



Food and Agriculture  
Organization of the  
United Nations



**USAID**  
FROM THE AMERICAN PEOPLE

# Protecting people and animals from disease threats



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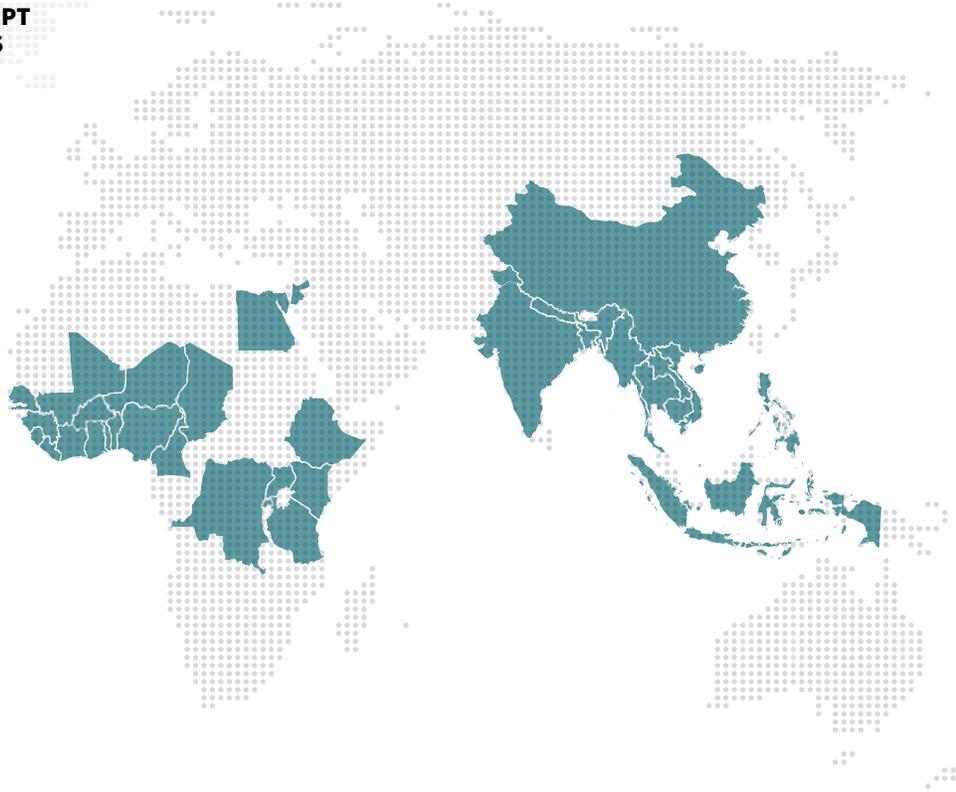
Illustrations: Chiara Caproni, Roma



**T**he United States Agency for International Development (USAID) is partnering with the Food and Agriculture Organization of the United Nations (FAO) to **protect people and animals** from high-impact diseases.

## 33 GHSA and EPT COUNTRIES

- Bangladesh
- Benin
- Burkina Faso
- Cambodia
- Cameroon
- Chad
- China
- Côte d'Ivoire
- Democratic Republic of the Congo
- Egypt
- Ethiopia
- Ghana
- Guinea
- India
- Indonesia
- Jordan
- Kenya
- Lao People's Democratic Republic
- Liberia
- Mali
- Myanmar
- Nepal
- Niger
- Nigeria
- Philippines
- Rwanda
- Senegal
- Sierra Leone
- Thailand
- Togo
- Uganda
- United Republic of Tanzania
- Viet Nam



Source: FAO, 2019.

**Two key programmes – Global Health Security Agenda (GHSA) and Emerging Pandemic Threats (EPT) – are building animal health capacity to prevent, detect and respond to disease threats.**

For over a decade, USAID has supported the work of FAO to keep the world safe from infectious diseases.

Through the USAID-funded GHSA and EPT programmes, FAO is active in preventing and combating diseases in over 30 countries. By supporting capacity development and technology transfer, the GHSA and EPT programmes are reducing the risk of national, regional and global disease spread. ■

Preventing  
the spread of  
infectious diseases  
can improve  
human wellbeing  
on many levels

# From animal disease to human disaster

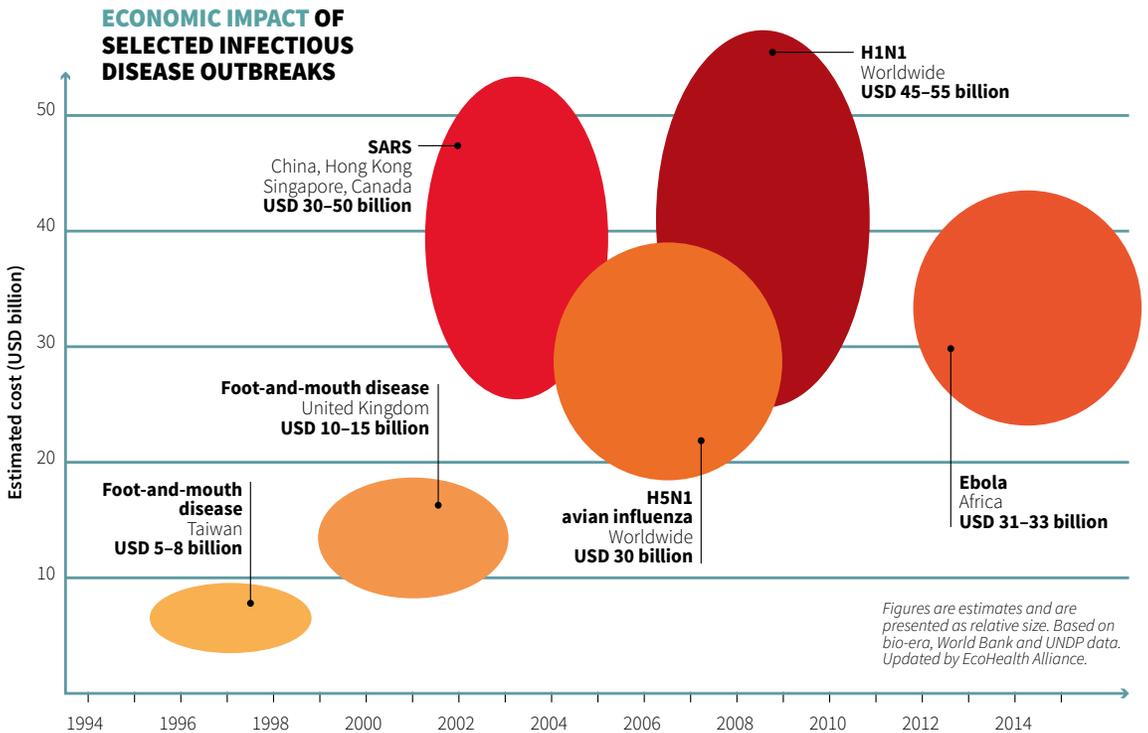
Animals and humans are living in closer proximity than ever before due to urbanization, deforestation, climate change, population growth, increases in mobility, and the intensification of the livestock industry. This means that diseases that jump from animals to humans (zoonoses) are on the rise and can spread in a matter of hours or days.

The most damaging outbreaks of high impact diseases in recent decades have had an animal source, including H5N1 highly pathogenic avian influenza, H1N1 pandemic influenza, Ebola, severe acute respiratory syndrome (SARS)



and Middle East respiratory syndrome (MERS). These diseases have either spread rapidly in a particular region (epidemics) or spread widely in many countries across the world (pandemics), leading to massive losses of life and livelihoods, and having a significant economic impact.

The link between humans, animals and the surrounding environment is particularly close in developing regions, where poor farming communities raise animals that provide transport, draught power, fuel and clothing, as well as food. Due to the broad reliance on animals, zoonotic diseases can have



even wider devastating impacts on these communities. When compounded with poverty, inadequate sanitary standards and lack of resilience, they can quickly wipe out much of the development that a country has achieved.

In many developing countries, hunting and the consumption of meat from wild animals is a common cultural practice, contributing to a large part of daily diets, and increasing the risk of zoonotic transmission.

By building capacity to forecast, prevent, detect and respond to disease emergence, FAO is reducing the impact of zoonoses on lives and livelihoods, and helping to stop emergence and spread of potential epidemics and pandemics at source.

FAO is committed to building resilience to animal and public health threats and emergencies, improving food security and supporting sustainable agriculture, in line with the 2030 Agenda for Sustainable Development. FAO works with local and global partners with the ultimate goal of eliminating poverty and hunger.

## USAID programmes implemented by FAO

- **GLOBAL HEALTH SECURITY AGENDA PROGRAMME**  
Developing national capacity to prevent zoonotic and non-zoonotic diseases while quickly and effectively detecting and controlling diseases when they do emerge.
- **EMERGING PANDEMIC THREATS PROGRAMME**  
Improving national capacity to pre-empt the emergence and re-emergence of infectious zoonotic disease and to prevent the next pandemic. ■

Global health  
security  
is a shared  
responsibility

# Global Health Security Agenda

## Developing national capacity to prevent, detect and respond to infectious disease threats.

Through the USAID-funded GHSA programme, FAO is helping 19 countries in Africa and Asia to improve their capacity to prevent, detect and respond to disease threats, using a multi-sectoral **One Health** approach, linking human, animal and environmental health.

Priority zoonotic diseases have been identified by animal and public health professionals in each country, assisted by the Centers for Disease Control and Prevention Prioritization Tool and other USAID implementing partners.

### 19 FAO GHSA COUNTRIES

- Bangladesh
- Burkina Faso
- Cameroon
- Côte d'Ivoire
- Democratic Republic of the Congo
- Ethiopia
- Ghana
- Guinea
- India
- Indonesia
- Kenya
- Liberia
- Mali
- Rwanda
- Senegal
- Sierra Leone
- Uganda
- United Republic of Tanzania
- Viet Nam

Source: FAO, 2019.

Missions in each country have determined the current capacity level, using the GHS Joint External Evaluation tool, which is now being used to build action plans and self-assess progress.

The FAO GHS programme contributes to the Global Health Security Agenda – a growing partnership of over 60 countries, NGOs and international organizations, aiming to create a world safe from infectious disease threats and elevate global health security as a national and global priority.

All GHS member countries participate in one or more of the 11 Action Packages, which are areas of work and specific sets of actions to urgently establish global capacity to prevent, detect and rapidly respond to infectious disease threats. The FAO GHS programme focuses on the five Action Packages below, where it has a strong comparative advantage – implementing and supporting country-driven prevention and detection of zoonotic diseases.

## Antimicrobial resistance

**Aim:** Prevent the emergence and spread of drug resistant microbial pathogens, and ensure uninterrupted access to essential antimicrobials of assured efficacy.

**Action:**

- Strengthen laboratory capacity to detect disease-causing microbes that are resistant to antimicrobials.
- Improve surveillance of infections caused by antimicrobial-resistant pathogens through sentinel sites.
- Implement national control programmes to prevent healthcare-associated infections.
- Designate stewardship centres to promote and regulate the use of antibiotics in humans and animals.

## Zoonotic diseases

**Aim:** Adopt policies and practices which minimize the risk of transmission of zoonotic diseases from animals into human populations.

**Action:**

- Identify each country's five priority zoonotic diseases or pathogens with high national public health concern.
- Strengthen surveillance systems for prioritized zoonoses.
- Develop the One Health capacity of the animal health workforce at a national and sub-national level.
- Ensure mechanisms for responding to existing and emerging zoonoses are established and functional.

## Biosafety and biosecurity

**Aim:** Identify, secure and monitor dangerous pathogens in a minimal number of facilities according to best practices, to avoid unintentional exposure or release, and ensure the proper handling and storage of dangerous biological material.

**Action:**

- Put in place biosafety and biosecurity systems which include pathogen inventories and laboratory licensing at all human, animal and agricultural facilities.
- Train laboratory and field staff and contribute to the development of a national training programme for all staff at facilities that work with dangerous pathogens and toxins.



## National laboratory systems

**Aim:** Safely and accurately identify pathogens through an effective nationwide laboratory system.

**Action:**

- Ensure a safe and secure countrywide specimen transport system
- Field-test innovative point-of-collection diagnostics for screening outbreak specimens
- Train staff in quality assurance and ensure quality control programmes are in place in laboratories



## Workforce development

**Aim:** A well trained diverse workforce that include physicians, veterinarians, biostatisticians, biologists, ecologists, scientists and farming professionals, and at least one field epidemiologist per 200 000 population, meeting core capacity requirements of international health regulations.

**Action:**

- Put in place a public health workforce strategy which ensures the required multidisciplinary human resources are available at national and local levels.
- Implement an applied epidemiology training programme. ■



Monitoring the  
evolution and  
pre-empting  
the emergence of  
potentially zoonotic  
avian influenza  
strains is critical  
to preventing  
a pandemic

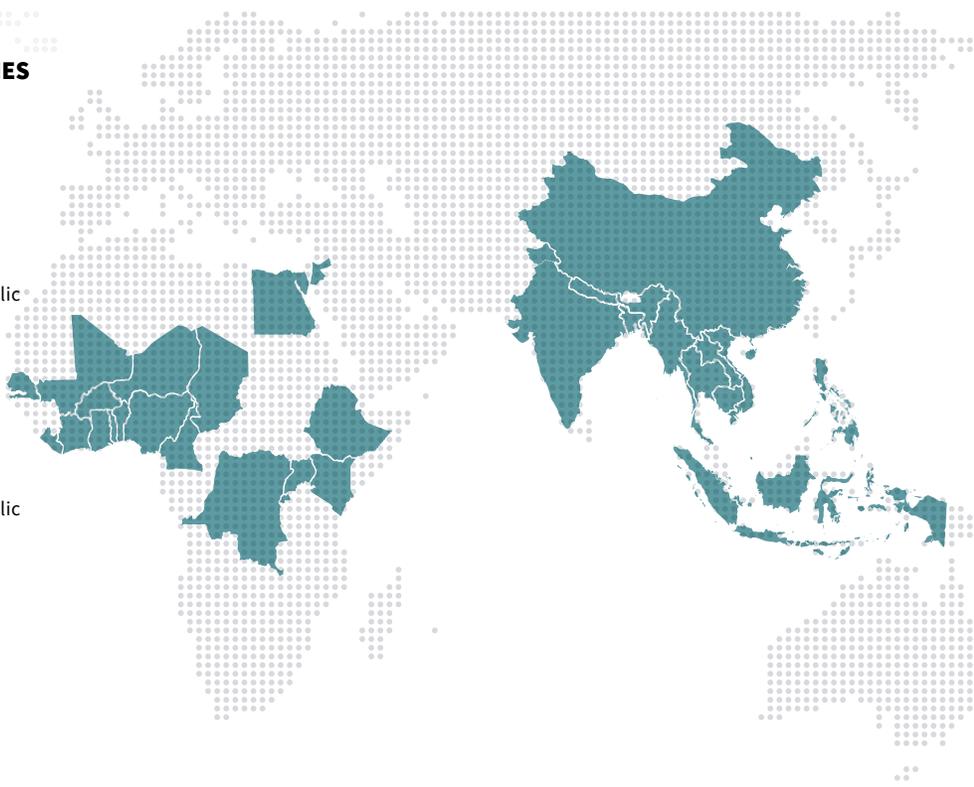
# Emerging Pandemic Threats

**Improving national capacity to pre-empt the emergence of infectious zoonotic diseases and prevent pandemics.**

When infectious diseases emerge they can spread across a country, region and the globe in a matter of hours to days. This presents enormous challenges for public and animal health, economies and development. In order to prevent

## 30 **FAO EPT** **COUNTRIES**

- Bangladesh
- Benin
- Burkina Faso
- Cambodia
- Cameroon
- Chad
- China
- Côte d'Ivoire
- Democratic Republic of the Congo
- Egypt
- Ethiopia
- Ghana
- India
- Indonesia
- Jordan
- Kenya
- Lao People's Democratic Republic
- Liberia
- Mali
- Myanmar
- Nepal
- Niger
- Nigeria
- Philippines
- Rwanda
- Senegal
- Thailand
- Togo
- Uganda
- Viet Nam



Source: FAO, 2019.

the transmission and spread of these diseases, the global community needs a comprehensive, proactive approach that draws on a wide array of sectors, partners and resources and focuses on the source of disease emergence, spillover and spread.

Through the EPT programme, FAO develops the capacity of more than 25 countries in Africa and Asia to pre-empt or combat, at their source, emerging diseases of animal origin that could threaten human health.

**The EPT programme focuses on:**

- **Avian influenza**  
Prevention measures including guidance on poultry production, biosecurity and sanitary standards, and vaccine quality and vaccination, as well as early detection and rapid response.
- **Middle East respiratory syndrome**  
Surveillance and analysis to understand why, how and where the disease is spreading and associated risk factors.
- **Africa Sustainable Livestock 2050 (ASL2050)**  
Policy guidance to ensure sustainable and safe livestock production – assuring livelihoods, food security and nutrition.
- **Emergency equipment stockpile**  
Deploying specialist resources for onsite rapid response and containment of disease outbreaks.

## Avian influenza

**Understanding risks and targeting disease prevention and control to reduce the risk of spillover to humans and mitigate impact on the poultry sector.**

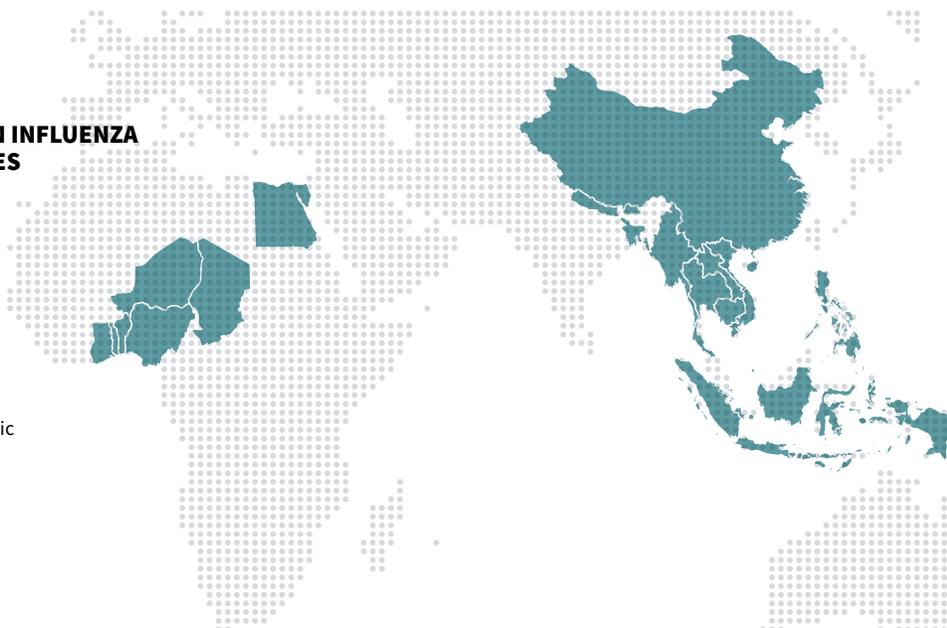
Following the first emergence of zoonotic H5N1 highly pathogenic avian influenza (HPAI) in several countries in Southeast Asia in 2004, the disease spread rapidly in 63 countries in Asia, Europe and Africa. While global efforts have helped to widely eliminate the disease, there are still some countries in Asia and Africa where the H5N1 virus persists, causing regular disease outbreaks in poultry and occasionally human cases.

Since H5N1 HPAI first emerged, 861 human cases have been confirmed, leading to 455 human deaths.<sup>1</sup> The global economic cost is estimated to be in the tens of billions of US dollars. In the last decade, a number of new subtypes of zoonotic avian influenza viruses have emerged,

<sup>1</sup> World Health Organization (WHO), June 2019  
[https://www.who.int/influenza/human\\_animal\\_interface/H5N1\\_cumulative\\_table\\_archives/en/](https://www.who.int/influenza/human_animal_interface/H5N1_cumulative_table_archives/en/)

### 15 EPT AVIAN INFLUENZA COUNTRIES

- Bangladesh
- Benin
- Bhutan
- Cambodia
- Chad
- China
- Egypt
- Ghana
- Indonesia
- Lao People's Democratic Republic
- Myanmar
- Nepal
- Niger
- Nigeria
- Togo
- Viet Nam



Source: FAO, 2019.



notably H7N9 and H5N6. Another highly pathogenic virus for poultry, H5N8, is able to move long distances, carried by migratory birds. In addition, the low pathogenic H9N2 influenza virus is now entrenched in poultry farming systems in many countries in Africa and Asia. Co-circulation of these various subtypes of avian influenza viruses enhances the opportunity for genetic recombination, generating new subtypes of influenza viruses with unpredictable results.

The avian-origin H7N9 virus has infected 1 567 people and caused 615 human deaths since its emergence in China in 2013.<sup>2</sup> The H7N9 virus is rapidly evolving, and has recently become highly virulent to poultry populations. While still confined to China, cross-border trade in poultry and poultry products continues between China and its neighbouring countries Myanmar, Viet Nam and Lao People's Democratic Republic. FAO conducts regular risk assessments with national counterparts and supports countries in preparing to detect a virus incursion early and respond effectively.

FAO has broadened its efforts to monitor all avian influenza viruses in order to guide targeted prevention and control measures. It is very important to analyse the evolution of avian influenza viruses – if a new strain has the ability to spread between humans then it has the potential to cause a global pandemic. With this growing danger in mind, FAO works with USAID's PREDICT-2 programme to carry out triangulated surveillance of humans, poultry and wild birds in Asia and regularly contributes virological information on field strains to decision-makers who select vaccine strains to protect humans.

FAO is actively combating avian influenza in 15 countries. FAO aims to reduce virus spread in poultry and human exposure, as well as identify the emergence and spread of new virus subtypes early, in order to assess potential threats.

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<sup>2</sup> WHO, September 2019. <https://www.who.int/csr/don/05-september-2018-ah7n9-china/en/>

Where avian influenza is under control, FAO is helping to improve preparedness to prevent and detect the virus and forecast new incursions, by:

- undertaking regular risk assessments
- carrying out surveillance where the risk of transmission – among poultry, or between wild birds and poultry – is high, including critical points along value chains, markets and across-borders
- analysing human exposure risks along value chains – including production, marketing and cultural practices – such as live bird markets and smallholdings
- technology transfer and increasing laboratory capacity for detection and characterisation of the virus

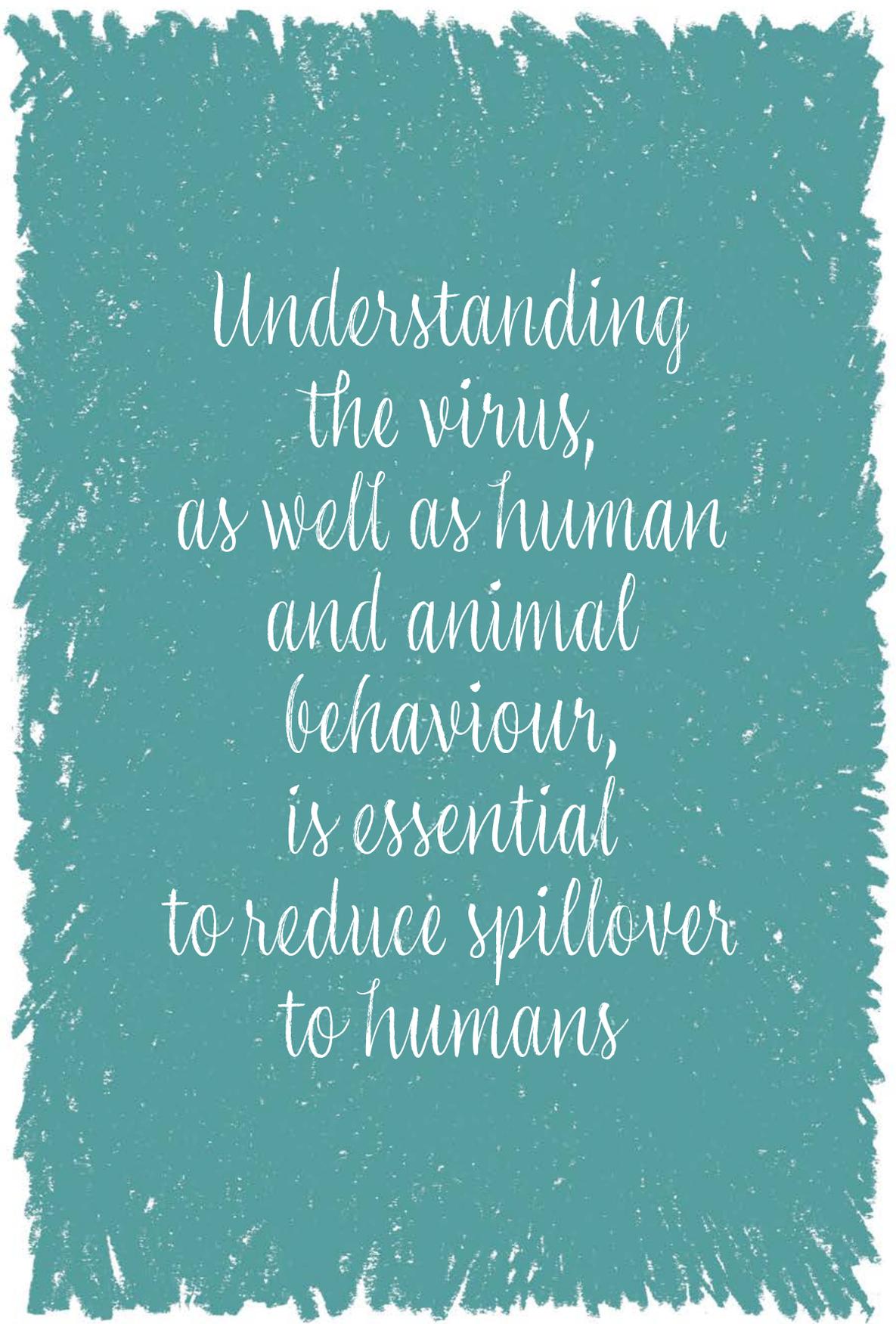
Where the virus is endemic or has recently emerged or re-emerged, FAO is focusing on rapid response to the changing situation to stop the disease from spreading, by:

- implementing control programmes including stamping out, biosecurity and improved vaccination practices, and monitoring effectiveness
- biosafety and biosecurity training and guidelines to reduce the occupational hazards for those in contact with the virus
- ensuring the public and rural communities are well-informed about how they can help to prevent the spread of disease

FAO is monitoring the evolution of the virus and pre-empting re-emergence, by:

- conducting longitudinal field surveillance to better understand infection and transmission dynamics and identify new avian influenza viruses and points for disease intervention
- providing data to the public health community to inform the choice of viruses that may be used to generate human vaccines for seasonal influenza prevention or to avert a possible pandemic





Understanding  
the virus,  
as well as human  
and animal  
behaviour,  
is essential  
to reduce spillover  
to humans

## Middle East respiratory syndrome

Understanding disease spread in order to help reduce the risk of transmission from camels to humans.

Dromedary camels are the natural reservoir of the MERS coronavirus and a source of infection for humans, but the nature of transmission is not well understood.

The virus can cause severe respiratory infection damage in humans, especially to those with related health conditions. There have been more than 2 464 human cases since September 2012, with 850 associated deaths.<sup>3</sup> Human-to-human transmission has been observed especially in hospital settings, although there is no evidence of sustained human-to-human spread.

<sup>3</sup> WHO, September 2019. <https://www.who.int/csr/don/26-september-2019-mers-saudi-arabia/en/>

### 4 EPT MERS COUNTRIES

- Egypt
- Ethiopia
- Jordan
- Kenya



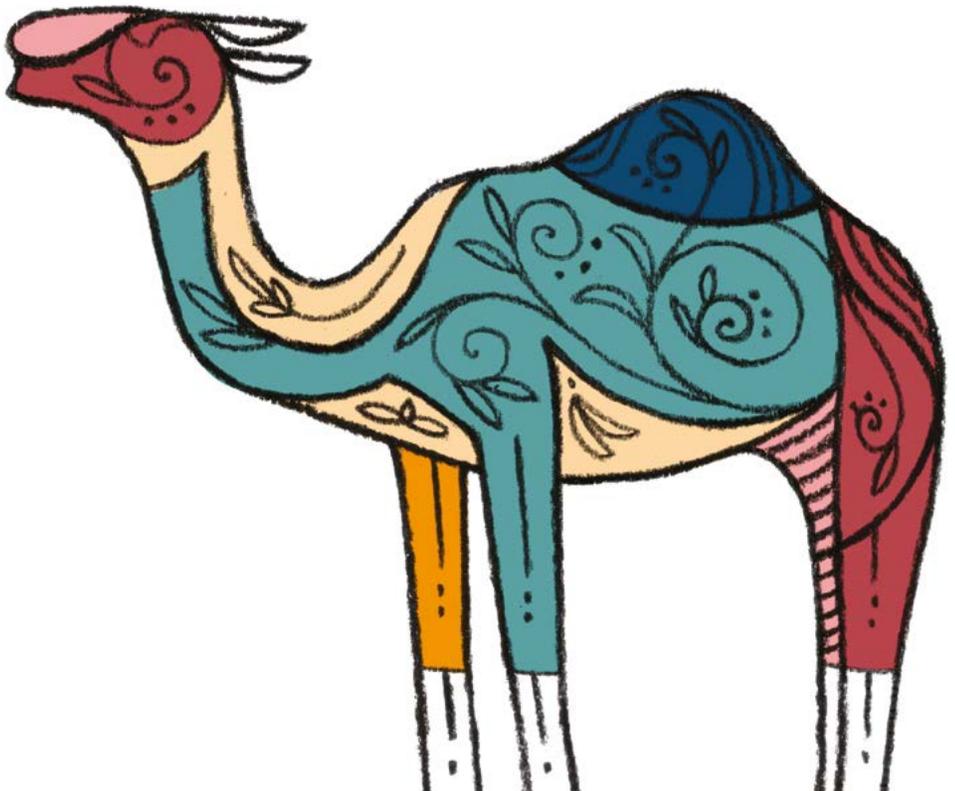
Source: FAO, 2019.

FAO is focusing on four countries in the Horn of Africa and Middle East in which the MERS virus is endemic in camels, and investigating how spillover risk to humans can be reduced, by:

- training field staff in the safe collection and transport of samples
- increasing the ability of laboratories to test samples quickly and safely
- conducting risk mapping and analysis of highly MERS-positive areas
- understanding the epidemiology and infection dynamics of MERS virus in camels

In order to make recommendations to mitigate the risk of animal-to-human spillover, FAO is conducting longitudinal surveillance studies to better understand:

- animal and human behavioural risk factors, including rearing and management practices, which could lead to transmission between camels and humans
- economic and social vulnerabilities along the camel value chain, including production, farming, trade and consumption
- seasonal factors including the effects of calving and weaning
- the potential presence of variant strains of the virus with different transmission dynamics





Livestock sector  
growth in Africa  
presents a critical  
opportunity to  
build on lessons  
learned, for a more  
secure future

## Africa Sustainable Livestock 2050

### Identifying priority actions that will allow sustainable and safe growth in the livestock sector.

As Africa's population grows and becomes more affluent in the next few decades, the demand for meat, milk and eggs is expected to boom. The livestock sector will evolve in response to this growing demand and will soon become the largest contributor to the value of agricultural markets.

While a growing livestock market will offer access to better nutrition and many economic opportunities, intensification will also lead to a greater risk of pathogen emergence and spread. It is important to utilise global experience in order to build a sustainable and robust livestock sector in Africa.

### 6 ASL2050 COUNTRIES

- Burkina Faso
- Egypt
- Ethiopia
- Kenya
- Nigeria
- Uganda



Source: FAO, 2019.

Through ASL2050, FAO cooperates with governments and stakeholders, to generate evidence for improved policies to assure sustainability of the livestock sector and provision of livelihoods, food security and nutrition, whilst mitigating the environmental and public health impacts of fast-changing livestock systems.

By facilitating dialogue and cooperation between stakeholders in six African nations, FAO:

- assesses the impact of livestock on public health, livelihoods and the environment
- models long-term scenarios to anticipate the challenges and opportunities for society that a growing livestock sector will introduce
- recommends priority policy actions to be taken now, in order to tap into future opportunities while addressing public health, environmental and socio-economic challenges



Pandemics  
are  
preventable

## Emergency equipment stockpile

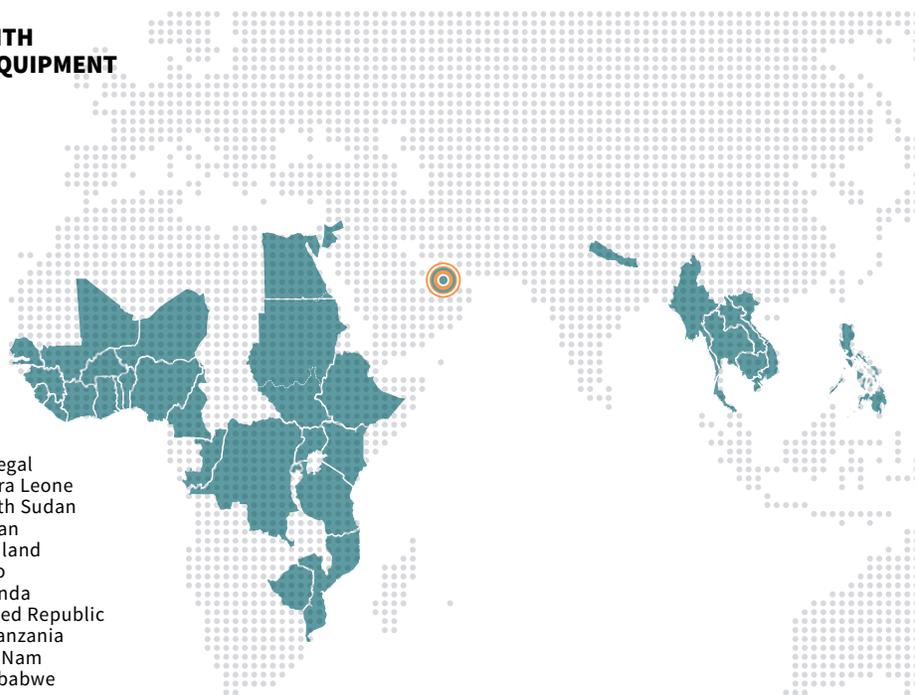
**Sending equipment and providing expertise to areas of disease outbreak to facilitate rapid response and contain the disease before further spread.**

Special items such as personal protective equipment, diagnostic laboratory consumables and reagents, and sample shipping containers are essential to respond to outbreaks, detect pathogens and refer samples for analysis. This contributes to the prevention and detection of national, regional and international spread of animal diseases that have the potential to spill over to humans.

To avoid delayed detection and response to disease events due to lack of appropriate equipment or expertise, FAO has set up a global emergency stockpile in collaboration with the United Nations Humanitarian Response Depots in Dubai.

### 32 COUNTRIES WITH EMERGENCY EQUIPMENT STOCKPILE

- Benin
- Burkina Faso
- Cambodia
- Cameroon
- The Congo
- Côte d'Ivoire
- Democratic Republic of the Congo
- Egypt
- Ethiopia
- Ghana
- Guinea
- Jordan
- Kenya
- Lao People's Democratic Republic
- Liberia
- Mali
- Mozambique
- Myanmar
- Nepal
- Niger
- Nigeria
- Rwanda
- Senegal
- Sierra Leone
- South Sudan
- Sudan
- Thailand
- Togo
- Uganda
- United Republic of Tanzania
- Viet Nam
- Zimbabwe

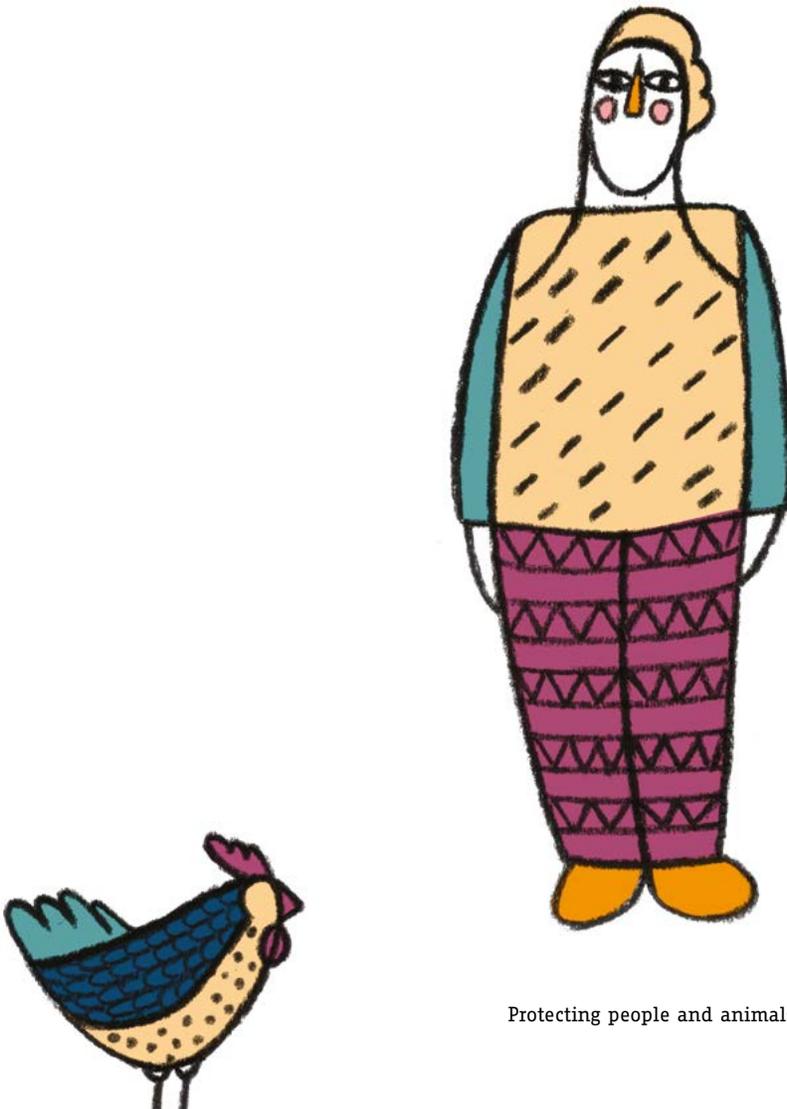


Source: FAO, 2019.

By rapidly deploying the required equipment in response to outbreaks, training end-users, and maintaining an emergency response supply chain to target countries, FAO support allows for:

- outbreak investigation and control
- disease diagnosis
- biosafety and biosecurity for outbreak responders
- sample referral to FAO, World Organisation for Animal Health (OIE) or World Health Organization (WHO) reference laboratories

Since the emergency equipment stockpile was established in 2016, resources have been deployed to 32 countries and were critical in responding to outbreaks of Ebola, HPAI and Rift Valley fever. ■



**ECTAD** FAO's Emergency Centre for Transboundary Animal Diseases (ECTAD) plans and delivers animal health assistance to FAO member countries responding to the threat of transboundary animal health events.

The GHSA and EPT programmes are facilitated by FAO's ECTAD multidisciplinary teams.

### **National, regional and global partners**

FAO works with OIE and WHO to consolidate efforts to institutionalize the One Health approach at country level.

FAO works closely with national governments, specialized agencies, regional economic communities, international research institutes, leading laboratories, and FAO, OIE and WHO reference centres, in order to build national and regional capacities to reduce the impact of infectious diseases on public health, improve food security and nutrition and support sustainable development.

PREDICT-2, Preparedness and Response, and the One Health Workforce are key partners in the development and implementation of the USAID-funded GHSA and EPT programmes.

### **One Health**

The health of people is connected to the health of animals and the environment. The One Health approach recognizes that the emergence of infectious diseases and pandemic threats is influenced by multiple factors including medical, behavioural, climatic, social and economic. The approach thus encourages cross-disciplinary collaboration – locally, nationally and globally.

FAO, OIE and WHO have partnered to address the major health and economic impacts of emerging and re-emerging infectious diseases at the animal-human-environment interface.

Throughout FAO's work to raise the level of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy, there is increasing recognition that the improvement of **global health security** and **food security** form twin objectives.

Enhancing  
global health security  
by controlling  
the spread of  
infectious diseases  
at source

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