Introduction to situation analysis and guidance to establish integrated surveillance programs at country level

Interpretation of AMU/AMR data to improve evidence-based decision-making in Asia and the Pacific

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Food and Agriculture Organization of the United Nations
World Health Organization
World Organisation for Animal Health
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Stages for establishing OH integrated surveillance

STAGE 1

Situational analysis and resourcing

STAGE 2

Sampling/ data collection (AMU/ AMR)

STAGE 3

Sample/ Specimen processing, lab analysis & quality control

STAGE 4

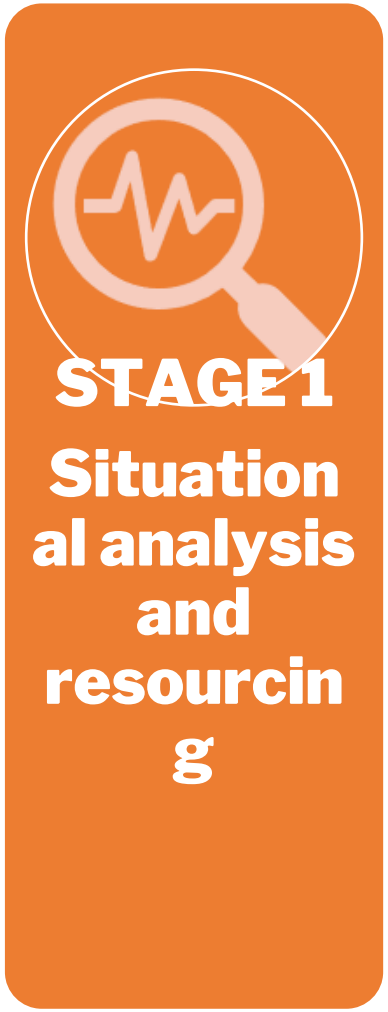
Data integration, analysis, reporting, interpretation & communication

STAGE 5

Monitoring & evaluation

(Source: Quadripartite OHISA guidance (TBC))

STAGE 1- Situational analysis and resourcing



Step 1

- Conduct situational analysis, planning, resourcing, and stakeholder mapping

Step 2

- Priority setting

Step 3

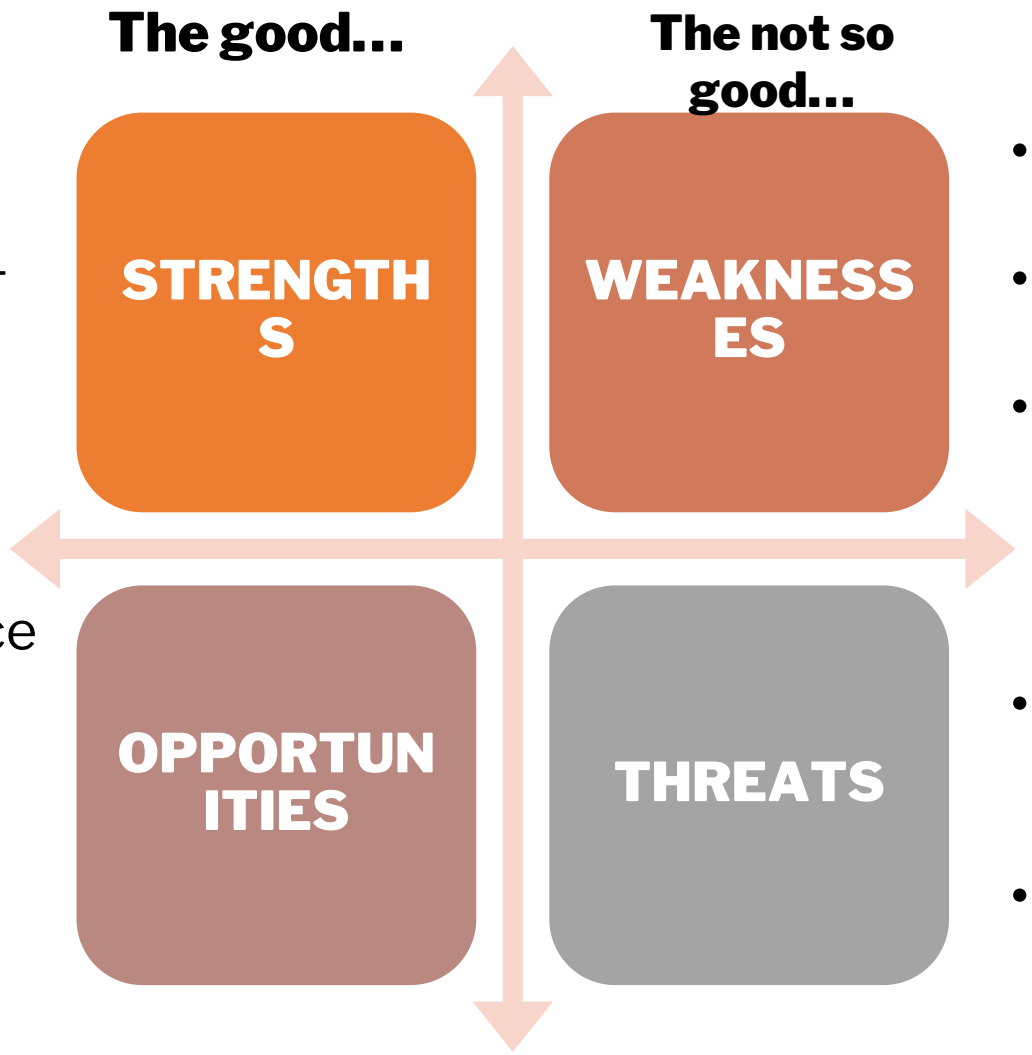
- Epidemiological design of the system

Step 4

- AMR and AMU data sharing across sectors

(Source: Quadripartite OHISA guidance (TBC))

SWOT analysis



- Resources available
- Ongoing sector-specific and integrated surveillance activities

- Existing resource partners
- Political engagement (UNGA Political declaration 2024)
- PVS, ATLASS and IHR missions

- Lack of infrastructure/ resources
- No allocation of budget to NAP implementation
- Weak or no legal frameworks

- Shifts in government, civil unrest
- Loss of external funding

(Source: Quadripartite OHISA guidance (TBC))

Example: Madagascar's SWOT analysis of AMR surveillance in hospitals

STRENGTHS

- **Laboratory network in place**, already transferring data to **WHO GLASS-AMR** module
- **Active support of international stakeholders**
- Identification of **highly motivated Malagasy practitioners** willing to work on AMR and ASP
- Existence of **several scientific societies**

WEAKNESSES

- **Little knowledge of the local epidemiology of AMR**
- **Collection of antibiograms not performed on a daily basis**
- Lack of visibility **on antibiotic prescriptions and their efficiency**
- **Implementation only doable where good laboratories exist**
- **Bacteriology results** sometimes delivered **in paper format**

OPPORTUNITIES

- **Capture high-level AMU in hospitals**
- Existing **AMU recommendations** in place, but they are **not adapted to local AMR patterns**
- Existing **AMR protocols including the surveillance of AMU**

THREATS

- **Challenging implementation**
- **Substantial missing data**
- **Personnel require training**
- **Lack of funding**
- **Political instability**
- **Climate disorders**

(Adapted from: Elias C et al, BMJ Open 2024;14:e078504)

Considerations for integrated surveillance systems

- Define scope and objectives

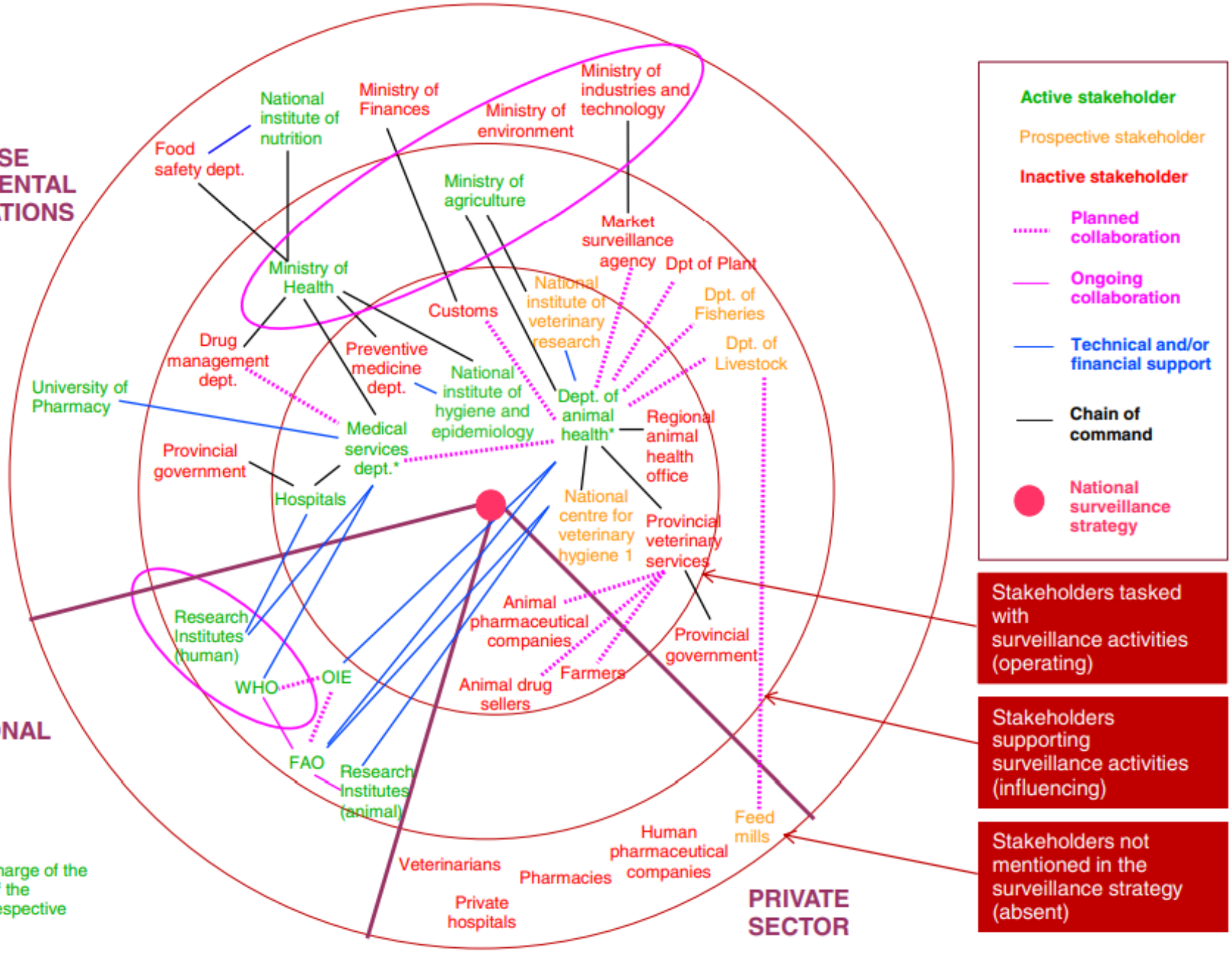
- Map all relevant stakeholders across sectors
  - Identify roles & responsibilities
  - Assess easiness of collaborations

- Review existing sector-specific and/or integrated AMR/AMU surveillance
  - **Determine coverage** (e.g. targeted human & animal populations, bacteria sampled)
  - **Data collection & analysis methods**
  - **Infrastructures & technical capacity**

- Identify existing surveillance data management system(s)
  - Databases in place
  - Data flow mechanisms
  - Data accessibility & security

(Source: Quadripartite OHISA guidance (TBC))

Example- Mapping of main stakeholders involved in AMR surveillance strategy in Vietnam (2018)



(Source: Bordier et al, *BMC Public Health* (2018) Sep24;18:1136)

Example: French AMR surveillance system (2021)

- 48 programmes contributed to the system- from which, 3 intersectoral:
  - humans (n= 35)
  - animals (n= 12)
  - food (n= 3)
  - environment (n= 1)
- The programmes relied on several types and sources of data

Sector (number of programmes)[a]	Population (number of programmes)	Number of programmes covering the target of interest[b] (IDs of corresponding programmes)		
		ABR (n = 35)	ABU (n = 14)	Residues (n = 2)
Human (n = 35)[a]	Healthcare facilities (n = 30)	29 (1–17, 19, 21, 23, 24, 28, 32–36, 44, 46)	3 (18, 21, 44)	NA
	Community (n = 23)	19 (1, 3–16, 19, 24, 35, 45)	4 (18, 37, 39, 48)	NA
	Long-term care facilities (n = 20)	18 (3–16, 20, 24, 35, 45)	3 (18, 20, 37)	NA
Animal (n = 12)[a]	Diseased food-producing animals (n = 10)	3 (25, 30, 31)	7 (22, 27, 38, 40–43)	NA
	Diseased companion animals (n = 2)	1 (30)	1 (43)	NA
	Healthy food-producing animals (n = 2)	2 (19, 26)	None	NA
Food (n = 3)[a]	Food of animal and non-animal origin (n = 1)	1 (11)	None	None
	Food of animal origin (n = 2)	1 (26)	None	1 (29)
Environment (n = 1)	Surface and ground water (n = 1)	None	None	1 (47)

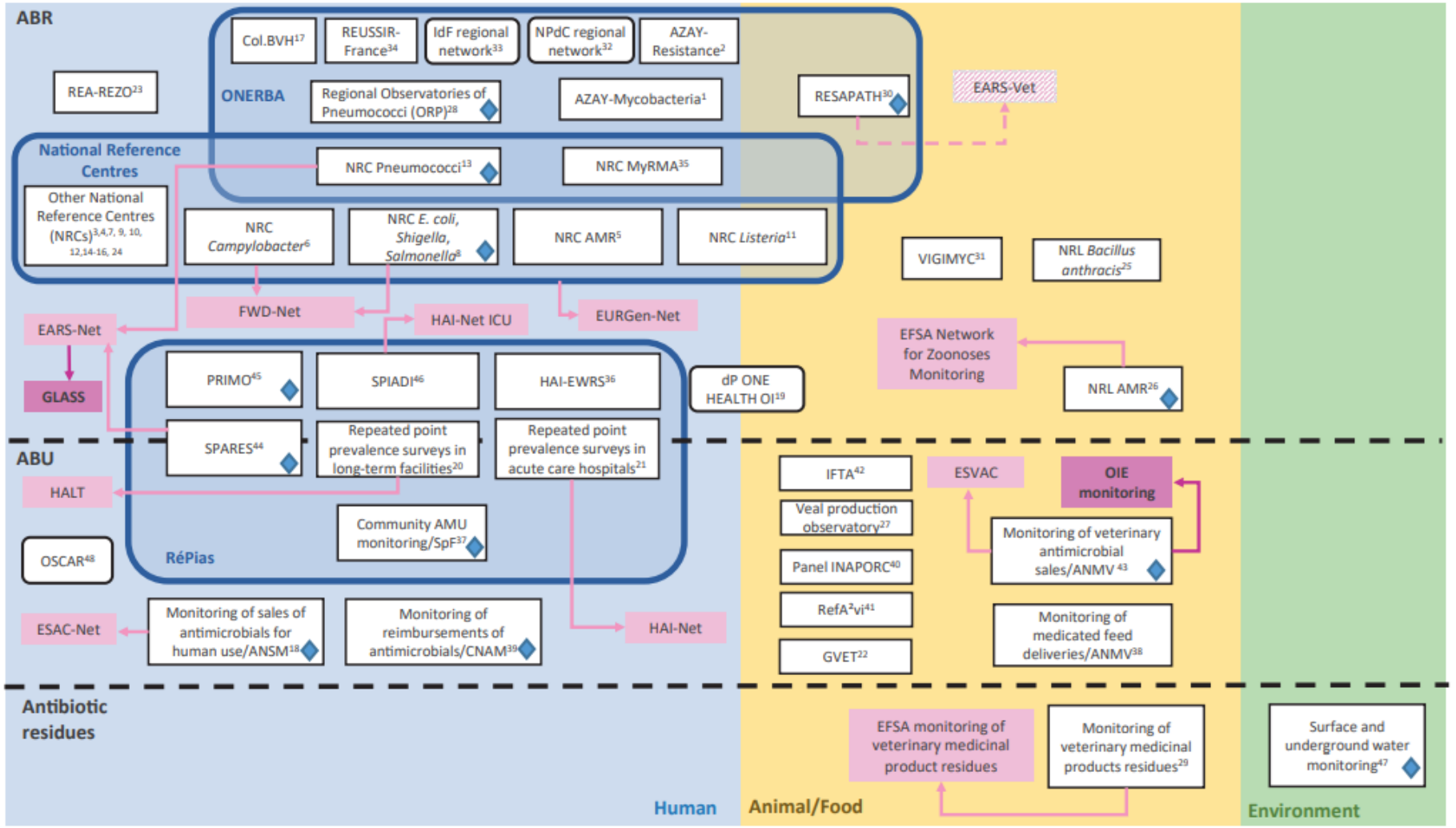
ABR: antibiotic resistance; ABU: antibiotic use; ID: identifier; NA: not applicable.

(Source: Collineau L et al, *Euro Surveill.* 2023 Jun 1;28(22):2200804)

Example: French AMR surveillance system

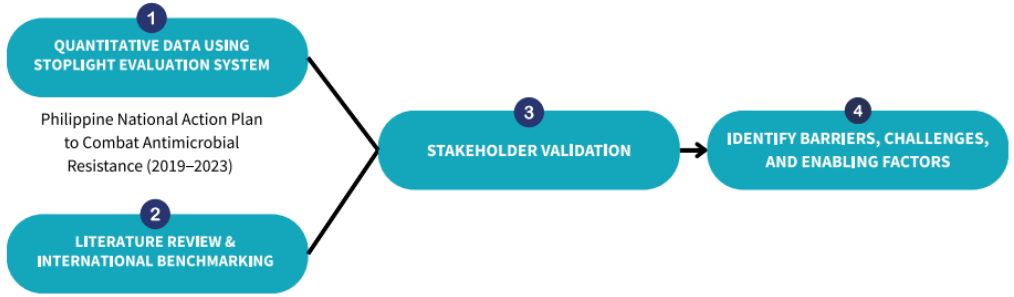
Surveillance system resourceful but…

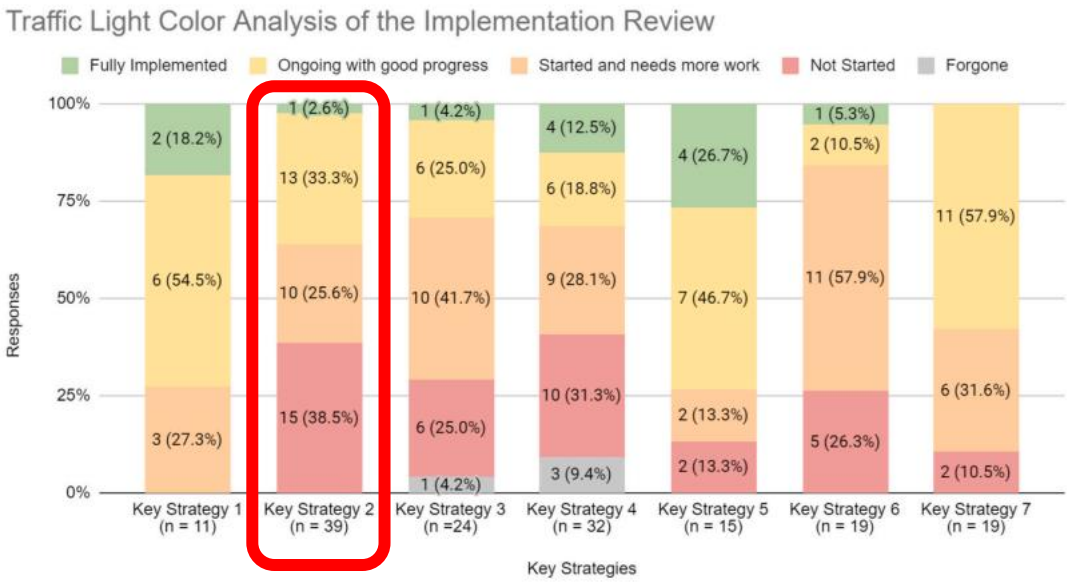
- Too complex
- Overlap between programmes – duplication?
- Not integrated across sectors and hazards.



(Source: Collineau et al, *Euro Surveill.* 2023 Jun 1;28(22):2200804)

Example: Situation analysis of AMR policies and program implementation in the Philippines (2019-2023)





Key Strategy 1.
Commit to the Philippine Action Plan through multisectoral engagement and accountability

- Elevate AMR as a national priority
- Uphold accountability among various sectors

Key Strategy 2.
Strengthen surveillance and laboratory capacity

- Improve diagnostic capabilities
- Capacitate health workers
- Institutionalize robust reporting and surveillance systems

Key Strategy 3.
Ensure uninterrupted access to safe and quality-assured antimicrobials

- Improve regulatory frameworks, monitoring, and supply chain management

Key Strategy 4.
Regulate and promote the rational use of antimicrobials

- Fully implement guidelines for prudent antimicrobial use
- Track policy enforcement across various sectors.

Key Strategy 5.
Implement appropriate measures to reduce infection across all settings

- Enhance the capacities of health personnel
- Improve infection control in facilities
- Promote sanitation and hygiene in communities

Key Strategy 6.
Promote innovation and research on AMR

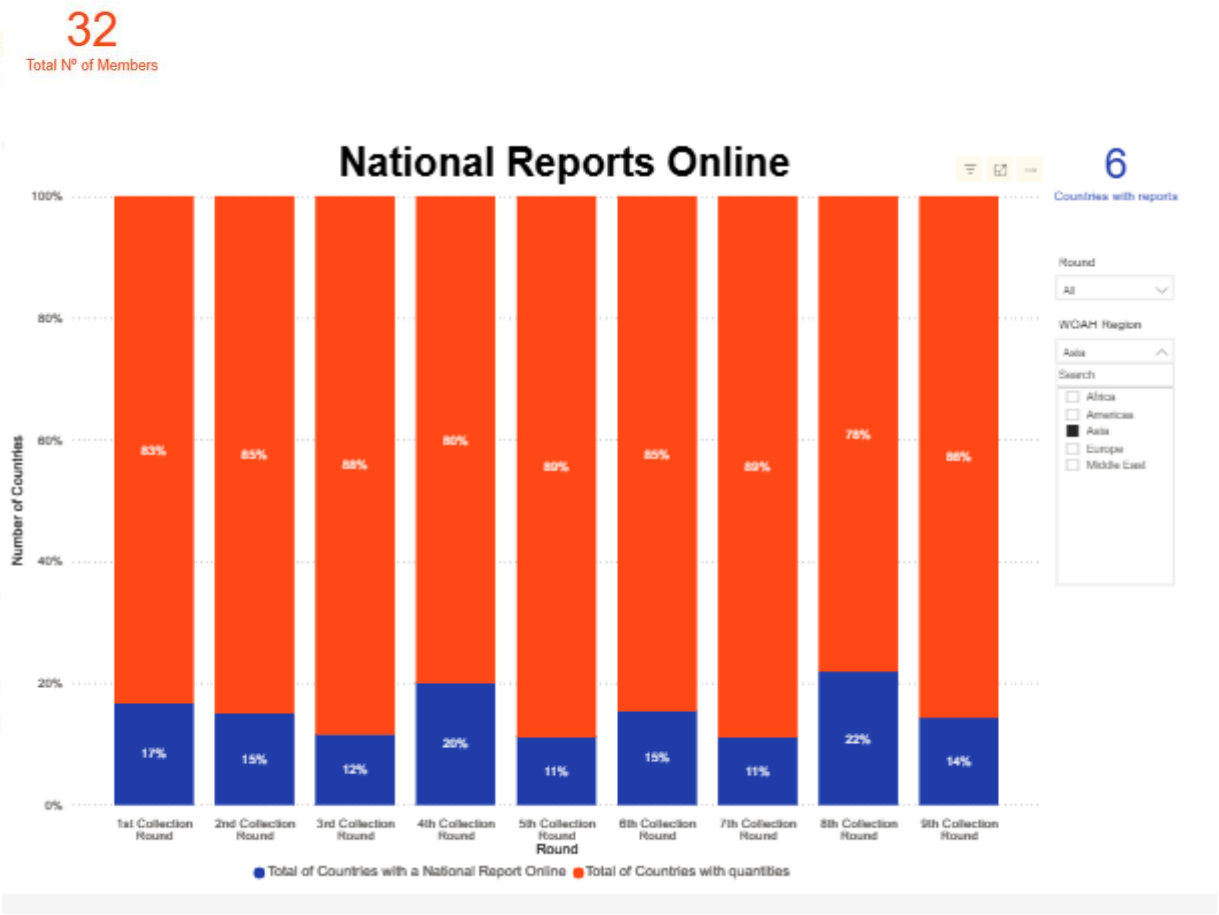
- Create a supportive and sustainable environment for research
- Disseminate information
- Foster technological advancements

Key Strategy 7. Improve awareness and understanding of antimicrobial resistance through effective communication and education

- Increase public awareness of AMR
- Integrate AMR prevention and reduction into the pre-service training of health and agriculture professionals

(Source: Valenzuela et al, One Health 21(2025) 101255)

AMU data availability for animal health sector (ANIMUSE, 9th round)



Source: WOAH, ANIMUSE (2025)

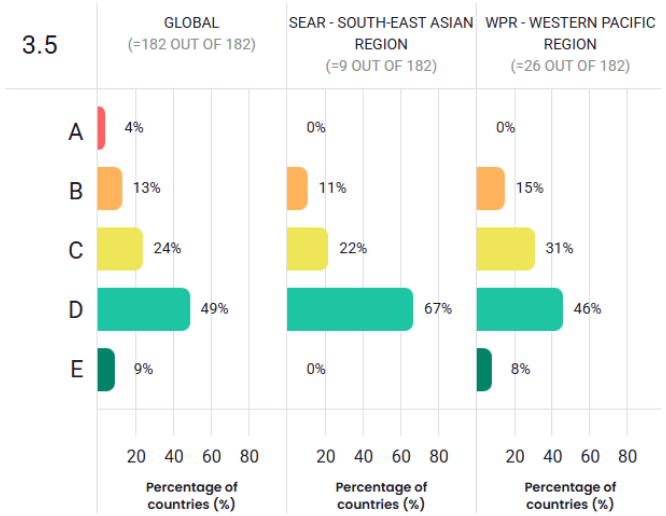
Example: Setting indicators- Situational analysis tool for South East Asia

Sector	Indicators	Exploration & adoption	Programme installation	Initial implementation	Full implementation	Sustainable operation
HUMAN HEALTH	**National human AMR surveillance**	No capacity for AMR laboratory or limited reporting or both, or no surveillance guidelines	Guidelines developed but not fully implemented. Limited quality data and analysis and not representative	Standardised national AMR surveillance in place and representative of country but limited	Surveillance in place and functional to monitor AMR trends accurately and timely but no contributing data to GLASS	National AMR surveillance regularly assessed and adjusted; and contributing to GLASS
	National laboratory network strengthening	No national network developed	A national network with testing according to the international standards is planned	A national reference laboratory is identified, and quality assured laboratory networks have been developed only at few surveillance sites	A national network of EQA health laboratories has been developed in most or all surveillance sites	A laboratory network is established, EQA measures are in place, and the reference laboratory has Demonstrated capacity for research
ANIMAL HEALTH	**National surveillance of AMR and AMU at national level in animals**	No or weak national policy and guidelines	Limited capacity for surveillance of sales, AMR, or AMU	Some capacity and data generated from sales, AMR or AMU	Some comparative analysis of surveillance data between AMR and AMU	Comprehensive approach of surveillance with coordinated analysis between humans and animals
	Infection prevention and control in the animal sector	No policy and national guidelines developed for biosecurity	Policies and national guidelines in line with international standards	Limited implementation	Full implementation	Fully implemented in multiple areas with M&E framework in place

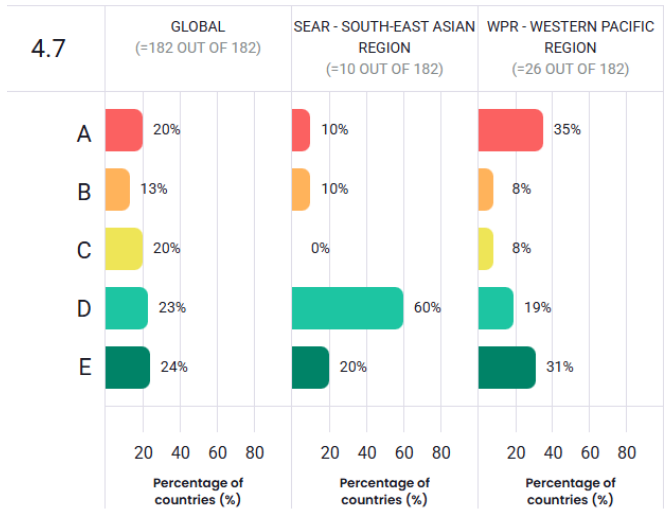
(adapted from: Kakkar M et al, (2017) BMJ: Suppl1))

AMR surveillance systems- current situation (TrACSS, 2025)

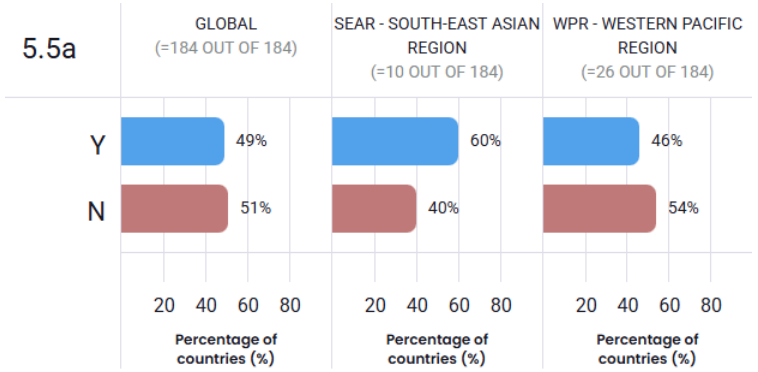
Humans



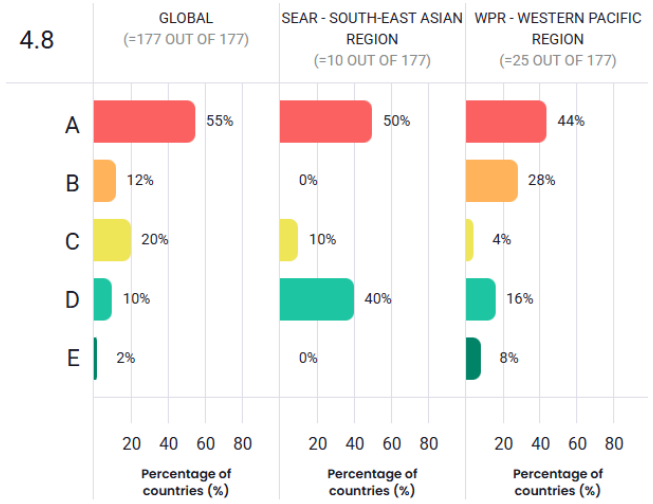
Terrestrial animals



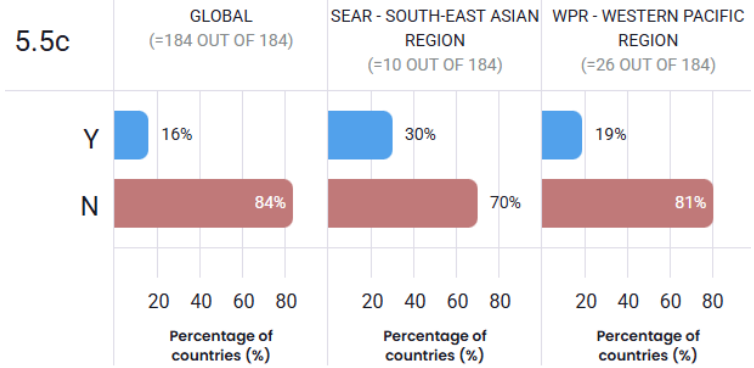
Food derived from terrestrial animals



Aquatic animals



Food derived from aquatic animals



A None B Limited C Developed D Demonstrated E Sustained Y Yes N No N/A

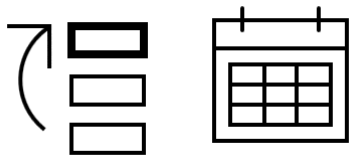
(Source: TrACSS, 2025)

Considerations for integrated surveillance systems

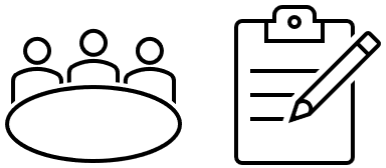
- Evaluate existing resources
  - Human
  - Financial
  - Infrastructural
- Map policies and legislation framework for AMU & AMR
  - Assess **alignment with NAP-AMR**
  - Identify **global and national data sharing mechanis**
- Map funding mechanisms & opportunities
  - Assess **sustainability of funding available (domestic, external)**
  - Identify **potential resource partners**
- Conduct risk assessment
  - What might hinder **multisectoral collaboration**

(Source: Quadripartite OHISA guidance (TBC))

After situation analysis…



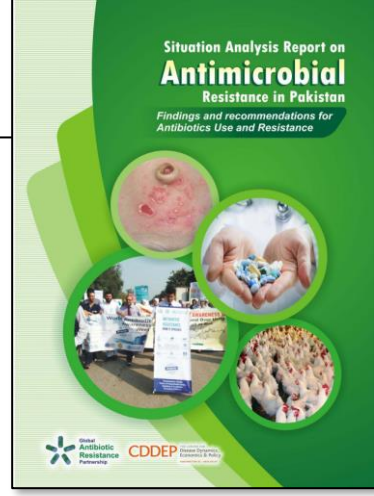
- Develop action plan
  - **Set priorities** for immediate action
  - **Formulate recommendations** for addressing gaps identified
  - Agreed **timeline for implementation**



- Set Monitoring & Evaluation framework(s)
  - **Assess progress** of implementation of systems
  - Identify **potential risks and barriers**
  - **Adjust action plan** according to results & feedback from stakeholders

(Source: Quadripartite OHISA guidance (TBC))

Example- Situational analysis AMR in Pakistan (2018)



Main findings & observations

- **Priority for AMR, responsibility and accountability and monitoring mechanisms** are less clear or developed.
- **Qualified human resources are lacking**, including infectious diseases physicians, microbiologists, (…), amongst others.
- There are **inadequate or poor microbiology facilities, with a lack of dedicated funds** that hamper efforts for (…) surveillance and diagnostics.
- There is **inadequate or poor AMR surveillance and research** with no federal or provincial laboratories

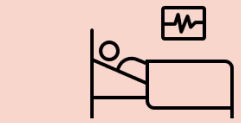
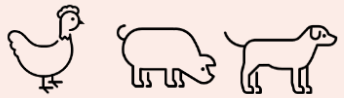
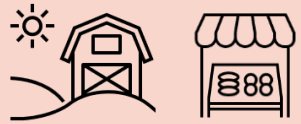
Main recommendations

- An Integrated AMR surveillance system shall comprise of **national and provincial coordinating and communication centers, national and provincial reference laboratories, data collection and management units, and QA Systems**.
- **Establishment of an integrated national AMR surveillance system** (use and resistance, human and animal).
- **Establishment and strengthening of microbiology laboratories** (including veterinary and agriculture laboratories) across Pakistan should be ensured.

(Source: CDDEP, GARP (2018) Situational analysis report on AMR in Pakistan)

STEP 2- Setting priorities

- For each sector consider
  - Population(s) of interest
  - Targeted microorganisms
  - Antimicrobials & metabolites of interest
  - Sampling strategy
  - Lab methods & standards
  - Data analysis
  - Reporting plan

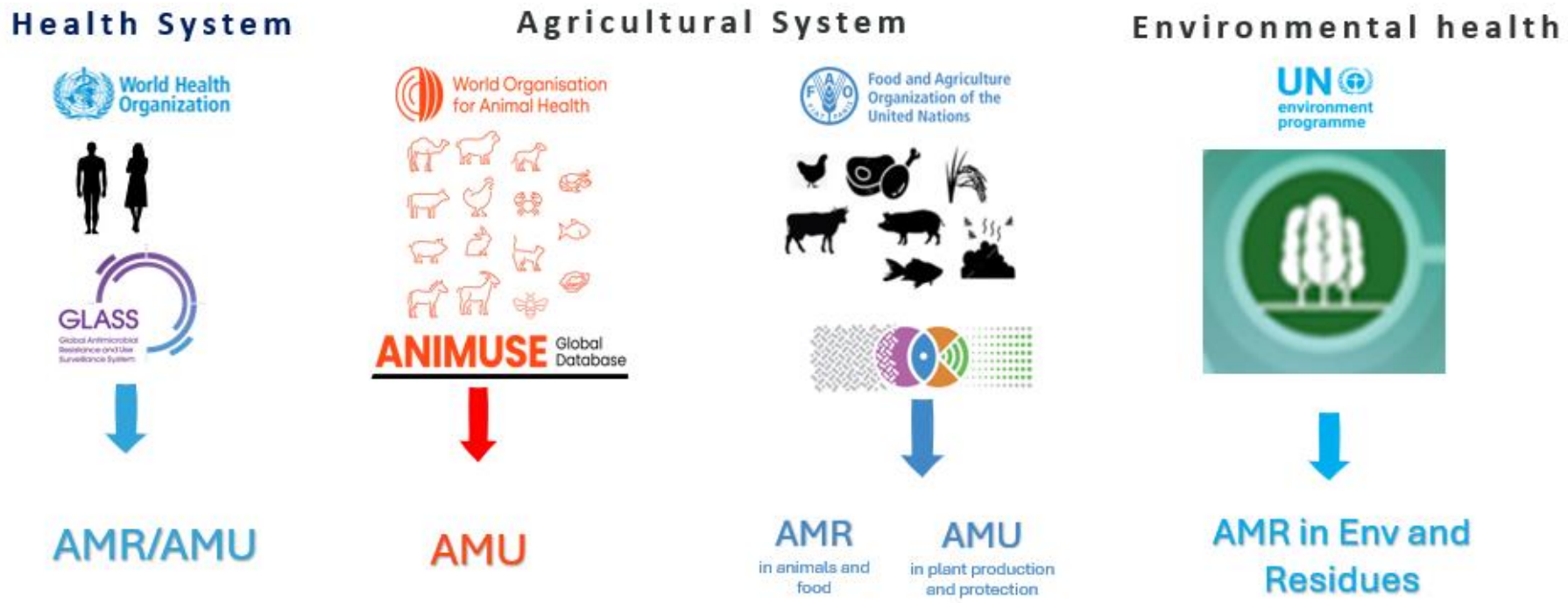
Population of interest	Location	Microorganisms	Antimicrobials & resistance mechanisms
		Pathogens • *Salmonella* spp. • *Campylobacter* spp. Indicators • *Escherichia coli* 	3rd and 4th generation cephalosporins Carbapenems Fluoroquinolones
			
			Extended-spectrum beta-lactamases (ESBLs) Carbapenem-resistant Enterobacterales (CREs)
			

(Source: Quadripartite OHISA guidance (TBC))

STEP 3. Epidemiological design of the system

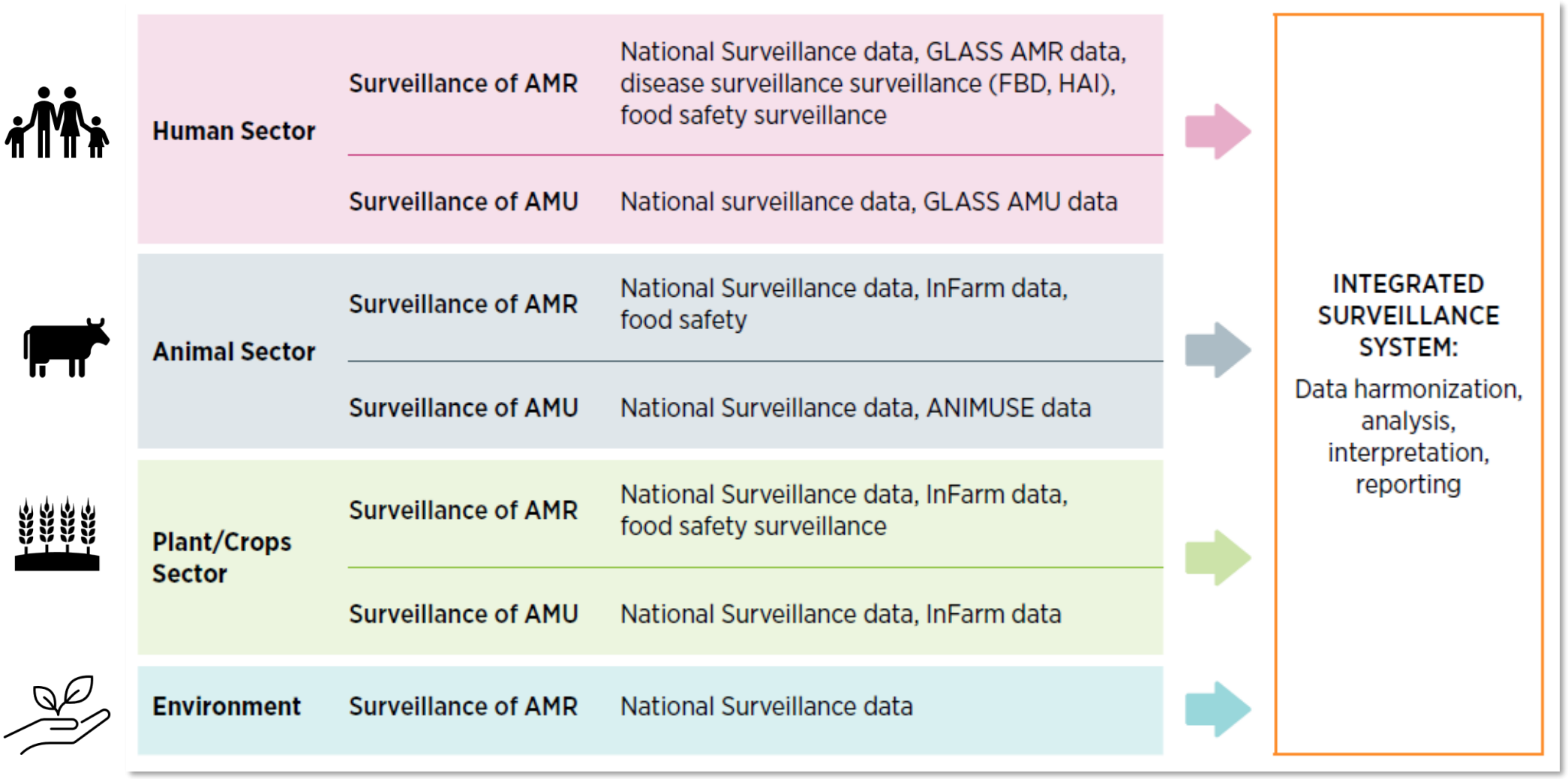
Develop the **epidemiological design of the system**

- Consider
  - **Analytical capacity** needed
  - **Harmonisation of data across sectors**
  - Consider **potential data sources** & **existing programs**



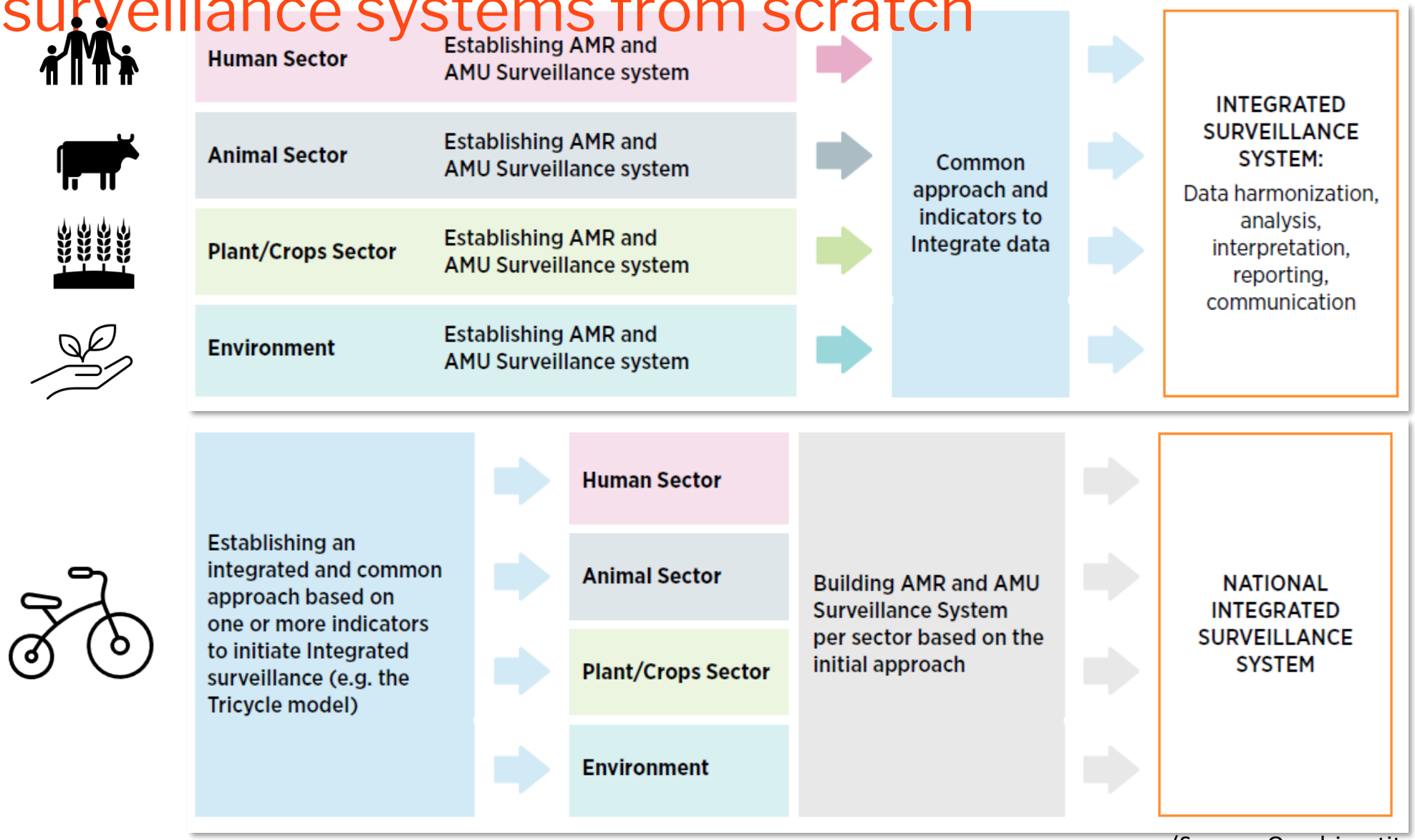
(Source: Quadripartite OHISA guidance (TBC))

Epidemiological design of surveillance systems- using existing sector-specific systems



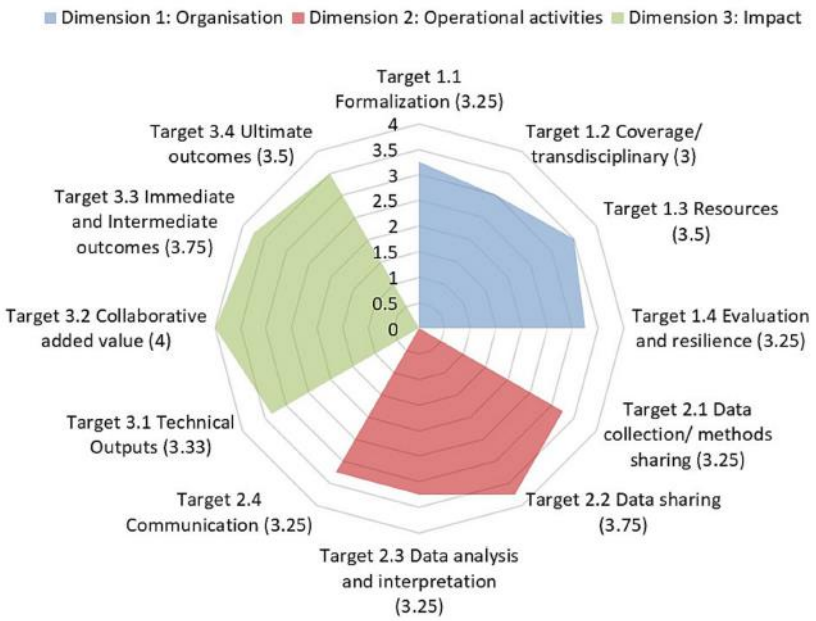
(Source: Quadripartite OHISA guidance (TBC))

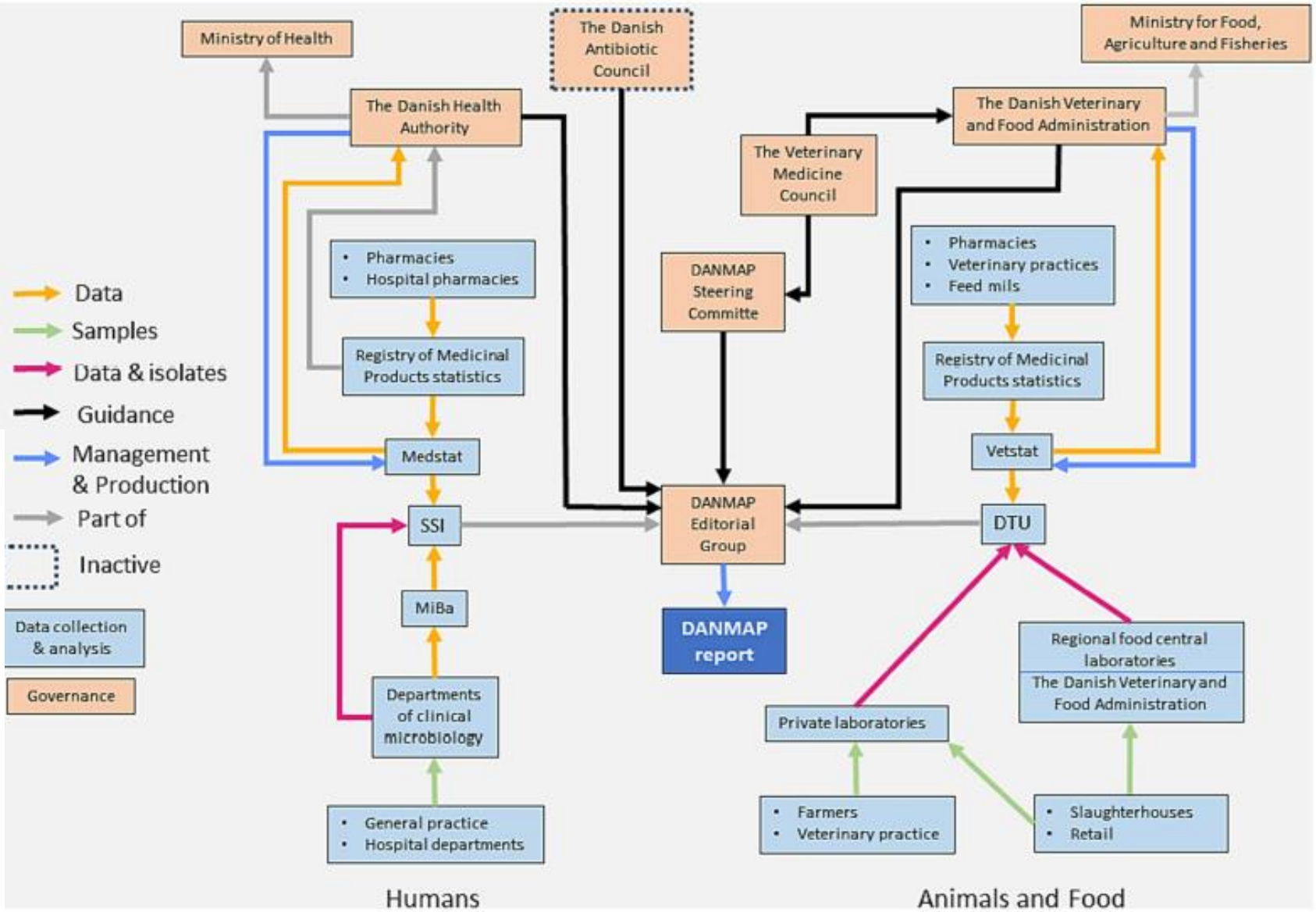
Epidemiological design of surveillance systems- developing sector specific systems or integrated surveillance systems from scratch



(Source: Quadripartite OHISA guidance (TBC))

Example: Evaluation of DANMAP using OH-EpiCap tool

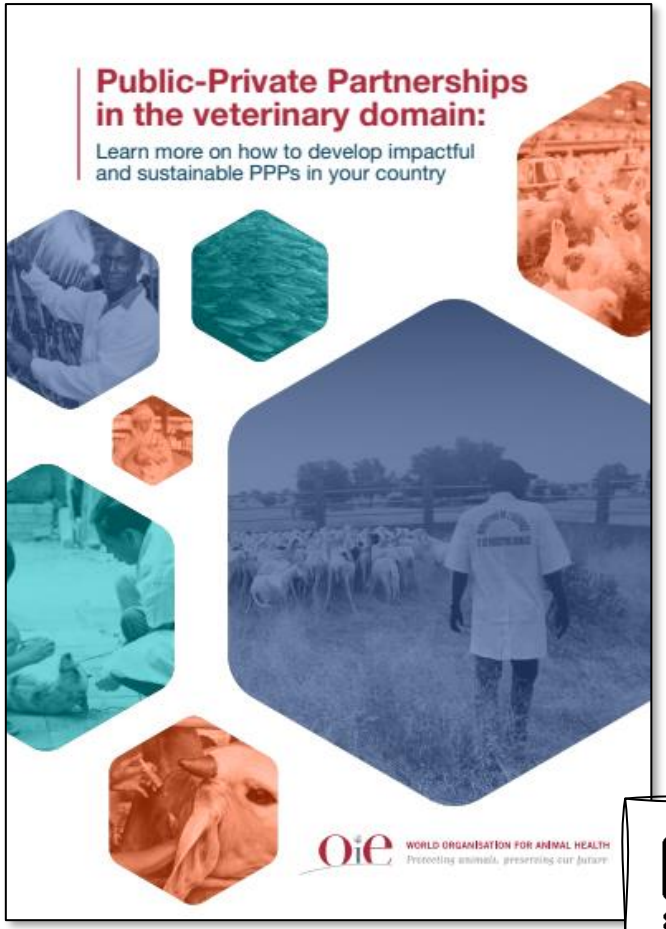




(Source: Moura et al, *Frontiers in Public Health*, 20 November 2023)

STEP 4. AMR and AMU data-sharing among sectors

- Identify **sources of data – who owns it**?
- Explore mechanisms in place for **data sharing** & **data protection** requirements
- Is the data publicly available? Why not?
- Identify **barriers for data sharing**
- Consider **engagement of private sector**
  - Is it necessary (added value)
  - Is it supported by existing legislation
  - Do competent authorities have



Final remarks

- Situation analysis is important because it can be used to…
  - Identify **existing resources** (or lack thereof)
  - Map **relevant stakeholders** that should be involved
  - Identify **potential sources of data** from existing programs
  - Comprehend the **socioeconomic context**
  - Develop an **action plan that is realistic**
  - Inform the design of the **surveillance system** that is **cost-effective and more efficient**
  - …

Thank you