The Fleming Fund

RADAAR
Regional AMR Data Analysis for Advocacy, Response, and Policy

Catalyzing the Potential of Regional Action to Combat AMR

Critical Insights on Data Sharing and Use of One Health Data in **Africa**

MOTT MACDONALD

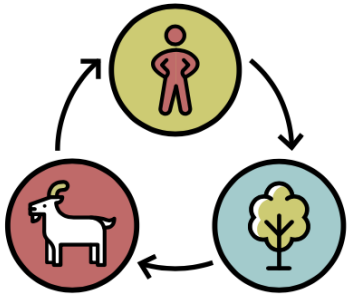
UKaid
from the British people

IVI International Vaccine Institute

PUBLIC HEALTH SURVEILLANCE GROUP

Context and Rationale

- **Why is this a critical time point for regional action and to develop a framework?**
- **As surveillance improves, the solution and plan becomes more tailored**
- **In many countries, initial plans to combat AMR have been established (NAPs)**
- **Initial global plans and initiatives have set AMR as a priority, established guidance for NAPs, increased awareness and data quality, and more.**
- Now that national level surveillance systems are increasing in quality, we are now at a time point **where the role and utility of the regional level needs to be established**
- **Coordinated approaches and policies, regulations, and behavior change across countries** is the only way for AMR to be controlled
- **Each region operates in its own unique manner, internally intertwined through their economic and trade**, animal husbandry practices, and health practices.
- Therefore, **the role and utility of the regional level in control of AMR needs to be tailored to each region** to maximize its impact.
- Today and over the next few days, we want to explore **what the role and framework of the regional level**, based on the insights from experts in the countries, at the regional level, and global experts.



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Assessment Goal and Objectives

Assessment Goal

- Is to gather the necessary information to establish or enhance regional data sharing and further the establishment of a regional One Health framework for AMR and AMU/C.

Assessment Objectives

- **Depict current AMR and AMU/C data sharing pathways** and networks at the national, regional and global levels
- **Assess the status of surveillance systems and the availability** of human and animal health AMR and AMU/C data on the national and regional levels
- **Identify information gaps at the national and regional leve**l, where regional level activities could potentially fulfill such gaps and impediments.
- **Identify stakeholders' perceived benefits and expectations** of a regional framework and data foundation
- **Identify barriers and facilitators** to sharing of data into a regional data foundation
- **Gather insights on trusted organizations**, both technically and in leadership
- **Provide conclusions drawn from the information** above to inform the regional framework and data foundation

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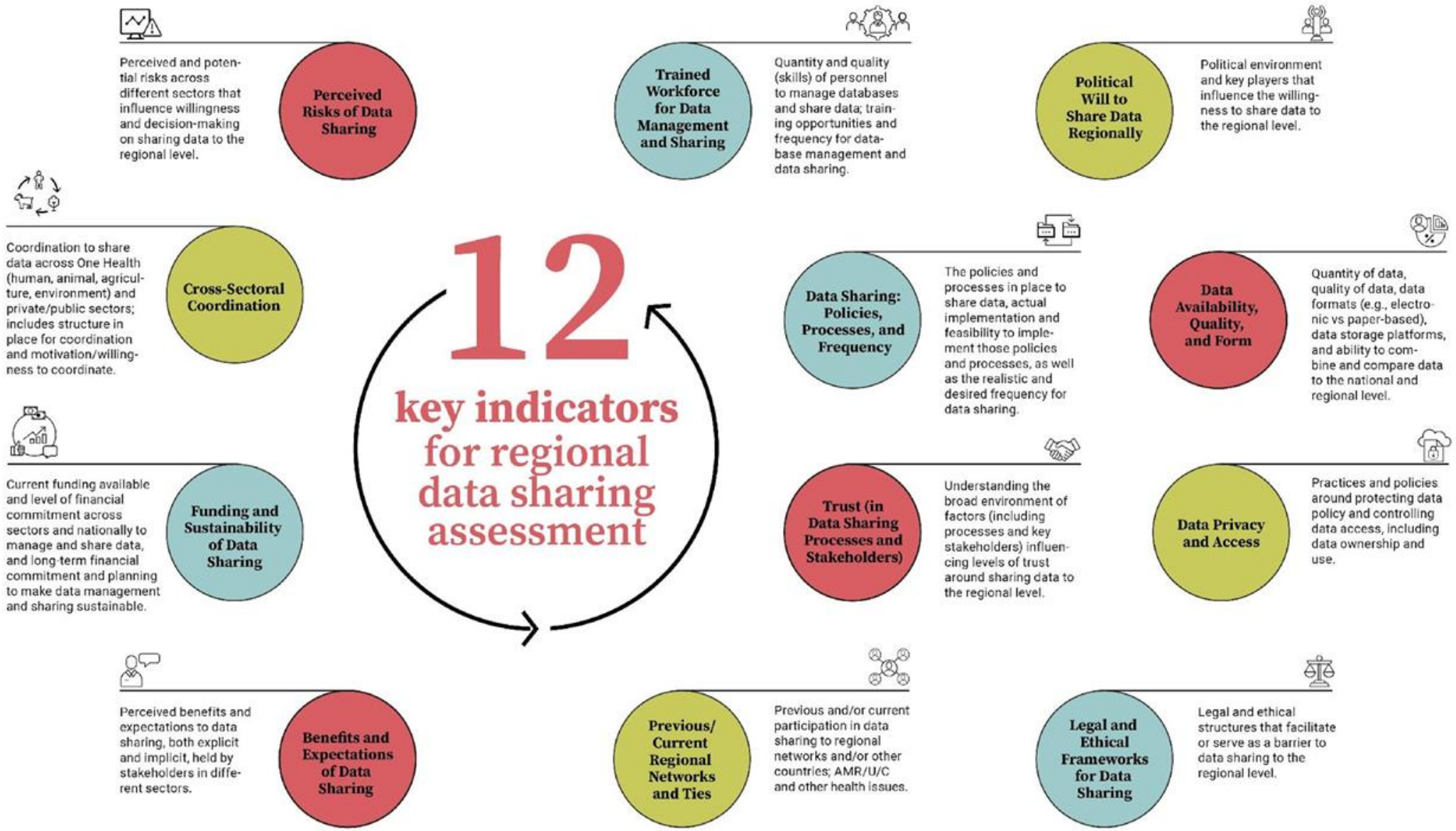
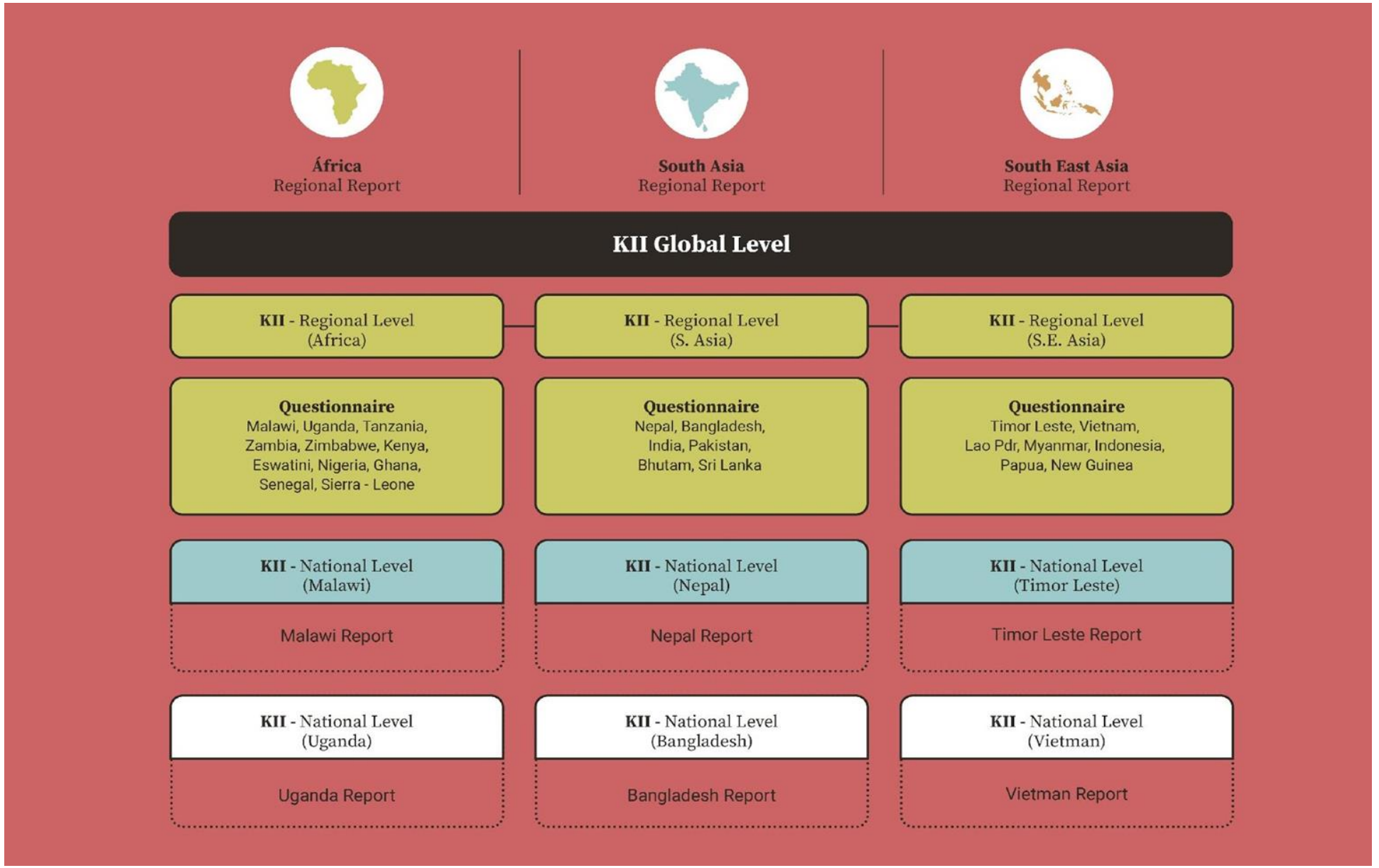


Frameworks drawn upon and reviewed in building building one health data sharing assessment framework:

Van Panhuis WG, Paul P, Emerson C, Grefenstette J, Wilder R, Herbst AJ, Heymann D, Burke DS. A systematic review of barriers to data sharing in public health. BMC Public Health. 2014 Nov 5;14:1144. doi: 10.1186/1471-2458-14-1144.

Edelstein, M., Lee, L. M., Herten-Crabb, A., Heymann, D. L., & Harper, D. R. (2018). Strengthening Global Public Health Surveillance through Data and Benefit Sharing. *Emerging Infectious Diseases*, *24*(7), 1324-1330. https://dx.doi.org/10.3201/eid2407.151830

Overview of Methods



KII and Quesitonnaire Participants

National KII Participants- Malawi (n=15) and Uganda (n=10)

- Government administrations of animal and human health
- Leaders of public health and veterinary laboratories
- Experts from WHO and FAO local offices

Global and Regional KII Participants (n= 24)

- WHO-HQ, WHO-GLASS, and regional offices of WHO with backgrounds in human health
- FAO-HQ and OIE-HQ and other regional offices of FAO and OIE with backgrounds in animal health, aquaculture and fisheries and plant health, UNEP
- Regional organizations working on AMR (e.g., Africa CDC, ASLM, ReACT)
- Multinational pharmaceutical companies (e.g., Pfizer and Health for Animals)

Questionnaire Participants (Human health n= 54, Animal Health= 48)

- 11 countries represented

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Coding, Analysis and Report Generation

Methods

Coding

Codebook developed	Key Informant Interview notes were coded

Thematic Analysis

Codes were grouped into themes	Themes were then summarized by research question

Generation of Findings and Report

Findings were summarized in national level reports and a questionnaire was developed to validate the findings	A regional report was developed (by a cross-sectoral research team) to guide the regional framework

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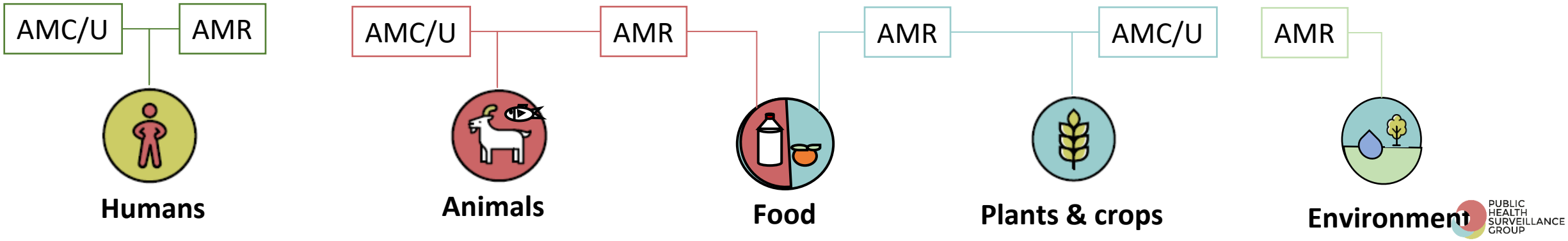
Existing (& future) networks in Africa

Key Findings

Global level

Regional level

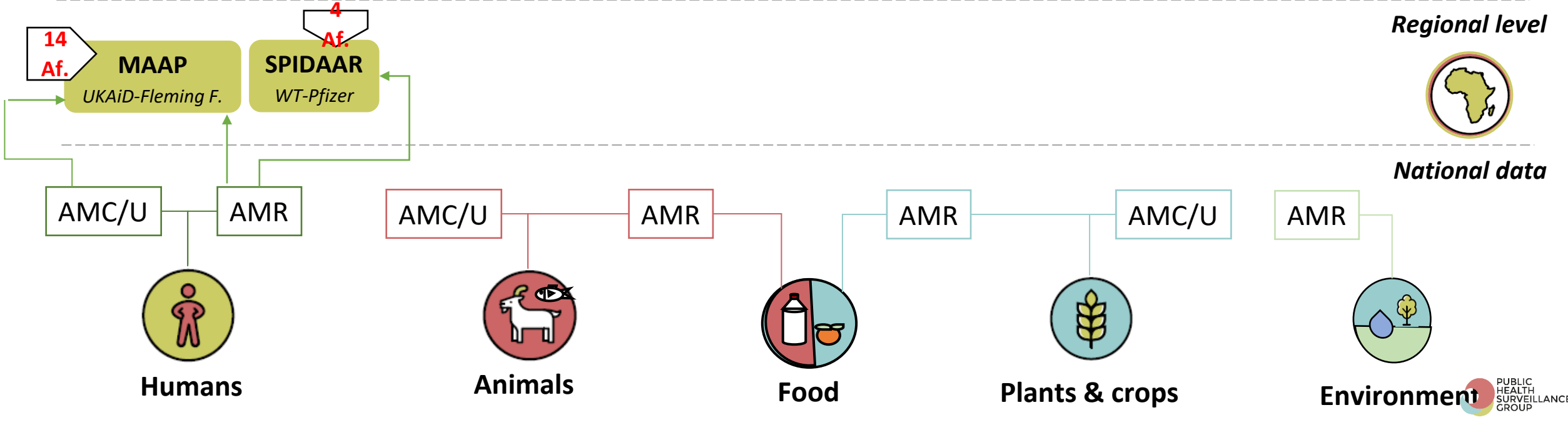
National data



PUBLIC HEALTH SURVEILLANCE GROUP

Existing networks in Africa

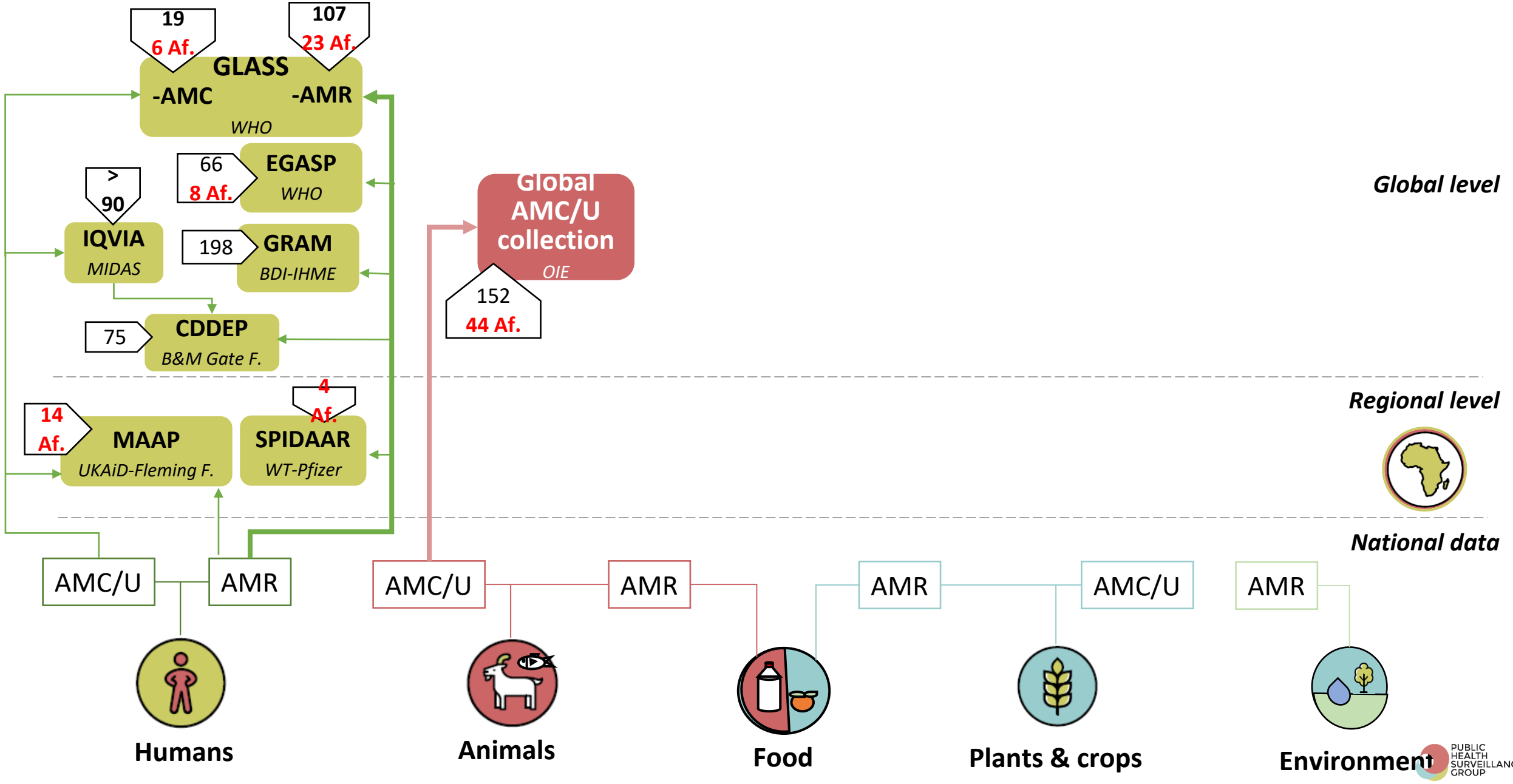
Key Findings



PUBLIC HEALTH SURVEILLANCE GROUP

Existing networks in Africa

Key Findings



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Existing networks in Africa

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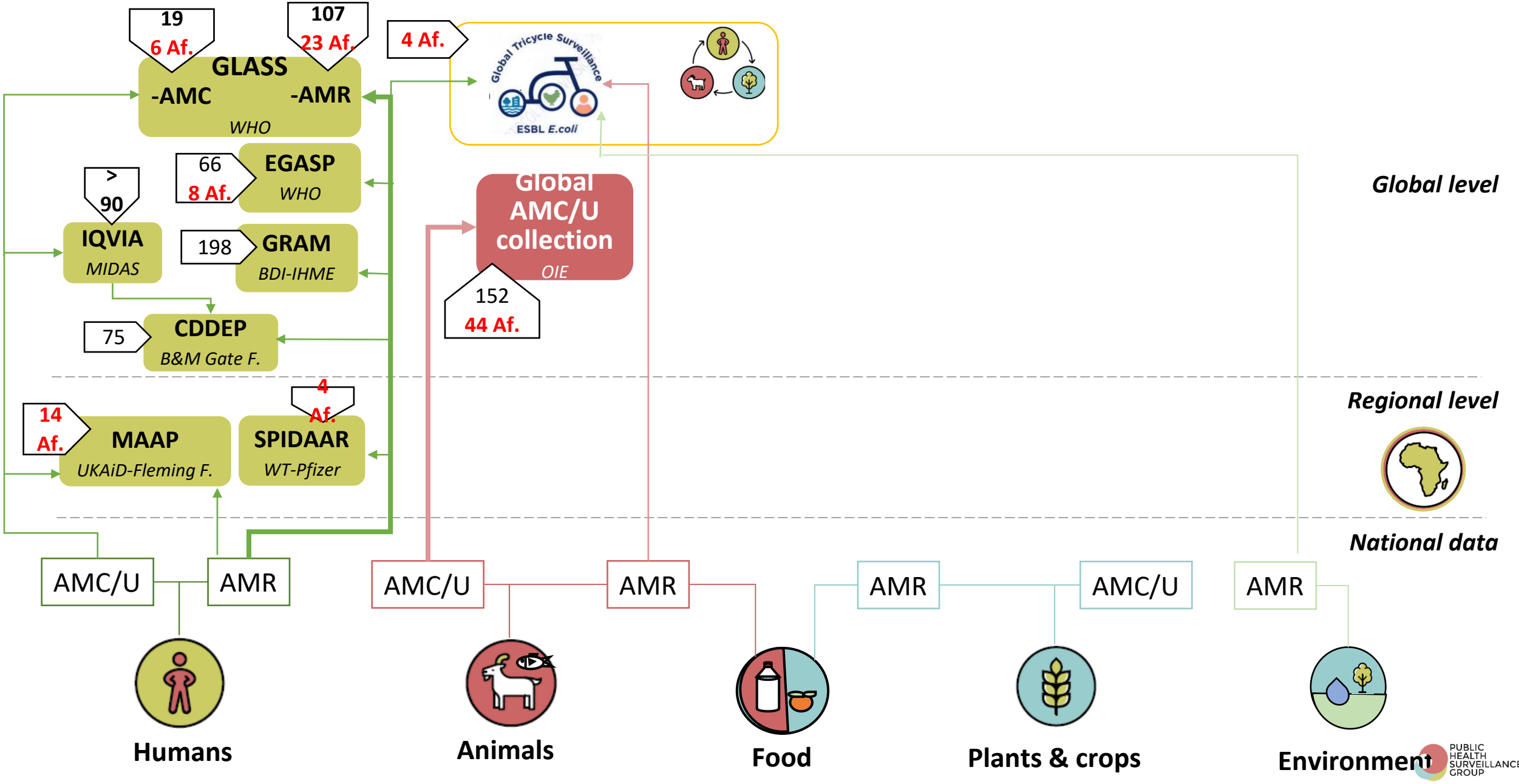
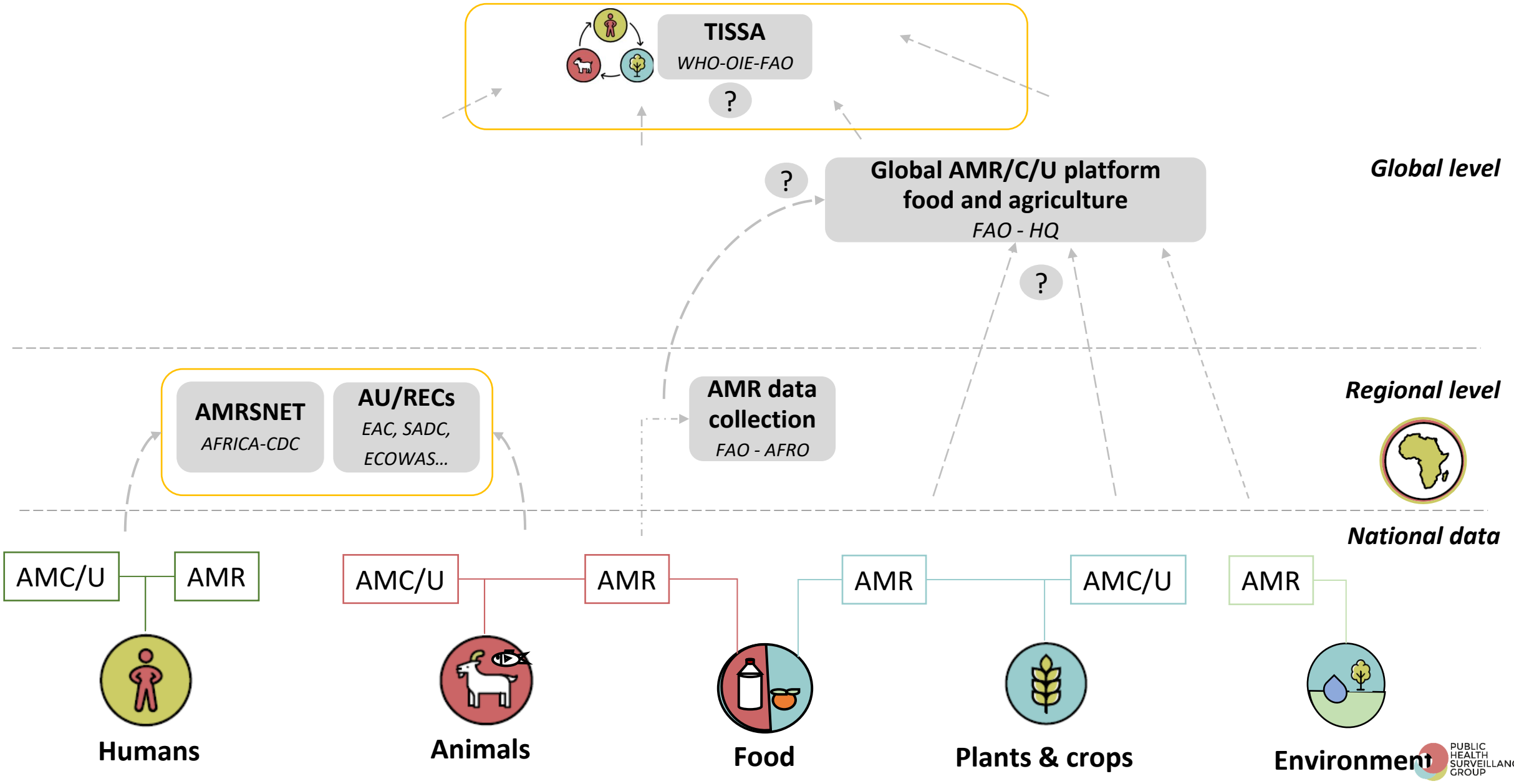


Future networks in Africa

Key Findings



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Utility of generated feedback in informing decision making

Key Findings

DISSEMINATION OF INFO.

⇧

DATA ANALYSIS/ GENERATION OF INFO.

⇧

DATA COLLATION

Translation into action

ACTIONS

INFO. USE FOR <u>REGIONAL</u>:

1) **SURVEILLANCE**
2) **ADVOCACY & AWARENESS**
3) **POLICY, REGULATION & PLANNING**

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Translation into action

ACTIONS

INFO. USE FOR REGIONAL:

1) SURVEILLANCE
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Regional data sharing

DISSEMINATION OF INFO.

DATA ANALYSIS/ GENERATION OF INFO.

AMR/C/U DATA COLLECTION & COLLATION

National data sharing

Translation into action

INFO. USE FOR NATIONAL:

1) SURVEILLANCE
2) ADVOCACY & AWARENESS
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PUBLIC HEALTH SURVEILLANCE GROUP

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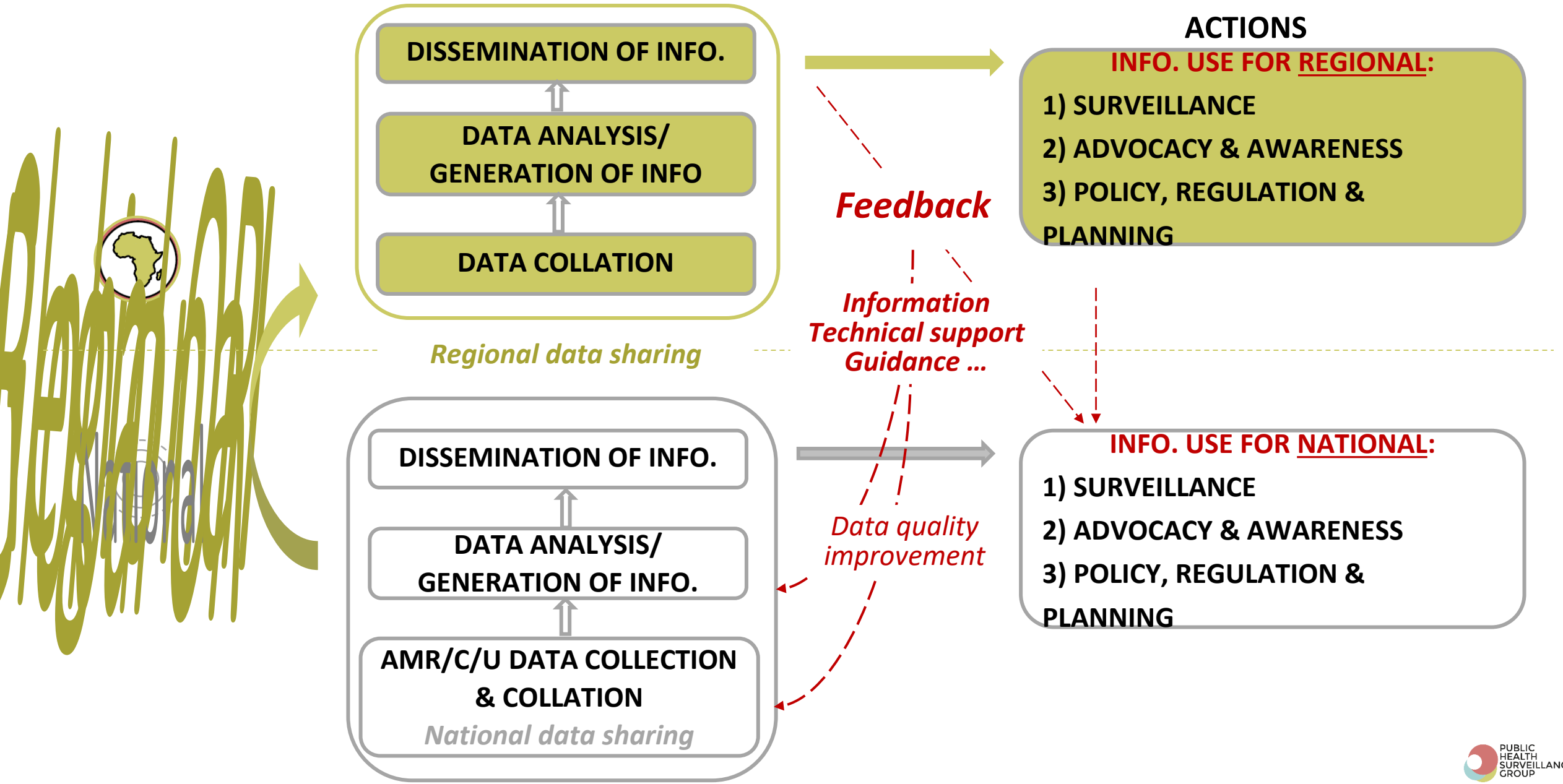

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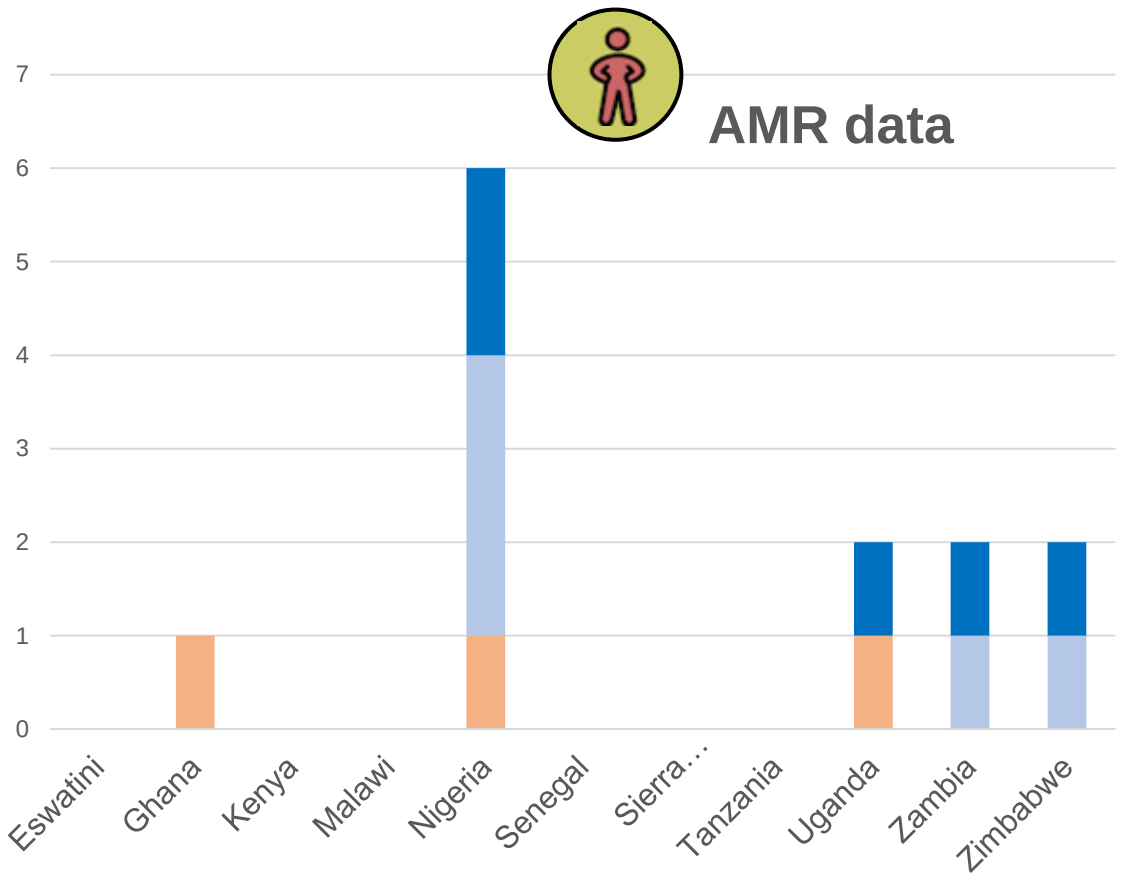
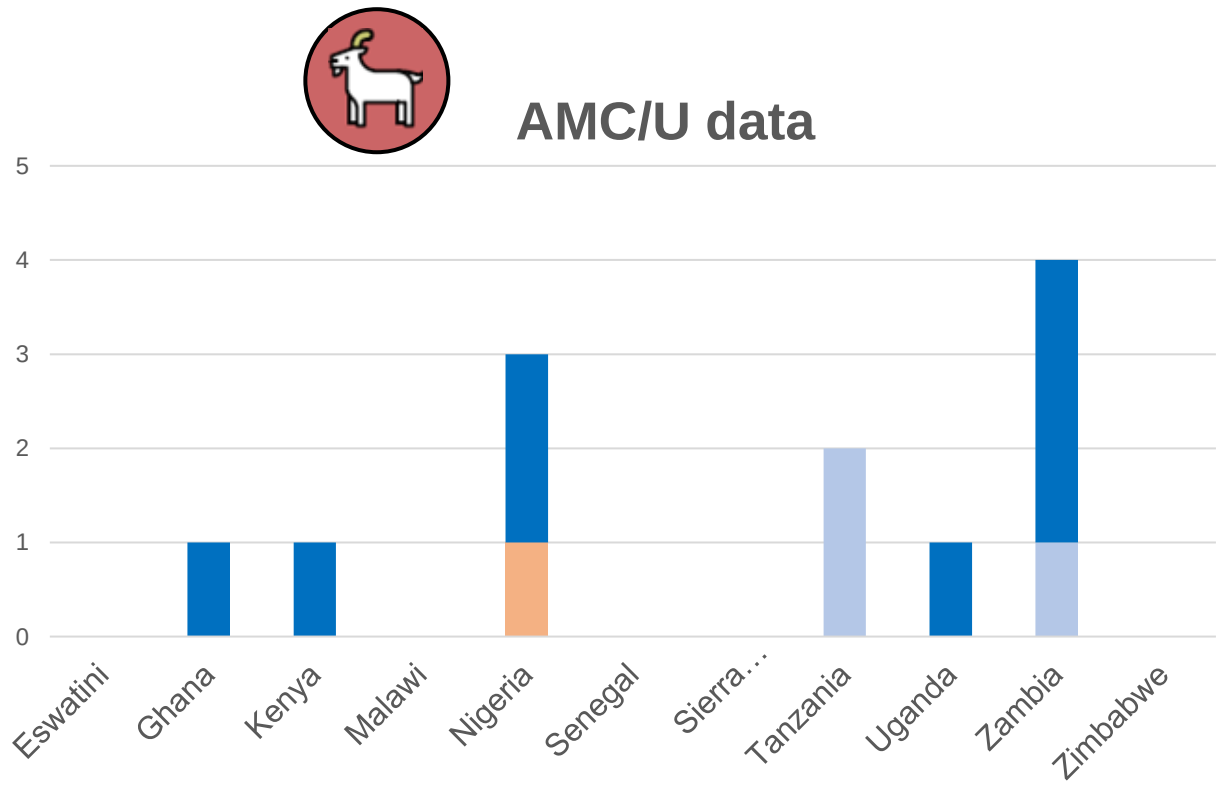
Utility of generated feedback in informing decision making

Key Findings

If data were submitted to a regional or global program were feedback and technical assistance provided by the program coordinators?





1: I am NOT aware of any formal feedback or report received AND NO technical assistance was provided to improve data quality or analysis capacities
2: I am NOT aware of any formal feedback or report received BUT technical assistance was provided to strengthen data quality or analysis capacities
3: Feedback was provided in the form of a report or other format AND technical assistance was provided to strengthen data quality or analysis capacities

Utility of generated feedback in informing decision making

Key Findings

"It challenges you, as a country, to see the huge gaps you have in the data collection, comparing to other countries "How could we improve?" For me that is the biggest benefit."
(OIE AMC/U, national stakeholder, AH)

"The aim is awareness at the beginning. Because it's clear that the data collected are not of very high quality. But the most important thing is that countries start to do something. To start and to progress."
(OIE AMC/U, global stakeholder, AH)

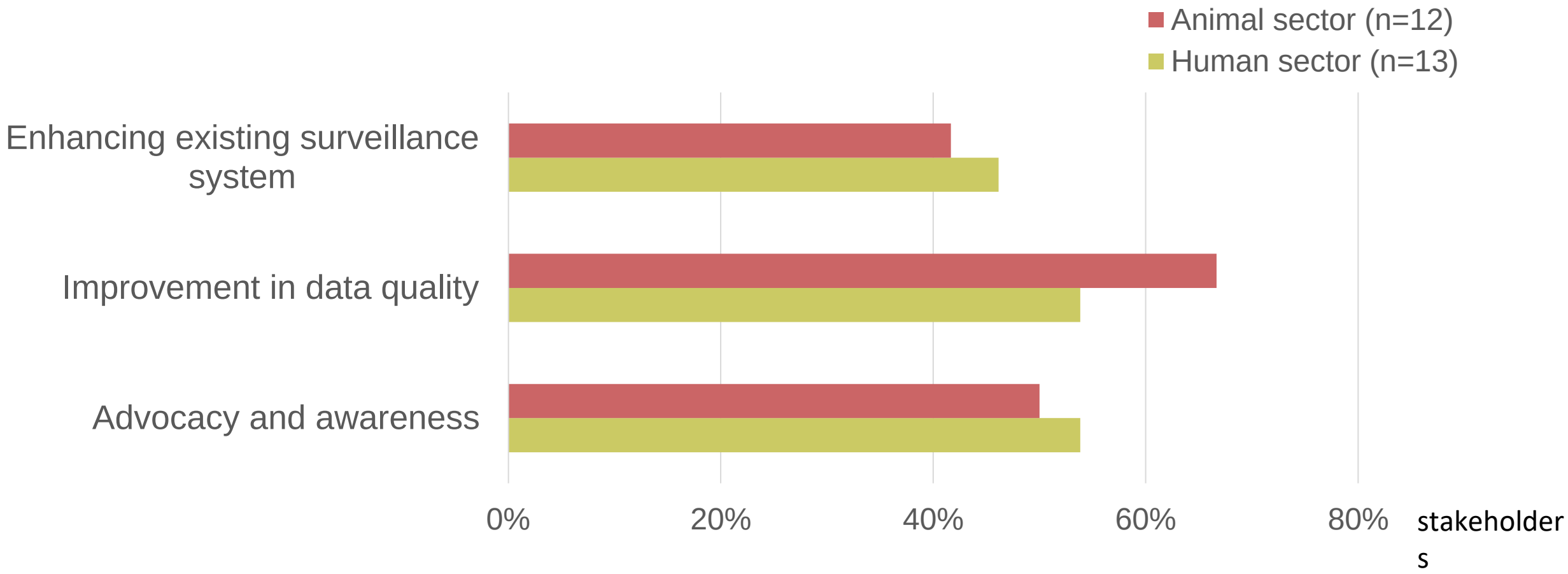
"To be sincere, we don't get any feedback from GLASS team, that's why we are struggling a lot. It's pushing countries away. It's really a challenge to send data. Many countries in Africa are not submitting data." (national stakeholder, HH)

"I would suggest to countries to be more demanding towards WHO"
(global stakeholder, HH)

Utility of generated feedback in informing decision making

Key Findings

Main uses of the generated feedback at national level ? (TOP 3)



Critical gaps where a regional hub would be advantageous

Key Findings

DISSEMINATION OF INFO.

DATA ANALYSIS/ GENERATION OF INFO.

DATA COLLATION

Regional data sharing

DISSEMINATION OF INFO.

DATA ANALYSIS/ GENERATION OF INFO.

AMR/C/U DATA COLLECTION & COLLATION

National data sharing

Translation into action

Translation into action

ACTIONS

INFO. USE FOR <u>REGIONAL</u>:

1) SURVEILLANCE

2) ADVOCACY & AWARENESS

3) POLICY, REGULATION & PLANNING

INFO. USE FOR <u>NATIONAL</u>:

1) SURVEILLANCE

2) ADVOCACY & AWARENESS

3) POLICY, REGULATION & PLANNING

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Critical gaps where a regional hub would be advantageous

Key Findings

DISSEMINATION OF INFO.

DATA ANALYSIS/ INFO. GENERATION

DATA COLLATION

Translation into action

ACTIONS

INFO. USE FOR REGIONAL:

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DISSEMINATION OF INFO.

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Translation into action

INFO. USE FOR NATIONAL:

1) SURVEILLANCE
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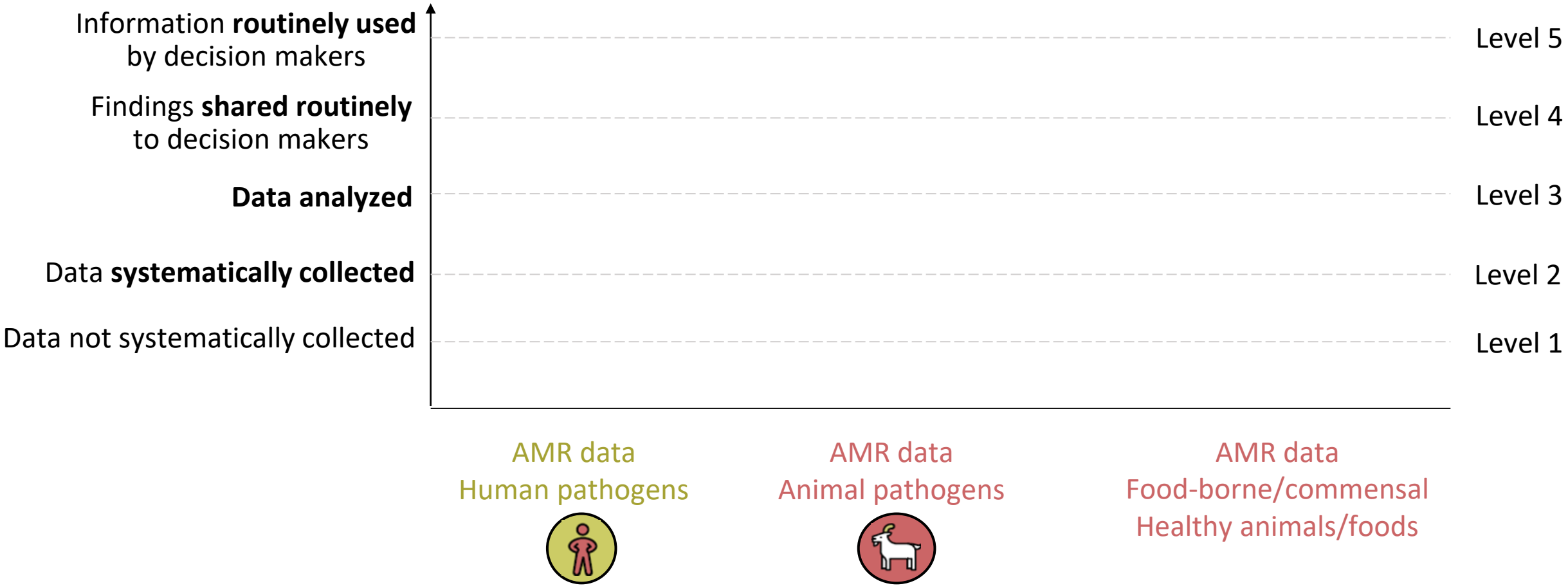
Critical gaps where a regional hub would be advantageous

Key Findings

Country median



Critical gaps where a regional hub would be advantageous

Key Findings

Country median

1 country

Region median

Africa = 2
South-Asia = 3

Africa = 1
South-Asia = 2

Africa = 1
South-Asia = 1

Information **routinely used** by decision makers — Level 5

Findings **shared routinely** to decision makers — Level 4

Data analyzed — Level 3

Data **systematically collected** — Level 2

Data not systematically collected — Level 1

AMR data
Human pathogens

AMR data
Animal pathogens

AMR data
Food-borne/commensal
Healthy animals/foods

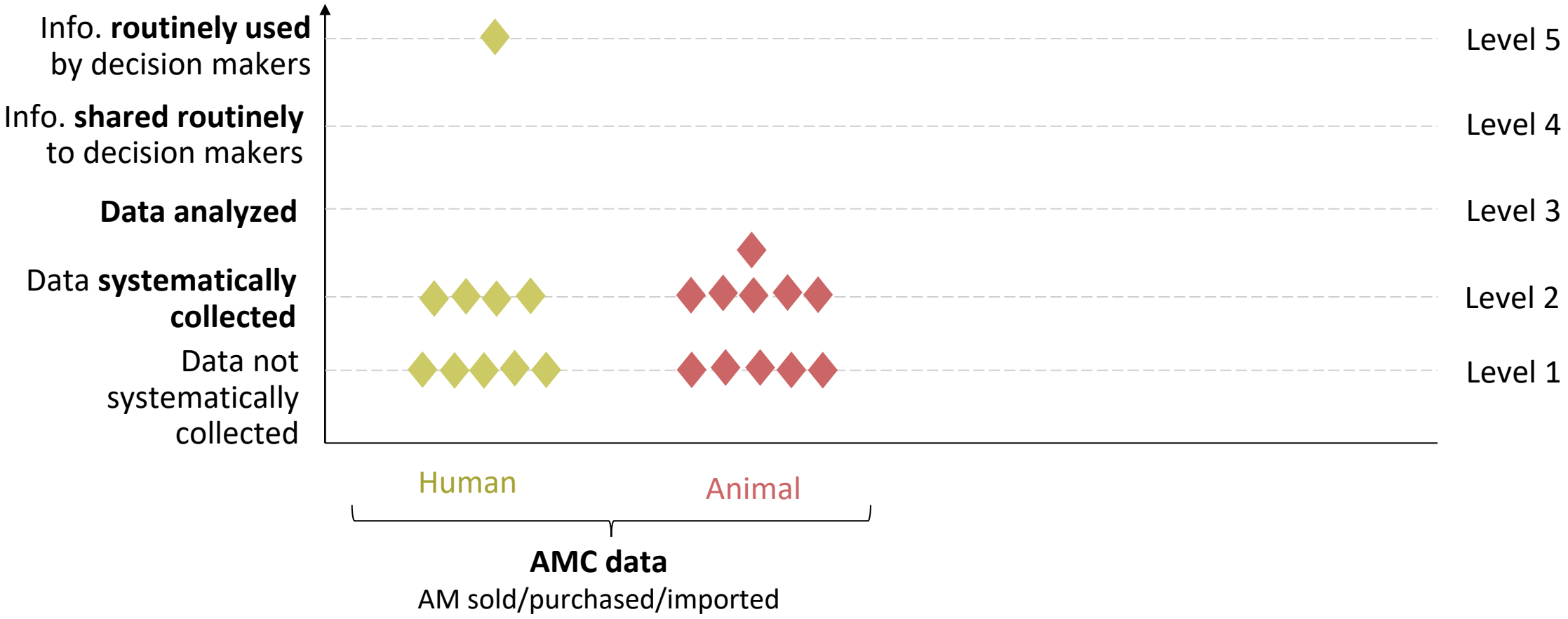
Critical gaps where a regional hub would be advantageous

Key Findings

Region median

Africa = 1,5
South-Asia = 1

Africa = 2
South-Asia = 1.5



Critical gaps where a regional hub would be advantageous

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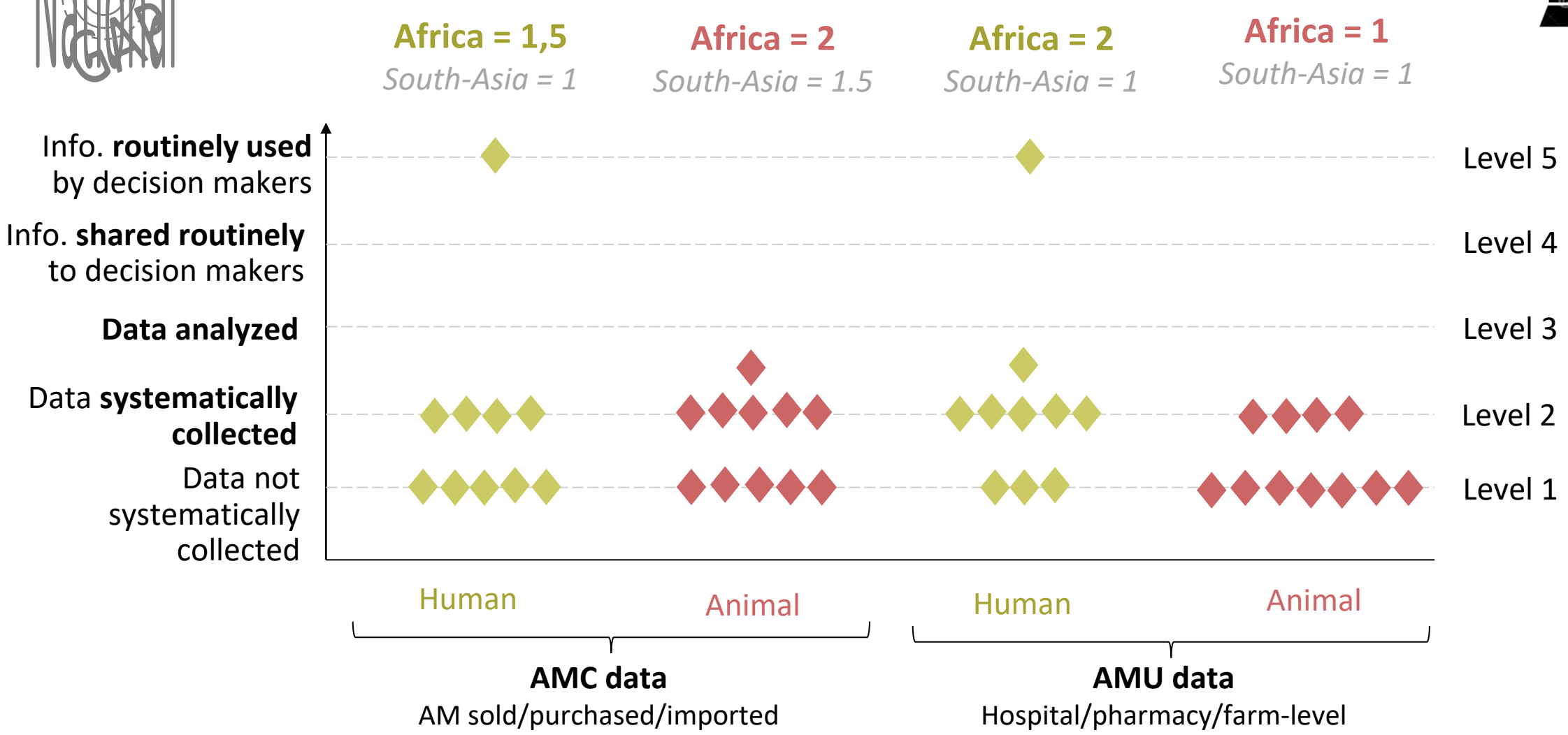

Critical gaps where a regional hub would be advantageous

Key Findings

1 DATA COLLECTION

AMR

Low quantity, quality and representativeness (AMR)

- **Low human capacity, lack of QA, SOPs, equipment**
- **Lack of adequate IT systems / time to digitize the data**
- Weak network (mainly central level lab.)
- Only few passive data for terrestrial animal's pathogens
- Prioritization of pathogens (reg. FAO guideline in process)

Low quality and representativeness (AMR)

- **Low human capacity (lab/management)**
- **Network cluster around large cities**
- **Private lab. not yet included**
- Conflicting guidelines (variable/metadata)
- Limited nb of pathogens collected

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AMC/U

First basic national estimates (AMC)

- **Only based on basic sources (import, sales), no /few species-specific farm-level data (AMU)**
- **Lack of coordination/cooperation with MOH and private sector** (no mandatory reporting)
- Lack of formal reproducible collection process
- Weak AM regulation/enforcement
- Paper-based records
- Lack of dedicated staff/turn-over

Insufficient quantity of AMC data

- **Lack of cooperation /private sector** (no mandatory reporting)

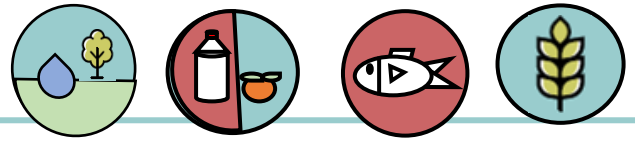
Some AMU data collected from point prevalence surveys

- Paper-based data (health facilities/pharmacy records)
- **AMU data not linked to clinical or microbiology data**

Critical gaps where a regional hub would be advantageous

Key Findings

1 DATA COLLECTION



No systematic data collection

Lack of standards and guidelines …

AMR

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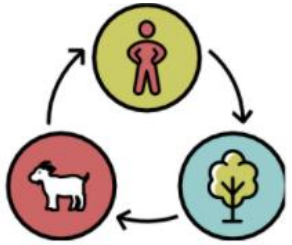
Critical gaps where a regional hub would be advantageous

Key Findings

1 DATA COLLECTION & COLLATION



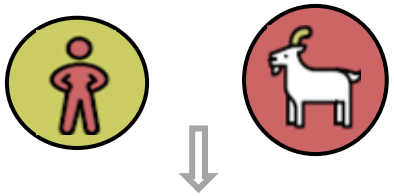
Ad hoc (or no) data sharing between sectors

Lack of formal process, harmonized IT system/platform, dedicated budget …

Reported by 81% of stakeholders (n=97)

Critical gaps where a regional hub would be advantageous

Key Findings

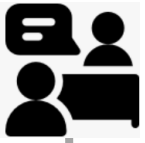


2 DATA ANALYSIS & GENERATION OF INFO.

3 DISSEMINATION OF INFO.

4 USE OF INFO.

Lack of efficient mechanisms for **TIMELY** actions



Data partially and poorly analyzed

- Lack of dedicated skilled human resources
- Lack of adequate IT and visualization tool

Lack of "integrated" analysis

- AMR/C/U associations
- Integration between sectors

Limited info. dissemination

- Unclear format/frequency/channels for dissemination to policy-M
- Inadequate "packaging" (policy briefs, visualization, economic arg.)

Generated info. rarely translated into action

- Inadequate capacities for policy-making
- Low "appetite" for AMR (low priority)
- **Research data exist <u>but are not used</u>**

Values and support of a regional network/hub ?

SURVEILLANCE

<u>In synergy</u> with existing/future
GLOBAL & REGIONAL initiatives

National capacity building

Quality and timeliness improvement
Progressive involvement of other sectors
Integrated surveillance

Generating regional evidence

Regional baselines for AMC/U
& AMR trends
Emerging resistance in the region
AMR cross-border surveillance

Critical gaps where a regional hub would be advantageous

Key Findings

SURVEILLANCE

"There is a huge gap in big data analysis. *It is very important, the use of new technologies. We need to strengthen in countries: not only on a regional and global level. When you look at Africa, the people are highly educated here [PhDs, etc.].* So we should have the pool there". *(Regional stakeholder, AH)*

"People are always talking about integrated surveillance... But how do you do this exactly? *Nobody is focusing on preparing real guidance that is practically applicable in the field […] then you need some capacity building."*
(Global stakeholder, aquaculture)

"What is the key metadata *we should focus on? I would like support with that."*
(National stakeholder, HH)

"We are lacking cross border surveillance. *It's a way* to learn from each other as neighbors, *as we can assume we share similarities in terms of pathogens. There are things we can do to improve communication cross borders."*
(National stakeholder, HH)

Values and support of a regional network/hub ?

SURVEILLANCE

<u>In synergy</u> with existing/future GLOBAL & REGIONAL initiatives

National capacity building

Quality and timeliness improvement
Progressive involvement of other sectors
Integrated surveillance

- ✔ Providing more **useful and regular feedback**, technical support
- ✔ Enhancing **regional networking/exchange** of best practices
- ✔ Providing **facilitating IT tool** (analysis, visualization, automated reports …) **that meet country needs**
- ✔ Supporting **"operationalization" of integrated analysis** (regional guidance, pilot countries …)

Generating regional evidence

Regional baselines for AMC/U & AMR trends
Emerging resistance in the region
AMR cross-border surveillance

- ✔ Creating **an official regional pathway** for AMR/C/U data **to struggle against high data fragmentation**
- ✔ Convergence of **all data sources** (research, private sector etc.)
- ✔ Supporting efforts for **regional harmonization and prioritization,** filling the gap in **regional guidance**

Values and support of a regional network/hub ?

ADVOCACY & AWARENESS

In synergy with existing/future
GLOBAL & REGIONAL initiatives

Generating national evidence

To raise awareness

To strengthen investment case for AMR

Generating regional evidence

Critical gaps where a regional hub would be advantageous

Key Findings

ADVOCACY & AWARENESS

In Africa it is vital to stress the economic case: ***why should we invest in this amongst every other health care issues?*** *How do we make an economic case for investment? (Regional stakeholder, AH)*

If we have evidence showing that AMR really an emerging policy issue in the plant sector, then we can convince member countries to take action on AMR. ***We expect that a regional program will provide support for these issues.*** *(Global stakeholder, plant sector)*

" There is ***insufficient information on AMR burden*** *specifically. This gap makes resource allocation among policymakers difficult." (Regional stakeholder, HH)*

"It is important for us to look at ***what are the major drivers of AMR.*** *We know that they are going to be underuse and overuse or misuse. So what are the driving factors to this? Then we start peeling off layers of data: is it education? Is it the infrastructure? Is it that there are no consumables? Is it because of challenges with access?" (Regional stakeholder, HH)*

Values and support of a regional network/hub ?

ADVOCACY & AWARENESS

In synergy with existing/future GLOBAL & REGIONAL initiatives

Generating national evidence

To raise awareness
To strengthen investment case for AMR

- ✔ Supporting the evaluation of **the economic burden of AMR**
- ✔ Supporting the development of **sociological approaches** to understand the drivers of AMU
- ✔ **Improving "data packaging"** (tailored guidance on how to persuade strategic policy-makers…)

Generating regional evidence

- ✔ Supporting **political buy-in with regional evidence** (economic burden, **AMR/U causal relationship** …)
- ✔ Supporting **awareness raising for AMR issue in environment and plant** sectors (global knowledge gap)
- ✔ Facilitating **"whole society" approach** to AMR (civil society & media)

Values and support of a regional network/hub ?

POLICY, GUIDELINE & REGULATION

<u>In synergy</u> with existing/future GLOBAL & REGIONAL initiatives

Generating national evidence

Generating regional evidence

Critical gaps where a regional hub would be advantageous

Key Findings

POLICY, GUIDELINE & REGULATION

"You can easily say that there will be no drug sold unless you have a prescription. This can't work in pastoral areas of Africa. There isn't qualified people to sell the drugs. "
(Regional stakeholder, AH)

"Not much work has been done to see the understanding of prescribers-clinicians, the understanding of pharmacists."
(National stakeholder, HH)

"The regional analysis should bring a multidisciplinary team [epidemiologist, microbiologist, economist, policy analyst …] that will look at the data and try to pull out the policy recommendations. That is what is lacking."
(Regional stakeholder, research sector, Agri/AH)

Values and support of a regional network/hub ?

POLICY, GUIDELINE & REGULATION

In synergy with existing/future GLOBAL & REGIONAL initiatives

Generating national evidence

- ✔ Supporting the establishment of **treatment guidelines** etc.
- ✔ Supporting the **development of evidence-based policies** enforceable in local context
- ✔ Supporting the evaluation of **socio-economic impact of interventions**

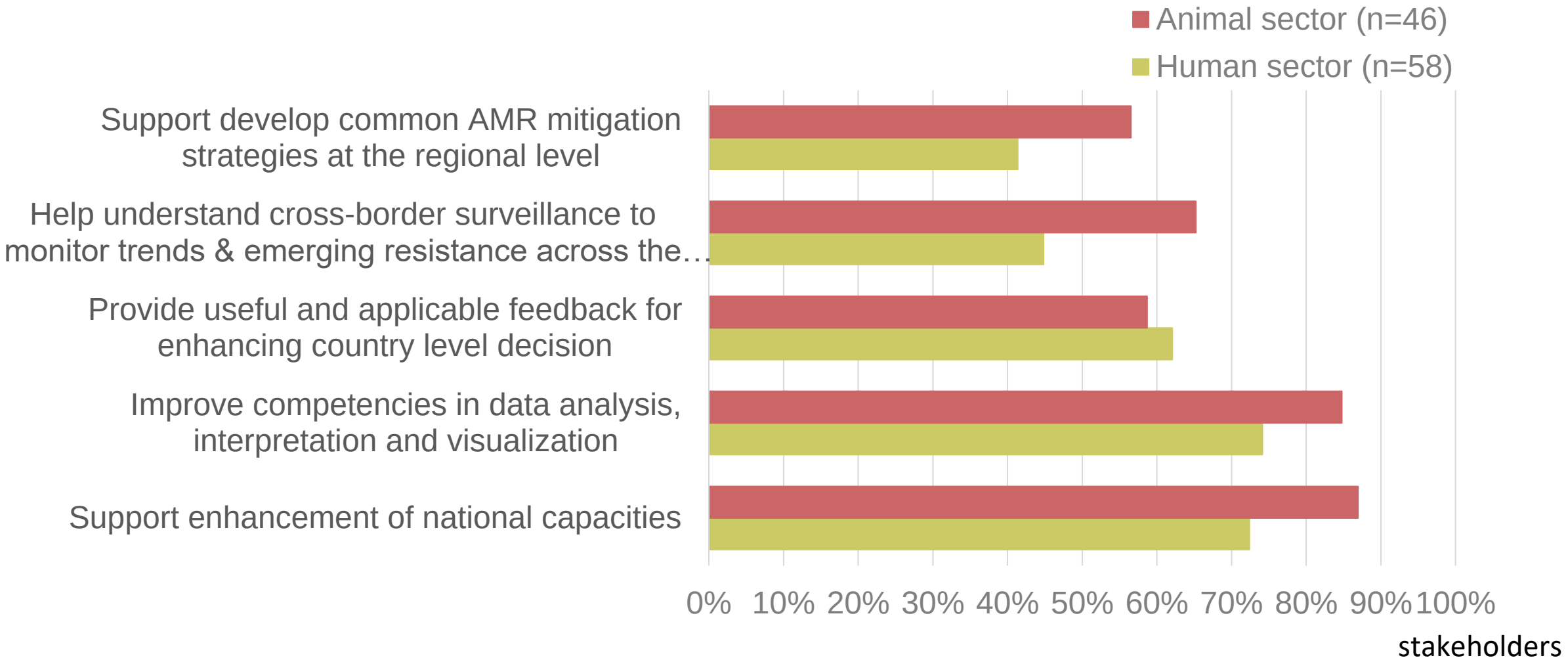
Generating regional evidence

- ✔ Conducting **regional analyses** that brings together a **large set of experts (including economists etc.)**
- ✔ **To identify regional issues** (AMR/U correlation between countries)
- ✔ Supporting the development of **AMR regional strategies** (including trade/export for animals and products …) and **regionalization of GAP**

Countries' expectations for sharing AMR/C/U data

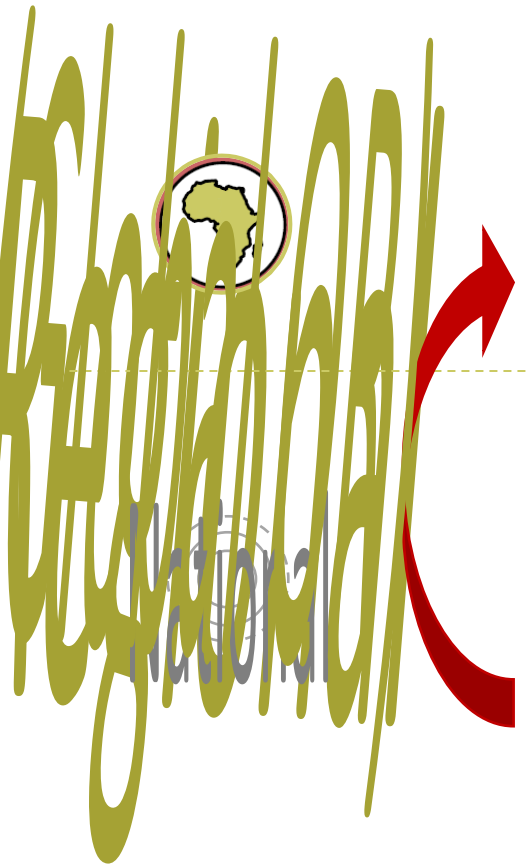
Key Findings

What could motivate you to submit AMR/U/C data to a regional network ? TOP 5



Major barriers & facilitators to sharing AMR/C/U data

Key Findings



DISSEMINATION OF INFO.

DATA ANALYSIS/ INFO. GENERATION

DATA COLLATION

Regional data sharing

DISSEMINATION OF INFO.

DATA ANALYSIS/ INFO. GENERATION

AMR/C/U DATA COLLECTION & COLLATION

National data sharing

Translation into action

Translation into action

ACTIONS

INFO. USE FOR <u>REGIONAL</u>:

1) SURVEILLANCE

2) ADVOCACY & AWARENESS

3) POLICY, REGULATION & PLANNING

INFO. USE FOR <u>NATIONAL</u>:

1) SURVEILLANCE

2) ADVOCACY & AWARENESS

3) POLICY, REGULATION & PLANNING

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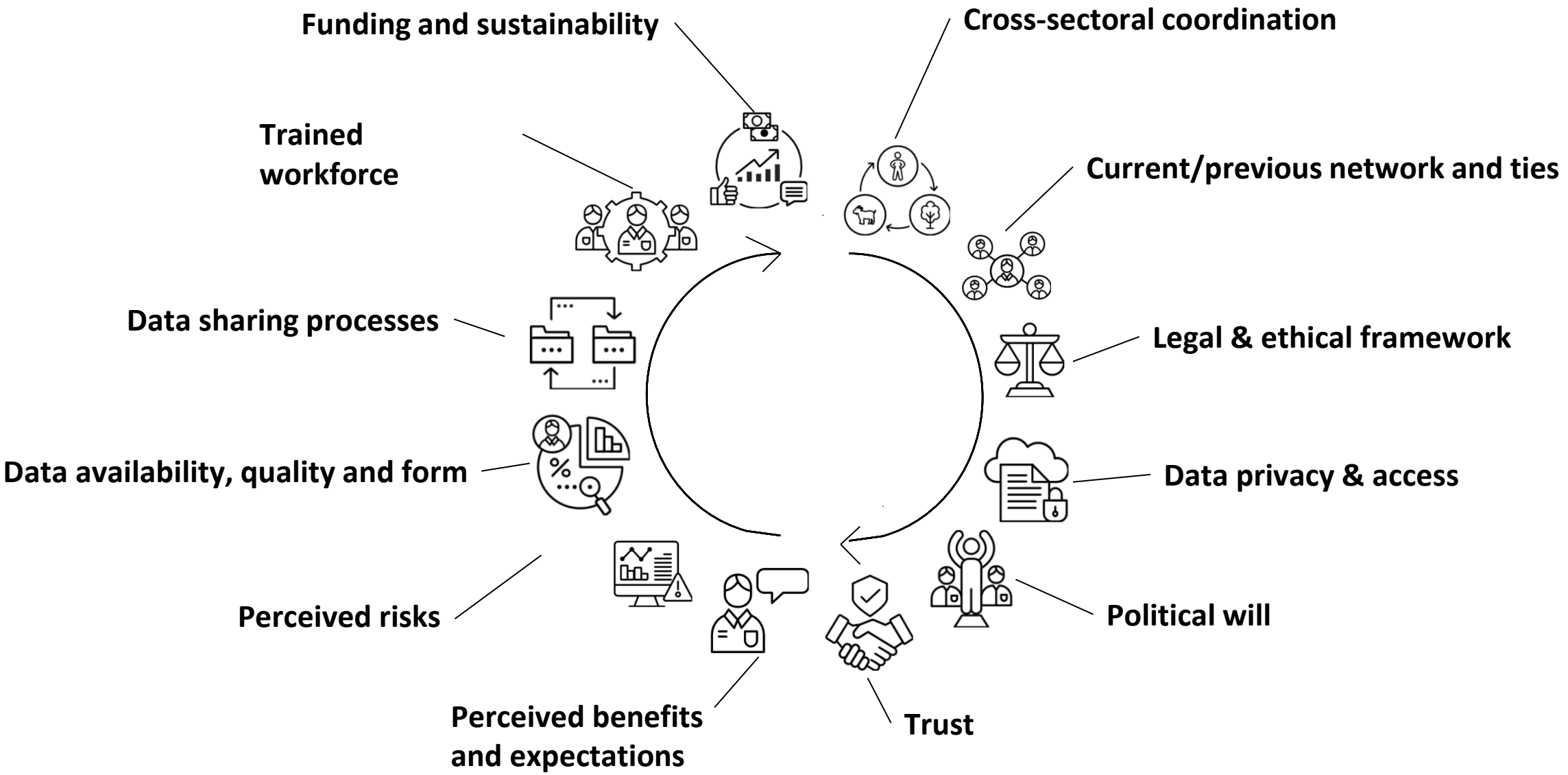
Major barriers & facilitators to sharing AMR/C/U data

Key Findings



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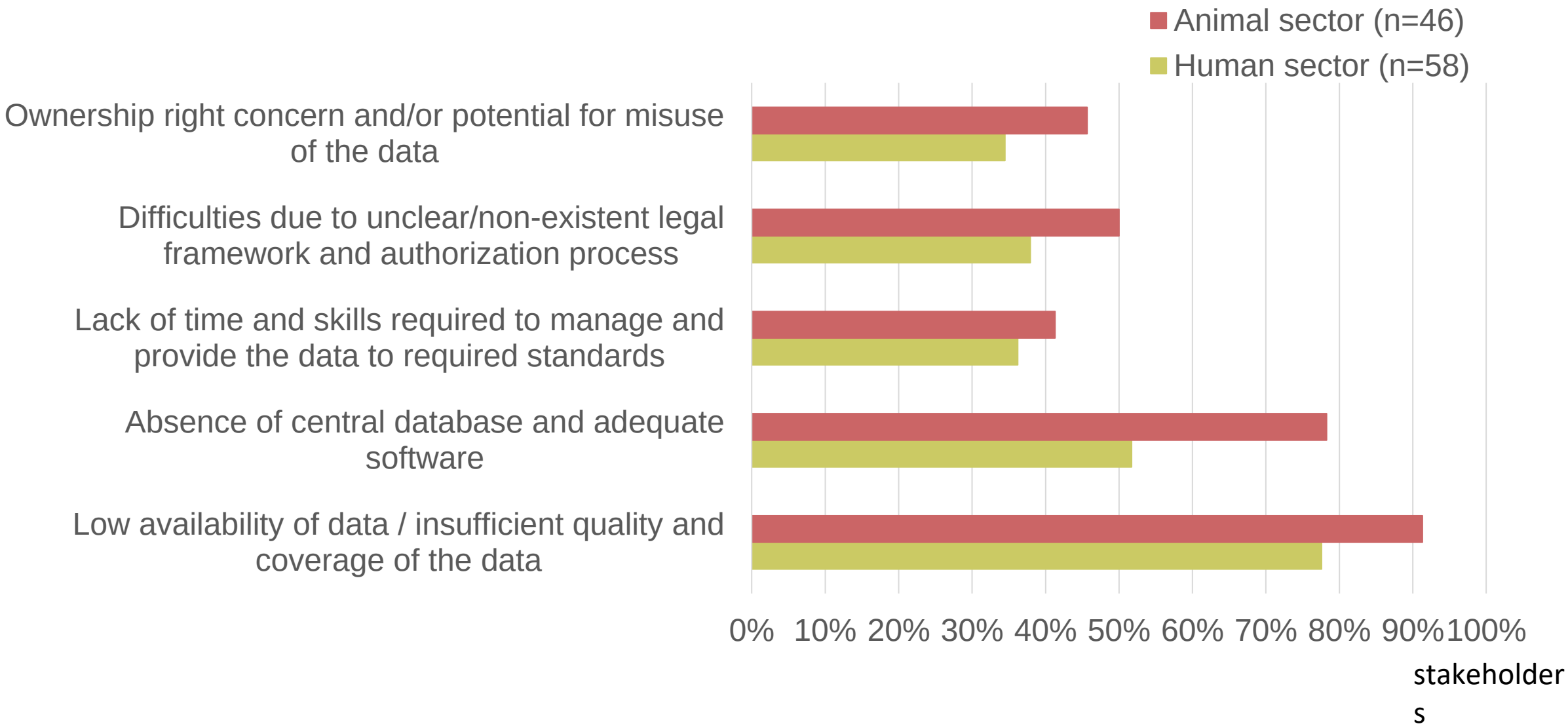
Major barriers to sharing AMR/C/U data

Key Findings

What barriers do you foresee /experience to sharing AMR/C/U data at the regional level? TOP 5



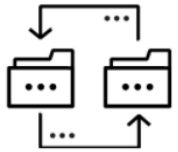
Major barriers & facilitators to sharing AMR/C/U data

Key Findings

Strongly interconnected:

Data availability, quality and form

- **Low AMR data *(quantity),* quality**, timeliness, format and structure, etc.
- **Data scattered** (+private, research data…)



Data sharing processes

- **Insufficient IT resources,** varied dataset structures, few automated processes
- **Work duplication** for reporting (many templates and systems)

Trained workforce

- **Insufficient workforce capacity with adequate skills,** for data management and analysis

Funding and sustainability

- **AMR is a low priority,** surveillance mostly partner driven, **sustainability issue**

- Quantity, quality & standardization **enhanced through donor-funded programs**
- Participation in GLASS, MAAP, SPIDAAR, OIE

- Future platforms, all using **WHONET** software
- Database improvement (online OIE AMC/U …)
- **Automated analyses**
- **Harmonization and**

- Tripartite and other entities improve workforce capacity and **receptiveness** for AMR issues

Major barriers & facilitators to sharing AMR/C/U data

Key Findings

« First of all, countries don't want to share very scarce data *(…). Then, what countries are fighting is* duplication of work and multiplicity of reporting systems *(…). Each agency come with its own format [AU, EAC, OIE …].»*

(Regional stakeholder, AH)

« The main issue for me with data sharing is quality*. Countries need to be sure that they are not sharing data that is incorrect. »*

(Regional stakeholder, AH)

" The data storage and IT infrastructure is really lacking. *Microbiologists store data on their personal computers, without a backup. It's not a good environment for routinely sharing upward."*

(National stakeholder, HH)

" We have not engaged with the private sector *on data. Why are countries hesitating?"*

(Regional stakeholder, HH)

Major barriers & facilitators to sharing AMR/C/U data

Key Findings

Strongly interconnected:

Perceived risks

- **Negative economic consequences/export (AH)** [/tourism (HH)]
- **Misinterpretation, misuse/abuse** of the data, discreditation/criticism

Data privacy & access

Key concerns/ownership & confidentiality: mainly due **to trade implications (AH)**
(> ethical issue (HH))

- **Countries maintain ownership**
- **Privacy issue** to be addressed**/type of data/sector** (Ex. OIE non-disclosure of national-level AMC/U data: aggregated by region)

Legal & ethical framework

Lack of legal precedents to build upon in some countries (not participation in GLASS, MAAP, …)

When precedents exist, MOUs are the preferred tools

Political will to share data reg.

Might be affect by the **lack of feedback and tangible benefits**

Globally present, as long as it is beneficial for the country (no economic damage)

Trust

Lack of trust between ministries/private sector

Trust in global and glob/regional partners is generally high

Guiding Principles offered by established networks

Key Findings

- ✔ **Clearly outline the benefits countries will experience** by participating, and continually manage country expectations.
- ✔ **Insist that member states should drive its priorities and activities.**
- ✔ **Establishing a data foundation for AMR and AMU/C requires significant time**. We should start immediately, with realistic expectations.
- ✔ **Prioritize the capacity building of national stakeholders** who value and have the influence to enhance their nation's AMR response sustainability (Empowering advocates)
- ✔ Understand - thoroughly - the advocacy process needed to translate data into action. This includes a focus on the Ministry of Finance to make sure adequate resources can be allocated to AMR activities.

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Guiding Principles offered by established networks

Key Findings

- ✔ **Generate and utilize data on the economic burden of AMR**. Many policymakers react best to an economic/cost argument.
- ✔ Understand that **each country's surveillance system must be tailored to that country.**
- ✔ Utilize private sector data, and persuade stakeholders who have an inherent distrust of private sector actors.
- ✔ At a regional level, major point **is to have countries and networks working in a way where results can be used together**

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Key Recommendations for Consideration

Recommendations

- A regional framework must **enhance national-level capacity** to improve the quantity, quality, and representativeness of data by providing active technical assistance and feedback.
- A regional framework must focus on **providing technical assistance guidelines, which allow countries to sustainably realize benefits in exchange for data sharing**.
- A regional framework must **set a precedent for integrated analysis** and support the countries to translate and utilize the data in a manner to better inform policy and decision-making.
- A regional framework must **support the countries to translate and utilize the data in a manner to better inform policy and decision-making**.
- A long-term goal of a regional framework must include the **monitoring of advanced parameters to quantify transmissions pathways between sectors**.
- A regional framework must demonstrate sufficiently broad and deep expertise to **fill a range of knowledge gaps noted by national stakeholders**.
- An effective regional framework must seriously consider **utilizing data from the pharmaceutical industry**.

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Key Recommendations for Consideration

Recommendations

- An effective regional framework must **enhance the advocacy capacity of national stakeholders**.
- A regional framework must be **composed of a range of organizations** which expertise in data management and analysis, advocacy and policy, and research, among others.
- Inclusion of private sector(s) in the regional framework is key for the success of AMR and AMU/C data foundation.
- Providing **access to an IT tool for data analysis and visualization** would be an attractive asset for a regional data foundation.
- **Confidentiality and privacy concerns need to be carefully addressed** to overcome trade-related barriers.
- A regional framework must support countries to **assess the economic AMR burden in animal health sector.**

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