REVOLUTIONARY GOVERNMENT OF ZANZIBAR

# ZANZIBAR ACTION PLAN
## ON ANTIMICROBIAL RESISTANCE

World Health Organization

2019 – 2024

FAO
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# ABBREVIATION AND ACRONYMS

| | |
|---|---|
| AMR | Antimicrobial Resistance |
| AMU | Antimicrobial Use |
| AR | Antimicrobial Residue |
| CDC | Center of Disease Control and Prevention |
| CHMT | Council Health Management Team |
| CMS | Central Medical Store |
| CPD | Continuous Professional Development |
| CPO | Chief Pharmacist Office |
| DPs | Development Partners |
| IDSR | Integrated Disease Surveillance and Responses |
| EQA | External Quality Assessment |
| FAO | Food and Agriculture Organization of the United Nations |
| GARP | Global Antimicrobial Resistance Partnership |
| GHSA | Global Health Security Agenda |
| GLASS | Global Antimicrobial Resistance Surveillance System |
| GOZ | Government of Zanzibar |
| HCW | Health Care Workers |
| HIV | Human Immunodeficiency Virus |
| HMT | Health Management Team |
| IEC/BCC | Information Education & communication/ Behavior Changes and Communication |
| MANLF | Ministry of Agriculture, Natural Resources, Livestock and Fisheries |

| | |
|---|---|
| MELD | Monitoring Evaluation Learning and Documentation |
| MoEVT | Ministry of Education & Vocational Training |
| MoH | Ministry of Health |
| MSD | Medical Stores Department |
| MTC | Medicine Therapeutic Committee |
| NAP | National Action Plan |
| NGO | Non-Governmental Organization |
| NHLQATC | National Health Laboratory Quality Assurance and Training Centre |
| OIE | World Organization for Animal Health |
| PC | Pharmacy Council |
| PHL-IdC | Public Health Laboratory Ivo de Carneri |
| PORALG | President's Office Regional Administration, Local Government and Special Departments |
| QIT | Quality Improvement Teams |
| STG | Standard Treatment Guideline |
| TB | Tuberculosis |
| WHO | World Health Organization |
| ZAHRI | Zanzibar Health Research Institute |
| ZARI | Zanzibar Agriculture Research Institute |
| ZALIRI | Zanzibar Livestock Research Institute |
| ZAP | Zanzibar Action Plan |
| ZBC | Zanzibar Broadcasting Cooperation |
| ZEML | Zanzibar Essential Medicines List |
| ZFDA | Zanzibar Food and Drugs Agency |
| ZMCC | Zanzibar Multi-sectoral Coordinating Committee |
| OIE | World Organization for Animal Health |
| UNDP | United Nation Development Program |

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The development of the Zanzibar Action Plan on Antimicrobial Resistance (2020-2024) is the result of extensive efforts involving broad consultation and collaboration of various key stakeholders in the public health, animal health and food production sectors, medicine manufacturers, importers, distributors, dealers/stockists, development partners, as well as interested groups and individuals.

Special thanks are devoted to the World Health Organization and the Food and Agriculture Organization for their technical and financial support under the Fleming Fund supported Antimicrobial Resistance Project in Tanzania. We are highly indebted to the team of facilitators from WHO and FAO for their engagement and interest during the development process.

The Ministry of Health and the Ministry of Agriculture Natural Resources Livestock and Fisheries in Zanzibar would like to acknowledge all those stakeholders who contributed towards successful development of this document, and would extend their sincere thanks to all institutions involved. Our sincere thanks are also expressed to AMR focal persons of both Ministries for their continued supervision and coordination role towards the realization of this plan.

Director General
**Ministry of Health, Zanzibar**

Director
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# FOREWORD

Antimicrobials, particularly antibiotics, have saved millions of lives since they were first discovered. However, antimicrobial resistance is increasingly becoming a serious public health threat for effective treatment of infections caused by bacteria, parasites, viruses and fungi. When infections can no longer be treated with currently available antibiotics, it leads to increasing suffering to individuals and cost to the government. All these impose a huge burden on health care systems and on the economy of Zanzibar. Antimicrobial resistance has been driven by misuse of antimicrobials without professional oversight. With few new antibiotics being developed to replace existing ones the world is heading towards a scenario in which common infections will not be easily treatable. With extensive travel and trade links throughout the world, no country is immune from antimicrobial resistant strains of microorganisms, which move freely in people, animals, plants and the environment, leading to their rapid spread worldwide.

Resistance to common antibiotics is an issue that cuts across human and animal health, and food, environment and agriculture sectors. Single, isolated intervention has limited impact and therefore coordinated action is required to minimize the emergence and spread of antimicrobial resistance. The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) have been working with Member States to secure commitment to develop and implement a national action plan on antimicrobial resistance.

The Zanzibar Action Plan on Antimicrobial Resistance (2020 – 2024) was developed through consultative process engaging all relevant sectors and development partners. Zanzibar multi-sectoral coordination committee, technical working groups and secretariats were formed to develop and facilitate this action plan. We are confident that this document will provide guidance for combating antimicrobial resistance, involving all stakeholders, with the common goal of minimizing the threat of antimicrobial resistance for a better quality of health and life in the years to come. We therefore request all relevant sectors to work together during implementation of this action plan. We need to act now, to make sure that our children and future generations continue to benefit from these life-saving medicines.

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# EXECUTIVE SUMMARY

This Action Plan for Antimicrobial Resistance, has been developed in line with the Sixty-eighth World Health Assembly held on May, 2015 in Geneva that adopted the Global Action Plan on AMR with the objectives to reduce the incidence of infection through rational use of antimicrobial medicines in human and animal health. The main goal of the Zanzibar Action Plan on Antimicrobial Resistance is to promote and ensure the prudent and judicious use of antimicrobials in the human and agricultural sector with emphasis on the promotion of infection prevention and control in an endeavour to slow down the rate of development and spread of antimicrobial resistant microorganisms and to ensure that antimicrobials remain a viable option in the management of infectious diseases.

The strategy is systematically arranged to facilitate better understanding of the actions needed in the process of day to day implementation of its activities to effectively achieve intended goals and objectives. It starts with the description of analysis of the situation of AMR in Zanzibar in the context of national AMR facilities, structures, policies, legal frameworks, surveillance undertakings, laboratory capacity and standards. Furthermore, an overview and analysis of data from surveillance, including the incidence and prevalence of AMR in different sub-groups of the population, morbidity, mortality and other health outcomes in relation to AMR, economic impact of AMR at both micro- and macroeconomic levels is highlighted. It also covers information awareness and knowledge, data from behavioural studies in different social and professional groups and any other evidence-based information on antimicrobial use and resistance in human health, animal health, agriculture and the environment.

As part of "One Health Governance" the document entails the governance structure and functions of related technical working groups of which the Government has established a multi-sectoral coordinating committee that involve different MDAs and other stakeholders, to oversee and coordinate AMR-related activities in the Isles.

The document further highlights the Strategic and Operational Plans in addressing 12 priority actions and 34 interventions in human and animal health, agriculture, food, and the environment with reference to Global Strategic objectives. The budget to cover all the interventions including cost of implementation and source of funds are covered in this section. With regards to Monitoring and evaluation the Plan draws a framework that comprises indicators and time frame for measuring strategic performance in the process of its implementation.

# 1.0 INTRODUCTION

The world is challenged with the rise and spread of antimicrobial resistant(AMR) microorganisms that cannot be treated with modern medicines. The impacts of AMR are wider in range which includes extreme cost, global health security, food sustainability and food security, environmental wellbeing, and socio-economic development. It has been reported worldwide that AMR related infections are estimated to cause about 700,000 deaths each year globally. This figure is expected to rise to 10 million deaths. On the other hand, the effect of AMR will make a cumulative cost of about $100 trillion, by 2050 if there will be no action taken as from today. Antimicrobial resistance is also threatening many of the Sustainable Development Goals (SDGs). The World Bank estimates that an extra 28 million people will be/ could be forced into extreme poverty by 2050 unless AMR is combated.

In Zanzibar, like other African countries, the AMR situation is not promising. There is an increased misuse of antimicrobial agents that cause unwanted harmful effects that include medicine resistance that currently affect the management of several diseases. This situation is threatening our ability to treat common infectious diseases, resulting in prolonged illness, disability, and deaths. According to the situation analysis on the AMU, AMR and AR in food animals including fish farming (aquaculture) and crop production conducted in June 2017, use of antimicrobial agents as feed additives, and prescription of antimicrobial agents by non-veterinary professionals, are critical areas for considerations in animal related strategies for combating AMR in the isles. Apparently there is poor knowledge on AMR at household levels. Testing of AMR and AR in food of animal origin as well as in plants is inadequate/frequently performed. With regards to AMR in humans, both hospital and community acquired bacterial infections accounts for higher resistant trends, therefore making antimicrobial resistance a major threat in Zanzibar. According to report by Global Health Security Agenda (GHSA, 2016), cases of urinary tract infections (UTI), blood stream infections (BSI) and skin and soft tissues infections (SSTI) prevail. In addition, cases related food and water borne gastrointestinal infections, cholera outbreaks and respiratory infections, Mycobacterium tuberculosis (some of the strains are multi medicine resistance (TB-MDR) and other chronic respiratory tract infections are highly reported.

This Strategic Plan addresses actions needed to be taken in order to combat AMR in Zanzibar. It might be mandatory to conduct a number of activities in the first two years since we ne need to raise people's awareness on antimicrobial resistance and promote

behavioural change through public communication programmes that targets human, animal and plant health. It has been also advised to include school health program and curricula, at all level the education on antimicrobial agents and resistance that will further promote better and or early understanding and awareness. The goal of the Global Action Plan for Antimicrobial Resistance (GAP-AMR) is: "To ensure, for as long as possible, continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them". Alignment with the GAP. The Zanzibar Action Plan on AMR has adopted the five GAP strategic objectives which are; Improve awareness and understanding of AMR through education and training, strengthen knowledge and evidence base through surveillance and research, Reduce the incidence of infection through effective hygiene and IPC measures, Optimize the use of antimicrobial medicines in human and animal health and Ensure sustainable investment through research and development.

In particular, the ZAP should also reflect the following GAP guiding principles, which describes the role of all stakeholders to follow a common approach that requires integrated and well-coordinated efforts at the national, institutional and individual levels. Therefore, such actions are linked to regional and global efforts to combat AMR. The principles are:

1. Whole-of society engagement including "One Health" approach
2. Prevention first
3. Access
4. Sustainability
5. Incremental Targets for implementation

# 2.0 SITUATIONAL ANALYSIS AND ASSESSMENT

The Zanzibar AMR Secretariat conducted an online database search and desk review of the sector specific studies that have been conducted in relation to AMR in human and animal health in order to understand the AMR situation and burden in the Island. This revealed presence of a limited number of studies carried out to address antimicrobial resistance especially focusing on antibiotics or antiprotozoal agents. No study has been carried so far to address resistance to antifungal agents in Zanzibar.

The International Health Regulation (IHR) Joint External Evaluation (JEE) assessment report demonstrated that Zanzibar has insufficient capacity to detect, and also undertake surveillance on AMR. Currently there are only four laboratories; two (2) from human health, and two (2)-from animal health, which have potential for detection and reporting of antimicrobial resistance (WHO, 2017).The distribution of laboratories with such capacity is equal between the Islands. Despite these bottleneck, national plan for detection of AMR has been developed (WHO, 2017). The JEE report further indicated presence of high levels of irrational use of antimicrobials in human and animal health sectors (WHO 2017).

In Zanzibar, Studies assessed antimicrobial resistance in humans, demonstrated that *Escherichia coli* and *Klebsiella pneumoniae* isolated from blood samples were resistant to antibiotics containing beta-lactam ring. It was further indicated that those organisms were either community or hospital acquired (Onken et al, 2015). Moreover, the study showed six out of 7 *Salmonella typhi* isolates detected were multidrug resistant(MDR) (Onken et al, 2015). These results are alarming, as they imply that some organisms already spread in the society are difficult to treat (Onken A et al.,2015). An earlier study conducted in Pemba to determine the burden of invasive bacterial infection showed an identical finding in which *S. typhi* isolated from blood samples were resistant to penicillin (beta-lactam ring containing antibiotic), chloramphenicol and co-trimoxazole and an MDR phenomenon was also observed (Thriemer et al, 2012).

Many studies have assessed efficacy of anthelminthiasis, especially mebendazole and albendazole either alone or in combination with other drugs. Most of those studies have been carried out in Pemba and revealed reduced efficacy (egg reduction rate (ERR) or cure rate (CR)) for both albendazole and mebendazole against major soil transmitted helminths (STHs), *Ascaris lumbricoide*, *Trichuris trichiura* and hookworms. Although, this is more noticed for *T.trichiura* infection (Speich et al.,2014; 2015; 2016) (Moser et al., 2016; 2017)(Barda et al., 2018). Nevertheless, it should be noted the reduction in CR and/or ERR imposed by anthelminthic drug may not necessarily indicate failure of the

drug to combat the infection; as other factors play role. This might be true from the fact that despite observation of low efficacy of mebendazole and albendazole, studies have not shown occurrence of mutation of STH worms (Albonico et al., 1996) to these drugs. However, further studies are underway to explore this possibility.

As for other malaria endemic countries, Zanzibar has experienced changing of anti-malaria therapies as a result of emergence of anti-malaria resistance. Prior to that, for decades chloroquine was used as the first line drug for the treatment of uncomplicated malaria in Zanzibar but this was subsequently replaced by other drugs such sulphadoxine/pyrimethamine (Fansidar). The later (drug) also became resistant against malaria parasites and that has been, in principle, withdrawn in the treatment plan. Currently, due to low prevalence of malaria cases in Zanzibar, assessment of efficacy of other anti-malaria drugs including artemisinin is impeded.

The study assessed *E.coli* in fish, diarrheic and healthy children showed that 100% of isolates from diarrheic children, 15% of isolates from health individuals and 55.2% , from fish were resistant to at least one antibiotic. However, all isolates [100%] from diarrheic children and 22.4% of isolates from fish were resistant to ampicillin. Other anti-microbials that were found to be resistant to various isolates from fish and humans were tetracycline, cefpodoxime, ciprofloxacin and Norfloxacin (Rabia et al., 2017). Moreover, MDR was observed from all three sources. In addition some of the isolates from fish were resistant to third generation cephalosporins and fluoroquinolones that area antibiotics of choice for treatment of Enterobacteriaceae infections in humans.

It was suggested that use of antimicrobial agents when applied as feed additives, use and prescription of antimicrobial agents by non-veterinary professionals and factors leading to non-adherence to withdrawal periods are the most critical areas for considerations in animal related strategies for combating AMR in Tanzania (Bachana et al., 2017). Over 70% of medicines and animal feeds sold and used in Zanzibar are imported from Tanzania mainland; hence enforcement of regulation measures in the mainland will also have a positive impact in Zanzibar. There is poor knowledge on AMR at farm levels and inadequate testing of AMR and AR in food of animal's origin as well as in plants. In support of this observation (Nonga et al., 2013) reported antimicrobial residues in 76.4% of 72 broiler meat samples from Zanzibar. MDR is threat to the control and treatment of mastitis since it reduces choice of medicine to be used. Most farmers in Zanzibar use penicillin, streptomycin and tetracycline or a combination of penicillin and neomycin, or kanamycin for intra-mammary infusion to treat their animals (Suleiman et al., 2018). Indeed, in this setting, it revealed that major bacterial pathogens isolated from a range samples were resistant to those common antibiotics

used to treat bovine mastitis and other bacterial diseases. In view of increased (87.6%) and spread of penicillin resistant pathogens, penicillin has been withdrawn in the treatment regimen for animal infection in Zanzibar (Suleiman et al., 2018). The occurrence of MDR in veterinary medicine raises a huge public health concern since the same medicines are used to treat infections in the human population. The threat may be by introducing antibiotic residue into the human food chain that may lead to the direct or indirect toxicity or allergic reaction; or by failure therapy to the common clinical diseases (Vishnuraj et al., 2016).

The subject of AMR found to receive less attention where the current National policies and Acts do not clearly indicate the control of antimicrobials and AMR. There is lack of coordination mechanism that unite efforts of different stakeholders like through One health coordination desk that link every sectors concerning human health, animal health, plant and crop, food chain and environmental sector. Public awareness is critical in promoting behavioral change and ensures the prudent and judicious use of antimicrobials through AMR communication programmes targeting different audiences in human health, animal health and agricultural practices. Currently in Zanzibar the programmes are not in place.

In Zanzibar, Limited research on AMR has been conducted for public consumption. The available AMR research data are sector specific, but there is no inter-sectorial and inter-ministerial communication and information sharing of the findings.The existing human health, animal health and food safety laboratories are working in silos in Antibiotic Sensitivity Testing (AST). Hence, integrated AMR surveillance system is not in place.
The country is lacking strategies and policies which should be taken into consideration in combating antimicrobial resistance. There is therefore a need for a coherent, comprehensive and integrated approach in reducing factors which lead to antimicrobial resistance challenges using the "One Health" approach. The situational analysis has been summarized in a SWOT Analysis (Annex I)

# 3.0 GOVERNANCE

## 3.1 Antimicrobial Resistance Focal Point

The development of the Zanzibar Action Plan (ZAP) on AMR in a one health approach was/ be coordinated by the Ministry of Health and Ministry of Agriculture, Natural Resources Livestock and Fisheries Zanzibar, where by the two ministries are the AMR focal points. The Focal points will work in close collaboration with the AMR Secretariat.

## 3.2 Zanzibar AMR Secretariat

The Zanzibar AMR Secretariat should be nominated and coordinated by the AMR Focal Points within the MoH and MANLF.

### Roles and Responsibilities of the Zanzibar AMR Secretariat

1. Preparation and circulation of documents (e.g. background papers, reports and advisory notes to ZMCC);
2. Storage and archiving of ZMCC works;
3. Build sustained partnerships and work nationally and internationally on containment of AMR;
4. Identify stakeholders and facilitate formation of an inclusive ZMCC;
5. Lead and coordinate drafting of a Zanzibar action plan for containment of AMR;
6. Facilitate and oversee implementation, M&E of the plan through the ZMCC;
7. Ensure regular data collection and information sharing by instituting effective communication and coordination among all stakeholders, the Members of ZMCC and their constituencies, sectors and disciplines;
8. Coordinate Zanzibar activities for establishment of AMR surveillance systems; and
9. Report on the prevalence of and trends in AMR to the global AMR surveillance system (GLASS).

### 3.3 Zanzibar Multi-Sectoral Coordinating Committee

The Zanzibar Multi-Sectoral Coordinating Committee (ZMCC) on AMR is the central steering body and shall oversee and coordinate all AMR related activities in all sectors. The AMR Action plan operations shall be managed and implemented through the ZMCC under the chairmanship of the Director General of Ministry of Health and co-chaired by the Chief Veterinary Officer of Zanzibar. Members of the MCC include representatives from different sectors and disciplines specifically from the sectors responsible for human, animal, plant, environment health as well as livestock and food production.

Membership to the Zanzibar Multi sectoral Coordinating Committee shall include the Director General Ministry of Health, Director of Livestock Development, Regulatory authority (ZFDA, Ministry of Health ( Epidemiology unit, curative services, preventive services, public health laboratories ), Chief Pharmacist, Director General Zanzibar Health Research Institute, Chief Veterinary Officer, Veterinary Laboratories, Department of Fisheries Development, Zanzibar Livestock Research Institute, Department of Agriculture, Zanzibar Environmental Management Authority, vice Second President's Office, State University of Zanzibar. Also involves the International Organizations such as WHO and FAO Zanzibar, OIE, CDC, UNDP, UNICEF.

#### Role and Responsibilities

1. The ZMCC is expected to lead facilitation and, when appropriate, coordination of Zanzibar response to the threat of AMR.
2. Oversee the development of Zanzibar AMR Plan of Action (ZAP) and endorse it.
3. The ZMCC provides a structure for information-sharing to mutually reinforce activities among sectors.
4. The ZMCC should facilitate and, when appropriate and agreed, coordinate efforts to contain and reduce the threat of AMR at national, regional, district and shehia/community levels.
5. Collaboration with internal and external agencies and organizations is essential. ZMCC will interact with the health system and public health and disease-specific programmes.

### 3.4 Multi sectoral Technical Working Groups

The ZMCC has four Technical Working Groups (TWGs) which are based on the five global strategic objectives that have been identified to achieve the Zanzibar Action Plan on AMR main objectives. These TWGs are mandated with specific tasks including

providing technical inputs, conducting situational analyses and in collaboration with ZMCC development of Zanzibar Action Plan on AMR.

### The four established technical working groups are:

I. Technical working group for Awareness, effective communication and Education
II. Technical working group for AMR Knowledge, Surveillance, Research and sustainable investments
III. Technical working group for sanitation, hygiene and infection prevention and control
IV. Technical Working Groups for Antimicrobial use stewardship

## 3.5 Membership to TWGs

Memberships of TWGs comprise relevant technical specialties and expertise. These include experts from infectious diseases, microbiology, infection prevention and control, social health, rational use of medicine, food safety, environmentalists, medicine regulation, surveillance, environmental health and health promotion and academia, fisheries, veterinarians, pharmacovigilance, plants pathologist and private sectors. Each TWG comprises of chairperson.

### Roles and Responsibilities of TWGs

The ZMCC has established Terms of References (TORs) for each TWG stipulating specific scope, roles and responsibilities. The TWGs which are national groups interact with country representatives of the required sectors, as determined by their scope of work and report regularly to the ZMCC.

Activities include but not limited to:

(i) Collaborate with ZMCC Formulation of ZAP
(ii) Operationalize Zanzibar Action plan on AMR under their respective strategic objectives.
(iii) Prepare annual work plan as per Zanzibar Action Plan on AMR
(iv) Report to ZMCC on the progress to the implementation of the respective strategic objective.
(v) Proposal writing
(vi) Provide updates on ongoing activities and provide technical advice to the ZMCC or Zanzibar AMR Focal Point.

# 4.0 STRATEGIC OBJECTIVES

The five global strategic objectives are adopted and to be operationalized in order to achieve the desired results of this plan. In each strategic objective, the priority actions, specific objectives, interventions and key activities have been identified.

**STRATEGIC OBJECTIVES**

1. Improve awareness and understanding of AMR through education and training
2. Strengthen knowledge and evidence base through surveillance and research
3. Reduce the incidence of infection through effective hygiene and IPC measures
4. Optimize the use of antimicrobial medicines in human and animal health
5. Ensure sustainable investment through research and development

## 4.1 STRATEGIC OBJECTIVE ONE

**Improve awareness and understanding of antimicrobial resistance through effective communication, education and training.**

Promotion of nation-wide behavioral change against antimicrobial resistance (AMR) in human and animal health and agricultural practices requires public awareness and understanding of AMR and antimicrobial use. The current level of public awareness is limited and AMR is not a core component of professional education, training or certification in both human and agricultural courses. Therefore, there is need for increased awareness for the general public and professionals to ensure appropriate use of antimicrobials, through conducting National Awareness campaigns targeting different audiences with emphasis to school children for better understanding and awareness from an early age However, it is important to develop AMR communication messages tailor made to suit different audiences and develop mechanisms to measure their effectiveness.

There is need for creating awareness in relevant ministries to ensure concerted efforts in combating AMR. Combating AMR calls for commitment of government, private sectors and other development partners through resource mobilization and ensuring comprehensive sensitization at grassroots level.

The priority actions in this strategic objective are as follows;

- **Awareness-raising and risk communication**
- **Education**

## PRIORITY ACTION 1: AWARENESS-RAISING AND RISK COMMUNICATION

| Objective 1:Increase national awareness of AMR | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 1.1. Establish an evidence-based public communications programme targeting audiences in human health, animal health, fisheries, plant production and crops, food chain and environmental sectors practice. | 1.1.1. To conduct Knowledge, Attitude and Practices (KAP) survey through behavioural studies in deferent social and health professional groups (human health, animal health, plant production and crops, food chain, fisheries and environmental sectors practice)<br>1.1.2. Develop communication awareness strategies and Standard Operating Procedures (SOP) targeting audience from different groups at all levels. |
| | 1.2. Strengthening of Public media and publication programmes targeting audiences in human health, animal health, fisheries, plant production and crops, food chain and environmental sectors practice. | 1.2.1. To develop and disseminate IEC materials to target different groups including peoples with special needs (posters, brochures, papers, ads, etc.)<br>1.2.2. Develop and support the TV/Radio programs, village panorama and documentaries (Regular press briefings, question and answer sessions, video news releases, press statements, TV Public Service Announcements, Radio Public Service Announcements/live announcer scripts, news)<br>1.2.3. Facilitate the publications of news and articles (newspaper, publication of news and feature articles)<br>1.2.4. Improve existing web-based information system which is multi sectoral on information management system |
| | 1.3. Establishing and strengthening national festivals and dialogues | 1.3.1. Establish and Support events for special days concerning with AMR<br>1.3.2. Annual commemoration on national festival and dialogues of AMR day and come up with annual special theme<br>1.3.3. Support Public private dialogues – (community leaders, religious leaders, NGOs). |

## PRIORITY ACTION 2: EDUCATION

| Objective 2: Improve knowledge of AMR and related topics | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 2.1. Establishing programmes on AMR and related topics as a core component of professional education, training, certification and development | 2.1.1. Introduce and Support AMR and related topics in curricula for human health professionals, fisheries and animal health professionals and food industry and agriculture professionals. |
| | 2.2. capacity buildings on AMR programmes | 2.2.1. Train staffs on AMR (tailor made and short courses)<br>2.2.2. Conducting workshop on AMR |
| | 2.3. Strengthening Policies, Acts and regulations on AMR awareness programmes | 2.3.1. To review existing Policies, Acts and regulations (incorporate AMR awareness programme)<br>2.3.2. To establish new integrated policy on AMR |

## 4.2 STRATEGIC OBJECTIVE TWO

**Strengthen the knowledge and evidence base through surveillance and research.**

Establishing a coordinated surveillance system to detect and report resistant pathogens in human health, animal health, agriculture and environmental settings, plays a critical role in developing evidence-based policies and guidelines to control/limit irrational use of antimicrobials which is a major driver of AMR.

In Zanzibar, currently there is no AMR surveillance system in place and limited number of research have been conducted on AMR in academic institutions, health facilities in collaboration with international research partners. Moreover, those researches are limited to enteric pathogens and blood steaming pathogens which cause significant mortality and morbidity in children.

In order to facilitate implementation of robust interventions the country needs to build capacity of National Reference Laboratory and designated laboratories for AMR surveillance and develop of multi-sectoral research agenda on AMR

The priority actions in this strategic objective are as follows;

- **Surveillance system**
- **Laboratory capacity**
- **Research and development**

## PRIORITY ACTION 3: SURVEILLANCE SYSTEM

| Objective 3: Establish a national surveillance system for antimicrobial resistance | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 3.1. Develop a Zanzibar AMR surveillance framework | 3.1.1 Review existing infectious disease surveillance systems<br>3.1.2 Conduct situation analysis to identify gaps relevant to AMR surveillance in all sectors<br>3.1.3 Define AMR priority pathogens for surveillance in all sectors |
| | 3.2. Develop AMR surveillance reporting system | 3.2.1. Develop a multisectoral AMR surveillance reporting and information sharing system in human, fisheries, animals, plants, food and environment health |
| | 3.3 Review and develop multi sectoral antimicrobial agents consumption | 3.3.1 Conduct a baseline survey on selected antimicrobial consumption<br>3.3.2 Conduct antimicrobial consumption surveillance down the supply chain towards consumers<br>3.3.3 Develop antimicrobial agents consumption guideline at all sectors |
| | 3.4 Establish antimicrobial residual testing program | 3.4.1 Identify key antimicrobial agents for residual testing surveillance<br>3.4.2 Establish antimicrobial residual sentinel sites<br>3.4.3 Identify and support laboratories for testing antimicrobial residuals<br>3.4.4 Build human and infrastructural capacity in the identified laboratories for antimicrobial |

## PRIORITY ACTION 4: LABORATORY CAPACITY

| **Objective 4: Build laboratory capacity to produce high-quality microbiological data for patient management and support surveillance activities in both human and animal sectors.** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 4.1. Designate laboratories for AMR surveillance | 4.1.1. Assess the existing laboratories' capacity and appoint two laboratories to be Zanzibar reference/designated laboratories for human and animal AMR surveillance |
| | 4.2. Capacity building for designated laboratories for AMR surveillance | 4.2.1. Conduct training, mentorship and supportive supervision for personnel on diagnostics and antimicrobial susceptibility testing |
| | 4.3Strengthen supply chain system to support laboratory AMR surveillance | 4.3.1 Develop the master list for the materials/ reagents/items required for AMR surveillance<br>4.3.2 Establish supply mechanism to ensure constant availability of equipment, reagents and supplies for AMR detection |
| | 4.4 Strengthen quality assurance system for AMR surveillance | 4.4.1 Identify and support QA scheme to be used basing on WHO/OIE guidelines/ISO Standards |

## PRIORITY ACTION 5: RESEARCH AND DEVELOPMENT

| **Objective 5: Identify operational research priorities for responsible use of antimicrobial agents and better practice in infection prevention in human and animal health** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 5.1. Incorporate multi sectoral research agenda on AMR in Zanzibar research agenda | 5.1.1. Engage relevant stakeholders to identify current gaps in knowledge and potential research areas<br>5.1.2. Develop research guidelines on AMR Undertaken research related to AMR |
| | 5.2. Establish a mechanism for sharing AMR research findings | 5.2.1. Participate in national multi sector AMR scientific symposiums<br>5.2.2 Establish an AMR data repository<br>5.2.3 Establish a bio bank/bio-repository centre |

## 4.3 STRATEGIC OBJECTIVE THREE

**Reduce the incidence of infection through effective sanitation, hygiene and prevention measures.**

Good hygiene and infection prevention control are essential to limit the development and spread of antimicrobial-resistant infections and multidrug-resistant bacteria. Applied bio security measures, environmental and food sanitation and hygiene as well as vaccination must be core components for IPC for transmission of AMR infections. In all fields of livestock, farm-raised animals and pets, appropriate vaccination is important to prevent infectious diseases, in addition to thorough hygienic management.

Promotion of Good Agricultural Practices, to reduce food contamination with antimicrobial resistant organisms and other microorganisms as well as to prevent food poisoning from occurring by promoting HACCP (Hazard Analysis and Critical Control Point). Additionally, prevention of water contamination from animal, human and manufacturing wastes containing active pharmaceutical ingredients which can result in soil, crops and water sources contamination and facilitate the development of antimicrobial resistance amongst the pathogens with which they interact creating environmental reservoirs of antimicrobial resistant bacteria.

There is no IPC Policy in place, however guidelines and basic training courses are in place in health facilities at all levels. This ZAP will support the IPC implementation framework, development of integrated IPC policies and related guidelines and tools, Leverage IPC implementation through enhanced multi-sectoral collaborations, implementation of IPC practices in health facilities and congregated settings and Improve sanitation and waste management practices.

The priority actions in this strategic objective are as follows;

- **Infection prevention and control in health care**
- **Infection prevention in Agriculture (animal , fisheries& Plant health)**
- **Hygiene and sanitation at all level**

## PRIORITY ACTION 6: INFECTION PREVENTION AND CONTROL IN HEALTH CARE

| Objective 6: Establish a national IPC programme with clear governance structure | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 6.1 Establish an integrated national and sub-national IPC implementation framework | 6.1.1 Hold multi-stakeholders' dialogue for development of an integrated IPC program for AMR prevention and control.<br>6.1.2 Develop a TOR for a multi-sectoral IPC coordinating unit.<br>6.1.3 Build capacity for IPC implementation. |
| | 6.2 Facilitate development of integrated IPC policies and related guidelines and tools | 6.2.1 Develop national IPC policy and implementation guidelines and tools |
| | 6.3 Leverage IPC implementation through enhanced multi-sectoral collaborations | 6.3.1 Hold joint annual IPC planning sessions (work plan and budget).<br>6.3.2 Establish nationwide mechanism for multi-level monitoring of IPC program implementation.<br>6.3.3 Conduction of regular multi-sectoral IPC program implementation progress reviews |
| | 6.4 Strengthen implementation of IPC practices in health facilities and congregated settings. | 6.4.1 Facilitate availability of IPC related equipment, supplies, SOP guidelines and improve related infrastructure<br>6.4.2 Conduct scheduled IPC supportive supervision, mentoring and monitoring in health facilities and congregated settings. |

## PRIORITY ACTION 7: INFECTION PREVENTION IN AGRICULTURE (ANIMAL, FISHERIES& PLANT HEALTH)

| **Objective 7: Development of functional IPC programmes in the agriculture and livestock sectors** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 7.1 Diversify and improve IPC trainings beyond human health curricula | 7.1.1 Include hygiene and infection prevention and control in training curricula for agriculture extension officers<br>7.1.2 Review existing IPC training contents to encompass and improve components of AMR prevention and control |
| | 7.2 To prevent and control occurrence of infectious disease in agriculture, fisheries and livestock | 7.2.1 Improve the national mechanism for communicating, responding, reporting and recording animal, fish and plant disease occurrences.<br>7.2.2 Review existing regulations to accommodate the need for a mandatory vaccination program in animal health<br>7.2.3 Motivate farmers to use pesticides<br>7.2.4 Quarantine practices in animals and plants |
| | 7.3 Strengthen bio security system at farm level | 7.3.1 Promote good agricultural, aquaculture and animal husbandry practice, improvement of animal hosting facilities and infrastructures. |
| | 7.4 Strengthen the national mechanism for regulation and control the use of antimicrobials in the agriculture, fisheries and livestock sector | 7.4.1 Review and improve existing medicine policy to included handling and uses of microbial agents<br>7.4.2 Optimize use of antimicrobials and prevent the spread of pest in the agricultural sector<br>7.4.3 Training on integrated pest management through farmer field school<br>7.4.4 Review national pesticides, fisheries and national livestock policy to address AMR |

## PRIORITY ACTION 8: HYGIENE AND SANITATION AT ALLLEVEL

| **Objective 8: Limit the development and spread of Infection in the community using infection prevention and control.** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 8.1 Promote hygiene practices in the communities | 8.1.1 Engage the communities on implementation of personal hygiene in different social groups as a basis for the social mobilization campaigns<br>8.1.2 Undertake IPC advocacy, Awareness raising and community sensitization activities |
| | 8.2 Improve sanitation and waste management practices | 8.2.1 Promote environmental sanitation in congregate settings<br>8.2.2 Promote sanitary inspectorate services in waste management for environment with a collective number of animals e.g. Zoos and parks.<br>8.2.3 Establish a national and sub national monitoring system in the field of waste management. |
| | 8.3 Strengthening National linkages and partnership for IPC | 8.3.1 Enforce the use of International Health Regulations through Integrated Disease Surveillance and Response (IDSR) and existing bi-laws on prevention of outbreaks.<br>8.3.2 Promote food Chain Hygiene |

## 4.4 STRATEGIC OBJECTIVE FOUR

**Optimize the use of antimicrobial medicines in human and animal health.**

Rational and Judicious Anti microbial Use (AMU) is vital to sustainable prevention and treatment of microbial diseases. Areas of focus in this strategic objective includes: development and implementation of guidelines, enhanced regulation, ensuring access to essential antimicrobials as well as establishing functional AMR stewardship program in order to ensure sustainable access to quality essential antimicrobials. Consumption of substandard or counterfeit antimicrobials containing less than the specified amount of the active ingredient, or consuming suboptimal dosage due to lack of supply or limited accessibility to antimicrobials contributes to the emergence of AMR.

Strengthening the regulatory measures, tools and activities of the Zanzibar food and drug agency in ensuring the safety, efficacy and quality of medicines from market authorization to post-marketing surveillance will help combat AMR. Efforts must also focus on sustaining an efficient supply chain system towards ensuring the availability or accessibility of quality medicines to all patients at all times with emphasis on appropriate use by both patients and prescribers. The local demand for animal food products such as milk, meat, fish and eggs, is bound to increase. This increased demand for animal protein endangers complex intensive production systems that results to an increase in the use of antimicrobial agents. The OIE, Codex Alimentarius Commission and other international organizations have formulated guidelines concerning the use of veterinary Antimicrobials.

The priority actions in this strategic objective are as follows;

- **Regulated access to high-quality antimicrobial medicines**
- **Antimicrobial stewardship**
- **Use of antimicrobial agents in animal health and agriculture**

## PRIORITY ACTION 9: REGULATED ACCESS TO HIGH-QUALITY ANTIMICROBIAL MEDICINES

| **Objective 9: Ensure uninterrupted access to high-quality antimicrobial medicines in human, animal, plant and fisheries.** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 9.1 Strengthen the pharmaceutical supply chain for human medicine, including the procurement, supply, storage, and quality management system. | 9.1.1 Build capacity for quality management system for the supply chain management of medicines, covering storage, transport, expiry date, etc.<br>9.1.2 Build capacity for ZFDA medicine regulation and enforcement on antimicrobial use.<br>9.1.3 Conduct Post marketing surveillance and Pharmaco-vigilance on microbial agents.<br>9.1.4 Revise and update STG and EML. |
| | 9.2 Establish the pharmaceutical supply chain for animal, plant and fisheries subsectors. | 9.2.1 Develop antimicrobial policies, regulatory framework for supply chain management. |

## PRIORITY ACTION 10: ANTIMICROBIAL STEWARDSHIP

| **Objective 10: Improve and measure appropriate use of antimicrobial agents in human, animal, plant and fisheries facilities.** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 10.1 Establish antimicrobial stewardship programmes inhuman, animal, plant and fisheries facilities. | 10.1.1 Develop policies and guidelines for antimicrobial stewardship<br>10.1.2 Build capacity for prescribers, pharmacist, lab personnel and nurses about good antimicrobial prescribing, dispensing and diagnosis.<br>10.1.3 Establish and operationalize MTC and other related committees.<br>10.1.4 Conduct survey/assessment on antimicrobial consumption and use |
| | 10.2 Monitor and supervise antimicrobial Stewardship program. | 10.2.1 Conduct supportive supervision to monitor antimicrobial stewardship programmes.<br>10.2.2 Introduce audit programs for antimicrobial prescribing. |

## PRIORITY ACTION 11: USE OF ANTIMICROBIAL AGENTS IN ANIMAL HEALTH AND AGRICULTURE

| **Objective 11:Ensure prudent use of antimicrobial agents** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 11.1 Establish national policies on use of antimicrobial agents in animal, plant and fisheries subsectors. | 11.1.1 Develop policies and guidelines on prudent use of antimicrobial agents.<br>11.1.2 Develop essential medicine list and standard guideline for animal, plant and fisheries use.<br>11.1.3 Build capacity on practitioners on appropriate use of antimicrobial agent.<br>11.1.4 Support regulatory enforcement on antimicrobial use.<br>11.1.5 Support survey/assessment on antimicrobial consumption. |
| | 11.2 Establish monitoring, Evaluation, Learning and Documentation (MELD) system. | 11.2.1 Develop comprehensive system for MELD.<br>11.2.2 Develop facility for documentation centre. |

## 4.5 STRATEGIC OBJECTIVE FIVE

**Prepare the economic case for sustainable investment, and increase investment in new medicines, diagnostic tools, vaccines and other interventions.**

Research is required on trends in resistance, practices and attitudes driving resistance in Zanzibar to inform appropriate interventions. In addition to investment in the discovery and development of new anti microbials, diagnostic tools and vaccines is required.

Research and investment in diagnostic tools and improved vaccines can contribute to the overall reduction in AMU. Veterinary antimicrobial consumption needs be further studied in order to determine the correlation of AMR/AR effects and impact in both animal and human health in the country. Researchers are needed to enhance the development of effective strategies and alternatives to combat AMR in food-producing animals.

Developing a multi-sectoral research agenda on AMR and resources allocation for AMR researches, it is important not only to accumulate existing scientific evidence and incorporate it into public health measures, but also to create new scientific evidence in Zanzibar and share it with Tanzania Mainland and the international community for future investment and support for AMR interventions.

The priority actions in this strategic objective are as follows;

- **Sustainability of antimicrobial resistance interventions.**

## PRIORITY ACTION 12: SUSTAINABILITY OF ANTIMICROBIAL RESISTANCE INTERVENTIONS

| **Objective 12:To prepare the economic case for sustainable investment in new medicines, diagnostic tools, vaccines and other interventions.** | | |
|---|---|---|
| | **Strategic interventions** | **Activities** |
| | 12.1 Identify the investment required for the implementation of the Zanzibar action plan for AMR using one health approach | 12.1.1 Engage the public, private sectors and development partners on the investment requirements for implementation of the AMR Zanzibar Action Plan<br>12.1.2 initiate and support research into pharmaceutical products quality and post marketing surveillance activities of antimicrobials<br>12.1.3 Support piloting and dissemination of innovative ideas on investment for new medicines, diagnostic tools, vaccines and other interventions |

# 5.0 OPERATIONAL PLAN

The operational plan consists of activities, sub-activities, unit measure, quantity, time frame, level of implementation, cost, source of fund and indicators.

**PRIORITY ACTION 1: AWARENESS-RAISING AND RISK COMMUNICATION**
**Strategic intervention 1.1: Prepare an evidence-based public communication programme for people in human health practice.**

Activity 1.1.1.To conduct Knowledge, Attitude and Practices (KAP) survey through behavioural studies in deferent social and health professional groups (human health, animal health, plant production and crops, food chain and environmental sectors practice).

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implementation | Responsible Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct KAP survey | Survey | 2 | Aug 2020 | Nation-wide | MoH, MANRLF | 20,000 | Gov't / Partners | surveys conducted and report/ data shared |
| Conduct Dissemination meeting on KAP survey results | Meeting | 3 | Oct 2020 | Nation-wide | MoH, MANRLF, | 5,000 | Gov't / Partners | |

Activity 1.1.2. Develop communication awareness strategy and SOP on targeting audience from different groups.

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implementation | Responsible Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Develop communication awareness strategy | Workshop | 3 | Nov 2020 | Nation-wide | MoH, MANRLF, SVPO, | 10,000 | Gov't / Partners | AMR communication strategy developed and shared |
| Print communication strategy | Copies | 200 | Dec 2020 | Nation-wide | MoH, MANRLF | 10,000 | Gov't / Partners | |
| Develop SOP on targeting audience from different groups | Workshop | 2 | Dec 2020 | Nation-wide | MoH, MANRLF | 5,000 | Gov't / Partners | SOP in place |

**Strategic intervention 1.2:Strengthening of Public media and publication programmes targeting audiences in human health, animal health, plant production and crops, food chain and environmental sectors practice**.

| Activity 1.2.1 :To develop and disseminate IEC materials (posters, brochures, papers, ads) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Develop and disseminate AMR IEC materials | Copies | 600 | Jan 2021-Jan 2025 | National wide | MoH, MANRLF | 15,000 | Gov't / Partners | Number of AMR IEC disseminated |

| Activity 1.2.2: Developing and supporting the TV/Radio programs and documentary (Regular press briefings, question and answer sessions, press statements, TV Public Service Announcements, Radio Public Service Announcements/live announcer scripts, news) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implementation** | **Responsible Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Developing and support media programmes | programme | 10 annually | Feb 2021 (annual) | Nation wide | MoH, MANRLF | 10,000 | Gov't / Partners | Media programmes records |

| Activity 1.2.3 Facilitate the publications of news and articles (newspaper, publication of news and feature articles) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Publications of news and articles | publication | 5 annually | Jan - Dec 2021 | Nationwide | MoH, MANRLF, | 5,000 | Gov't / Partners | Published News and articles |

| Activity 1.2.4 Development and support of web-based information management system | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Develop and support of web-based information management system | Web based system | 1 | Jan 2020-2025 | Nationwide | MoH, MANRLF, | 10,000 | Gov't / Partners | AMR web-based system online |

### Strategic intervention 1.3: Conducting national AMR awareness campaign

| Activity 1.3.1 Conduct multimedia awareness campaigns on AMR | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD** | **Source of Funding** | **Indicator** |
| Disseminate AMR massages through social media and broadcasting programmes through radio/TV | Massages /programmes | 12 | Jan 2021-Dec 2022 | Nationwide | MoH,MANRLF | 30,000 | Gov't / Partners | Number of messages and aired programmes |
| Promote AMR awareness campaign during national festival | National festival | 6 annual | Jan 2021-Dec 2022 | Nationwide | MoH and MANRLF | 10,000 | Gov't / Partners | Number of AMR campaign conducted |

## PRIORITY ACTION 2: EDUCATION

### Strategic intervention 2.1:Establishing programmes on AMR and related topics as a core component of professional education, training, certification and development

| Activity 2.1.1 Establish and Support development of AMR and related topics in Primary, Secondary and undergraduate curricula for human health professionals, animal health professionals and food industry and agriculture professionals. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct workshop to Introduce and Support AMR and related topics in Primary, Secondary and undergraduate curricula | Meeting | 3 | Aug 2022-dec 2023 | Nationwide | MoH, MANRFL, MoE | 10,000 | Gov't / Partners | AMR topics and curricula developed |

**Strategic intervention 2.2: Strengthening capacity buildings on AMR programmes**

| Activity 2.2.1 Training and workshops on AMR (tailor made and short courses) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsibl e Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct training on AMR (tailor made and short courses) | Training | 1 annual | Dec 2022 | national | MoH, MANRLF | 10,000 | Gov't / Partners | Training reports |
| Conducting workshop on AMR | Workshop | 1 annual | Jan 2023 | national | MoH, MANRLF,. | 5,000 | Gov't / Partners | Workshop reports |

**PRIORITY ACTION 3: SURVEILLANCE SYSTEM**

**Strategic intervention 3.1:Develop guideline on Zanzibar AMR surveillance framework for all sectors.**

| Activity 3.1.1. Operationalize AMR surveillance systems | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Collect information on the pre-existing surveillance system on AMR | Surveillance System | 1 | Jan 2020 | Nationa | MoH, MANRLF, | 5000 | Gov't / Partners | Availability of Information of on AMR |
| Review and harmonize collected information on existing surveillance system on AMR | Workshop | 1 | Mar 2020 | National | MoH , MANRLF | ... | Gov/ Partners | Surveillance System on AMR in place |
| Prepare and disseminate AMR Guideline/ SOP for AMR surveillance in human, animals/fisheries, plant and environment | Number SOP disseminated | 1 | May 2020 | National | MoH, MANRLF | 4000 | Gov/ Partners | Guideline/ SOP in place |

| Activity 3.1.2. Conduct situation analysis to identify gaps relevant to AMR surveillance in all sectors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsible Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Develop terms of reference for conducting AMR Surveillance in human, animals/ fisheries, plant and environment | List of ToR | 1 | June 2020 | National | MoH, MANRLF | 10,000 | Gov' t/ Partners | Terms of reference in place |
| Conduct Need assessment to identify existing gaps on relevant AMR surveillance in human, animals/ fisheries, plant and environment | Assessed gaps | 1 | July 2020 | National | MoH, MANRLF, SVPO | 2000 | Gov't / Partners | Needs assessment /gaps Identificatio n report |
| Conduct capacity Building for AMR Surveillance in human, animals/ fisheries, plant and environment | Human resource | 4 | Sept 2020 | National | MoH, MANRLF, SVPO | 10,000 | Gov't / Partners | Skilled human personnel |
| Establishment of AMR Surveillance database based on one health | Database | 1 | Jan 2021 | National | MoH, MANRLF | 5,000 | Gov't / Partners | Functional Database in place |

| Activity 3.1.3. Develop multi sector AMR surveillance reporting system(data collection, management, analysis and dissemination) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Collect and identify the existing reporting system on AMR in human, animals/fisheries, plant and environment | List of existing Reporting system | 1 | Oct 2020 | National | MoH, MANRLF | 6000 | Gov't / Partners | Availability of functional AMR reporting system |
| Conduct stakeholder meeting to review and harmonize collected information on reporting system | Meeting | 1 | Nov 2020 | National | MoH, MANRLF | 3000 | Gov't / Partners | Availability of functional AMR reporting system |
| Conduct specific training for AMR surveillance reporting system in human, animals/fisheries, plant and environment | Training | 2 | Dec 2020<br><br>Jan 2021 | National | MoH, MANRLF | 2500 | Gov't/ Partners | Availability of functional AMR reporting system |

**PRIORITY ACTION 4: LABORATORY CAPACITY**

**Strategic intervention 4.1: Selection of designate laboratories for AMR surveillance**

| Activity 4.1.1. Assess the existing laboratories' capacity and appoint two laboratories to be Zanzibar reference/designated laboratories for AMR surveillance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implemen tation** | **Responsibl e Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Develop terms of reference for selection of reference laboratories for AMR | Terms of reference tools | 1 | June 2020 | National | MoH, MANRLF | 10,000 | Gov't / Partners | Zanzibar reference laboratory terms of reference ready for approval |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| detection and surveillance. | | | | | | | | |
| Conduct assessment of existing laboratory capacity on AMR detection and surveillance (human resource, reagents, equipment and consumables) | Laboratory | 1 | July 2020 | National | MoH, MANRLF | 2000 | Gov't / Partners | AMR reference laboratories |
| Conduct training on AMR detection /surveillance in reference laboratories | training | 4 | September 2020 | National | Reference laboratories | 10,000 | Gov't / Partners | Skilled human personnel |
| Procure reagents, equipment and consumables (for detection of AMR in reference laboratories) | Equipment, reagents and other consumables | 10 | January<br><br>June<br>Every year | National | MoH, MANRLF | 200,000 | Gov't / Partners | Qualified laboratories for AMR detection |
| Conduct surveillance and detection of AMR pathogens in human, animals/ fisheries, plant and environment | Surveillance | Ongoing | 2020 | National | MoH, MANRLF | 30,000 | Gov't / Partners | Surveillance system in place |
| Dissemination of annual report on AMR surveillance in human, animals/ fisheries, plant and environment | Report | 4 | 2021 | National | MoH, MANRLF | 5000 | Gov't / Partners | Annual Report delivery |

## Strategic intervention 4.2: Capacity building for designated laboratories for AMR surveillance

| Activity 4.2.1. Conduct training, mentorship and supportive supervision for personnel on diagnostics and antimicrobial susceptibility testing | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Enhance supervision, mentorship, and supportive supervision on AMR detection in selected laboratories | Reference laboratory | Ongoing | 2020 | National | MoH, MANRLF | 5000 | Gov't / Partners | Competent laboratory personnel |

## Strategic intervention 4.3:Strengthensupplychainsystem to support laboratory AMR surveillance

| Activity 4.3.1. Procurements of materials/ reagents/items required for AMR surveillance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Development of master list of materials and reagents required for AMR surveillance in all sectors | List of material and reagents | 2 | Jan 2020<br><br>Jan 2023 | Nationwide | MoH, MANRLF | 0 | Gov't / Partners | Master list ready for use |
| Procurement and Supply of materials and reagents for AMR surveillance in human, animals/fisheries, plant and environment | Materials and reagents | 10 | January<br><br>June Each year | Nationwide | MoH, MANRLF | 100,000 | Gov't / Partners | Percentage of diagnostic and reagents available for AMR |

| Activity 4.3.2. Establish supply mechanism to ensure constant availability of equipment, reagents and supplies for AMR detection | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsibl e Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Establishment of one health supply mechanism on equipment, reagents and supplies for AMR surveillance based on one health approach. | Supply mechanism | 1 | Jan 2021 | Nation wide | Procurement unit | 12 000 | Gov't / Partners | Supply mechanism in place |

**Strategic intervention 4.4: Strengthen quality assurance system for AMR surveillance**

| Activity 4.4.1. Identify and support QA scheme to be used based on WHO/OIE guidelines/ISO Standards | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsibl e Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Institute EQA AMR program basing on the WHO/OIE guidelines/ISO Standards to the participating laboratories. | Laboratory | 10 | March 2021 | National | MoHMANRLF | 5000 | Gov't / Partners | AMR surveillance test performed as per WHO/ISO standard. AMR |
| Train laboratory personnel on AMR Quality assurance program in all sectors | Training session | 4 | Once per year | National | MoH,MANRLF | 10000 | Gov't / Partners | |
| Support implementation of Quality assurance on AMR schemes for appointed laboratories in all sectors (responsible | Laboratories | 4 | May 2021 | National | MoH, MANRLF | 20,000 | Gov't / Partners | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| sectors) | | | | | | | | |
| Establish Quality Assurance system on AMR in all selected laboratories | Reference laboratory | Ongoing | 2020 | National | MoH, MANRLF | 7000 | Gov't / Partners | Number of laboratories implementing QMS |

## PRIORITY ACTION 5: RESEARCH AND DEVELOPMENT

### Strategic intervention 5.1: Incorporate multi-sectoral research agenda on AMR in Zanzibar Research agenda 2021-2025

Activity 5.1.1. Engage relevant stakeholders to identify gaps in knowledge and potential research areas on AMR

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implement ation | Responsib le Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct stakeholders workshop to identify gaps and potential research areas on AMR | Workshop | 1 | April 2020 | National wide | MoH, MANRLF | 6000 | Gov't / Partners | AMR gaps and potential research areas identified |
| Conduct epidemiology study in order to identify gaps related to AMR surveillance in all sectors | Survey | 6 | June 2020 | National wide | MoH, MANRLF | 30000 | Gov't / Partners | Report on AMR gaps identified |
| Incorporate identified AMR gaps into Zanzibar research agenda | workshop | 1 | Sept 2020 | Unguja | MoH, MANRLF, SVPO | 4000 | Gov't / Partners | AMR components on Research agenda 2021-2025 |

Activity 5.1.2. Develop research guidelines on AMR

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implement ation | Responsib le Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conduct stakeholders meeting to develop TOR on AMR research | meeting | 1 | Oct 2020 | Nationwide | MoH, MANRLF | 4000 | Gov't / Partners | TOR of AMR research availability |
| Conduct a workshop to develop guideline on AMR Research. | workshop | 1 | Nov 2020 | Nationwide | MoH, MANRLF | 4000 | Gov't / Partners | AMR guideline available |
| Print and disseminate AMR research guideline in all sectors | Copies | 50 | Jan 2021 | National wide | MoH, MANRLF | 2000 | Gov't / Partners | Zanzibar AMR research guideline |

Activity 5.1.3. Conduct research activities related to AMR in all sectors

| Sub-activity | Unit | Quantity | Date/ Time Frame | /Level of Implement ation | Responsib le Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Develop AMR related research proposals with one health approach | Proposals | TBD | April 2021 | National wide | MoH, MANRLF | 4000 | Gov't / Partners | Number of AMR research proposal developed |
| Conduct research activities | Papers | TBD | June 2022 | National wide | MoH, MANRLF | 20,000 | Gov't / Partners | Number of AMR research conducted |

**Strategic intervention 5.2: Establish a mechanism for sharing AMR research findings**

Activity 5.2.1. Conduct Zanzibar multi sector AMR scientific symposium

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implement ation | Responsib le Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Establish and support the organizing scientific conference meetings on AMR | meeting | 2 | June 2023 | National wide | MoH, MANRLF, SVPO | 2000 | Gov't / Partners | AMR Symposium/ conference conducted |
| Conduct AMR scientific symposium or roundtable discussions annually | Symposium | 1 | Sept 2023 | National wide | MoH, MANRLF, SVPO | 12,000 | Gov't / Partners | AMR Symposium/ conference |

Activity 5.2.2. Establish an AMR data repository

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implement ation | Responsi ble Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Establish Zanzibar AMR bulletin | Bulletin | 1 | Dec 2023 | National level | MoH, MANRLF | 5000 | Gov't / Partners | Zanzibar AMR data repository established |
| Establish an electronic system for AMR data repository | Repository | 1 | Dec 2018 | National level | MoH, MANRLF | 25,000 | Gov't / Partners | Zanzibar AMR data repository established |

Activity 5.2.3. Establish a bio-bank/bio-repository canter

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implement ation | Responsi ble Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Establish and Equip the Zanzibar Reference laboratory with equipment for bio-bank/bio repository | Bio-bank/ bio repository equipment | 1 | May 2023 | National | MOH, MANRLF, SVPO | 2500 | Gov't / Partners | Assessment report available |
| Source and train personnel on use of a web-based bio-repository in all sectors | Training | Quarterly | Sept 2023 | National | MOH, MANRLF, SVPO | 5000 | Gov't / Partners | Zanzibar bio-bank/ bio repository centre established |

## PRIORITY ACTION 6: INFECTION PREVENTION AND CONTROL IN HEALTH CARE

### Strategic intervention 6.1: Establish a national and sub-national IPC implementation framework in human health

| Activity 6.1.1 : Hold multi-stakeholders' dialogue for development of IPC program for AMR prevention and control | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsibl e Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct stake-holder meetings on development of IPC program | Meetings | 3 meetings | 03/2020 – 06/2020 | Nation wide | MoH, MANRLF | 10,000 $ | Gov't / Partners | National IPC program created |
| Develop a draft for national IPC program for AMR | Draft of IPC | 30 | 08/2020 – 10/2020 | Nation wide | MoH, MANRLF | 200,000$ | Gov't / Partners | |

| **Activity 6.1.2. Build capacity for IPC implementation in human health** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsibl e Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Conduct training for one health stakeholders on IPC program | Workshop and training | 10 trainings | 01/2021 | Nation wide | MoH, MANRLF, SVPO, | 6000 | Gov't / Partners | No. of trainings and reports done |
| Monitoring and supervision of implementation on IPC program | Monitoring and supervision | Semi annual | 07/2021 | Nation wide | MoH, MANRLF, SVPO | 50,000 | Gov't / Partners | No. of Monitoring and Supervision s |

### Strategic intervention 6.2: Facilitate development of IPC policies and related guidelines and tools.

| Activity 6.2.1 Develop national IPC policy and implementation guidelines and tools | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsibl e Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Meeting with stake holders on the community level for policy development | Community stake holders' meeting | 3 | 12/2020 | Community | MoH, MANRLF, SVPO, | 60,000 | MoF, MANRLF, SVPO,MoH | Developed national IPC guidelines and policies |
| Meeting with development partners, NGOs and public institutions for policy and guidelines development | Stake holders' meeting | 1 | 12/2020 | Organizational levels | MoH, MANRLF, SVPO, | 20,000 | MoF, MANRLF, SVPO,MoH | |
| Develop drafts of national IPC policy and guidelines | National IPC policy and guidelines | 1 | 05/2021 | Responsible ministries | MoH, MANRLF, SVPO, | 300,000 | MoF, MANRLF, SVPO,MoH | |

Activity 6.2.2: Facilitate availability of IPC related equipment, supplies and guidelines.

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implement ation | Responsibl e Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct needs assessment for related equipment and supplies | Quantified items | To be known | 09/2022 | Nation wide | MoH, MANRLF, SVPO, | To be known | MoF, MANRLF, SVPO,MoH | IPC equipment, supplies and guidelines available in health facilities |
| Procure and distribute IPC materials | IPC materials | To be known | 10/2022 | Nation wide | MoH, MANRLF, SVPO, | To be Known | Gov't | |
| Distribute IPC guidelines | Guideline documents | 2,000 | 12/2022 | Nation wide | MoH, MANRLF, SVPO, | 30,000 | Gov't | |
| Develop and support of web-based information management system | Web based system | 1 | Jan 2020 - 2025 | Nationwide | MoH, MANRLF. | 10,000 | Gov't / Partners | AMR web-based system online |

**Strategic intervention 6.3: Strengthen implementation of IPC practices in health facilities and congregated settings.**

Activity 6.3.1: Facilitate availability of IPC related equipment, supplies, SOP guidelines and improve related infrastructure

| Sub-activity | Unit | Quantity | Date/ Time | Level of Implement | Responsibl e Entity | Cost | Source of | Indicator |
|---|---|---|---|---|---|---|---|---|

| | | | Frame | ation | | (USD) | Funding | |
|---|---|---|---|---|---|---|---|---|
| Assess availability of IPC related equipment and supplies | Quantified items | To be known | 01/2020 | Nation wide | MoH | To be known | Gov't / Partners | IPC related equipment, supplies, SOP guidelines and improved related infrastructure are readily available |
| Procure and distribute IPC related equipment and supplies | Quantified items | To be known | 04/2020 | Nation wide | MoH | To be known | Gov't / Partners | |
| Provide adequate and appropriately maintained water and sanitation as well as waste management facilities | Sanitation and waste management facilities | 100 | 10/2020 | Nation wide | MoH | 10,000 | Gov't / Partners | |

Activity 6.3.2: Conduct scheduled IPC supportive supervision, mentoring and monitoring in health facilities and congregated settings

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implementation | Responsible Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct supportive supervisions and mentoring in health facilities and congregate setting | visits | Quarterly | Ongoing | Nationwide | MoH | 7,000 | Gov't | Supportive supervision and mentoring report is available |

Activity 6.3.3: Strengthen the functioning vaccination programs available for human health

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Procurement of required vaccines | Vaccines | To be known | 01/2023 | National level | MoH | 200,000 | Gov't | Strong & Functional |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Distribution of vaccine | Route | To be known | 02/2023 | National level | MoH | 80,000 | Gov't | vaccination programs for human health |
| Provide capacity building | Work shop | | 12/2022 | National level | MoH | 7,000 | Gov't | |
| Conduct inspection | Visits | Semi annual | Ongoing | National level | MoH | 10,000 | Gov't | |

**Strategic intervention 6.4: Diversify and improve IPC trainings beyond human health curricula**

Activity 6.4.1 : Review existing IPC training contents to encompass and improve components of AMR prevention and control

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct a stake holders meeting to reviewing existing IPC training contents | meetings | 2 | 02/2023 | National level | MoH, MANRLF, SVPO, | 8000 | Gov't / Partners | AMR prevention and control components are improved and added into IPC programs |

Activity 6.4.2: Include hygiene and infection prevention and control in training curricula for agriculture extension officers

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implementation | Responsible Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Review of curricula for agriculture to incorporate IPC components | Curricula | 1 | 08/2023 | Education sector, MoH, MANRLF, SVPO | MoH, MANRLF | 50,000 | Gov't | A revised curricula and TOT manual on IPC are available |
| Develop TOT manual on IPC for health professionals (human, animals, Plants, environmental health and extension officers) | TOT Manual | 1 | 08/2023 | Education sector, | MoH, MANRLF, SVPO | 80,000 | Gov't | |

**PRIORITY ACTION 7: INFECTION PREVENTION IN AGRICUTURE (ANIMAL AND PLANT HEALTH)**

**Strategic intervention 7.1: To prevent and control occurrence of infectious disease in agriculture and livestock sector**

Activity 7.1.1 :Improve the national mechanism for communicating, responding, reporting and recording animal and plant disease occurrences.

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Procure relevant virtual networking equipment | Set of equipment | 1 | 09/2022 | National level | MANRLF | 10,000 | MoF, MANRLF, SVPO | Virtual networking platform on communicating, responding, reporting and recording animal and plant disease occurrences is available |
| Establish a central database on communicating, responding, reporting and recording Disease occurrences | Database | 1 | 11/2022 | National level | MANRLF | 20,000 | Gov't | |
| Conduct training to designated officers of the use of the virtual equipment | Training workshop | 3 | 2021-2022 | National level | MANRLF | 25,000 | Gov't | |
| Operationalize and monitor the database | Report | quarterly | 07/2023 | National level | MANRLF | 25,000 | Gov't | |

Activity 7.1.2: Review existing regulations to accommodate the need for a mandatory vaccination programs in animal health

| Sub-activity | Unit | Quantity | Date/ Time | Level of implement | Responsible Entity | Cost (USD) | Source of | Indicator |
|---|---|---|---|---|---|---|---|---|

| | | | Frame | ation | | | funding | |
|---|---|---|---|---|---|---|---|---|
| Review regulations for vaccinations | Meeting | 2 | 04/2022 | National level | MANRLF | 30,000 | MoF, MANRLF, SVPO,MoH | Regulations on mandatory vaccination on animal health are reviewed |
| Conduct stakeholders meeting to share the revised draft of regulations | Workshop | 1 | 05/2022 | National level | MANRLF | 25,000 | Gov't | |
| Approval and dissemination of the regulations | Meetings | 2 | 07/2022 | National level | MANRLF | 30,000 | Gov't | |

**Strategic intervention 7.2: Strengthen bio security system in animal health, plants and environment.**

Activity 7.2.1 : Promote good agricultural/animal husbandry practice to enhance bio security practices and improvement of animal hosting facilities and infrastructures

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implement ation | Responsib le Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Training farmers, livestock keepers and fisher folks on bio security practices. | training | 6 | Jul - Aug 2020 | National wide | M.N.L.F SVPO | USD 70000 | MoF MANRLF | Training Report |
| Support farmers, livestock keepers and fisher folks on bio security facilities and infrastructures. | Facilities and infrastructures | 200 | Sept 2020 | National wide | MANRLF SVPO | USD. 500000 | MoF MANRLF | Facilities and infrastructure |

**Strategic intervention 7.3: Strengthen the national mechanism for regulation and control the use of antimicrobials in the agriculture and livestock sector**

| Activity 7.3.1:Strengthen policies and guidelines on handling and uses of microbial agents | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Review the current Policies and guidelines on microbial agent usage and handling | Work shop | 2 | 12/2020 | Nation wide | MoH, MANRLF | 3,000 | Gov't | Reviewed guidelines and policies |

| Activity 7.3.2: Training on integrated pest management through farmer field school | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implementation** | **Responsible Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Conduct assessment on integrated pest management among farmers | visits | 1 | 07/2022 | National level | MANRLF | 5,000 | MoF, MANRLF. | Integrated pest management is practised by farmers |
| Prepare and conduct trainings on integrated pest management | Work shop | 5 | 08/2022 | National level | MANRLF | 45,000 | Gov't | |

**PRIORITY ACTION 8: HYGIENE AND SANITATION AT COMMUNITY LEVEL**

**Strategic intervention 8.1: Promote hygiene practices in the communities.**

| Activity 8.1.1 : Undertake IPC advocacy, Awareness raising and community sensitization activities | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Develop Information, Education and communication (IEC) & behavioral change communication materials | | 200,000 | 04/2021 | Nation wide | MoH, MANRLF, SVPO, | | MoF, MANRLF, SVPO, MoH | IPC sensitization sessions conducted |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sensitization, orientation & training stake holders at all levels | People | 300 | 05/2021 | Country wide | MoH, MANRLF, SVPO, | | Gov't | |

**Strategic intervention 8.2:Improve sanitation and waste management practices**

| **Activity 8.2.1: Promote environmental sanitation in congregate settings** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsib le Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Review infectious outbreak (IOB) guidelines to include concepts of hygiene and sanitation | Meeting | 4 | 03/2020 | National level | MoH, SVPO | 25,000 | Gov't | IOB guideline reviewed |
| Activity 8.2.2: Promote sanitary inspectorate services in waste management for environment with a collective number of animals e.g. Zoos and parks. | | | | | | | | |
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsib le Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Equip targeted areas with necessary facilities | Sanitary facilities | To be known | 2021 | National | MANRLF, SVPO | To be known | MoF, Municipal council, SVPO, MANRLF | Sanitary environment in collective animal settings improved. |
| Conduct capacity building to respective inspectors | Meeting | 5 | 2021 | National level | MANRLF, SVPO | 15,000 | Gov't | |
| Activity 8.2.3: Establish a national and sub national monitoring system in the field of waste management | | | | | | | | |
| **Sub-activity** | **Unit** | **Quantity** | **Date/T ime Frame** | **Level of Implement ation** | **Responsi ble Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct supportive supervision | Visits | Semi annually | 04/2023 | National level | MANRLF, SVPO. MoH | 6,000 | Gov't | Functional system for monitoring waste |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Prepare report of the monitor | Reports | Semi annually | 04/2023 | National level | MANRLF, SVPO, MoH | 4,000 | Gov't | management |

| Activity 8.2.4: Procure waste management equipment | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsi ble Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Assess health facilities and communities to determine equipment needs | Visit | 1 | 04/2024 | National level | MoH, MANRLF, SVPO, | 15,000 | Gov't | Waste management equipment available |
| Procure and distribute incinerators and other waste management equipment | Incinerators and other waste management equipment | To be known | 06/2024 | National level | MoH, MANRLF, SVPO, | To be known | Gov't | |

**Strategic intervention 8.3: Strengthening National linkages and partnership for IPC**

| Activity 8.3.1 : Promote food Chain Hygiene | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsib le Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct sensitization meeting on IPC | meeting | 6 | 09/2022 | National wide | MANRLF, MoH, | 60,000 | Gov't | Available reports on supervisions, training and awareness meeting |
| Conduct regular supervision to ensure compliance with slaughter suitability and withdrawal periods | No of copies | annual | 2022 | National level | MoH, MANRLF, | 20000 | Gov't | |
| Conduct awareness on slaughter protocols to abattoirs | Mentoring sessions | 2 | 2022 | District wise | MoH MANRLF, | 15000 | Gov't | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conduct regular inspections Large scale and small scale processing industries | Visits | Semi annual | 2022 | National wide | SVPO | 10,000 | Gov't | |

Activity 8.3.2: Encourage use of medias for educating and Promoting IPC

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of implement ation | Responsib le Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Training with journalist and stakeholders on IPC | meeting | 8 | May 2021-2023 | National wide | MANRLF MOH SVPO | 80,000 | Gov't | Education and IPC promotion through the use of media is achieved. |
| Develop sensitization material on IEC (Information Education and Communication) for behavioural changes. | IEC materials | 20000 | June 2021 | Zanzibar | MANRLF MOH SVPO | 700000 | Gov't | |

## PRIORITY ACTION 9: REGULATED ACCESS TO HIGH QUALITY ANTIMICROBIAL MEDICINES

**Strategic intervention 9.1:Strengthen the pharmaceutical supply chain for human medicine, including the procurement, supply and management system.**

Activity 9.1.1 : Build capacity for quality management system for the supply chain management of medicines, covering storage, transport, expiry date, etc.

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implement ation | Responsi ble Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct Train to human medicines supply chain actors on appropriate handling procedures during purchasing, storage, distribution and disposal | Training | 12 (1 national 11 districts) | 2020-2022 | Zanzibar | MoH | 50,000 | MoH | Number of supply chain actors trained |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Develop and provide standard operating procedure manuals on purchasing, storage, distribution and disposal | Document | 2500 | 2020 | Zanzibar | MoH | 15,000 | MoH | Number of Manual developed and distributed |
| Expand Central Medical Stores to accommodate xxx tons of medicine | Premises | 2 | 2021-2024 | Unguja and Pemba | MoH | 800,000 | MoH | Number and capacity of Central Medical Store |
| Rehabilitate and equip primary health storage facilities | Premises | 80 | 2021-2024 | Unguja and Pemba | MoH | 500,000 | MoH | Number of primary health storage facilities rehabilitated |
| Activity 9.1.2: Build capacity for ZFDA medicine regulation and enforcement on antimicrobial use. | | | | | | | | |
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsi ble Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Train ZFDA inspectors on modern inspection and surveillance of antimicrobial agents at port of entries | Training | 5 | 2020-2024 | Unguja and Pemba | MoH | 10,000 | MoH | Number of inspectors trained |
| Equip ZFDA laboratories with modern facilities and materials (Centrifuges, HPLC machine, gas chromatograph machine, reagents) | Set | 5 | 2020-2024 | Unguja | MoH | 200,000 | MoH | Number of lab facilities equipped |
| Rehabilitate and equip Pemba ZFDA laboratory | Building | 1 | 2021-2024 | Pemba | MoH | 150,000 | MoH | Pemba ZFDA Laboratory rehabilitated and equipped |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conduct regular inspections and surveillance in medicine outlets | Inspections | 5 | 2020-2024 | Unguja and Pemba | MoH | 120,000 | MoH | Number of outlets inspected |

Activity 9.1.3: Conduct Post marketing surveillance and Pharma covigilance on microbial agents.

| Sub-activity | Unit | Quantity | Date/ Time Frame | /Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct AMR Post marketing surveillance on microbial agents | Surveillance | 5 | 2020-2024 | Unguja and Pemba | MoH | 70,000 | MoH | Number of AMR PMS reports |
| Disseminate PMS findings to stakeholders | Workshops | 5 | 2020-2024 | Unguja and Pemba | MoH | 20,000 | MoH | Number of PMS findings reports |
| Train health workers on Pharma covigilance on microbial agents | Training | 5 | 2020-2024 | Unguja and Pemba | MoH | 30,000 | MoH | Number of health workers trained |

Activity 9.1.4 Revise and update STG and EML

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct stakeholder meeting on STG and EML | Meeting | 4 | 2020-2024 | Unguja and Pemba | MoH | 16,000 | MoH | Number of meeting conducted |
| Review STG and EML | Event | 2 | 2020-2024 | Unguja | MoH | 12,000 | MoH | Reviewed STG and EML |
| Distribute new STG and EML | Event | 1 | 2020-2024 | Unguja | MoH | 5,000 | MoH | Number of STG and EML distributed |

**PRIORITY ACTION 10: ANTIMICROBIAL STEWARDSHIP.**

**Strategic intervention 10.1: Establish antimicrobial stewardship programmes in human, animal, plant and fisheries facilities.**

| Activity 10.1.1 : Develop policies and guidelines for antimicrobial stewardship | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct stakeholder meeting on antimicrobial stewardship | Meeting | 4 | 2020-2024 | Unguja and Pemba | MoH, MANRLF | 12,000 | MoH&MANRLF | Number of meeting conducted |
| Develop policies and guideline on antimicrobial stewardship | Consultant | 1 | 2020-2024 | Unguja and Pemba | MoH, MANRLF | 70,000 | MoH | Policies and guidelines on antimicrobial stewardship |
| Operationalize anti microbial stewardship policies and guideline | Event | 5 | 2020-2024 | Unguja and Pemba | MoH, MANRLF | 60,000 | MoH& MANRLF | Number of Operational reports |
| Monitor and supervise anti microbial stewardship policies and guideline | Event | 5 | 2020-2024 | Unguja and Pemba | MoH, MANRLF | 45,000 | MoH& MANRLF | Monitoring and supervision reports |

| Activity 10.1.2: Build capacity for prescribers, pharmacist, lab personnel and nurses about good antimicrobial prescribing, dispensing and diagnosis. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implementation** | **Responsible Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Conduct training need assessment (TNA) for prescribers, pharmacist, lab personnel and nurses | Assessment | 1 | 2020 | Unguja and Pemba | MoH, MANRLF | 10,000 | MoH & MANRLF | TNA report |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Training prescribers, pharmacist, lab personnel and nurses good antimicrobial management | Training | 2 | 2021-2024 | Unguja and Pemba | MoH | 30,000 | MoH & MANRLF | Number of Trainees |

Activity 10.1.3: Establish and operationalize to MTC and other related committees

| Sub-activity | Unit | Quantity | Date/ Time Frame | /Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct Stakeholders meeting for MTC and other related committees | Meeting | 1 | 2021 | Unguja and Pemba | MoH | 2,000 | MoH & MANRLF | Number of meeting conducted |
| Operationalize to MTC and other related committees | Event | 4 | 2021-2024 | Unguja and Pemba | MoH | 12,000 | MoH & MANRLF | Number of meeting and reports |

Activity 10.1.4:Supervise antimicrobial use and consumption to human, animal, plant and fisheries sub-sector

| Sub-activity | Unit | Quantity | Date/ Time Frame | Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct assessment on antimicrobial use and consumption | Assessment | 4 | 2021-2022 | Unguja and Pemba | MoH & MANRLF | 20,000 | MoH & MANRLF/ Partners | Number of assessment report |
| Disseminate assessment findings on antimicrobial use and consumption to stakeholders | Event | 1 | 2023 | Unguja and Pemba | MoH & MANRLF | 15,000 | MoH & MANRLF/ Partners | Dissemination reports |
| Develop guideline on proper antimicrobial use and consumption | Guideline | 1 | 2020 | Unguja and Pemba | MoH & MANRLF | 10,000 | MoH & MANRLF/ Partners | Antimicrobial use and consumption guidelines |
| Orient practitioners on antimicrobial use and consumption guideline | Event | 1 | 2021 | Unguja and Pemba | MoH & MANRLF | 25,000 | MoH & MANRLF/ Partners | Orientation reports |

**Strategic intervention 10.2: Monitor and supervise antimicrobial Stewardship program.**

| Activity 10.2.1 : Conduct supportive supervision to monitor antimicrobial stewardship programmes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsib le Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Develop M&E Tool to monitor antimicrobial stewardship programmes | M&E Tool | 1 | 2020 | Unguja and Pemba | MoH& MANRLF | 5,000 | MoH & MANRLF | M&E Tool in place |
| Supervise and monitor antimicrobial stewardship programmes | Event | 5 | 2020-2024 | Unguja and Pemba | MoH& MANRLF | 25,000 | MoH & MANRLF | Supervision and monitoring reports |
| Activity 10.2.2: Introduce audit programs of antimicrobial prescribing | | | | | | | | |
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsib le Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Conduct auditing training to prescribers of antimicrobial agents | Training | 1 | 2021-2024 | Unguja and Pemba | MoH & MANRLF | 5,000 | MoH & MANRLF | Number of prescribers trained |
| Operationalize audit programs of antimicrobial prescribing | Event | 4 | 2021-2024 | Unguja and Pemba | MoH & MANRLF | 15,000 | MoH & MANRLF | Prescribing audit reports |
| Monitor and supervise audit programs of antimicrobial prescribing | Event | 4 | 2021-2024 | Unguja and Pemba | MoH & MANRLF | 10,000 | MoH & MANRLF | Monitoring and supervision reports |

**Strategic intervention 10.3: Establish national policies on use of antimicrobial agents in animal, plant and fisheries subsectors.**

| Activity 10.3.1 : Develop policies and guidelines on prudent use of antimicrobial agents in animal, plant and fisheries subsectors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsi ble Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct stakeholder meeting on prudent use of antimicrobial agents | Meeting | 2 | 2020 | Unguja and Pemba | MoH & MANRLF | 10,000 | MANRLF | Number of meeting conducted |
| Develop policies and guideline on prudent use of antimicrobial agents | Consultant | 1 | 2020-2024 | Unguja and Pemba | MoH& MANRLF | 70,000 | MANRLF | Policies and guidelines on anti microbial stewardship |
| Operationalize antimicrobial use policies and guidelines | Event | 5 | 2020-2024 | Unguja and Pemba | MoH & MANRLF | 80,000 | MoH & MANRLF | |
| Monitor and supervise policies and guideline implementation | Event | 4 | 2021-2024 | Unguja and Pemba | MoH & MANRLF | 15,000 | MoH& MANRLF | Monitoring and supervision reports |

| Activity 10.3.2: Develop essential medicine list and standard guideline for animal, plant and fisheries | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsi ble Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Develop EML and standard guideline | Meeting | 3 | 2021 | Unguja and Pemba | MoH & MANRLF | 30,000 | MANRLF | EML and standard guidelines |
| Operationalize EML and standard guidelines | Event | 4 | 2021-2024 | Unguja and Pemba | MoH & MANRLF | 80,000 | MoH & MANRLF | Disseminati on and Operational reports |
| Monitor and supervise EML and standard guidelines operations | Event | 4 | 2021-2024 | Unguja and Pemba | MoH& MANRLF | 10,000 | MoH& MANRLF | Monitoring and supervision reports |

| Activity 10.3.3: Build capacity on practitioners on appropriate use of antimicrobial agent. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time** | **Level of Implement** | **Responsi ble Entity** | **Cost** | **Source of** | **Indicator** |

| | | | Frame | ation | | (USD) | Funding | |
|---|---|---|---|---|---|---|---|---|
| Conduct training need assessment (TNA) appropriate use of antimicrobial agent | Assessment | 1 | 2020 | Unguja and Pemba | MoH ,MANRLF | 10,000 | MoH & MANRLF | TNA report |
| Develop Training Programmes on appropriate use of antimicrobial agent | Training programmes | 1 | 2021-2024 | Unguja and Pemba | MoH, MANRLF | 20,000 | MoH & MANRLF | Number of training programmes developed |
| Conduct training of trainers appropriate use of antimicrobial agent | ToT | 2 | 2021-2024 | Unguja and Pemba | MoH, MANRLF | 20,000 | MoH & MANRLF | Number of ToT Trained |
| Conduct training to practitioners on appropriate use of antimicrobial agent | Training | 8 | 2021-2024 | Unguja and Pemba | MoH, MNARLF | 20,000 | MoH & MANRLF | Number of practitioners trained |

**Strategic intervention 10.4: Establish Monitoring, Evaluation, Learning and Documentation (MELD) system.**

| Activity 10.4.1 : Develop comprehensive system for MELD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implementation** | **Responsible Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Establish MELD section | Section | 1 | 2020 | Unguja and Pemba | MoH, MANRLF | 15,000 | MoH& MANRLF | MELD section in place |
| Develop MELD tool | MELD tool package | 1 | 2020 | Unguja and Pemba | MoH, MANRLF | 10,000 | MoH& MANRLF | MELD tool package in place |
| Conduct training on MELD for practitioners | Training | 5 | 2020 | Unguja and Pemba | MoH, MANRLF | 60,000 | MoH& MANRLF | Number of practitioners trained |
| Operationalize the MELD system | Event | 5 | 2020 | Unguja and Pemba | MoH, MNARLF | 100,000 | MoH& MANRLF | MELD reports |

| Activity 10.4.2: Develop facility for AMR documentation centre | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of implement ation** | **Responsib le Entity** | **Cost (USD)** | **Source of funding** | **Indicator** |
| Extend and equip Central Medical Stores to accommodate documentation centre for AMR resources | AMR DC | 2 | 2021 | Unguja and Pemba | MoH | 500,000 | MoH | Number of AMR DC in place |
| Link AMR DC with service delivery points | Linkage | 4 | 2020 | Unguja and Pemba | MoH | 120,000 | MoH | Number of delivery points linked to AMR DC |

## PRIORITY ACTION 12: USE OF ANTI-MICROBIAL AGENTS IN ANIMAL HEALTH AND AGRICULTURE

### Strategic intervention 12.1: Identify the investment required for the implementation of the Zanzibar action plan on AMR using one health approach

| Activity 12.1.1 : Incorporate the public, private sectors and development partners on the investment requirements for implementation of the AMR Zanzibar Action Plan | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sub-activity** | **Unit** | **Quantity** | **Date/ Time Frame** | **Level of Implement ation** | **Responsi ble Entity** | **Cost (USD)** | **Source of Funding** | **Indicator** |
| Conduct assessment investment requirements for implementation of the ZAP on AMR | Meeting/ Workshop | 1 | Oct 2023 | National level | MoH MANRLF MoFP SVPO | 25 000 | SVPO, MoH, MANRLF | Assessment report available |
| Integrates the ZAP on AMR into the sectoral plan | Meeting | 1 | Nov 2023 | National level | MoH MANRLF MoFP SVPO | 1,000 | SVPO, MoH, MANRLF | ZAP on AMR integrated into sectoral plan |
| Engage local and international development partners on implementation of the ZAP AMR | Meeting | 1 | Nov 2023 | National level | MoH, MANRLF MoFP SVPO | 3,000 | SVPO, MoH, MANRLF | Proportion of targeted AMR stakeholders engaged in ZAP |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Review and priorities areas for investment in new medicines, diagnostic tools, vaccines and other interventions | Workshop | 1 | Dec 2023 | National wide | MoH, MoFP | 1000 | SVPO , MoH, MANRLF | Priority areas for investment in new medicines, diagnostic tools, vaccines and other interventions reviewed |

Activity 12.1.2: Conduct research related to development of new antimicrobials agents, vaccines and sera

| Sub-activity | Unit | Quantity | Date/Time Frame | Level of implementation | Responsible Entity | Cost (USD) | Source of funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Conduct research with objectives of development of new antimicrobials agents, vaccines and other interventions | Research | TBD | April 2021 | National wide | Stakeholders | 24000 | MoH, MoF, MANRLF | Number of AMR research reports available |

Activity 12.1.3: Support piloting and dissemination of innovative ideas on investment for new medicines, diagnostic tools, vaccines and other interventions

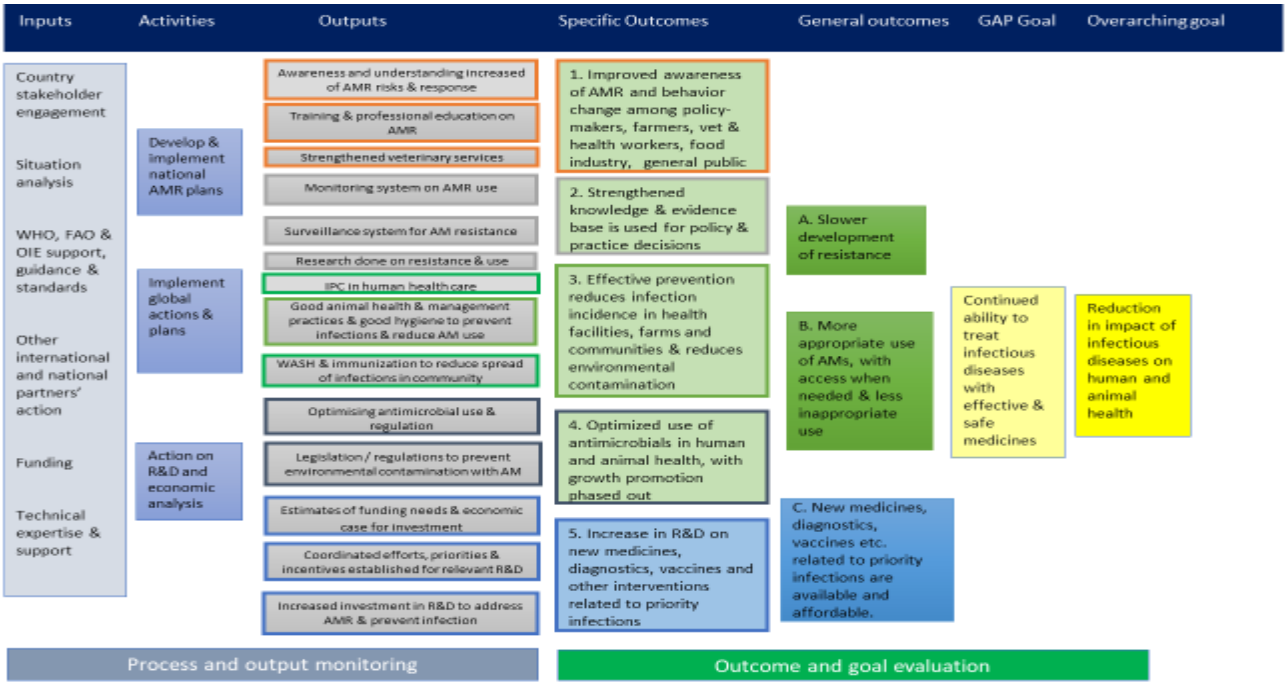
| Sub-activity | Unit | Quantity | Date/ Time Frame | /Level of Implementation | Responsible Entity | Cost (USD) | Source of Funding | Indicator |
|---|---|---|---|---|---|---|---|---|
| Support the implementation of the selected innovative ideas | Workshop | 4 | January 2024 | National wide | Stakeholders | 25 000 | MoH, MoFP, MANRLF | Innovative products available |
| Support dissemination of the appropriate innovative ideas | Workshop | 1 | July 2024 | National wide | Stakeholders | 5,000 | MoH, MoFP, MANRLF | Disseminated innovative products available |

# 6.0 MONITORING AND EVALUATION PLAN

Monitoring and Evaluation of AMR Zanzibar Action Plan is critical in measuring the implementation of the designed interventions. The main objectives of this is to track implementation progress and demonstrate results of the Zanzibar Action Plan on AMR in Zanzibar, assess the plan in accordance with the agreed objectives and goals using performance indicators to support management for results (evidence-based planning and decision making), improve accountability and constructive engagement with stakeholders (policy dialogue) and facilitate the documentation of achievements, challenges and lessons learned during the implementation of the ZAP AMR and share with relevant stakeholders.

A set of indicators will be developed and used to determine whether the interventions are on the right track or not, aiming at achieving its desired objectives and goals of the AMR - AP. They will be measured at all levels starting from input, output, outcome and impact.

**Conceptual framework**




Data collection will be done on monthly, quarterly and annual basis depending on its type using the available sources such as surveillance report, laboratory analysis and

research findings. New data sources will be established when required. These data will be generated from designated AMR laboratories then sent to data repository of the National reference laboratory for analysis and compilation, the national AMR data will be disseminated to the National Focal Points. Quarterly progress reports and annual progress report will be produced and shared to all relevant stakeholders for planning and decision making. Apart from that there will also be a mid-term review which will be done in the middle of the of the implementation period of the Action Plan. End of term evaluation will be conducted by the end of the implementation period. The following matrix show the basic indicators to monitor the implementation of the plan.

## Monitoring & Evaluation Plan Matrix

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | **Strategic Objectives 1: Improve awareness and understanding of AMR through education and training** | | | | | | | | |
| Develop AMR communication awareness strategy | Availability/presence and uses of a communication strategy for AMR | Process | A comprehensive document that will be used as guide for creating AMR education and awareness to all implementers and other relevant stakeholders | Yes/No | Once | Annual AMR Progress Report | No | Yes | MOH, MANLF |
| | Number of higher learning institutions that have incorporated AMR educational modules in their core curricula | Output | Number of higher learning institutions in health, environment, animal, agriculture and fisheries that have incorporated AMR educational modules in their core curricula aiming at creating awareness on AMR to graduates | Number of higher learning institutions that have incorporated AMR in their core curricula | Annually | Higher learning institutions' Curricula Annual Report | 0 | 4 (SUZA, ZSHS, ZU, KIST) | MANLF MOH |
| | Number of AMR cases reported | Process | This is the total number of cases of AMR reported from the animal and human health facilities | This is the total number of cases of AMR reported from the animal and human health facilities | Quarterly /Annually | Quarterly/Annual AMR Progress Report | | | MOH MANLF |
| Conduct training | Number of | Output | Number of stakeholders | Number of | Quarterly/A | Quarterly/ | 0 | 2,000 | MCC |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| and workshops on AMR | stakeholders trained ON AMR | | (farmers/ veterinarians/agricultural workers, agro – vet dealers, human drug dealers, health practitioners, policy makers, journalists, oriented on AMR | stakeholders (farmers/ veterinarians/ agricultural workers, agro – vet dealers, human drug dealers, health practitioners, policy makers, journalists, oriented on AMR | nnually | Annual AMR Progress Report | | | SECRETARIAT |
| Strengthen policies, acts and regulations on AMR awareness program | Availability of reviewed policies, acts and regulations | Outputs | Availability of reviewed policies, acts and regulations on AMR for agriculture, fisheries, vetenaries and public health programs | Yes/No | Annually | MOH Annual Progress report<br><br>MANLF progress report | 0 | 9 (Agricultural Policy, 2003 Fisheries Policy,2014 Fisheries Act, 2010 Livestock Policy,2012 Health Policy, 2011 Medicine Management | MOH MANLF SOVP |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Act, 2015 Public and Environmental Health Act, 2012 ZFDA Act, 2016)Policy, 2014 Zanzibar Environmental | |
| **Strategic Objectives 2: Strengthen knowledge and evidence based through surveillance and research** | | | | | | | | | |
| Develop policy guideline on Zanzibar AMR surveillance and research framework for all sectors | Presence of policy guidelines on AMR research and surveillance for all sectors | Process | Policy guidelines on AMR research and surveillance in place in agriculture, livestock, human, environment and fisheries | Yes/No | Once | MOH Annual Progress report<br><br>MANLF progress report | 1 (MOH) | Availability of research guideline and surveillance guideline in place | MOH, MANLF |
| Conduct Zanzibar Multi-sector AMR scientific symposium | Number of Multi-sectoral Scientific Symposium conducted | Output | Number of Multi-sectoral Scientific Symposium conducted in a year | Annually | AMR Annual Report Meeting Report | MOH Annual Progress report<br><br>MANLF progress | 0 | No | MOH, MANLF |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | report | | | |
| Establish an AMR data repository | Presence of a functional data repository | Output | Presence of a functional data repository for storing AMR surveillance information | Once | Annually | MOH Annual Progress report<br><br>MANLF progress report | No | Presence of a functional AMR data repository | MCC SECRETARIAT |
| | Availability of a National reference laboratory for AMR surveillance in human health, animal health and environment | Output | Availability of a national reference laboratory for AMR surveillance in human health, animal health and environment designated and participating in an external quality assurance scheme | Yes/No | Once | AMR Quarterly/ Annual report | 0 | 1 | MOH, MANLF |
| Establish a bio bank/bio-repository center | Number of a bio-repository center | Process | Presence of a functional bio-repository Centre in a national reference laboratories for storing biological materials | Yes/no | Once | AMR Quarterly/ Annual report | 0 | 1 | MOH, MANLF |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| Establish AM residual program | Number of laboratories with capacity to test AM residues | Process | Number of laboratories with the appropriate infrastructure, equipment, reagents and skills to test AM residues in food animal origin (milk, egg, meat) | Number of laboratories with the appropriate infrastructure , equipment, reagents and skills to test AM residues in food animal origin (milk, egg, meat) | Quarterly | ZFDA Quarterly Progress Report<br><br>Veterinary Investigation Centre Quarterly Progress Report | 2 | 2 | MOH, MANLF |
| | Number of samples tested | Output | Number of food animal samples tested by designated laboratories | Number of food animal samples tested by designated laboratories | Quarterly | ZFDA Quarterly Progress Report<br><br>Veterinary Investigation Centre Quarterly Progress Report | 1,648 | TBD | MOH, MANLF |
| Develop Zanzibar AMR multi-sectoral research | Presence of a multi-sectoral AMR research agendas | Process | Presence of a multi-sectoral one health AMR research agendas developed, disseminated | Presence of a multi-sectoral AMR research agendas | Five Years | AMR research Agendas Document | No | AMR research Agendas Document in Place | ZAHRI ZALIRI ZARI Institute of |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| agendas | | | to stakeholders and used for conducting research in line with the requirements | developed, disseminated to stakeholders and used for conducting research in line with the requirements | | | | | Fisheries Research Zanzibar ( IFRZ) ZEMA |
| | Number of AMR research conducted and disseminated | Output | Number of AMR research conducted and disseminated | Number of AMR research conducted and disseminated | Annually | Research Reports and Publications | 4 | TBD | ZAHRI ZALIRI ZARI Institute of Fisheries Research Zanzibar ( IFRZ) ZEMA |
| | | | | | | | | | |
| **Strategic Objectives 3: Reduce the incidence of infection through effective hygiene and IPC measures** | | | | | | | | | |
| Develop AMR IPC guidelines and promotion programs | Presence of AMR IPC guidelines | Process | Presence of AMR IPC guideline for human in clinical setting which incorporate AMR component (presence of coordinating unit, planning sessions, | Presence of AMR IPC guideline for human in clinical setting | Once | Quarterly/ Annual AMR Progress Report | No | Presence of AMR IPC guideline for human in clinical setting | MOH, MANLF |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | | | supervision, mentoring and monitoring) | | | | | | |
| | Establish baseline data to understand the percentage of health facilities adhered with AMR IPC guidelines | Outcome | Percentage of health facilities adhered with AMR IPC guidelines (presence of coordinating unit, planning sessions, supervision, mentoring, monitoring, etc). | Number of health facilities adhered with IPC guidelines/Total number of health facilities assessed x 100 | Annually | Annual AMR IPC Assessment Report<br><br>TSPA Report | TBD | TBD | MOH |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| Promotion of hygiene and sanitation at community level | Proportion of household and congregate settings with access to basic sanitation facilities (water) | Outcome | Population using a basic drinking-water source (piped water into dwelling, yard or plot; public taps or standpipes; boreholes or tube wells; protected dug wells; protected springs and rainwater) which is located on premises and available when needed; free of fecal (and priority chemical) contamination and/or regulated by a competent authority. | Population using safely managed drinking-water services/Total population x 100 | Three years | TDHS – MIS | 98% (2015/ 16) | | OCGS |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | Proportion of household and congregate settings with access to basic sanitation facilities (latrine/toilet) | Outcome | Population using a basic sanitation facility (flush or pour-flush toilets to sewer systems, septic tanks or pit latrines, ventilated improved pit latrines, pit latrines with a slab, and composting toilets) which is not shared with other households and where excreta are safely disposed in situ (e.g. in a sealed latrine pit until they are safe to handle and re-use, such as an agricultural input ) or transported to a designated place for safe disposal or treatment (e.g. treatment facility or hygienically collected from septic tanks or pit latrines by a suction truck or similar | Population using safely managed sanitation services/ Total population x 100 | Three years | TDHS - MIS | 58.7% (2015/ 2016) | 89 (2023/24) | OCGS |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | | | equipment that limits human contact and thereafter transported to a designated location such as a treatment facility or solid waste collection site). | | | | | | |
| | Number of new cases of infectious diseases | Outcome | Number of new cases of top infectious diseases such pneomonia, typhoid, UTI, Diarrhea and skin diseases reported | Quarterly | Quarterly/Annual infectious diseases Progress Report DHIS 2<br><br>Annual Health Bulletin | Quarterly/ Annual infectious diseases Progress Report DHIS 2 Annual Health Bulletin | Pneumonia(65580) Typhoid (5679) UTI(98404) Diarrhea(94976) Skin disease(10554 | Pneumonia (30500)<br><br>Typhoid (2500) UTI(5300)<br><br>Diarrhea (4200 00) 50000 | MOH |
| | | | | | | | | | |
| | **Strategic Objectives 4: Optimize the use of antimicrobial medicines in human and animal health** | | | | | | | | |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| Establishing functional AMR stewardship program | Percentage of new products registered | Output | Percentage of food, animal feed, human and veterinary medicines, cosmetics, medical devices and Herbal drugs registered | Number of new products registered/Total number of products targeted x 100 | Quarterly Annually | Quarterly/ Annual Health sector Performance Report ZFDA Quarterly/ Annual Report | 66 (2017/ 18) | 96 | ZFDA |
| | Percentage of premises inspected | Output | Percentage of premises such as land, buildings, structures, basements and vessels in relation to the storage of food, medicine & cosmetics | Number of registered premises inspected/Total number of registered premises x100 | Quarterly Annually | Quarterly/ Annual Health sector Performance Report ZFDA Quarterly/ Annual Report | 57 (2017/ 18) | 87 | ZFDA |
| | Percentage of samples analyzed | Output | A set composed of one or several items Food, Animal Feed, Human and Veterinary Medicines, Cosmetics, Medical Devices and Herbal drugs analyzed for quality assurance in | Number of samples analyzed/Total number of samples planned x 100 | Quarterly Annually | Quarterly/ Annual Health sector Performance Report ZFDA Quarterly/ | 62 (2017/ 18) | 92 | ZFDA |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | | | the ZFDA laboratory. | | | Annual Report | | | |
| | Presence of a national policy/guideline on the use of Antimicrobial | Output | Presence of a national policy/ guidelines on the use of Antimicrobial for animal, plants and fisheries | Presence of a national policy on the use of Antimicrobial | Once | Existing MOH&MANLF Policies | No | Presence of a national policy on the use of Antimicrobial | MOH MANLF |
| | Establish baseline data to understand the total consumption of antibiotics for human use | Output | Total consumption of antibiotics for human and animal use including critical importance, highly important and important antibiotics | Total consumption of antibiotics consumed /Number of antibiotics imported | Annually | Assessment Report and Survey Report | Unknown | TBD | MOH (ZFDA) |
| | | | | | | | | | |
| **Strategic Objectives 5: To prepare the economic case for sustainable investment in new medicines, diagnostic tools, vaccines and other interventions** | | | | | | | | | |
| Investment of innovation of new medicine, diagnostic tools and vaccine | Presence of new diagnostic tools | Output | Presence of a new diagnostic tools for laboratory surveillance of pathogens such as PCR MaldiTof | Presence of a new diagnostic tools for laboratory surveillance of pathogens | Once | Reference Lab progress Report<br><br>Pathology Lab | 0 | 1 (PCR MaldiTof) | MOH MANLF |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | | | | such as PCR MaldiTof | | Report<br><br>Veterinary Lab Report | | | |
| | Presence of a new vaccines | Output | Presence of a new vaccines for infectious diseases (Hepatitis B, TB, diarrhea, pneumonia) introduced | Presence of a new vaccines for infectious diseases (Hepatitis B, TB, diarrhea, pneumonia) introduced | When needed | MOH Annual Report | No | Hepatitis B birth dose | MOH |
| | Presence of new medicine | Output | Presence of a new and WHO prequalified medicine introduced for combating infectious diseases | Presence of a new and WHO prequalified medicine introduced for combating infectious diseases | When needed | MOH Annual Report<br><br>MANLF Annual Report | No | Primaquine | MOH |

| Planning element (activity linked to the strategic plan) | Indicator | Type | Definition | Value (Calculation /Formula) | Frequency of data collection | Data source | Baseline 2018/19 | Target 2023/2024 | Responsible body |
|---|---|---|---|---|---|---|---|---|---|
| | Percentage of Zanzibar AMR Action Plan activities and budget implemented | Output | Percentage of Zanzibar AMR Action Plan activities and budget implemented in a given year | Number of planned activities implemented/ Total number of activities planned in a given year x 100 | Annually | AMR Progress Report | 0 | 80 | MCC secretariat |
| | | | | | | | | | |

# ANNEX I: SWOT ANALYSIS

| STRENGHTHS | WEAKNESSES |
|---|---|
| ➢ Presence of health promotion unit under the Ministry of Health<br>➢ Availability of medicine policy 2014, standard treatment guideline and essential medicine list<br>➢ Existence of Regulatory authorities (Zanzibar Food and Drug Agency, Zanzibar Traditional Medicine Council) and their operating Act, regulation and guidelines<br>➢ Availability of human and animal health and agriculture research institutions (ZAHRI, ZALIRI, ZARI and ZRFI)<br>➢ There is integrated disease surveillance system and response (IDSR/IDWE) in human health sector<br>➢ Existence of IPC unit at Mnazi Mmoja hospital<br>➢ Presence several acts on sanitation and hygiene, such as public and environmental health act no 11 of 2012 | ➢ Lack of public awareness and understanding of AMR and antimicrobial use.<br>➢ In necessary prescription of antimicrobials by health care providers and veterinarians<br>➢ Lack of One health AMR surveillance system and guideline<br>➢ Limited number of equipped laboratories for detection and reporting of resistance pathogens in human, animal health and agriculture.<br>➢ Limited number of skilled personnel to conduct surveillance and research on AMR.<br>➢ Inexistence of IPC guideline and national programs<br>➢ Limited IPC related facilities and supplies, such as hand wash and hospital waste disposal pits/incinerator<br>➢ Lack of policies that describe the control the use of antimicrobial agents in veterinary medicine and agriculture.<br>➢ Lack of well-defined veterinary medicine supply chain.<br>➢ Lack of regulatory framework for preservation of new antimicrobial agents.<br>➢ Lack of investment in modern technology and tools for diagnostic, analysis and intervention.<br>➢ In adequate legal enforcement on antimicrobial consumption.<br>➢ Inadequate skilled, professional and expert in AMR. |

| | |
|---|---|
| **OPPORTUNITIES**<br>➢ Existence of public Medias such as TV, radio stations, newspapers.<br>➢ Availability of professional staff<br>➢ Presence of higher learning institutions that can provide in-service and pre-service training on AMR<br>➢ Existence of selected health surveillance system in humans (TB, HIV/AIDS, malaria,)<br>➢ There is a global and regional AMR frame work.<br>➢ Willingness of international organization to support AMR intervention | **THREATS**<br>➢ Limited resources human and financial<br>➢ Competition of Ministerial priorities<br>➢ Increase of emerging and re-emerging infectious diseases<br>➢ Accessibility of antimicrobial without prescription.<br>➢ Presence of multiple unofficial entry points that allows movement of human, animal, fisheries and crop products.<br>➢ Use and dispensing of antimicrobial agents by nonprofessional individual.<br>➢ Off label use of antimicrobial agents on animals and plants growth |

# ANNEX II: LIST OF CONTRIBUTORS

| s/n | Participants | Position |
|---|---|---|
| 1 | Dr. Jamala Ismail | Chair person |
| 2 | Dr. Mayasa Salim Ally | Vice chair person |
| 3 | Ms. Hidaya Juma Hamad | Member |
| 4 | Dr Salma Yussuf Masauni | Member |
| 5 | Mr. Habib Ali Sharif | Member |
| 6 | Dr. Shaali Ame | Member |
| 7 | Dr Talib Saleh Suleiman | Member |
| 8 | Dr. Aron Edmond Ringo | Member |
| 9 | Mr. Burhani Mussa Hassan | Member |
| 10 | Dr Warid Abdallah Mussa | Member |
| 11 | Mr. Ahmed Haji | Member |
| 12 | Mr. Saida Issa Omar | Member |
| 13 | Dr Salum Seif Salum | Member |
| 14 | Mr. Muhiddin Hamada Omar | Member |
| 15 | Dr Khadja Noor Omar | Member |
| 16 | Dr Ghirmay Andemichael | Member |
| 17 | Mr. Ali Haji Ramadhan | Member |
| 18 | Ms. Rose Shija | WHO |
| 19 | Dr. Rubegwa Bachana | FAO |