# Angola antimicrobial resistance situational analysis within the context of One Health




World Health Organization
African Region

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# Abbreviations

| | |
|---|---|
| **AFENET** | African Field Epidemiology Network |
| **AIDS** | acquired immune deficiency syndrome |
| **AMC** | antimicrobial consumption |
| **AMR** | antimicrobial resistance |
| **AMRCC** | Antimicrobial Resistance Coordination Committee |
| **AMS** | antimicrobial stewardship |
| **ARMED** | Agência Reguladora de Medicamentos e Equipamentos (Regulatory Agency for Medicines and Medical Devices) |
| **AST** | antibiotic susceptibility testing |
| **AWaRe** | Access, Watch, Reserve classification |
| **CLSI** | Clinical and Laboratory Standards Institute |
| **DNH** | Direcção Nacional dos Hospitais (National Directorate of Hospitals) |
| **DNSP** | Direcção Nacional de Saúde Pública (National Directorate of Public Health) |
| **ESBLs** | extended-spectrum beta-lactamases |
| **FAO** | Food and Agriculture Organization of the United Nations |
| **GAP** | Global Action Plan |
| **GDP** | gross domestic product |
| **GHG** | greenhouse gas |
| **GLASS** | Global Antimicrobial Resistance and Use Surveillance System |
| **HCFs** | health care facilities |
| **HIV** | human immunodeficiency virus |
| **IGASF** | Inspecção Geral das Actividades Sanitárias e Farmacêuticas (General Inspectorate of Health and Pharmaceutical Activities) |
| **IHME** | Institute for Health Metrics and Evaluation |
| **IHR** | International Health Regulations |
| **INIS** | National Institute for Health Research |
| **INLS** | Instituto Nacional de Luta Contra a SIDA (National Institute for AIDS) |
| **INVE** | Instituto de Investigação Veterinária (Veterinary Research Institute) |
| **IPC** | infection prevention and control |
| **ISV** | Instituto de Serviços de Veterinária (Institute of Veterinary Services) |
| **JMP** | WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene |
| **KI** | key informant |
| **LMICs** | low- and middle-income countries |
| **MDR** | multidrug-resistant |
| **MINSA** | Ministério da Saúde de Angola (Ministry of Health) |

| | |
|---|---|
| **MMR** | maternal mortality ratio |
| **MRSA** | methicillin-resistant staphylococcus aureus |
| **MSW** | municipal solid waste |
| **NAP** | National Action Plan |
| **NCDs** | noncommunicable diseases |
| **NLEM** | national list of essential medicines |
| **OBCLA** | Ordem dos Biomédicos Clinico-laboratoriais de Angola (Council of Clinical Laboratory Biomedical Technicians of Angola) |
| **PNDS** | National Health Development Plan |
| **PPP** | purchasing power parity |
| **SDG** | Sustainable Development Goal |
| **SOP** | standard operating procedure |
| **TB** | tuberculosis |
| **TrACSS** | Tracking AMR Country Self-Assessment Survey |
| **TWGs** | technical working groups |
| **UHC** | universal health coverage |
| **UNGA** | United Nations General Assembly |
| **UNICEF** | United Nations Children's Fund |
| **UPRA** | Universidade Privada de Angola (Private University of Angola) |
| **USAID** | United States Agency for International Development |
| **WAAW** | World Antimicrobial Resistance Awareness Week |
| **WASH** | water, sanitation, and hygiene |
| **WHO** | World Health Organization |
| **WOAH** | World Organisation for Animal Health |
| **WUENIC** | WHO/UNICEF Estimates of National Immunization Coverage |

# Executive Summary

Antimicrobial resistance (AMR) poses a growing threat to public health in Angola, placing additional pressure on a health system already constrained by limited financing, health workforce shortages, and inequitable access to services. In 2021, AMR was directly responsible for an estimated 4520 deaths and contributed to a further 20 800 deaths, placing Angola 27th globally for AMR-attributable mortality *(1)*. Children aged under five years were disproportionally affected, accounting for an estimated 9080 AMR-related deaths. Without decisive action to address fundamental gaps in water, sanitation, immunization, diagnostics, and access to essential health services, the number of AMR-related deaths could increase to approximately 23 900 by 2030.

Angola's AMR burden is driven by a high prevalence of infectious diseases, combined with widespread inappropriate use of antimicrobials. The country is among the 30 countries with the highest burden of tuberculosis (TB) and multidrug-resistant/rifampicin-resistant TB and continues to experience a high incidence of human immunodeficiency virus (HIV) infection, malaria, and recurrent disease outbreaks *(2)*. These challenges are exacerbated by marked urban-rural disparities in access to safely managed drinking water (68% nationally and 37% in rural areas) and sanitation services (50% nationally and 24% in rural areas), high out-of-pocket expenditure on health (28.7% of total health expenditure), inadequate waste management systems, and limited bacteriology laboratory capacity.

Angola's institutional response to AMR resulted in the development of a draft national action plan (NAP) on AMR for 2018-2022. However, the plan was not operationalized because it lacked clearly defined priorities, an implementation framework, and dedicated domestic financing. In addition, Angola has not yet established a national AMR Coordinating Committee to oversee a multisectoral response. Although the country joined the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS) in 2020, it does not have a functional national surveillance system for AMR or antimicrobial use across the human, animal, and environmental sectors. Similarly, there is no national antimicrobial stewardship policy, national essential diagnostics list, or treatment guidelines aligned with the WHO Access Watch, Reserve classification. Efforts to prevent infections are further constrained by inadequate WASH infrastructure, suboptimal routine immunization coverage – with Angola among the ten countries with the highest number of zero-dose children globally - and the absence of a finalized national infection prevention and control (IPC) plan. Comparable gaps exist in the animal and environmental sectors, including the absence of national standards for antimicrobial use in livestock, surveillance systems for veterinary antimicrobial use (AMU) or aquatic AMR, and environmental monitoring of antimicrobial residues and resistance genes.

In November 2025, experts from the human, animal, and environmental health sectors participated in a stakeholder workshop to identify critical gaps and prioritize interventions with the greatest potential to mitigate AMR. The recommendations presented in this report are informed by desk review and stakeholder consultations. They are intended to be implemented in a phased and sequenced manner and are aligned with broader health system strengthening and national development priorities. This approach recognizes the structural challenges facing Angola, including poverty, urban–rural inequities, inadequate WASH services, weak IPC systems, limited laboratory and surveillance capacity, and constrained health financing, and acknowledges that AMR cannot be addressed in isolation. Establishing a national multisectoral governance mechanism is the immediate priority. This should be followed by a structured prioritization and sequencing exercise to identify high-impact interventions, assess funding and resource gaps, and leverage synergies with existing national strategies and partner-supported health system strengthening initiatives. The outcomes of this process should inform the development and implementation of a multisectoral National Action Plan (NAP) on AMR.

The following are key recommendations to accelerate AMR mitigation efforts in Angola:

1. Establish a multisectoral AMR Coordinating Committee with a clear mandate and terms of reference to lead the development, implementation, and oversight of a One Health NAP on AMR.

2. Develop a costed multisectoral NAP on AMR, supported by an operational plan and a monitoring and evaluation framework that engages all One Health sectors.

3. Conduct a stakeholder mapping exercise to identify partners and donors, and mobilize resources for implementing the NAP and AMR-related research.

4. Develop a national AMR communication strategy that promotes infection prevention, hygiene, and the appropriate use of antimicrobials among policy-makers, health care workers, and communities.

5. Strengthen the national reference laboratory to support high-quality AMR diagnostics and surveillance, and develop a national strategy for surveillance of AMR and antimicrobial use in human health.

6. Finalize, approve, and implement the national infection prevention and control strategic plan; expand access to safely managed drinking water in health facilities and communities; strengthen hand hygiene infrastructure in health facilities, schools, and public spaces; and enhance coordination between immunization and AMR programmes.

7. Develop a national essential diagnostics list, establish standard operating procedures for diagnostic stewardship, and adopt a national antimicrobial stewardship policy.

8. Develop and implement national standards for antimicrobial use in animal health and strengthen the regulation of antimicrobial use in plant agriculture.

9. Establish environmental surveillance for antimicrobial residues and resistance genes in fisheries, aquaculture, water, and wastewater, supported by strengthened regulatory frameworks, biosecurity measures, and workforce capacity development.

# 1. Overview

This situational analysis provides an overview of the status of antimicrobial resistance (AMR) mitigation and control in Angola and identifies priority actions to accelerate the development and implementation of a One Health National Action Plan (NAP) on AMR. The findings are based on a review of publicly available data, government reports and policy documents, peer-reviewed literature, and insights from a stakeholder workshop held in November 2025 with AMR focal persons across the human, animal, and environmental sectors, together with other relevant stakeholders in Angola. Information was collected through facilitated group discussions and a structured questionnaire completed by key informants (KIs) according to areas of expertise.

This analysis aligns with several strategic objectives of the WHO Global Action Plan (GAP) on AMR, namely to: (1) improve awareness and understanding of AMR through effective communication, education, and training; (2) strengthen the knowledge and evidence base through surveillance and research; (3) reduce the incidence of infection through effective sanitation, hygiene, and infection prevention measures; (4) optimize the use of antimicrobial medicines in human and animal health; and (5) develop the investment case for sustainable financing to address AMR. These objectives were assessed using a people-centred approach to support the prioritization of interventions that place people at the centre of AMR prevention and control efforts.



Group work during the stakeholder workshop, Luanda, Angola, November 2025. © WHO/Filipa Vaz

# 2. Country profile

Angola had a population of 35.1 million in 2024, of whom 53 % were aged 15-64 years and 71% lived in urban areas *(3-6)*. The population is projected to double by 2050, reflecting a young and rapidly growing population and labour force *(7, 8)*. Life expectancy at birth was 65 years in 2024.the infant mortality rate was 32 deaths per 1000 live births, exceeding both the global average of 27 deaths per 1000 live births and the Sustainable Development Goal (SDG) target of fewer than 12 deaths per 1000 live births by 2030, although remaining below the sub-Saharan African average of 45 deaths per 1000 live births *(5-7)*. The maternal mortality ratio was 170 deaths per 100 000 live births *(5, 7)*, exceeding the global SDG target of fewer than 70 deaths per 1000 births by 2030, but remaining lower than the global average of 197 deaths per 100 000 live births and the sub-Saharan African estimate of 448 deaths per 100 000 live births *(9)*.

# 3. Human health

## 3.1 Disease burden in Angola

Respiratory infections, tuberculosis (TB), maternal and neonatal disorders, and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) were the leading causes of death in Angola in 2023 *(10)*. Noncommunicable diseases (NCDs) also contribute substantially to mortality, accounting for approximately 27% of all deaths *(7)*.

In 2024, the estimated incidence of TB in Angola was 373 cases per 100 000 population *(2, 11)*. TB mortality was estimated at 75 per 100 000 population, including 67 deaths per 100 000 among HIV-negative individuals and 8.8 deaths per 100 000 among people living with HIV *(11, 12)*. According to the Global TB Report 2025, Angola remains among the 30 countries with the highest burden of TB and multidrug-resistant/rifampicin-resistant (MDR/RR) TB. However, it is no longer among the 30 countries with the highest burden of HIV-associated TB *(2)*.

In 2024, the incidence of new HIV infections was 1.0 per 1000 uninfected population *(13)*, while HIV prevalence among people aged 15-49 years was 1.6 %, compared to the sub-Saharan African average of 3.0% *(14)*. Women are disproportionately affected and account for 73% of the population aged 15 and older living with HIV *(15)*.

Malaria remains a major public health challenge in Angola, accounting for 3.1% of global malaria cases and 2.7% of global malaria deaths *(16)*. Within the WHO Central African subregion, Angola contributes an estimated 14% of malaria cases and 13% of malaria-related deaths *(16)*. In 2023, the malaria incidence was 224.5 cases per 1000 population *(17)*. Although the entire population is at risk, children aged under five years, and pregnant women remain particularly vulnerable. Malaria is a leading cause of anemia and low birth weight and continues to impose a substantial health and economic burden on households *(16)*.

## 3.2 Health inequalities in Angola

In 2018, 52.9% of the population lived below the international poverty line for low- and middle-income countries (LMICs), while 32.3% lived below the national poverty line *(18)*. Angola has marked income inequality, with the wealthiest 20% of the population receiving almost 63% of total national income *(19)*. Poverty is particularly severe in rural areas, where 87.8% of residents are classified as multidimensionally poor, compared to 35% of the urban population *(19)*. Multidimensional poverty is reflected in widespread deprivation across several determinants of health. An estimated 44.2% of the population lack adequate housing, 43.7% lack access to electricity, 43.3% lack civil registration, 39.5% lack adequate sanitation, and 35.9% have limited access to safe water. These conditions substantially limit access to health care and other essential services *(19)*.

According to the 2024 WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), 68% of the population had access to at least basic drinking-water services, while 50% had access to at least basic sanitation services in 2022 *(20-22)*. However, access to these services remains highly inequitable, with notable urban-rural disparities. Coverage of basic drinking-water services was 82% in urban areas compared to 37% in rural areas *(23, 24)*. Similarly, access to basic sanitation services in 2022 was 63% in urban areas and24% in rural areas *(20, 25, 26)*. Air pollution remains an important environmental risk. In 2020, the annual mean concentration of fine particulate matter (PM2.5) was 25 micrograms per cubic metre, five times higher than the WHO Air Quality Guideline of 5 micrograms per cubic metre *(27, 28)*. In 2019, the mortality rate attributable to air pollution was 142.8 deaths per 100 000 population *(29)*.

## 3.3 Health determinants, system, and workforce

Angola's health system comprises public, private for-profit, private non-for-profit, and traditional health sectors *(20)*. The public sector provides services to approximately 60% of the population through a network of 3164 health facilities, including 3099 primary-level facilities, 50 secondary-level facilities, and 14 tertiary-level facilities *(30, 31)*. These include 13 national hospitals, 32 central and specialized hospitals, and 18 provincial hospitals *(19, 32)*.

The National Health Development Plan (2012–2025) provides the overarching policy framework for strengthening the health sector *(30)*. Its priorities include expanding and upgrading public health infrastructure, strengthening the health workforce, and improving disease prevention and control. Stakeholders from the private health sector have recommended updating the plan to include more comprehensive projections of future health needs and extending its planning horizon to 10-20 years *(33)*. Such revisions could provide greater direction for both public and private investment and support better alignment of health services with the country's evolving population health needs *(31)*.

## 3.4 Health financing

In 2022, the health expenditure per capita was estimated at US$101.26 *(34)*. The government covered approximately half of this expenditure *(35)*, allocating only 6.7% of the national budget, well below the 15% target set out in the Abuja Declaration *(30)*. This limited public investment places considerable pressure on the health system and shifts a substantial share of health-care costs to households. Private health care expenditure, including out-of-pocket payments, charity donations, and private health insurance, accounted for 43.7% of total health expenditure (US$44.27) *(36, 37)*. Out-of-pocket expenses represented 28.7% of total health expenditure (US$29.06) *(38, 39)*, imposing a significant financial burden on households, particularly given that more than half of the population lives below the international poverty line for LMICs (US$2.15 per day in 2017 PPP terms) *(18)*. External financing from development partners - including non-governmental organizations, non-profit organizations, and private companies, as well as international agencies such as the United Nations, the World Bank, USAID, Gavi, and the Vaccine Alliance – accounts for approximately 30 % of total health spending *(19)*.

Angola has committed to achieving universal health coverage (UHC), with a target of extending UHC to 2.7 million people by 2025 *(30, 40)*. However, progress has been slow. In 2023, the UHC service coverage index was 44 (on a scale of 0-100), while Angola recorded the highest levels of catastrophic health expenditure in the WHO African Region between 2009 and 2018 *(41, 42)*. During this period, health expenditure exceeded 10% of total household expenditure or income for 35% of households and exceeded 25% for 12.5% of households. Major barriers to achieving UHC include insufficient health financing, shortages of health workers, and inadequate health infrastructure.

The health care workforce falls short of the country's needs and is further affected by the migration of doctors and nurses to the private sector and abroad, by low remuneration, limited career development opportunities, and poor working conditions *(41)*. As of 2022, Angola had 0.2 doctors, 1.3 nurses and midwives per 1000 population, and 0.4 pharmacists per 10 000 population *(43-45)*. These figures are well below the WHO threshold of 4.45 doctors, nurses, and midwives per 1000 population required to deliver essential health services *(40, 46)*. Health infrastructure also remains limited. Angola has 1.01 hospital beds per 1000 population, compared to the WHO benchmark of three beds per 1000 population and the African Union minimum target of two beds per 1000 population *(31)*. The country's best-equipped hospitals, most of which are privately owned, are concentrated in urban and semi-urban areas, requiring many people living in rural and underserved areas to travel long distances to access even basic health services *(30, 31)*.

**Table 1: Health network in Angola, 2020 (Statistical Yearbook, MINSA 2020)**

| National Health Service | No. | Private Sector | No. |
|---|---|---|---|
| National hospitals | 13 | Clinics | 139 |
| Specialised hospitals | 32 | Laboratories | 155 |
| Provincial hospitals | 18 | Specialized Medical Care units | 180 |
| Municipal hospitals | 166 | Medical practices | 420 |
| Private Not-for-profit hospitals | 10 | Medical centres | 1272 |
| Mother and child centres | 105 | Nursing stations | 1111 |
| Health facilities | 640 | - | - |
| Health posts | 2180 | - | - |
| Total | 3164 | Total | 3277 |
| Pharmacies | 1551 | Pharmacies | 356 |
| medicine warehouses | 203 | Other pharmaceutical entities | 92 |

Source: WHO Regional Office for Africa *(19)*.

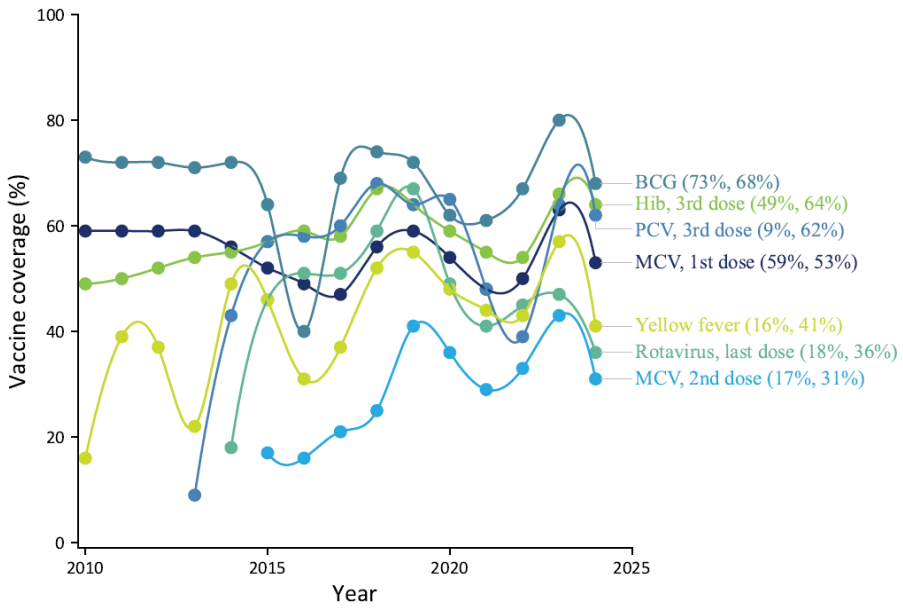
## 3.5 Immunization coverage in Angola

Routine immunization coverage in Angola has historically been low and, despite gradual improvements over the past two decades, remains fragile as of 2024 (Fig. 1). According to the 2024 WHO/UNICEF Estimates of National Immunization Coverage (WUENIC), coverage with the third dose pentavalent vaccine (Penta3) declined from 69% in 2023 to 64% in 2024. Nevertheless, this represents a marked improvement from 31% in 2000 and 57% in 2019, before the COVID-19 pandemic. Coverage with the first dose of measles-containing vaccine (MCV1) increased from 50% in 2023 to 53% in 2024, compared to 32% in 2000. Despite these gains, immunization coverage remains among the lowest in the WHO African Region. Angola continues to be among the top 10 countries with the highest numbers of zero-dose children globally. In 2024, an estimated 406 000 children (approximately 30%) did not receive a single dose of a routine vaccine. These figures underscore the continuing fragility of the routine immunization programme and the urgent need for sustained and targeted interventions to improve equitable vaccine coverage.

Suboptimal immunization performance in Angola is primarily driven by persistent health system challenges, including weak service delivery, particularly in hard-to-reach and remote areas, inadequate cold chain infrastructure, and recurrent vaccine stock-outs resulting from insufficient and inconsistent domestic investment in immunization and the broader health sector. These challenges were further exacerbated by the COVID-19 pandemic, which disrupted essential health services and contributed to declines in routine immunization coverage.

Strengthening routine immunization will require sustained domestic financing, improved vaccine forecasting and supply chain management, and investment in the maintenance and expansion of cold chain infrastructure. Addressing these systemic bottlenecks will be essential to restoring immunization coverage and reaching zero-dose and under-immunized children.

**Fig. 1.** Vaccination coverage in Angola




Source: WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) 2024

## 3.6 Antimicrobial use and resistance

AMR is a major public health threat in Angola. However, addressing AMR remains challenging because of persistent gaps in essential public health infrastructure and services. A substantial proportion of the population lacks access to reliable water, sanitation and hygiene (WASH) services, routine immunization, and equitable access to diagnostics and treatment. The findings of the WHO Joint External Evaluation of International Health Regulations (2005) Core Capacities conducted in 2019, together with annual results from the Tracking AMR Country Self-Assessment Survey (TrACSS), highlight these weaknesses and demonstrate limited national capacity to prevent infections and respond effectively to AMR across the human, animal and environmental sectors *(47, 48)*.

Available evidence provides only a limited picture of the AMR burden in the country. According to estimates from the Institute for Health Metrics and Evaluation (IHME), AMR was directly responsible for an estimated 4520 deaths and associated with 20 800 deaths in 2021, placing Angola 27$^{th}$ globally for AMR-attributable mortality *(1)*. Children aged under five years were disproportionately affected, accounting for an estimated 9080 AMR-associated deaths, equivalent to a mortality rate of 901 deaths per 100 000 population in this age group. Across all age groups, the pathogens contributing most to AMR-associated deaths were *Streptococcus pneumoniae, Klebsiella pneumoniae, Escherichia coli, Staphylococcus aureus, and Acinetobacter baumannii*. If current trends continue and no additional action is taken, AMR-associated deaths could increase to approximately 23 900 by 2030 *(1)*, jeopardizing progress towards the commitment adopted at the 2024 United Nations General Assembly (UNGA) High-level Meeting on AMR to reduce global deaths associated with bacterial AMR by 10% by 2030 *(49)*.

The inappropriate use of antimicrobials, driven by health system constraints and socio-economic factors such as limited access to health services and low levels of health literacy, further accelerates the emergence and spread of AMR. A small survey conducted in one province in Angola found that approximately 70% of respondents reported some knowledge of antibiotics, more than 50% kept them at home (with higher rates among urban respondents), and nearly 40% believed it was acceptable to stop treatment before completing the prescribed course *(50)*. Although the survey included only 102 participants, the findings highlight the need to strengthen public awareness and promote the responsible use of antimicrobials *(50)*.

Available microbiological evidence also demonstrates the emergence of resistance among priority bacterial pathogens. In 2018, resistant Salmonella enterica serotype Typhi was identified for the first time among hospitalized patients in Luanda *(51)*. The isolates were resistant to commonly used antibiotics, including trimethoprim/sulfamethoxazole, β- lactams, and chloramphenicol, and showed reduced susceptibility to ciprofloxacin. More recently, resistant non-typhoidal Salmonella enterica was isolated from human fecal samples, sewage, and food products such as fish, chicken, and maize flour *(52)*. The isolates demonstrated resistance to ampicillin, chloramphenicol, and several other antimicrobial agents, and three clinical isolates were identified as multidrug-resistant (MDR) *(52)*.

# 4. Food and agriculture

## 4.1 Animal-based food production and consumption

Agriculture and fisheries are the primary source of livelihood for approximately 90% of Angola's 10.7 million rural inhabitants and employ around 45% of the national labour force *(53)*. For more than half of rural households, agriculture provides the principal source of income. Women constitute a large proportion of the agricultural workforce and play a central role in food production, household income generation, and national food security *(54)*.

Angola's livestock population is estimated 5.2 million cattle, 4.6 million goats, 1.2 million sheep, and 3.7 million pigs *(55)*. Approximately 72.4% of the national cattle herd is concentrated in the south-western provinces of Huila, Cunene, and Namibe. Poultry production consists predominantly of backyard production systems, complemented by a limited number of commercial farms *(56)*. According to the Ministry of Agriculture and Fisheries, 3702 family farmers owned 39 018 poultry in 2021, corresponding to an average of 11 birds per household.

Chicken is the most widely consumed and affordable source of animal protein in the country, followed by locally caught sardines (lambula) *(57)*. In 2018, national poultry consumption reached approximately 342 000 metric tonnes, of which 92% was imported *(58)*. Domestic production is estimated at around 42 000 metric tonnes annually, meeting only about 13% of national demand *(59)*. Angola has consequently become the largest African market for U.S. poultry, importing poultry products valued at more than $232 million in 2023, ranking sixth globally *(58)*. In 2024, Angola produced about 110 000 metric tonnes of beef and 13 000 metric tonnes of pork *(60)*. Angola's beef production is expected to increase slightly by 0.2% to 100 800 metric tonnes in 2026, up from 99 400 metric tonnes in 2021 *(61)*.

Livestock productivity is constrained by overgrazing, poor pasture management, and endemic animal diseases, particularly trypanosomiasis in northern Angola *(62)*. Poultry production is further limited by inadequate feed supplies, insufficient veterinary services, weak infrastructure, and restrictions on genetically modified animal feed *(58)*. Under these conditions, antimicrobials are often used not only for therapeutic purposes but also prophylactically and, in some production systems, to promote growth and compensate for poor husbandry practices *(63)*. Such practices increase selective pressure on bacteria, accelerating the emergence and spread of AMR, and increasing the risk of transmission between animals, humans, and the environment through direct contact, contaminated food, and environmental pathways.

## 4.2 Abattoirs and cold chain systems

Angola has many small abattoirs and a limited number of larger facilities that supply domestic livestock producers *(64)*. In 2014, the Ministry of Agriculture and Forestry initiated the rehabilitation of four regional abattoirs. By 2018, two has been completed: one in Camabatela (US$13 million) and another in Huila (US$2 million) *(65)*. Although the Angolan Government plans to increase private sector participation in abattoir management, informal markets continue to dominate meat retailing, with an estimated 80% of livestock products sold through street vendors or small retail outlets.

Food security remains constrained by low agricultural productivity, poor post-harvest handling, and below-average crop yields *(66)*. Across agricultural value chains, inadequate cold storage and limited post-harvest facilities contribute to substantial food losses and reduced food quality *(62)*.

Despite considerable investment in transport infrastructure, water and sanitation services, and electricity generation since 2002, the country continues to face shortages of adequately equipped veterinary facilities, storage infrastructure, and cold chain systems. These gaps affect the production, processing, storage, transport and marketing of livestock products, dairy products, poultry and seafood, as well as the distribution of veterinary medicines, vaccines, and other temperature-sensitive commodities *(67)*. Strengthening cold chain systems across farm-to-market continuum will be essential to improve food safety, animal health, and antimicrobial stewardship.

## 4.3 Animal disease burden and associated zoonoses

Animal diseases have wide-ranging impacts on the environment, public health, and agriculture *(68)*. In addition to reducing livestock productivity and threatening food security, they increase the risk of zoonotic disease transmission to humans and cause significant financial losses *(69)*. Animal diseases may also contribute to environmental degradation, including increased greenhouse gas emissions and the emergence of and spread of antimicrobial resistance (AMR) *(68)*.

Brucellosis is an important zoonotic disease affecting both humans and livestock, particularly cattle *(70)*. Human infection commonly occurs through direct contact with infected animals or through consumption of contaminated meat, milk, or dairy products *(71)*. In Angola, seroprevalence studies conducted in Namibe Province indicate a considerable burden of disease with prevalence estimates of 14.96% among individual cattle and 40.10% at the herd level *(72)*. Among people working with livestock, the reported prevalence was 15.6%, including 16.7% among livestock breeders and 5.3% among other livestock workers *(72)*. Key risk factors for disease transmission include inadequate facilities for isolating infected animals and husbandry practices that prioritize livestock ownership for social status or economic value rather than disease control and production efficiency. Awareness of brucellosis among livestock workers remains low. Only 11.5% of respondents had heard of the disease, with awareness slightly higher among butchers and abattoir workers (16%) than among livestock breeders (8.3%). Overall, only 16.1% of respondents demonstrated adequate knowledge of brucellosis and its prevention *(72)*.

## 4.4 Wildlife and zoonotic diseases

Angola has rich biodiversity, with an estimated 983 bird species, 278 reptile species, 117 amphibian species, and about 291 mammal species *(73)*. The country's fauna includes a wide range of mammals, giant otter shrews, Congo golden moles, aardvarks, red-tailed monkeys, plains zebras, Beecroft's flying squirrels, antelopes, and hedgehogs. Typical reptile species include olive marsh snakes, large-scale grass lizards, and Fischer's thick-toed geckos, while amphibians include frogs, toads, and squeakers.

Angola has more than a dozen national parks and nature reserves *(74)*. However, wildlife conservation was severely affected during the civil war (1975-2002), when conservation measures largely collapsed and ecosystems were extensively degraded *(75)*. Since then, government and private sector initiatives have contributed to wildlife conservation and ecological restoration. Nevertheless, biodiversity remains under pressure due to structural challenges and insufficient political commitment *(75)*. Conservation of wildlife species in Angola has been challenged by the expansion of agriculture and pastoralism, and the resulting widespread loss of natural habitats, deforestation, poaching for bushmeat, and international wildlife trade *(76)*.

Bushmeat continues to provide an important and affordable source of animal protein for many rural and urban households *(77)*. It is widely sold in roadside markets as live animals or as fresh, smoked, or dried meat, and is commonly purchased by travelers *(78)*. Despite the recognized risks of zoonotic disease transmission, amplified by recent disease outbreaks, such as Ebola in neighbouring Democratic Republic of the Congo, wild animals are frequently bought directly from hunters and slaughtered under conditions that do not meet basic food safety and hygiene standards.

The bushmeat trade has been linked to outbreaks of several emerging infectious diseases, including severe acute respiratory syndrome (SARS), Ebola virus disease, and HIV, because close and frequent human-wildlife contact facilitates pathogen spillover and transmission *(79, 80)*. In Angola, expansion of the road network has increased access to previously remote wildlife habitats, while agricultural expansion and livestock production have intensified interactions between humans, domestic animals, and wildlife *(65, 81)*. As livestock production increasingly overlaps with wildlife habitats, opportunities for pathogen transmission are likely to increase, posing risks to biodiversity conservation, animal health, and public health *(77)*.

## 4.5 Veterinary workforce and access to veterinary services

Preventive veterinary services are essential for reducing animal disease, enhancing livestock production, and safeguarding the livelihoods of rural agricultural communities. However, like many countries in sub-Saharan Africa, Angola continues to face a severe shortage of veterinary professionals and limited capacity to meet the growing demand for animal health services *(82)*. These constraints are particularly evident in the pastoral areas of southern Angola, where limited government veterinary services and shortages of trained personnel restrict access to preventive and curative animal health services *(83)*.





High-level opening remarks by government officials and the WHO Country Office representative during the stakeholder workshop, Luanda, Angola, November 2025. © WHO /Filipa Vaz

# 5. Environment

## 5.1 Agrochemical use in agriculture

Population growth and increasing demand for food have contributed to greater reliance on pesticides and other agrochemicals in agricultural production in Angola *(84)*. Although these products can improve agricultural productivity, their use often occurs in the absence of adequate regulation, inspection, and technical guidance. Reports indicate widespread inappropriate practices, including the purchase and use of substandard or unregistered products through informal markets. These practices increase the risk of environmental contamination, adverse health effects among farmers and rural communities, and the development of pesticide resistance.

The regulation of pesticides and agricultural chemicals in Angola involves several institutions. The Ministry of Agriculture and Forestry is responsible for product regulation, import authorization, commercialization, and user training. Plant health services oversee inspections and pest surveillance, while the Ministry of Environment is responsible for environmental impact oversight. Customs authorities regulate imports, and agricultural research institutions support the development of integrated pest management approaches and other sustainable agricultural practices *(84)*. Despite these institutional arrangements, implementation and enforcement remain weak because of limited coordination, insufficient resources, and widespread informal marketing of agrochemicals, which contributes to unauthorized use, inappropriate storage, application, and disposal *(84)*.

From a public health and AMR perspective, the unregulated use of pesticides contributes to the development of resistance in pests and pathogens, creating a cycle of increasing dependence on chemical control measures. Environmental contamination with pesticide residues can disrupt soil microbiomes, and may facilitate the emergence and spread of resistant microorganisms. As resistance to pesticides increases and the range of agrochemical products continues to expand, effective monitoring becomes increasingly important. However, no data are available on agrochemical use in Angola's livestock sector.

## 5.2 Waste disposal and management practices in Angola

Angola generates an estimated 6.4 million tonnes of solid waste each year *(85)*. In Luanda alone, households and businesses generate approximately 9133 tonnes of waste each day, of which only 450 tonnes are recycled. Private companies collect about 6167 tonnes daily, leaving more than 2500 tonnes to be disposed of illegally across the province *(86)*. Municipal waste management is outsourced to private operators under agreements with the Luanda Provincial Government, while collection and transportation are coordinated by the provincial public corporation and its contracted companies. The Strategic Plan for Urban Waste Management provides a framework for integrated municipal solid waste (MSW) management, including waste treatment, recovery, disposal, source separation, and recycling *(87)*. In practice, however, waste collection and landfill disposal remain the dominant methods.

Although Angola, as sub-Saharan Africa's largest oil producer, has implemented advanced waste management practices in the oil and gas sector *(88)*, information on pharmaceutical waste management practices remains limited. As of 2022, the country had no pharmaceutical manufacturing facilities *(89)*. To reduce its reliance on imported medicines, Angola has begun constructing a €100 million pharmaceutical manufacturing plant, which is expected to produce 2 billion tablets and up to 35 million injectable medicines annually by 2027 *(90)*. Angola has also established legislative and technical requirements for the safe and environmentally sound disposal of expired, unused, and contaminated medicines and related products to minimize risks to human health and the environment *(91)*.

Poor management of health care waste, especially infectious waste, poses risks to patients, health workers, and surrounding communities *(92)*. To reduce the negative environmental and social impacts of health care waste, Angola developed a Hospital Waste Management Plan in 2020 *(93)*. However, limited information is available on its implementation or on compliance by health facilities.

Key challenges affecting waste management in Angola include inadequate waste collection practices, the absence of a comprehensive information, limited training opportunities and programmes for provincial and local authorities, inadequate human resources, and insufficient funding *(86)*. Illegal dumping, including disposal into rivers and other water bodies, remains common, thereby underscoring the need to improve waste collection and transportation systems, improve public awareness, and build the capacity of waste management services *(94)*.

## 5.3 Health risks

Poor waste management practices increase the risk of waste-related and waterborne diseases across Angola *(95)*. Inadequate sanitation and waste disposal contribute to the spread of typhoid fever, cholera, dysentery, and other enteric infections, and may also facilitate the emergence and spread of antimicrobial resistance *(96)*. As of 28 March 2025, Angola had reported 9274 cholera cases and 356 deaths, corresponding to a case fatality ratio of 3.8%. Males accounted for 55% of reported cases and 237 deaths, while children aged 0–19 represented more than 40% of all cases *(97)*. By November 2025, the outbreak had expanded to 34 445 reported cases and 874 deaths, with cases reported across multiple provinces, including Uíge and Huíla *(98)*.

Typhoid fever remains endemic in Angola and continues to represent a major public health challenge, particularly in areas with limited access to sanitation and safe water services *(51, 99)*. Reported typhoid cases nearly doubled from 497 258 in 2020 to 875 468 in 2024 *(13)*. A genomic study involving children in Luanda detected enteric pathogens in nearly all stool samples analysed, including bacteria (91%), viruses (78%), and parasites (50%), many of which are associated with diarrhoeal diseases *(100)*. Poor waste management also creates breeding sites for disease vectors, contributing to the transmission of vector-borne diseases, including malaria (7.5 million cases and 13 600 deaths in 2020), dengue, chikungunya, yellow fever, and Zika *(101-103)*.

## 5.4 Antimicrobial resistance and use

The use of antibiotics in livestock for growth promotion, disease prevention and treatment exerts selective pressure that promotes the emergence and spread of antimicrobial- resistant bacteria, including MDR strains *(63)*. Inadequate hygiene during animal slaughter, processing, and distribution can further contaminate animal-derived food products with resistant pathogens *(104)*.

In Angola, AMR transmission is driven by interactions among humans, animals, and ecological systems *(105)*. Food-producing animals constitute an important reservoir of antimicrobial-resistant bacteria, while the production, distribution, and consumption of animal-derived food products represent major pathways for the transmission of resistant bacteria and antimicrobial genes, many of which are associated with gastrointestinal infections *(106)*. However, information on AMR prevalence in veterinary isolates in Angola remains limited *(107)*.

Environmental pathways further contribute to the spread of AMR through the dissemination of resistant microorganisms and resistance genes in hospital effluents, agricultural runoff, wastewater treatment systems, soil, water, air, and sediments *(108)*. It is estimated that approximately 70% of administered antibiotics are ultimately released into the environment through human, animal, medical, and agricultural waste, where they may retain pharmacological activity and continue to exert selective pressure on microorganisms *(109, 110)*. A study conducted in southern Angola detected extended-spectrum beta-lactamase-producing *Escherichia coli* in 50% of samples collected from healthy animals and in 25% of samples from their drinking water sources, indicating widespread environmental contamination and an increased risk of AMR transmission *(111, 112)*.

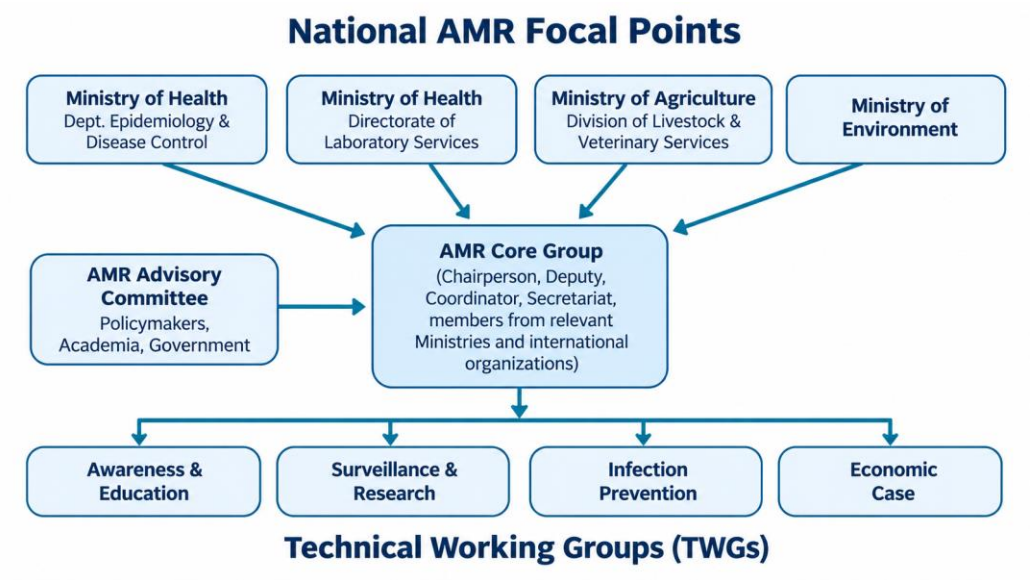
# 6. Status of the national action plan on AMR

Angola does not currently have an approved and publicly available national action plan (NAP) on AMR. Although a draft NAP was developed for 2018-2022, it was not operationalized because priorities, implementation timelines, and domestic financing were not clearly defined *(33, 113)*. The draft NAP, developed in 2018, was aligned with the five strategic objectives of the Global Action Plan on AMR and included a strategic framework, an operational plan, and a monitoring and evaluation plan. Although focal points within several ministries and government departments continue to lead AMR-related activities, including the development of the NAP on AMR 2018-2022, Angola currently lacks a national multisectoral AMR coordinating committee to oversee the development, implementation, and monitoring of AMR policies and strategies. In addition, key national public health policies, including the National Health Development Plan (2012–2025) and the National Development Plan (2018–2022), do not explicitly address AMR or define coordinated actions for its prevention and control *(113, 114)*.

## 6.1 Governance and coordination

The governance framework proposed in Angola's draft NAP on AMR (2018–2022) adopted a multisectoral One Health approach and comprised a national AMR focal point, an AMR core group, an AMR advisory committee, and technical working groups (TWGs) (Fig. 2). The national AMR focal point was intended to coordinate implementation of the NAP on AMR, oversee the activities of the AMR Core Group, and facilitate communication among stakeholders. The focal point was supported by representatives from the Department of Epidemiology and Disease Control (Ministry of Health), the Directorate of Laboratory Services (Ministry of Health), the Livestock and Veterinary Services Division (Ministry of Agriculture), and the Ministry of Environment. The AMR Core Group was designated as the principal multisectoral coordination mechanism and was led by a Chairperson, Deputy Chairperson, Coordinator, and Secretariat, with representation from relevant ministries and international partners. Its responsibilities included coordinating implementation of the NAP on AMR, mobilizing resources, and monitoring progress towards the plan's objectives. The AMR Advisory Committee, comprising policy-makers from the core ministries and representatives from academia, was expected to provide strategic and technical advice on NAP implementation, identify research priorities, and address evidence gaps. The technical working groups (TWGs), each aligned with one of the five objectives of the Global Action Plan on AMR, were expected to strengthen partnerships, engage relevant stakeholders, coordinate implementation within their respective sectors, monitor and evaluate progress in their sectors, and facilitate data sharing and communication with the AMR Core Group. Although the draft NAP on AMR was not implemented, its proposed governance framework provides a useful foundation for stakeholder mapping and the development of an updated governance structure for a future NAP on AMR 2.0.

**Fig. 2**. Organogram of the AMR governance structure of draft NAP on AMR 2018-2022



# 7. Awareness, education, and behaviour change



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According to key informants (Kis), Angola does not have a national communication strategy on AMR. World Antimicrobial Resistance Awareness Week (WAAW) activities are not routinely organized, and community engagement in AMR-related initiatives remains limited. Additionally, there is insufficient evidence on awareness, attitudes, and practices related to AMR among the general population and key professional groups, including health workers, veterinary officers, farmers, and food sector professionals. According to the 2025 Tracking AMR Country Self-Assessment Survey (TrACSS), the Ministry of Education is not currently involved in initiatives to raise awareness of AMR or to strengthen AMR content in school curricula and pre-service training programmes.

# 8. AMR surveillance and diagnosis

Angola enrolled in the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS) in 2020. However, the country does not yet have a comprehensive, nationally coordinated surveillance system for AMR in human health. According to KIs, bacteriology laboratory capacity remains limited, and the cost of bacteriological testing is unaffordable for much of the population. The National Institute for Health Research (INIS) applies the Clinical and Laboratory Standards Institute (CLSI) guidelines for antimicrobial susceptibility testing (AST) and conducts quarterly external quality assurance exercises for AST laboratories in collaboration with the Uganda Virus Research Institute. INIS also collaborates with the Uganda Centre for Disease Control on quarterly quality assurance activities for TB laboratories.

Routine AST at INIS plays a key role in detecting emerging resistance patterns and informing clinical management. In 2025, antimicrobial susceptibility testing of clinical isolates identified resistance to several antibiotics commonly used to treat severe infections, including cephalexin, carbapenems, and amikacin. High levels of resistance to chloramphenicol and nalidixic acid were also observed across multiple bacterial species. During the cholera outbreak in 2025, INIS performed targeted AMR susceptibility testing on *Vibrio cholerae* isolates and confirmed resistance to nalidixic acid, tetracycline, and chloramphenicol *(115)*.

Angola does not have a national surveillance system for AMR in terrestrial or aquatic animals or in the environment, reflecting broader regional gaps in integrated One Health AMR Surveillance *(47)*. Nevertheless, limited AST is undertaken within the veterinary sector through a single public laboratory in Huambo, where testing costs are heavily subsidized by the government. According to KIs, the laboratory does not operate under a standardized quality assurance programme but receives periodic capacity-building support through the Regional Disease Surveillance Systems Enhancement Project.

Environmental surveillance for AMR is also limited. Angola does not routinely monitor antibiotic residues, antimicrobial-resistant microorganisms or resistance genes in environmental matrices and no formal surveillance system exists for AMR in aquatic pathogens. Antibiotics are occasionally used in aquaculture to treat bacterial diseases associated with poor water quality. According to KIs, the Food and Agriculture Organization of the United Nations (FAO) and other partners have supported efforts to enhance biosecurity, disease surveillance, and diagnostic capacity in the aquaculture and fisheries sectors.

# 9. Prevention

According to KIs, Angola faces significant gaps in preventive measures to reduce AMR, particularly in water, sanitation, and hygiene (WASH) and infection prevention and control (IPC). In 2024, approximately 40% of the population did not have access to basic water and sanitation services. Although the Government of Angola allocated 1.8% of the State budget to the WASH and environmental protection sector, only 19% of this allocation was directed towards basic sanitation *(116)*. Angola does not have a comprehensive national policy or strategy for water supply and sanitation, nor an effective system for monitoring water quality and availability *(117)*. Limited access to safe water and sanitation increases the risk of infectious diseases and contributes to the emergence and spread of AMR.

In December 2024, the Ministry of Health prepared a draft National Strategic Plan for Infection Prevention and Control (2025-2029), followed in May 2025 by standard operating procedures (SOP) to support its implementation. However, the plan and SOP document have not been finalized. The situational analysis underpinning the draft IPC strategy identified several important gaps, including the absence of a legislative framework for IPC in health facilities, the lack of a national IPC committee, and the absence of dedicated IPC structures at provincial and municipal levels. Although IPC training has been conducted in selected provinces, IPC has not yet been incorporated into pre-service education programmes. Hand hygiene training materials have been developed and distributed to provincial and municipal health personnel; however, inadequate access to handwashing facilities continues to limit implementation. The assessment also identified major deficiencies in isolation infrastructure, hand hygiene facilities, and health care waste management. A 2024 assessment using the WHO Infection Prevention and Control Assessment Framework (IPCAF) evaluated 29 health facilities. Of these, 16 were classified as having inadequate IPC implementation, 10 as basic, two as intermediate, and only one private-sector facility achieved an advanced level of IPC implementation.

Although Angola has policies governing the safe disposal of unused medicines, broader environmental protection measures remain limited. The country lacks laws addressing environmental contamination from antibiotic manufacturing and does not have systems for monitoring antibiotic residues in the environment. Significant gaps also exist within the animal health sector, including the absence of national standards for WASH and waste management, limited implementation of biosecurity measures, and the lack of formal IPC programmes.



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# 10. Access and optimal use of antimicrobials

According to KIs and the 2025 TRACSS report, the national list of essential medicines (NLEM), which was last updated in 2021, incorporates the WHO AWaRe classification of antibiotics *(118)*. Additionally, KIs also reported the existence of regulatory guidance, overseen by the National Regulatory Agency for Medicines and Health Technologies, to prevent, detect, and respond to counterfeit and substandard medical products, including vaccines, diagnostics, and antimicrobials. However, implementation of these regulations is inconsistent across the country. Additionally, Angola does not have a national system to detect, report, and manage shortages of essential antimicrobials or diagnostic tests at health facility level. According to KIs, several key components required to support appropriate antimicrobial use are also lacking. These include a national essential diagnostics list, national diagnostic guidelines, standard operating procedures, and functional referral system to ensure access to microbiology and antimicrobial susceptibility testing across all levels of care. The country also lacks a national AMS policy or implementation plan, as well as national treatment guidelines based on AMS principles and the WHO AWaRe classification. AMS programmes have not been established in secondary or tertiary health facilities, and no initiatives are in place to improve antimicrobial prescribing practices in primary health care.

# 11. Antibiotic use and consumption

Angola does not currently have a national surveillance system to monitor human antimicrobial use (AMU). Furthermore, no health facility-based AMU surveillance or point prevalence surveys have been conducted over the past five years. The importation, distribution, and dispensing of antimicrobials are not standardized across industries, and although legislation restricting over-the-counter sales of antimicrobials exists, enforcement remains weak. Similarly, Angola has no national mechanism to monitor antimicrobial use in animals. The importation and use of veterinary antimicrobials are not coordinated across sectors, reflecting challenges similar to those in the human health sector. In the plant health sector, there are no national or subnational guidelines, inspection systems, or licensing mechanisms to enforce the responsible use of antimicrobials and pesticides. Furthermore, no national awareness campaigns or educational initiatives have been implemented to educate farmers about responsible use of antimicrobials and pesticides.




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# 12. Research and innovation

Research and innovation capacity for AMR remains limited in Angola. The country does not have a national AMR research agenda to guide research priorities and investments. Coordination mechanisms for engaging donors and development partners are also lacking, including forums for information sharing, collaboration, and resource mobilization for AMR initiatives. Angola does not currently participate in regional AMR research collaboration, multicentre research or clinical trials related to AMR. Additionally, the country has not established a national priority pathogens list to identify drug-resistant bacteria and fungi of public health concern.

# 13. Stakeholder engagement workshop

From 17 to 20 November 2025, WHO convened a stakeholder engagement workshop in Luanda to inform the development of this situational analysis. The workshop brought together representatives from the human, animal, and environmental health sectors, as well as stakeholders from the private sector, government institutions, academia, and development partners. Its primary objectives were to engage national stakeholders in identifying gaps and prioritizing interventions for AMR, collect information to inform the situational analysis, and strengthen dialogue on multisectoral One Health coordination to support the development of Angola's National Action Plan (NAP) on AMR. The recommendations presented in this report are informed by both the desk review and the discussions held during the stakeholder engagement workshop. They are intended to support the development and implementation of Angola's multisectoral One Health response to AMR.




National stakeholder workshop, Luanda, Angola, November 2025. © WHO/Filipa Vaz

# 14. Key recommendations

The recommendations presented in this chapter should be implemented in a phased and prioritized manner and aligned with broader national health system strengthening and development priorities. This situational analysis highlights several structural challenges that will influence implementation of AMR interventions. These include high levels of poverty, with more than half of the population below the international poverty line for LMICs; marked urban–rural inequities; limited access to basic water, sanitation and hygiene (WASH) services (about 68% coverage for basic drinking water and 50% with basic sanitation, with substantially lower coverage in rural areas); weak infection prevention and control (IPC) infrastructure in most health facilities; limited laboratory and surveillance capacity; and constrained health financing characterized by low government expenditure, high out-of-pocket payments, and continued reliance on external partners. Addressing these challenges will require multisectoral sustained multisectoral collaboration and alignment with broader priorities.

As a first step, Angola should establish a multisectoral AMR Coordination Committee (AMRCC) to coordinate national efforts, set strategic priorities, mobilize resources, and strengthen collaboration across the One Health sectors. Establishing this governance and collaboration mechanism will provide the institutional foundation required for effective leadership, coordination, decision-making, resource mobilization, and accountability across One Health sectors. Once established, the AMRCC should lead the development of a multisectoral NAP on AMR, building on the findings of this situation analysis. As part of this process, a structured prioritization exercise should be undertaken to identify interventions that are likely to have the greatest public health impact while remaining feasible within existing resource constraints. The exercise should also implementation timelines (short-, medium-, and long-term), identify available funding sources, estimate financing gaps, and align proposed interventions with ongoing national development programmes and health system strengthening initiatives. Where possible, implementation should build on existing national and partner-supported programmes, including WHO-supported initiatives such as the UHC Partnership, to maximize efficiencies, avoid duplication, and strengthen sustainability. Aligning AMR investments with broader health system strengthening efforts will generate wider public health benefits while addressing critical service delivery gaps. Although several recommendations are broad and more complex, each can be translated into specific, measurable, and context-appropriate objectives that reflect Angola’s national priorities (Table 2).

**Table 2**. Governance and collaboration recommendations for the National Action Plan on antimicrobial resistance

| Recommendation | Lead institution | Key stakeholders | Timeline | Step |
|---|---|---|---|---|
| Establish a multisectoral AMR Coordination Committee (AMRCC) with formal terms of reference and an official mandate to coordinate the development and implementation of the NAP on AMR. | Ministry of Health, DNSP, INIS, ARMED, DNH, Health Inspectorate, professional councils | Ministry of Health; Ministry of Agriculture; Ministry of the Environment; Ministry of the Interior; ISV; INVE; universities; WHO; FAO; and WOAH | Short term 4-6 months | 1 |
| Design an inclusive process for developing the NAP on AMR, including stakeholder mapping, stakeholder engagement, and priority setting. | Multisectoral AMR Coordination Committee | Ministry of Health; Ministry of Agriculture; Ministry of the Environment; Ministry of the Interior; ISV; INVE; universities; WHO; FAO; and WOAH | Short term 4-6 months | 1 |
| Conduct a national prioritization exercise for AMR activities and identify opportunities to align implementation with existing national development plans and health system strengthening initiatives | Ministry of Health; DNSP; INIS; ARMED; DNH; Health Inspectorate; professional councils | Ministry of Health; Ministry of Agriculture; Ministry of the Environment; Ministry of the Interior; ISV; INVE; universities; WHO; FAO; and WOAH | Medium term 6-12 months | 2 |
| Develop a costed multisectoral NAP on AMR, including an operational plan and a monitoring and evaluation framework covering all One Health sectors | Ministry of Health; DNSP; INIS; ARMED, DNH; Health Inspectorate; professional councils | Ministry of Health; Ministry of Agriculture; Ministry of the Environment; Ministry of the Interior; ISV; INVE; universities; WHO; FAO; and WOAH | Medium term 6-12 months | 2 |

The following recommendations include both AMR-specific interventions and broader health system strengthening actions, such as improving access to safe water, sanitation, and hygiene (WASH), and waste management. These interventions are essential for preventing infections, reducing the need for antimicrobial use, and limiting the emergence and spread of antimicrobial resistance (AMR). Recommendations should be prioritized and adapted to the national context to ensure that they are feasible, appropriately sequenced, and sustainable.

### Awareness, education, and behaviour change

- Develop a national AMR communication strategy that promotes infection prevention, hygiene, and the appropriate use of antimicrobials, using a phased approach that prioritizes feasible interventions at each level of the health system.
- Conduct advocacy and awareness activities for policy-makers to strengthen political commitment and resource mobilization for AMR.
- Integrate AMR into pre-service and in-service education programmes for health professionals, veterinarians and other relevant disciplines through existing school and university curricula.
- Promote community awareness of hand hygiene, food safety, and the appropriate use of antimicrobials through risk communication and community engagement activities.
- Strengthen awareness among health workers, veterinarians, and other relevant professionals to improve antimicrobial prescribing and dispensing practices.

### Surveillance and diagnosis

- Strengthen the national reference laboratory for AMR to support high-quality diagnostics, patient management, and national surveillance, in collaboration with other microbiology laboratories.
- Develop and implement a phased national strategy for AMR and AMU surveillance in the human health sector.
- Establish a national database to monitor antimicrobial use in the human and animal health sectors.
- Harmonize AMR surveillance indicators across national health surveillance and laboratory information systems.
- Strengthen microbiological water quality monitoring, including routine testing and chlorination monitoring, especially in semi-urban and rural areas.
- Establish a national veterinary AMR technical working group led by the Institute of Veterinary Services (ISV) and strengthen the capacity of accredited veterinary laboratories.
- Integrate environmental surveillance, including water and wastewater monitoring, into national AMR surveillance to identify emerging trends and high-risk areas.
- Develop medium- and long-term animal health inspection and surveillance programmes.

### Prevention

- Finalize, approve, and implement the National Strategic Plan for Infection Prevention and Control, and ensure that it is disseminated to all health facilities.
- Institutionalize IPC standards and routine assessments to reduce health care-associated infections and inappropriate antimicrobial use.

- Strengthen IPC infrastructure and supplies across health facilities to support implementation of the national IPC programme.
- Promote sustainable funding for WASH services in health facilities and environmental health interventions, including life-cycle costing for operations and maintenance.
- Establish IPC committees or focal points in veterinary clinics, veterinary laboratories, slaughterhouses, and the Institute of Veterinary Services (ISV).
- Expand access to safely managed drinking water in health facilities and communities to reduce infection incidence and inappropriate antimicrobial use.
- Scale up access to functional hand hygiene facilities, including handwashing stations with soap and alcohol-based hand rub, in health facilities, schools, and other public spaces.
- Strengthen coordination between immunization and AMR programmes to maximize the contribution of vaccination to AMR prevention.
- Develop immunization targets for the animal health sector, where appropriate.

### Access to and appropriate use of antimicrobials

- Regularly update the national list of essential medicines, ensuring continued alignment with the WHO AWaRe classification of antibiotics.
- Convene experts to develop a consensus on national antibiotic treatment guidelines, based on available antibiotics and recent AMR trends.
- Develop a national list of essential diagnostics and create an SOP for diagnostic stewardship.
- Map health facilities with AMR diagnostic capacity nationwide.
- Develop a national antimicrobial stewardship (AMS) policy and implementation plan, with appropriate monitoring and supervision mechanisms.
- Establish AMS committees at national referral hospitals.
- Strengthen oversight of antimicrobial access to address gaps and prevent inappropriate use nationwide.
- Strengthen implementation and enforcement of prescription-only policies for antimicrobials in the human and animal health sectors, supported by surveillance and regular inspections.
- Strengthen implementation and monitoring of legislation that restricts the sale of antimicrobials without prescription in the human and animal health sectors.
- Develop national standards for the use of antimicrobials in the animal health sector.
- Regulate the use of antimicrobials for use on plants and raise awareness among farmers about AMR.
- Harmonize and regulate the distribution of antimicrobials nationwide.
- Strengthen the incentive and availability of laboratory tests that help to better guide antibiotic prescriptions, such as culture tests and sensitivity tests whenever possible.

## Environmental considerations

- Develop an environmental surveillance system for antimicrobial residues and resistance genes, supported by strengthened laws, biosecurity precautions, and training initiatives for fisheries and aquaculture.
- Expand the coverage and frequency of water quality control to monitor antimicrobial residues and microbial contaminants.
- Establish a national database for the use of antimicrobials in the environment.
- Strengthen the segregation, treatment, and safe disposal of infectious waste and expired or unused antimicrobials.
- Ensure that health care wastewater (including laboratories and pharmacies) is treated before discharge to reduce antimicrobial residues and resistant pathogens.
- Improve incineration or alternative treatment capacity and compliance with environmental safeguards.
- Increase investment in basic sanitation facilities, especially in communities in remote areas.
- Improve safely managed sanitation to limit environmental dissemination of resistant organisms.

## Research and innovation

- Convene international and local research partners, particularly in the education and university sectors, to promote AMR research and innovation.
- Develop a national AMR research agenda.

# 15. References


1. Institute for Health Metrics and Evaluation. VizHub – MICROBE. Seattle (WA): Institute for Health Metrics and Evaluation; 2025 (https://vizhub.healthdata.org/microbe/, accessed 5 November 2025).
2. World Health Organization. Global tuberculosis report 2025. Geneva: World Health Organization; 2025 (https://www.who.int/publications/i/item/9789240116924, accessed 13 November 2025).
3. World Bank. Population, total. World Bank Group; 2025 (https://data.worldbank.org/indicator/SP.POP.TOTL, accessed 20 January 2026).
4. World Bank. Urban population (% of total population) - Angola. World Bank; 2025 (https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=AO, accessed 20 January 2026).
5. Instituto Nacional de Estatística (INE), Ministério da Saúde (MINSA), Ministério do Planeamento (MINPLAN), ICF. Inquérito de Indicadores Múltiplos e de Saúde em Angola, 2023–2024. Luanda, Angola: INE, MINSA, MINPLAN and ICF; 2025 (https://www.dhsprogram.com/pubs/pdf/FR396/FR396.pdf, accessed 20 January 2025).
6. World Health Organization, Regional Office for Africa. Strengthening ealth financing in Angola. Brazzaville: World Health Organization Regional Office for Africa; 2025 (https://www.afro.who.int/countries/angola/publication/strengthening-health-financing-angola, accessed 20 January 2025).
7. World Health Organization, Regional Office for Africa. Country disease outlook: Angola. Brazzaville: World Health Organization Regional Office for Africa; 2023 (https://www.afro.who.int/sites/default/files/2023-08/Angola.pdf, accessed 29 October 2025).
8. World Bank. World Bank Open Data. World Bank Group; 2025 (https://data.worldbank.org, accessed 30 October 2025).
9. World Bank. Maternal mortality ratio (modeled estimate, per 100,000 live births). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.STA.MMRT, accessed 20 January 2026).
10. Institute for Health Metrics Evaluation. GBD Compare Data Visualization. Seattle (WA): Institute for Health Metrics and Evaluation; 2025 (http://vizhub.healthdata.org/gbd-compare, accessed 29 October 2025).
11. World Health Organization. Summary of tuberculosis data. Geneva: World Health Organization; 2025 (https://worldhealthorg.shinyapps.io/TBrief/?_inputs_&sidebarItemExpanded=null&sidebarCollapsed=true&iso3=%22AGO%22&entity_type=%22country%22, accessed 13 November 2025).
12. World Health Organization. Tuberculosis data. Geneva: World Health Organization; 2025 (https://worldhealthorg.shinyapps.io/tb_profiles/?_inputs_&tab=%22charts%22&lan=%22EN%22&iso3=%22CIV%22&entity_type=%22country%22, accessed 13 November 2025).
13. World Health Organization. Typhoid reported cases and incidence. Geneva: World Health Organization; 2025 (https://immunizationdata.who.int/global/wiise-detail-page/typhoid-reported-cases-and-incidence?CODE=AGO&YEAR=, accessed 31 October 2025).
14. World Bank. Prevalence of HIV, total (% of population ages 15-49). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.DYN.AIDS.ZS, accessed 22 January 2026).
15. World Bank. Women's share of population ages 15+ living with HIV (%). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.DYN.AIDS.FE.ZS, accessed 22 January 2026).
16. World Health Organization. World malaria report 2024: addressing inequity in the global malaria response. Geneva: World Health Organization; 2024 (https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2024, accessed 31 October 2025).
17. World Bank. Incidence of malaria (per 1,000 population at risk). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.MLR.INCD.P3, accessed 22 January 2026).
18. World Bank. Angola Poverty and Equity Brief. World Bank Group; 2024 (https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099758201032554819, accessed 30 October 2025).
19. World Health Organization Regional Office for Africa. Country Cooperation Strategy 2023–2027: Angola. Brazzaville: World Health Organization Regional Office for Africa; 2023 (https://www.who.int/publications/i/item/9789290235057, accessed 31 October 2025).

20. World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). Progress on household drinking water, sanitation and hygiene 2000–2024: special focus on inequalities. Geneva: World Health Organization; 2025 (https://www.who.int/publications/m/item/progress-on-household-drinking-water--sanitation-and-hygiene-2000-2024--special-focus-on-inequalities, accessed 26 February 2026).
21. World Bank. People using at least basic drinking water services (% of population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.H2O.BASW.ZS, accessed 22 January 2026).
22. World Bank. People using at least basic sanitation services (% of population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.STA.BASS.ZS, accessed 22 January 2026).
23. World Bank. People using at least basic drinking water services, urban (% of urban population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.H2O.BASW.UR.ZS, accessed 22 January 2026).
24. World Bank. People using at least basic drinking water services, rural (% of rural population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.H2O.BASW.RU.ZS, accessed 22 January 2026).
25. World Bank. People using at least basic sanitation services, urban (% of urban population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.STA.BASS.UR.ZS, accessed 22 January 2026).
26. World Bank. People using at least basic sanitation services, rural (% of rural population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.STA.BASS.RU.ZS, accessed 22 January 2026).
27. World Health Organization. WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. Geneva: World Health Organization; 2021 (https://www.who.int/publications/i/item/9789240034228, accessed 31 October 2025).
28. World Bank. PM2.5 air pollution, mean annual exposure (micrograms per cubic meter). World Bank Group; 2025 (https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3, accessed 22 January 2026).
29. World Bank. Mortality rate attributed to household and ambient air pollution, age-standardized (per 100,000 population). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.STA.AIRP.P5, accessed 22 January 2026).
30. U. S. President's Malaria Initiative. President's Malaria Initiative: Angola Country Profile. United States of America: Centers for Disease Control and Prevention, US Agency for International Development; 2023 (https://reliefweb.int/report/angola/presidents-malaria-initiative-angola-country-profile-last-updated-06302023, accessed 31 October 2025).
31. International Trade Administration. Angola: Healthcare. Washington (DC):International Trade Administration, US Department of Commerce; 2024. (https://www.trade.gov/country-commercial-guides/angola-healthcare, accessed 31 October 2025).
32. Ministry of Health Angola (MINSA). Anuário Estatístico Sanitário 2020. Luanda: Ministry of Health Angola; 2020 (https://www.ine.gov.ao/Arquivos/arquivosCarregados//Carregados/Publicacao_638842780853702963.pdf, accessed 20 October 2025).
33. Ministry of Health Republic of Angola. The National Health Development Plan 2012-2025 (PNDS) Volume 1. 2024 (https://p4h.world/en/documents/the-national-health-development-plan-2012-2025-pnds-volume-1/, accessed 22 January 2026).
34. World Bank. Current health expenditure per capita (current US$). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.XPD.CHEX.PC.CD, accessed 22 January 2026).
35. World Bank. Domestic general government health expenditure per capita (current US$). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.XPD.GHED.PC.CD, accessed 22 January 2026).
36. World Bank. Domestic private health expenditure (% of current health expenditure). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.XPD.PVTD.CH.ZS, accessed 22 January 2026).
37. World Bank. Domestic private health expenditure per capita (current US$). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.XPD.PVTD.PC.CD, accessed 22 January 2026).
38. World Bank. Out-of-pocket expenditure (% of current health expenditure). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS, accessed 22 January 2026).
39. World Bank. Out-of-pocket expenditure per capita (current US$). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.XPD.OOPC.PC.CD, accessed 22 January 2026).
40. World Health Organization. Angola: country overview. Geneva: World Health Organization; 2025. (https://data.who.int/countries/024, accessed 23 October 2025).

41. World Health Organization and World Bank. Tracking Universal Health Coverage: 2025 Global Monitoring Report. Geneva: World Health Organization; 2025 (https://iris.who.int/server/api/core/bitstreams/04e720a0-bf22-4fb8-ad42-d6296bba739f/content, accessed 11 March 2025).
42. World Health Organization Regional Office for Africa. Universal Health Coverage (UHC) Regional Fact Sheet. Brazzaville: World Health Organization Regional Office for Africa; 2022 (https://files.aho.afro.who.int/afahobckpcontainer/production/files/UHC_Regional_AFRO_Factsheet-2022.pdf, accessed 11 March 2025).
43. World Bank. Physicians (per 1,000 people). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.MED.PHYS.ZS, accessed 22 January 2026).
44. World Bank. Nurses and midwives (per 1,000 people). World Bank Group; 2025 (https://data.worldbank.org/indicator/SH.MED.NUMW.P3, accessed 22 January 2026).
45. World Health Organization. Pharmacists (per 10 000 population). Geneva: World Health Organization; 2025 (https://www.who.int/data/gho/data/indicators/indicator-details/GHO/pharmacists-(per-10-000-population), accessed 22 January 2026).
46. World Health Organization. Global strategy on human resources for health: Workforce 2030. Geneva: World Health Organization; 2020 (https://www.who.int/publications/i/item/9789241511131, accessed 4 November 2025).
47. Food and Agriculture Organization of the United Nations, United Nations Environment Programme, World Health Organization, and World Organisation for Animal Health. Global database for tracking antimicrobial resistance (AMR) country self-assessment survey (TrACSS). Geneva: World Health Organization; 2024. (https://new.amrcountryprogress.org/country/angola/, accessed 5 November 2025).
48. World Health Organization. Joint external evaluation of the IHR core capacities of the Republic of Angola: mission report, November 18-22, 2019. Geneva: World Health Organisation; 2020 (https://extranet.who.int/sph/sites/default/files/document-library/document/JEE%20Report%20Angola%202019.pdf, accessed 22 January 2026).
49. UNEP. World leaders commit to decisive action on antimicrobial resistance. Nairobi: United Nations Environment Programme; 2024 (https://www.unep.org/news-and-stories/press-release/world-leaders-commit-decisive-action-antimicrobial-resistance, accessed 22 January 2026).
50. Cortez J, Rosário E, Pires JE, Taborda Lopes J, Francisco M, Vlieghe E et al. Antimicrobial storage and antibiotic knowledge in the community: a cross-sectional pilot study in north-western Angola. International Journal of Infectious Diseases. 2017;60:83-7. doi: 10.1016/j.ijid.2017.05.011.
51. Francisco M, Costa SS, Belas A, Ramos J, Couto I, Pomba C et al. First report on antimicrobial resistance and molecular characterisation of Salmonella enterica serotype Typhi isolated from human specimens in Luanda, Angola. Journal of Global Antimicrobial Resistance. 2018;13:246-9.
52. Francisco M, Belas A, Costa SS, Menezes J, Ramos J, Couto I et al. Molecular Patterns and Antimicrobial Resistance Characterization of Salmonella enterica Non-Typhoidal from Human, Food, and Environment Samples Isolated in Luanda, Angola. Zoonotic Diseases. 2024;4:259-70. doi: 10.3390/zoonoticdis4040022.
53. World Bank. Angola Agricultural Transformation Project (MOSAP3) (P177305). World Bank Group; 2021 (https://documents1.worldbank.org/curated/en/099120012092126895/pdf/Concept0Projec000MOSAP30000P177305.pdf, accessed 27 October 2025).
54. International Fund for Agricultural Development. Angola. Rome: International Fund for Agricultural Development; 2025 (https://www.ifad.org/en/w/countries/angola, accessed 20 October 2025).
55. FAOSTAT. Crops and livestock products. Food and Agriculture Organization of the United Nations; 2023 (https://www.fao.org/faostat/en/#data/QCL, accessed 20 October 2025).
56. Kinsley N. Angola relies on poultry imports as demand increases. Poultry World; 2022 (https://www.poultryworld.net/the-industrymarkets/market-trends-analysis-the-industrymarkets-2/angola-relies-on-poultry-imports-as-demand-increases/#:~:text=Poultry%20production%20in%20Angola%20consists,%C2%B7, accessed 3 November 2025).
57. Uitgeverij M. Angola relies on poultry imports as demand increases. Poultry World; 2022 (https://www.poultryworld.net/the-industrymarkets/market-trends-analysis-the-industrymarkets-2/angola-relies-on-poultry-imports-as-demand-increases/, accessed 20 October 2025).

58. United States Department of Agriculture Foreign Agricultural Service. Angola Poultry and Products Annual Report. Washington (DC): United States Department of Agriculture, Foreign Agricultural Service; 2021 (https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Poultry%20and%20Products%20Annual_Luanda_Angola_09-01-2021, accessed 20 October 2025).
59. International Trade Administration. Agricultural products. Department of Commerce, United State of America; 2024 (https://www.trade.gov/country-commercial-guides/angola-agricultural-products, accessed 20 October 2025).
60. IndexMundi. Agriculture. IndexMundi; 2025 (https://www.indexmundi.com/agriculture/?country=ao&commodity=beef-and-veal-meat&graph=production, accessed 20 October 2025).
61. ReportLinker Research. Angola Beef Industry Outlook 2022-2026. n.d. (https://www.reportlinker.com/clp/country/1595/726315, accessed 22 October 2025).
62. FAO. Enhancing public and private sector investment in the livestock subsector in Angola Harare, Zimbabwe; 2025 (https://openknowledge.fao.org/server/api/core/bitstreams/3cd6470f-8e01-4238-861b-1c8719a0317b/content, accessed 22 October 2025).
63. Matheou A, Abousetta A, Pascoe AP, Papakostopoulos D, Charalambous L, Panagi S et al. Antibiotic Use in Livestock Farming: A Driver of Multidrug Resistance? Microorganisms. 2025;13:779. (https://www.mdpi.com/2076-2607/13/4/779, accessed 22 October 2025).
64. Kinsley N. Angola continues to rely on poultry imports. Poultry World; 2020 (https://www.poultryworld.net/poultry/angola-continues-to-rely-on-poultry-imports/, accessed 23 October 2025).
65. Ron T, Agostinho J, Rafael A, Lyman E, Nadzam B, Geier T. Animal markets and zoonotic disease in Angola. 2024 (https://animal.law.harvard.edu/wp-content/uploads/Angola-Live-with-Cover.pdf, accessed 23 October 2025).
66. International Trade Administration. Angola agribusiness cold chain industry. Washington (DC): International Trade Administration, United States Department of Commerce; 2024 (https://www.trade.gov/market-intelligence/angola-agribusiness-cold-chain-industry#:~:text=Poultry%20production%20has%20increased%20slightly,of%20approximately%203.5%20million%20heads, accessed 23 October 2025).
67. International Trade Administration. Angola cold chain industry. Washington (DC): International Trade Administration, United States Department of Commerce; 2022 (https://www.trade.gov/market-intelligence/angola-cold-chain-industry, accessed 23 October 2025).
68. Lysholm S, Chaters GL, Di Bari C, Hughes EC, Huntington B, Rushton J et al. A framework for quantifying the multisectoral burden of animal disease to support decision making. Frontiers in Veterinary Science. 2025;12:1476505.
69. Kappes A, Tozooneyi T, Shakil G, Railey AF, McIntyre KM, Mayberry DE et al. Livestock health and disease economics: a scoping review of selected literature. Frontiers in veterinary science. 2023;10:1168649.
70. Abdulah B. Brucellosis. Medscape; 2025 (https://emedicine.medscape.com/article/213430-overview, accessed 23 October 2025).
71. Warioba JP, Karimuribo ED, Komba EV, Kabululu ML, Minga GA, Nonga HE. Occurrence and risk factors of brucellosis in commercial cattle farms from selected districts of the Eastern Coast Zone, Tanzania. Veterinary Medicine International. 2023;2023:4904931.
72. Mufinda F, Boinas F, Nunes C. A survey on knowledge and practices of brucellosis among occupationally exposed livestock workers in Namibe province, Angola. African Journal of Science and Research. 2015;4:29-38.
73. A-Z Animals. Animals in Angola. A-Z Animals; 2025 (https://a-z-animals.com/animals/location/africa/angola/, accessed 27 October 2025).
74. Encyclopaedia Britannica. Angola. 2025 (https://www.britannica.com/place/Angola, accessed 27 October 2025).
75. Huntley BJ, Russo V, Lages F, Ferrand N. Biodiversity of Angola: Science & conservation: A modern synthesis: Springer Nature; 2019.
76. Beja P, Vaz Pinto P, Veríssimo L, Bersacola E, Fabiano E, Palmeirim JM et al. The mammals of Angola. In: Biodiversity of Angola: science & conservation: a modern synthesis: Springer International Publishing Cham; 2019:357-443.

77. Bolognino de Orth LG, Ernst R, Monizi M, Lautenschläger T. Socio-economic drivers of bushmeat consumption in the northern Angolan province of Uíge. Oryx. 2025:1-10.
78. Gonçalves FM, Luís JC, Tchamba JJ, Cachissapa MJ, Chisingui AV. A rapid assessment of hunting and bushmeat trade along the roadside between five Angolan major towns. Nature Conservation. 2019;37:151-60.
79. Kurpiers LA, Schulte-Herbrüggen B, Ejotre I, Reeder DM. Bushmeat and emerging infectious diseases: lessons from Africa. In: Problematic wildlife: A cross-disciplinary approach: Springer; 2015:507-51.
80. Teutloff N, Meller P, Finckh M, Cabalo AS, Ramiro GJ, Neinhuis C et al. Hunting techniques and their harvest as indicators of mammal diversity and threat in Northern Angola. European Journal of Wildlife Research. 2021;67:101.
81. Ripple WJ, Abernethy K, Betts MG, Chapron G, Dirzo R, Galetti M et al. Bushmeat hunting and extinction risk to the world's mammals. R Soc Open Sci. 2016;3:160498.
82. Food and Agriculture Organization of the United Nations. Strengthening veterinary paraprofessionals for sustainable animal health. Food and Agriculture Organization of the United Nations; 2025 (https://www.fao.org/animal-health/resources/publications/strengthening-vpps-for-sustainable-animal-health/, accessed 25 October 2025).
83. Food and Agriculture Organization of the United Nations. FAO, in collaboration with the Institute of Veterinary Services (ISV), strengthens the capacity of 112 livestock handlers and community facilitators in southern Angola to boost resilience and improve community animal health services. Food and Agriculture Organization of the United Nations; 2025 (https://www.fao.org/angola/news/detail/fao--in-collaboration-with-the-institute-of-veterinary-services-(isv)--strengthens-the-capacity-of-112-livestock-handlers-and-community-facilitators-in-southern-angola-to-boost-resilience-and-improve-community-animal-health-services/en#:~:text=Limited%20public%20veterinary%20services%20and,the%20knowledge%20and%20tools%20to, accessed 25 October 2025).
84. Government of Angola. Agricultural value chain development project in the Eastern region of Angola. Ministry of Agriculture and Forestry Institute of Agrarian Development; 2025 (https://c2a.portais.gov.ao/uploads/PEST_MANAGEMENT_MANAGEMENT_PLAN_PMP_ENG_33f703f0bc.pdf, accessed 8 March 2026).
85. Angola Press Agency. Angola Produces 6.4 Million Tons of Solid Waste Per Year. All Africa; 2021 (https://allafrica.com/stories/202106290558.html, accessed 28 October 2025).
86. Yamauchi H. Common Challenges in SWM in Africa learned from survey by JICA. UN-Habitat; 2022 (https://unhabitat.org/sites/default/files/2022/08/Session%282%29-1b_EN.pdf, accessed 28 October 2025).
87. Cristóvão GSF, de Medeiros GA, Mancini SD, Pessela JD. Index for the assessment of municipal solid waste management in Angola: a case study in kuito, bié province. African Geographical Review. 2022;41:545-57.
88. Further Africa. High standards of waste management in Angola's oil sector. 2022 (https://furtherafrica.com/2022/10/14/high-standards-of-waste-management-in-angolas-oil-sector/, accessed 28 October 2025).
89. Chimbuco BN, Ferreira MA, Sacomboio ENM, Ekundi-Valentim E. Community pharmacy services in Malanje city, angola: A survey of practices, facilities, equipment, and staff. Pharmacy. 2022;10:35.
90. Ecofin Agency. Angola builds Pharma plant to cut drug import dependence. Mediamania Sarl, Rue du Léman, 6, 1201 Geneva, Switzerland: Ecofin Agency; 2025 (https://www.ecofinagency.com/news/0306-47126-angola-builds-pharma-plant-to-cut-drug-import-dependence, accessed 3 November 2025).
91. Logistics Cluster. Angola Regulatory Departments and Quality Control. 2025 (https://www.lca.logcluster.org/12-angola-regulatory-departments-and-quality-control#:~:text=Pharmaceutical%20Waste%20Management,quality%2C%20efficacy%2C%20and%20safety, accessed 3 November 2025).
92. Lyster J. Rethinking healthcare waste management in Asia and the Pacific. United Nations Development Programme; 2025 (https://www.undp.org/asia-pacific/blog/burden-opportunity-rethinking-healthcare-waste-management-asia-and-pacific, accessed 3 November 2025).
93. Government of Angola. Angola Health System Strengthening Project: Hospital Waste Management Plan. Policy Commons; 2020 (https://coilink.org/20.500.12592/b61s8d, accessed 3 November 2025).

94. Japan International Cooperation Agency. Data collection survey on municipal solid waste management in African cities Final Report Japan International Cooperation Agency; 2022 (https://openjicareport.jica.go.jp/pdf/1000048189_01.pdf, accessed 28 October 2025).
95. Surjen. Waste management and its influence on community health. 2025 (https://www.surjen.com/blog-details/waste-management-and-its-influence-on-community-health, accessed 31 October 2025).
96. World Health Organization. Sanitation. Geneva: World Health Organization; 2024 (https://www.who.int/news-room/fact-sheets/detail/sanitation#:~:text=Poor%20sanitation%20is%20linked%20to,the%20spread%20of%20antimicrobial%20resistance, accessed 31 October 2025).
97. UNICEF. Angola Cholera outbreak Situation Report. In: No 5. United Nations Children's Fund; 2025 (https://www.unicef.org/media/169231/file/Angola-Cholera-Outbreak-SitRep-28-March-2025.pdf.pdf, accessed 31 October 2025).
98. Ministério da Saúde Angola, Direcção Nacional de Saúde Pública. Boletim epidemiológico semanal: cólera em Angola: actualização semanal - semana epidemiológica nº 43 (19–25 de outubro de 2025). Luanda: Ministério da Saúde; 2025.
99. Sustainable Development Solutions Network. Sustainable Development Report. Angola 2020 (https://dashboards.sdgindex.org/profiles/angola/indicators/, accessed 31 October 2025).
100. Pelkonen T, Dos Santos MD, Roine I, Dos Anjos E, Freitas C, Peltola H et al. Potential diarrheal pathogens common also in healthy children in Angola. The Pediatric Infectious Disease Journal. 2018;37:424-8.
101. World Health Organization. World malaria report 2020. Geneva: World Health Organization; 2020 (https://www.who.int/docs/default-source/malaria/world-malaria-reports/9789240015791-eng.pdf, accessed 31 October 2025).
102. World Health Organization. Vector-borne diseases. Geneva: World Health Organization; 2024 (https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases, accessed 31 October 2025).
103. Teslim B. Impact of Waste Management Practices on Vector Population Control. 2023. (https://www.researchgate.net/publication/387381277_Impact_of_Waste_Management_Practices_on_Vector_Population_Control, accessed 30 November 2025).
104. Phares CA, Danquah A, Atiah K, Agyei FK, Michael O-T. Antibiotics utilization and farmers' knowledge of its effects on soil ecosystem in the coastal drylands of Ghana. PloS one. 2020;15:e0228777.
105. Wee BA, Muloi DM, van Bunnik BA. Quantifying the transmission of antimicrobial resistance at the human and livestock interface with genomics. Clinical Microbiology and Infection. 2020;26:1612-6.
106. Morel C. Transmission of antimicrobial resistance from livestock agriculture to humans and from humans to animals. OECD Publishing, Paris; 2019 (https://www.oecd.org/content/dam/oecd/en/publications/reports/2019/07/transmission-of-antimicrobial-resistance-from-livestock-agriculture-to-humans-and-from-humans-to-animals_fa21e973/fcf77850-en.pdf, accessed 30 November 2025).
107. Da Costa RC, Serrano I, Chambel L, Oliveira M. The importance of "one health approach" to the AMR study and surveillance in Angola and other African countries. One Health. 2024;18:100691. doi: 10.1016/j.onehlt.2024.100691.
108. Ahmad I, Malak HA, Abulreesh HH. Environmental antimicrobial resistance and its drivers: a potential threat to public health. Journal of global antimicrobial resistance. 2021;27:101-11.
109. Abate TA, Birhanu AG. Antibiotic Use in Livestock and Environmental Antibiotic Resistance: A Narrative Review. Environmental Health Insights. 2025;19:11786302251357775.
110. Awad YM, Kim KR, Kim S-C, Kim K, Lee SR, Lee SS et al. Monitoring antibiotic residues and corresponding antibiotic resistance genes in an agroecosystem. Journal of Chemistry. 2015;2015:974843.
111. Ribeiro T, Novais Â, Peixe L, Machado E. Atypical epidemiology of CTX-M-15 among Enterobacteriaceae from a high diversity of non-clinical niches in Angola. Journal of Antimicrobial Chemotherapy. 2016;71:1169-73. doi: 10.1093/jac/dkv489.
112. Walsh TR, Weeks J, Livermore DM, Toleman MA. Dissemination of NDM-1 positive bacteria in the New Delhi environment and its implications for human health: an environmental point prevalence study. The Lancet infectious diseases. 2011;11:355-62.

113. Global Health Security Index. Angola: Country profile. Nuclear Threat Initiative and Johns Hopkins Center for Health Security; 2021 (https://ghsindex.org/wp-content/uploads/2021/12/Angola.pdf, accessed 4 November 2025).
114. World Health Organization. Library of national action plans. Geneva: World Health Organization; 2025 (https://www.who.int/teams/surveillance-prevention-control-AMR/national-action-plan-monitoring-evaluation/library-of-national-action-plans, accessed 4 November 2025).
115. World Health Organization. Cholera - Angola. Geneva: World Health Organization; 2025. (https://www.who.int/emergencies/disease-outbreak-news/item/2025-DON562, accessed 4 November 2025).
116. United Nations Children's Fund. General State Budget 2024: Water and Sanitation in the GSB. 2024 (https://www.unicef.org/angola/en/media/4816/file/Angola%20Wash%20Leaflet_English_Revised_03-10-2024.pdf.pdf, accessed 4 November 2025).
117. Sanitation and Water For All. Angola Collaborative Behavior Profile. 2021. (https://www.sanitationandwaterforall.org/sites/default/files/2021-10/CB_Profile_Angola.pdf, accessed 4 November 2025).
118. World Health Organization Country Office in Angola. Lista Nacional de Medicamentos Essenciais 2021. Government of Angola; 2021.

## The WHO Regional Office for Africa

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Africa is one of the six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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