

Workshop on Development of Surveillance Framework for Antimicrobial Resistance in Food Animals and Environment  
India Habitat Centre, New Delhi  
3-4 August 2017

# FAO Initiatives on AMR Surveillance in Asia



Food and Agriculture  
Organization of the  
United Nations

# OUTLINE OF PRESENTATION

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## Areas of the FAO Action Plan on AMR

### Initiatives on AMR Surveillance in Asia

1. Development of the **Regional Framework** for AMR Surveillance
2. Development of **Regional Guidelines** on AMR Surveillance
3. Strengthening of **Laboratory Capacity** on AMR Surveillance
4. Assessment of **National Capacities** related to AMR Surveillance
5. Support to **country initiatives** on AMR Surveillance
6. Other support to **regional work** on AMR Surveillance



## These ongoing FAO Initiatives on AMR in Asia are supported by:



**OSRO/RAS/502/USA:** Addressing Antimicrobial Usage in Asia's Livestock, Aquaculture and Crop Production Systems



**GCP/GLO/710/UK** Engaging the food and agriculture sectors in sub-Saharan Africa and South and South-east Asia in the global efforts to combat antimicrobial resistance using a One Health approach

**FMM/RAS/298/MUL** Strengthening capacities, policies and national action plans on prudent and responsible use of antimicrobials in fisheries (aquatic animal health and aquaculture component)



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# Focus Areas of the FAO Action Plan on AMR

## FOCUS AREA 1

**IMPROVE AWARENESS ON ANTIMICROBIAL RESISTANCE AND RELATED THREATS**

AWARENESS

EVIDENCE



## FOCUS AREA 2

**DEVELOP CAPACITY FOR SURVEILLANCE AND MONITORING OF ANTIMICROBIAL RESISTANCE AND ANTIMICROBIAL USE IN FOOD AND AGRICULTURE**

## FOCUS AREA 3

**STRENGTHEN GOVERNANCE RELATED TO ANTIMICROBIAL USE AND ANTIMICROBIAL RESISTANCE IN FOOD AND AGRICULTURE**

GOVERNANCE

PRACTICES



## FOCUS AREA 4

**PROMOTE GOOD PRACTICES IN FOOD AND AGRICULTURE SYSTEMS AND THE PRUDENT USE OF ANTIMICROBIALS**



# FAO Initiatives on AMR Surveillance in Asia

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EVIDENCE

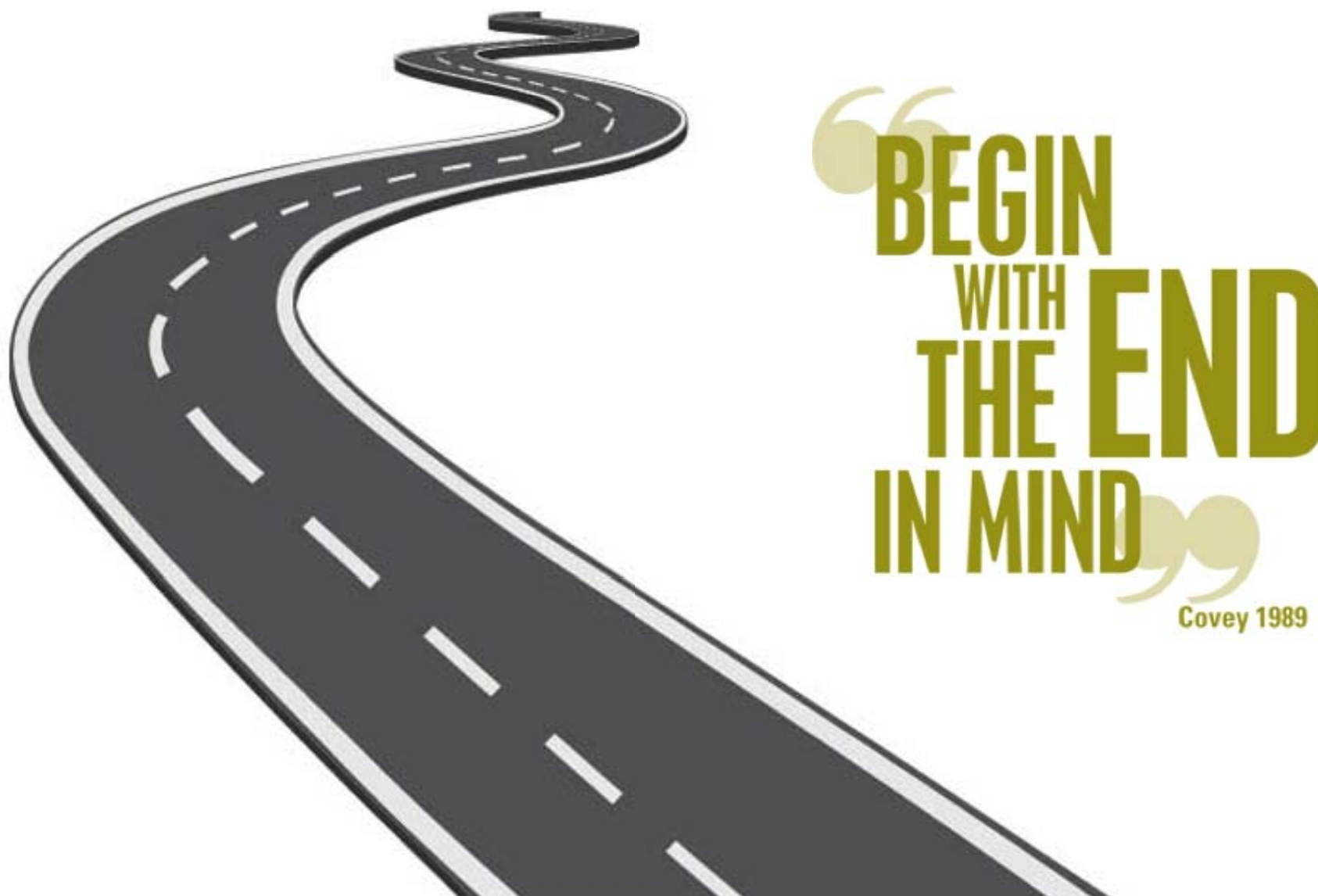


## FOCUS AREA 2

**DEVELOP CAPACITY FOR SURVEILLANCE AND MONITORING  
ANTIMICROBIAL RESISTANCE AND ANTIMICROBIAL USE IN  
AND AGRICULTURE**

## FAO Initiatives on AMR Surveillance in Asia

### ROUTINE AMR SURVEILLANCE IN THE ANIMAL HEALTH SECTOR





# 1. Development of the Regional Framework for AMR Surveillance

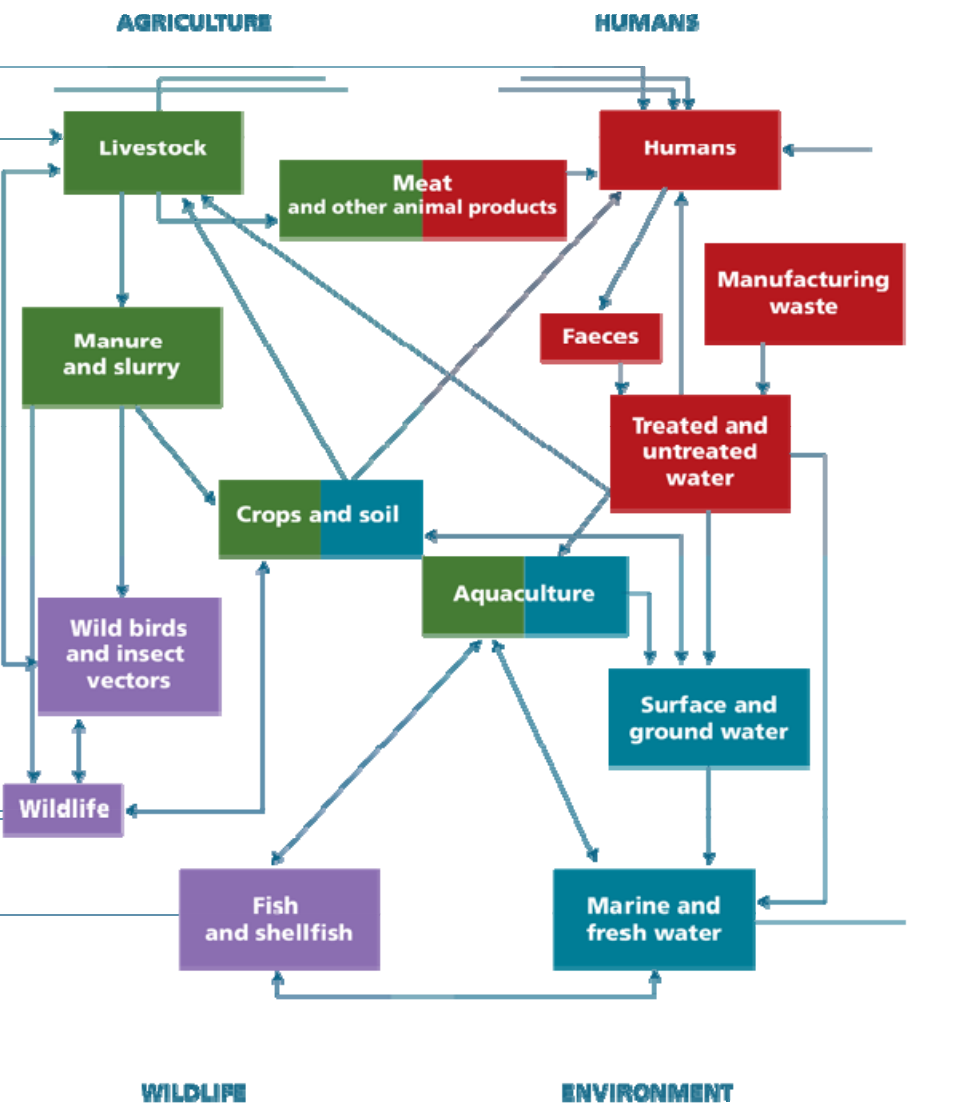




# 1. Development of the Regional Framework for AMR Surveillance



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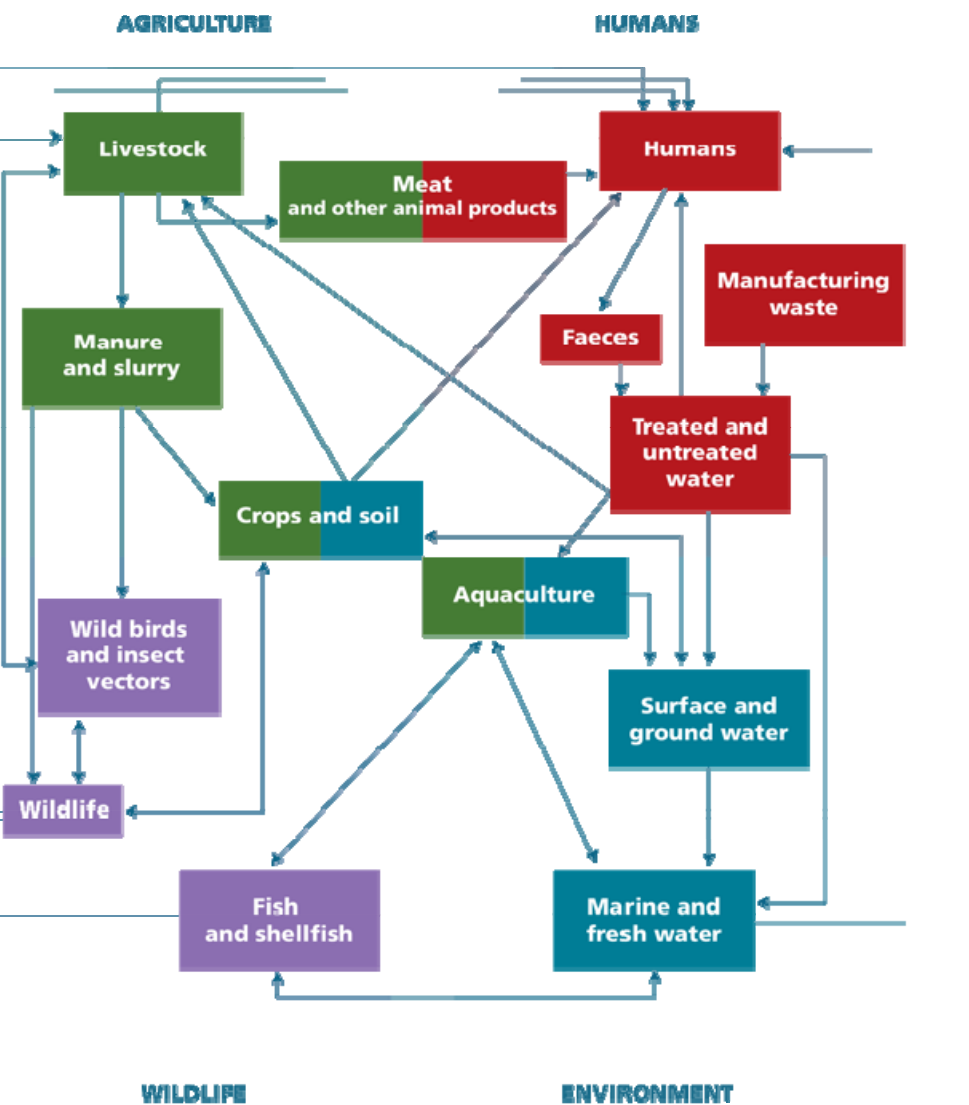
AMR Transmission Pathways

- Antimicrobial resistance (AMR) in bacterial organisms **does not recognize biological, physical, or sectoral boundaries.**
- Its potential **transmission pathways** include broad areas of disciplines that are often traditionally segregated: **agriculture, humans, environment, and wildlife**

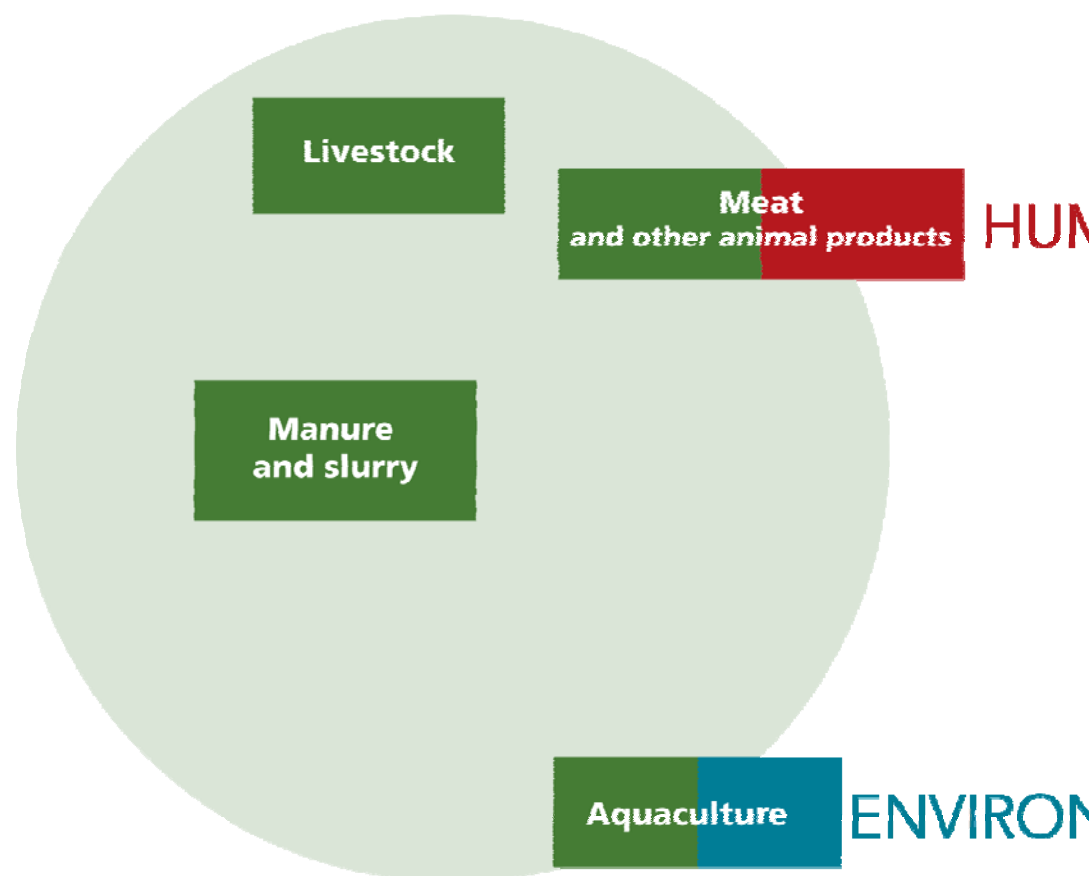




# 1. Development of the Regional Framework for AMR Surveillance



## AGRICULTURE | THE ANIMAL HEALTH S



AMR Transmission Pathways

# 1. Development of the Regional Framework for AMR Surveillance



AGRICULTURE | THE ANIMAL HEALTH S



AMR Transmission Pathways

## 1. Development of the Regional Framework for AMR Surveillance

collective and coordinated actions  
across these multiple disciplines can  
converge on the strengthened **sectoral**  
**accountability towards AMR**  
**mitigation.**

ensures that the efforts of nations  
to address this global issue will benefit  
from the respective **expertise** of each  
actor, and that actions are also well-  
coordinated by their **respective mandates**

AGRICULTURE | THE ANIMAL HEALTH S



Aquaculture ENVIRON

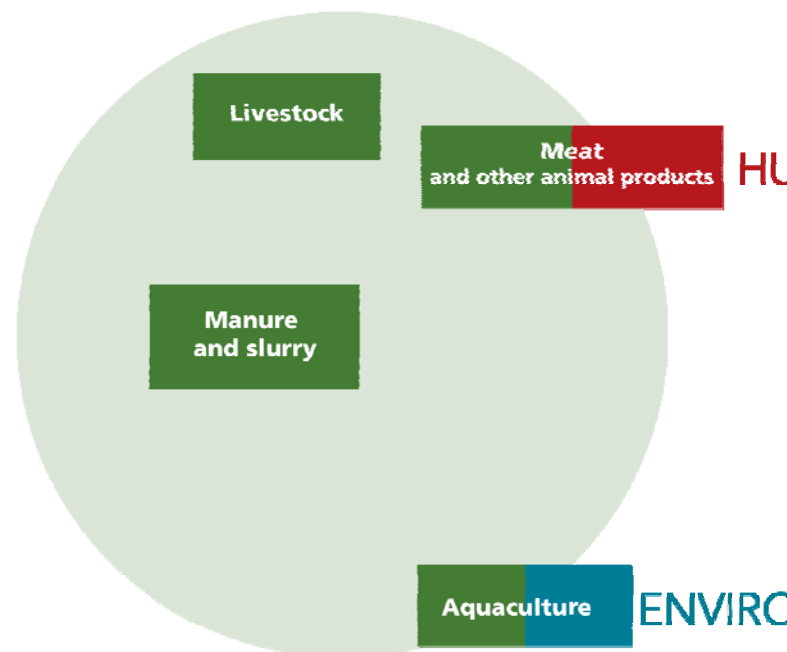
# 1. Development of the Regional Framework for AMR Surveillance

MR surveillance in **food-borne microorganisms from healthy animals** intended for food consumption;

MR surveillance in **animal pathogens recovered from clinically or sub-clinically diseased livestock**;

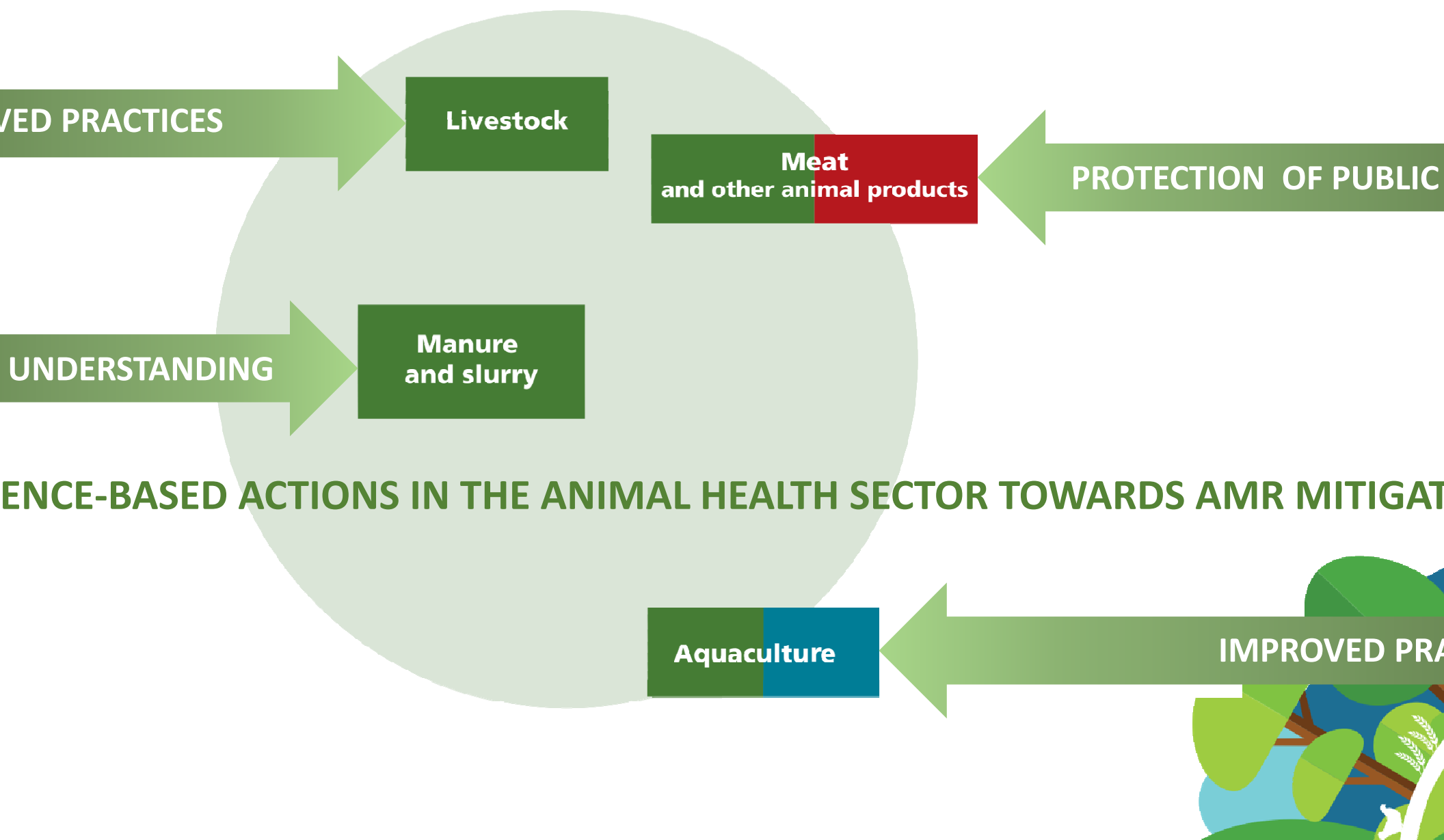
MR surveillance in **aquaculture in both healthy and clinical cases** which will primarily involve the fisheries sector, in coordination with the environmental sector;

MR monitoring in **farm settings** (eg., manure and slurry) in coordination w/ the environmental sector;

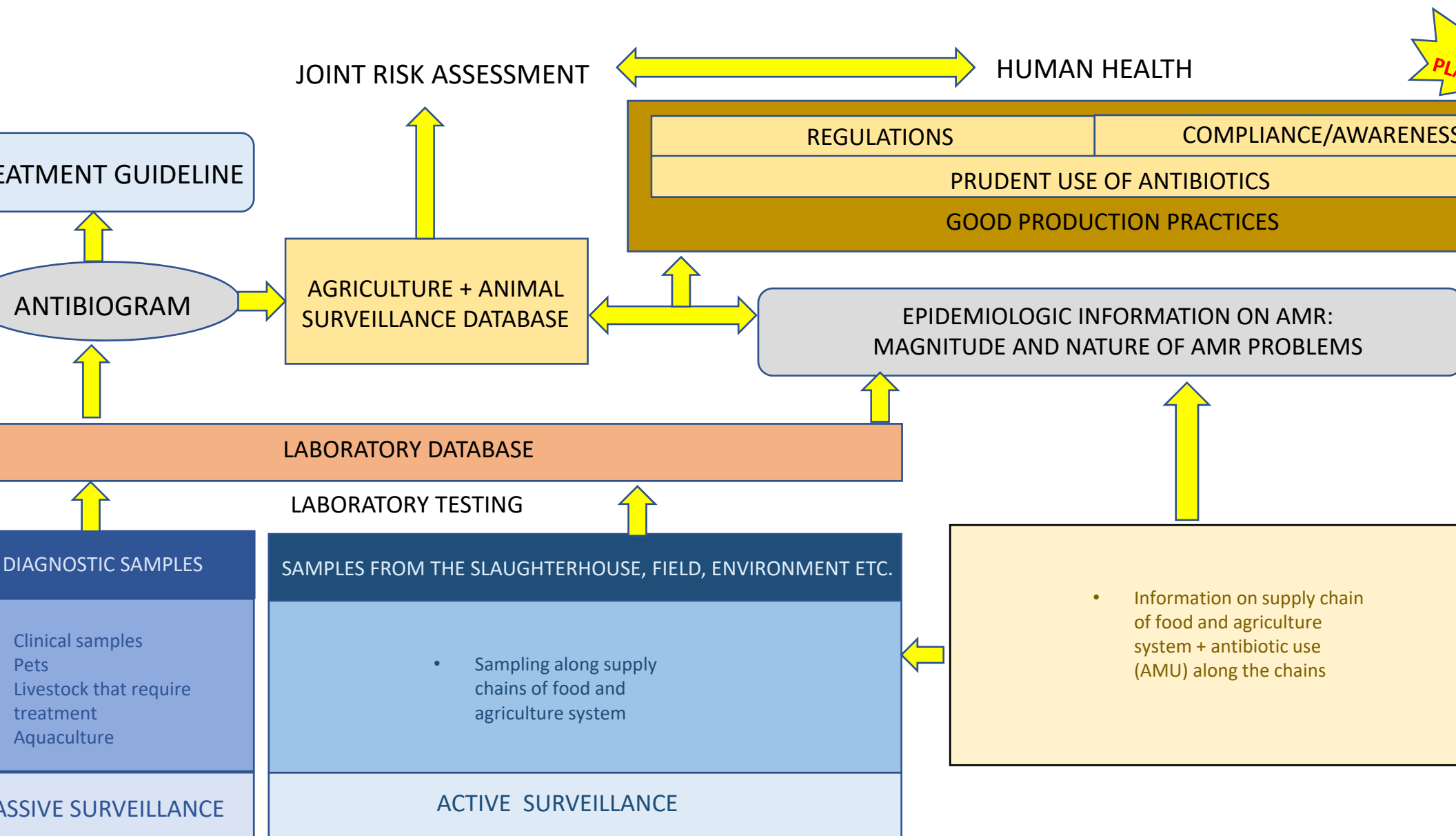




# 1. Development of the Regional Framework for AMR Surveillance



# 1. Development of the Regional Framework for AMR Surveillance



## 2. Development of Regional Guidelines on AMR Surveillance



**Development of the regional guidelines  
AMR surveillance**

## 2. Development of Regional Guidelines on AMR Surveillance

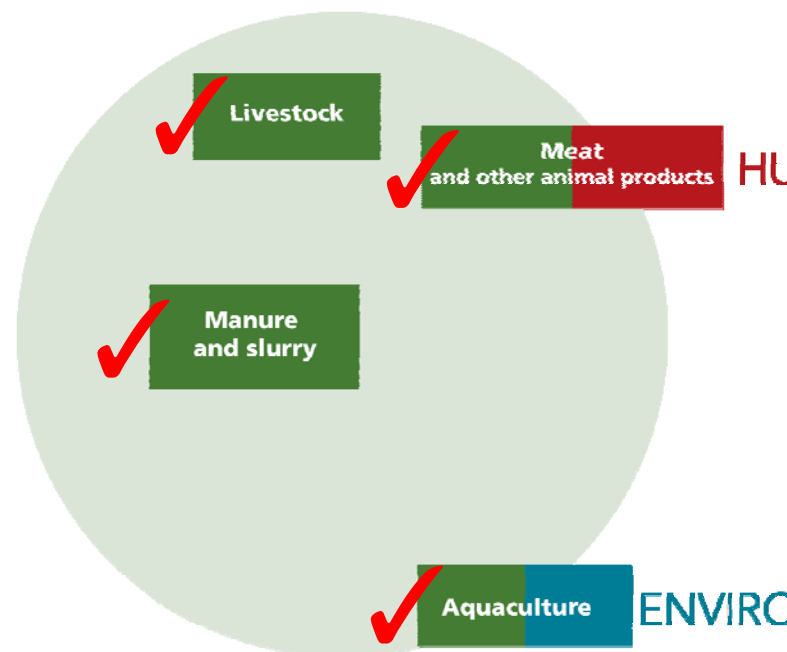
### IONALLY-HARMONIZED GUIDELINES FOR:

MR surveillance in **food-borne microorganisms** from **healthy animals** intended for food consumption;

MR surveillance in **animal pathogens recovered** from **clinically or sub-clinically diseased** livestock;

MR surveillance in **aquaculture in both healthy and clinical cases** which will primarily involve the fisheries sector, in coordination with the environmental sector;

MR monitoring in **farm settings** (eg., manure and slurry) in coordination w/ the environmental sector;





## 2. Development of Regional Guidelines on AMR Surveillance

efforts of Member Countries  
marking to contribute to this global drive  
benefit from having **a regional  
eline** that is:

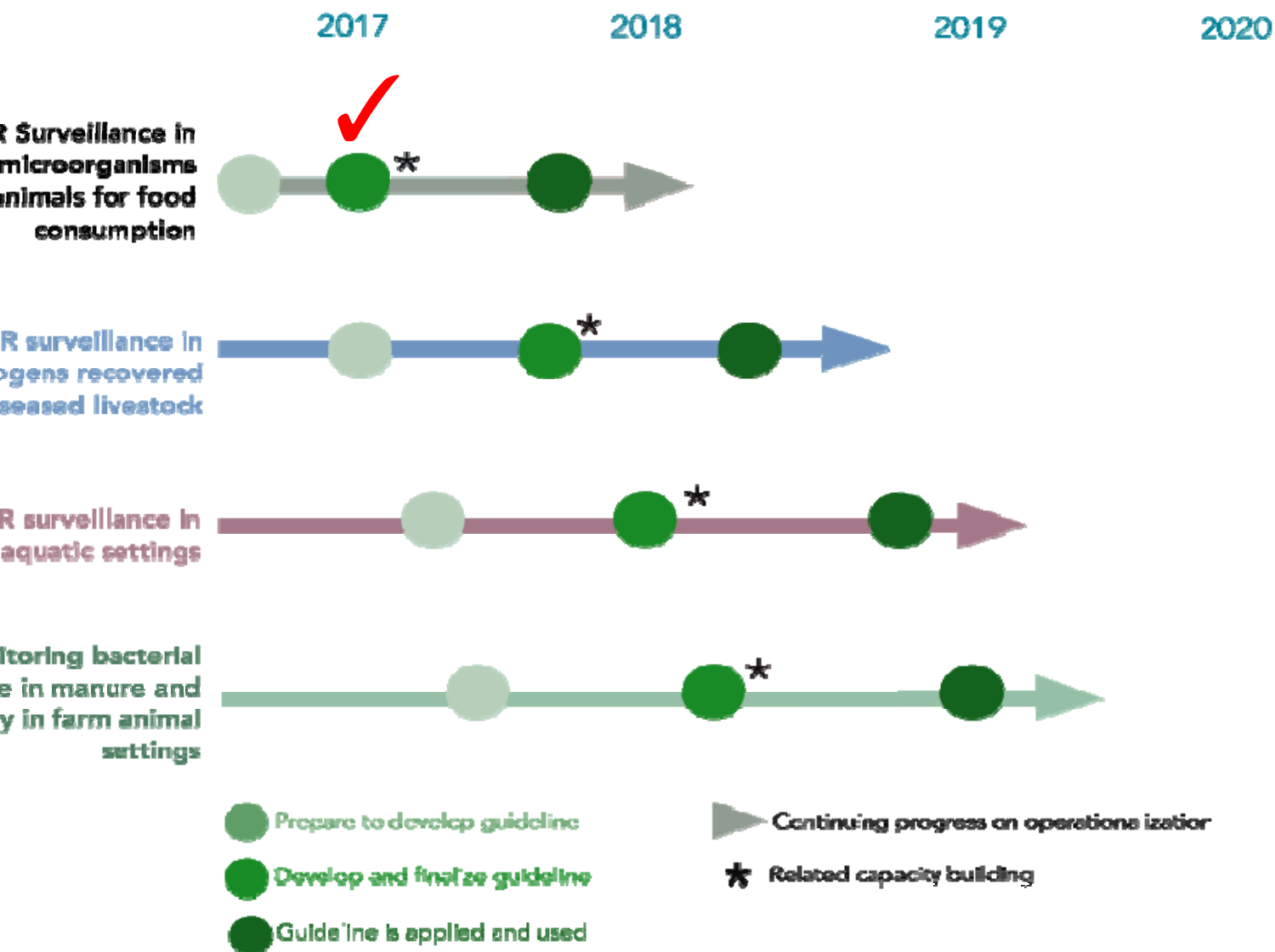
anchored on existing international  
standards

taking well into account the unique  
ettings in the region

regionally-harmonized



## 2. Development of Regional Guidelines on AMR Surveillance



Regional Guideline for  
Monitoring Antimicrobial Resistance (AMR) in bacteria  
associated with food animals in Southeast Asia

Rungtiro Chuanchuen  
Saharutai Jeamsripong  
Taradon Luangtongkum

Faculty of Veterinary Science, Chulalongkorn University





## 2. Development of Regional Guidelines on AMR Surveillance

regionally-harmonized guidelines will:

help Member States in preparing to carry  
out their respective national AMR  
surveillance

help obtain a cohesive body of regional  
information



## 2. Development of Regional Guidelines on AMR Surveillance



**DEAL:** All countries in the Region  
ence AMR surveillance in all critical

**REALITY:** Countries need progressive  
ng of relevant capacities for:

**Designing**  
**Planning**  
**Implementation**

ional AMR surveillance program in  
imal Health Sector



### 3. Strengthening Laboratory capacity on AMR Surveillance



Training on Standardized and Harmonized Methods for  
AMR Surveillance in Food Animals in South-East Asia

12-15 June 2017; 21-24 August 2017



### 3. Strengthening Laboratory capacity on AMR Surveillance





## 4. Assessment of national capacities on AMR Surveillance

### Pilot Missions using ATLASS (Assessment Tool for Laboratory and AMR Surveillance Systems)

March to May 2017: Thailand, Indonesia, Myanmar, Vietnam, Lao PDR



## 4. Assessment of national capacities on AMR Surveillance





## 5. Support to country initiatives on AMR Surveillance



Various national pilot projects on AMR Surveillance  
Planning \* Training \* Field implementation \* Others



## 5. Support to country initiatives on AMR Surveillance



### 1. HOW MANY SAMPLES WILL BE COLLECTED?

It is presumed that approximately 80% of antimicrobial usage in Indonesia utilized by the poultry sector. For 2017 it was decided that AMR surveillance will thus initially start with broilers and expand from there.

To follow international recommendations and harmonize with the region, Indonesia decided to first start with the two more common bacterial food-borne zoonoses (*Salmonella* spp) and commensal bacteria (*E. coli*)

To follow international recommendations and harmonize with the region, and considering the local setting in the country, it was decided that cecal samples from slaughterhouses and slaughter-intents will be collected.

Sampling from farms for monitoring broiler flocks from farms will be done.

### 2. HOW MANY SAMPLES WILL BE COLLECTED?

A consultation with national experts was organized to determine the sampling approach. The group agreed to set the following conditions:

**90% CONFIDENCE LEVEL**  
Degree of PRECISION 5%  
**50% ESTIMATED Prevalence**

**n=270**  
No. of bacterial isolates needed to estimate the prevalence of AMR

**SINCE:** it is estimated that Recovery Rate of *Salmonella* spp from broilers is at **10%**

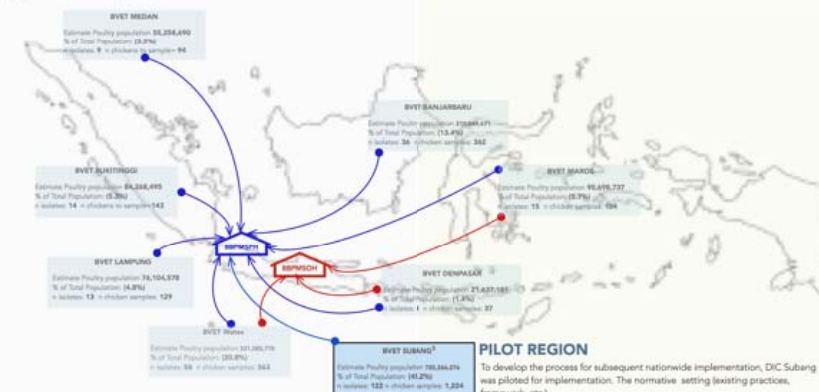
**HENCE:**

**2,700** No. of broilers to sample to obtain 270 isolates

While this was the agreed direction to be taken for the next years, the implementation for 2017 was limited with the standing national arrangements which has started to roll out earlier in the year. Nevertheless, to determine the feasibility in projected implementation, it was agreed that at least one DIC (Subang) will be piloted for 2017 following this overarching design.

### 3. WHERE WILL THE SAMPLES COME FROM?

Since it was agreed at the national level that all the DICs will be involved in the National AMR Surveillance, **THE TECHNICAL WORKING GROUP OPTED FOR PROPORTIONATE STRATIFIED SAMPLING INCLUDING ALL THE 8 REGIONAL LABORATORIES (DICs) IN INDONESIA.** The "share" of samples from each DIC will be proportionate to the broiler poultry population in their respective DICs



### 4. WHAT WILL BE THE ROLE OF THE LABS?

**SPECIMEN COLLECTION, BACTERIAL ISOLATION and IDENTIFICATION** will be done at the DICs. All isolates will then be sent to the national laboratories: BPMSPH (for food animal products) and BPMSOH (for specimens obtained from farms) for a harmonized approach to **ANTIBIOTIC SUSCEPTIBILITY TESTING**

### 5. HOW WILL THE SAMPLES FROM THE ABATTOIRS BE SELECTED?

**a LIST ALL SLAUGHTERPLACES** (RPU/TPU/TPn) in each district in the region (or at the minimum, in places that comprise at least 80% of the total broiler population)



**b CALCULATE NO. OF SAMPLES** needed from each district proportionate to the no. of slaughterplaces in the area

**c RANDOMLY SELECT** slaughterplaces in the area (RPU/TPU/TPn)



**d FOR RANDOMLY SELECTED SLAUGHTERPLACE (RPU/TPU/TPn)** where farm sources of birds are **NOT KNOWN**... **COLLECT THREE** cecal samples per slaughterplace



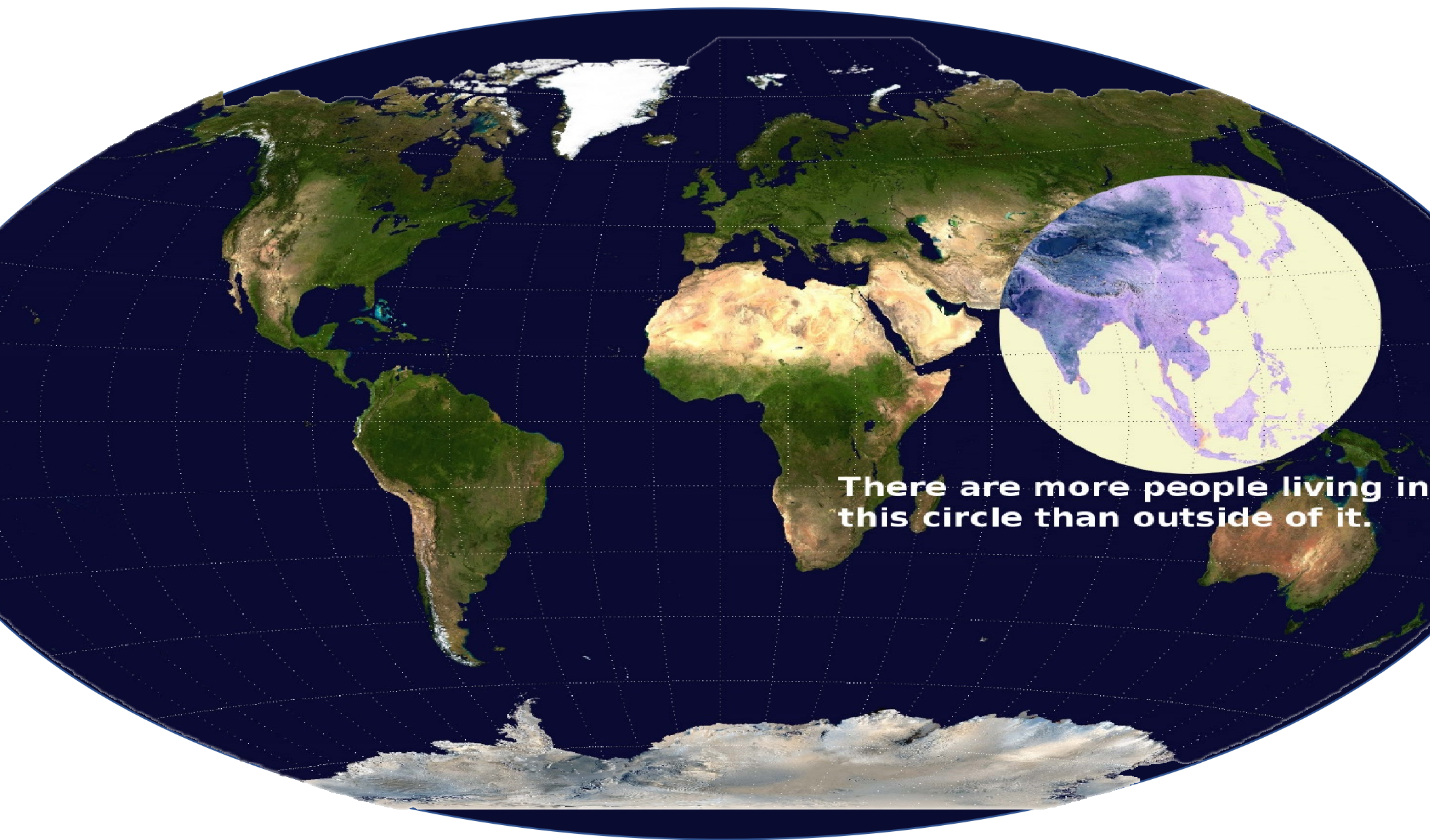
**d FOR RANDOMLY SELECTED SLAUGHTERPLACE (RPU/TPU/TPn)** where farm sources of birds are **KNOWN**... **COLLECT ONE** cecal sample from each farm source in that slaughterplace

### PILOT REGION

To develop the process for subsequent nationwide implementation, DIC Subang was piloted for implementation. The normative setting (existing practices, framework, etc.).



## 6. Other reinforcements to regional efforts on AMR Surveillance



**There are more people living in  
this circle than outside of it.**

## 6. Other reinforcements to regional efforts on AMR Surveillance



### SURVEILLANCE IN THE ANIMAL HEALTH SECTOR IN THE REGION

Antimicrobial resistance (AMR) in bacterial pathogens does not recognize biological, sectoral or sectoral boundaries. Its potential transmission pathways include broad areas of overlap: agriculture, humans, environment, and wildlife (Fig 1). It is for this reason that AMR needs to be addressed with a cross-sectoral lens and with a One Health approach.

Effective and coordinated actions across these multiple disciplines can contribute to the strengthened sectoral capability towards AMR mitigation. This requires that the efforts of nations to address AMR will benefit from the respective mandates of each sector, and that actions are also coordinated by their respective mandates.

Reference to the AMR transmission pathways at the multi-sectoral interface (Fig 1), the health sector within the agriculture compartment are the AMR gatekeepers in: (1) meat and animal products, (2) livestock, (3) manure and slurry, and (4) aquaculture. These critical AMR pathways within the dynamic animal health sector require due national AMR monitoring and surveillance should thus be carried out in these areas of focus under the oversight of the Veterinary Authority.

As a major public health concern, particular attention should be given to AMR monitoring and surveillance in food-borne pathogens from food of animal origin as this critical interface is the main pathway towards human exposure, at least from within the animal health side. Participating countries will have cross-sectoral benefit from the evidence and information to be generated from national AMR surveillance and monitoring programmes from food animals and products of food-animal origins.

Moreover, the other channels in the relevant pathways should also be closely monitored in the interest of protecting animal health, promoting good veterinary practices, and building capacity within the Veterinary Services.



Figure 1. Potential transmission pathways of antimicrobial-resistant bacteria, resistance genes and antimicrobial residues, at the agriculture-human-environment-wildlife interface (FAO, 2016, *Dynamics and Epidemiology of Antimicrobial Resistance in Animal Production*)

### Consultation Meeting on the Regional AMR Surveillance in the Animal Health Sector of South-East Asia

16 June 2017  
Bangkok, Thailand

#### Summary, Conclusions and Recommendations

##### Summary:

- The Consultation Meeting on the Regional AMR Surveillance in the Animal Health Sector of Southeast Asia was held last 16 June 2017 at the Chamchuri 10 (Chaloem Rajakumari) Building, Chulalongkorn University, Bangkok. The meeting was organized by FAO through the USAID funded regional project (OSRO/RAS/502/USA) Addressing the antimicrobial usage in Asia's Livestock, Aquaculture and Crop Productions Sectors) in collaboration with the Faculty of Veterinary Science, Chulalongkorn University. The meeting was held after the Training on "Standardized and Harmonized Surveillance Methods for Antimicrobial Resistance in Food Animals in Southeast Asia" on 12-15 June 2017 where laboratory staff of ASEAN countries were trained on standardized and well-defined methods for performing antimicrobial susceptibility testing.
- Leveraging on the momentum from the laboratory training, the consultation meeting was held to set-up a cohesive, harmonized, well-planned, and well-coordinated AMR surveillance in the region. It is envisioned that such collective force will (1) mutually strengthen national systems on AMR surveillance and continuously improve capacities; (2) provide timely exchange of information for national and regional policy decisions; and (3) will encourage political support for continued and sustained implementation that progressively improves over time.
- The objectives of the Consultation Meeting were to:
  - Provide a comprehensive technical overview on AMR surveillance and ongoing initiatives in the region to support this, including the planned Regional Framework for AMR Surveillance in the animal health sector of South-East Asia.
  - Discuss and deliberate on the needs in setting-up and sustaining harmonized AMR surveillance within countries and across the region.
  - Seek advice on the development process of a regional coordination mechanism that can support and reinforce the independent, but regionally cohesive, national AMR surveillance initiatives in South-East Asia.
- Fifty-six participants from 9 countries and 8 partner organizations/institutions attended the consultation meeting. Participants were composed of the trainees from the laboratory training held earlier and laboratory directors, representatives from CU, private sector, OIE, CDC, Mott McDonald and FAO staff.

### Regional AMR Technical Advisory Group (AMR-TAG) Terms of References – Draft #2

Following the agreement made during the AMR Surveillance Workshop held last November, the establishment of an AMR Technical Advisory Group (TAG) for the animal health sector in South-East Asia is hereby initiated by FAO-RAP on June 16, 2017.

**Roles and Responsibilities.** The Regional AMR-TAG will be tasked to assume an advisory role to provide technical advice and support to the appropriate bodies addressing AMR issues under the ASWGL and national AMR coordinating committees on AMR Surveillance in the animal health sector. Such, the roles and responsibilities of the AMR-TAG will be to:

- Propose the development and review of regional guidelines relevant to AMR surveillance;
- Provide recommendations on approaching regional AMR risk analysis, development of research agenda, and strategic regional directions on AMR surveillance;
- Invite other experts as appropriate to assist in assessing and interpreting collated surveillance findings in the region and to provide updates on regional trends of AMR in ASEAN Member States;
- Propose the development and/or review of evidence-based prescribing guidelines for the animal sector in South-East Asia.

**Composition of the AMR-TAG.** The Regional AMR-TAG will be composed of up to two national technical experts on AMR in livestock and/or fisheries from each ASEAN Member State, to be officially nominated by the Director General of the respective Veterinary Services of the country. These nominated national experts may come from any background - government service, private sector, or research institutions in the country - as long as they are technically competent to discuss the interests of the country as its national focal point, and willing to commit the time and resources in fulfilling their roles and responsibilities for the country and the region. Additional Members who may sit at the AMR TAG to provide further technical support and regional global perspective to the AMR work in South-East Asia include representatives from the Tripartite (FAO, OIE, WHO), relevant Reference Laboratories/Lead laboratories in the region, and additional AMR experts as deemed necessary by the AMR TAG.

**Mechanics of the AMR-TAG operations.** The AMR-TAG will meet face-to-face annually at the beginning of each year or at a time agreed from the previous AMR-TAG meeting which is one month before the annual meeting of the regional network for AMR surveillance in the animal health sector, to prepare the recommendations and evidence that will provide the technical support to guide the network. Virtual technical discussions will also be organized regularly as per agreed frequency and duration by all members. The costs attached to the operationalization of this AMR-TAG will be supported by each Member State and involved organizations and/or institutions.

A Secretariat of the Regional AMR-TAG will be established initially with FAO RAP until such time that secretariat functions can be transferred to other relevant regional groups (e.g. ASEAN). The secretariat will be tasked to provide coordination support and information dissemination for the group and/or its stakeholders.

## ADVANCE DOCUMENT ON AMR SURVEILLANCE IN THE REGION

## CONSULTATION MEETING WITH ASEAN MEMBER STATES

## SETTING UP OF THE AMR TECHNICAL ADVISORY GROUP

# Thank you.

[www.fao.org/antimicrobial-resistance](http://www.fao.org/antimicrobial-resistance)

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