatest in least developed countries, where 50% of health care facilities lack access to water services and 60% have no sanitation services at all. Lack of access to adequate WASH services is giving rise to the spread of infectious diseases; in turn, this increases antibiotic use and thus drives the emergence and spread of AMR. 	<ul style="list-style-type: none"> Each year, hundreds of millions of cases of diarrhoea in humans are treated with antimicrobials. Universal access to WASH could reduce such cases by 60%. Improved WASH services are critical to reducing the spread of infection.
8 DECENT WORK AND ECONOMIC GROWTH 	<ul style="list-style-type: none"> By 2030, increased mortality and morbidity due to AMR and thus reduced labour supply could cause a decrease in the global economic output of 1–3%, with estimated losses as high as US\$ 3.4 trillion. 	

CORE SDGs	HOW AMR IMPEDES PROGRESS ON THE SDG	HOW PROGRESS ON THE SDG HELPS TO ADDRESS AMR
12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	<ul style="list-style-type: none"> Antimicrobial compounds and their metabolites can be found in the wastewaters from manufacturing sites for medicines and APIs. In extreme cases, antimicrobial compounds have been found in water downstream from manufacturing sites in concentrations higher than those found in the blood of patients taking medicines. 	<ul style="list-style-type: none"> Effective pollution controls on pharmaceutical production, health facilities and agricultural production will substantially decrease the risk of AMR emergence and spread in the environment.
17 PARTNERSHIPS FOR THE GOALS 	<ul style="list-style-type: none"> To effectively tackle AMR, collaboration and partnerships are needed across all relevant sectors (human, animal, plants and the environment) and at all levels (national, regional and global). 	<ul style="list-style-type: none"> Working in partnership means taking up the One Health approach to addressing AMR.

RELATED SDGs	5 GENDER EQUALITY 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	13 CLIMATE ACTION 	14 LIFE BELOW WATER 
<ul style="list-style-type: none"> AMR can lead to increasing inequalities within societies; also, certain groups may be particularly vulnerable to drug-resistant infections. These groups include women, children, migrants, refugees, people employed in certain sectors (e.g. agriculture or health care) and people living in poverty. Quality-assured local production of antimicrobials, vaccines and diagnostics can improve access to medical technologies and this is an important part of the strategy for some countries. Investment in R&D is vital for the development of vaccines, new antibiotics and diagnostics. 	<ul style="list-style-type: none"> AMR can lead to increasing inequalities within societies; also, certain groups may be particularly vulnerable to drug-resistant infections. These groups include women, children, migrants, refugees, people employed in certain sectors (e.g. agriculture or health care) and people living in poverty. 	<ul style="list-style-type: none"> AMR can lead to increasing inequalities within societies; also, certain groups may be particularly vulnerable to drug-resistant infections. These groups include women, children, migrants, refugees, people employed in certain sectors (e.g. agriculture or health care) and people living in poverty. 	<ul style="list-style-type: none"> Addressing overcrowding, poor WASH provision and the lack of regulation of basic services will decrease the risks of infections and hence the emergence and spread of AMR in cities. 	<ul style="list-style-type: none"> Global warming is resulting in changing patterns of disease and increased reliance on antimicrobials in non-immune populations. Taking action on climate change will decrease the likelihood of extreme weather events and the associated spread of resistance. 	<ul style="list-style-type: none"> If countries develop aquaculture, it is vital that this is done with appropriate regulation to ensure access to quality antimicrobial agents and to minimize the overuse and misuse of antimicrobials. 	

API: active pharmaceutical ingredient; HIV: human immunodeficiency virus; LMIC: low- and middle-income country; R&D: research and development; SDG: Sustainable Development Goal; TB: tuberculosis; UHC: universal health coverage; WASH: water, sanitation and hygiene.



The Steering Committee members convening at FAO HQ in Rome, Italy for the 9th Steering Committee session in March 2023. The changing of the Chair occurred between FAO (Keith Sumption) and WHO (Dr. Hanan Balkhy).

AMR MPTF Governance



3.1 Steering Committee

The Steering Committee that governs the Fund is composed of a senior level principal representative (or nominated alternate) from each of the Quadripartite Organizations, three to five representatives from Resource Partners, the Administrative Agent and the Secretariat as ex officio members. In 2022, the Steering Committee met twice in February and May. The main functions of the Steering Committee include programmatic oversight; appraisal and approval of projects; monitoring and reporting; and resource mobilization. The Steering Committee takes decisions by consensus and is chaired by one of the Quadripartite organizations on an annual rotational basis. The role of the Steering Committee Chair was passed from FAO to WHO during the 9th Steering Committee meeting at Rome Headquarters of FAO in March 2023.



3.2 AMR MPTF Secretariat Coordination

The core Fund Secretariat coordination functions include providing technical and management support to the Steering Committee and countries, ensuring the operational functioning of the Fund, engaging with Resource Partners and facilitating projects (from selection through concept note and proposal assessment to monitoring and reporting). The current Coordinator for the Fund was appointed in April 2022.

The Fund governance structure established consists of:

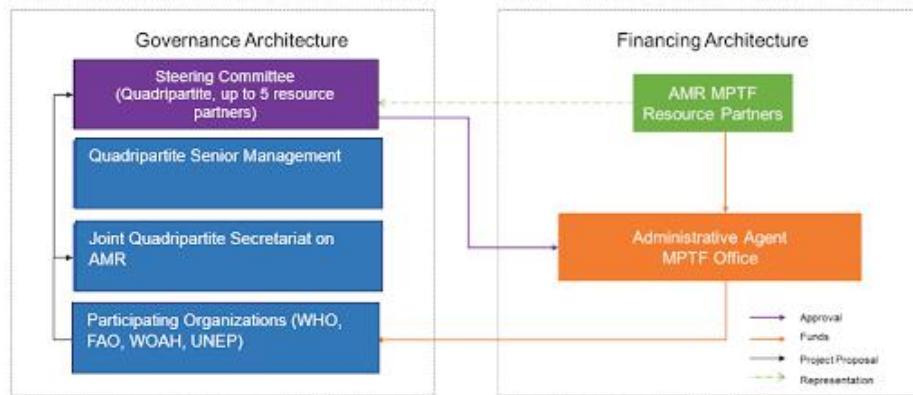
- The Steering Committee (decision-making body);
- The Secretariat (small unit hosted at the WHO which supports the Steering Committee and is responsible for the Fund's operational functioning);
- The Administrative Agent ("trustee" of the Fund, responsible for administering the contributions).

The governance arrangements for the Fund are based on standard governance arrangements for Pass-through Multi-Partner Trust Fund² and UNDG best practices. As

² Pass-through Multi-Partner Trust Funds (MPTFs) are mechanisms used by the UN to pool financial contributions from multiple donors and channel them through an intermediary organization, such as the UNDP, to implement projects that support specific development objectives. The intermediary organization is responsible for allocating funds and selecting implementing partners, while the implementing partners are responsible for project implementation and reporting on progress. Pass-through MPTFs promote donor coordination, capacity building, and efficient allocation of resources.

depicted in Figure 1, the governance arrangements provide for an efficient and effective decision-making and oversight framework, ensuring streamlined allocation processes and clear lines of accountability. These arrangements are built on and informed by the principles of inclusiveness, transparency, accountability, and consensus-based decisions. Throughout 2022, this structure, along with the established processes, methodologies and tools of the Fund, facilitated effective and efficient operations.

Figure 1. Fund Governance and Financing Architecture



Steering Committee Membership in 2022

Constituent	Members
Resource Partners	
The Netherlands	Rosa M. Peran i Sala, Senior Advisor, Ministry of Health, Welfare and Sport
Sweden	Mats Åberg, Department for International Organisations and Policy Support Vendela Romedahl, Programme Manager Health/SRHR
Germany	Daniel Eibach, Senior Policy Advisor, One Health BMZ, Ministry for Economic Cooperation and Development Nicola Watt, GIZ, Component Lead, International Collaboration Constanze Boenig, Global Programme Pandemic Prevention and Response, One Health GIZ
United Kingdom	Holly Rhyner-Jones, Head of the Fleming Fund Akinola Gandonu, Programme Officer
European Commission	Xavier Pavard, Policy Officer, European Commission, Directorate-General for International Partnership



Constituent	Members
Quadripartite	
WHO	Dr. Hanan Balkhy, Assistant Director General Dr. Haileyesus Getahun, Director, Global Coordination and Partnership, AMR Division
FAO	Keith Sumption, Chief Veterinary Officer, Animal Production and Health Division
WOAH	Montserrat Arroyo, Deputy Director General, International Standards and Science
UNEP	Monika MacDevette, Chief, Chemicals and Health Branch
AMR Multi-Partner Trust Fund	
AMR MPTF Secretariat	Mam Issa Mboob-Hunger, Coordinator, ex-officio
MPTF Office, UNDP	Jennifer Topping, Executive Director Olga Aleshina, Senior Portfolio Manager, ex-officio

3.3 MPTF Office Gateway/Fund Dashboard

The Multi-Partner Trust Fund Office (MPTF Office) of the United Nations Development Programme (UNDP) serves as the Administrative Agent of the Fund. The MPTF Office Gateway is a public website that provides real time financial information on the Fund as well as information on the Fund overall and all the approved programmes. The MPTF Office is responsible for a range of fund management services, including: (a) receipt, administration and management of contributions; (b) transfer of funds approved by the Steering Committee to Participating Organizations; (c) reporting on the source and use of contributions received; (d) synthesis and consolidation of the individual financial progress reports submitted by each Participating Organization for submission to contributors through the Steering Committee; and (e) ensuring transparency and accountability of AMR MPTF operations by making available a wide range of operational information on the [MPTF Office GATEWAY](#).



In May 2022, the Tajikistan Tripartite mission visited cattle and poultry farms to discuss the need for continued capacity building and awareness to promote rational use of antimicrobials in animal health and decreased use of antimicrobials for growth in farms.

AMR MPTF Progress and Achievements in 2022

4.1 Overview of Programme Implementation

In 2022, the Fund launched two new country programmes in Peru and Senegal, while the other eight country programmes and the global programme continued their implementation. Table 2 provides a summary of the programme start times. Each programme contributes to the AMR MPTF results matrix (Figure 2) and works towards three desired long-term impacts (>10 years), as well as specific outcomes and supporting outputs. The progress made towards the major outputs of the country and global programmes is summarized in Table 3, with more detailed and specific programme reports provided in Annex 3.

Table 2. Country Programme Launch 2022

JAN
Peru
Senegal

Country Programme Launch 2021

JAN	FEB	MAY	JUN	AUG
Cambodia	Global	Ethiopia	Ghana	Tajikistan
Indonesia		Zimbabwe		
Morocco				
Kenya				

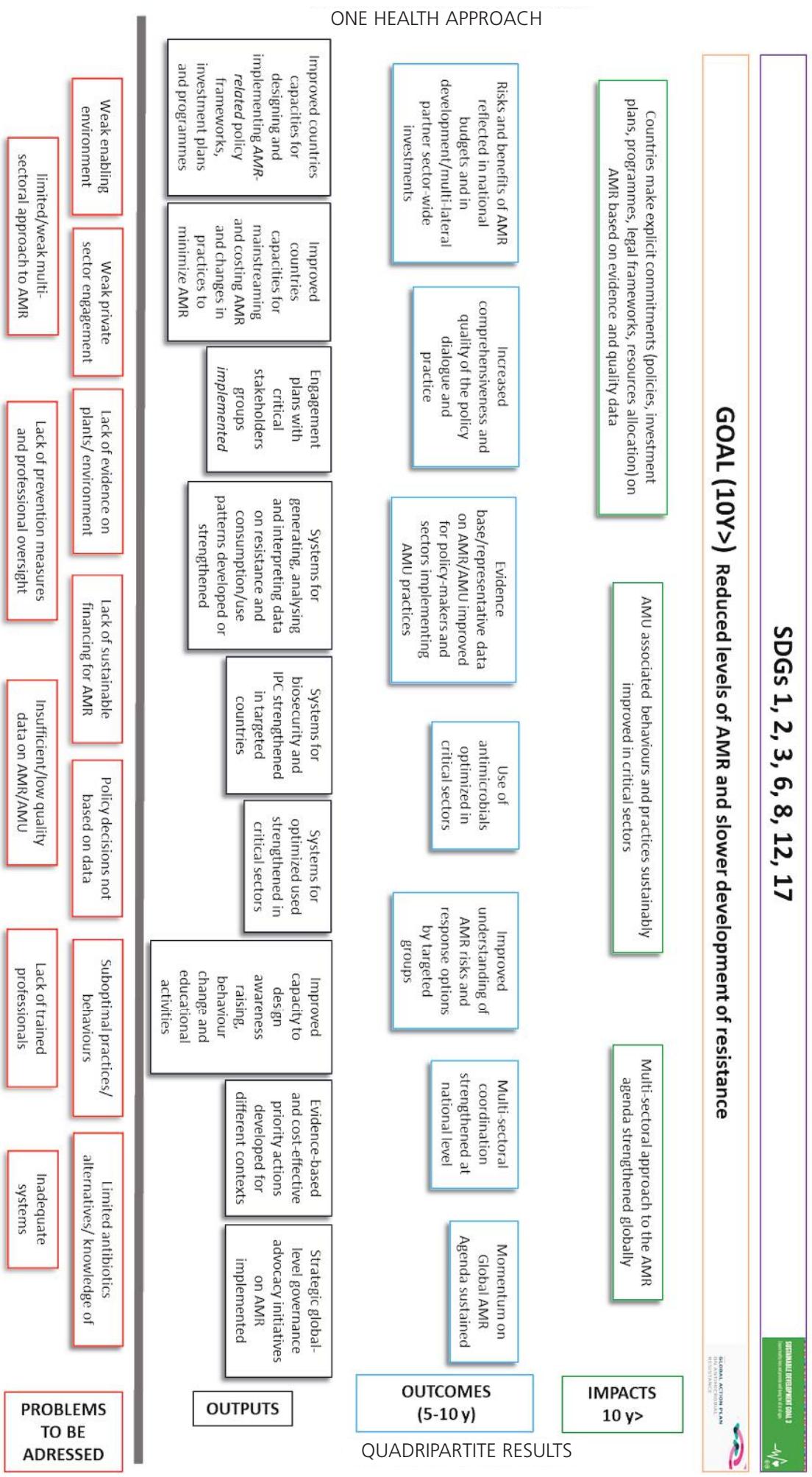


Figure 2. Results matrix for the AMR MPTF

Table 3. Country and Global Programmes Contributing to Specific AMR MPTF Outputs

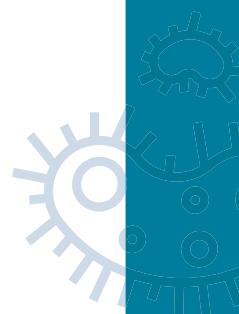
OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Improved capacities for designing and implementing AMR-related policy frameworks, investments plans and programmes	■	■	■			■	■		■		■
Improved capacities for mainstreaming and costing AMR as well as changes in practices to minimize AMR			■								
Engagement plans with stakeholder groups implemented			■	■							■
Systems for generating, analysing and interpreting data on AMR, AMU/AMC patterns developed or strengthened		■	■			■	■	■	■		■
Systems for biosecurity and IPC strengthened		■	■	■	■	■		■	■	■	
System for optimized use of antimicrobials strengthened in critical human/animal sectors	■	■	■	■	■		■	■	■	■	
Improved capacity to design awareness-raising, behaviour change and educational activities	■		■		■	■	■		■	■	
Evidence-based, cost-effective priority actions developed for different contexts											■
Strategic global-level governance advocacy initiatives on AMR implemented											■

AMC: antimicrobial consumption; AMR: antimicrobial resistance; AMU: antimicrobial use; IPC: infection prevention and control; MPTF: Multi-Partner Trust Fund.

Improved AMR-related policy frameworks, investments plans and programmes

Fighting AMR is crucial for ensuring the effectiveness of antibiotics and preventing the emergence of superbugs that could cause widespread infections. To combat AMR, it is essential to have improved policy frameworks, investment plans, and programmes that focus on strengthening surveillance and monitoring systems. In addition, it is critical to promote the appropriate use of antibiotics, increasing research and development for new antibiotics, and enhancing infection prevention and control measures. Such initiatives require coordinated efforts from multiple stakeholders, including governments, international organizations, healthcare providers, pharmaceutical companies, and the public. Without strong policy frameworks, investments, and programmes, the fight against AMR will be difficult to win, and the consequences could be devastating for public health and the economy.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Improved capacities for designing and	■	■	■			■	■		■		■
Improved capacities for designing and implementing AMR-related policy frameworks, investments plans and programmes	■	■	■			■	■		■		■



Let's Discuss Success!

The Use of Accessible Guidelines for the Prudent Use of Antimicrobials in Agriculture and Animal Health in Peru

Peru is characterized by the production and consumption of non-traditional species such as guinea pigs and South American camelids, such as alpacas. These animal species are of great importance in Peru and are usually not specifically considered in international guides and guidelines for the responsible and prudent use of antimicrobials.

There are no accessible guidelines or guides for the responsible and prudent use of antimicrobials in the field of animal health and agriculture, adequate to the reality and production systems in use in Peru.

To tackle the challenge of antimicrobial resistance (AMR), Peru utilized the AMR Multi-Partner Trust Fund to assemble a multidisciplinary team of health and animal production specialists. The team achieved a high level of internal coordination, as well as effective communication and collaboration with the productive, academic, and governmental sectors. The team conducted extensive research on the common practices in the use of antimicrobials in animal production for the prioritized animal species and crops. To achieve this, they conducted meetings with the different sectors involved to prepare guidelines that reflected the local reality. The team also



organized workshops and meetings to present their findings and progress on the guidelines ensuring the engagement of diverse sectors that participated in its development.

As a result, visibility was increased and representatives of the animal production, agricultural and veterinary pharmaceutical industries, as well as academia and the official sector, were involved in the topic of responsible and prudent use of antimicrobials. This was reflected in active participation in the preparation of the guidelines and in the workshops to present the guide. It was observed that in the plant production sector, there have not yet been actions regarding the responsible and prudent use of antimicrobials, which was a first approximation to the problem. The interest of the different sectors consulted in the elaboration of the guide was increased, and their potential involvement in reaching agreements for its implementation.

As a result, the visibility of the issue of responsible and prudent use of antimicrobials increased, and representatives from various industries, in-

cluding animal production, agriculture, veterinary pharmaceuticals, academia, and the official sector, became involved. This was reflected in their active participation in the development of the guidelines and in the workshops that were held to present the guide.

During the research, it was noted that there had not yet been any actions taken regarding the responsible and prudent use of antimicrobials in the plant production sector, making this study the first step towards addressing the problem. The commitment of the different sectors consulted in the elaboration of the guidelines to making a difference in the fight against AMR was clearly strengthened.

Peru is an excellent example of an innovative approach that was used in developing a unified set of guidelines under the concept of "One Health". The guide successfully integrates the production of terrestrial animals, aquatic animals, agriculture, and environmental care as a relevant and cross-cutting theme across all these areas.

Country Programmes

Cambodia: In 2022, the Fund remained focused on combating AMR and provided opportunities to sustain political momentum. For instance, a national multisectoral workshop was held in Cambodia to assess the progress, challenges, lessons learned, and way forward for the Multi-Sectoral Action Plan on AMR, along with the Fund project implementation. The workshop brought together representatives from the human, animal, and environmental health sectors, the Quadripartite organizations, and other development partners.

Ghana: At a functional level, similar activities were carried out in Ghana, where the Fund supported the convening of quarterly AMR platform meetings, including core technical working group meetings.

These meetings provided strategic direction for the implementation of AMR activities in the country and discussed AMR-related issues such as findings on the implementation of AMR NAP, Fund activity implementation, and updates on ongoing AMR activities in the country.

Peru: The Fund's Legal Analysis tool was applied under the One Health approach of the Quadripartite to analyse seven regulatory chapters on governance, human health, food safety, veterinary legislation, pesticides, plant health, and the environment. The Fund's Legal Tool project brought together various stakeholders from different government ministries to raise awareness of the importance of governance, legislation, and regulations in addressing AMR. The tool was developed through extensive review and consultation, and it comprises information and assessment questions derived from international standards across multiple sectors.

Global Programmes

The Fund's Legal Analysis Tool project is an important component of the global programme to combat AMR. The tool expands upon the FAO Methodology to analyse AMR-relevant legislation in the food and agriculture sector and integrates health sector assessments derived from a range of WHO standards, including the Global Benchmarking Tool. Ultimately, the tool is paving the way for the implementation of international norms and standards for AMR across the One Health AMR Quadripartite organizations and sectors at the regional and country levels.

The AMR-NAPs of nearly all countries cover human and animal health and livestock, but the inclusion of the environment varies. The global programme's environment team worked with countries to better understand their environmental status and priorities.

To ensure that quality data is collected, the Tracking AMR Country Self-Assessment Survey (TrACSS) is used at the country level by the Ministries and the Multisectoral AMR Committee for policy changes or for prioritizing action. Leveraging on this data, comprehensive country reports were developed and published by the Quadripartite. These reports provide a snapshot of AMR NAP implementation across all sectors in 2022 and trends over the past six years across various indicators. The reports are available for all 166 countries in English, French, and Spanish.

Improved capacities for mainstreaming and costing AMR as well as changes in practices to minimize AMR

Mainstreaming AMR refers to the integration of AMR control measures into existing healthcare systems (both human and animal) and policies. This involves creating guidelines for the appropriate use of antimicrobial agents and promoting the development of alternative therapies to reduce the reliance on antibiotics. Costing AMR involves assessing the economic impact of AMR on healthcare systems and societies. This includes estimating the cost of treating AMR infections, the cost of developing new antimicrobial agents, and the indirect costs of lost productivity and increased mortality. By understanding the economic burden of AMR, policymakers can make informed decisions about allocating resources to combat the issue.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Improved capacities for mainstreaming and costing AMR as well as changes in practices to minimize AMR											

Country Programmes

Ghana: Finalisation and publishing of AMR NAP mainstreaming guidelines for Ministry Departments and Organizations took place. In addition, conduction of in-depth assessments of barriers to inform the effective mainstreaming and implementation of AMR NAP activities in relevant sectors also occurred.

Engagement plans with critical stakeholder groups implemented

Engagement plans with critical stakeholder groups are crucial in combating AMR. These stakeholders can include healthcare professionals, veterinarians, policymakers, patients, the private sector, civil society and the public. By raising awareness and promoting understanding of the challenges relating to AMR, stakeholders can work together to implement strategies that minimize the spread of AMR.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Engagement plans with stakeholder groups implemented			■	■							■

Country Programmes

Ghana: Significant progress was made in the implementation of stakeholder engagement plans in 2022, following the easing of Covid-19 restrictions. In Ghana, a milestone was achieved with the training of focal persons from 14 high-volume private health facilities in Accra on infection prevention and control (IPC), water, sanitation, and hygiene (WASH), and AMR. This training, which was the first of its kind for members of the Association of Private Medical Practitioners, generated intense interest and prompted the development of proposals to scale up the programme to other regions in the country.

Indonesia: A communication and advocacy strategy was developed to engage key stakeholders, including farmers, veterinarians, pharmaceutical manufacturers, civil society, and academia. This strategy facilitated stronger collaboration with the private sector, resulting in the signing of a joint statement by the public and private sectors to mitigate AMR. Additionally, the FAO Emergency Centre for Transboundary Animal Diseases (ECTAD) worked with the Ministry of Agriculture-Directorate General of Livestock and Animal Health Service (MoA-DGLAHS) to organize a series of meetings in 2022 to improve the public-private partnership (PPP) programme for national fresh milk quality improvement. The programme focused on increasing awareness and capacity-building programmes related to AMS and conducting a needs assessment of dairy cattle stakeholders to strengthen AMS in the private sector.

Systems to generate, analyse and interpret data on AMR, AMU/AMC developed or strengthened

One of the major reasons why AMR is still neglected is the scarcity of reliable and robust data to inform policies and track progress (including the lack of gender-disaggregated data that would enable a more nuanced understanding of AMR's impact on different population groups). Strengthening systems to generate, analyse and interpret data on AMR and AMU/AMC is essential for effectively preventing and controlling the spread of antimicrobial resistance. By identifying emerging threats, monitoring progress, improving decision-making, enhancing surveillance, and guiding resource allocation, data systems play a critical role in ensuring that antimicrobial drugs remain effective for years to come.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Systems for generating, analysing and interpreting data on AMR, AMU/AMC patterns developed or strengthened		■	■			■	■	■	■		■

Country Programmes

Ethiopia: An innovative tool for capturing and compiling AMR data was developed and field-tested for use. Moreover, 40 laboratories received practical and theoretical capacity development training on AST and AMR surveillance. Finally, microbiology lab supplies were procured and donated to the Ethiopian Public Health Institute for distribution to the National AMR Surveillance sites.

Establishment of A High-Level Inter-Ministerial Coordination Committee for One Health In Cambodia

In Cambodia, the AMR-MPTF project original support to strengthen the coordination and monitoring of the Multi-Sectoral Action Plan (MSAP) on AMR (2019-2023) has inspired the establishment of a high-level inter-ministerial coordination committee for One Health (IMCC-OH).

In August 2022, the Government of Cambodia, in partnership with the FAO, WOAH, and WHO, organized a multisectoral consultative workshop with key government stakeholders and development partners across the One Health spectrum to provide an opportunity to the human, animal, and environment health sectors to review their current collaboration gaps in key technical areas (zoonotic diseases, antimicrobial resistance, and food safety threats). These are the three major phenomena which “One Health” aims at preventing and developing joint measures and strategic investments to improve the work.

The workshop adopted the Quadripartite One

Health Joint Plan of Action (OH-JPA) as a guide that Cambodia could follow to identify practical next steps and activities in the way of developing and implementing its One Health National Joint Plan to strengthen collaboration and coordination. Considering the results obtained from the interactive sessions, participants agreed that there was a need to establish a national high-level One Health coordination platform.

The original draft terms of reference (ToRs) for the IMCC-AMR have been revised to create an operational coordination mechanism. This mechanism, known as the Multi-Sectoral AMR Technical Working Group (MS-AMR-TWG), will be housed under the IMCC-OH. The MS-AMR-TWG is currently awaiting final approval after collecting inputs to shape its foundation in a multi-sectoral consultative workshop that is set to be organized in Q1 of 2023. The Fund will continue to provide technical expertise on coordination, antimicrobial stewardship, and effective communication strategies to encourage the initiation and functioning of this multi-sectoral coordination mechanism.



Image credit: One health joint action plan for the future of Cambodia: aligning human, animal, and environmental health, 09-08 August 2022, Sokha Hotel, Phenom Pena, Cambodia

Ghana: A monitoring mechanism for the use of antimicrobials in terrestrial animals, fisheries, and plant health was established. To achieve this, a well-defined process was followed, including a workshop to identify and review tools for on-farm AMU data collection. From this, suitable templates were developed, validated, and migrated into a mobile application, which was pretested and is now in use for data collection from a range of sources, including poultry, piggery, aquaculture, hatcheries, and veterinary clinics. Prior to the rollout of the mobile application, a series of training sessions were conducted for farmers and veterinary officers from seven regions involved in the pilot. An end-of-year assessment was carried out to evaluate the in-coming data and overall, Ghana’s system for generating, analysing, and interpreting on-farm AMU data was strengthened.

Global Programmes

As part of the global programme, the TISSA (Tripartite Integrated System for Surveillance on Antimicrobial Resistance and Use) IT platform aims to provide official and

validated data on patterns and trends in AMU and AMR in humans, animals, food, plants, and the environment. This data is provided by countries to FAO, WOAH, and WHO. The platform is designed to offer user-friendly access to this data on a global and regional basis.

The development of the TISSA data platform has reached an advanced stage with the successful initial testing of the interface for data upload. The launch of TISSA has been delayed allowing organizations to secure data from their members and finalize the testing of safe data sharing through the platform. Despite making tremendous progress, the project has encountered challenges in harmonizing data due to the different rules governing each organization's data management system.

Systems for biosecurity and IPC strengthened in critical sectors

Strengthening systems for biosecurity and infection prevention and control (IPC) in critical sectors is essential to combat AMR. By implementing effective biosecurity and IPC measures, the spread of infectious diseases can be reduced, which in turn can help to reduce the use of antibiotics, a major driver of AMR. Improved hygiene, appropriate use of personal protective equipment, and regular monitoring and surveillance are some measures that can be implemented to reduce the spread of infectious diseases and the need for antibiotics, helping to protect public health and ensure that antibiotics remain effective in the future.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Systems for biosecurity and IPC strengthened		■	■	■	■	■		■	■	■	

Country Programmes

In 2022, countries have advanced on strengthening their systems for biosecurity and IPC. This area of work is dominated by institutional assessments and the development and implementation of locally appropriate guidelines (adapted from global tools).

Indonesia: IPC-WASH and Antimicrobial Stewardship (AMS) assessments were conducted in four districts in Central Java and East Java Province. The human health sector focused on hospitals and primary health center (Puskesmas) while the animal health sector focused on poultry farms and animal health facilities (Puskeswan). The assessment targeted 33 Puskesmas, 18 hospitals, 160 poultry farms and eight Puskeswan. The IPC-WASH assessment showed that 94% of the hospitals in all districts have an "advanced" level of IPC-WASH implementation, 58% of the Puskesmas an "intermediate" level, and none of the healthcare facilities (HCF) scored an "inadequate" or "basic" level of implementation. Meanwhile, findings in the animal health sector showed that on average the poultry farms have scored 67 of 100 in the implementation of IPC-WASH measures.

Kenya: Following the baseline assessments carried out in 2021, six county health facilities were trained in IPC as well as in antimicrobial stewardship. The health facility managements developed workplans to address these gaps and in 2022, the six county health facilities were trained on IPC. The goal of the training was to increase understanding of IPC by health workers and promote practice of evidence- based IPC practices that will protect patients, clients, and health care workers from health care- associated infections (HAIs). It focused on issues on the chain of infection and how to break the chain, standard precautions that must be observed by all health workers, prevention and management of healthcare associated infections, occupational safety and health, and carrying out health facility audits. In total, 121 health workers were trained on IPC during the year 2022. Of these, 59 were female health workers.

Zimbabwe: Vaccination is included under the biosecurity and IPC banner. In Zimbabwe, the project seeks to promote use of vaccines as an alternative to the irrational use of antibiotics for Theileriosis in cattle and Typhoid in humans. The Theileriosis (BOL-VAC) vaccine was manufactured in batches of 20,000 doses in August 2022, followed by 92,000 doses in December 2022. This production represents a successful breakthrough after years of hard work. The Theileriosis (BOLVAC) pilot vaccination was officially launched in December 2022 in Makoni District, Manicaland Province, Zimbabwe. Following successful quality and efficacy tests, which were conducted at the Central Veterinary Laboratory, this pilot field vaccination will enable assessment of the performance of the vaccine under field conditions and its impact in reducing the occurrence of Theileriosis and cattle deaths. Vaccination will begin in the rest of Zimbabwe's high-risk areas once the pilot vaccination activities are completed. The vaccine is expected to provide vaccinated cattle with lifelong immunity.

Lastly, the Fund's support has also enabled Zimbabwe to upscale the Farmer Field School programme in 2022, which was and remains supported primarily by the Fleming Fund. Farmer Field Schools are used to promote adoption of good animal husbandry practices to improve biosecurity and hygiene standards in the broiler value chain as a tool for disease prevention and control.

System for optimized use of antimicrobials strengthened in critical human and animal sectors

To effectively combat AMR, systems for optimized use of antimicrobials must be strengthened in critical human and animal sectors. These systems can help ensure that antimicrobials are used appropriately, only when necessary, and in a way that maximizes their effectiveness while minimizing the development and spread of AMR. By implementing optimized use of antimicrobials, we can help preserve the effectiveness of existing antibiotics and other antimicrobial drugs and ensure that they remain effective for future generations.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
System for optimized use of antimicrobials strengthened in critical human/animal sectors											

Country Programmes

The year 2022 witnessed significant progress in strengthening systems for optimized use of antimicrobials in many countries.

Kenya: Impressive steps to combat AMR have been taken by issuing legal notices prohibiting the use of antimicrobials for growth promotion and critically important antimicrobials without prior risk analysis. Moreover, the country developed guidelines on the prudent use of antimicrobials in dairy, poultry, and pig production and disseminated them to 29 county veterinarians and 30 veterinary paraprofessionals. These efforts highlight Kenya's commitment to promoting responsible use of antimicrobials and serve as a model for other countries seeking to tackle the growing threat of AMR.

Ethiopia: Significant strides have been made towards addressing the issue of AMR by providing training on integrated AMS and Healthcare-Associated Infections (HAI) to multidisciplinary teams in seven hospitals. In addition, guidelines have been developed to



ensure safe and quality production of primary animal source food and control of AMR. Furthermore, advocacy and awareness campaigns have been launched to educate the public on responsible antimicrobial use and the consequences of AMR. These initiatives demonstrate Ethiopia's commitment to promoting optimal use of antimicrobials and preventing the emergence and spread of AMR in both human and animal health sectors.

Cambodia: The primary focus of this output is the execution of antimicrobial stewardship programmes. In Cambodia, the programme has been introduced to more healthcare facilities. The national AMS policy has also been revised, and both the policy and national guidelines on AMC monitoring have been translated into Khmer. Additionally, in 2022, literature reviews on AMR and AMU in animal health were conducted, followed by an expert meeting. A consultation workshop that involved stakeholders in the AMR and AMU fields was organized to gain more perspectives and deliberate on the key recommendations and findings to aid guideline development.

Ghana: Training programmes and materials for veterinary personnel on responsible antibiotic use in both terrestrial animals and aquaculture were developed. A comprehensive strategy and proposal were formulated and submitted to WOAH awaiting funding for implementation.

Senegal: The National One Health Platform, Ministry of Health (MOH), Ministry of Labour (MOL), Ministry of Environment (MOE), FAO, WOAH, and WHO co-hosted several national and regional events during World Antimicrobial Awareness Week (WAAW) 2022. The events centred around the global theme "Preventing antimicrobial resistance together in Africa" and provided a platform for advocacy on AMR to policy makers from national and regional governments, academia, private sector, research, NGOs, and media. The events received extensive coverage on national mainstream media platforms, including newspapers, television, and social media.

Improved capacity to design awareness-raising, behaviour change and educational activities

Improved capacity to design effective awareness-raising, behaviour change, and educational activities is crucial to combat AMR. Such efforts should target different audiences, including healthcare providers, farmers, veterinarians, and the public. It is essential to raise awareness about the misuse and overuse of antibiotics, as well as the importance of hygiene and infection prevention measures. Education and behaviour change campaigns can help to reduce inappropriate antibiotic use, promote responsible use of antibiotics, and prevent the spread of antibiotic-resistant infections.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Improved capacity to design awareness-raising, behaviour change and educational activities											

Country Programmes

In 2022, much of the work on awareness raising revolved around WAAW.

Cambodia: Two videos were released on AMR focusing on the responsible and prudent use of antibiotics in poultry and fish farms in Cambodia (in Khmer and English subtitles). Also released were 10 leaflets and posters targeting audiences across the spectrum of the AMU supply chain from policy makers to end users of antimicrobials. Cambodia's National AMR Communication Strategy, currently in its second draft, was developed with inputs from key stakeholders from the government and the Tripartite.

Ghana: In Ghana, churches, mosques, schools and the public were educated during WAAW.

Peru: Peru's AMR Awareness and Advocacy Strategy, designed under the One Health approach, prioritized the poultry sector due to its importance in the country's food security and its inclusion in the AMR integrated surveillance pilot plan. The final document is expected to be released in Q2 of 2023.

Zimbabwe: Zimbabwe identified KAP (knowledge, attitudes and practice) studies and invited proposals from universities to partner with them to generate KAP data. These efforts signify a growing commitment to addressing AMR and promoting the responsible use of antibiotics across the globe.

Evidence-based and cost-effective priority actions developed for different contexts

To effectively combat the growing threat of AMR, a coordinated and evidence-based approach is necessary. This approach should prioritize cost-effective interventions that have been developed for different contexts, such as hospitals, communities, and livestock farms. By using evidence-based strategies, resources can be used efficiently, and interventions can be tailored to specific populations. This can help overcome challenges such as the widespread use of antibiotics in agriculture and animal husbandry. Additionally, prioritizing cost-effective interventions can ensure that resources are available to support the implementation of interventions in low- and middle-income countries where the burden of AMR is often highest.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Evidence-based and cost-effective priority actions developed for different contexts											■

Global Programme

The main objective of this output is to sustain the momentum of the global AMR agenda, which falls primarily under the responsibility of the global programme. The TISSA team is dedicated to providing data to inform the global response. They have defined the AMR and AMU data models and data harmonization points within the system, as well as data specifications for displaying all surveillance programmes on the system. The Fund has enabled FAO and WOAH to strengthen their M&E teams and support data quality assessment in TrACSS, as well as offer suggestions for enhancing the use of TrACSS data and the data collection process.

Strategic global-level governance advocacy initiatives on AMR implemented

Strategic global-level governance advocacy initiatives on AMR are necessary to promote responsible use of antimicrobial drugs, strengthen surveillance and monitoring systems, and support research and development efforts. These initiatives can help to prevent the spread of AMR, ensure effective treatments are available, and ultimately save lives. It is important to increase public awareness of the risks associated with AMR and to invest in research and development efforts that focus on the development of new antimicrobial drugs and alternative treatments.

OUTPUTS	CAM	ETH	GHA	INO	KEN	MOR	PERU	SEN	TAJ	ZIM	GLOBAL
Strategic global-level governance advocacy initiatives on AMR implemented											

Global Programme

Addressing AMR and the environment poses a significant challenge. Biological and chemical pollutants from untreated human, animal, agricultural and industrial waste affect the development, transmission and spread of AMR. This requires concerted action such as enhancing environmental governance and regulation, targeting priority AMR relevant pollutants, improving surveillance and monitoring and prioritising innovation, capacity development and financing on a broad scale.

Consequently, clarity on how organizations can best fulfil their mandates and build capacity in a coordinated manner, while ensuring that internal and external stakeholders have a common understanding, is key to efficiently delivering as one across the UN system. Via the Fund, the Quadripartite have used a participatory process to develop a strategy and action plan that sets out their respective roles and the comparative advantage of inter-organizational cooperation on the environmental dimensions of AMR. The “inter-organization cooperation on environmental dimensions of AMR” was sent to each organization at HQ and the AMR MPTF Environment Steering Committee for review and adoption.

The Quadripartite used the TrACSS 2022 data (including gender-disaggregated data where available) to develop sector-specific priorities and areas for additional action, as well as areas for multisectoral action. These key messages were then included in the 166 country reports that have been shared with countries. This guidance can help countries in identifying and prioritizing actions at the country level to address AMR. Additionally, both FAO and WOAH have recruited an M&E Expert using the MPTF grant to support the core M&E functions of the Quadripartite. The M&E focal points within the Quadripartite jointly deliver this support by collaborating with the regional offices and providing technical support to national counterparts to establish multisectoral M&E working groups in countries, to build national M&E capacity.

4.2

The Optimization of the AMR MPTF

The year 2022 was a momentous year for the Fund as it made significant strides in achieving its objectives. Ten countries, namely Morocco, Kenya, Zimbabwe, Ghana, Senegal, Ethiopia, Cambodia, Indonesia, Peru, and Tajikistan, have been successfully implementing their projects since late 2020. In addition, four new countries, including Bangladesh, Mongolia, Tunisia, and Madagascar submitted their country proposals for evaluation and approval. The ongoing components of the Global Programme have also yielded impressive and tangible results, further underscoring the Fund’s commitment to addressing the growing threat of AMR.

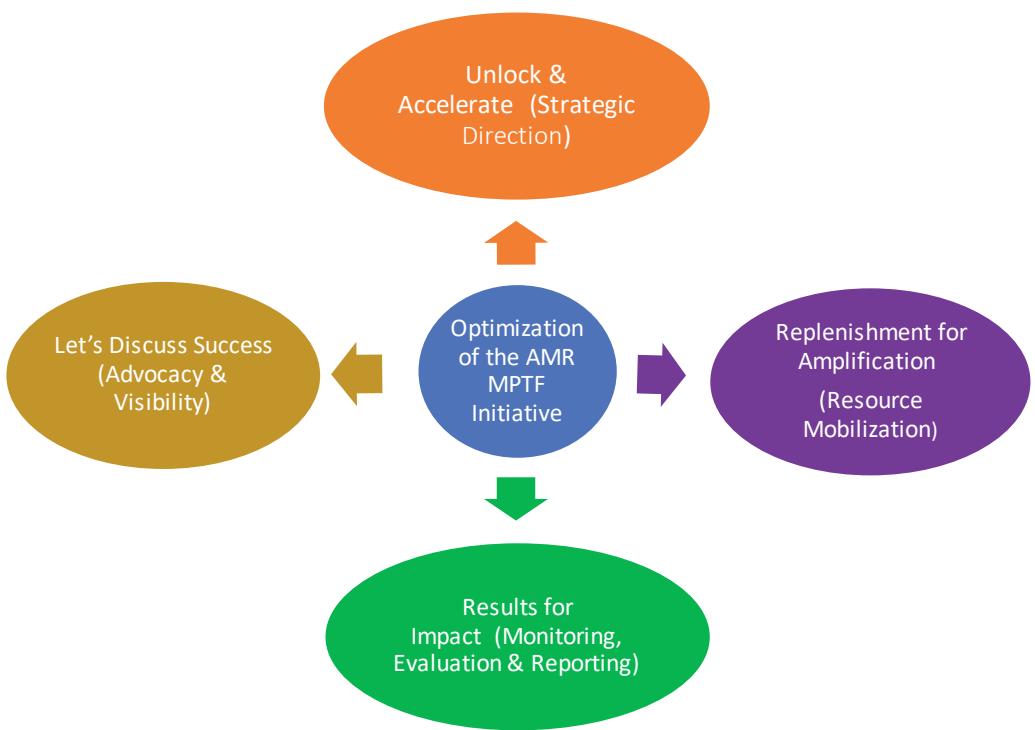
The remarkable expansion of the project raised fundamental questions regarding the strategic direction of the Fund, its long-term sustainability, the transition of countries from the AMR MPTF programme, and ways to bolster the Fund’s operational capacity.

To address these questions, the Secretariat launched the AMR MPTF Optimization Initiative to improve the effectiveness of the Fund by assessing its progress, identifying challenges and opportunities, streamlining processes, and implementing necessary tools and interventions. The initiative is comprised of four workstreams, including Unlock & Accelerate, which aims to eliminate bottlenecks and accelerate the Fund’s success; Replication for Amplification, which intends to intensify resource mobilization efforts through a joint Resource Mobilization Strategy and Action Plan targeting US\$20M over

the next five years; Let's Discuss Success, which aims to disseminate success stories to garner public and donor support and promote the visibility of the Fund; and Results for Impact, which focuses on demonstrating results to reinforce resource partner confidence and secure increased levels of investment (Figure 3).

OPTIMIZATION OF THE AMR MULTI-PARTNER TRUST FUND: STRENGTHENING AND SCALING UP FOR SUCCESS

Figure 3.



As part of the AMR MPTF Optimization Initiative, the Secretariat called for an independent strategic review of the Fund. The review provided specific recommendations on how to maximize the efficiency, effectiveness, and impact of the Fund, including identifying options for its future evolution based on a realistically resourced programme management model. The review highlighted key areas of progress, main challenges and suggested strategic directions for the future. The report recognized the limitation posed by the short duration of support to countries to have demonstrable impact. Notable among the recommendations include, focus on country rather than global projects particularly in countries with higher burden or antimicrobial use to better demonstrate impact, reviewing the funding proposal application process aiming at simplification, strengthening competitive approach, addressing priorities as well as fine-tuning the governance structure of the Fund in general.



Overview of the Financial Situation

The Fund remains highly visible and enjoys global recognition as a vital tool in driving the expansion of AMR-NAPs, particularly in Low- and Middle-Income countries. Up until 2022, the Fund has been generously supported by the United Kingdom of Great Britain and Northern Ireland (via the Fleming Fund), Germany, Netherlands, Sweden (Figure 4). In 2022, the Fund experienced growth, thanks to the addition of more country and global programmes, as well supplementary contributions from Sweden and the European Union Commission Directorate-General for Health and Food Safety (DG SANTE). Sweden committed the equivalent of 20 million SEK (USD 2,296,211), while the European Union's DG SANTE contributed EUR 500,000 (USD 540,000) as well as funds to support the AMR Partnership Platform. By the end of 2022, the Fund had amassed over USD 19 million.

Figure 4.

Contributors	Commitments	Gross Deposits	Earmarked	Earmarked Un-Earmarked	Total Net Deposits	Deposit Rate
European Union	533,049.04	266,225.00	-	263,562.75	263,562.75	50.00
Goverment of Germany	3,412,083.00	3,412,083.00	-	3,377,962.17	3,377,962.17	100.00
Goverment of Netherlands	4,979,455.00	4,979,455.00	3,943,728.36	985,932.09	4,929,660.45	100.00
Goverment Offices of Sweden	2,086,147.46	2,086,147.46	-	2,065,285.99	2,065,285.99	100.00
Sida	7,987,951.54	1,099,317.79	-	1,088,324.61	1,088,324.61	13.76
Department of Health and Social Care	7,666,704.00	7,666,704.00	5,238,189.00	2,351,847.96	2,590,036.96	100.00
Grand Total	26,665,390.04	19,509,932.25	9,181,917.36	10,132,915.57	19,314,832.93	73.17

Preventing Antimicrobial Resistance In Private Health Facilities In Ghana.

Infection Prevention and Control and Water Sanitation & Hygiene (IPC/WASH) is the basis for quality health care delivery as it is crucial in preventing the transmission of infectious organisms.

In Ghana, formal IPC/WASH interventions have for many years been restricted to only government supported health facilities, leaving behind private health facilities. As a result, most private health facilities were left to do 'what makes business sense'. This led to a culture of over prescription of antimicrobials, use of antimicrobials as a quick fix for instances where proper WASH and IPC interventions are required, and lack of investment in antimicrobial stewardship programmes particularly in the private health sector.

In the spirit of leaving no health care facility behind in the fight against AMR, the Ghana AMR



MPTF project is strengthening the capacity of private health care facilities to institute mechanisms to promote, track progress and commitments of IPC/WASH interventions in high patient volume private health facilities in Ghana.

"One of the challenges with the fight against AMR is the weak private sector engagement. This AMR MPTF intervention opens huge doors of opportunities to address this challenge." - Dr George Hedidor, Technical Officer AMR SORT IT.

A total of 30 staff (comprising 25 females and 5 males) with responsibility for infection control and patient safety from 13 high volume private medical facilities in Accra have benefited from this capacity building exercise.

"We are not boasting, but our facility has implemented a lot of interventions after the training to improve IPC/WASH ...", beneficiary of training, Gertrude Baiden, DDNS.

This intervention had the impact of preventing health care associated infection and a reduction in needless uses of antimicrobial among the average 2,356 patients visiting each selected facilities per month. All participants were added to IPC/WASH community of practice for continuous learning and benchmarking.

Most IPC/WASH events end with a resolution; however, this started with a deep-seated hun-

Let's Discuss Success!

"This training could not have come at a better time.... In private hospitals, you know we prescribe antimicrobials as part of customer care? So, these engagements are very crucial to the goal of reduced levels of AMR and slower development of resistance" he further noted. "This training is important; we have been advocating for the inclusion of private health practitioners in these trainings for a very long time. We are looking for more of these collaborations". - Executive Secretary of Private Health Sector Alliance of Ghana, DR. Nii Nortey Hanson-Nortey

ger to change and adopt IPC/WASH practices aimed at supporting the fight against AMR. This first ever AMR IPC/WASH intervention in private health facilities in Ghana, opens a huge door of opportunity for private sector engagement to reduce levels of AMR and slow the development of resistance.

In terms of ongoing advocacy and resource mobilization, the year 2022 saw:

Development of a Five-Year Resource Mobilization Strategy and Action Plan.

The overarching goal of the Fund's resource mobilization strategy is to mobilize up to USD 20 million over the next five years to extend support to a feasible number of low - and middle - income countries and global programmes based on a set of criteria. This would include resourcing from a diverse set of partners with the objective that they make significant, more predictable, timely and sustainable contributions to ensure that the Fund can respond to AMR in an effective, efficient, and timely manner.

Launch of the Let's Discuss Success Initiative.

This initiative seeks to intensify communication with the goal to strengthen advocacy and to expand on resource mobilization. The Let's Discuss Initiative harvests success stories, garners public and donor support and promotes the visibility of the AMR MPTF. Additionally, it has also successfully demonstrated the strategic priority of catalysing collaborative work among the Quadripartite at all levels (country, regional and global) alongside national governments and other relevant stakeholders to support One Health action on AMR.

Strengthening of the political visibility of the Fund.

Efforts have been made to strengthen the political visibility of the AMR MPTF by enhancing its visibility, promoting advocacy efforts, and mobilizing resources at the highest levels. For instance, the priorities of the Global Leaders Group on AMR Rolling Action Plan specifically emphasize the need to secure funding for the Fund.





A female farmer partakes in a training in Ghana for implementing a Mobile App for on-farm Antimicrobials Use Monitoring in Terrestrial Animals and Aquaculture.

Key Lessons Learned

Thorough concept notes and programme design has resulted in quality implementation, leading to early results. This has included extensive technical support from regions and headquarters as well as from the Steering Committee.

COVID-19 has slowed implementation progress. However, the pandemic itself has highlighted the urgency of a One Health approach and also increased AMR advocacy.

For sustained results, additional resources for some programmes may be required, as well as connecting to concrete investment opportunities beyond the lifespan of the project.

The AMR MPTF funding base remains limited. Further concerted outreach is required, for example by joining forces to harness the momentum for One Health.

The level of coordination and backstopping cannot be underestimated, support at headquarters and at the regional level needs to be better anchored to enhance programme design, implementation and lessons learning, including networking between countries and regions.

The Quadripartite has demonstrated the value of collaboration in the fight against AMR. The method and mode of inter-agency and inter-organizational collaboration have proven effective in linking global and national implementation efforts. This intersectoral cooperation and partnership can foster true collaboration and enhanced synergies, resulting in the cultivation of new ideas, targeted activities, credible outputs, and efficient joint tasks. It helps avoid unnecessary duplication and fills gaps that any single organization might not have been able to address against AMR.

The COVID-19 pandemic slowed down implementation progress leading to several countries requesting for No-Cost Extensions. However, the pandemic has underscored the urgency of taking a One Health approach in addressing emerging health threats. The interconnectedness between human health, animal health, and the environment has become more apparent than ever before, highlighting the importance of a collaborative and integrated approach.

Communicating success stories that demonstrate the impact of the Fund is crucial for promoting the visibility of the Fund, raising awareness of AMR, building trust, and identifying best practices. It helps engage stakeholders, enhance the Fund's reputation, and promote knowledge sharing to improve the Fund's impact in the fight against AMR. Lastly, it plays a critical role in strengthening resource partner confidence as well as attract support from the public and new Resource Partners.

The Fund's projects were designed to catalyse additional funding from important stakeholders, such as governments, to ensure project sustainability. Results show that projects in countries where the government is committed to support have demonstrated the strongest impact. For instance, the Theileriosis pilot vaccination project in Zimbabwe has been successful due to strong government support.

The Fund's resource base remains limited. The international aid context is constantly changing, and priorities can shift in response to new and emerging global challenges and crises. To maintain momentum and keep the Fund replenished through demonstrating results, resource mobilization efforts must be intensified through the implementation of the Fund's joint resource mobilization strategy and action plan.



WAAW teams educating church goers in the Eastern region of Ghana on AMR and the importance of using antimicrobials responsibly.

Next Steps and Vision for The Future

The Fund has laid a solid foundation and developed effective operational procedures at the global, regional, and national levels. It is now well-positioned to drive the development of functional One Health systems in the years ahead. This 2022 report highlights tangible progress in implementation and identifies both areas of success and those where lessons learned can inform future efforts.

Over the next year, the Fund will expand its reach to four additional countries. In collaboration with national and global programmes, the Fund will review and adjust work plans as needed. The Fund will also consider the potential need for No-Cost Extensions to accommodate any delays in implementation.

Moving forward, the Fund has identified several key areas of focus. These include:

Increasing awareness of gender-based differences in access to antibiotics and exposure to resistance, supporting research on the gender dimensions of AMR and integrating gender into all aspects of the Fund's programming. Our goal is to ensure that everyone, regardless of gender, has access to effective antibiotics and is protected from the threat of AMR.

Providing strategic and technical support to the four new countries - Bangladesh, Madagascar, Mongolia and Tunisia - in the implementation of their respective projects.

Implementing the recommendations made by the independent strategic review of the Fund, particularly with regards to the Fund's strategic direction and exit strategy and sustainability of its projects.

Expanding the Let's Discuss Success Initiative to enhance the Fund's visibility, including organizing regional and national Learning, Adapting and Collaborating (LAC) workshops in Africa, Asia, and Latin America.

Developing the Fund's website.

Implementing the Resource Mobilization Strategy and Action Plan, with the goal of strengthening the Fund's resources from a diverse set of partners. The objective is to secure significant, predictable, timely, and sustainable contributions to the Fund.

Showcasing the Fund's success and attracting replenishment and commitment by leveraging key events such as the World Health Assembly, the United Nations General Assembly, and other relevant events.

Annex 1

Theory of change for the Strategic Framework for collaboration on AMR and the AMR MPTF results matrix

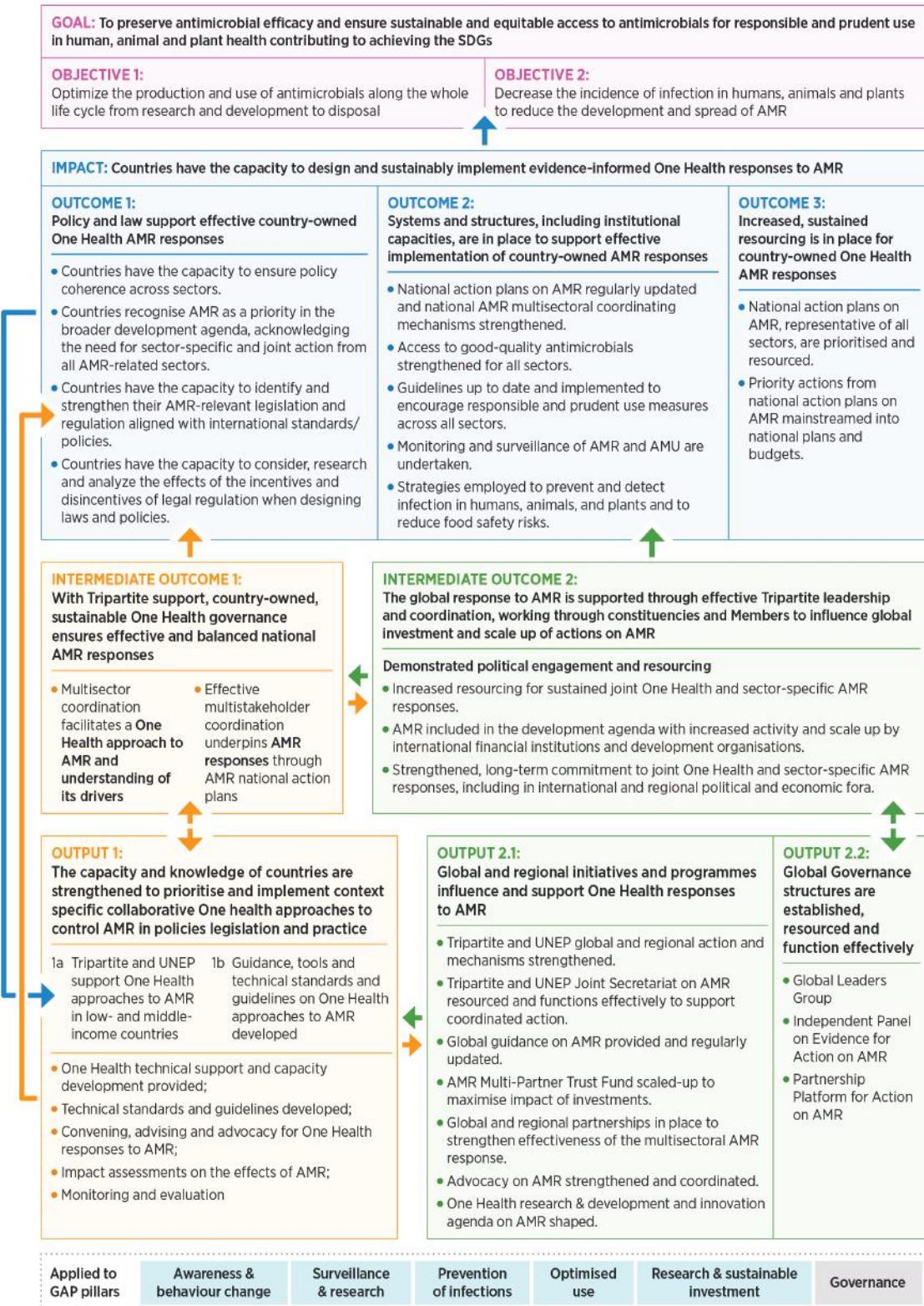


Fig. A1.1. Theory of change for the Strategic Framework on AMR

Annex 2

Consolidated annual financial report of the administrative agent for the AMR MPTF

The link to the financial report can be found easily on the Antimicrobial Resistance Multi-Partner Trust Fund | MPTF Office (undp.org) page of Gateway under “Overview In Focus”.

Annex 3

Country and global programme profiles

This annex comprises:

- A table showing country and programme headlines – key dates, management, technical and financial progress; and
- A summary report for each country and global programme with:
 - a narrative section describing the main features of the programme, 2022 highlights, the main challenges (including impacts and mitigation), and any early learning and innovation;
 - a listing of the log frame outputs and indicators for which there has been some progress, along with a summary of activities which have contributed to the outputs and an approximation of the degree of progress in achieving the indicators for the outputs. These assessments are the programmes' own and are necessarily subjective.

NB:

Outcomes have not been included in these summary reports, as it is too early to be assessing progress against the outcomes.

Not all outputs and indicators have been listed, only those where there has been some measurable progress. The separate programme reports published on the Gateway website include all outcomes, outputs and indicators.

Table A3.1. Country and global programme headlines

INDICATOR	CAM	IMO	MOR	GHA	KEN	ZIM	ETH	TAJ	SEN	PERU	GLOBAL
Tripartite lead agency	WHO	WHO	FAO	WHO	WOAH	WHO	FAO	WHO	FAO	FAO	FAO/ WOAH/ WHO
Proposal approved	Sep 2020	Sep 2020	Sep 2020 ²	Sep 2020	Oct 2020	Oct 2020 ³	Apr 2021	Apr 2021	Oct 2021	Nov 2021	Oct 2020
Project started	Jan 2021	Jan 2021	Jan 2021	Jun 2021	Jan 2021	May 2021	May 2021	Jun 2021	Jan 2022	Mar 2021	Mar 2021
Start date (Gateway)	19 Oct 20	19 Oct 20	16 Dec 20	24 May 21	1 Dec 20	21 May 21	25 May 21	5 Aug 21	17 Jan 22	11 Jan 22	12 Mar 23
End date (Gateway)	31 Dec 22	31 Dec 22	31 Dec 22	31 Dec 22	19 May 23	23 May 23	23 May 23	17 Jan 24	11 Jan 24	11 Jan 24	12 Mar 23
Project start-up meeting held	Nov 2020	Nov 2020	Mar 2021	May 2021	Jan 2021	May 2021	Jun 2021	Aug 2021	Feb 2022	Feb 2022	Mar 2021
Multisectoral AMR committee	Yes (TrACCS-B)	Yes (TrACCS-B)	Yes (TrACCS-D)	Yes (TrACCS-D)	Yes (TrACCS-C)	Yes (TrACCS-C)	Yes (TrACCS-D)	Yes (TrACCS-E)	Yes (TrACCS-D)	Yes (TrACCS-E)	Yes, TJS
Progress reports/ calls to TJS	3	3	3	2	3	2	1	1	2	2	3

AMR: antimicrobial resistance; FAO: Food and Agriculture Organisation of the United Nations;
 WOAH: World Organisation for Animal Health; TrACCS: Tripartite AMR Country Self-Assessment Survey;
 TJS: Tripartite Joint Secretariat; WHO: World Health Organisation.

TrACCS assessment for AMR multisectoral coordination committee

- A** – No formal multisectoral governance or coordination mechanism on AMR exists.
- B** – Multisectoral working group(s) or coordination committee on AMR established with government leadership.
- C** – Multisectoral working group(s) functional, with clear ToRs, regular meetings and funding with activities and reporting/accountability defined.
- D** – Joint working on issues, including agreement on common objectives.
- E** – Integrated approaches used to implement the AMR-NAP with relevant data and lessons learned from all sectors used to adapt implementation of the NAP.

²With request for technical amendments.
³With request for technical amendments.

Country Programme Reports

CAMBODIA

Overview

Project: Enhancing governance and coordination mechanisms to reduce AMR in Cambodia (ID: 00124430)

Duration: 36 months (19 October 2020 to 19 October 2023)

The project focuses on strengthening governance and coordination between and within ministries, regulating AMU in the human and animal health sectors and increasing public awareness and advocacy. Its key activities include:

- supporting the establishment of the IMCC-AMR;
- developing a national M&E framework for the MSAP;
- supporting the review of existing national tools and frameworks, including legislation, for regulating antimicrobial use in humans, animals, plants and the environment;
- rolling out national AMS guidelines in health care facilities;
- developing responsible and prudent AMU guidelines in animals and a road map for implementation; and
- developing national multisectoral AMR communication strategies and materials.

Project Progress

The Royal Government of Cambodia has demonstrated its commitment to addressing the threat of AMR by launching the Multi-Sectoral Action Plan (MSAP) on AMR (2019–2023) on 23 December 2019. The MSAP represents a One Health approach that brings together the Ministry of Health, the Ministry of Agriculture, Forestry and Fisheries, and the Ministry of Environment to collaborate on interventions aimed at addressing AMR in human health, agriculture, and the environment. The comprehensive plan comprises seven strategic areas that cover various aspects of AMR, including governance and coordination, surveillance, the prudent use of antimicrobials, awareness-raising, infection prevention and control, capacity building, and research and innovation.



To support the implementation of the MSAP on AMR, Cambodia has access to the AMR MPTF, which enables the country to work collaboratively towards achieving its AMR-related goals. With the support of the MPTF, Cambodia has made progress on several outputs, which is a testament to the country's commitment to tackling the AMR threat.

Improved Capacities for Designing and Implementing AMR-related Policy Frameworks, Investments Plans and Programmes

- The Multi-Sectoral AMR Technical Working Group (MS-AMR-TWG), formerly known as the coordination committee is currently awaiting endorsement of its revised terms of reference from the AMR-TWGs of the three involved ministries.
- The original draft national M&E framework for the MSAP on AMR has undergone revisions by the Tripartite in collaboration with key national stakeholders. Official approval of the final M&E framework is expected during Q2 2023.
- The Department of Drug, Food, and Cosmetics of the Ministry of Health is currently reviewing the draft law on the management of health products and AMR-related articles. ToRs for recruiting a national law consultancy to support this review have been drafted and are under review.
- In January 2023, a national multisectoral workshop was held to review the progress on AMR

implementation. The results of this evaluation will inform the updating of the new MSAP on AMR and align it to Cambodia's One Health joint plan and mobilise financial support.

Systems for Optimized Use Strengthened in Critical Sectors

- The Department of Hospital Services (DHS/MoH) has revised the national AMS policy and translated it into Khmer, along with the national guidelines on antimicrobial consumption (AMC) monitoring. The DHS plans to complete the draft pre- and in-service training curricula on AMS by mid-2023. Additionally, a Point Prevalence Survey (PPS) has been piloted in 18 provincial hospitals, and a national refresher training on PPS is planned for Q2 2023.
- In the animal health sector, an integrated review on AMU and AMS good practices has been completed, which resulted in recommendations for developing treatment guidelines for responsible and prudent antimicrobial use in the sector. The development of these guidelines and a roadmap towards their implementation have begun including the development of two treatment guidelines for poultry and swine and pilot training on their use.
- The World Organisation for Animal Health (WOAH) RRAP is responsible for implementing several WOAH-led activities under the AMR MPTF Cambodia project, including delegating the General Directorate for Animal Health and Production (GDAHP) to implement certain activities through a letter of agreement. These efforts demonstrate the government's commitment to addressing the AMR threat through a multisectoral and coordinated approach.

Enhancing Awareness, Behaviour Change and Educational Activities at all Levels of AMU Supply Chain –From Policy to End Users of Antimicrobials

- WOAH RRAP released awareness tools that include two videos on AMR focusing on the responsible and prudent use of antibiotics in poultry and fish farms in Cambodia and 10 leaflets and posters focusing on the responsible use of antimicrobials by farmers, pharmacists, pharmaceutical companies, clinicians, and competent authorities in English and Khmer languages.
- The National AMR Communication Strategy for Cambodia is under development and expected to be finalized within the second quarter of 2023.

Enhanced Monitoring of Antimicrobial Use in Animals and Implementation of WOAH Standards on AMR

- The second workshop on monitoring antimicrobial use in animals was held in Cambodia from 27-28 April 2022. The workshop aimed to provide attendees with a comprehensive understanding of the current state of play in the collection, analysis, and sharing of AMU data with the government, while also identifying gaps that needed to be addressed. Results will help improve the monitoring and regulation of antimicrobial use in animals in Cambodia.

Effective Engagement of the Private Sector

- GDAHP organized one national and three sub-national seminars on the containment of AMR in the livestock and aquaculture industries in Cambodia from 14-26 July 2022. They discussed national legislation, standards for responsible and prudent use of antimicrobials, and good practices in animal health and production.

Main Challenges

There have been some delays in the implementation of certain activities, which has impacted the original timeline of the project. For example, the implementation of activities related to the draft law on the management of health products and AMR-related articles has been delayed due to changes in the review process. In addition, lack of awareness and limited capacity among ministries and health care professionals on AMR, AMS, AMC and AMU restrict their full engagement and support. These challenges have caused a delay in the implementation of the activities, but the project is still ongoing,

and work is being done to complete the deliverables.

Learning Innovation

The project has facilitated the following innovations:

- A robust and effective partnership among the Tripartite partners (WHO, FAO, WOAH) and government counterparts.
- Technical synergies, leading to efficient use of resources and time.
- Actions that catalyse or leverage additional funding for in-country action extending the project's gains.

Stakeholder Engagement and Resource Mobilization

The Ministry of Environment (MoE) has taken a pioneering role in allocating a limited seed budget for the implementation of AMR-related activities. This demonstrates the commitment of the government to address the issue of AMR in Cambodia. Additionally, development partners have provided financial support for the implementation of the MSAP on AMR, targeting specific strategic areas such as surveillance on AMR in human health. Some partners are also complementing the support for activities under the MPTF, such as AMS. As the MSAP on AMR is anticipated to be reviewed and updated, additional potential partners are expected to provide financial support for the implementation of AMR-related activities in Cambodia. These partnerships will not only provide financial resources but also bring technical expertise and best practices to strengthen the capacity of the government and stakeholders to combat AMR.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS
Increased comprehensiveness and quality of the policy dialogue and practice	Number of countries whose AMR Multisectoral Coordination mechanisms engage with a broad range of relevant partners
Use of antimicrobials optimized in critical sectors	Number of countries that implemented one or more (additional) international instruments on AM

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Improved countries capacities for designing and implementing AMR related policy frameworks, investments plans and programmes	<p>A.1 National coordination mechanism for the AMR established</p> <p>A.2 The National M&E Framework for the MSAP developed</p>	<p>ToRs for MS-AMR-TWG were revised and await endorsement by the three ministries.</p> <p>A consultative meeting was held with all key stakeholders to discuss revising the indicators. The indicators were revised, and the framework is awaiting official approval from the three ministries.</p> <p>ToRs have been drafted for M&E focal points, which have been officially endorsed by the three ministries with official nominations.</p>	75-99%	
	A.3 The regulatory framework has been reviewed in line with the related international guidance on responsible and prudent use of antimicrobial agents	Reviewed the law on management of health products. The law covers all sectors. MoA previously issued a law on animal health and veterinary services, so the laws need to be harmonized. ToRs for recruiting a national law consultancy to support this review have been drafted and are under review	25-50%	
	A.4 Joint One Health meeting to discuss the MSAP progress and the MPTF implementation in Cambodia organized	A national multisectoral workshop was held to review the progress of Cambodia's National Action Plan on AMR, including achievements, challenges, lessons learned, and the way forward. The workshop brought together representatives from the human, animal, and environmental health sectors, as well as the Tripartite Organisations and other development partners. The workshop also discussed progress on the implementation of the Multi-Partner Trust Fund project.	75-99%	
B. Systems for optimized use of antimicrobials strengthened in critical human and animal sectors	<p>B.1 Antimicrobial stewardship programme implemented in additional health care facilities</p>	AMS programme implemented in additional health care facilities. The national policy on Antimicrobial Stewardship (AMS) has recently undergone a revision and has been translated into the Khmer language. Additionally, the national guidelines on Antimicrobial Consumption (AMC) monitoring have also been translated into Khmer to ensure wider dissemination and uptake of these important resources. <p>DHS has piloted the PPS in 18 provincial hospitals.</p>	50-75%	
	B.2 Guidelines for responsible and prudent use of antimicrobials based on international standards are developed or revised	A literature review of existing documents, studies, and guidelines in the country and neighboring countries has been completed. The AMR and AMU literature reviews in animal health and the experts' meeting were conducted at the end of 2022. The consultation workshop involving stakeholders in the AMR and AMU areas was organized to get more insights and discuss the key findings and recommendations for guideline development. The report of the AMR and AMU reviews will be shared with WHO, which will allow for the integration of human health in what could be viewed as the report of the two sectors.	25-99%	
	B.3 Development of responsible and prudent use guideline in animals (AMU) and road map toward its implementation in animal health sector	The General Directorate of Animal Health and Production (GDAHP) has started to develop treatment guidelines of responsible and prudent antimicrobial use for animals and a road map towards their implementation. The assignment was to: <ul style="list-style-type: none"> • Develop of treatment guidelines for pigs and poultry • Conduct pilot trainings for guidelines developing • Organize joint One Health Workshop to discuss and conclude on the antimicrobial stewardship/antimicrobial use progress in Cambodia. 	25-50%	Under B.4 Joint One-Health meeting to discuss the AMS/ AMU progress was moved under LoA with GDAHP.
C. Improved capacity to design awareness raising, behavior change and educational activities	C.1 Communications strategies developed	The National AMR Communication Strategy for Cambodia is currently in its second draft with two rounds of consultation meetings held with the key stakeholders from the government and the Tripartite. The document is expected to be released in Q2 of 2023.	75-99%	
	C.2 IEC materials developed and used for nationwide AMR campaigns	WOAH RRAP released two videos on AMR focusing on the responsible and prudent use of antibiotics in poultry and fish farms in Cambodia (in Khmer with English subtitles). Also released were 10 leaflets and posters targeting audiences across the spectrum of the AMU supply chain from policy makers to end users of antimicrobials. <p>During World Antimicrobial Awareness Week (WAAW) 2022, seven awareness events were organized across Cambodia at both national and sub-national levels. The events aimed to raise awareness among stakeholders from various sectors involved in the AMU supply chain, including policy makers, students in veterinary, medical, agriculture, and environmental sectors, government officials, private sectors, and communities who use antimicrobials.</p>	75-99%	

ETHIOPIA

Overview

Project: AMR MPTF support for the implementation of the Ethiopian One Health AMR prevention and containment strategy (ID: 00127140)

Duration: 24 months, 25 May 2021 to 25 May 2024; No-Cost Extension (12 months)

The AMR-MPTF project in Ethiopia supports the design and implementation of systems strengthening in policy and programmes; generating, interpreting and using evidence-based data for decision-making; and improving antimicrobials use behaviour change practices. Its key activities include:

- Supporting functioning of the multisectoral and multidisciplinary AMR prevention and containment advisory committee and Technical Working Groups;
- Updating and monitoring implementation of the One Health AMR prevention and containment strategic plan and the AMR MPTF project;
- Developing One Health communication, stakeholder analysis, engagement strategy, and behaviour change materials;
- Establishing/strengthening sustainable human and animal antimicrobial sensitivity testing (AST) and AMR surveillance systems and data capture;
- Strengthening HAI prevention and control and scaling up AMR prevention and containment evidence (including AMS);
- Supporting behaviour change practices for optimized use of antimicrobials;
- Developing and implementing user-friendly animal species-specific treatment guidelines based on international recommendations; and
- Developing safe, quality animal source food production with consideration of antimicrobial withdrawal times and maximum residue limits.

Project Progress

Joint activities implemented Biosecurity, AMU/AMR Capacity Building

Two workshops and advisory committee meetings were held discussing topics such as AMU, AMR, biosecurity, vaccines use, alternatives and complementary approaches to AMs, as well as prevention and containment, and engagement and communication strategies.

- An assessment of the Monitoring and Evaluation capacities of the AMR National Action Plan for Ethiopia was developed in consultation with the Quadripartite M & E team and Ethiopian AMR stakeholders.

AMR Advocacy and Awareness Raising Commemorations

World Antimicrobials Awareness Week (WAAW) 2022 event on 18 November 2022

- The AMR prevention and containment plan was officially launched at the 2022 WAAW.
- WHO, FAO, and other partners collaborated to organise a mass mobilisation event on the prevention and containment of AMR with the theme "Preventing Antimicrobial Resistance Together" which was held on 24 November 2022 in Addis Ababa. The event targeted 75 women and youth representatives, aiming to raise awareness and promote action towards preventing AMR.

Commemoration of the 10th National AMR Day

On 15 June 2022, the 10th AMR Advocacy and Awareness-Raising Commemoration Day was held in Ethiopia focusing on "Coordinated Efforts towards Antimicrobial Stewardship". It brought together a diverse range of participants, and centred on the implementation and achievements of the national AMR Prevention and Containment Strategic plan. Participants also engaged in advocacy for the adop-

tion of national essential medicines and national standard treatment guidelines which will further strengthen the country's efforts to combat antimicrobial resistance.

Global, Regional and National Coordination

The Ethiopia MPTF team completed the sixth round of the Quadripartite AMR Ethiopia Self-assessment Survey and contributed to global awareness-raising efforts on AMR. They also shared their experiences on AMR integrated surveillance and efforts to tackle AMR in Ethiopia using a One Health approach, emphasizing safe and quality animal source food production.

Capacity Development on Antimicrobial Stewardship to Animal Health Care Professionals

The team conducted two capacity development training programmes related to antimicrobial resistance (AMR) in Ethiopia focussing on One Health training on Antimicrobials Stewardship, and veterinary pharmaceuticals (antimicrobials) management and use.

AMR Surveillance and Laboratory Capacity Training

The team provided training and support for AMR surveillance and laboratory capacity development in Ethiopia. The team also provided catalytic support for AMR system strengthening and procurement of supplies for enhanced laboratory capacity in detecting and testing pathogens. Additionally, they developed an AMR data capture and management tool in collaboration with AHI to create a comprehensive and global database.

Consultative Meeting and Training on Safe and Quality Production of Animal Source Food and Control of AMR organized

The following activities were conducted:

- A consultative meeting on safe and quality production of animal source food and control of AMR technical guideline workshop with a multi-disciplinary team of experts from various institutions.
- Capacity development training on safe and quality food production with consideration of AMU, AMR, withdrawal times and maximum residues limits for animal health professionals and providers.
- Advocacy and awareness raising training on AMU and AMR as well as primary animal source safe food production for mass media professionals and public relation experts from various institutions. The participants were trained on OH, disease prevention, AMU/AMR principles, and safe food production. The media outlets broadcasted news and advocacy articles in their respective outlets after the training.
- Web article link: FAO supports Ethiopian government in developing media training to raise awareness of antimicrobial resistance: www.fao.org/antimicrobial-resistance/news-and-events/news/news-details/en/c1629710/

Advocacy and Awareness Raising on AMR

On March 31, 2022, an awareness-raising and advocacy presentation on AMR prevention and containment was showcased to environmental health professionals at the IP and WASH capacity building Extension for Community Healthcare Outcomes (ECHO) programme. The event was co-organized by the Ethiopia Environmental Health Professionals Association (EEHPA) and the Ethiopian Infection Prevention and Control Association (EIPCA). The presentation aimed to broaden and strengthen AMR work beyond animal health in the environment and link it with the United Nations Environment Programme (UNEP).

Coordination

The FAO AMR MPTF coordinator held a coordination meetings with the USAID Medicines, Technologies and Pharmaceutical Services (MTaPS) and Infectious Disease Detection and Surveillance (IDDS) programmes to explore opportunities for collaboration and synergy.

Broadcasted Materials

- <https://www.fao.org/antimicrobial-resistance/resources/papers-in-scientific-journals/en/>
- Web article: Ethiopia is scaling up efforts to tackle AMR via a One Health Approach: <https://www.fao.org/antimicrobial-resistance/news-and-events/news/news-details/en/c/1506140/>
- Provided live education programme on AMU and AMR at the Ethiopia Broadcasting Corporation national/Ethiopia radio programme on 27 May 2022 from 9:00-10:00 AM by the MPTF coordinator
- <https://www.fao.org/antimicrobial-resistance/news-and-events/news/news-details/en/c/1506140/>
- <https://www.youtube.com/watch?v=xMUBANq2V9o>
- <https://www.fao.org/antimicrobial-resistance/news-and-events/news/news-details/en/c/1506140/>

WHO and Public Health Specific Implemented Activities to Strengthen Human AMR Surveillance Systems

- Baseline basic microbiology labs of 13 hospitals and sentinel sites, that will be enrolled in the national human AMR surveillance system assessed, to understand their strengths, challenges, gaps, and take corrective actions.
- Training on basic microbiology to 13 medical laboratory technologists from 13 hospitals and sentinel sites organized.
- AMR and AST microbiology laboratory antimicrobials discs, media, reagents and supplies provided to Ethiopian Public Health Institute (EPHI) and distributed to the AMR surveillance sentinel sites.
- Monitoring and mentoring of microbiology labs and sentinel sites conducted.

Integrated AMS and HAI Prevention and Control Programmes

- Baseline integrated antimicrobial stewardship (AMS) and healthcare associated infections (HAI) prevention and control programme of 20 hospitals assessed using the WHO Self-Assessment tool.
- Advocacy workshop on Integrated AMS and HAI Prevention and Control programme to 13 hospitals management and chief executive officers provided.
- Training on Integrated AMS and HAI prevention programme from 7 hospitals and to 28 multi-disciplinary health professionals (physicians, pharmacists, infection prevention and control (IPC) professionals and medical laboratory technologists organized.

Assesment and Monitoring on Substandard and Falsified (SF) Medicines with Focus on Antimicrobials capacitated the Ethiopian Food and Drug Authority (EFDA) (national medicine regulatory)

- Consultant recruited, technical working group (TWG) from EFDA, WHO, and advisors established, protocol and data collection tool for the assessment of Substandard and Falsified medicine developed. Tracer medicines that included antimicrobials, cardiovascular, and anti-cancer identified.
- Training for data collectors and supervisors on the data collection manual and tool, and sampling and sample collection conducted.
- Samples of tracer SF medicines from sampled hospitals medicine retail outlets, port of entries and informal markets and institutions from regional states and city administrations.
- Quality assurance of the collected data and samples reviewed for completeness as per the data collection protocol and tools.
- The samples collected were re-reviewed and compared against EFDA's documents and records of market authorization and registration and port clearance permits.
- Laboratory Quality Control (QC) tests of samples of medicines as per the protocol on selected and suspected products conducted.

WOAH and Agriculture

- Supported the development of a One Health AMR communication and stakeholder engagement strategy. This was facilitated by a lead consultant hired under the AMR-MPTF project.
- Conducted a training to sensitize animal health professionals on international standards on AMR and AMU (including sensitization on responsible and prudent use of antimicrobials), biosecurity guidelines and use of vaccines in animals.

Main Challenges

- Travel restrictions due to security delayed implementation of some of the activities in certain areas.
- COVID-19 pandemic travel restrictions affected some of the activities.
- Restructuring and staff turnover of some government Organisations.
- Competing priorities of the government due to security and draught.

Learning Innovation

- The government has cost shared some of the activities during implementation and this has saved resources.
- Technical and logistical synergy and cross fertilization of AMR projects within and across sectors saved financial resources and time.
- Programmatic and health system strengthening approach in the implementation of the Ethiopian AMR strategy.

Stakeholder Engagement and Resource Mobilization

- There is continued commitment of the Ethiopian government despite competing priorities in the implementation of the five years one health AMR prevention and containment strategy even though there are competitive priorities of the government due to security, draught, and damaged health facilities. This can be attested through the cost sharing of some of the activities.
- There were several coordination meetings with other development partners to form technical and logistical synergy in the prevention and containment of AMR.
- Other projects played a catalytic role in the development of the AMR MPTF project and this in return has played a key role in the addition of other AMR projects.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Risks of and response to AMR improved in targets	<ul style="list-style-type: none">Number of Functional AMR Advisory committees and TWGs.Monitoring and evaluation framework included in AMR prevention and containment strategic plan. <p>One Health AMR communication and stakeholders' engagement strategy, and behaviour change, and advocacy products developed.</p>	Ethiopia is a big country and AMR is high in the agenda of the government as reported above. There is a high demand and probability of not accessing some parts of the country. Actions: <ul style="list-style-type: none">This could be an opportunity for project implementation.Agree on prioritization of activities.Success and evidence will guide support decisions and linkage with development partners. Ethiopia has some experiences in the implementation of AMR for more than 10 years. The additional supports by the MPTF are very much appreciated for health facilities affected.
Evidence based and representative data on AMU and AMR improved for policymakers and sectors implementing AMU practices	<p>AMC/AMU report generated</p> <ul style="list-style-type: none">Number of experts trained on AST and AMR surveillanceAn epidemiologic AMR data capturing, and compilation tool developed.Handover note for procurement of antimicrobial susceptibility testing (AST) discs, media and other supplies.	The 2021 national election had no influence on AMR MPTF performances. Security in some parts of the country might delay not stop implementation. The trajectory of COVID-19 pandemic has decreased in severity, and this will be an opportunity for enhanced implementation of the AMR MPTF project <ul style="list-style-type: none">We will work where security is ok.We tried to use the COVID-19 interventions such as infection prevention and lab capacity building as opportunities for strengthening AMR prevention, containment, and surveillance. And will align in response plans.The introduction of COVID-19 vaccines is another opportunity.
Use of antimicrobials optimized in critical sectors	<ul style="list-style-type: none">Number of experts trained on AMU and AMR.Number of hospitals implementing integrated (HAI, AMR surveillance and AMS).Species specific biosecurity guidelines developedGuideline on safe production of primary animal source food in.	Instead of the anticipated turnover of government staff who are implementing the AMR MPTF project, however, restructuring of some government offices may delay some of the activities of the AMR MPTF project.

4.b. Log frame outputs and activities

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
Improved country capacity in designing and implementing AMR related policy frameworks, investment plans, and programme	Developed AMR prevention and containment strategy/ NAP framework with monitoring and evaluation, and costing	<p>World Antimicrobial Awareness Week (WAAW) 2022 organized. Organized the 39th regular meeting of the one health national AMR advisory committees and reviewed progresses.</p> <p>Assessment of the Monitoring and Evaluation Capacities of the Antimicrobial Resistance (AMR) National Action Plan for Ethiopia" reported. Follow on capacity development for national stakeholders and the M & E framework is under preparation.</p> <p>Cascaded implementation of the AMR strategy</p> <p>Ethiopian One Health AMR Prevention and Containment Advisory committee and Technical Working Groups (TWGs) launched the OH AMR Prevention and Containment Strategic Plan, 2021 to 2025 in November 2021. AMR MPTF project was technically and officially launched on 13 July and 18 November, respectively.</p> <p>Development of OH AMR communication and stakeholders' engagement strategy workshop.</p>	75-99%	
	Operational plan for implementing the updated NAP with the associated budget	<p>Sector Specific operational plan developed and launched for the three sectors (human, animal health and environment).</p> <p>Strategic AMR elements have been included in the Human Health Sector Transformation Plan.</p> <p>Awareness Raising Training Workshop on Infection Prevention, Biosecurity, Safe Food Production and AMR provided to Addis Ababa city administration animal health office.</p>	50-75%	
Systems for generating, analyzing and interpreting data on AMR and AMC/AMU strengthened	Indicator 2.1. Report on AMC and AMU	<p>Reports on Awareness and Understanding (KAP) of Animals Owners on Antimicrobials Use and Resistance and one on Veterinarians produced.</p> <p>Situation Analysis of Antimicrobial Use and Resistance in Ethiopia: One Health Approach drafted.</p> <p>AMC data in humans collected and reported generated and submitted to EFDA for approval.</p> <p>An epidemiologic AMR data capturing tool was drafted and reviewed in a workshop. It is being field tested and updated.</p>	50-75%	
	Percentage of laboratories with capacity to perform AST Number of experts trained on AST and AMR surveillance (Integrated with output on IPC activities)	<p>Developed AMR data capture and compilation tool and being field tested</p> <p>Held an Integrated AMR Surveillance (detection, isolation, identification and AST) plan implementation annual review and experiences sharing workshop</p> <p>Provided practical and theoretical capacity development training on AMR surveillance, and isolation, identification, antimicrobial susceptibility testing (AST), bacterial preservation, epidemiological approaches for AMR surveillance and data management provided to 27 animal health, public health, food safety and quality, public health institute zoonotic diseases, environment, conformity assessment center, and academia laboratories.</p> <p>Produce a technical report on AMR Surveillance and Antimicrobials Sensitivity in Ethiopian Testing for the Agriculture.</p> <p>Initiated impetus procurement for antimicrobial susceptibility testing (AST) in human and animal health laboratories consumables: antimicrobials discs. Training on basic microbiology is provided to 13 medical laboratory technologists from hospitals and sentinel sites.</p> <p>Microbiology lab supplies procured and handed over to Ethiopian Public health Institute to be distributed to the National AMR Surveillance sites.</p> <p>Baseline assessment of basic microbiology and AST in 20 hospitals has been undertaken. Preparing to provide training of laboratory technologists.</p> <p>Handover note for the procured AST/AMR supplies. Selected with specifications, and quantified AST supplies for both human and animal health, and food safety labs.</p>	50-75%	
Strengthened systems for infection prevention, hygiene, biosecurity in Ethiopia	3.1. IPC and biosecurity and good practices guidelines developed and/or disseminated	Status of Biosecurity and AMU and AMR (Assessment of Knowledge, Attitude, Practices of poultry owners) in small to large-scale commercial poultry farms" assessed.	25-50%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	Number of trained professionals on IPC and biosecurity (integrated with output on AMS activities)	Training Workshop on Biosecurity, Vaccines Use AMU, AMR, and Alternatives and Complementary approaches to AMs organized to 27 MOA, EAA, AHI, NVI, regional agriculture bureaus, private experts.	75-99%	
	Operational plan for implementing the updated NAP with the associated budget	Sector Specific operational plan developed and launched for the three sectors (human and animal health and Environment) Strategic AMR elements have been included in the human Health Sector Transformation Plan. Awareness Raising Training Workshop on Infection Prevention, Biosecurity, Safe Food Production and AMR provided to Addis Ababa city administration animal health office.	50-75%	
Systems for optimized use of antimicrobials strengthened in critical sectors	Assessment report on substandard and falsified (SF) antimicrobials (Number of tracer antimicrobials Post Market Surveillance (PMS) conducted)	Laboratory post marketing surveillance (PMQS) of samples of medicines as per the protocol on selected and suspected products conducted. Drafted a report on the assessment of SF medicines. Draft report presented and discussed by TWG and management of EFDA.	25-50%	
	Number of hospitals implementing integrated (HAI, AMR surveillance and AMS)(Number of HCPs who are provided with capacity development training on AMS.)	Baseline assessment on integrated AMS and HAI Prevention and Control in 20 hospitals undertaken. Training on Integrated AMS and HAI Prevention to multidisciplinary team from 7 hospitals provided.	25-50%	
	Number of animal healthcare providers trained on AMU and AMR	Final draft guideline safe and quality production of primary animal source food and control of AMR developed Consultative workshop to re-review, finalize the safe and quality production of primary animal source food and control of AMR organized. Safe and Quality Primary Animal Source Food Production with Consideration of AMU, AMR, and Withdrawal Times and Maximum Residues Limits training organized to 40 Animal Health Professionals. Advocacy and awareness raising on antimicrobial use (AMU) and antimicrobial resistance (AMR), and Safe Food Production training organized to 41 mass media and public relation experts. And these media outlets have broadcasted news and advocacy articles in their respective outlets.	50-75%	
	Indicator 4.1: Number of HCPs who are provided with capacity development trainings on antimicrobial stewardship	The first of its kind, One Health on Antimicrobial Stewardship (AMS) training organized to 19 animal health care professionals.	1-25%	

GHANA

Overview

Project: Ghana One Health Antimicrobial Resistance Multi-Party Trust Fund (AMR MPTF)

Project (ID: 00124433)

Duration: 24 months, 24 May 2021 – 24 May 2023; 24 February 2024 (9 months extension)

Ghana is focusing on strengthening governance and coordination between the Tripartite and inter-governmental Organisations in One Health. It seeks to support the integration of the AMR-NAP into country plans; support prudent AMU and systems to generate evidence; improve IPC and biosecurity in the human, animal, and environmental health sectors; and design communication and awareness/advocacy AMR materials. Activities include:

- Implementing the national M&E framework for the AMR-NAP;
- Establishing surveillance systems for AMU in humans, animals, crops, and the environment;
- Assessing laboratory capacity for culture and sensitivity testing, and hospital-based surveillance;
- Developing national biosecurity standards to enhance AMS at the farm level and building capacity on IPC/WASH for private practitioners in human health;
- Adapting the WHO AWaRe (Access, Watch, Reserve) classification of antimicrobials and implementing outline strategies to optimize the prescribing, dispensing and use of antimicrobials;
- Developing multisectoral IEC materials for a targeted public education campaign;
- Scaling up the ESBL-producing E. coli Tricycle protocol project in another region of Ghana.

Project Progress



The AMR MPTF project in Ghana has helped to strengthen the country's capacity for designing and implementing AMR-related policy frameworks, investment plans, and programmes in various ways. The project has facilitated a data mapping exercise, the development of an M&E software and digital dashboard, and the training of AMR focal points for monitoring and evaluating the implementation of the AMR NAP. It has also supported the implementation of quarterly AMR platform meetings, as well as activities aimed at researching the economic costs and implications of AMR. Furthermore, the project has improved Ghana's capacity for designing awareness-raising, behavior change, and educational activities, and has facilitated the development of information, education, and communication materials for public education. The project has also supported the development of systems for generating, analyzing, and interpreting data on resistance patterns, and has helped to strengthen biosecurity and IPC in Ghana. Overall, the project has made significant progress towards achieving its goals of improving Ghana's capacity to combat AMR.

Main Challenges

- Delays in the implementation of two activities due to unfavorable terms in the MOU, which included WOAH giving approval for only two activities at a time and only providing 50% of the budgeted cost upfront, with the government responsible for funding the rest.
- Cross-cutting AMR Secretariat activities involving inter-departmental stakeholders, which caused delays in the implementation of the two activities.
- Competition from other Organisations and partners demanding attention from the same implementor.
- Challenges with entering environmental and animal health AST data into GLASS, which is not accepting such data at the current time.

Impact of Challenges

These challenges led to a delay in the implementation by eight months.

Learning Innovation

Ghana has the capacity to develop and implement sustainable AMR solutions given the right funding mechanisms. In addressing on-farm AMU, it was observed that all farm focal persons had some formal education, with 75.7%, (n=81) completing college or university and 16.8% (n=18) completing a postgraduate education. This provides a unique opportunity for smooth dissemination of educational materials to address inappropriate use of antimicrobials on farms. It was also learned that it is feasible to use modern technology to address the issue of AMR/AMU/ AMC in Ghana.

Stakeholder Engagement and Resource Mobilisation

Several engagements, for example, Fleming Fund phase 2 supporting NAP implementation among others are currently ongoing to support resource mobilisation for continuity of activities beyond the AMR MPTF funding.



Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS
Increased comprehensiveness and quality of the policy dialogue and practice	Number of countries whose AMR Multisectoral Coordination mechanisms engage with a broad range of relevant partners
Use of antimicrobials optimized in critical sectors	Number of countries that implemented one or more (additional) international instruments on AM

4.b. Log frame outputs and activities

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Improved countries capacities for designing and implementing AMR related policy frameworks, investments plans and programmes	A.1 Fully functional One Health Multi-Sectoral Coordination Group (MCG) established.	1.1.1 AMR MPTF supported the activity to convene quarterly AMR platform meetings including core Technical Working Group meetings. Supported three AMR platform meetings, and two Technical Working Group meetings in 2022. AMR platform focused on AMR activities in the country and gave strategic directions for implementation. Discussion on AMR related issues example; findings on end time assessment of implementation of AMR NAP, AMR MPTF activity implementation, updates on AMR activities ongoing in the country.	75-99%	
	A.2 Operational plan for implementing AMR National Action Plan developed or updated with associated budget consideration.	<p>1.1.2 An activity to conduct a data mapping exercise to support the monitoring and evaluation (M&E) framework and identify cost-effective (efficient) means to monitor and evaluate implementation of the AMR NAP was fully completed. Two sub activities were carried out and completed under this activity. First, a, M&E consultant was recruited, who through a series of meeting with AMR focal points, and key stakeholders carried out data mapping exercise to support monitoring and evaluation framework, and identify cost effective means, units, focal points to support M&E of AMR NAP implementation. Secondly, an IT consultant was recruited to develop AMR M&E software and digital dashboard for monitoring AMR NAP and AMR MPTF indicators.</p> <p>1.1.3 To monitor implementation of the AMR NAP in Ghana half-yearly, a training workshop was organised for focal persons and stakeholders on AMR NAP M&E dashboard to enable data input on all related AMR activities in the country on to the M&E dashboard. Data entry is ongoing by focal persons on a temporarily hosted domain http://www.ajhive.com/admin/login. But dashboard would be migrated and hosted on the Ministry of Health website when baseline data entry is complete.</p> <p>1.1.4 Research economic costs and implications of AMR in plant health, terrestrial and aquatic animals' health, environment, human-health etc. and technical analysis of investment outlook is a key activity in progress. Using the FAO recruitment process to recruit a consultant to lead activity. TOR developed and application advertised, selection process completed. Consultant expected to start work by end of first quarter 2023.</p> <p>1.1.5 This activity aimed at convening public forum on economic case for investments into AMR (defining gaps and investment opportunities in AMR) is yet to start.</p>	100%	
			75-50%	
			50-75%	
			1-25%	
B. Systems for optimized use of antimicrobials strengthened in critical human and animal sectors	B.1 Antimicrobial stewardship programme implemented in additional health care facilities	4.6.29 Initiated this activity of developing training scheme/content and train veterinary personnel on responsible use of antibiotics in terrestrial animals and aquaculture. Detailed strategy and proposal were developed, and proposal submitted to WOAH AFRO pending release of funding for the implementation of activity.	1-25%	
	B.2 Guidelines for responsible and prudent use of antimicrobials based on international standards are developed or revised	4.6.28 This activity aimed at adapting the WHO classification list of Antimicrobials for Ghana and ensure optimized prescribing and dispensing based on Laboratory results was fully completed. The AMR secretariate of the Ministry of health together with stakeholders in health, academia and Ghana National Medicines Select Committee completed this activity and adapted WHO classification list for antimicrobials and guidelines for antimicrobial use is ready for incorporation into the next edition of the Ghana's Essential Medicine List and Standard Treatment Guidelines. Yet to receive final technical report.	75-99%	
C. Improved capacity to design awareness raising, behaviour change and educational activities	C.1 Communications strategies developed	<p>5.7.31 Educating the public to promote the responsible use of antimicrobials among the general population is on track. Leveraging on the WAAW momentum, Churches, Mosques, schools, and public were educated in 2021 and 2022. However, a massive public education campaign is planned to follow completion of the development of AMR related Information, Education, and Communication (IE&C) materials for public education.</p> <p>5.7.32 The activity aimed at reviewing the public education campaign for optimized impact is planned to follow the massive public education activity to take place after the development of the AMR IE&C materials.</p>	50-75%	
			0%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	C.2 IEC materials developed and used for nationwide AMR campaigns	5.7.30 Developing Information, Education and Communication (IE & C) materials for targeted groups in a stratified public education campaign (informed by target audience analysis) is targeted to start mid-2023.	0%	
D. Improved countries capacities for mainstreaming and for costing AMR	D.1 National Action Plan on AMR (NAP) with the estimation of the costs of the implementation of the NAP by year have been established or reviewed.	1.2.7 Activity aimed at finalizing and publishing AMR NAP mainstreaming guidelines for Ministries Departments and Organisations (MDAs) and Multi-sector MDA director's forum to provide technical support for AMR NAP mainstreaming and prioritization by MDAs is yet to start.	1-25%	
	D.2 Assessment of investment needs, existing resource finance and funding gaps for implementing National Action Plan conducted with the involvement of all relevant sectors.	1.2.6 Conduct in-depth assessment of barriers, bottlenecks, and gaps to inform effective mainstreaming and implementation of AMR NAP activities in the relevant sectors. This activity is yet to start.	1-25%	
E. Systems for generating, analysing, and interpreting data on resistance and consumption/ use patterns developed or strengthened	E.1 Multisectoral Co-ordination Group (MCG) is supported by the Tripartite to review the data and data quality on AMU/AMC and/or AMR in relevant sectors and consider the need to adapt the delivery of national strategies.	3.4.8 Technical Workshop Series on generation, analysis, interpretation and use of quality resistance and consumption data (AMU/AMC/AMR data quality). This activity is yet to start. 3.4.9 Policy dialogue on AMR and AMU data. This activity is yet to start.	0%	
	E.2 Percentage of targeted laboratories with capacity to perform antimicrobial susceptibility testing and bacterial isolation and identification according to international standards.	3.4.10 Assess current capacity of laboratories for conducting culture and sensitivity testing; and capacity for hospital-based surveillance. An academic institution: University of Ghana Medical School, department of Microbiology is implementing this activity, led by the chairman of the Surveillance Technical Working Group of Ghana's AMR platform. Activity is expected to be completed by end of first quarter 2023. 4.5.14 Resource regional laboratories with capacity to perform culture and sensitivity testing based on comprehensive needs assessment. Selected Laboratories were assessed using FAO-ATLASS tool, needs assessment were also carried out. Procurement of laboratory consumables and items to ongoing. Next steps are to deliver resources to laboratories, installation, and training of staff on the use of procured items.	50-75%	
			50-75%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	E.3 National surveillance system for AMR/ AMC/ AMU supported in human health, animal health, plant health, food, and environment	<p>3.4.11 Conduct AMR prevalence studies. A commissioned studies to conduct AMR prevalence studies has been planned. A project lead from an academic institution has been identified to implement this activity.</p> <p>4.5.12 Support the ESBL integrated surveillance protocol in 1 region of Ghana. Assessment of sites were completed. Three sites respectively for human, animal, and environmental health component of the Tricycle ESBL E. coli surveillance identified, trained, and supported to initiate processes to begin surveillance.</p> <p>4.5.13 Support the ESBL data input into the GLASS. Focal person from Noguchi Memorial Institute for Medical Research worked on stored isolates from ESBL tricycle surveillance. Antimicrobial Susceptibility Testing (AST) results from human health component was entered into GLASS alongside over 12,000 isolates from across the country. Had challenges with entering environmental and animal health AST results into GLASS. Administrators of GLASS were contacted, who gave a response that, GLASS is not accepting environmental and animal data at current time.</p> <p>3.4.15 Establish the surveillance system of antimicrobial use in animals, crops, and environment sectors. Stakeholders met and defined implementation plan for this activity to be implemented by the veterinary service Division of the ministry of Food and Agriculture, and the Environmental Protection Agency of the Ministry of Environment, Science, Technology, and innovation. Awaiting release of funding from WOAH AFRO to country for full scale implementation.</p> <p>3.4.16 Develop indicators for monitoring antimicrobial use and resistance across all affected sectors. Leveraging an AMR NAP M&E dashboard development, indicators across some affected sectors were developed. Pending review by a wider stakeholder across all sectors and inputs from stakeholders.</p> <p>3.4.17 Develop monitoring tools for antibiotic use in terrestrial animals and aquaculture. Leveraging on an FAO led AMR MPTF activity, monitoring tools for antibiotics use in terrestrial animals and aquaculture were developed. Next step is for a wider stakeholder meeting to finalise tools and indicators for AMU in terrestrial animal farms and aquaculture.</p> <p>3.4.18 Monitor antimicrobial use in selected health facilities for human health. Data collection from selected healthcare facilities have been completed. Analysis of data ongoing to generate actionable priorities for intervention. Yet to receive technical report.</p> <p>3.4.19 Institute monitoring mechanisms for the use of antimicrobials in terrestrial animals, fisheries, and plant health. Workshop to identify, review tools for on farm AMU carried out. Suitable templates have been developed, validated, and migrated into a mobile application for the AMU data collection on. The app has been pretested and in use for collecting on farm data from farms (poultry, piggery, aquaculture, hatcheries) and Veterinary clinics. Training for farmers and veterinary officers from seven regions involved in the pilot was carried out. Interim end of year assessment of data coming in was carried out.</p> <p>3.4.20 Facilitate collection and review of sales data on antimicrobials for animal use. A workshop has been organized to discuss and develop standard tools and methodology for the antimicrobial sales data in the animal sector. Data collection started in October 2022 by staff from veterinary service division.</p> <p>3.4.21 Develop systems to yield AMC surveillance data in human and animal sectors. Stakeholder identification and engagement completed. Potential sources of AMC surveillance data identified. The AMR secretariate of the ministry of Health is leading this activity.</p>	1-25% 50-75% 75-100% 1-25% 75-100% 50-75% 75-99% 100% 75-99% 1-25%	
F. Systems for biosecurity and IPC strengthened in targeted countries	F.1 National plans developed or reviewed to ensure good production practices	4.5.23 Develop national biosecurity standards to enhance antimicrobial stewardship at farm level. Draft national biosecurity guidelines for piggery and aquaculture have been developed. The items within the guidelines have been prioritized and score/ weights assigned to them. A wider stakeholder workshop for validation of the guidelines was organized. Corrections and recommendations of stakeholders incorporated, and biosecurity guidelines approved and adopted for country.	100%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	F.2 Implementation and/or scale up minimum requirements for infection prevention for food production, in accordance with international standards.	<p>4.5.25 Pilot the use of biosecurity standards to rank poultry, pig, and fish farms in three ecological zones in Ghana. This activity is yet to start. It is dependent on completion of training manual development on developed national biosecurity guidelines, training of selected farmers on the biosecurity guidelines and assessing using the biosecurity guidelines.</p> <p>4.5.27 Conduct antimicrobial use studies in animal sector to expand the initiated AMU behaviour change studies in other species. The veterinary service division of the Ministry of Food and Agriculture is leading this activity on behalf of WOAH. Detailed proposal has been submitted to WOAH AFRO which have also forwarded to WOAH HQ in Paris. Awaiting release of funds to implement activity in country.</p>	1-25%	
	F.3 National IPC programme supported in line with IPC core components	4.5.26 Support the development and adoption of Integrated pest management (IPM) strategies using farmer field school approach. We completed a KAP study on the use of antimicrobials on vegetable farms and Agrochemical shop owners. Data collection was completed and data analysis ongoing.	75-100%	
	F.4 Stakeholder training for the scaled-up implementation of national IPC programme/interventions.	<p>4.5.22 Train the private practitioners in human health on MoH IPC document. Focal persons from fourteen high volume private health facilities in Accra were trained on IPC, WASH and AMR. This is the first ever organized training on IPC for members of the association of private medical practitioners in Ghana. Trainees were trained and supported to conduct baseline assessment of WASH practices in respective private health care facilities and plan interventions to improve IPC. Manuscript from baseline survey submitted to a journal. Intense interest following completion of this activity necessitated proposals development to scale-up the training and assessment to other regions in the country. Seeking funding for the scale-up.</p> <p>4.5.24 Training manual development for biosecurity framework and SOPs Recruitment process ongoing, for recruitment of consultant to develop training manual from the developed national biosecurity guidelines.</p>	100%	
			25-50%	

INDONESIA

Overview

Project: Combating AMR in Indonesia through multi-sectoral approaches to infection reduction and improved stewardship (ID: 00124431)

Duration: 24 months, 1 January 2021 – 31 December 2022; No-Cost Extension (6 months) until 30 June 2023.

Activities under the AMR MPTF project focus on strengthening systems for optimized use of anti-microbials between and within ministries, regulating infection prevention and control (IPC), water, sanitation and hygiene (WASH) in the human and animal health sectors, as well as developing a communication and advocacy strategy for engagement with key stakeholders on antimicrobial resistance. Key activities in 2022 included:

- Joint review of IPC, including WASH, in human and animal sectors in pilot areas;
- Development and pilot implementation of IPC initiatives in healthcare facilities and farming systems using complementary parallel approaches on WASH, agricultural WASH (AgriWASH), IPC, and farm biosecurity;
- Strengthened the involvement of the environmental health sector in the AMR control programme;
- Strengthened waste treatment system in livestock production facilities and health care facilities that play a role in preventing the spread of AMR in the environment;
- Joint review/assessment of antimicrobial stewardship (AMS) practices in humans and animals in pilot areas;
- Development of AMS guidelines for human and animal health;
- Development of standard treatment guidelines and a user-friendly application (for both human and animal health) using AWaRe classification for health care professionals and veterinarians/veterinary paraprofessionals;
- Establishment of a coordination mechanism to monitor and inspect antimicrobial use in human and animal health;
- Joint assessment of the implementation of antimicrobial use AMU stewardship in selected farms and communities through a knowledge, attitude and practice survey (KAP) towards the end of project;
- Development of monitoring and evaluation plans for national action plan (NAP) implementation in pilot areas;
- Development of a communication and advocacy strategy for engagement with key stakeholders (farmers, veterinarians, food sectors, pharmaceutical manufacturers and sellers, investors and development partners, civil society, academia); Strengthening cross-sectoral involvement and participation in the 2022 World Antimicrobial Awareness Week Celebration.

Project Progress

Joint Review of IPC-WASH and AMS

- IPC-WASH and AMS assessments were conducted in four districts in Central Java and East Java Province. The human health sector focused on hospitals and primary health centres (Puskesmas) while the animal health sector focused on poultry farms and animal health facilities (Puskeswan).
- The IPC-WASH assessment showed that most healthcare facilities had an intermediate to advanced level of implementation; however two districts required infrastructure support. The AMS assessment found one-third of healthcare facilities had inadequate implementation and less than half integrated the WHO Access, Watch, Reserve classification into their formulary. Whilst the results suggest a positive correlation between successful IPC-WASH and AMS implementation, improvement of AMS will require policy advocacy, regulation development, communication, education, and M&E.

Other Progress Items

Developing standard treatment guidelines and a user-friendly application (for both human and animal health) using AWaRe classification for health care professionals and veterinarians/ veterinary paraprofessionals.

- Close communication and coordination meetings with FAO RAP and FAO Bangladesh were conducted in preparation of a visit by FAO RAP/FAO Bangladesh to Indonesia.
- Translation of the WHO AWaRe antibiotic book from English into Bahasa Indonesia.

Creating a coordination mechanism to monitor and inspect antimicrobial use in human and animal health.

- As a result of a series of meetings between FAO, DGLAHS and the National Agency for Drug and Food Control (NADFC) in 2022, a Multisector Joint Inspection Guideline on Antimicrobial distribution chain between human and animal health sector has been developed. The Government will use these guidelines to prevent switching in the distribution chain and cross-sectoral use of antimicrobials which risks causing overuse and misuse of antimicrobials.

Developing an activity timeline for implementation of the joint inspection in 2023 focusing on high-risk locations. Joint assessment of the implementation of AMU stewardship in selected farms and communities through a KAP survey towards the end of the project.

- A KAP survey helps government and other stakeholders to understand antimicrobial usage practices among HCFs and farms. The Tripartite Organisations in collaboration with DGLAHS have started preparing the KAP survey in both sectors through a workshop to determine the survey method, questionnaire of the KAP survey as well as the selection of target locations and farms. Implementation followed by dissemination of the KAP survey is planned for early 2023.

Developing monitoring and evaluation plans for NAP implementation in pilot areas.

- The Tripartite Organisations have conducted initial consultations and plans to organize a meeting with the Coordinating Ministry of Human Development and Cultural Affairs (CMHDCA) to develop and disseminate the monitoring and evaluation plan of the NAP in 2023.

Developing a communication and advocacy strategy for engagement with key stakeholders (farmers, veterinarians, food sectors, pharmaceutical manufacturers and sellers, investors, development partners, civil society and academia).

- World Organisation of Animal Health - Sub-Regional Representation for South-East Asia (WOAH SRRSEA) has engaged a local consultant to develop a multisectoral advocacy and communication strategy to mitigate AMR for Indonesia in consultation with Tripartite staff, AMR technical working groups of different ministries and other relevant stakeholders working on AMR/AMU issues in Indonesia. The consultant conducted a consultation workshop in August 2022 to introduce the conceptual framework of social and behaviour change communication (SBCC), brainstorm for advocacy and communication strategy development, and identify/select the awareness materials to be developed. The communication and advocacy strategy document will be finalized early 2023.
- In addition to the communication and advocacy strategy, WOAH SRRSEA developed key messages and communication materials, including three posters, three leaflets, and three social media graphics focusing on the prudent and responsible use of antimicrobials in human, animal, and environmental sectors. A matrix of key messages has been developed and the final product will be launched by April 2023.

Strengthening cross-sectoral involvement and participation in the 2022 World Antimicrobial Awareness Week Celebration (WAAW).

- WHO and FAO collaborated with the CMHDCA, MoH, and MoA and participated in a media briefing on 12 October 2022 in the lead up to WAAW in November 2022.
- In celebration of WAAW 2022, a talk show was held by MoA-DGLAHS with WOAH SRRSEA, FAO and Fleming Fund on 22 November 2022, in Jakarta. The talk show was attended by public and private sector, including CMHDCA, MoH, MoA, and was aimed to increase awareness of AMU in the poultry and veterinary drug industries and to create a model for other veterinary drugs industries.
- The talk show was followed by a joint declaration for active participation in AMR control which was also signed by some of the largest poultry and pharmaceutical industries in Indonesia, and a press conference on the same day.

Main Challenges

- Disruptions due to the COVID-19 pandemic during the first year of implementation have cumulatively impacted implementation in 2022, causing delays. Close collaboration and regular meetings between the Tripartite were found to be best practice to prioritize and identify activities that could be done despite the delays and how to catch up on the remainder of activities.
- The outbreak of Foot and Mouth Disease (FMD) in the animal health sector caused the government to focus activities on controlling FMD, thereby affecting the implementation of MPTF activities and other donors.
- The responsibility for AMR is scattered across several DGs, adversely affecting planning, coordination and implementation. In addition, the new 2022 MoH health transformation agenda led to a restructuring within MoH, including shifting roles and responsibilities of MoH units working on AMR, which led to protracted administrative and knowledge transfer processes. This also contributed to delayed implementation.
- Indonesia held the presidency of G20 in 2022 and as part of the 3rd Health Working Group, MoH hosted an AMR side event on 24 August 2022. The side event was an opportunity to refocus efforts on tackling AMR and successfully drew the attention of G20 leaders. MoH Indonesia led the preparation of the side events.
- The Ministry of Environment and Forestry has been involved in the AMR strengthening programme in Indonesia, but formal involvement based on the formal appointment is still in process. The limited availability of UNEP representatives/staff in the country is also identified as one of the main challenges in strengthening the environmental AMR programme. Another challenge is limited information on wastewater AMR. With regards to the human sector, WHO continues to work with the Environmental Health Directorate in the MoH and the National Research and Innovation Agency (BRIN).

Impact of Challenges

- The challenges faced were not the same in animal and human health sectors, resulting in different time frames of implementing activities. The overall programme implementation was slow.
- No-Cost Extension needed until June 2023.

Learning Innovation

- Close and regular cooperation/coordination between Tripartite Organisations allowed for effective implementation of activities,
- Leadership from the government is important to ensure participation, support and commitments from in-country private sector entities in the form of formal agreement and intersectoral collaboration.

Stakeholder Engagement and Resource Mobilization

- The Coordinating Ministry of Human Development and Cultural Affairs released the Coordinating Minister regulation no. 7/ 2021 concerning the Multi-Sectoral AMR National Action Plan. The MPTF grant has facilitated the close collaboration between all the related sectors to work together including with the Coordinating Ministry of Human Development and Cultural Affairs.
- Close engagement with the private sector included signing a joint declaration on key steps to mitigate AMR by public and private sector.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Increased comprehensiveness and quality of the policy dialogue and practice	Number of countries whose AMR Multisectoral Coordination mechanisms engage with a broad range of relevant partners	That there will be no significant political changes or shifts in national priorities.
Use of antimicrobials optimized in critical sectors	Number of countries that implemented one or more (additional) international instruments on AM	That there will be no excessive changes in staffing in partner ministries.

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Use of Systems for biosecurity and IPC strengthened in targeted countries	A.1 Number of provinces (pilot area) that are supported to implement and/or scale up minimum requirements for infection prevention (e.g., husbandry and biosecurity) for food animal production, in accordance with international standards (GAP M&E Framework 3.d). Baseline value: 1 province Target value: 2 provinces	Joint review of infection prevention and control (IPC – including WASH) in human and animal sectors in pilot areas (done in both sectors). • IPC-WASH review in both animal and human health sector were done. • IPC-WASH database in animal health sector at 160 poultry farms in 4 pilot districts. • Data on IPC-WASH in the animal health sector has been analysed and disseminated to stakeholders and developed intervention plans. • Intervention for human health sector is identified and will be done in 2023. Develop and pilot the implementation of IPC initiatives in healthcare facilities and farming systems using complementary parallel approaches on WASH, AgriWASH, IPC, and farm biosecurity. • Yet to be started for human health. • Intervention of the animal health sector is done by improving the capacity of 16 veterinary service officers on AMS and IPC-WASH in the poultry farm through training of trainers (ToT) and debriefing. Strengthen the involvement of the environmental health sector in the AMR control programme. – new – under No-Cost Extension programme • Initial coordination discussion with UNEP Representative in the country – identification of coordination issues e.g., limited number of UNEP staff in the country, no appointed unit responsible for AMR in the Ministry of Environment and Forestry yet. Strengthening waste treatment systems in livestock production facilities and health facilities that play a role in preventing the spread of AMR in the environment - new - under no cost extension programme. • WASH Assessment together with IPC assessment. • Under preparation for AMR wastewater assessment to provide baseline situation.	75-99%	Active support from concerned ministries will be available and the current workload of ministries for COVID-19 will decrease. Risks: Competing priorities in local governments; price fluctuations, and disease incidence in farms; lack of willingness from the government to invest in infrastructure.
B. System for optimized use strengthened in the critical sectors	B.1 Guidelines for responsible and prudent use of antimicrobials based on international standards are developed or revised.	Joint review/ assessment of Antimicrobial Stewardship (AMS) practices in human and animal health in pilot areas. (Started) AMS review in both animal and human health sector was completed. AMS database in animal health sector at 160 poultry farms in 4 pilot districts. Data on AMS in the animal health sector has been analysed and disseminated to stakeholders and developed intervention plans. Interventions for human health sector are identified and will be done in 2023.	50-75%	
		Develop Antimicrobial Stewardship guidelines for human and animal health (started) • Drafting of communication and advocacy strategy. • Developing the key messages targeting multiple stakeholders, • Conducting stakeholder awareness targeting WAAW. Develop standard treatment guidelines and a user-friendly application (for both human and animal health) using AWaRe classification for health care professionals and veterinarians/ veterinary paraprofessionals. (Started) • Online dissemination of AWaRe antibiotic book 2022. • Translation of AWaRe antibiotic book to Bahasa Indonesia. • Close communication with FAO RAP and FAO Bangladesh. Create a coordination mechanism for monitoring and inspection of antimicrobial use in human and animal health. (Started) • Developed joint inspection guideline for the antimicrobial distribution chain between human and animal health sectors guideline. • Develop activity timeline. Jointly assess implementation of AMU stewardship in selected farms and communities through Knowledge Attitude Practices (KAP) Survey towards the end of the project (yet to be started). • Finalization of TOR and KAP tool for both animal and human health sector. • The KAP survey will be implemented in 2023.		Active support from concerned ministries and workload of ministries on COVID-19 reduced. Risks: Competing priorities in local government, willingness to share information between sectors.
C. Implement engagement plans with critical stakeholder groups	C.1: Number and list of stakeholder engagement plans developed and/or implemented at the national level	Develop monitoring and evaluation (M&E) plans for NAP implementation in pilot areas. (Started) • Conducted coordination meeting with the Coordinating Ministry of Human and Culture Development on the plan for development M&E tools for NAP AMR 2020-2024. Develop communication and advocacy strategy for engagement with key stakeholders (farmers, veterinarians, food sectors, pharmaceutical manufacturers and sellers, investors and development partners, civil society, and academia). • The first stakeholder workshop took place. Strengthening cross-sectoral involvement and participation in the 2022 World Antimicrobial Awareness Week Celebration. - new - under No-Cost Extension programme • WAAW by WOAH – conducting a multi-stakeholder talk show and signing a joint statement for mitigation of AMR.	50-75%	Consistent participation of critical stakeholders, active support from concerned ministries and current workload of ministries on COVID-19 is reduced. Risks: Competing priorities in ministries and among critical stakeholders.

KENYA

Overview

Project: Preventive approaches to containment of AMR in Kenya (ID: 00124994)

Duration: 24 months, 1 December 2020 to 1 December 2022, No-Cost Extension (25 May 2023)

Activities under the AMR MPTF project focus on strengthening AMR governance and coordination between and within Government Ministries and their stakeholders in regulating AMU in the human and animal health sectors as well as increasing public awareness and advocacy. Its key activities include:

- Scale up enforcement of regulation along the supply and distribution chain of antimicrobials in human and animal health;
- Strengthening Inter-Ministerial Coordination Committee on AMR;
- Capacity building health workers on infection prevention and control as well as rolling out national AMS guidelines in healthcare facilities;
- Develop a reporting system and database to support county level antimicrobial consumption in humans and improve reporting on AMU in animals;
- Undertake KAP surveys;
- Improved capacity to design awareness raising behaviour change and educational activities.

Project Progress

IPC Trainings

- Workplans developed to address gaps in infection prevention and control (IPC) as well as in antimicrobial stewardship.
- Six county health facilities were trained in infection prevention and control.

Support for Regulatory and Legislative Reviews

- Veterinary Medicines Directorate (VMD) and Directorate of Veterinary Services (DVS) held a national stakeholder forum to harmonise the regulatory framework for veterinary medicines in the country with a subsequent gazettement of the amended regulations. The forum will help in the maintenance and awareness of high standards of safety, quality, and efficacy for all veterinary medicines in the country and safeguard animal and human health and the environment.
- The DVS is in the process of enacting regulations prohibiting AMU as growth promoters and banning the use of certain critically important antimicrobials without a risk analysis. Legal notices have been drafted, and internal reviews and consultations on the prohibitions are ongoing.
- A post-market surveillance (pharmacovigilance) workshop on strengthening regulatory measures, development of necessary data collection tools and streamlining activities of the veterinary medicine regulatory systems was held allowing for the development of the first ever pharmacovigilance plan for the VMD in the country.
- Draft Terms of reference (TORs) for the AMU database have been developed.
- A literature review titled: "A Review of Antimicrobial Use and Antimicrobial Resistance in Crop Production - the Link Between Crop and the Environment in Antimicrobial Resistant Germs Transmission to Humans and Animals". has been prepared and shared with the Tripartite partners and the Directorate of Veterinary Services (DVS).

Continued Dissemination of Farm Biosecurity Guidelines

- Farm biosecurity guidelines that were developed during the first year of the project are being disseminated and used to sensitise veterinarians and veterinary paraprofessionals by the Kenya veterinary Association branch for the Self-Employed Veterinarians (KVA-SEVET).
- A Knowledge Attitude and Practices (KAP) study was conducted by FAO in collaboration with Nyeri County Government (Department of Crops) to understand AMU in crops, support compilation of best practices and identify areas of interventions. Results of the KAP study will be

disseminated to stakeholders in 2023.

Main Challenges

- Restrictions on holding physical meetings due to COVID-19 resulted in the postponement of some activities.
- The project implementing team at the ministries is lean in numbers with a huge workload. Prioritizing activities and utilizing earlier trained national Training of Trainers (ToTs) was done to enhance capacity building of health workers and stakeholders in animal health and for dissemination of developed guideline documents.
- Getting the right consultants to support implementation of specific activities took more time than had been anticipated and this resulted in delayed implementation.

Impact of Challenges

- Delayed activities by up to six months thereby affecting timely implementation.
- The delivery of the workshop on post-market surveillance needed more than one consultant and this had a financial implication as more funds had to be used than initially budgeted to support the activity.

Learning Innovation

In responding to a country's need to establish systems, stakeholder consultation and involvement is key to achieving country ownership. Several stakeholder forums may be required than had been previously envisaged and they are necessary in delivering the project objectives and to ensure sustainability of processes.

Sometimes, activity implementation unearths other prerequisite and follow-up steps to a process. It is important to recognize and map-out such developments as we implement the planned activity with the aim of future planning on how those integral elements will be supported to guarantee completion of developed systems to full functionality.

Stakeholder Engagement and Resource Mobilization

It is evident the MPTF grant is catalysing a broader engagement of stakeholders. This has been the trend since the project inception for all engagements that required stakeholder consultation; and it is key to country ownership and for building sustainability for the continued implementation of activities and systems for posterity.

- Additional investment by government has been realized in implementing some activities where the government requested for partnership and funded some aspects of implementation and provided government vehicles and fuel to support project activity.

2.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Use of antimicrobials optimized in critical sectors	Tools for Country level AMC/AMU data collection developed for human and animal health.	Pharmacy and poisons Board and the Veterinary Medicines Directorate will support the processes. All stakeholders required for this process will be willing to participate.
	AMC/AMU databases developed in the MoH and MoALFC.	There will be adequate capacity to develop the databases in a timely manner.
Improved understanding of AMR risks and response options by targeted groups	National and county targeted AMR awareness campaigns established.	Stakeholders from counties will be willing to participate in the awareness campaigns.

2.a. 2.b Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Systems for biosecurity and IPC strengthened	A.1 Indicator A.1: National IPC and good practices guidelines developed and/or disseminated.	<p>Three (3) farm biosecurity guidelines for dairy, poultry and pig value chains developed during writing -workshop held between 22-24 March 2021 involving key multi-sectoral experts from the public and private sector.</p> <p>The three farm biosecurity guidelines documents were reviewed and validated during a validation workshop held from 12-16 August 2021.</p> <p>The three farm biosecurity guidelines documents were disseminated to 29 veterinarians and 30 paraprofessionals during various training sessions. Trainees were informed to further disseminate the guidelines to stakeholders in their respective networks. Dissemination of guidelines continued through Kenya Veterinary Association -Self Employed Veterinarians (KVA-SEVET) continuous professional development programmes and the TRANSFORM project.</p> <p>Guidelines have been published on the MOH website and ECHO platform used for further dissemination.</p> <p>70 (13 female) sub-national public and private animal health workers were sensitized on Infection Prevention Control (IPC) and biosecurity guidelines with reference to antimicrobial resistance, in October 2022</p> <p>Dissemination planned during the 2023 annual Kenya Veterinary Association (KVA) conference in April 2023.</p>	75-99%	
	A.2: Number of trained professionals on IPC and Biosecurity	<p>Thirty (14 male, 16 female) sub-national veterinary Paraprofessionals trained as Trainers of Trainers (ToTs) on farm biosecurity measures, from 12-14 October 2021.</p> <p>Twenty-nine (22 male, 7 female) sub-national veterinarians trained on AMR-NAP implementation, responsible use of antimicrobials and Farm Biosecurity from 14-17 December 2021.</p> <p>121 personnel trained on IPC drawn from 6 target counties.</p>	100%	
B. Systems for optimized use of antimicrobials strengthened in critical human and animal sectors	B.1: Number of regulatory framework for AMC/AMU in human and animal health revised/ developed/updated.	<ul style="list-style-type: none"> • A Post- market surveillance Plan for veterinary medicines developed. • Draft legal notices on prohibition of use of antimicrobials AMU as growth promoters and on the prohibition of the use of critically important antimicrobials (Fluoroquinolones, third and fourth generation Cephalosporins and Colistin) without a risk analysis 	100%	50-75%
	2: AMC/AMU databases developed in the MoH and MoALFC	<ul style="list-style-type: none"> • Draft terms of reference (TORs) for the development of AMU database at VMD developed 	1-25%	
	B.2b: Guidelines for prudent use of antimicrobials in animals disseminated to veterinarians and veterinary paraprofessionals	<ul style="list-style-type: none"> • Guidelines on prudent use of antimicrobials in dairy, poultry and pig production shared with 29 County veterinarians and 30 veterinary paraprofessionals during various trainings. • SEVET continuously disseminated during their continuous professional development (CPD) programmes 	75-99%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
C. Improved capacity to design awareness raising, behavior change and educational activities	C.1: Support delivery of two (2) nationwide AMR campaign targeting stakeholders' groups based on targeted messaging within sectors	<ul style="list-style-type: none"> Supported WAAW 2021 celebrations at national level that enabled, i) convening of a 1-day meeting to train the media on AMR, ii) convening a high-level meeting which launched the WAAW celebrations in Kenya and, iii) launching of various documents to support the implementation of Kenya's AMR-NAP. Supported WAAW 2021 at subnational level by enabling Bungoma County Antimicrobial Stewardship Interagency Committee (CASIC) to hold a farmer field day that educated more than 150 farmers and other key stakeholders. During WAAW 2021, various awareness creation materials (pull up banners, horizontal banners, branded t-shirts and branded caps) were developed, printed and disseminated at national level as well as to five County Antimicrobial Stewardship Inter-Agency Committees (CASICs). 	50-75%	
	C.2: The Implementation of the communication strategy harmonized	<ul style="list-style-type: none"> Harmonized AMR messages developed for joint awareness creation (WAAW) 2022 	100%	

MOROCCO

Overview

Project: Support the implementation of the AMR-NAP through a One Health approach in Morocco (ID: 00124432)

Duration: 24 months, 16 December 2020 – 16 December 2022; 31 October 2023 (9 months extension)

The project sets out to improve the country's governance capacities, strengthen surveillance and information systems, support systems for biosecurity and infection prevention control as well as increased awareness raising, and behavior change among key stakeholders and the public. All activities included in the MPTF project are anchored in the country's AMR National Action Plan (NAP), 2019-2021, and the results of the project will provide a robust basis for the development of the next NAP.

The project is carried out by the country Tripartite Organisations (WHO, FAO, WOAH) in close collaboration with the Ministry of Health and Social Protection, Ministry of Agriculture, Marine Fisheries, Rural Development and Water and Forests, and the Ministry of Energetic Transition and Sustainable Development. Implementation of the project's activities started in January 2021 and activities are set to conclude by October 2023.

Its key outputs include:

- Improved country capacity for the design and implementation of investment plans and programmes related to antimicrobial resistance;
- Data generation, analysis and interpretation systems for AMR and consumption and use, developed or strengthened;
- Biosecurity and IPC systems in Morocco strengthened; and
- Improved capacities to design awareness raising, behavior change and education activities.

Project Progress

- The recruitment in December 2022 of a consultant to develop a joint communication plan and tools (sectoral and joint) to raise awareness of the importance of AMR and means of infection prevention and control. Result expected in 2023;
- The successful implementation of two consultations on 1) strengthening the capacities of professional Organisations, in the fields of animal health in the development and implementation of norms, and 2) standards and guidelines for good practices on biosecurity and the control and prevention of infections for dairy and poultry sectors. Good practices guidelines and manuals were prepared for dairy and poultry sectors;
- Training of trainers (private and public veterinarians) workshops on biosecurity in the poultry and dairy sectors for POs were organized on June 23, 2022, and 15, 16, 17 June 2022, respectively;
- ATLASS mission for a joint assessment and analysis of veterinary and environmental laboratories capacities was conducted. A restitution workshop of the mission was organized, and the final report of the mission was shared, and implementation of recommendations is ongoing.
- Consultation to establish a robust and effective governance mechanism to drive and support AMR policy was conducted and its report draft was shared with all stakeholders in November 2022. A restitution workshop is scheduled for March 2023.
- Celebration of the World Antimicrobial Awareness Week 2022 through 1) the edition of communication tools, dissemination of messages and public display. (e.g. rent of billboard, TV, radios spots), 2) the design and implementation of appropriate messages in the form of capsules, videos and flyers for the three sectors (human health, agriculture, environment) and 3) the Organisation of a national conference on AMR on December 8, 2022, with the participation of stakeholder's senior officials, scientists, and scientific associations from the human,

animal and environment health sectors.

- Data to support the implementation of integrated surveillance (e.g., Tricycle ESBL E. coli) on agricultural sectors was collected for 2022 by ONSSA and shared with national and international MPTF project stakeholders.



Main Challenges

- Restriction imposed by COVID-19 during the first semester of 2022 with impact on travel and restrictions to hire international consultants.
- Complexity of Terms of Reference (ToR) of the international consultation to support the design and implementation of an integrated national surveillance network and information system to monitor and generate data on AMR and antimicrobial use, resulting in difficulties to identify consultants with the required profile and in delay of engaging this important activity.
- The complexity of the Terms of Reference (ToR) for the international consultation, aimed at assisting in the development and implementation of an integrated national surveillance network and information system to monitor and generate data on AMR & AMU led to challenges in identifying consultants with the necessary expertise and caused delays in initiating this crucial activity.
- Difficulties in engaging some key activities of the project such as: 1) Updating the national strategy for the prevention and control of nosocomial infections and related survey, 2) Support the implementation of integrated surveillance (e.g., Tricycle ESBL E. coli) because of consultant disclaimer or breach of commitment.

Impact of Challenges

Some pillar MPTF activities such as 1) the establishment of a robust and effective governance mechanism to drive and support AMR policy, 2) design and implementation of an integrated national surveillance network and information system to monitor and generate data on AMR and antimicrobial have not yet been implemented yet or only achieved.

For the above-mentioned challenges, extension of the MPTF project for an additional 9 months was requested and approved.

Learning Innovation

The implementation of the AMR MPTF project resulted in broader engagement of stakeholders in tackling AMR. This is evidenced by:

- The commitment of senior officials from national stakeholder institutions, their close follow up of the project implementation and capacity building.
- The degree of awareness gained at the level of the Departments of Health, Agriculture and Environment as well as within the scientific and relevant NGO communities.
- The agreement signed between the Ministry of Agriculture and the interprofessional federations of the agricultural sectors and IAV Hassan II to tackle AMR.
- The recommendation of the Royal Institute of Strategic Studies (IRES) to the Moroccan government, at the occasion of a symposium organized on July 2022, to include a One Health approach, including AMR in their strategy and policy.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS
Increased comprehensiveness and quality of the policy dialogue and practice	Number of countries whose AMR Multisectoral Coordination mechanisms engage with a broad range of relevant partners.
Use of antimicrobials optimized in critical sectors	Number of countries that implemented one or more (additional) international instruments on AM.

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Improved countries capacities for designing and implementing AMR related policy frameworks, investments plans and programmes	A.1 The National M&E Framework for the MSAP developed	<p>IMCC-AMR TOR drafted, and consultative meeting held with stakeholders.</p> <p>M & E framework drafted, and consultative meetings held with stakeholders. A provision of the M&E framework was addressed by the consultancy on Governance. The quadripartite offered its support in recruiting a consultant to support Morocco. The meeting for the presentation of the new mechanism of governance was held March 7, 2023.</p>	75-99%	
	A.2 The regulatory framework has been reviewed in line with the related international guidance on responsible and prudent use of antimicrobial agents	<p>Reviewed the Law on Management of Health Products.</p> <ul style="list-style-type: none"> • The law covers all sectors. MoA previously issued a law on animal health and veterinary services, so the laws need to be harmonized. <p>Integrated AMR-related items into this draft law.</p> <p>The existing legal framework for AMR management was reviewed by a consultancy cabinet using the tool developed by the Tripartite. A restitution workshop of the consultancy was organized, and a draft report was shared. The existing legal framework covers the 3 sectors: Human, Animal and Environmental Health. Recommendations to improve the regulatory framework were shared with national stakeholders.</p>	75-99%	
B. Systems for optimized use of antimicrobials strengthened in critical human and animal sectors	B.1 Antimicrobial stewardship programme implemented in additional health care facilities	<p>Local NGO contracted to support the Department of Health Services for AMS for human health:</p> <ul style="list-style-type: none"> • Drafted AMS policy and materials for pre- and in-service training • Held consultative workshop to collect inputs from stakeholders (Not yet implemented). 		
	B.2 Guidelines for responsible and prudent use of antimicrobials based on international standards are developed or revised	Review existing documents/ studies/ literature in-country and neighboring countries has started: good practices guidelines and manuals were prepared for dairy and poultry sectors to promote responsible and prudent use of antimicrobials.		
C. Improved capacity to design awareness raising, behavior change and educational activities	C.1 Communications strategies developed	GDAHP with WOAH support hosted multi-sectoral workshop to develop AMR communication strategy, 20-22 October. A consultant was recruited in December 2022 and work is in progress for elaborating a communication strategy.	25-50%	
	C.2 IEC materials developed and used for nationwide AMR campaigns	<p>GDAHP with WOAH support prepared awareness activities during WAAW at national and sub-national levels.</p> <ul style="list-style-type: none"> • The edition of communication tools, dissemination of messages and public display. (e.g., rent of billboard, TV, radios spots), 2) the design and implementation of appropriate messages in the form of capsules, videos and flyers for the three sectors (Human health, Agriculture, Environment) and 3) the Organisation of a national conference on AMR on December 8, 2022, with the participation of stakeholders' senior officials, scientists, and scientific associations from the human, animal and environment health sectors. • Participation to the celebration of the WAAW Africa 2022 by sharing the experience gained by the MPTF project in Morocco through the participation in webinar series organized by the quadripartite and AU-IBAR during the third week of November 2022 in Dakar, Senegal • Consultants recruited in December 2022 to develop the AMR/AMU awareness materials (leaflets, posters, social media infographics, videos) 	75-99%	

PERU

Overview

Project: AMR-MPTF: Fight against antimicrobial resistance in Peru under the One Health Approach (ID: UNJP/PER/060/UNJ)

Duration: 24 months; 11 January 2022 – 11 January 2024

The key areas of the AMR-MPTF project focus on strengthening institutional governance, generating AMR and AMU data and evidence to decision-makers by strengthening the basis for an integrated AMR surveillance system, promoting responsible antimicrobial use in the human health and agricultural sectors, and improving understanding of AMR risks. The core activities include:

- Updating the AMR Multisectoral Plan and strengthening the CMS-AMR;
- AMR regulatory framework with One Health approach;
- Bases for the integrated surveillance system: strengthening analytical and information management capacities, AMR and AMU protocols and procedures, and provision of laboratory materials and reagents;
- Responsible and prudent use of antimicrobials in animal health and agriculture and implementation of the consensus guide through public-private partnerships;
- Support for the implementation of the ASP regulations in human health at the national level.
- Awareness and advocacy strategy on AMR/AMU under the One Health approach, with priority application in the poultry sector;
- Advocacy in higher education institutions, Professional Associations and Scientific Societies, including AMR and AMU in the curriculum of professional careers.

Project Progress

- Updating of the Multisectoral AMR Plan and strengthening of the CMS-AMR, the "Multisectoral Plan to address Antimicrobial Resistance 2019-2021" approved by Supreme Decree No. 010-2019-SA, establishes the Multisectoral Commission of Permanent Nature as responsible for its implementation, monitoring and updating and/or improvement. The project contributed to the evaluation of its implementation over three years, a result that will serve as the main input for the update of the AMR Multisectoral Plan for the next 5 years, and that will establish the foundation for a functional framework for monitoring and evaluation of its progress. The project will also contribute to the CMS-AMR, with the analysis of a possible Multisectoral Budget for Results for the containment of AMR, with a view to the sustainability of actions under the One Health approach and the consequent allocation of resources from the public treasury.
- Regulatory framework on AMR with a One Health approach; the Legal Analysis tool was applied under the One Health approach of the Quadripartite, analyzing seven regulatory chapters on: governance, human health, food safety, veterinary legislation, pesticides, plant health and environment. The work plan and the roadmap for its implementation attends the request and prioritization proposed by CMS-AMR for the development of two regulatory proposals aligned with international standards, one consists of a framework law on AMR containment under the One Health approach, and the other on integrated surveillance of AMR. Bases for the Integrated AMR Surveillance System: the analysis of the installed capacity of five official laboratories for the diagnosis of AMR is in process: SENASA (2), SANIPES (2), DIGESA (1). The study used a combined methodology of "5 M" and the Peruvian Technical Standard NTP-ISO/IEC 17025:2017, which preliminary results classified the Food Microbiology Laboratory of the Toxic Inputs and Waste Control Center Unit (UCCIRT) of SENASA as Half-Life Stage in its path of continuous improvement, and the Microbiology and Molecular Biology Laboratory of SANIPES as a laboratory with an Advanced Life Stage in its path of continuous improvement.
- The capacities of 13 technicians from the laboratories were strengthened virtually, with the support of SENASICA Mexico, the regional reference laboratory for AMR for FAO. Five technicians also participated in an internship at SENASICA's laboratory facilities on diagnostic methods. The purchase of supplies for the official laboratories that are implementing the pilot plan for

integrated surveillance of AMR approved by CMS-AMR is in process. Similarly, the diagnostic service for the existing computer platforms is being managed in support of this surveillance system. In addition, there is a preliminary report on the AMU situation in the animal sector.

- Responsible and prudent use of antimicrobials in animal health and agriculture: the "Integrated Guide for the responsible use of antimicrobials for animal health, agriculture, and the environment" was formulated and approved by consensus. The structured document has one general part and three sections on the use of antimicrobials in terrestrial animals, aquatic animals, and agriculture, in addition to thematic sheets by animal species and main crops. This document contributes to the responsible use of antimicrobials, the implementation of which is planned in the short term, through public-private partnerships.
- Support for the implementation of the ASP regulations in human health, MINSA approved the Technical Health Standard NTS No. 184-MINSA/DIGEMID-2022 for the implementation of the ASP at the hospital level. The project, through PAHO, continues coordination with the General Directorate of Medicines, Supplies, and Drugs - DIGEMID and the School of Public Health of MINSA, to establish a virtual training platform for health personnel at the national level.
- Awareness and advocacy on AMR under the One Health approach: the design of the AMR Awareness and Advocacy Strategy under the One Health approach is in its initial phase. This strategy will prioritize the poultry production sector due to the importance of meat and egg consumption for the country and because it is included in the pilot plan for integrated surveillance of AMR.
- The project contributed with CMS-AMR in the celebration of the World Antimicrobial Awareness Week (WAAW) from 18 to 24 November 2022; through the following communication tools: (i) the transmission of daily information spots in the 520 units of Lima's metropolitan ground transportation, containing short messages about AMR and the consequences of anti-microbial misuse; (ii) participation in a backyard poultry farmers' field school, with the aim of promoting the responsible use of antimicrobials; (iii) theatrical activations of direct contact with people in three strategic points of Metropolitan Lima; (iv) radio interview in the programme Rotativa del Campo of Radio Programas del Perú (RPP), a national radio station; (v) two podcasts on AMR with the participation of authorities and guests.
- Incidence and Advocacy in Higher Education Institutions, Professional Associations, and Scientific Societies, the first phase of the development corresponding to the baseline on Professional Associations / Scientific Societies of Peru linked to AMR and AMU has been completed, having identified various actors in the areas of human medicine, biomedical sciences, and agricultural and livestock sciences. Likewise, the proposal to update two curricula that specifically incorporate these topics in universities and institutes of higher education is in process, for which curricular contents of these areas have been compiled.

Main Challenges

- To have regulatory support under the One Health approach that allows decision makers to develop intersectoral activities for the containment of AMR; for which CMS-AMR prioritized the formulation of two proposals, one legislative and the other resolutive.
- The increasingly recurrent climate of political instability and social protests generates uncertainty, both in the authorities, due to the rotation of senior management and technical staff and strategic partners, which limits the achievement of project objectives. In this regard, the main challenge is to keep the current authorities permanently informed and to engage them in project activities and in the review of intermediate and final products.
- The reorganisation of the Technical Working Groups by Strategic Objectives of the ARM Multi-sectoral Plan and other key actors after the implications produced by the COVID-19 pandemic, to continue the process of updating the mentioned plan in the first months of 2023. In this regard, the project is helping the coordination meetings held with the Technical Secretary of the CMS-AMR.
- To achieve the country's commitment, through the project's counterpart institutions so that they participate and finally take ownership of its results, giving it the expected usefulness to position AMR/AMU on the government's political agenda, all with a view to giving sustainability to AMR containment activities and the optimal use of antimicrobials. In this regard, the

project has intensified advocacy actions with CMS-AMR and decision-makers.

- To achieve a constructive approach of the private business sector, competent authorities, civil society, and academia in activities involving the improvement of production processes, good livestock, agricultural, industrial, and environmental practices of production processes, good livestock, agricultural, industrial, and environmental practices, to demonstrate the shared benefits resulting from AMR containment and the responsible use of antimicrobials. In response, the project promotes public-private partnerships and the participation of key stakeholders in the CMS-AMR and/or in the project's consultative body.
- To ensure that the interest shown by the different professional associations and scientific societies is materialized through their participation in the CMS, or in technical advisory groups; furthermore, that the commitment to promote the good use of antimicrobials in professional practice is reflected in the results of an improvement in the control of AMR in the country.

Impact of Challenges

- The update of the AMR Multisectoral Plan is the activity with the longest delay with respect to the Operation Plan 2022, due to changes in the definition of the strategy to initiate the process and the rules established by the Strategic Planning Center (CEPLAN). It was agreed with CMS-AMR: i) the evaluation of the progress of the Multi-sectoral Plan ARM 2019-2021; ii) the results of the evaluation as a basis for updating the plan with a horizon of 05 years, including core indicators for monitoring and evaluation iii) the sustainability of CMS-AMR actions through the analysis of a possible PPoR on ARM and the roadmap to follow for its realization.
- Although the One Health legal analysis tool was applied in the review of the AMR regulatory framework, it was not possible to identify with the necessary level of detail the gaps that lead to the generation and/or updating of legislation or regulations on AMR, to be considered in the two work plans programmed. In this regard and considering the prioritization made by CMS-AMR to have two legal norms, one consisting of a framework law on AMR containment under the One Health approach, and the other on integrated surveillance of AMR; the project with the support of FAO-LEGN will contribute to this process.
- Regarding the programmed products on AMR/AMU awareness and advocacy, difficulties were encountered in identifying specialized service providers under the letter of agreement contract modality, for the design of a strategy under the One Health approach. In this context, it was decided to hire two individual consultants, one in AMR risk management and the other in communication.
- The product on incidence and advocacy for curriculum updating in universities and institutes of higher education will take more time than estimated due to the large number of universities with careers in agricultural sciences, human medicine, and other biomedical sciences, from which information is required for the evaluation of curricula and syllabi. In addition to the above, there has been a slow response to requests for information. However, the project will conclude satisfactorily with the proposal of two updated curricula.

Learning Innovation

- Inclusion of AMR containment and antimicrobial use in the development of a SENASA Field School for backyard poultry breeders in Carapongo-Lima, with great interest in the subject, especially due to concern about the evidence found in an outbreak of H5N1 avian influenza.
- To conduct a specific study of the poultry value chain (meat and eggs) as a pilot demonstration of good AMU practices will lead to the containment of AMR and the consequent possible recognition of a distinctive seal on the label. This learning initiative is expected to be carried out with the Peruvian Poultry Farming Association (APA).

Stakeholder Engagement and Resource Mobilization

- The project supports the analysis of a possible Results-Oriented Budgetary Programme for AMR containment under the One Health approach, which would contribute to the sustainability of actions in the country if approved over time.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Risks and benefits of AMR reflected in national budgets and in development/multi-lateral partner sector-wide investments	<p>The country includes AMR within the framework of United Nations Cooperation and Sustainable Development (UNSDCF).</p> <p>The country has a functional framework for monitoring and evaluating the National Action Plan.</p>	
Evidence base/ representative data on AMR/AMU improved for policymakers and sectors implementing AMU practices	<p>The Multisectoral Commission (MSC) reviews and uses data on AMU and AMR in relevant and prioritized sectors to strengthen policies and practices.</p> <p>Percentage of selected laboratories achieving PIP 3 in the FAO AMR Laboratory and Surveillance System Assessment Tool (FAO-ATLASS)</p> <p>The country reviews and uses data on levels and trends in sales/imports/use of antimicrobials in animal production for food.</p>	<p>Assumptions: AMR integrated surveillance pilot generates data for analysis.</p> <p>Assumption: The country has the financial resources to provide the facilities, human resources, equipment, and supplies for the selected laboratories to achieve PIP3.</p> <p>Assumptions: The country collects and notifies WOAH annually with data through SENASA, in a timely manner.</p>
Use of antimicrobials optimized in critical sectors.	<p>Percentage of antibiotics consumed in the human sector that are in the Access Category</p> <p>Percentage of antimicrobials used in animals, classified by pharmacological class, animal species, and route of administration.</p>	<p>Revisions: To see the changes in the use of antibiotics, it was decided to change the initial indicator to the "Number of doses of reserve antibiotic consumption per 1000 inhabitants of the population." This change is also in line with the Global Report of the Antimicrobial Resistance and Use Surveillance System 2022, where indicator data is reported for different countries.</p> <p>Assumptions: The country collects and notifies WOAH annually with data through SENASA, in a timely manner.</p>
Improved understanding of AMR risks and response options by targeted groups	Number and list of communication strategies developed or implemented to support enhanced capacity for communication and behavior change initiatives in AMR	

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Improved country capacities for the design and implementation of AMR-related policy frameworks, investment plans, and programmes	A.1 AMR Multisectoral Commission, with a fully functional Health approach	The execution report of the AMR Multisectoral Plan 2019-2021 was completed. The result will serve as the main input for updating the AMR Multisectoral Plan for the next 5 years and will lay the foundations of a functional framework for monitoring and evaluating its progress.	1-25%	Assumptions: The CMS-AMR helps the process to update and approve the ARM Multisectoral Plan
	A.2 The regulatory framework on AMR, including antimicrobials used as pesticides have been reviewed in line with international standards.	The Legal Analysis tool was applied under the One Health approach of the quadripartite, analyzing seven regulatory chapters on governance, human health, food safety, veterinary legislation, pesticides, plant health, and the environment. The work plan on AMR regulatory framework aligned with the international standards is in process with the support of FAO-LEGN.	50-75%	
B. Systems for the generation, analysis, and interpretation of data on resistance and patterns of consumption/use of antimicrobials developed or strengthened	B.1 CMS is supported by the Tripartite to review AMR and AMU data and their quality in relevant sectors and consider the need to adapt the implementation of national strategies	The Verification report of installed capacities of the official laboratories for the generation, analysis, and interpretation of data is in process. The report prioritizes five official laboratories for the diagnosis of AMR belonging to SENASA (02), SANIPES (02), and DIGESA (01). As preliminary results, the Food Microbiology Laboratory UCCIRT of SENASA is classified as Half-Life Stage in its PIP, and the Microbiology and Molecular Biology Laboratory of SANIPES as a laboratory with an Advanced Life Stage in its PIP.	25-50%	
	B.2 Percentage of specialized official laboratories with recognized capacities to carry out antimicrobial susceptibility tests and to isolate and identify bacteria in accordance with international standards	Aligned with the formulation of the Plan for strengthening capacities in microbiological diagnosis and in the analysis and interpretation of information, a training course was developed for the National Reference Laboratory for Enteropathogens of the Clinical Bacteriology Unit of the CNSP-INS, in coordination with the Technical Secretary of the CMS-AMR.	1-25%	
	B.3 Bases for a national integrated surveillance system for AMR, supported by human health, animal health, plant health, food chain, and environment	The diagnostic capabilities of laboratory technicians on AMR were strengthened through virtual training and attendance at an internship at SENASICA Mexico. The purchase of supplies for the official laboratories that implement the AMR integrated surveillance pilot plan approved by the CMS-AMR in November 2022 is in process. The diagnostic service of the existing computer platforms is being managed, in support of this surveillance system.	25-50%	
C. Systems for the optimized use of antimicrobials strengthened in critical sectors	C.1 Regulatory framework developed, reviewed, and updated on antimicrobials for human and veterinary medical use for prioritized critical sectors	The work plan on AMU regulatory framework aligned with the international standards is in process with the support of FAO-LEGN. Coordination is being carried out with the authorities of DIGEMID and the School of Public Health of the Ministry of Health for the implementation of the ASP approved by the country under the Technical Health Standard NTS No. 184-MINSA/DIGEMID-2022.	1-25%	
	C.2 Guidelines for the responsible and prudent use of antimicrobials based on international standards are developed or revised	The “Integrated Guide for the responsible use of antimicrobials for animal health, agriculture and the environment” was formulated and approved by consensus. The structured document has one (01) general part and three (03) sections referring to the use of antimicrobials in terrestrial animals, aquatic animals and agriculture, in addition to thematic sheets by animal species and main crops.	25-50%	Revisions: A change was made in the means of verification of the indicator, from 02 guides to 01 guide. The change responds to the need to have an integrated document that addresses the sectors of terrestrial animals, aquatic animals, agriculture, and the environment in a transversal manner, seeking the “One Health” approach.

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
D. Enhanced capacity for designing awareness, behavior change and educational activities	D.1 Number and list of communication strategies developed or implemented to support enhanced capacity for communication and behavior change initiatives in AMR	Strategy under the One Health approach is in its initial phase, which has given priority to the poultry production sector due to the importance that the consumption of meat and eggs represents for the country and because it is included in the AMR integrated surveillance pilot plan. Likewise, the proposal to update two curriculums is in process, which specifically incorporates the topics of AMR and AMU in Universities and institutes of higher education.	25-50%	<p>Revisions: Change of verification means from "One (01) AMU/ AMR training programme for higher level training institutions" to "Two Proposals to improve curricula in biomedical and agricultural careers for higher level training institutions"</p> <p>With the change, it is expected that the subject of AMU/AMR will be visualized in the curricular plans, which will have a greater impact on the training and skills of future professionals.</p>

SENEGAL

Overview

Project: Enhancing governance and coordination mechanisms to reduce antimicrobial resistance in Senegal (ID:00130122)

Duration: (24 months) 17 January 2022 to 17 January 2024

In Senegal, the AMR MPTF project focuses on developing an integrated national AMR/AMU surveillance system across sectors, strengthening IPC and biosecurity measures, assessing the quality of antimicrobials as well as ensuring the rational use of antimicrobials. The key activities include:

- Building a Monitoring, Evaluation and lesson learning M&E framework (MEL framework) system for AMR and AMU data collection, sharing and reporting at national level for the MPTF project;
- Assessing capacities of 10 laboratories for AMR detection in the human, animal, and environment sectors using the One Health approach;
- Developing and/or implementing surveillance strategy for AMR to support AMU/AMR data collection and reporting systems by developing a strategic and integrated national AMR/ AMU surveillance systems in humans, food and agriculture and environment sectors for a cohesive OH reporting of national AMR/AMU data; and
- Supporting laboratory training on AST and data analysis and reporting.

Project Progress

The AMR MPTF project in Senegal was officially launched on 17 March 2022, with representatives of the government, the national One Health Platform, the AMR/Technical working group and the three Organisations (FAO, WHO, WOAH) in attendance. The technical launch of the AMR MPTF project took place at Hotel Fleur de Lys in Dakar, Senegal. The purpose of the official launch was to obtain political and technical commitment, support for implementation by the technical teams, and visibility of the AMR MPTF project. During the launch of AMR-MPTF project, 24 participants attended the event (half of them were female) and other participants attended virtually. The kickoff meeting was followed by a planning meeting of AMR-MPTF activities for the next three months. The workshop was chaired by Permanent Secretariat of The National One Health Platform (NOHP) and held on 14 April 2022 in Dakar.



Photo: AMR-MPTF Kick off meeting held on March 17th 2022 in Dakar, Senegal

Build a Monitoring, Evaluation and Lesson Learning System for AMR and AMU Data Collection, Sharing and Reporting at National Level for the MPTF Project

The implementation started in March 2022 through the Organisation of a workshop held from 17 to 21 May in Saly. This region mapped the different existing AMR data collection platforms. This was conducted in order to build a monitoring, evaluation and lesson learning system for AMR and AMU data collection and for sharing and reporting at national level for the MPTF project. The objective of the workshop was to share and analyze tools and reporting systems used at country level for micro-

biological and epidemiological surveillance of AMR using a «One Health» approach. More than 30 participants attended the event.

Support the development and dissemination of good practice measures on Biosecurity and Biosafety in human, animal (terrestrial and aquatic), agriculture and environment

- During its implementation, the AMR MPTF project helped to strengthen the systems for bio-security and Infection Prevention Control (IPC) through training workshop for surfaces technicians on bio cleaning and maintenance of care premises according to "One Health approach". This was held from 14 to 15 June 2022 in three simultaneously sessions at tertiary hospitals in Dakar: Hospital Fann, Hospital Abass Ndao and Hospital Pikine.
- During the three sessions, 90 surfaces cleaning workers were trained. Training workshop for surface technicians on biomedical waste management according to the "One Health approach" occurred on 17 to 18 July 2022 at tertiary hospitals in Dakar: Hospital Fann, Hospital Abass Ndao and Pikine Hospital with 90 surfaces workers trained.



Photo: Training workshop for surfaces technicians on bio cleaning and maintenance of care premises according to «One Health approach» held from 14th to 15th June 2022

Develop and/or Implement Surveillance Strategy for AMR to Support AMU/AMR Data Collection and Reporting Systems

To strengthen systems for generating, analyzing and interpreting data on resistance and consumption/use patterns, a training workshop for strengthening the capacities of agents of the Environment Department and Classified Establishments (DEEC) on the fight against antimicrobials resistance (AMR). Thirty workers from the regional Environment Department, universities, veterinary service, fish and aquaculture were trained on AMR surveillance 27 to 28 June in Dakar.

A field mission on AMR monitoring in bivalve mollusks and their environmental water habitat was organized from 14 to 22 June 2022 in several regions including Thiès, Fatick, Saint-Louis, Ziguinchor regions. The mission also made it possible to collect:

- 50 water samples for IPD;
- 15 samples of sludge for IPD;
- 30 samples of 50g of fresh meat extracted from the mollusks divided equally between IPD and LANAC.

Organize Organize Training of Trainers Using One Health Approach on AMR/AMU Awareness and Communication Activities

To strengthen systems for optimized use of antimicrobials in critical sectors, a "training of trainers" workshop for professionals was organized on AMR to raise awareness and enhance communication activities from 24 to 26 August in Saly, Thies region.

At the end of these various interventions, the training workshop enabled to strengthen the capacities

of 33 professionals distributed as follows:

- 13 professionals from the sectoral ministries;
- 10 teachers/researchers;
- 6 students



Photo: T.O.T Workshop for professionals from 24th to 26th August 2022 in Saly Thies.

In the spirit of One Health, the African Union, the regional Quadripartite (FAO, WOAH, WHO, and UNEP) and Senegal National One Health Platform joined efforts for organizing together the 4th Africa Continental World Antimicrobial Awareness Week celebrations from 18 to 24 November 2022. Activities included panel discussions on the burden of AMR, media communication for professionals on effective AMR reporting, and outreach to various communities and targeted groups, such as farmers, public health specialist, political leaders, local authorities and women from various association in Thiès region of Senegal. The event was an opportunity to educate communities on appropriate AMU and on AMR. One hundred people attended the event.

Main Challenges

The main challenges during the implementation are:

- Availability of implementing partners; mostly involved in other activities.
- Insufficiencies of coordination among implementing partners.
- The strike observed by professionals from the livestock, agriculture and fishing sector impacted on the implementation of AMR/MPTF activities and other projects as well.

A follow up meeting is organized once a month to handle the challenges encountered and discussed on level of implementation. The team will continue engaging with the institutions and experts in a positive discussion to overcome challenges.

Learning Innovation

- AMR surveillance among bivalve mollusks and sensitization sessions around actors allow us to build foundation to generate data in this specific sector.
- All activities are conducted under NOHP which facilitates collaboration between national counterparts and the Tripartite for the implementation of the activities.
- Involvement of Ministry of Environment especially the Directorate of Environment and Classified Establishment (DEEC) where several staff were trained on AMR threats was a major achievement of success; Coordination with other projects and events provided technical and logistical synergy, and saved resources and time.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Evidence base/ representative data on AMR/AMU improved for policymakers and all the sectors implementing AMU practices	Indicator 1.1: Information shared on trends of AMC (human and animal health) annually to policy and decision makers. Indicator 1.2: Database on AMR / AMU (human and animal health) set up. Indicator 1.3: Reporting of AMR / AMU data improved at national and international level	AMR in Senegal is a high priority in the agenda of the government. Key partners sufficiently engaged. No major changes in key leadership on AMR. Willingness to work as a team and agreement on who will take the lead on each activity.
Use of antimicrobials optimized in critical sectors.	Indicator 2.1: Antimicrobial stewardship programme implemented in additional health care facilities Indicator 2.2: Guidelines for responsible and prudent use of antimicrobials based on international standards are developed or revised Indicator 2.3: Communication strategies developed	

4.b. Log frame outputs and associated indicators

MTPF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Systems for generating, analyzing and interpreting data on resistance and consumption/use patterns developed or strengthened	Indicators A.1 Laboratories with capacity to perform antimicrobial susceptibility testing (AST) and bacterial isolation and identification according to international standards developed Indicators A.2 National surveillance system for AMR supported in human health, animal health, plant health, food and the environment; Indicators A.3 National system for monitoring AMC/AMU supported in human health, animal health, plant health and food	The laboratories assessment capacities for AMR detection in human, animal, and environment sectors using One Health approach is ongoing. 10 laboratories within 9 regions were selected among them we can note: Principal Hospital, Hospital Idissa Pouye of Dakar, Regional Hospital in Diourbel, Kaolack, Louga, Matam, Saint Louis, Tambacounda, Thiés and Ziguinchor regions. The re-enforcement of national surveillance system for AMR in various sectors is implemented during MTPF activities. Training workshops enabled the strengthening of capacities for 33 professionals. During the workshop mapping of different existing AMR data collection platforms, a Data Management Expert Group (DMEG) was set up. The members of the group are IT specialist, M&E expert and AMR focal point from various ministries as well as experts from Tripartite (FAO-WOAH-WHO)	50-75% 25-50% 25-50%	No changes
B. Systems for biosecurity and IPC strengthened in targeted countries	Indicator B.1: National health plans in animal, environment and human health developed or reviewed to ensure good production practices Indicator B.2: Guidelines and tools to evaluate professional good practices on IPC and BSS in human and animal developed, validated and disseminated at the national level	Still ongoing Train sessions for professional on good practices on IPC and BSS in human at tertiary hospitals in Dakar: Hospital Fann, Hospital Abass Ndao and Pikine Hospital with 90 surfaces workers trained.	1-25% 25-50%	
C. Systems for optimized use of antimicrobials strengthened in critical human and animal sectors.	Indicator C.1: Training of trainers on antimicrobial stewardship and Joint missions of the National Committee to control, raise awareness, collect and test the quality of medicines in markets including mislabeled or relabeled medicines supported using a One Health approach	Changes at the Directorate of Pharmacy and Medicines that had been upgraded to a Senegalese Agency for Pharmaceutical Regulation.	1-25%	
	Indicator C.2: IEC materials developed and used for nationwide AMR campaigns	The National One Health Platform, AU MOH, MOL, MOE, and the Tripartite hosted several national and regional events during WAAW 2022. In line with the global theme "Preventing antimicrobial resistance together in Africa", the events gave a platform for further advocacy on AMR to policy makers from national and regional governments as well as academia, private sector, research, NGOs and media. Events were well covered on national mainstream media (newspaper, TV and social media).	50-75%	

TAJIKISTAN

Overview

Project: One Health capacity building to support priority actions for combatting antimicrobial resistance in Tajikistan (ID: 00127141)

Duration: extended to 36 months (5 August 2021 to 5 August 2024)

The MPTF project activities are aimed to support establishment and strengthening of the systems for:

- Collecting, analyzing and interpreting data on antimicrobial resistance and use of antimicrobial medicines;
- The optimization and prudent use of antimicrobial medicines in critical sectors;
- Biosecurity and IPC in the country to reduce the incidence of infections;
- Targeted awareness raising, behaviour change and educational activities;
- Coordination, development, implementation and monitoring of AMR related policy frameworks, investment plans and programmes.

Project Progress

In May 2022, a joint mission was conducted in Tajikistan by FAO and WHO, and with the aim of addressing AMR. The mission had several objectives, including initiating the implementation of the AMR National Action Plan (NAP), advocating for the importance of AMR and AMU, strengthening partnerships for a One Health approach, and raising awareness about AMR and rational antimicrobial use in humans, animals, and agriculture.

The mission brought together more than 70 participants, including high-level stakeholders from various sectors such as health, agriculture, food security, environment, education, and trade. During the meeting in Dushanbe, the stakeholders discussed the progress and challenges in implementing the National Action Plan for AMR in Tajikistan (2018-2022). They presented strategic objectives and priority areas at both global and regional levels, aiming to address the specific needs and priorities of the country.

As a result of the meeting, resolutions were developed and agreed upon, calling for government actions to combat AMR effectively. The mission also facilitated a workshop in August 2022 to review the current implementation of the AMR NAP and gather input from the participants for the development of the next NAP.

In July and August 2022, another important initiative took place in Tajikistan with the goal of increasing awareness about the rational use of antimicrobials in animal food production. A series of workshops and meetings were conducted to present information leaflets developed for this purpose. Veterinary associations, laboratories, surveillance institutions, and breeding institutions actively participated in these activities, discussing challenges related to antimicrobial use in animal feed and finding ways to improve food animal production while ensuring responsible antimicrobial practices.

Subsequently, in October 2022, WHO organized workshops at the national level, focusing on antimicrobial resistance and antimicrobial use (AMU). During these workshops, key results from human AMU surveys were presented, highlighting the need for effective regulatory mechanisms. Additionally, discussions were held with health professionals to address concerns about the inappropriate sale of antimicrobials without prescriptions. The meetings resulted in an agreement among primary healthcare and pharmaceutical professionals to take actions to regulate antimicrobial use and remove certain antimicrobials from the "Reserve" group.

To further support the development of the AMR NAP for Tajikistan (2023-2025), FAO, WHO, and WOAH facilitated discussions and engaged international experts in October 2022. The objective was to involve key stakeholders from the human health, agriculture, and veterinary sectors in shaping the second round of the NAP.

Throughout the process, various awareness-raising activities were conducted to promote responsible antimicrobial use. These activities included the distribution of leaflets and posters among different

target groups such as veterinary students, healthcare professionals, farmers, and the general public. These efforts aimed to increase understanding and foster discussions about rational antimicrobial use, ultimately contributing to the prevention of antimicrobial resistance.

Furthermore, the team actively participated in World Antimicrobial Awareness Week (WAAW) 2022 by organizing events in collaboration with the Ministry of Health. These events focused on increasing awareness among teachers, medical colleges, and universities in Tajikistan. They aimed to incorporate infection prevention and control, microbiology, antimicrobial susceptibility, and management of infectious diseases into the curriculum, thus promoting rational antimicrobial use.

Main Challenges

Procurement of laboratories are very difficult and complicated in Tajikistan due to absence of relevant suppliers and land-locked country with limited flights and railway connections. This has resulted in delay in the start of planned surveillance activities and in particularl, the collection and processing of samples using EUCAST standards and reporting to GLASS/CAESAR. To overcome these challenges, the project duration was extended to 5 August 2024.

Impact of Challenges

Delay in the start of the surveillance activities. Particularly the collection and processing of samples using EUCAST standards and reporting to GLASS/CAESAR as well as FAO and WOAH.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
1. Evidence base/ representative data on AMR/AMU improved for policymakers and sectors implementing AMU practices	<p>Percentage of targeted laboratories reaching PIP 3 in FAO Assessment Tool for Laboratories and AMR Surveillance systems (FAO-ATLASS)</p> <p>Baseline value: No human health or veterinary laboratories have been assessed at PIP 3.</p> <p>Target value: 1 veterinary laboratory (NCVD) & 2 human health laboratories (Tajik Research Institute of Preventive Medicine, Sanitary and Epidemiological Laboratory) assessed at PIP 3.</p> <p>Sustainable sampling strategy for integrated active and/or passive surveillance in the human, food and agriculture sectors developed, including target organisms, and priority livestock species.</p> <p>Baseline: No strategy has been developed.</p> <p>Target: Detailed strategy for Tajikistan.</p>	<p>National surveillance system for AMR supported in human and animal health and agriculture with annual integrated report(s) on AMR (at a later stage (after this joint project) to be extended to plant health, food and the environment);</p> <p>The number and percentage of laboratories with capacity to perform AST and bacterial isolation and identification according to international standards, such as EUCAST, VETCAST.</p> <p>The national system for monitoring AMC/AMU supported human and animal health and agriculture with annual integrated report(s) on AMC/AMU.</p>
2. Use of antimicrobial medicines optimized in critical sectors	<p>Proportion of antibiotics consumed in the human sector that are in the Access category of AWaRe</p> <p>Baseline: 54% (2015 data) in the Access category.</p> <p>Target: 60% in the Access category.</p> <p>Determination of AWaRe categories for antibiotics sold for use in animals in Tajikistan</p> <p>Baseline: WOAH data submission.</p> <p>Target: All antibiotics available for sale in animals in Tajikistan categorized.</p>	<p>Guidelines for responsible and prudent use of antimicrobials based on international standards are developed or revised;</p> <p>Use the AWaRe classification and the WOAH list of antimicrobial agents of veterinary importance for managing the supply of antibiotics for healthcare and veterinary services.</p> <p>Communication strategy developed to support improved capability for communication and behaviour change initiatives on AMR/AMU.</p> <p>The assessment of training, professional and educational events and courses on AMR/AMU in each sector provided.</p>



MPTF OUTCOME	INDICATORS	ASSUMPTIONS
3. Improved understanding of AMR risks and response options by targeted groups	National targeted awareness campaigns established Baseline value: Annual WAAW events in capital. Target value: Awareness campaigns established in the human and agriculture sectors.	National operational plan to promote and support hygiene and good production practice in priority animal production sectors; (monitoring: annual report on vaccination coverage for the 8 diseases covered by the national budget); National IPC plan developed or strengthened in line with the IPC core components and WASH.
4. Multi-sectoral coordination strengthened at national level	An integrated approach to implement the National Action Plan on AMR is adopted Baseline value: Laboratory methods and data capture tools are not standardized within or between sectors. Target value: Integration and standardization of laboratory methods and data capture tools across sectors (human and agriculture/animal health).	Fully functional MCG established with secretariat and representatives from all sectors (with monthly meetings); NAP with the estimation of costs of the implementation by year has been established or reviewed. Regulatory framework for antimicrobial medicines for critical sectors is developed, revised or updated.

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
Output 1.1: Systems for generating, analyzing and interpreting data on resistance and consumption/ use patterns developed or strengthened	<p>National surveillance system for AMR supported in human and animal health Baseline value: AMR surveillance in 4 hospital laboratories Target value: AMR surveillance in 5 hospital laboratories Baseline value: No passive surveillance of AMR in sick animals Target value: Veterinary laboratory passive surveillance network established, and active surveillance piloted Baseline value: no integrated ESBL producing E. Coli surveillance system Targeted value: developed database on active integrated ESBL producing E. Coli surveillance piloted in the country</p>	<p>Develop and implement surveillance of AMR in human and animal health, food and the environment. Expand AMR surveillance in human health Conducted assessment of the country capacity to implement the AMR Tricycle protocols on surveillance of ESBL producing E. Coli in humans, animals, and the environment conducted in Oct-Nov 2021. 2022: Continued procurement process to support two surveys on AMR. Part of the supplies have arrived and putted to NRL. Establish passive surveillance for collecting samples from sick poultry and cattle Establish linkages with AMR Central Database Project [ongoing]</p>	50-75%	<p>Dedicated focal points surveillance nominated to develop protocols to synergize the activities No delays in the purchase of reagents and other lab materials Ongoing availability of reagents and other lab materials Availability of samples/isolates for passive surveillance Resources available and access to farms possible for active surveillance COVID restrictions do not impact Training, Farm visits, the FAO survey, and/or AMC surveillance activities</p>
	<p>Number of laboratories with capacity to perform antimicrobial susceptibility testing and bacterial isolation and identification according to international standards. Baseline value: 8 human health laboratories in WHO-EQA system Target value: 10 human health laboratories in WHO-EQA system Baseline value: 0 veterinary laboratories with this capacity Target value: 2 veterinary laboratories with this capacity (1 central and 1 regional)</p>	<p>Provide laboratory training in public health and veterinary/food safety to strengthen laboratory capacity. Build on previous capacity building initiatives - focus on integrated surveillance of ESBL producing E. coli in all sectors; Provide additional training on AMR testing for central and regional veterinary labs; Ensure the use of AST guidelines, SOPs, and Quality Assurance Programmes for human health and veterinary bacteriological labs based on international protocols. 2022: Preparation for the five days laboratory training on EUCAST standards implementation. Increase the number of laboratories in the WHO EQA 2022: number of labs participating in EQA using UK NEQUAS boxes increased to 11 Design and initiate targeted active surveillance by vet labs [ongoing]</p>	50-75%	
	<p>Number of laboratories in CAESAR-network Baseline value: 4 hospital laboratories Target value: 10 hospital laboratories</p>	<p>Increase the number of laboratories in CAESAR-network Several webinars to build capacity and encourage participation of the National and subnational laboratories in CAESAR network 2022: WHO Regional Office for Europe conducting series of webinars to build capacity of laboratory specialists on AMR surveillance methodology, international standards and practices. [ongoing]</p>	25-50%	
	<p>Number of AMR training sessions for veterinary laboratories Baseline value: 0 Target value: 1 central and 1 regional</p>	<p>Raise awareness among veterinarians and farmers on the importance and feasibility of surveillance to understand AMR in livestock with regards to animal and human health [not yet started]</p>	0%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	National system for monitoring of AMC/AMU supported in human and animal health Baseline value: AMU surveillance data based on the imported antimicrobials to the country. Target value: strengthen AMU surveillance system with better annual reporting; 1 analysis of trends at national level; 2 annual years data reported to GLASS; 1 AMU survey in the national hospital; Baseline value: FAO AMU survey developed Target value: AMU survey conducted in poultry	Monitor AMU/AMC in general population, health facilities, animal husbandry, and veterinary services Continue and improve participation in EURO AMC network. 2022: participation of country AMC Focal point in annual AMU network meetings. Tajikistan approved agreement to submit data to GLASS and submitted human AMU data 2021 to GLASS. Expand AMU data surveillance in hospitals 2022: development of draft proposal on AMU in hospital. WOAH data collection on antimicrobials intended for use in animals Design and develop an AMC surveillance system for livestock and poultry Implement AMC surveillance activities in one region [ongoing]	50-75%	
Output 2.1: Systems for optimized use strengthened in critical sectors	Guidelines for prudent use of antimicrobials Baseline value: Guidelines developed Target value: guidelines updated including AWaRe	Provide support to strengthen systems for optimized and prudent use Review and update the national EML and international classifications of antimicrobials; include AWaRe categorization 2022: National Law of Pharmaceutical and medical products have been revised by the Government. The EML has been updated based on WHO recommendation, however, AWaRe categorization has not been considered as such. AMU PH mission has been conducted. WHO presented AWaRe in the meeting and suggested to the MoHSP for adaptation through developed technical regulation with stepwise approach. The regulatory mechanisms for AWaRe categorization implementation to be developed in 2023.	50-75%	Ability to determine list of all available antibiotics for animal use Sufficient veterinarians available for scaling up programmes
	AWaRe and WOAH-list of antimicrobials used for managing supply of AB Baseline value: not included Target value: AWaRe categorization included	Improve prudent AMU and good husbandry practices by farmers and veterinarians by scaling up the existing programmes; [not yet started]	0%	
	Guidelines for control of maximum residue limits for antimicrobials in food Baseline value: Guidelines developed Target value: guidelines adapted based on Codex Alimentarius standards	Provide technical support for the adoption of Codex Alimentarius maximum residue limits for antimicrobials in food. [not yet started]	0%	
Output: 2.2 Strengthen systems for biosecurity and IPC to reduce incidence of infections	Operational plan to ensure hygiene and good production practice in animal sectors; Baseline value: no plan and no accurate data on vaccination coverage Target value: national plan developed; vaccine coverage records summarized annually	Develop and implement standards for biosecurity, IPC and WASH: Integrate WASH and IPC programmes in policies, standards and activities Support adherence to the Law on national drinking water and sanitation Support implementation of biosecurity, good husbandry practices and management in livestock production systems aiming at reducing AMU Support Tajik capacity to control the WOAH-listed diseases by implementing FAO guidelines for vaccinators [ongoing]	25-50%	Dedicated staff available for IPC protocol development AM stewardship supported in HCF Veterinary services coordinated and resourced Reliable, clean water source available for HCF and community

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	IPC plan strengthened in line with the IPC core components and WASH Baseline value: IPC/WASH implemented in 1 pilot hospital Target value: IPC/WASH implemented in up to 5 hospitals; training provided to clinical staff	Support the development of IPC standards in HCF and WASH services in HCF and community 2022: WHO supported establishment of the National coordination and technical working group (CTWG) and review of the National IPC guideline and Standard Operation Procedures for health facilities. The prefinal version of draft IPC guideline has been discussed and is under final proof reading by WHO and CTWG. This activity must be completed before the end of 2023. [ongoing]	50-75%	
Output 3.1: Improved capacity to design targeted awareness raising, behaviour change and educational activities	Communication strategy developed to support improved capability for communication and behaviour change initiatives on AMR. Baseline value: Annual WAAW events in capital Target value: Comprehensive strategy addressing all sectors	Promote behaviour change on good hand hygiene in the community using already developed materials from WHO; Promote good food hygiene practices using already developed materials from FAO, WOAH and WHO. Promote good animal production and prudent antimicrobial use practices Eurobarometer survey has been conducted with support of WHO [ongoing]	20-50%	Sufficient resources to organize events – digital platforms and physical meetings, adequate channels available, radio & TV Faculty knowledgeable on AMR available to provide professional education
	Assessment of the attendance and performance of training & professional courses Baseline value: no assessment Target value: monitoring system endorsed and applied	Establish Farmer Field Schools to efficiently and effectively promote good animal husbandry and good animal production practices, in order to improve animal health and facilitate prudent antimicrobial use. Establish communication strategies for livestock producers using trusted community representatives Provide training workshops for professional education on AMR and develop a monitoring system to assess the achievements [not yet started]	50%	
	Farmer Field Schools established in priority livestock species. Baseline value: no Farmer Field Schools Target value: 2 Farmer Field Schools established		20%	
Output 4.1. Improved capacity for designing and implementing AMR related policy frameworks, investment plans and programmes	Full functional MCG established with representatives from all sectors Baseline value: MCG established; some sectors not represented Target value: project coordinator recruited; capacity building for MCG, all relevant sectors represented including agriculture, veterinary, and private sectors.	Provide programme support and coordination: Develop and submit the MPTF proposal on behalf of Tripartite; (completed) Support the implementation of a detailed workplan for the joint project with FAO and WOAH Support synergies, harmonization, and coordination across the five outputs identified in the joint project, as well as among individual contractors and existing activities within Tajikistan Support the development of an operational plan to review the NAP and budget execution; Establish a mechanism to coordinate the actions across ministries on addressing AMR with a dedicated secretariat and adequate funding to support MCG operations Support the inclusion of additional agriculture, veterinary, stakeholders in the MCG, including private sector representatives (completed) [ongoing]	100%	No substantial changes in the staffing in ministries and key Organisations Resources are available to support MCG activities, meetings and premises Private sector representatives available and willing/able to participate in regular meetings in the capital Government priorities include ban of antibiotic sales without prescription
	NAP with the estimation costs of implementation by year Baseline value: log frame for NAP available Target value: annual review and planning of (next) NAP		50-75%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	<p>Regulatory framework(s) for AM in critical sectors reviewed</p> <p>Baseline value: No legal framework reviewed</p> <p>Target value: Ban on AB without prescription included in the Law; FAO/WOAH recommendations from legislation report considered in updating legislation</p>	<p>Provide support for regulated access to antimicrobial medicines:</p> <p>Support inclusion of ban of antibiotics sale for human consumption without prescription in the national Law;</p> <p>Complete the Tripartite legal assessment and identify priorities for legal reform in the country</p>	50-75%	

ZIMBABWE

Overview

Project: Combatting the rising global threat of AMR through a One Health Approach in Zimbabwe (ID: 00127114)

Duration: 21st May 2021 to 21st May 2024. Incorporates 12-month No Cost Extension.

Activities under the AMR MPTF project focus on strengthening biosecurity and IPC, optimizing use of antimicrobials and improved capacity to design awareness-raising, behaviour change and educational activities/materials.

Key activities include:

- To promote of use of vaccines as an alternative to the irrational use of antibiotics for Theileriosis in cattle and typhoid in humans.
- To upscale the Farmer Field Schools in the broiler value chain to promote the adoption of good husbandry practices;
- Revise National IPC Policy and Strategic Plan, the National IPC guidelines and training programme to strengthen evidence-based practices to address AMR transmission;
- To strengthen the National IPC programme by supporting a pilot surveillance system of Hospital Acquired Infection (HAI) in selected health facilities;
- To conduct spot checks on Falsified, Substandard (FS) and illegal drugs at ports of entry especially the Northern Border Posts; and
- To develop and pilot behaviour change Community of Practice (COP).

Project Progress

The IPC (Infection Prevention and Control) strategy and policy documents are currently being typeset and will be released in the near future. Additionally, there is an ongoing surveillance program for post-typhoid vaccination, and cases have already been reported.

The World Organisation for Animal Health (WOAH) has played a crucial role in the development of the Theilerioses vaccine. After years of hard work, the BOLVAC vaccine has been successfully manufactured in batches. In August 2022, 20,000 doses were produced, followed by an additional 92,000 doses in December 2022.

In December 2022, the pilot vaccination for Theileriosis (BOLVAC) was officially launched in Makoni District, Manicaland Province, Zimbabwe. This initiative aims to evaluate the vaccine's effectiveness under field conditions and its ability to reduce the incidence of Theileriosis and cattle deaths. Once the pilot vaccination activities are completed, the vaccination program will expand to other high-risk areas in Zimbabwe. It is anticipated that the vaccine will provide lifelong immunity to vaccinated cattle.

The Medicines Control Authority of Zimbabwe (MCAZ), with support from WOAH through the AMR-MPTF, organized a workshop in September 2022 to raise awareness about the illegal importation and sale of unregistered and substandard human and veterinary medicines. The workshop aimed to inform various stakeholders, including the pharmaceutical industry, customs, law enforcement agencies, and health experts, about the dangers of such medicines in driving AMR. The participants, including representatives from the WHO discussed planned activities to combat the circulation of illegal and substandard products. The workshop also sought to strengthen national response teams dedicated to combating this issue. Recommendations from the workshop included enhancing human capacity through training, improving medicinal product inspections, addressing challenges posed by illegal vendors, implementing a traceable identification system for legal drugs, registering paraprofessionals to control over-the-counter drugs, revising legal frameworks, and organizing broader consumer awareness campaigns.

Main Challenges

The COVID-19 pandemic disrupted the initiation of the AMR MPTF project implementation. It resulted in lockdowns and restricted opportunities to engage potential service providers for activities since most of them were assigned to work for the COVID-19 pandemic response. This resulted in a delay of implementation by 6 months. To overcome these challenges, a full-time AMR MPTF project coordinator began his position on December 2, 2021, which has accelerated the implementation of planned activities.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS
Use of antimicrobials optimized in critical sectors	% reduction in Theileriosis in pilot intervention herds as compared to control herd % reduction in typhoid infection among the vaccinated population Number of districts covered by FFS Updated IPC Policy, Strategy and Guidelines Number of facilities conducting HAI surveillance Supply chain mapping conducted Economic data collected (FAO piloting AMU data collection on selected broiler farms)
Improved understanding of AMR risks and response options by targeted groups	KAP studies in selected sectors conducted Behaviour change COP integrated into the development of interventions NAP for Zimbabwe revised

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Systems for biosecurity and IPC strengthened in targeted areas	A.1 % reduction in Theileriosis in pilot intervention herds as compared to control herd	Finalized and adopted the Theileriosis Vaccine Production implementation plan Purchased laboratory supplies and testing kits - \$40 000	100% 25-50%	
	A.2 % reduction in typhoid infection among the vaccinated population	% reduction in new typhoid cases post-vaccination compared to the pre-vaccination period	1-25%	
	A.3 Number of districts covered by FFS	Five districts have been identified and facilitators have been trained while the collection of economic data has been initiated.	1-25%	
	A.4 Updated IPC Policy, Strategy and Guidelines	Availability of IPC Policy, IPC Strategic Plan and IPC Training Guidelines.	75-99%	
	A.5 Number of facilities conducting HAI surveillance	Reported cases of HAI in two central hospitals of Sally Mugabe and Pari Hosp.	1-25%	
Output B "Systems for optimized use strengthened in critical sectors"	B.1: % of total sales/imports that are classified by the WHO/WOAH as Highest Priority Critically Important Antimicrobial Agents for human or animal use	No progress	1-25%	
	B.2: Total amount of pesticide (active substance) intended for repelling, destroying, or controlling bacterial or fungal diseases in plants	No progress	1-25%	
	B.3: % of the above total composed of each of the following antimicrobial classes: Aminoglycosides Tetracyclines Triazoles Oxalinic acid	No progress	1-25%	
	B.4: Number of spot checks conducted	No progress	1-25%	
	B.5: Number of port officials able to systematically conduct spot checks	No progress	1-25%	
	B.6: Technical and economic impact of tailor-made interventions, aimed at reducing antimicrobial use in broiler production	No progress	1-25%	
C. Improved capacity to Design Awareness raising, behaviour change and educational activities/ materials	C.1 KAP studies in selected sectors conducted	KAP studies were identified and a call for proposals to universities was sent so the project partners with them to generate the KAP data.	1-25%	
	C.2 Behaviour change COP integrated into the development of interventions	Activity is to be initiated once KAP results are in place however behaviour nudges developed by FAO on broiler value chains will be piloted on the onset of FFS.	1-25%	
	C.3 NAP for Zimbabwe revised	End-term evaluation coupled by PMP to be conducted in the first quarter of 2022 through the second quarter to pave way for the activity initiation.	1-25%	

Global programme reports

ENVIRONMENT

Overview

Strengthening capacity and actions on environment within AMR National Action Plans, sector policy and global partnership as part of a multi-Organisation cross-sectoral One Health Approach (ID: 00126136)

Duration: 24 months (12th March 2021 to 12th March 2024)

Activities under the AMR MPTF Environment component are focused on increasing understanding of, cooperation in, and capacity to, act on the environmental dimensions of AMR among key stakeholders. Key activities include:

- Clarified roles and responsibilities among FAO, UNEP, WHO and WOAH on environmental dimensions of AMR to efficiently work;
- Demystifying the topic and increased technical awareness and capacity among AMR stakeholders globally on environmental dimensions of AMR;
- Targeted capacity building on selected sub-topics targeted to MPTF-countries;
- Supported improved NAP implementation and sustained actions on environmental dimensions of AMR;
- Increased political engagement and commitment by environment politicians and policymakers to tackle environmental dimensions of AMR.

Output 1: Strategic global-level governance advocacy initiatives on AMR implemented.

Given the immense challenge and breadth of action needed, clarity on how Organisations work and ensure all internal and external stakeholders have a common understanding was key to efficiently deliver as the programme. To assist in clarifying the collaboration of the Quadripartite on the environmental dimensions of AMR, the team disseminated the strategic document on “Inter-Organisation co-operation on environmental dimensions of AMR” to all MPTF countries.

Output 2: Improved countries’ capacities for designing and implementing AMR-related policy frameworks, investment plans and programmes.

For awareness raising and capacity development, the team mapped out topics and subtopics, audience segmentation and delivery modes and created a calendar with dates for global and regional AMR-related events. Furthermore, the team also ran a series of four webinars for awareness raising for AMR in the environment that covered concepts of environment to technical solutions for addressing AMR within and across sectors to reduce its impact and spread through the environment to humans, animals and plants. Global stakeholders engaged for the four webinars on AMR and the environment included stakeholders from academia, governments, and international Organisations. The team used the WHO/FAO/WOAH “Technical brief on water, sanitation, hygiene (WASH) and wastewater management to prevent infections and reduce the spread of antimicrobial resistance (AMR)” and the UNEP “Summary for Policymakers - Environmental Dimensions of Antimicrobial Resistance” as a point of departure for the development of the webinar series.

The full webinar series was delivered throughout 2022 in English, with live interpretation in French and Spanish. The webinar series received over 1000 registrations, and over 600 active participants in total. The full evaluation report is forthcoming in 2023. Webinar recordings are archived online for public use:

- **Webinar 1:** Understanding the basics of environmental AMR for national action held on 14 June 2022.
- **Webinar 2:** Sources, drivers and impacts on AMR in the environment held on 7 September 2022.
- **Webinar 3:** Technical solutions for the prevention and control of AMR in the environment held

on 27 October 2022.

- **Webinar 4:** Governance approaches for prevention and control of AMR in the environment held on 01 December 2022.

To better understand priority requests on environmental issues from AMR MPTF-supported countries, the team conducted interviews with country teams (Morocco, Peru, Tajikistan, Indonesia, Cambodia, Ghana, Ethiopia, Zimbabwe, Kenya, Senegal) to initiate communications and to ensure alignment with country-level capacity building activities. Additionally, a literature review on the environmental dimensions of AMR to map existing capacity building interventions was finalized; the report is currently being reviewed.

Capacity building roadmaps were developed and finalized for selected MPTF-supported countries. Building on country interviews and capacity building roadmaps, a concept note of capacity building activities was developed with the objectives to: (1) strengthen environmental AMR related institutional capacity for the next AMR National Action Plan by strengthening knowledge, attitude, and practices on collection and management of unused antimicrobials with co-benefits in addressing AMR and (2) facilitate the development and implementation of plans for safe disposal of unused antimicrobials for local municipalities and at the national level.

Capacity building activities are currently being organized for Indonesia, Zimbabwe, Morocco, Tajikistan, and Peru. Outcomes will include (1) a shared understanding of actions and gaps to develop systems for collection and management of unused antimicrobials and (2) summary of the workshop and meetings, and policy briefs outlining the recommendations to facilitate the development and implementation of plans for safe disposal of unused antimicrobials.

The team also developed a rapid assessment tool to support countries in identifying priority AMR and environment actions for NAPs – the tool is in draft stage. The strengthening of the environmental component of the FAO-PMP-AMR tool is currently underway as well.

Output 3: Engagement plans with critical stakeholders' groups implemented.

The team has continued contributing to the GLG working group on environment and has strengthened engagement with stakeholders through country interviews, the webinar series and planned capacity building activities.

The team also organized participation in the World Water Forum 9 and organized the 'One Water One Health' Webinar on 24 March 2022; with over 228 participants.

Main Challenges

The ongoing COVID-19 pandemic caused difficulties in proposing side events on environmental dimensions of AMR at in person events due to planning disruptions, delays and postponements. However, online and virtual events were explored and opportunities were taken.

Levels of AMR awareness vary across countries and regions. The general understanding of AMR in the environment remains a lower priority against all other hazards particularly when resources are limited as occurs in low- and middle- income countries. Prioritization of activities to address AMR in the environment at the country level should be made through NAPs, and global efforts in this regard are needed across sectors of health, industry, agriculture/aquaculture, urban, environment, and potentially others; however, many countries still need to address environmental components of AMR in their NAPs. Most MPTF countries are aware of this challenge and welcome the support provided through this project's activities.

November and December 2022 were months of inactivity – additionally, all planned capacity building workshops and meetings in the selected countries that had been organised with country teams and government representatives were forced to be cancelled due to a funding miscommunication.

After learning the environment project ended in September 2022, the team was obliged to request a retroactive non-cost extension, and due to the incurred delays, not to 12 March 2023 as originally planned, but to 30 June 2023 to ensure there is enough time to complete all the activities and close the project properly.

Impact of Challenges

Implementation was delayed by 3.5 months due to the miscommunication of the end date of the project in the system.

Learning Innovation

The method and mode of inter-agency and inter-Organisational collaboration continued to be effective in making the linkage between global and national implementation. This intersectoral cooperation and partnership has created true collaboration and enhanced synergies in cultivating new ideas, targeted activities, credible outputs and joint tasks done efficiently, avoiding unnecessary duplication and filled in the gaps that any single Organisation might not have been able to address. Communication flow was effectuated with clarity and ease and greatly improved delivery and messaging for targeted public uptake

Stakeholder Engagement and Resource Mobilization

- The interviews conducted with MPTF countries were important in gaining a better understanding of the current level of awareness and technical capacity that exists to address AMR in the environment. Webinars developed as part of this project helped address some of these issues.
- Lessons learned through country engagement for AMR in the environment included general indicators that a country has the capacity to integrate the environmental dimensions of AMR into its country action, including: (1) the country has an AMR NAPs and AMR Interagency Committee; (2) the AMR Interagency Committee has engaged Ministry of Environment, Ministry of Health, Ministry of Water, Ministry of Agriculture; and (3) the Ministry of Environment has identified AMR as a topic of emerging concern.
- As AMR is a multi-sectoral concern, all sectors should understand the role of each other, and key stakeholders to involve in communication and advocacy include national environmental protection Organisations/Ministries of Environment; legislators or officials from the executive branch of government; Country Interagency Committees on AMR (Ministry of Health, Ministry of Agriculture, Ministry of Environment, Ministry of Water); academia working on AMR, environmental protection, microbiology, chemistry, engineering, and public health; civil society; youth groups; and planetary health advocates.
- Strategies to convey messaging through webinars and capacity building included: (1) giving an overview of the environmental dimensions of AMR; (2) providing the science behind the significance of environmental action for AMR; (3) providing a range of technical solutions that countries can implement or further study appropriateness; and (4) giving the range of governance, coordination, and legislative solutions for countries to take on or advocate for.
- Further capacity building activities will focus on providing concrete actions for countries through technical engagements to understand country-specific problems identified; identify solutions that are applicable to AMR in the environment that may have origins from other sectors, safe disposal of unused antimicrobials in countries.

There is an increasingly strong interest and motivation in countries to begin addressing the environmental dimensions of AMR, both from within Ministries of Environment, as well as related Ministries such as Agriculture/Public Health/Animal Health. This increased motivation has also been noted in the international community amongst researchers, NGOs, CSOs, and intergovernmental Organisations.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Momentum on Global AMR Agenda sustained.	Document outlining Tripartite Plus collaboration for AMR in the environment	
Improved understanding of AMR risks and response options by targeted groups.	Number of countries with strengthened representation of environmental dimensions of AMR and response actions	No revisions
Increased comprehensiveness and quality of the policy dialogue and practice.	# of Member State advocates for developed Call to Action on AMR in the environment	

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
Strategic global-level governance advocacy initiatives on AMR implemented.	# of online meetings discussing interagency roles and responsibilities	HQ level inter-Organisation meetings conducted. Regional consultations conducted via email.	100%	
	Report summarizing discussions and next steps of interagency roles and responsibilities on AMR and environment	HQ level inter-Organisation consultations completed, and inputs incorporated. Regional inputs from each Organisation being gathered. Long-form document outlining inter-Organisation co-operation on environmental dimensions of AMR completed. Short-form document being developed in a more strategic manner as a potentially an external facing document.	75-99%	
Improved countries' capacities for designing and implementing AMR-related policy frameworks, investment plans and programmes	Awareness raising and capacity development approach developed	Awareness raising roadmap and calendar of global AMR-related events developed. Survey to understand MPTF-countries' awareness and capacity needs in environmental dimensions of AMR developed. Report under finalization.	100%	
	Interagency awareness raising series of webinars conducted	Webinar 1: Understanding the basics of environmental AMR for national action held on 14 June 2022. Webinar 2: Sources, drivers and impacts on AMR in the environment held on 7 September 2022. Webinar 3: Technical solutions for the prevention and control of AMR in the environment held on 27 October 2022. Webinar 4: Governance approaches for prevention and control of AMR in the environment held on 01 December 2022.	100%	
	# of MPTF countries receiving targeted capacity development activities	Environmental AMR Capacity Building Consultant engaged. AMR Technical Specialist for country engagement, capacity building and technical support engaged. Literature review on environmental dimensions of AMR and available capacity building interventions drafted, and the report is being finalized. Consultations with MPTF-country teams to best inform country-level capacity building activities currently conducted. Capacity building workshops with selected countries under planning. Rapid assessment tool to identify priority AMR and environment actions for NAP in draft stage for quadripartite input.	75-99%	
	Strengthened environmental component of FAO-PMP-AMR tool	Literature review on environmental dimensions of AMR and available capacity building interventions drafted. Antimicrobial Resistance programme Specialist and Quantitative Risk Assessor engaged to strengthen FAO-PMP-AMR tool.	75-99%	
Engagement plans with critical stakeholders' groups implemented.	Number of Member States joining in "friends against AMR in the environment" group	Provided support to the One Health Global Leaders Group on AMR on environmental dimensions of AMR discussions and prioritizing. Assisted to the GLG statement on reducing antimicrobial discharges. Contributing to GLG working group on environment. Engagement with stakeholders from outputs of FAO country interviews and capacity building.	100%	
	Number of side events increasing visibility of environmental dimension of AMR	Organized participation in World Water Forum 9 as member of the Board of Governors of the World Water Council and delivered the 'One Water One Health' Webinar held on 24 March 2022; with over 228 participants.	100%	

LEGAL FRAMEWORK

Overview

Project: Development and piloting of a Tripartite One Health assessment tool for AMR-relevant legislation (ID: 00126136)

Duration: 24 months plus a six-month extension (Mid-March 2021 to Mid-September 2023)

Activities under this MPTF project focus on the development and piloting of a One Health Legislative Assessment Tool for AMR (hereinafter “the Tool”).

According to the global project proposal document, its key activities include:

- Development of the Tool by a group of international experts backstopped by FAO, WHO and WOAH, and with the support of UNEP;
- Conducting expert review meetings to support the finalization of the Tool;
- Piloting the Tool in three MPTF priority countries;
- Two multi-country workshops (one virtual, one in person depending on the COVID-19 travel situation);
- Development of an e-learning method;
- Validation of the Tool.

Project Progress

Implementation of the MPTF global legal project (hereinafter “the global project” or the “legal project”).

Development of the Tool

The Tool was developed through an extensive process of review and consultation lasting eight months. It comprises information and assessment questions derived from international standards across multiple sectors. It builds upon and expands the FAO Methodology to Analyse AMR-Relevant Legislation in the Food and Agriculture Sector (hereinafter “FAO Methodology”) and a recent module developed by WOAH aiming to assess a country’s AMR-relevant legislation in the veterinary domain. The Tool also integrates health sector assessments derived from a range of WHO standards, notably the Global Benchmarking Tool.

The content and preliminary structure of the Tool was agreed upon by the three Organisations (FAO, WHO, and WOAH – hereinafter “the project team”) with inputs from UNEP, along with the style, reference terminology, approach and internal structure of the sections. The Tool comprises seven chapters that correspond to different One Health sectors, including a cross-sectoral chapter on governance. Each Organisation commissioned the development of its assigned chapters (see below for chapter topics) to external consultants with a total of seven experts working on the various chapters along with a coordinator.

Once the first drafts of the chapters were ready, they were shared with peer reviewers and experts inside and outside of the Organisations, and each chapter was assigned its own group of experts and peer reviewers.

Following several discussions on the length of the Tool and prioritization of topics, the final structure of the Tool has evolved, with more attention being paid to governance and cross-cutting issues. Separate chapters on pesticides and plant protection were also created. With the expansion of Tripartite to Quadripartite, UNEP was brought in to contribute to the chapter on Environment.

Pilot projects (missions with back-to-back national workshops)

The pilot phase of the Tool started in 2022 with two AMR MPTF countries – Morocco and Zimbabwe. The third country will be Cambodia, starting in February 2023. Pilot missions involve the recruitment of a national legal consultant for each country, backstopped by lawyers and international consultants from FAO, WHO and WOAH.

The pilot project for Morocco (the first) is almost completed. Following numerous bilateral meetings

with key ministries and stakeholders, the results of the national report were presented on November 3, 2022, at a hybrid national workshop in Rabat, Morocco. The report, which was sent for additional feedback from the ministries, will be finalised in Q1/Q2 2023.

Zimbabwe is the second pilot project, and a launch meeting has been held among various stakeholders in the country and the national legal consultant has commenced the assessment and national consultation process. For Zimbabwe, efforts have been made to ensure no duplication of work following the FAO Methodology assessment in 2019 and the WHO health sector legislation assessment under the Fleming Fund. The national workshop will take place in Q1/Q2 2023.

A similar approach is envisaged for Cambodia, where a legal consultant has been identified and the Tool will be piloted in Q1/Q2 2023.

Multi-country workshops

Two multi-country workshops, mainly aimed to present the Tool, were planned in the initial project proposal.

The multi-country workshop for Latin America and the Caribbean region took place virtually on November 22, 2022. It was organized as a Quadripartite activity and attended by over 116 experts from the human, animal and plant health, food safety and the environment sectors, and nearly all countries in the region.

The multi-country workshop for the South-East Asian region will follow a similar approach but in a hybrid format and is tentatively planned to take place on May 10-11, 2023, in Phnom Penh, Cambodia.

Main challenges

The development of the Tool took longer than originally foreseen. The process of consultations which led to the expansion of the Tool with additional chapters, and then subsequently ensuring consistency was a first challenge.

Once a detailed version was developed, a second challenge was simplifying the complex and cross-sectoral regulatory mechanisms. Priority was placed, as the development of the Tool progressed, on feasibility for application and implementation across a range of jurisdictions, legal systems and human and resource capacities. Efforts have been made to strike a balance between sufficiently comprehensive scope and detail to serve as a meaningful assessment and ease of use and understanding so that the assessment process is not overly time-consuming and complicated in terms of process or substance.

Given the complexity of the development of the Tool, the expert meetings were postponed and some of them required follow-up work and meetings. There were additional challenges related to the evolving and diverse scientific understanding of AMR in relation to the interface between AMR and the environment, as well as on the role of certain antimicrobials (e.g., biocides and food additives) in the development of AMR.

Due to COVID-19, engaging with countries and regions took significantly more time. The engagement of countries across sectors takes additional time in order to gain commitment for implementation, as does the implementation itself. Stakeholder consultation at the national level therefore is another significant source of delays. Convening stakeholders in a timely manner for bilateral and especially group consultations took longer than anticipated.

Impact of Challenges

Finally owing to the complexity of the Moroccan AMR-relevant legal framework and other sources of delay at the local level, this national project is taking longer than expected.

On average, there has been a delay of more than six months from the original work plan, impacting particularly the pilot missions and multi-country workshops.

Learning innovation

The drafting of the Tool has brought to light several technical points that were unclear as well as where there is a diversity of opinions among the technical experts. As a very dynamic and relatively new area, the evolution of science and the different focus and prioritization of areas is likely to continue during the duration of the project and after that. To address these challenges, the Tool must remain flexible and adaptable.

Stakeholder Engagement and Resource Mobilization

The success of the pilot missions depends on the interest and agreement of the country representatives of the four Organisations, as well as of the national representatives of the different sectors. Due attention must be paid to existing or potential conflicts across government institutions as well as to other potential challenges to conducting the missions. There has been significant interest in the project and various other countries inside and outside of the MPTF have engaged for legal support surrounding AMR governance and interventions.

Through the AMR MPTF Legal Tool project various stakeholders from different government ministries or authorities are brought together for the first time. The importance of governance, legislation and regulations is raised, and an expanded One Health view is brought to the table, showing that sectors are dealing with the same or similar issues across their areas of work. The MPTF global projects are paving the way for regional and country implementation of international norms and standards for AMR across the One Health AMR Quadripartite Organisations and sectors.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Increased comprehensiveness and quality of the policy dialogue and practice	Number of countries whose AMR Multisectoral Coordination mechanisms engage with a broad range of relevant partners	AMR-relevant regulatory framework following a One Health approach. Countries can allocate sufficient qualified (technical and legal) human and financial resources to support the revision of legislation. No revisions.
Use of antimicrobials optimized in critical sectors	Number of countries that implemented one or more (additional) international instruments on AM	Countries are committed to identify and address their regulatory gaps and weaknesses. No revisions.

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
A. Improved countries capacities for designing and implementing AMR related policy frameworks, investments plans and programmes.	A.1 Internationally applicable Tool developed to support legislation review and revision.	The Draft Tool will be finalized following lessons learned from the three pilot missions. The Tool has already been translated to French and Spanish.	75-99%	Development of Tool is conditional to the successful finalization of the three pilot projects, which were somewhat delayed.
	A.2 Number of countries where the regulatory framework has been reviewed in line with the international standards on AMU and AMR	The Tool has been successfully piloted in Morocco (project almost completed). Pilot is on-going in Zimbabwe and will start in Q1 2023 for Cambodia.	25-50%	The Tool is piloted in three countries. Additionally, the two multi-country workshops may generate interest in further country reviews.

MONITORING AND EVALUATION

Overview

Project: AMR Global Action Plan Monitoring and Reporting (ID: 00126136)

Duration: 24 months; ending March 2024

The purpose of this intervention is to drive forward the implementation phase of the AMR MPTF M&E Framework at global and national level. This is accomplished through supporting the Quadripartite's direct management and delivery of global level monitoring, together with targeted Technical Assistance for five MPTF grant recipient countries and other LMICs to support the establishment or improvement of national AMR national action plan monitoring and evaluation capability. These two intervention levels will contribute to higher quality evidence and data for improved decision and policy prioritisation on AMR, and the development of the biennial global AMR report. The key activity includes:

- Global level monitoring and aggregation of indicator data at sectoral level

Project Progress

- Based on country-level analysis conducted in six countries on the feasibility of using the Global Action Plan on AMR M&E framework and recommended indicators, the Quadripartite has now developed a practical and user-friendly "Guidance to facilitate monitoring and evaluation for antimicrobial resistance national action plans" This Quadripartite document will be published in March 2023.
- The 2022 TrACSS survey benefited from a comprehensive review and revision of the questionnaire by the Quadripartite. This included the development of a detailed section on AMR and the Environment. Despite a longer TrACSS questionnaire, in 2022, the survey received the highest response rate on record (166 responses) which translates to a 110% increase compared to the first year's return in 2016. This achievement is attributable largely to improved communication, collaboration and coordination within and across Quadripartite members at global, regional and country levels.

To ensure that the data collected by TrACSS is used at country-level by the Ministries and the multisectoral AMR Committee for policy changes or for prioritizing action, comprehensive Country Reports were developed and published by the Quadripartite. These reports are available for all 166 countries in English, French and Spanish. The reports provide a snapshot of AMR NAP implementation across all sectors in 2022 and provided the trends over the past six years across the various

indicators. The reports can be accessed at <https://amrcountryprogress.org/#/country-profile-view>.

- M&E technical assistance was provided to countries to strengthen their NAP implementation. M&E capacity assessments were conducted in the ten first-round MPTF project countries followed by the selection of five pilot countries to receive direct in-country AMR NAP M&E technical assistance. Based on the level of need identified by the capacity assessment exercise, Cambodia, Ethiopia, Morocco, Peru and Zimbabwe were selected to receive tailored M&E technical assistance in 2023.
- The M&E consultants to support the provision of direct M&E technical assistance have been recruited for all countries except Peru. Recruitment for Peru is currently on-going.

Biennial global reporting on AMR under the GAP M&E framework

- The Quadripartite had several engagements during the reporting period to formulate the 2020-2021 AMR biennial report. UNEP fully participated in developing this report after joining the group in 2021.

The Quadripartite for the first time collected indicator data for the GAP AMR results framework. The final document, that also includes summary TrACSS data from 2022, is currently being reviewed for clearance ahead of publication.

Main challenges

- For the delivery of technical assistance to the five countries, finding technical experts to support the countries was challenging. Delays were experienced in recruiting the consultants to provide the technical assistance. A consultant for Peru is yet to be identified and discussions are ongoing with the regional office and country office colleagues on best ways forward.
- The currently available financial resources through the grant are not sufficient to effectively conduct country-level workshops, develop the planned e-learning module on M&E for AMR NAP, and support the annual TrACSS submission, collation of data, publication of results online, and development of bespoke country reports.
- UNEP needs resources to provide continued, uninterrupted contribution to the AMR M&E work.

Impact of Challenges

- There is a risk of providing technical assistance to four countries instead of the planned five.
- The planned e-learning module will not be feasible due to the lack of resources; financing outside of the MPTF grant will need to be identified to develop this module, beyond the period of this grant.

Stakeholder Engagement and Resource Mobilization

The M&E assessments conducted in ten MPTF countries helped bring together representatives of the various sectors. Ministries, and members of the Quadripartite to review their M&E capacity or lack thereof and to help monitor their AMR NAP implementation. The assessment reports highlight many positive steps taken by Governments to support the monitoring of AMR NAP implementation in their countries and helping prioritize critical next steps.

In some countries, e.g., Zimbabwe, resources from other sources are used to layer and support/ deepen interventions supported by the MPTF grant.

Some of the Quadripartite members are also leveraging the MPTF M&E project process and the assessment reports to mobilize additional resources to support similar efforts in LMICs beyond the MPTF countries.

Efforts are also underway to identify resources beyond the MPTF that can support planned initiatives, including the development of an e-learning module on M&E based on the Quadripartite M&E Country Guidance document. Resources outside of the MPTF have also been identified to develop a “Channel for M&E” in the existing WHO online community exchange platform to facilitate information exchange and peer-to-peer learning on M&E issues.

Table 4: Review of progress against log frame**4 a&b.** Log frame outcomes, outputs and associated indicators

MPTF RESULTS	INDICATORS	ASSUMPTIONS
Outcome 1: Risks and benefits of AMR reflected in national budgets and in development/ multilateral partner sector wide investments	1.b Number of countries that have functioning monitoring and evaluation framework and national action plans in place.	
	National Multi-sectoral working group or coordination committee in charge of national AMR strategy reviews data on antimicrobial consumption and resistance in human and animal sectors at least annually, considers implications for and amends national strategy accordingly [For human health/ Animal Health and Agro-food systems] – in LMICs.	
	3.a Number of countries whose Multisectoral Coordination Group (MCG) reviews and uses data on AMU/AMC and/or AMR across relevant sectors to strengthen policy and practice.	

MPTF RESULTS	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
Output 1: Improved countries capacities for designing and implementing AMR related policy frameworks, investment plans and programmes.	1.c Number of countries that have developed or updated operational plan for implementing national action plans on AMR with associated budget consideration	The M&E guidance document to support countries develop their monitoring and evaluation systems for their AMR national action plan has been completed and is in the publication phase. Data from TrACSS suggests that out of 194 countries only 24% of them are effectively implementing their plan with monitoring in place; and only 10% of the countries that responded to TrACSS in 2022 (n=166) have financial provision for AMR NAPs in their national budgets.	75-99%	
	A. 2 Number of LMICs where national staff have been trained in M&E framework development, prioritization of activities, collecting indicators data for monitoring and reporting of AMR NAP implementation	The consultants have been hired to deliver M&E technical assistance including capacity building training of AMR multi-stakeholder coordination committee in 5 MPTF countries. The Quadripartite M&E Country Guidance document will also help build technical capacity in countries.	25-50%	
	Annual AMR NAP implementation progress reports produced in LMICs based on country-level analysis of M&E data	The implementation of country level MPTF AMR projects in the targeted countries built their capacity to meaningfully contribute to the annual AMR NAP implementation progress reports. Countries may also wish to use the TrACSS Country reports that provide information on several key indicators for AMR NAP implementation across the various sectors as a key resource to further develop their annual report.	50-75%	

MPTF RESULTS	INDICATORS	ASSUMPTIONS
Outcome 6: Multisectoral coordination strengthened at national level	6.a Number of countries that adopt an integrated approach to implement the national action plan on AMR (TrACSS 4.1 Ex)	
	Number of LMICs with M&E working groups established within their Multisectoral Coordination Groups/ Committees	

MPTF RESULTS	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
Output 8: Evidence based, and cost-effective priority actions developed for different context.	8.a Number and list of studies are undertaken to support prioritization of actions on addressing AMR	The Quadripartite used the TrACSS 2022 data to develop sector-specific priorities and areas for additional action, and areas for multisectoral action. These key messages were then included in the 166 country reports that have been shared with countries. This guidance can help countries in identifying and prioritizing actions at the country level to address AMR. Additionally, both FAO and WOAH have both recruited an M&E Expert using the MPTF grant to support the core M&E functions of the Quadripartite. The M&E Focal points within the Quadripartite (FAO, UNEP, WHO and WOAH) jointly deliver this support by collaborating with the regional offices and provide technical support to national counterparts to establish multisectoral M&E working groups in countries, build national M&E capacity to systematically collect data, review multisectoral data on an annual basis and conduct analysis, identify critical gaps, prioritize actions to address implementation challenges, and support the investment of scarce resources.	75-99%	
	B.2 Annual publication by the Tripartite of the joint review and analysis of country's' TrACSS submission by sector to show trends, benchmark country progress, provide evidence of critical gaps and identify targets priority actions	The Quadripartite administered year six of TrACSS with close engagement with regional and country offices. Data was collected, analysed and published on the Quadripartite open access database. Individual country reports that included data from year 6 and trend data from the last 6 years were developed and disseminated the 2022 TrACSS questionnaire was revised based on inputs from all the Quadripartite members, and it was agreed that the questionnaire will not be altered for the next 3-5 years to ensure comparability of data to monitor trends. All Quadripartite members conducted a quality assessment of TrACSS data to identify bottlenecks and improve TrACSS data quality. Further, regional representatives were consulted to provide suggestions to improve use of TrACSS data and data collection processes of the same.	100%	It is an ongoing activity
	B. 3 Tripartite data collation, analysis, and reporting of progress against the GAP recommended multi-sectoral indicators, including relevant SDG indicators	As part of the development of the AMR global biennial report, the data based on the GAP M&E framework and its recommended indicators was collated and analysed. This data will be presented for the first time as an Annex in the upcoming biennial report.	75-99%	It is an ongoing activity

TRIPARTITE INTEGRATED SYSTEM FOR SURVEILLANCE ON ANTIMICROBIAL RESISTANCE AND USE (TISSA)

Overview

Project: Tripartite Integrated System for Surveillance on Antimicrobial Resistance and Use (TISSA) (ID: 00126136)

Duration: 36 months (12th March 2021 – 12th March 2024); last year was due to No-Cost Extension

The TISSA IT platform intends to make available the official and validated data provided by countries to FAO, WOAH, and WHO on patterns and trends in antimicrobial use (AMU) and antimicrobial resistance (AMR) in humans, animals, food, plants, and the environment. The platform aims to provide access to such data in a user-friendly way on a global and regional basis.

The key activities are defining requirements, IT development and management, development and roll-out of shared data collection and visualization platform to display data for AMR and AMU data and development and expansion of in-house IT systems for the Organisations' surveillance programmes to meet the needs of the TISSA platform.

Project Progress

Development of the system started in 2021 with an initial phase of requirements gathering to define the high-level needs and requirements for the TISSA IT data platform. An IT vendor was hired, and the development of the project began at the end of 2021 and continued until March 2022.

An extensive testing, bug fixing, and completion phase of the project was then initiated where representatives from all the Organisations all systematically tested the IT system that had been developed by the external IT vendor.

Following the testing and completion of the initial IT system, a maintenance phase of the project was carried out by issuing an RFP and carrying out a vendor selection process. Once completed, representatives then continued to identify areas of improvement in the system with a view of launching the system live for the public.

The name of the project was discussed as something that might need to change as a result of the addition of UNEP to the Quadripartite. These issues were then brought to the Quadripartite Joint Secretariat where it was decided that the project would be brought to senior management for consideration. The launch of TISSA was delayed to allow for Organisations to secure data from their members and finalize the testing of safe data sharing through the platform.

- WHO carried out the project management of the project - both internal between all Organisations as well as external with the IT vendor. WHO also organized and purchased the hosting domain and services is managing the technical hosting of the system. WHO also organized the initial maintenance contract with the external IT company and managed all aspects of this initial maintenance phase.
- The first beta version of the International FAO Antimicrobial Resistance Monitoring platform/system (InFARM) has been developed and is currently under testing by countries, this version includes the specifications for building the interoperability with TISSA and for generating files for direct export to TISSA from the InFARM platform
- FAO also assigned dedicated human resources for the TISSA project
- WOAH worked on the development, testing and launch of the ANIMAL antiMicrobial USE (ANIMUSE) Global Database, including the integration and export files for TISSA. Training workshops for Members conducted in WOAH regions during last trimester of 2022 and first trimester of 2023.

Initial testing of the TISSA interface for data upload from ANIMUSE was completed successfully. Dedicated TISSA dashboards and reports have been developed within ANIMUSE specifically for this purpose.

Main challenges

Some of the major issues from the previous project year remain for TISSA and the development of a shared IT platform for shared AMR data. Such as:

- The standardizing of countries and regions between the three Organisations. It is currently impossible to use a common map for regions and a further review of a standard map at the country level between the Organisations is needed. Until this is resolved, TISSA will need to display separate maps for AMU and/or AMR data per Organisation. This lack of cohesion may cause confusion.
- The critical challenge of individual agreements between each Organisation and its Member States. Some Organisations require specific agreements to share data in TISSA in addition to the respective Organisation database/platform.
- As reported in the previous year, the critical point is the level of data submission and reporting. Due to rules in each Organisation, the data will be submitted either at country or regional levels; independently of the submission level data will be reported at country or regional levels. The long-term objective of the three Organisations is to report country-level data and compare sectors in the future.

FAO is establishing a data platform hosting AMR data from the food and agriculture sectors at the global level. The Organisation has finalized the work with an external vendor to develop an IT solution for the first pilot version of InFARM, that is currently being tested by countries. One of the main challenges is getting countries trained in the use of the platform and the Organisation is currently working on a manual for operationalization of the platform that will be jointly published with the first global open call for data.

One of the challenges has been to find a harmonized way to provide reports for TISSA as AMU data is owned by WOAH Members and it is therefore confidential. With the launch of ANIMUSE Global Database (in September 2022), WOAH has started asking its Members for their desired level of confidentiality for their AMU data; as of March 2023; so far, only three Members have decided to make their data publicly available. It will take at least two years for the WOAH to further explore countries' willingness to share their data. This will mean that for Members for which access to AMU at the country level is not an option, WOAH must assure their confidentiality even if countries in the same region decide to make their AMU data public. In this situation, AMU data will then be displayed in TISSA at the regional level.

- The procurement process of the IT vendor in WHO is streamlined for procurement unique to WHO, so there is nothing in place for such a "joint" contract between WHO and other Organisations.
- Another major hurdle is hosting a joint website by one agency, including cybersecurity, architectural and maintenance considerations.
- Integrating the notion of the Tripartite Organisations in contractual procedures would clarify the work of the technical and administrative teams.

Impact of Challenges

The main way to overcome the challenges relating to standardization is for TISSA to manage extra functionalities, mostly around countries and maps, that has meant the system has grown in complexity to fulfill legal requirements from the three Organisations.

Challenges with the website layout and hosting have been resolved mostly through multiple exchanges with the Tripartite Joint Secretariat on AMR and the WHO IT department.

The ultimate issue of the launch of the system is now under discussion with the QJS as they look at how to sustainably continue the work of the MPTF. As a complete product of the MPTF TISSA is ready to be launched when necessary.

Learning innovation

There has been substantial learning during this project. In particular, the Organisations have learned a great deal about data platforms and software available as well as data harmonization and standardization between the Organisations and surveillance areas. Such lessons could be used as guidance for countries as they set up their own data platforms.

Table 4: Review of progress against log frame

4.a. Log frame outcomes

MPTF OUTCOME	INDICATORS	ASSUMPTIONS
Evidence base/ representative data on AMR/AMU improved for policymakers and sectors implementing AMU practices	Information on AMU available and harmonized across sectors, provided on a regional level Number of countries for which data across sectors will be available in the TISSA platform Number of annual visits to the TISSA website by specific reports	N/A

4.b. Log frame outputs and associated indicators

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
Evidence base/ representative data on AMR/ AMU improved for policymakers and sectors implementing AMU practices	<p>A.1 Information on AMU available and harmonized across sectors, provided on a regional level Baseline value: No harmonized AMU data across sectors available on a regional level Target value: Harmonized AMU data across sectors available at least by region</p>	<p>The IT system is fully functional and complete. The team is waiting for a decision on the date and scope of the launch of the system in order for it to go live and be available for data upload and view by the public.</p>	75-99%	<p>Currently, countries are independently reporting data on AMR and AMU in different sectors to WOAH and WHO monitoring systems. FAO monitoring system (InFARM) is under development, with the first prototype planned to be available by the end of 2023. Given the timeline for InFARM development, it is unlikely that FAO will be able to share aggregated AMR data with TISSA before its launch. During the initial data upload, the Tripartite Organisations will identify available countries to contribute with AMR and AMU for humans or animals at the end of the project duration. It is expected that the number of countries providing all sets of data, including AMR in animals, will increase in the long term. When AMR data from food and plant sectors are available, numbers will be reported for this type of data and sector. Similarly, when data in the environment become available, the number of countries providing this information will be reported.</p> <p>The Tripartite Organisations initially expect around 30 countries to report human AMR and AMU and animals AMU at the time of the Project. In terms of the use of the data, initially, a simple indicator will be the number of visits to the website.</p> <p>At this point the system is functional and only needs a few content updates to be ready to be fully launched when the date is given by QJS. When this is the case, we can see the data to inform these indicators.</p>
	<p>A.2 Number of countries for which data across sectors will be available in the TISSA platform Baseline value: no countries information displayed in TISSA Target value: 25 countries reporting AMR and AMU data in humans and AMU data in animals by second half of 2023</p>	<p>The system is now complete and fully functional. However, as the team is now awaiting a decision from the QJS for the data and scope for the launch of the system data has not yet been submitted, this indicator is still in progress. However, each Organisation's surveillance programmes already collect the data that will ultimately be submitted to the TISSA platform. WHO, for example, collects data on AMR from over 100 countries.</p>	75-99%	

MPTF OUTPUT	INDICATORS	PROGRESS DESCRIPTION (ACTIVITIES STARTED/COMPLETED)	INDICATOR % MET	ASSUMPTIONS
	A.3 Number of annual visits to the TISSA website by specific reports Baseline value: No visit currently happens Target value: more than 1000 visits annually	The website is not yet live, so this indicator can be better measured upon successful launch.	0%	
	A.1. Development of the TISSA Platform Baseline value: no IT platform available Target value: the TISSA platform developed The system is fully developed and ready for full launch with only a few minor content updates needed before launching (for example, update the logo of WOAH). This will be done upon the decision of the date and scope of the launch.		100%	The decision for the date of the launch is being discussed between the QJS. There is therefore a delay in the launch of the system. A risk that this creates is that content will need to be updated as it is already becoming out of date.
A.2 Number of countries included in the TISSA database Baseline value: No countries are included in TISSA Target value: 70 countries included in TISSA and having at least one set of data	A. Systems for generating, analysing, and interpreting data on resistance and consumption/use patterns developed or strengthened This indicator is in process and will be better measured upon the launch of the system		0%	In terms of countries included in TISSA, TISSA will report the number of countries included in the database for each sector and the type of data at the time of the Project. The number of countries reporting at least one set of data is expected to be larger than for the outcome indicator 1 as some countries will not have access to all data sets. In the long term, it is expected that this indicator and outcome indicator 1 will converge. Due to data sharing policies, it might be that data will not systematically be initially reported at a country level but at a regional level.
A.3 Display of harmonized data across sectors at the regional level Baseline value: No harmonized data across sectors displayed at the regional level Target value: Harmonized data displayed at the regional level		During the requirements gathering phase of the Project involving subject matter experts from all Organisations, the needs for data visualizations have been defined for each surveillance programme. However, during this exercise, some issues have arisen regarding the potential to harmonize the data as detailed in the risk above. The regions for each Organisation are distinct, and thus it will be difficult to display such data on one common map at the regional level.	25-50%	As detailed above, there is an issue with displaying data from all Organisations on one common map. The intermediate solution is to have a map distinct for each Organisation's data.
B Strategic global level governance advocacy initiatives on AMR implemented	B.1 Number of global initiatives supported by TISSA data Baseline value: no global initiatives supported by TISSA data Target value: Tripartite Organisations expect Codex Alimentarius to refer to the use of the TISSA platform	This output will be better measured, and activities will be started once the IT system is launched.	0%	The Tripartite Organisations are already involved in global initiatives related to AMR and AMU across sectors. The three Organisations also have a leading role in global initiatives. TISSA would be a unique global independent database having AMR and AMU data across sectors

Profiles of new country programmes



BANGLADESH

Key statistics

- Population: 169.36million (World Bank, 2021)
- Human Development Index: 0.661 (UNDP, 2021)
- Income Level (GDP per capita in USD): 2,457.9 (World Bank, 2021)

AMR situation

Bangladesh has the highest density of humans and animals globally. Identified as a potential hotspot for a waterborne AMR epidemic, only 35% of the population in Bangladesh has access to hand-washing facilities at home and 48% have access to basic sanitation services – many in dense urban areas (WEF, 2021). Antimicrobials may be used extensively due to weak infection prevention and control and biosecurity practices and wide availability of watch and reserve group antimicrobials. Unethical pharmaceutical promotion and weak regulatory oversight contribute to overuse. AMR is increasing in Bangladesh with challenges in healthcare and misuse and overuse of antimicrobials, posing a regional and global threat. Resistant pathogens are found in hospitals, community settings, farms, and the environment.

Trend data from Bangladesh reveals that national consumption of antimicrobials in the human health sector is the highest in WHO Watch group antimicrobials, followed by Access and Reserve groups. This information is generated by the national system for monitoring consumption of antimicrobials, led by the Directorate General of Drug Administration (DGDA), and is cause for great concern. However, to-date no decisive action has been taken to reverse this trend. Prescribers often believe that first line treatments have become ineffective, even for community-based infections. The data on AMR trends originates mainly from hospitals and may be misinterpreted, leading to an increased reliance on second-line treatments for community infections. The recent WOAH Performance of Veterinary Services (PVS) Gap Analysis recommended Bangladesh to:

- improve control and prudent use of veterinary medicines
- develop a pilot residue control programme
- strengthen disease surveillance and early detection of emergency diseases
- improve control of economic and zoonotic diseases.

National response to AMR

The Antimicrobial Resistance Containment component was introduced in the fourth health sector-wide programme (2017-2022), which has been extended and expected to end in June 2023. A National Strategic Plan for Antimicrobial Resistance Containment in Bangladesh (2017-2021) was developed, and the second plan (2021-2026) drafted, adopting a One Health approach. Joint multi sectoral committees and four working groups were established in 2012 to implement integrated AMR and One Health related activities. The country has shown political will and commitment to tackle AMR an example being H.E. Sheikh Hasina, Prime Minister of Bangladesh, is Co-Chair of the Global Leaders Group on Antimicrobial Resistance. This keen interest from the top leadership translates into willingness and interest of government Organisations to engage in AMR activities. However, awareness raising, and advocacy are needed to mobilise relevant sectors, especially the environmental and plant health sectors. Human and animal health sectors have been engaged in the development of the national action plan and joint awareness activities. The environmental sector is lagging and nominated officials have only recently begun participating in national AMR technical committee and core working group meetings. Plant health sector has to-date minimal involvement in AMR activities.

Project: Bangladesh Quadripartite Response to Combat AMR

Duration: 36 Months (January 2023 – January 2026)

Objectives and key activities:

OBJECTIVE	KEY ACTIVITIES
Systems for optimized use strengthened in critical sectors	<p>Expansion of antimicrobial stewardship programmes to selected secondary and tertiary care hospitals</p> <p>Bangladesh AMR Response Alliance (BARA) in-service training programme expansion for private sector veterinarians and human health practitioners</p> <p>Medical college continuing education programme on antimicrobial resistance and principles of responsible usage</p>
Improved capacity to design awareness raising, behaviour change and educational activities	<p>Develop multi sectoral communication strategies to tackle AMR issues in Bangladesh</p> <p>Develop and disseminate awareness materials on AMR in Bengali (human, terrestrial and aquatic animals and environment health sectors).</p> <p>Conduct pilot study and collect feedback regarding the developed AMR/AMU awareness material from target audiences</p> <p>Organise One-Health awareness programme on AMR during World Antimicrobial Awareness Week</p> <p>Organise seminar on AMR for veterinary education establishments and private sectors (pharmaceutical manufacturers/dealers, livestock and poultry producers, fish farmers, feed manufacturers, etc)</p>
Systems for generating, analysing and interpreting data on resistance and consumption/use patterns developed or strengthened	<p>Strengthen AMR surveillance and laboratory capacity in human, animal and environment health sector</p> <p>One Health AMR Surveillance Information System (OHASIS) platform development for collection, analysis, and sharing of antibiogram data from participating laboratories with BARA practitioners and participating hospitals.</p> <p>Quality Control programme for selected private laboratories in the OHASIS culture and sensitivity data submission</p> <p>Enhance monitoring of antimicrobial usage in animals (both terrestrial and aquatic) and antimicrobial consumption in humans at different level (national, subnational) using a multi-sectoral collaboration approach</p> <p>National/sub-national AMU/AMC data collection training/workshops inviting participants from key stakeholders in terrestrial animals, aquatic animals and human health sectors.</p> <p>Training on AMU/AMC data collection and calculation.</p> <p>Translation of the WOAH global AMU database system/software use guideline materials into Bengali.</p>

Budget:

US\$ 990,000

Expected results**Impacts**

- AMU associated behaviours and practices sustainably improved in critical sectors
- Countries makes explicit commitments (policies, investment plans, programmes, legal framework, resources) on AMR based on evidence and quality data

Outcomes

- Use of antimicrobials optimized in critical sectors
- Improved understanding of AMR risks and response options by targeted groups
- Evidence based/representative data on AMR/AMU improved for policy makers and sectors implementing AMU practices

Main challenges

Historically, global health and animal-focused projects have faced significant sustainability challenges in Bangladesh, primarily due to a well-established donor dependency complex for essential operational funding combined with continued government sector under-investment. Sustainable impact has also suffered from over reliance on public sector stakeholders for implementation rather than tapping into more intrinsically motivated economically dynamic private sector actors. For example, well-equipped private sector laboratories are now processing the majority of culture and sensitivity tests in the country while government labs remain understaffed, poorly maintained, and under-utilized.

Outlook for 2023

The proposed project model focuses on maximizing use of local human resources with maintenance of a small in-country expert team and backstopping from regional and headquarter offices of the Quadripartite and short-term consultants. The project is an opportunity to strengthen collaboration with other development partners to support the One Health approach in Bangladesh. The collective knowledge and rapport of the Quadripartite with leaders in the field will facilitate greater harmonization between the various coordinating bodies and stakeholders. A focus on national capacity development will leave Bangladesh on stronger technical footing when further investments are made, either by GOB or donors, to support AMR activities.

Planned trainings will address AMR surveillance and AMU/AMC data collection through trainings for public sector staff, generating a multiplier effect, applied to all trainees of designated laboratories and Organisations aiming to ensure sustainability beyond the project and to continue providing data to the Quadripartite through GLASS and AMU global database systems.



MADAGASCAR

Key statistics

- Population: 28.92million (World Bank, 2021)
- Human Development Index: 0.501 (UNDP, 2021)
- Income Level (GDP per capita in USD): 500.5 (World Bank, 2021)

AMR situation

Developed in full alignment with the WHO Global Action Plan on Antimicrobial Resistance, Madagascar's National Action Plan on AMR (AMR NAP) was validated in 2019. The level of implementation of the AMR NAP is low due to the lack of financial resources, although some initiatives have been carried out, namely: the development of strategies and policies (infection prevention and control (IPC) for health facilities, National Action Plan for Health Security), as well as participation in the collection of AMU data in the human and animal sectors.

Madagascar participates in the GLASS network, the TrACSS, and the global surveillance system for AMU. In addition, a recent FAO PMP RAM evaluation in 2022 showed a low AMR NAP implementation rate (22%), allowing the various stakeholders to identify key and priority actions. These actions have been included in this project to support more effective implementation of the AMR NAP.

The World Bank is also involved in the country's AMR activities through technical assistance for the establishment of the One Health operational exchange/coordination platform, as well as in the operation and support of this coordination platform for a period of two years beginning in 2022.

National response to AMR

Mindful of the danger posed by AMR and the challenge it presents for the future, the Government of Madagascar in 2016 signed the political declaration of the high-level meeting of the United Nations General Assembly on AMR and is one of the African countries involved in the Global Antimicrobial Resistance Surveillance System. The AMR Multisectoral Coordination Committee (CMC-RAM) was then established with representatives from across the relevant sectors.

The Ministry of Public Health has set up resistance surveillance systems for certain programmes, such as: multidrug-resistant tuberculosis (MDRTB) surveillance in partnership with the Institut Pasteur; surveillance of antimalarial drug resistance and efficacy. The Madagascar Medicines Agency maintains data on adverse drug reactions. In the area of animal health, Madagascar participates in seven WOAH global surveillance systems for antimicrobial use. The Directorate of Veterinary Services (DSV) is the implementing authority for the WOAH measures under the Ministry of Agriculture and Livestock. As such, it conducts animal disease surveillance through the MADSUR (Madagascar Animal Disease Surveillance) network, with support from the Indian Ocean Commission (IOC). Major zoonoses such as rabies and cysticercosis are monitored jointly with the Ministry of Health.

Surveillance is conducted annually for antibiotic residues and chemical contaminants in food of animal origin subject to export, including honey. The authority responsible for fishery products within the Ministry of Fisheries and the Blue Economy is the Fisheries Health Authority (ASH), which is decentralized to ten health inspection posts for fishery and aquaculture products. It has a product safety department which implements a formal monitoring plan for drug residues and environmental chemical contaminants in aquaculture products each year. Work is under way to develop a Southwest Indian Ocean coastal monitoring plan.

In the environment sector, Madagascar, acting through the Ministry of Environment and Sustainable Development, has ratified and implemented international conventions on the management and disposal of substances, harmful products and hazardous wastes such as 4 antimicrobials (Stockholm Convention on Persistent Organic Pollutants, Rotterdam and Basel Conventions on Chemicals and Hazardous Wastes). The National Office for the Environment (ONE), a body under the Ministry, is the country's focal point for environmental assessment. It is responsible for the implementation of the decree for environmental compliance of investments (MECIE), ultimately aimed at reducing or eliminating the negative impacts of investments on the environment.

In the area of agriculture, the country has a list of approved pesticides for pest control. In this regard, the Directorate for Plant Protection (DPV) of the Ministry of Agriculture and Livestock could be involved in monitoring. All large-scale agriculture and livestock projects are subject to environmental assessments that use a multisectoral approach as a window of opportunity for AMR control.

Project: Strengthening AMR control efforts in Madagascar through a “One Health” Approach

Duration: 36 Months (January 2023 – January 2026)

Objectives and key activities:

OBJECTIVE	KEY ACTIVITIES
Systems for generating, analyzing and interpreting data on resistance and consumption/use patterns developed or strengthened	Monitoring and evaluation, data sharing and lessons learned
	AMU monitoring in various sectors using reliable
	Improve AMR surveillance in all sectors using reliable
	Strategy for antimicrobial traceability and assurance of future use
Improved countries capacities for designing and implementing AMR-related policy frameworks, investment plans and programmes	Strengthen the governance of AMR management
Improved capacity to design awareness-raising, behaviour-change and educational activities. 3.1 Raise awareness of AMR and implement interventions to promote behaviour change	Raise awareness of AMR and implement interventions to promote behaviour change
Systems for biosecurity and IPC strengthened	Combat AMR and promote best practices
	Reduce the incidence of infection through efficient sanitation, hygiene and infection prevention measures

Budget

US\$ 999,411.00

Expected results:

Impacts

- Explicit AMR commitments by Madagascar (policies, investment plans, programmes, legal frameworks, resource allocation) based on evidence and quality data.
- AMU-associated behaviours and practices sustainably improved in critical sectors

Outcomes

- Improved and comprehensive data on antimicrobial resistance (AMR) and antimicrobial use (AMU) to inform policies and benefit sectors implementing rational antimicrobial use practices
- Risks and benefits of AMR reflected in national budgets and in development/multi-lateral partner sector-wide investments
- Improved understanding of AMR risks and response options by targeted groups

- Use of antimicrobials optimized in critical sectors

Main challenges

Implementation of planned AMR activities has been slow, mainly due to financial constraints arising from a sluggish economy. The Quadripartite will build on existing programmes to support national efforts with a package of synergistic activities through a “One Health” approach to address the following major issues, which form the basis of the proposed intervention:

- Limited antimicrobial alternatives
- Suboptimal practices/behaviours
- Inadequate infection prevention and control (IPC) systems
- Insufficient/low quality data on AMR/AMU

The COVID-19 pandemic delayed the implementation of activities as well.

Outlook for 2023

The programme will be implemented in close collaboration with the relevant ministries (Ministry of Public Health, Ministry of Agriculture and Livestock, Ministry of Environment and Sustainable Development, Ministry of Fisheries and the Blue Economy, Ministry of Water Resources, Sanitation and Hygiene, Ministry of Higher Education and Research), and the AMR Multisectoral Coordination Committee (CMC-RAM).

The MPTF will provide an opportunity to scale up planned activities by addressing some of the gaps to effectively contribute to AMR control efforts through the One Health approach. It will also address some of the main areas of concern in Madagascar, namely the use of illicit, substandard and falsified medicines across sectors. The programme will contribute to promoting the rational use of antimicrobials, in accordance with the AMR NAP. It also proposes an innovative approach to reduce the use of antimicrobials by supporting mass immunization of at-risk populations.

MONGOLIA

Key statistics



- Population: 3.35million (World Bank, 2021)
- Human Development Index: 0.739 (UNDP, 2021)
- Income Level (GDP per capita in USD): 4,566.1 (World Bank, 2021)

AMR situation

According to the WHO Report on Surveillance of Antimicrobial Consumption (2016-2018) the AMC in Mongolia was estimated to be 64.4 expressed as Daily Defined Dose (DDD) per 1000 inhabitants (2015 data) which was the highest among 65 countries and areas globally¹. In 2018, it was decreased to 50.68 DDD² following government's policies and actions to restrict the sale of antimicrobials over the counter and improve public awareness on AMR.

Mongolia's unique country conditions include a large herder population and an even greater livestock population that outnumbers the human population by a factor of 20. Winters in Mongolia are harsh and extend between November to May. Nomadic herders live in isolation and far from health centres and veterinary clinics located in districts or province centers. This has caused nomadic herders to become self-reliant and herders often self-diagnose and self-medicate with antimicrobials their livestock.

Currently, antimicrobial susceptibility testing in veterinarian hospitals and facilities are randomly performed and mostly funded by external resources while lacking a systematic and sustainable approach.

A 2018 assessment of staff competency which was carried out by the Institute of Veterinary Medicine (IVM) found that only six percent of 47 laboratory staff was able to perform the disk diffusion susceptibility testing indicating the need for skills training on AMR surveillance. There are no standard operating procedures on AMR surveillance or detection of pathogenic contamination even for those accredited food laboratories.

National response to AMR

Since 2010, a number of multi-sectoral coordination efforts have been initiated including an establishment of zoonoses mechanisms between the human and animal sectors guided by Tripartite partners. In 2013, it was expanded to the Zoonotic Diseases Coordination Committee which was later integrated with the Disaster Risk Management (DRM) system.

Recognizing AMR as an emerging health threat, MoH and MoFALI developed and endorsed the first joint Multisectoral National Action Plan (MNAP) 2017-2020 with six objectives: 1) Establish a governance and ensure multisectoral role to combat antimicrobial resistance sustainable investment and functionin ; 2) Strengthen surveillance and diagnostic capacity for AMR and research; 3) Reduce the spread of infections through better infection prevention and control; 4) Ensure quality and safety of antimicrobial medicines; 5) Optimize the use of antimicrobials in the human and animal sectors; and 6) Raise awareness and understanding of AMR and rational use of the general public, herdsmen and health professionals.

A rapid assessment of the MNAP was conducted in 2021 prior to the development of the second MNAP. A working group, which consisted of representatives from MoH, MoFALI, Medicine and Medical Devices Regulatory Authority (MMDRA), General Authority for Veterinary Services (GAYS), National Center for Communicable Diseases (NCCD), the First Clinical Hospital, WHO and FAO was established to draft the second MNAP. The second MNAP was endorsed on 22 May 2022.

Project: One Health approach to manage AMR and AMU in Mongolia

Duration: 36 Months (January 2023 – January 2026)

Objectives and key activities:



OBJECTIVE	KEY ACTIVITIES
Improved capacity for designing and implementing AMR-related policy frameworks, investment plans and programmes Rationale: the functionality of multi-sectoral coordination needs to be made more effective and coordinated through the support of a Secretariat.	Support the Multi-Sectoral Coordination Committee (MSCC) by a secretariat that coordinates its activities
	MSCC supports policy development and legal enabling environment
	Development of the operational budgeting of the MNAP 2022-2025
	Development of the Monitoring and Evaluation framework for MNAP
Systems for generating, analysing, and interpreting data on resistance and consumption/use patterns developed Rationale: Capacity and surveillance on AMR needs to be established across national laboratories and expended to provincial laboratories. Concurrently, the use of antimicrobials needs to be well mapped to allow for AMU monitoring in key sectors.	Capacity building on AMR detection and surveillance of infections caused by AMR pathogens across human health and animal health including environment sectors
	Strengthen AMR detection and surveillance of infections caused by AMR pathogens across human health, animal health, environment, and food sectors
	Enhance monitoring of antimicrobial usage B.4 Improve reporting on AMU using the new WOAH-AMU database system
Improved capacity to design awareness raising, behaviour change and educational activities Rationale: An over-arching communication strategy on AMR and AMC/AMU will help to guide the development and dissemination of awareness campaigns for key sectors.	Develop multi-sectoral communication strategies and plans based on AMR surveillance and AMC/AMU monitoring
	Develop and disseminate awareness materials on AMR and guidelines on AMC/AMU in Mongolian language
	Upscale awareness programmes on AMR/AMU/AMC targeting relevant stakeholders across the food chain

Budget

US\$ 999,818

Expected results:

Impacts

- Countries make explicit commitments (policies, investment plans, programmes, legal frameworks, resources allocations) on AMR based on evidence and quality data
- AMU associated behaviours and practices sustainably improved in critical sectors

Outcomes

- Risks and benefits of AMR are reflected in the national budget and in development/multi-lateral partner sector-wide investments
- Evidence-based data on AMR/AMU improved for policymakers and sectors implementing AMU practices
- Improved understanding of AMR risks and response options by targeted groups

Main challenges

Overall, the main gaps in MNAP 2017-2020 implementation were: lack of AMR pathogen and consumption/use surveillance; lack of trainings on surveillance network, insufficient usage of WHO-NET and laboratories of animal sector and lack of enforcement of AMR-related regulation. These activities, especially trainings have been affected by the COVID-19.

These gaps were reported in the previous evaluation and performance of the Tripartite, namely the Joint External Evaluation, 2017 by WHO and the Performance of the Veterinary Services, follow-up mission, 2019 which emphasized that the need of a sustainable and coordinated approach for addressing the following areas:

- Strengthen the implementation of coordination and collaboration between Ministries with respect to public health including AMR and AMU
- Establish systematic and ongoing AMR surveillance (as opposed to research- or project-based AMR studies)
- Complete and implement prescription regulations (needed in the animal health sector)
- Build workforce capacity at all levels (national and sub-national)
- Improve awareness and communication on prudent use of antimicrobials tailored to targeted risk-groups including herders, farmers and veterinarians. This recommendation is also relevant to minimize the presence of residues in food products.

Outlook for 2023

The Tripartite (FAO-WOAH-WHO) Organisations are well positioned to support this project having worked together on one health, zoonoses and on AMR/AMU in the Asia Pacific Region for many years. The emergence of new and existing animal diseases, including zoonoses, the growing threat of transboundary animal diseases, the impact of environmental changes and globalization, as well as new societal demands related to food security, food safety, public health and animal welfare, emphasize the critical need for collaboration between the three Organisations by applying a comprehensive One Health approach¹³. This One Health approach was further stressed and elaborated during the National Bridging Workshop that was organized by the Tripartite on 15-17 June 2022 involving the Ministry of Environment and Tourism.

The MPTF activities are directly in line with Mongolia's MNAP 2022-2025 to combat AMR.



TUNISIA

Key statistics

- Population: 12.26million (World Bank, 2021)
- Human Development Index: 0.731 (UNDP, 2021)
- Income Level (GDP per capita in USD): 3,807.1 (World Bank, 2021)

AMR situation

Antimicrobial resistance is a neglected serious public health problem in Tunisia. For the past fifteen years, Tunisia has faced an overall increase in microbial resistance. This is mainly due to the over-consumption and misuse of antimicrobials, which reduces the available therapeutic arsenal, which is needed for the most vulnerable patients. In human health, antimicrobial resistance surveillance showed that resistance of *Escherichia coli* to 3rd generation cephalosporins increased from 4% in 2004 to 17% in 2014 while resistance of *Klebsiella pneumoniae* to carbapenems increased from zero before 2004 to 6% in 2014.^{1,2,3} In animal health, several studies have shown significant resistance in certain livestock sectors, particularly in poultry where the rate of *Escherichia coli* strains resistant to 3rd generation cephalosporins is on average 30%. In addition, significant resistance to tetracycline and fluoroquinolones is also noted in various animal species.^{1,4} This alarming situation has motivated the human health and animal health sectors to join the global efforts to combat AMR.

National response to AMR

In 2019, Tunisia developed its NAP on AMR, mainly addressing awareness, surveillance and infection prevention. The NAP was prepared jointly with the Ministry of Health and the Ministry of Agriculture, representatives of the veterinary services, plant protection and environment sectors were not involved. This project will allow participation of those sectors in revising and implementing the NAP. At the structural level, the Minister of Health created the Technical Committee on AMR in January 2015. It is composed of volunteer experts: infectiologists, general practitioners, resuscitators, microbiologists, veterinarians, pharmacists, representatives of the national orders of doctors, veterinarians, pharmacists and dental medicine, the deans of the faculties of medicine, pharmacy and dentistry and veterinary medicine, learned scientific societies and representatives of concerned ministries. In April 2018, the Ministry of Agriculture created a scientific committee on AMR and AMU. The members of this committee, in collaboration with other eminent four academics and scientists, have already carried out several actions raising awareness on AMR at different levels.

The Technical Committee of the Ministry of Health is very active at the national and local level to implement AMR activities related to human health in collaboration with WHO but the role of this committee remains advisory without decision-making power. While the Ministry of environment and the National Environment Protection Agency are crucial in the fight against AMR by mainstreaming the environmental dimensions of AMR across sectors, surveillance and reporting, and pollution control and enforcement, etc. the participation of the ministry in the NAP coordination mechanism requires strengthening.

Project: Support the implementation of the AMR National Action Plan in Tunisia using One Health Approach

Duration: 36 Months (January 2023 – January 2026)

Objectives and key activities:

OBJECTIVE	KEY ACTIVITIES
Improved capacities for designing and implementing AMR-related policy frameworks, investment plans and programmes	Support the establishment and functioning of the national inter-ministerial AMR steering committee in Tunisia
	Strengthen the management and monitoring capacities of NAP activities through joint workshops on AMR Management.(assessment of NAP 2019, identification of gaps, suggestions for improvement)
	Revise the NAP 2019 to include environmental health and plant health and to update activities
	Assess current legal and institutional frameworks governing AMR in the human health, animal health, plant protection and environment sectors and propose the necessary amendments to meet AMR challenges using quadripartite tool
Systems for generating, analyzing and interpreting data on resistance and consumption/use patterns developed or strengthened	Assess human, technological and material capacities of human, animal, plant and environmental health laboratories working on AMR, support networking and provide reagents 5 interpreting data on resistance and consumption/use patterns developed or strengthened and expendables to support joint surveillance programme
	Support the national AMR/AMU surveillance system in Tunisia for better monitoring planning, data collection, processing and dissemination to key stakeholders
	Assess, design and support implementation of traceability system of antimicrobials in human health, animal health, plant protection and environment sectors
	Carry out a study on the causes and environmental impacts of AMR in Tunisia
Improved capacity to design awareness raising, behavior change and educational activities	Develop and implement a joint communication plan to raise awareness on AMR by ensuring equitable participation between men and women and by respecting the participation of people with disabilities
	Organize training of key stakeholders in human health, animal health, plant protection and environment on AMR, good practices, biosecurity and infection control and prevention by ensuring equitable participation between men and women and by respecting the participation of people with disabilities
	Organize training sessions on the appropriate use of antimicrobials for the human, animal and plant health sectors by respecting the gender approach
	Promote Integrated Pest Management for reducing use of antimicrobials in the plant health sector by respecting the gender approach
Impacts	Advocate for the development of an updated AMR training modules in veterinary, medical, environment, dentistry, pharmacy and paraprofessional
	Organize a joint training workshop on negotiation and advocacy

Budget

US\$ 1,002,721

Expected results:

Impacts

- Countries make explicit commitments (policies, investment plans, programmes, legal frameworks, resources allocation) on AMR based on evidence and quality data
- AMU associated behaviors and practices sustainably improved in critical sectors

Outcomes

- Risks and benefits of AMR reflected in national budgets and in development/multi-lateral partner sector wide investments
- Evidence base/representative data on AMR/AMU improved for policy makers and sectors implementing AMU practices
- Improved understanding of AMR risks and response options by targeted groups

Main challenges

Tunisia is facing financial challenges to fully implement its NAP on AMR, especially with the Covid-19 crisis and the health and financial impacts. The Tunisian Government needs support of this project for strengthening multisectoral collaboration, involvement of environment and plant protection, capacity building, strengthening AMR surveillance and improving AMR knowledge and practices.

Though mandated under the environmental protection act, AMR surveillance in the environment is limited, and not structured. It also lacks coordination with the other sectors such as agriculture and human health.

The most critical gaps to be addressed are:

- Limited coordination between national stakeholders for designing and implementing AMR related policy frameworks, investment plans and programmes
- Lack of structured and integrated AMR surveillance systems that brings together all sectors
- Lack of coordination in generating, analyzing and interpreting data on AMR and AMU/AMC
- Lack of involvement of plant protection and environment sectors in national AMR activities
- Limited capacity to design coordinated awareness campaigns

Outlook for 2023

The AMR MPTF project will accelerate the sustainable implementation of the AMR National Action Plan in Tunisia by providing catalytic support through advice on the planning, management and implementation of AMR-related activities. The project will provide technical assistance to improve capacities for the assessment, design and implementation of policy frameworks and programmes related to AMR. It will support the country mainly in the areas of governance, surveillance, behavior change, training and infection prevention and control in the relevant sectors (human health, animal health, plant protection and environment). The project will enable capacity development of various government staff and other stakeholders who will participate in the implementation process for posterity. Multisectoral collaboration, joint communication on AMR, improved data collection and analysis, and application of good biosecurity and infection prevention practices will result in transformative practices and innovative solutions and enable evidence-based decisions that will scale up and accelerate country efforts to fight against AMR through a One Health approach. The AMR MPTF Fund will be used to assess and identify existing gaps and coordinate multisectoral responses to prevent control antimicrobial resistance at national, departmental and local levels.

Annex 5

References

01. Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet*. 2022;399(10325):629–55 ([https://doi.org/10.1016/S0140-6736\(21\)02724-0](https://doi.org/10.1016/S0140-6736(21)02724-0), accessed 9 April 2022).
02. Antimicrobial resistance and the United Nations Sustainable Development cooperation framework: guidance for United Nations country teams. Geneva: World Health Organisation; 2021.
03. Summary for policymakers – environmental dimensions of antimicrobial resistance. New York: United Nations Environment Programme; 2022.
04. Reducing antimicrobial discharges from food systems, manufacturing facilities and human health systems into the environment: call to action by the Global Leaders Group on Antimicrobial Resistance. Geneva: World Health Organisation; 2022.
05. Financing to address antimicrobial resistance: information note of the Global Leaders Group on Antimicrobial Resistance. Geneva: World Health Organisation; 2021 (<https://www.amrleaders.org/resources/m/item/financing-to-address-antimicrobial-resistance>, accessed 11 April 2022).
06. Infection prevention and control assessment framework at the facility level. Geneva: World Health Organisation; 2018.
07. Water and sanitation for health facility improvement tool (WASH FIT). Geneva: World Health Organisation; 2018.
08. Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries: a WHO practical toolkit. Geneva: World Health Organisation; 2019.
09. Methodology to analyse AMR-relevant legislation in the food and agriculture sector: guidance document for regulators. Rome: Food and Agriculture Organisation of the United Nations; 2020.
10. Peru. In: World Bank/Data [website]. Washington (DC): World Bank; 2022 (<https://data.worldbank.org/country/peru>, accessed 9 April 2022).
11. Peru: human development indicators. In: United Nations Development Programme Human Development Reports/Country profiles [website]. New York: United Nations Development Programme; 2022 (<https://hdr.undp.org/en/countries/profiles/PER>, 9 April 2022).
12. GDP per capita (current US\$) – Peru. In: World Bank/Data [website]. Washington (DC): World Bank; 2022 (<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=PE>, accessed 9 April 2022).
13. Peru: national action plan to combat antimicrobial resistance. In: WHO/Publications [website]. Geneva: World Health Organisation; 2022 (<https://www.who.int/publications/m/item/peru-national-action-plan-to-combat-antimicrobial-resistance>, accessed 11 April 2022) (in Spanish).
14. Larson A, Hartinger SM, Riveros M, Salmon-Mulanovich G, Hattendorf J, Verastegui H et al. Antibiotic-resistant *Escherichia coli* in drinking water samples from rural Andean households in Cajamarca, Peru. *Am J Trop Med Hyg*. 2019;100(6):1363–8.
15. Hartinger SM, Medina-Pizzali ML, Salmon-Mulanovich G, Larson AJ, Pinedo-Bardales M, Verastegui H et al. Antimicrobial resistance in humans, animals, water and household environs in rural Andean Peru: exploring dissemination pathways through the One Health lens. *Int J Environ Res Public Health*. 2021;18(9):4604.

16. García C, Astocondor L, Rojo-Bezares B, Jacobs J, Sáenz Y. Molecular characterization of extended-spectrum β -lactamase-producer *Klebsiella pneumoniae* isolates causing neonatal sepsis in Peru. *Am J Trop Med Hyg*. 2016;94(2):285–8.
17. López R. Determinación de la resistencia microbiana de cepas de *Staphylococcus aureus* aisladas de quesos frescos provenientes de mercados de Lima Metropolitana [thesis]. Lima: UNMSM; 2016 (in Spanish).
18. Cruz C. Sensibilidad antimicrobiana en cepas de *Salmonella* sp. de importancia en salud pública [thesis]. Santiago de Surco: Universidad Ricardo Palma; 2017 (in Spanish).
19. Quino W, Hurtado CV, Escalante-Maldonado O, Flores-León D, Mestanza O, Vences-Rosales F et al. Multidrogorresistencia de *Salmonella Infantis* en Perú: un estudio mediante secuenciamiento de nueva generación. *Rev Peru Med Exp Salud Publica*. 2019;36(1):37–45. doi:10.17843/rpmesp.2019.361.3934 (in Spanish).
20. Jorge-Berrocal A, Mayta-Barrios M, Fiestas-Solórzano V. Resistencia antimicrobiana de *Neisseria gonorrhoeae* en Perú. *Rev Peru Med Exp Salud Publica*. 2018;35(1):155–6. doi:10.17843/rpmesp.2018.351.3552 (in Spanish).
21. Yábar MN, Curi-Pesantes B, Torres CA, Calderón-Anyosa R, Riveros M, Ochoa TJ. Multirresistencia y factores asociados a la presencia de betalactamasas de espectro extendido en cepas de *Escherichia coli* provenientes de urocultivos. *Rev Peru Med Exp Salud Publica*. 2017;34(4):660–5. doi:10.17843/rpmesp.2017.344.2922 (in Spanish).
22. Mayta-Barrios MM, Ramírez-Illescas JJ, Pampa-Espinoza L, Yagui-Moscoso MJA. Caracterización molecular de carbapenemasas en el Perú durante el 2019. *Rev Peru Med Exp Salud Publica*. 2020;38(1) (<https://doi.org/10.17843/rpmesp.2021.381.5882>, accessed 11 April 2022) (in Spanish).
23. Paucar-Miranda C, Sandoval-Ahumada R, López-Martínez R, Terrel-Gutierrez L, Zurita-Macalapu S, Urcia-Ausejo F et al. Primer reporte de *Candida auris* en Perú. *An Facmed*. 2021;82(1):56–61 (<https://doi.org/10.15381/anales.v82i1.20739>, accessed 11 April 2022) (in Spanish).
24. Centro Nacional de Epidemiología, Prevención y Control de Enfermedades. Alerta Epidemiológica AE-001-2022. Riesgo de infecciones asociadas a la atención de la salud causadas por Enterobacteriales, *Pseudomonas aeruginosa* y *Acinetobacter* spp. coproductoras de carbapenemasas en el Perú. Lima: Ministry of Health; 2022 (in Spanish).
25. Fighting AMR in Peru under the One Health approach. In: United Nations Development Programme/Project factsheet [website]. New York: United Nations; 2022 (<https://mptf.undp.org/factsheet/project/00130055>, accessed 9 April 2022).
26. Senegal. In: World Bank/Data [website]. Washington (DC): World Bank; 2022 (<https://data.worldbank.org/country/senegal>, accessed 9 April 2022).
27. Senegal – human development indicators. In: United Nations Development Programme Human Development Reports/Country profiles [website]. New York: United Nations Development Programme; 2022 (<https://hdr.undp.org/en/countries/profiles/SEN>, accessed 9 April 2022).
28. GDP per capita (current US\$) – Senegal. In: World Bank/Data [website]. Washington (DC): World Bank; 2022 (<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=SN>, accessed 9 April 2022).
29. Senegal One Health AMR. In: United Nations Development Programme/Project factsheet [website]. New York: United Nations Development Fund; 2022 (<https://mptf.undp.org/factsheet/project/00130122>, accessed 9 April 2022).

