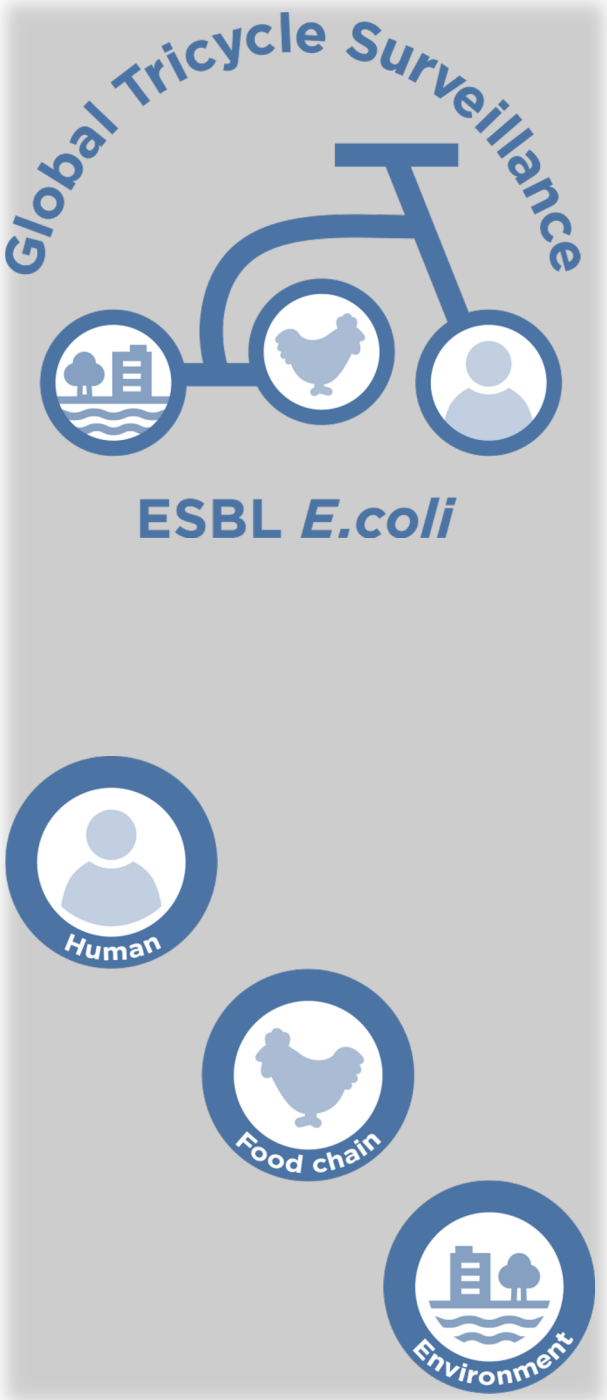


WHO model for Integrated Surveillance on AMR

The ESBL Ec Tricycle protocol

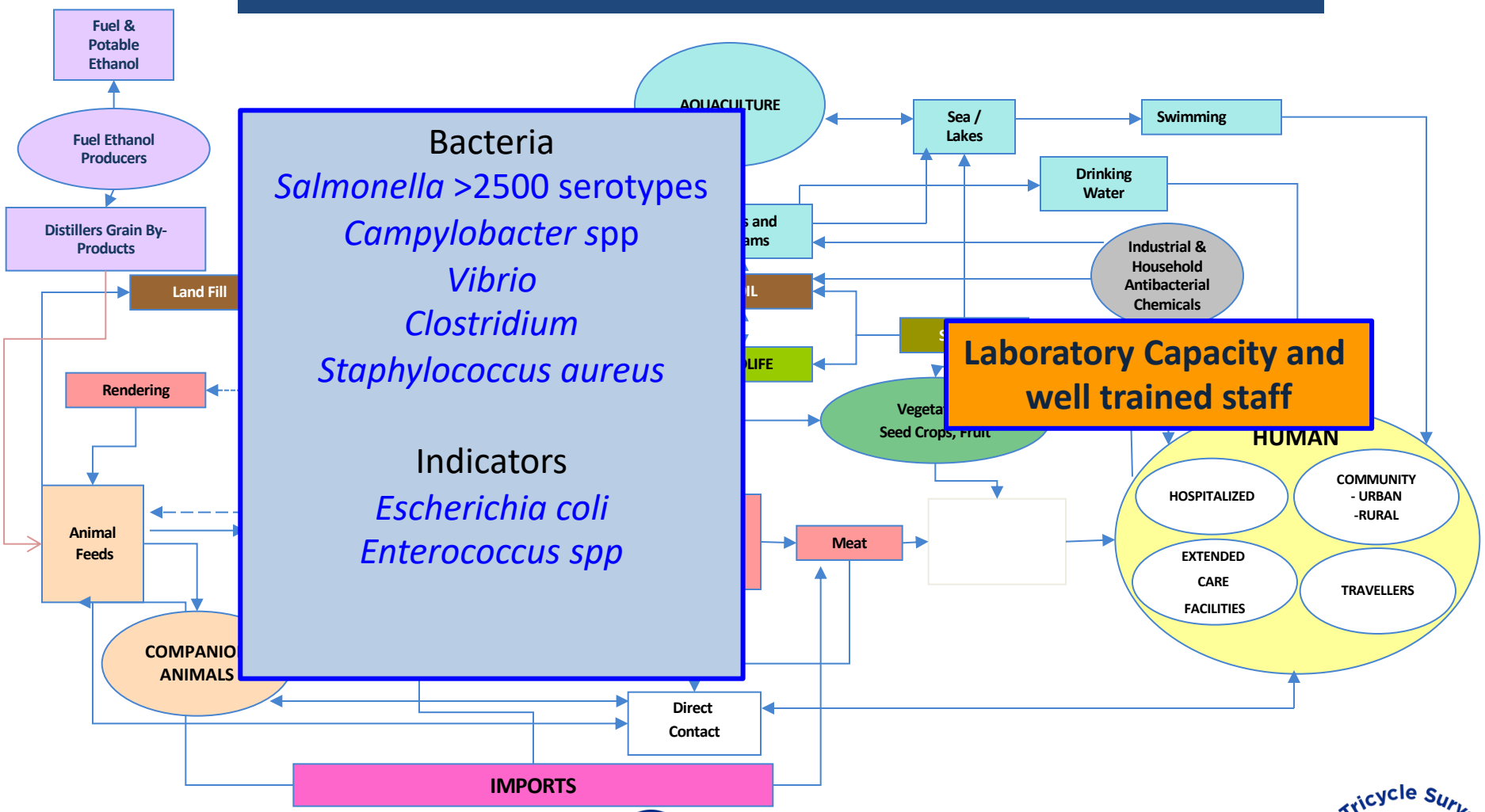
Jorge Matheu
AMR division-WHO HQ
29 September 2021

World Health Organization

GAP Implementation: 5 strategic objectives

1. Improve awareness and understanding
2. Strengthen the knowledge through surveillance and research
3. Reduce the incidence of infection
4. Optimize the use of antimicrobial medicines
5. Ensure sustainable investment

COMPLEXITY OF ANTIMICROBIAL RESISTANCE

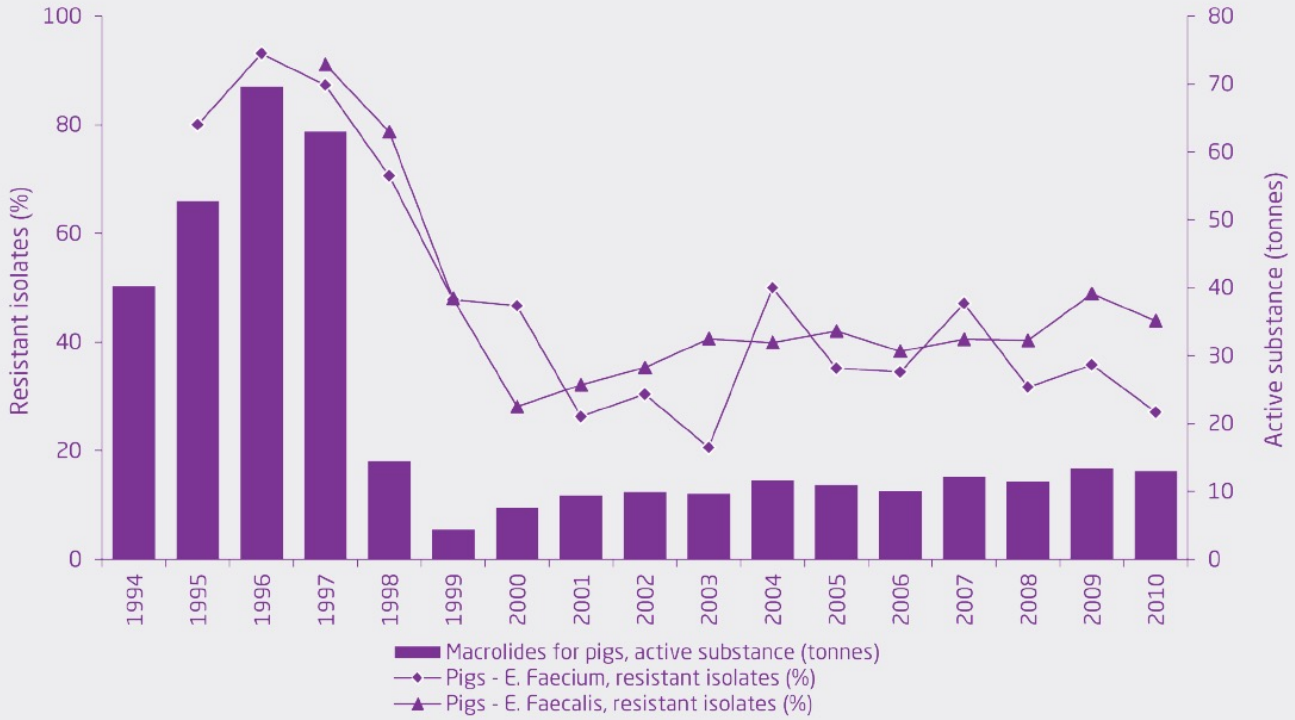


Global Tricycle Surveillance

ESBL *E.coli*

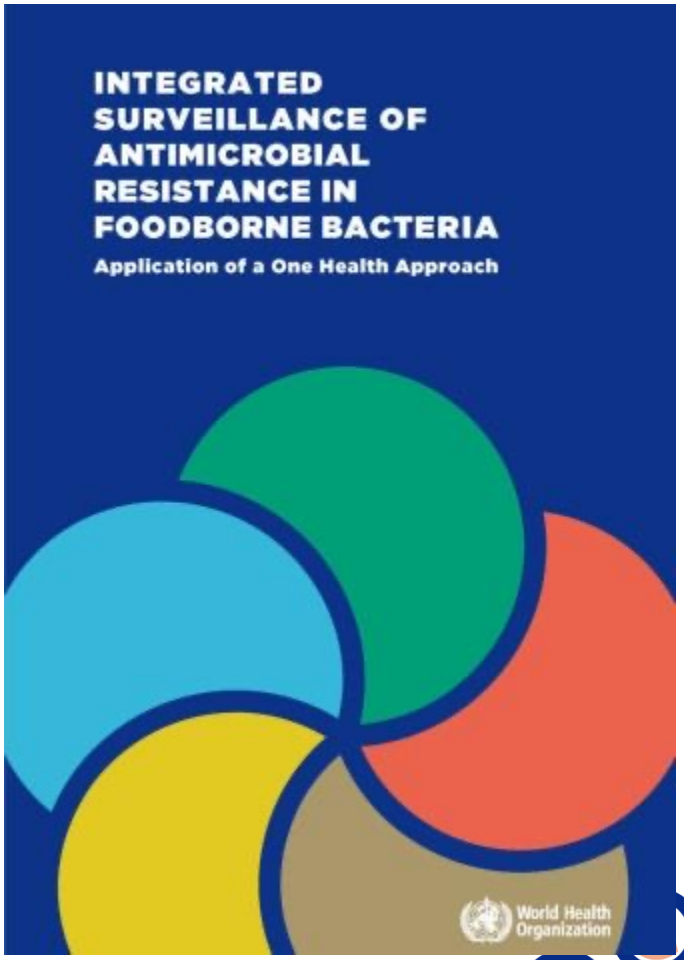
Resistance to erythromycin follows the consumption

Macrolides are one group of antimicrobial agents that the World Health Organization has indicated as critically important antimicrobial agents for human therapy. The consumption of macrolides in pigs has decreased over the past 15 years, but it is still used. The resistance to one of the macrolides, erythromycin, has followed the decrease in the total consumption of macrolides, showing an association between consumption and resistance.

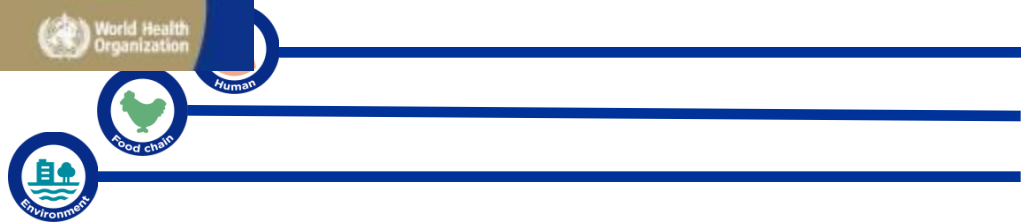


DANMAP - Data for action

WHO Integrated Surveillance Guidance 2017



1. Monitoring/ Surveillance of resistance
2. Monitoring/ Surveillance of use
3. Towards fully integrated analysis and reporting

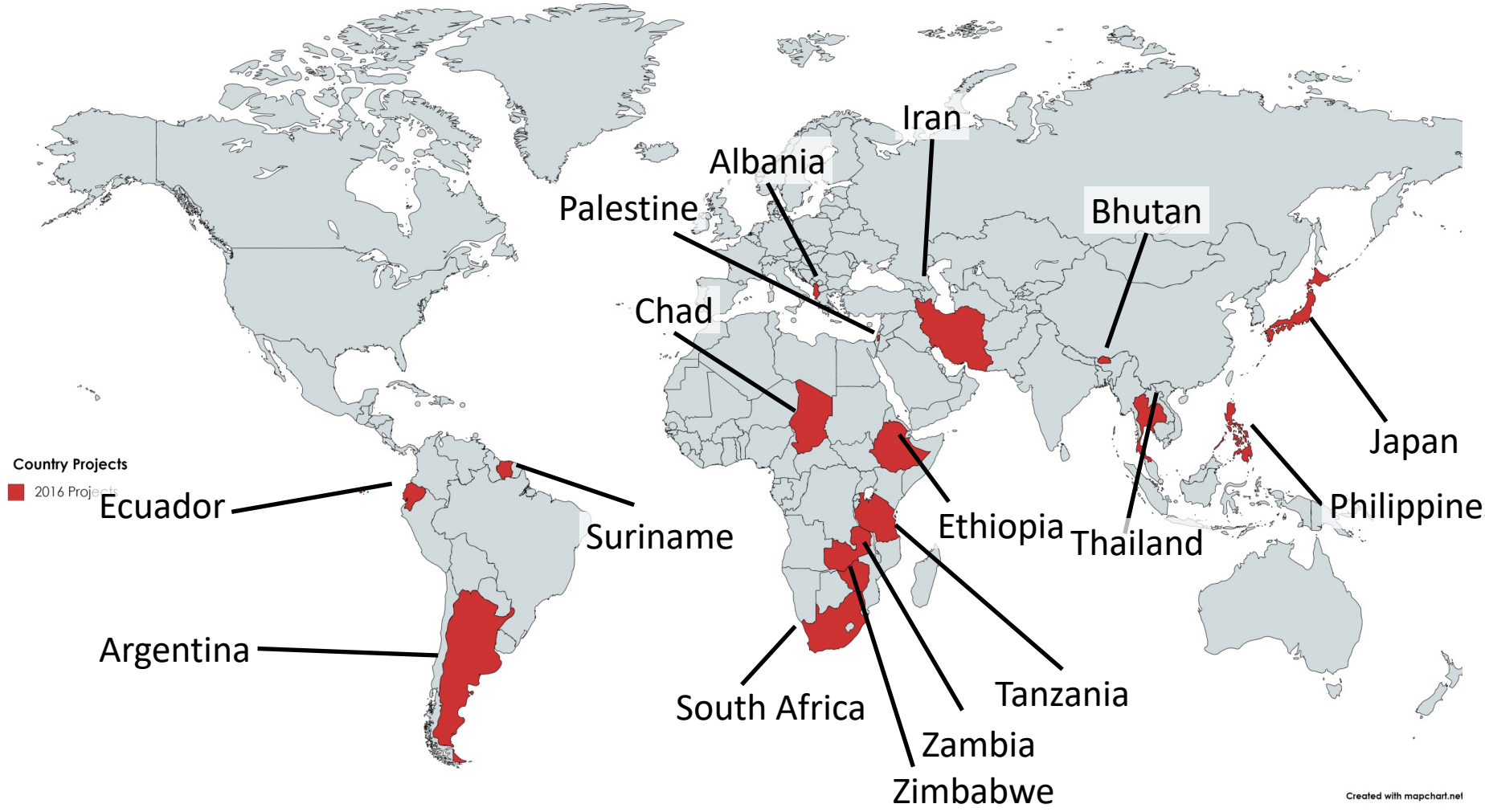


WHO ADVISORY GROUP ON INTEGRATED SURVEILLANCE OF AMR
-AGISAR-

LESSONS LEARNED 2010-2019

16 AGISAR projects on integrated surveillance of AMR 2017– 2019

42 AGISAR projects 2010-2016



AGISAR Projects

Country

Bangladesh

Ghana

Kenya

Rwanda

Tanzania

Lebanon

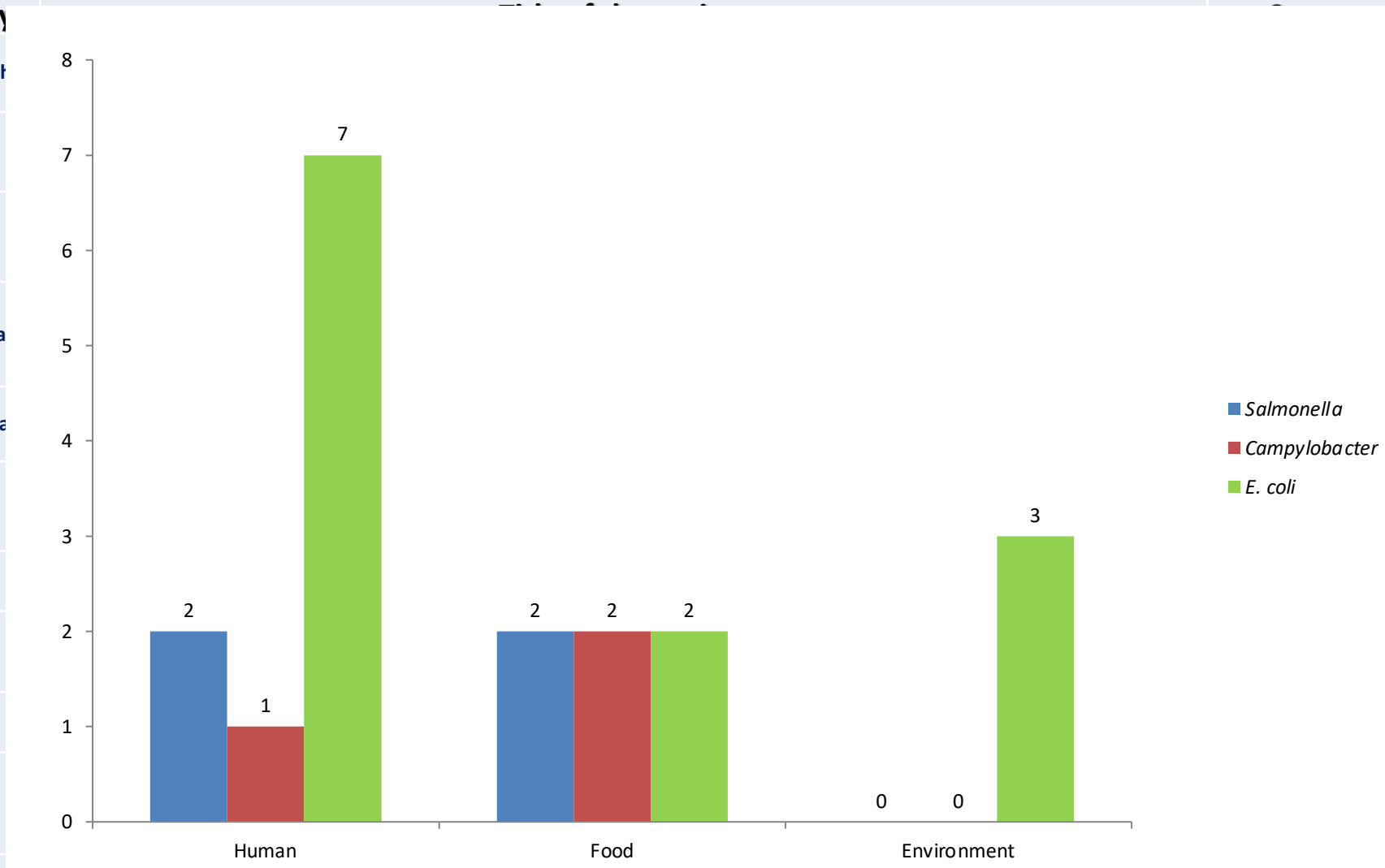
Peru

Uganda

Togo

Gambia

Uzbekistan



Survey on Salmonella and Campylobacter in humans and poultry and their Antimicrobial Resistance

ESBL *E.coli*

HOW TO ESTABLISH A GLOBAL MODEL FOR INTEGRATED SURVEILLANCE ON AMR WITH ONE HEALTH APPROACH?

6th AGISAR meeting

The initiative to develop a standard protocol was born

Concept note
WHO Integrated Global Survey on ESBL-producing *E. coli* using a "One Health" approach - An initiative of the WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance (AGISAR).

Contributors : Awa Aidara-Kane (WHO), Antoine Andremont (University of Paris-Diderot Medical School), Mark D. Sobsey (Gillings School of Global Public Health, University of North Carolina), H. Morgan Scott (Texas A&M University)

World Health Organization

WHO Integrated Global Survey on ESBL-producing E. coli using a "One Health" approach, "The Tricycle Project"

1st Meeting for ESBL E. coli Project Protocol Development

North Carolina, October 18-19, 2016

World Health Organization

Global Tricycle Surveillance

ESBL *E.coli*

ESBL Ec Tricycle protocol: Principles

- Simple
  - One indicator: Extended Spectrum Beta Lactamase (ESBL) producing *Escherichia coli*
- Feasible
  - Allow many countries the implementation
  - Multisectoral engagement (Governance)
  - Require few resources (Laboratory capacity, training)
  - Data management (WHONET)
- Standardized
  - Standard laboratory methodology

World Health Organization

Global Tricycle Surveillance
ESBL E.coli

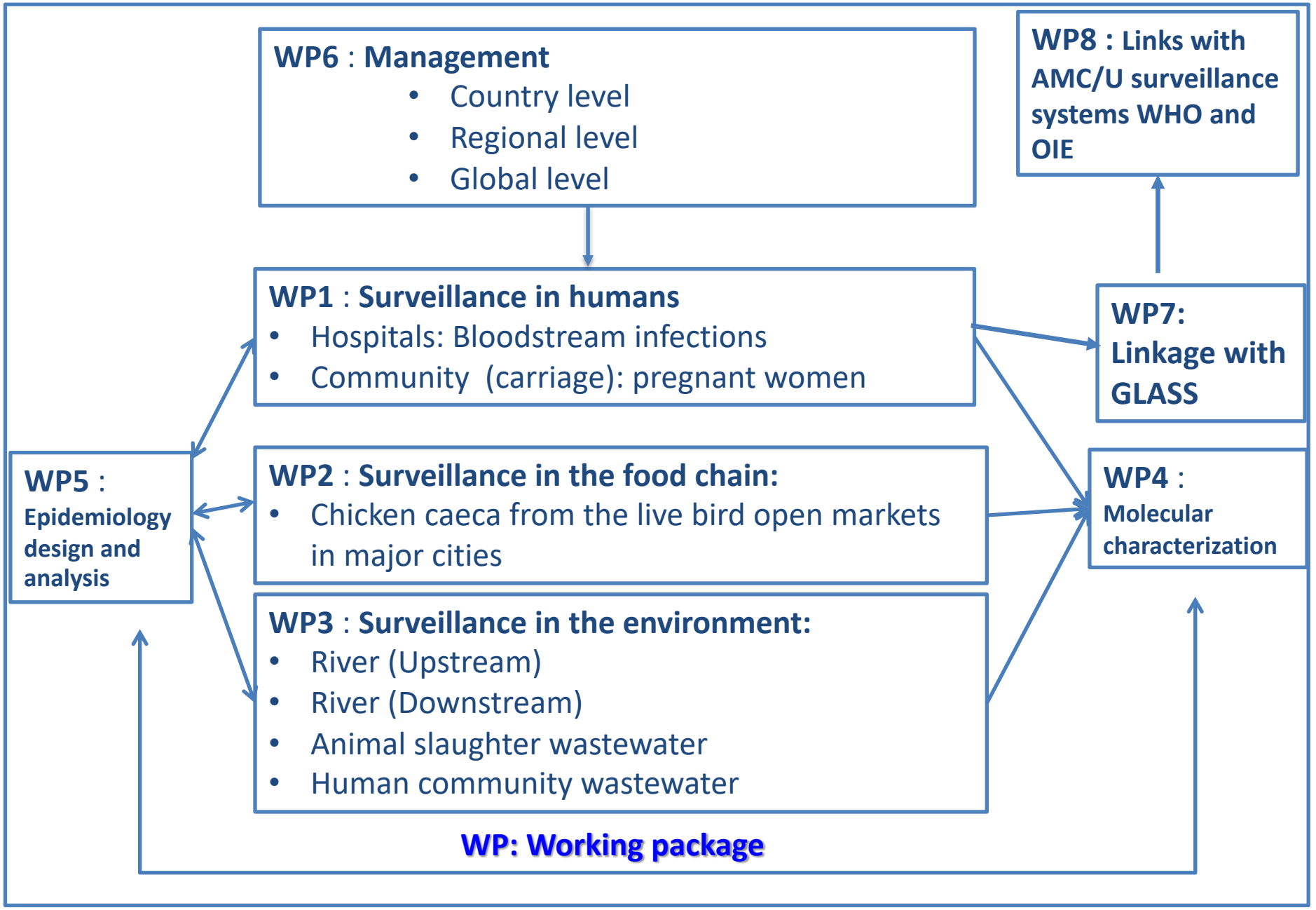
Aim

To provide Member States with a common, simplified, and integrated multisectoral surveillance system to detect, and then estimate the prevalence of a microorganism indicator with a specific resistance mechanism, ESBL producing *E. coli* in three sectors.

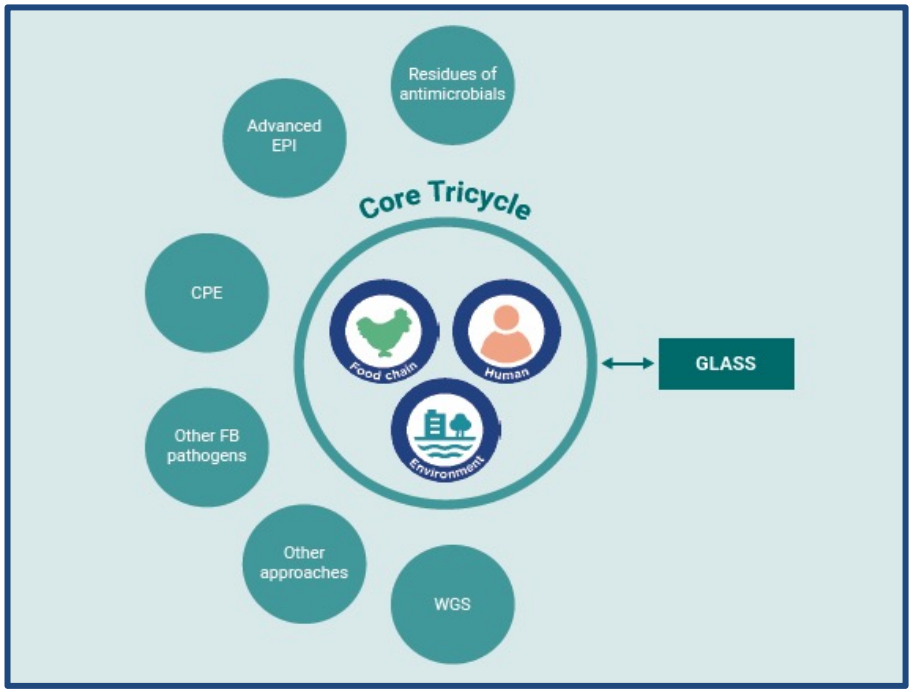
World Health Organization

Global Tricycle Surveillance
ESBL *E.coli*

Structure of the ESBL Ec Tricycle for implementation



ESBL Ec Tricycle: opportunities



Followed the implementation of the core surveillance protocol,

- Links with other UN proposed surveillance systems in the field of AMR; and
- Opportunities to add satellite surveillance and research project protocols on AMR.

CPE: Carbapenem producing Enterobacteriaceae
FB: Foodborne
WGS: Whole Genome Sequencing

World Health Organization

Global Tricycle Surveillance
ESBL *E.coli*

Core sites and samples

Sector	Sites	Sample subject	Sample	No. of samples	Links
Human	Hospital	Inpatient	Bacteremias	5000 blood cultures/year	GLASS specimen sample
	Community	Pregnant women	stool/rectal swab	100	Minimal number
Animal	Market	Chicken	Cecal	240/year 20/month	Most common food animal in countries
Environment	Capital or biggest city	Communal sewage	Waste water	8-12 rounds per year 4 samples per round 2 cities (suggested)	Suggested 1 round per month. River samples: AMR related with environment Waste water: AMR related with community
		Market sewage	Waste water		
		River Downstream	Water		
		River Upstream	Water		

World Health Organization

Global Tricycle Surveillance
ESBL *E.coli*

Implementation in countries

Pilot countries

Region	Country
Africa	Ghana, Madagascar, Senegal
Eastern Mediterranean	Pakistan, Jordan
South East Asia	Indonesia, India, Nepal
Western Pacific Asia	Malaysia

Countries implementing in 2021

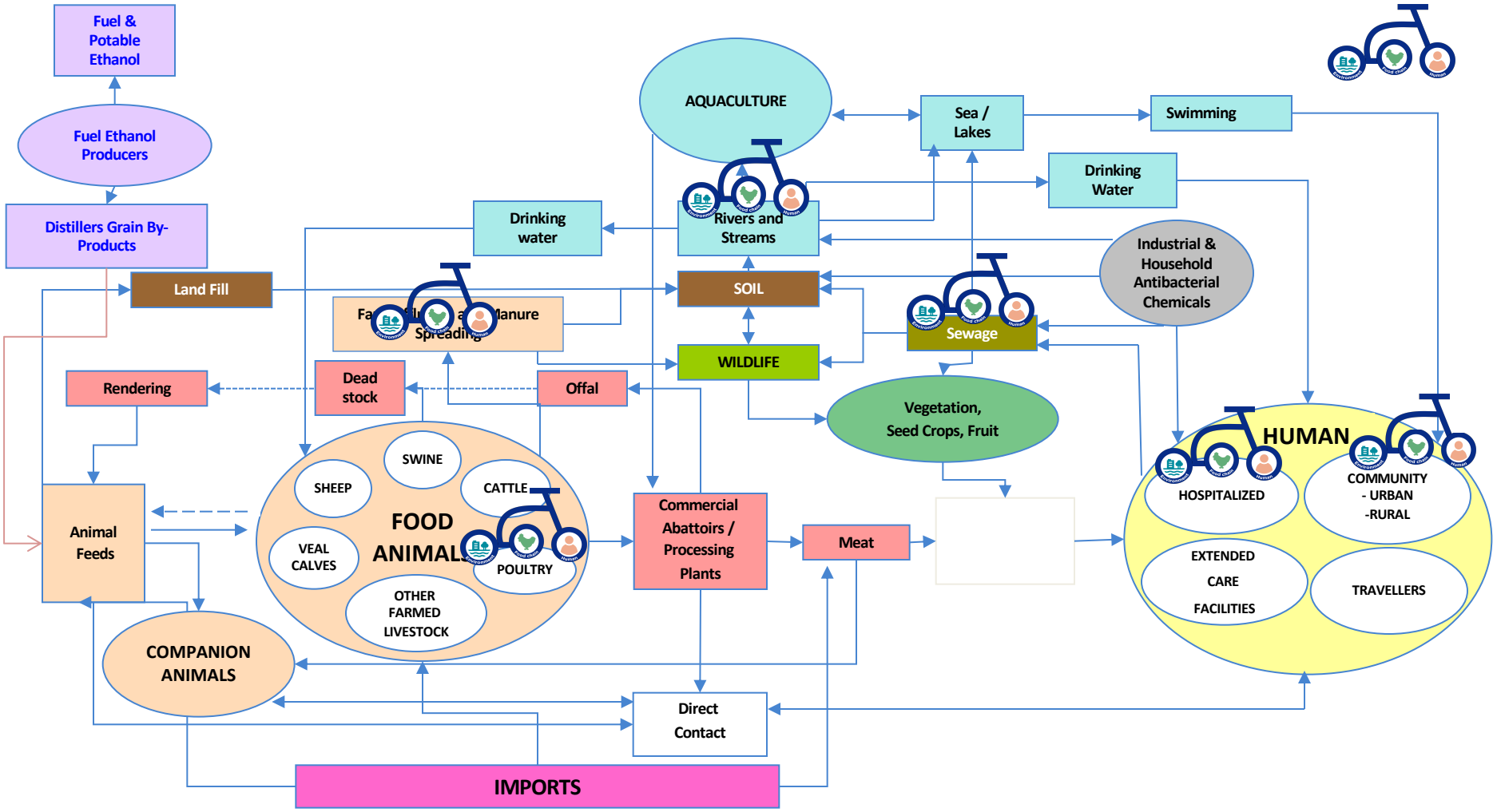
Region	Country
Africa	Cameroon, Nigeria, Zambia, Zimbabwe, Burkina Faso
Eastern Mediterranean	Iran, Morocco, Sudan

World Health Organization

Global Tricycle Surveillance

ESBL *E.coli*

COMPLEXITY OF ANTIMICROBIAL RESISTANCE




Global Tricycle Surveillance
ESBL E.coli
WHO integrated global surveillance on ESBL-producing E. coli using a "One Health" approach: Implementation and opportunities
World Health Organization

THANK YOU


Human
Food chain
Environment


Global Tricycle Surveillance
ESBL E.coli