RAND EUROPE

World Organisation for Animal Health

# EcoAMR

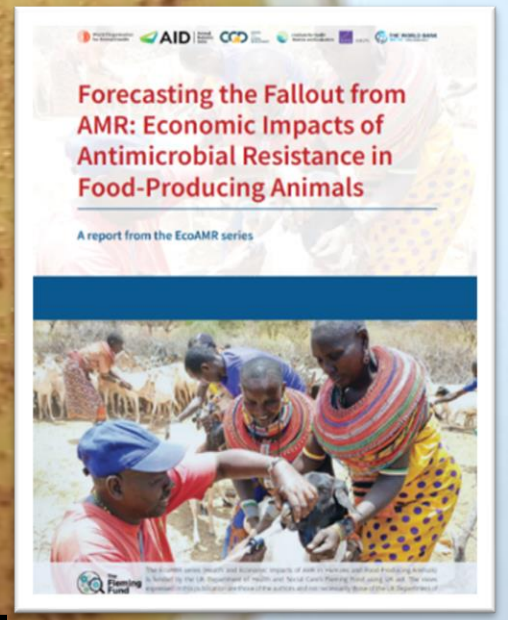
## Forecasting the fallout from AMR - Economic impact of antimicrobial resistance in food-producing animals

Marco Hafner & Morgan Jeannin

3rd February 2025 | Africa Regional Workshop on the Implementation of the 2024 UNGA-adopted AMR Political Declaration

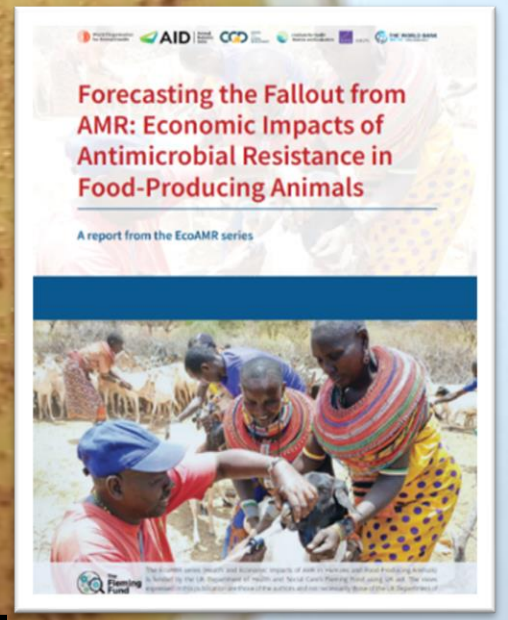
# From 2025 to 2050, the spillover of resistant pathogens from livestock to humans could reduce global GDP by ...

$



# From 2025 to 2050, the spillover of resistant pathogens from livestock to humans could reduce global GDP by ...

# $5.2 trillion



From 2025 to 2050, the spillover of resistant pathogens from livestock to humans could reduce global GDP by ...

# $ 5.2 trillion

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2 ×

# EcoAMR Reports

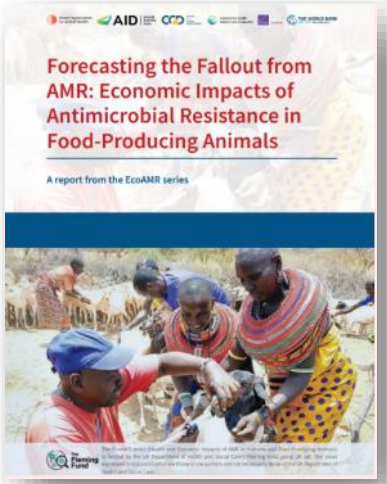
CENTER FOR GLOBAL DEVELOPMENT

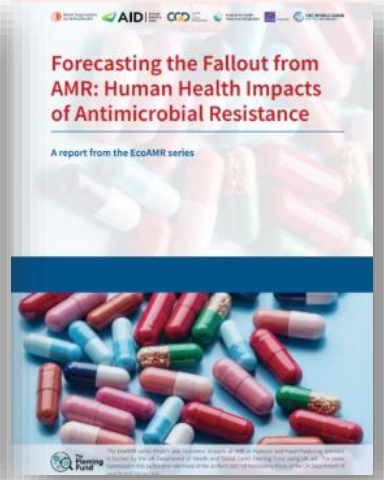
RAND EUROPE

Institute for Health Metrics and Evaluation

World Organisation for Animal Health (Founded as OIE) | Organisation mondiale de la santé animale (Fondée en tant qu'OIE) | Organización Mundial de Sanidad Animal (Fundada como OIE)

Provide new evidence on the cost of AMR from a One Health Perspective and inform the UN High-Level Meeting on AMR of September 2024



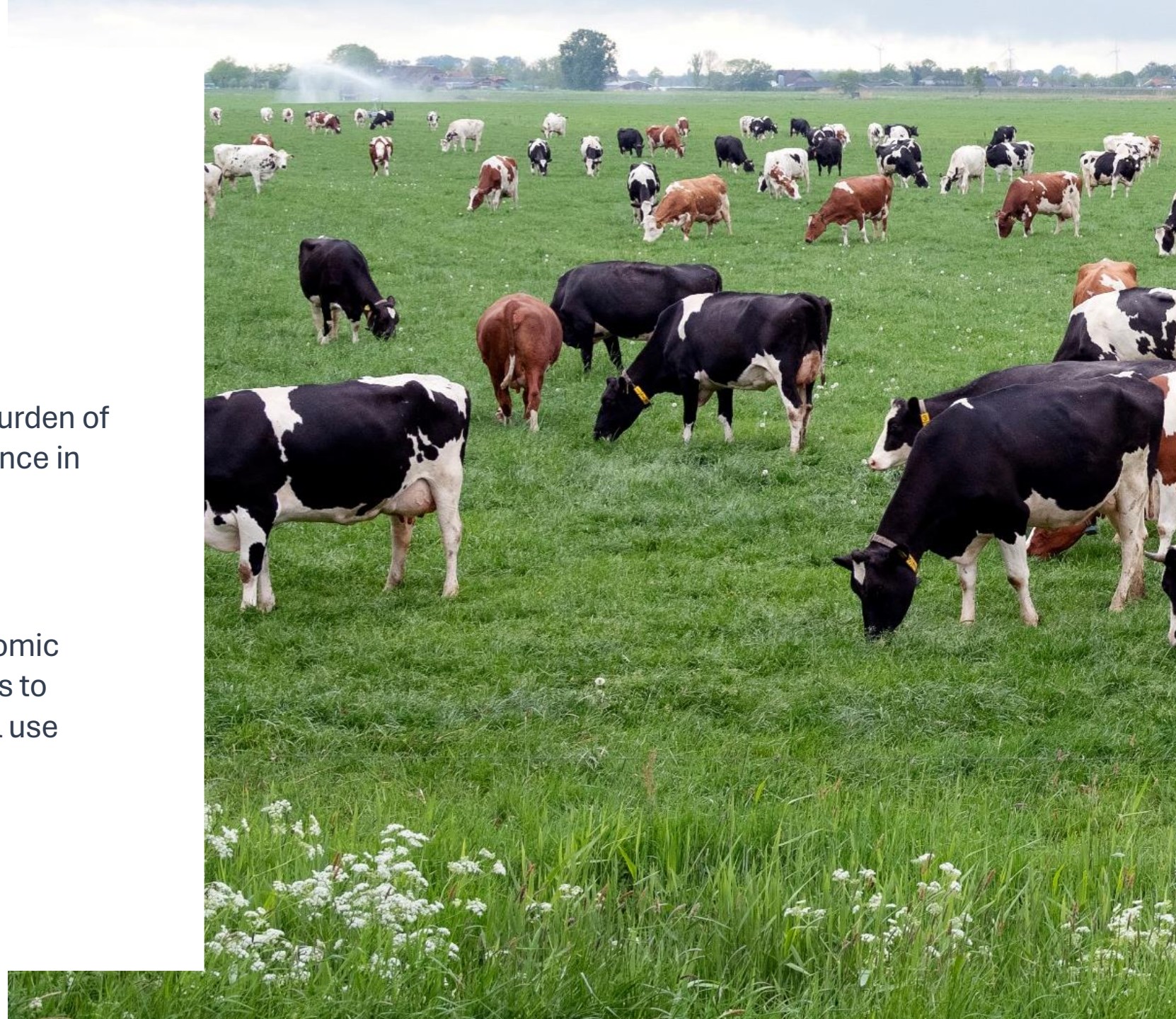


# Objectives

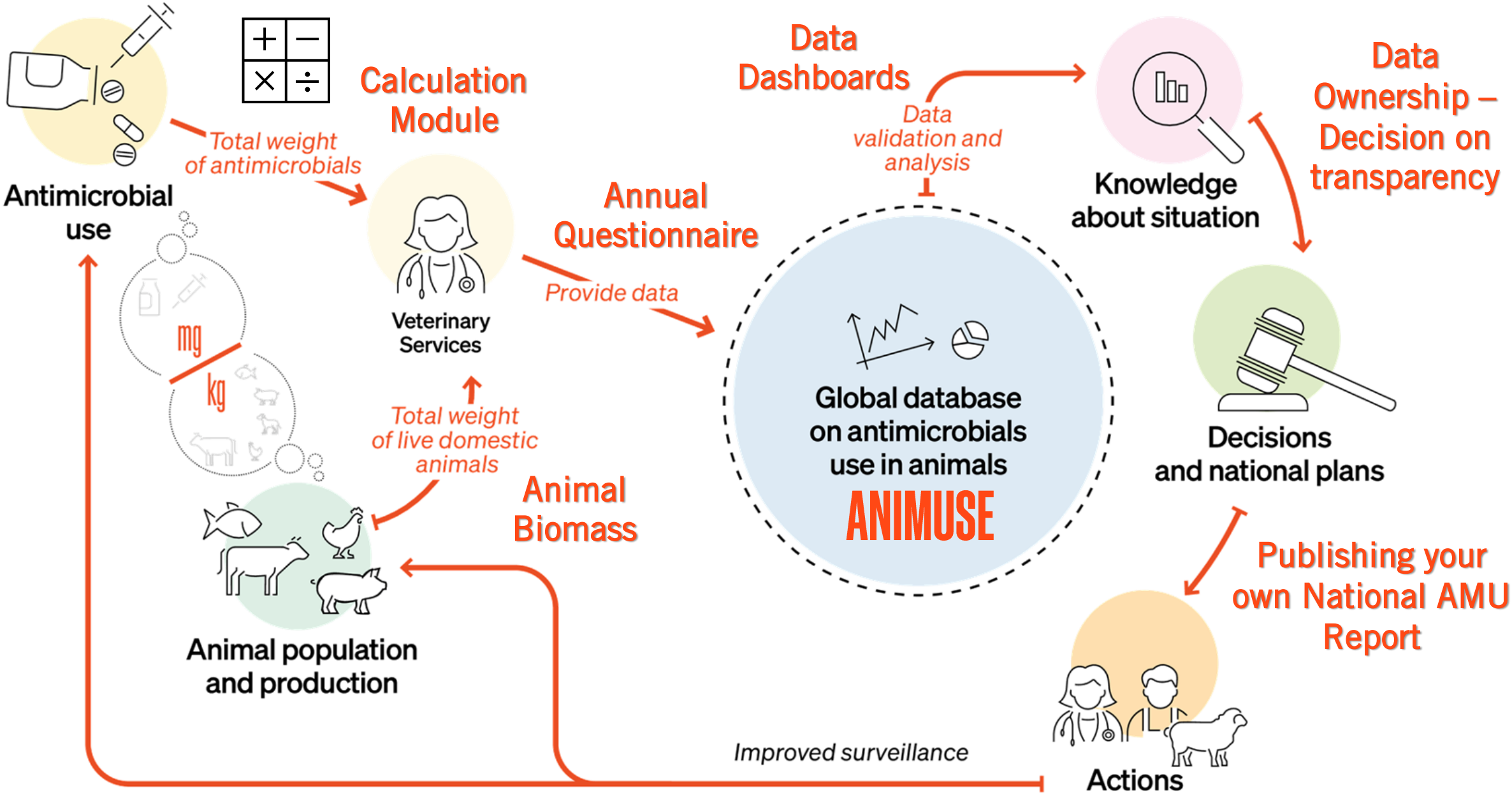
## Focus of the research:

Understanding the burden of antimicrobial resistance in livestock production

Estimating the economic value of interventions to reduce antimicrobial use



# ANIMUSE – From AMU Data to Action



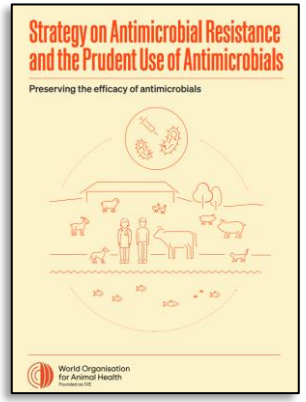
# ANIMUSE – More than 10 years of commitment




**1st Global Conference AMR**

GLOBAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE

**Global Action Plan on AMR**




**WOAH's AMR Strategy**

**Resolution 36** "*Combating AMR through a One Health Approach: Actions and OIE Strategy*"

The OIE actions to be compiled and consolidated within the OIE Strategy on antimicrobial resistance include:

84 SG 2016 Paris 22-27 may mai mayo

*The establishment and the management of a database for the collection of data on the use of antimicrobial agents in animals as well as the development of interpretation indicators*

83SG 2015

**Resolution 26** "*Combating AMR and Promoting the Prudent Use of Antimicrobial Agents in Animals*"

The OIE *develops a procedure and standards for data quality for collecting data annually from OIE Member Countries on the use of antimicrobial agents in food-producing animals with the aim of creating an OIE global database…*

99. Encourage all countries to report quality surveillance data on antimicrobial resistance and **antimicrobial use** by 2030, through existing global surveillance systems, including the Global Antimicrobial Resistance and Use Surveillance System (GLASS), **Global Database for Antimicrobial Use in Animals (ANIMUSE)**, and International FAO Antimicrobial Resistance Monitoring (InFARM) platform […]

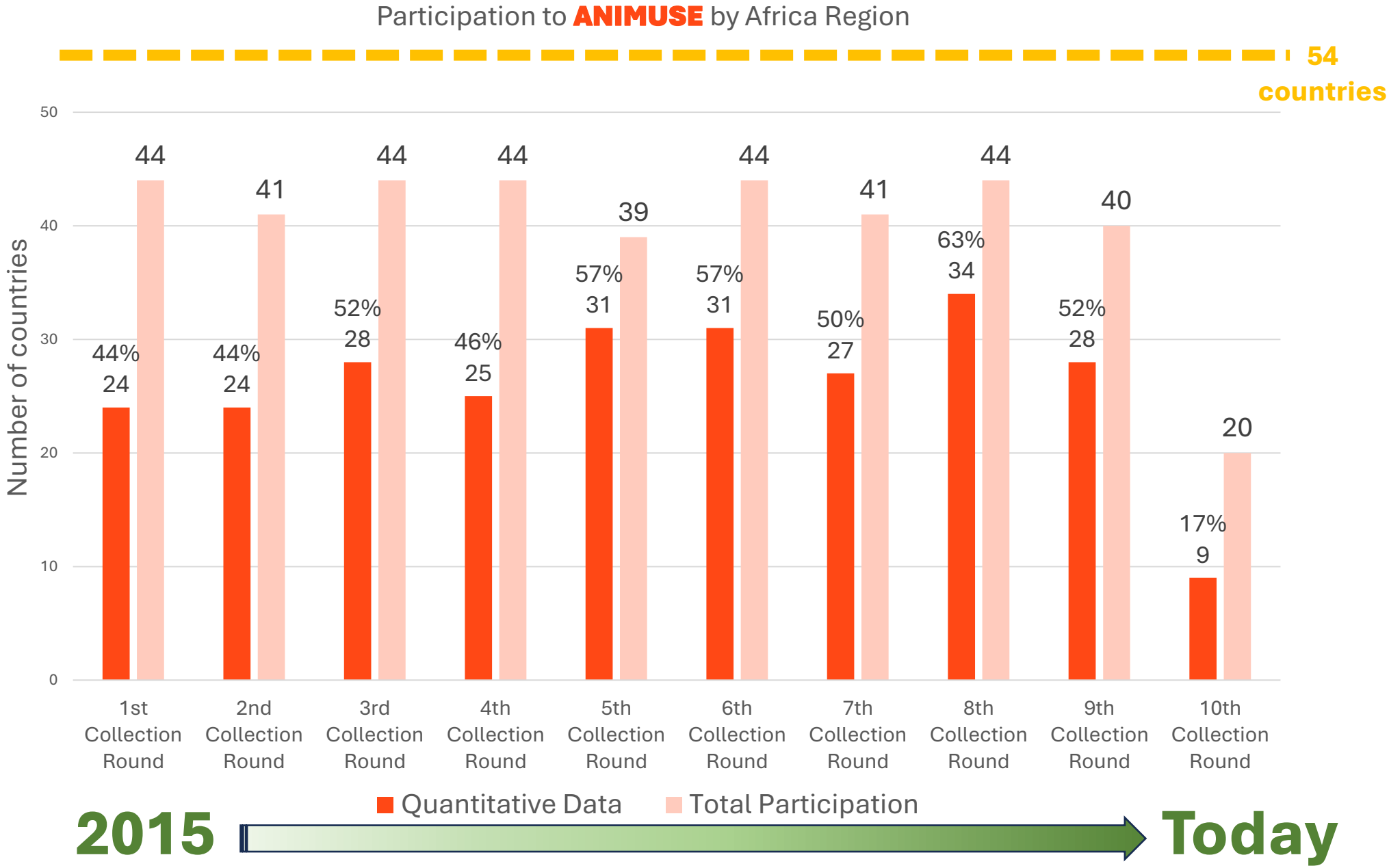
Fourth Global High-Level Ministerial Conference on Anitmicrobial Resistance

## Jeddah Declaration

4) **Support collection of accurate data and report regularly** into global surveillance systems including GLASS AMR/AMC, **ANIMUSE** and INFARM as appropriate […]

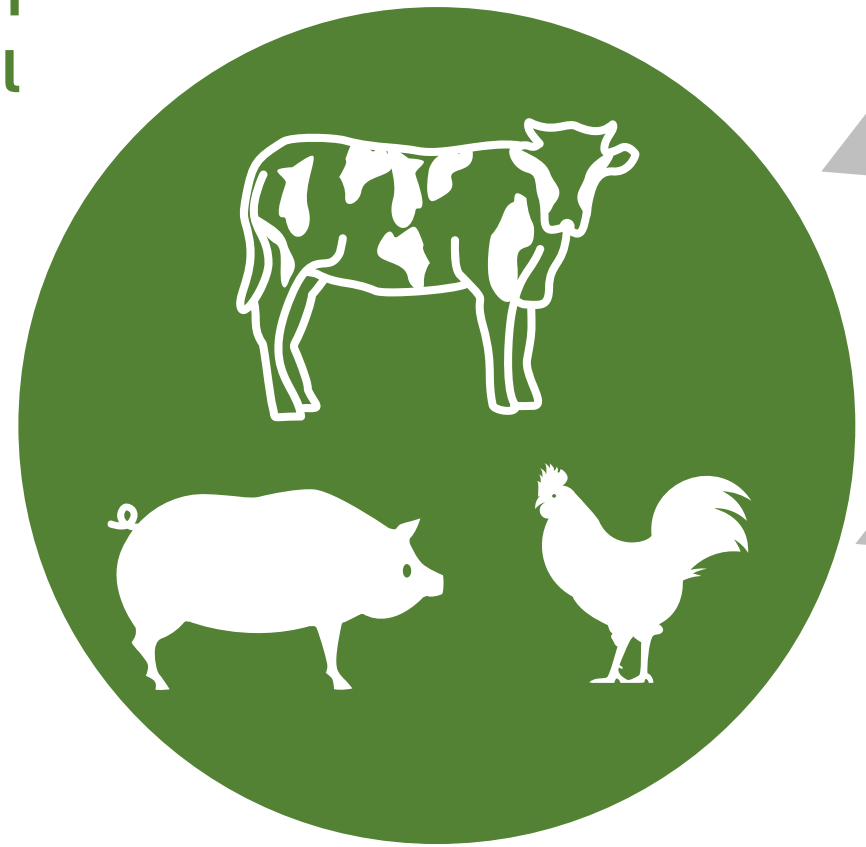
# ANIMUSE – 10 years of AMU data





# Modelling the cost of resistance in livestock production

## Livestock production disease (LPD) model



**Livestock sector and disease inputs:**

- Animal stocks
- Production parameters
- Disease incidence

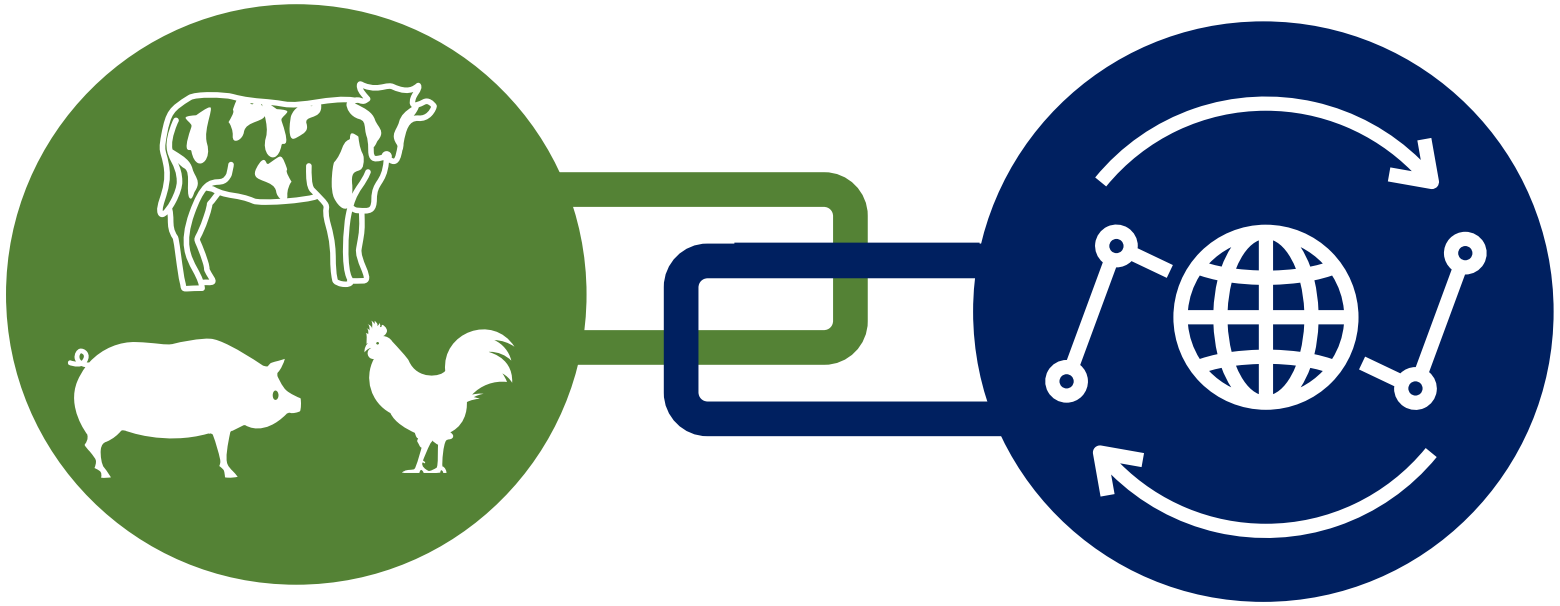
**Link between antimicrobial use and resistance:**

- **ANIMUSE**
- Resistancebank

# Modelling the cost of resistance in livestock production

**Livestock production disease (LPD) model**

**Dynamic computable general equilibrium (DCGE) macroeconomic model**



**Economic inputs:**

- Consumption of intermediate and final goods and services
- Bilateral trade flows factor use tables
- Transport, taxes and subsidies

# Business as usual and other “what-if” scenarios

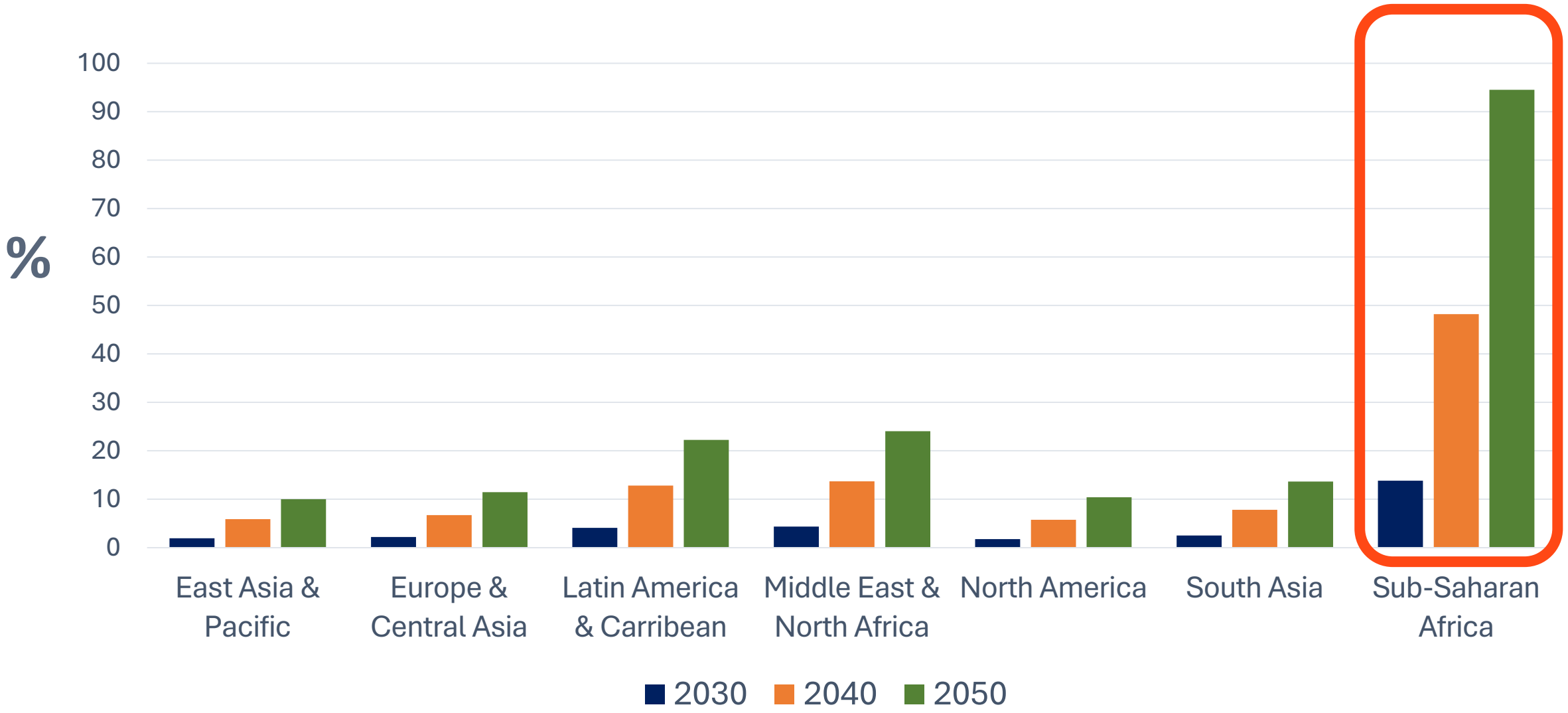
**Business as usual case:**
Resistance projected based on historical rates; **business as usual antimicrobial use**

**Pessimistic scenario:**
Higher AMR-attributable disease burden

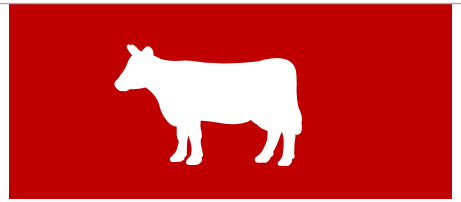
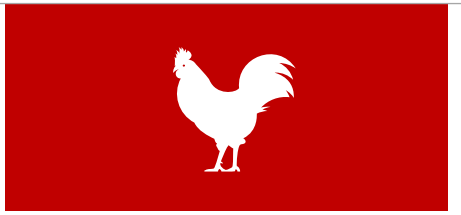
**Human spillover scenarios:**
Moderate spillover effects from animal antimicrobial use on humans

# Predicted changes in antimicrobial use by 2050

(business as usual) – using FAO livestock production trend data

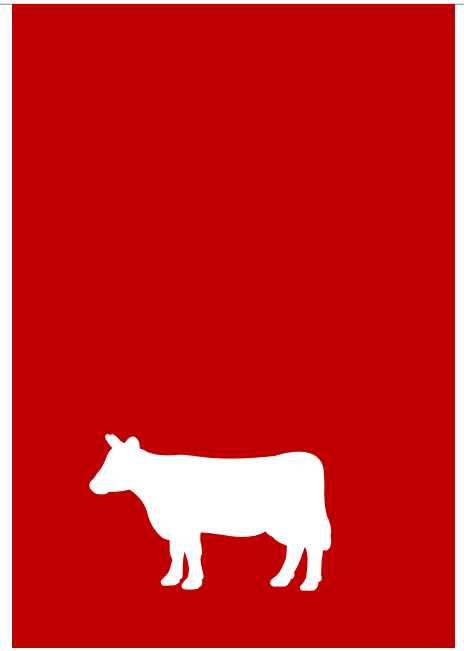
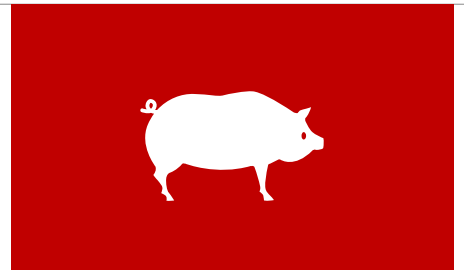
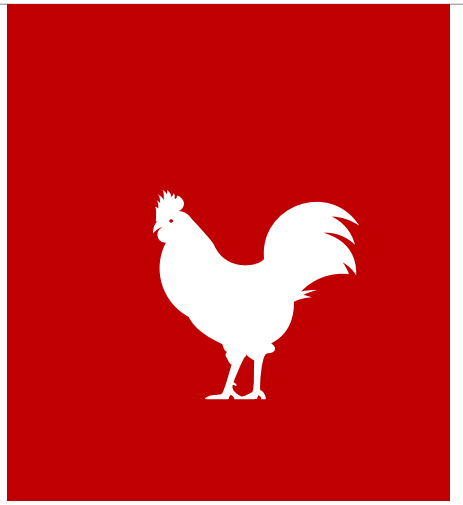


# Estimated production losses in livestock sectors attributable to resistant infections in 2025 – Sub-Saharan Africa

| CATTLE: MEAT | CATTLE: RAW MILK | PIG: MEAT | CHICKEN: MEAT |
|---|---|---|---|
|  |  |  |  |
| **-1.2%** | **-0.5%** | **-1.0%** | **-1.6%** |
| **(-16 million)** | **(-8.7 million)** | **(-12 million)** | **(-12 million)** |

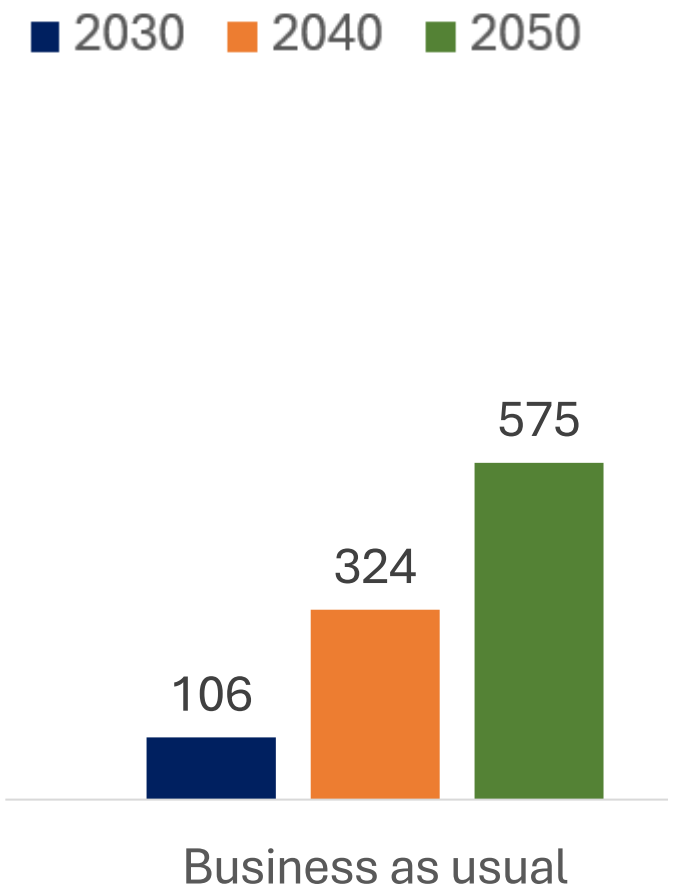
**Consumption equivalent based on per capita consumption**

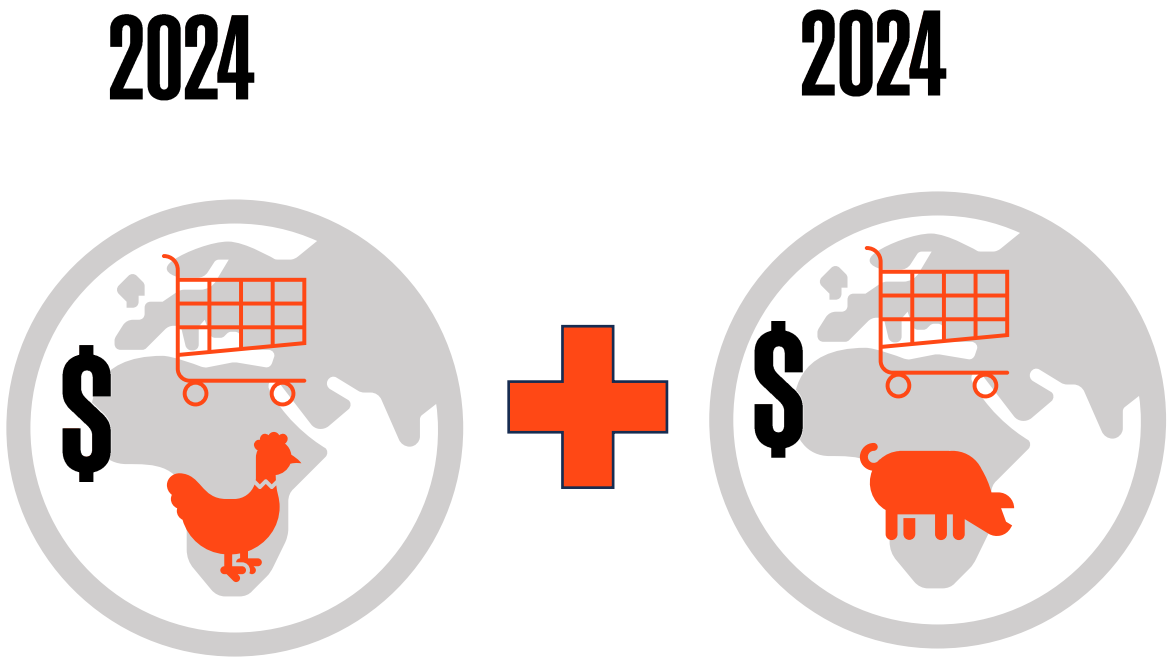
# Estimated global production losses in livestock sectors attributable to resistant infections in 2050 – Sub-Saharan Africa

| CATTLE: MEAT | CATTLE: RAW MILK | PIG: MEAT | CHICKEN: MEAT |
|---|---|---|---|
|  |  |  |  |
| **-9.4%** | **-5.5%** | **-4.0%** | **-6.8%** |
| **(-253 million)** | **(-224 million)** | **(-115 million)** | **(-170 million)** |

**Consumption equivalent based on per capita consumption**

# Global cumulative GDP loss attributable to AMR in livestock sectors ($ billion)



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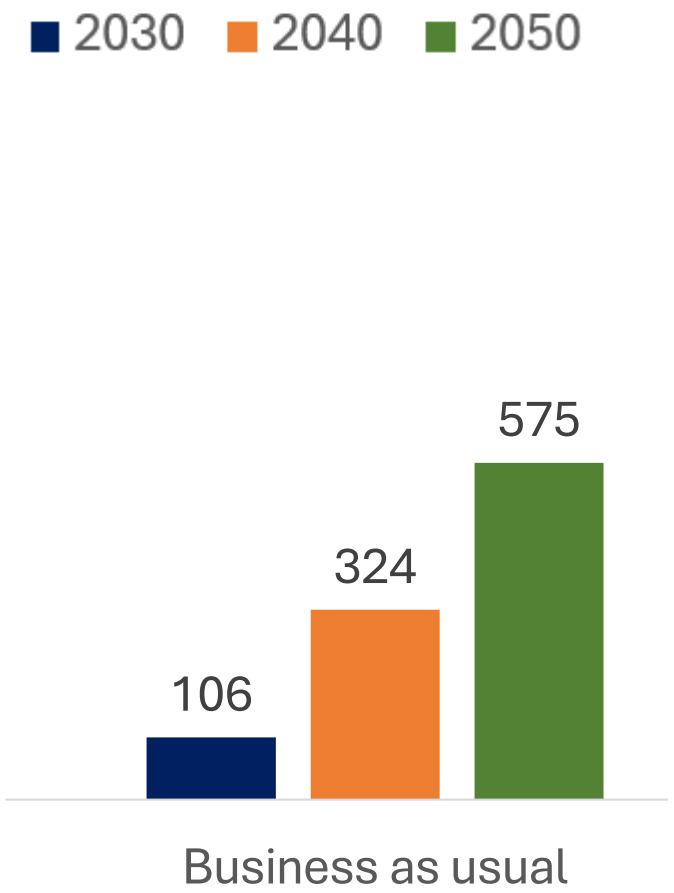


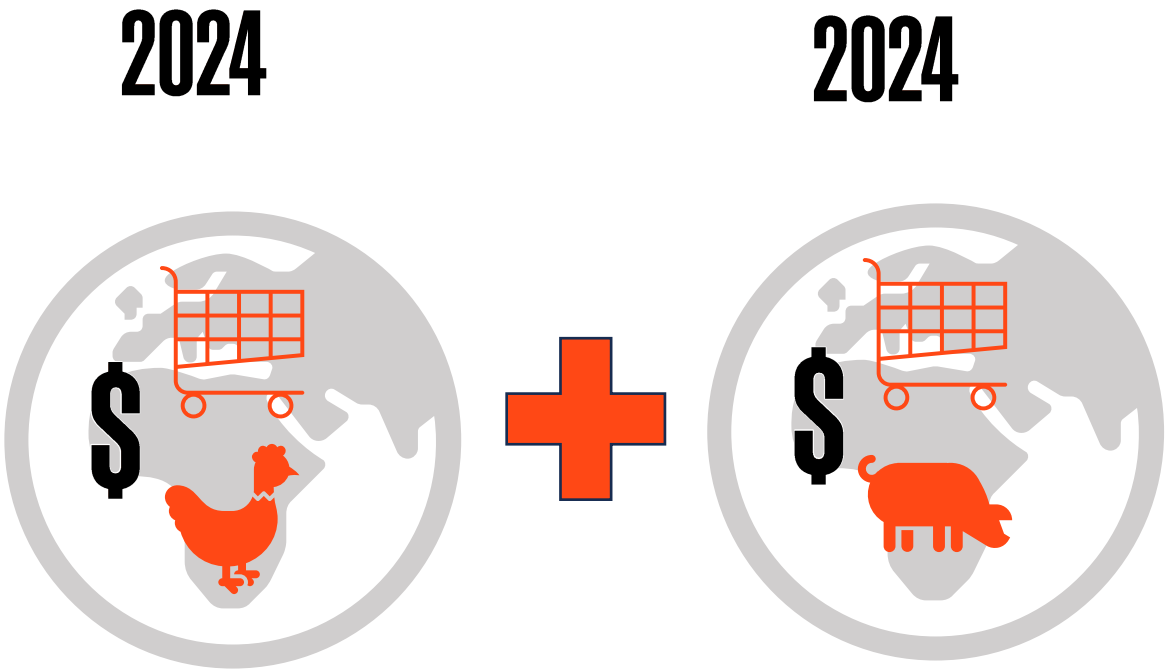

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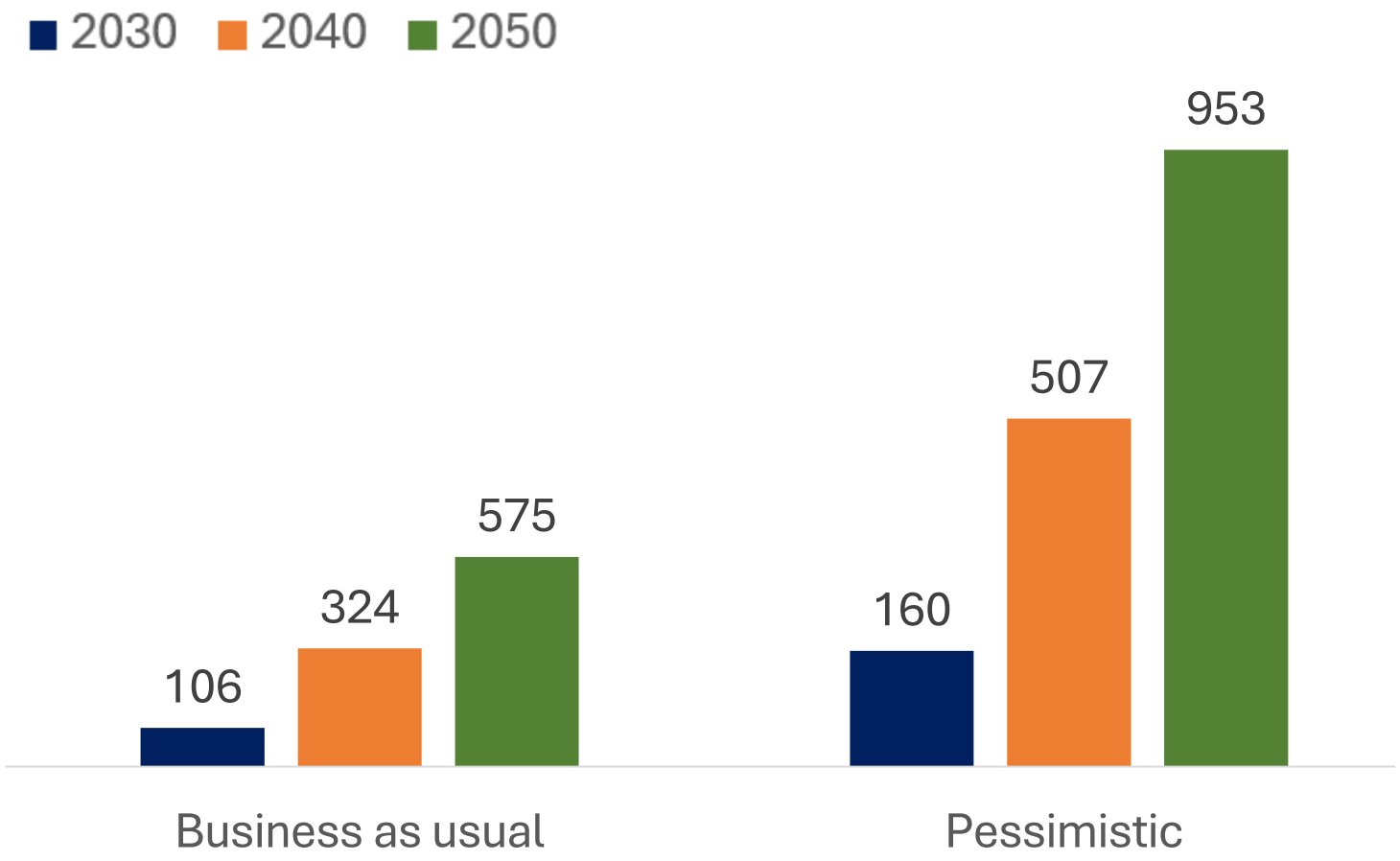

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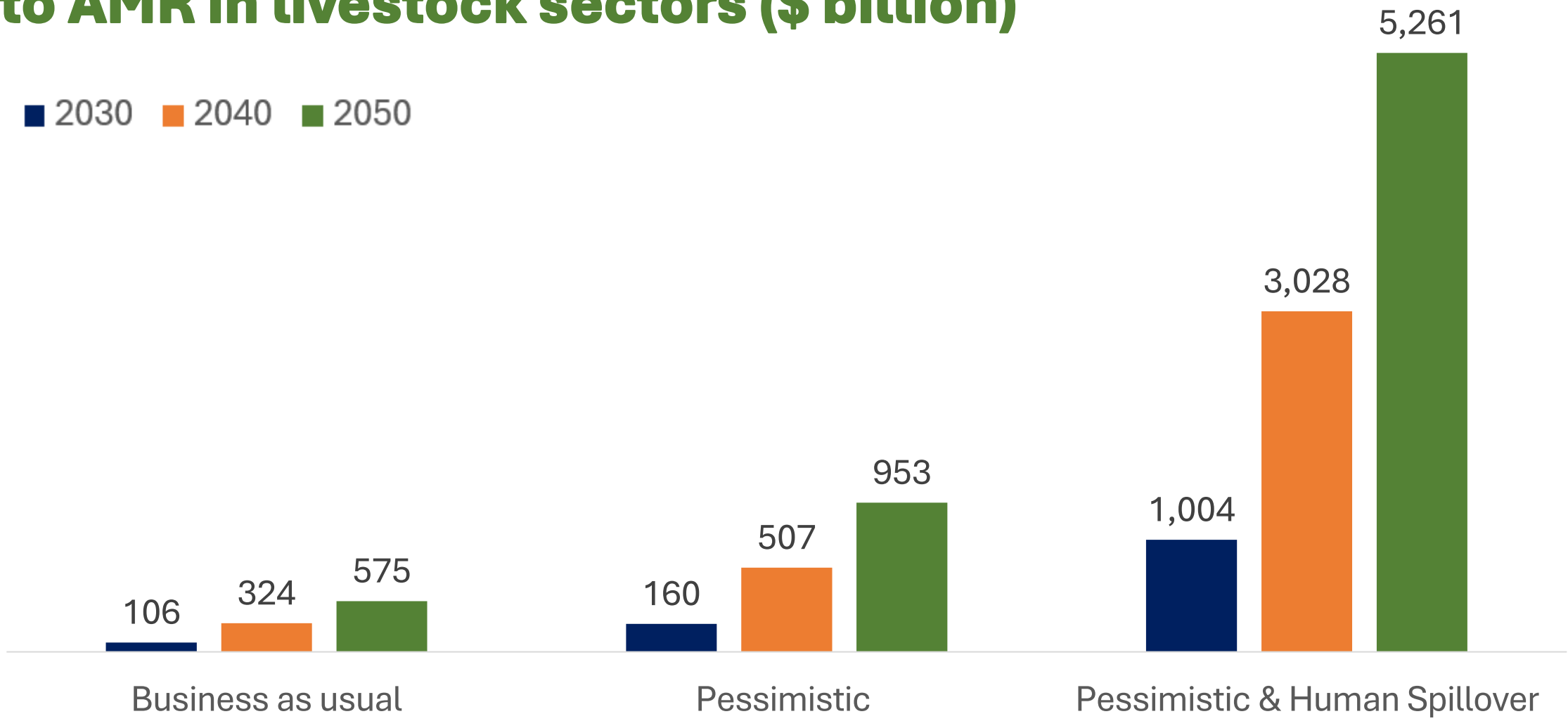
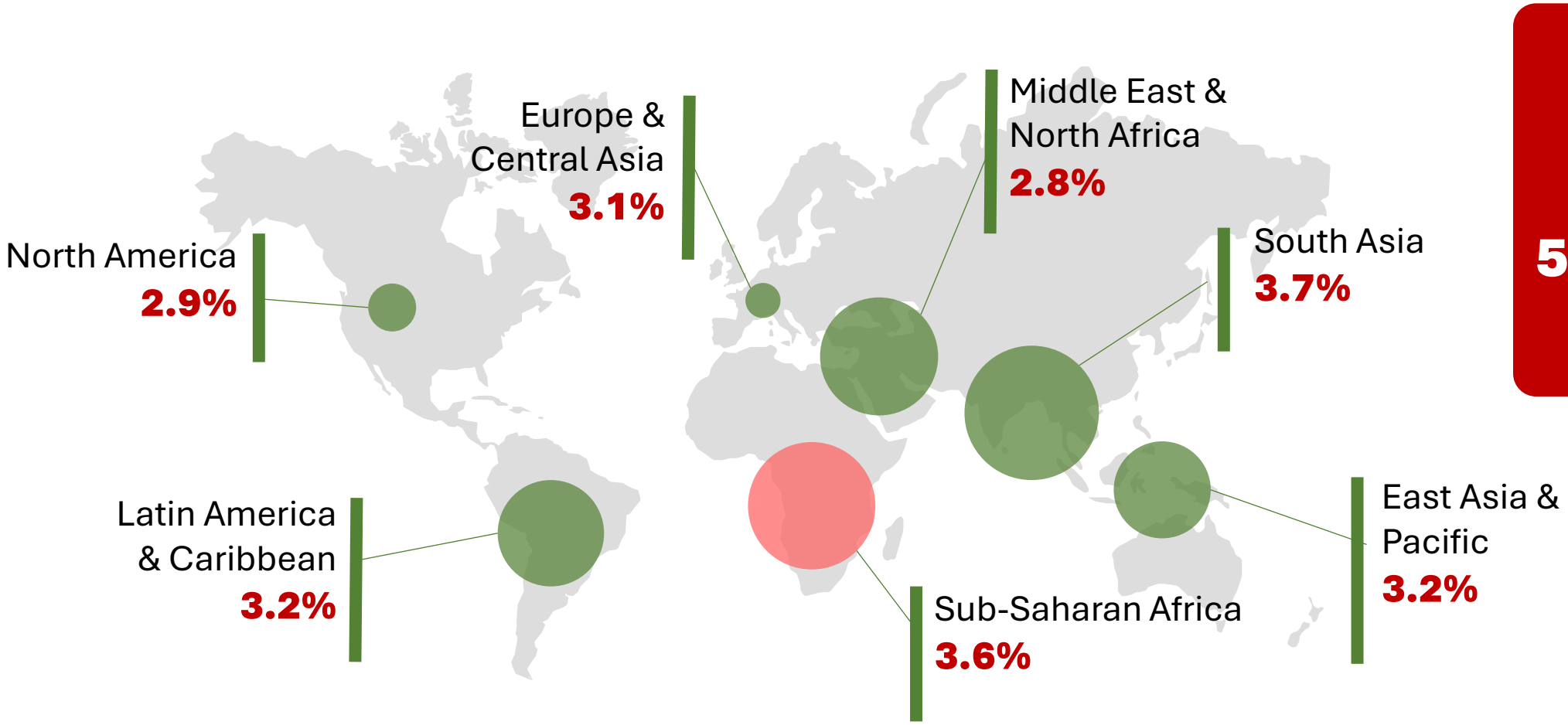


# Cumulative GDP loss attributable to AMR in livestock sectors by 2050




WORLD
**5,261 $bn**
**3.2%**

# What to do next?

Mobilise investments

Aim policies at prevention

Foster R&D across the One Health Approach

Let data flow

# THANK YOU

RAND EUROPE

EcoAMR **Reports :**


World Organisation for Animal Health