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Developing and scaling up animal health systems to mitigate Antimicrobial Resistance

Challenges, opportunities and required political actions to strengthen animal health systems

GLG-AMR meeting, Barbados | 07-08 February 2023

Keith Sumption
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Chief, Joint Zoonotic Diseases and AMR Centre
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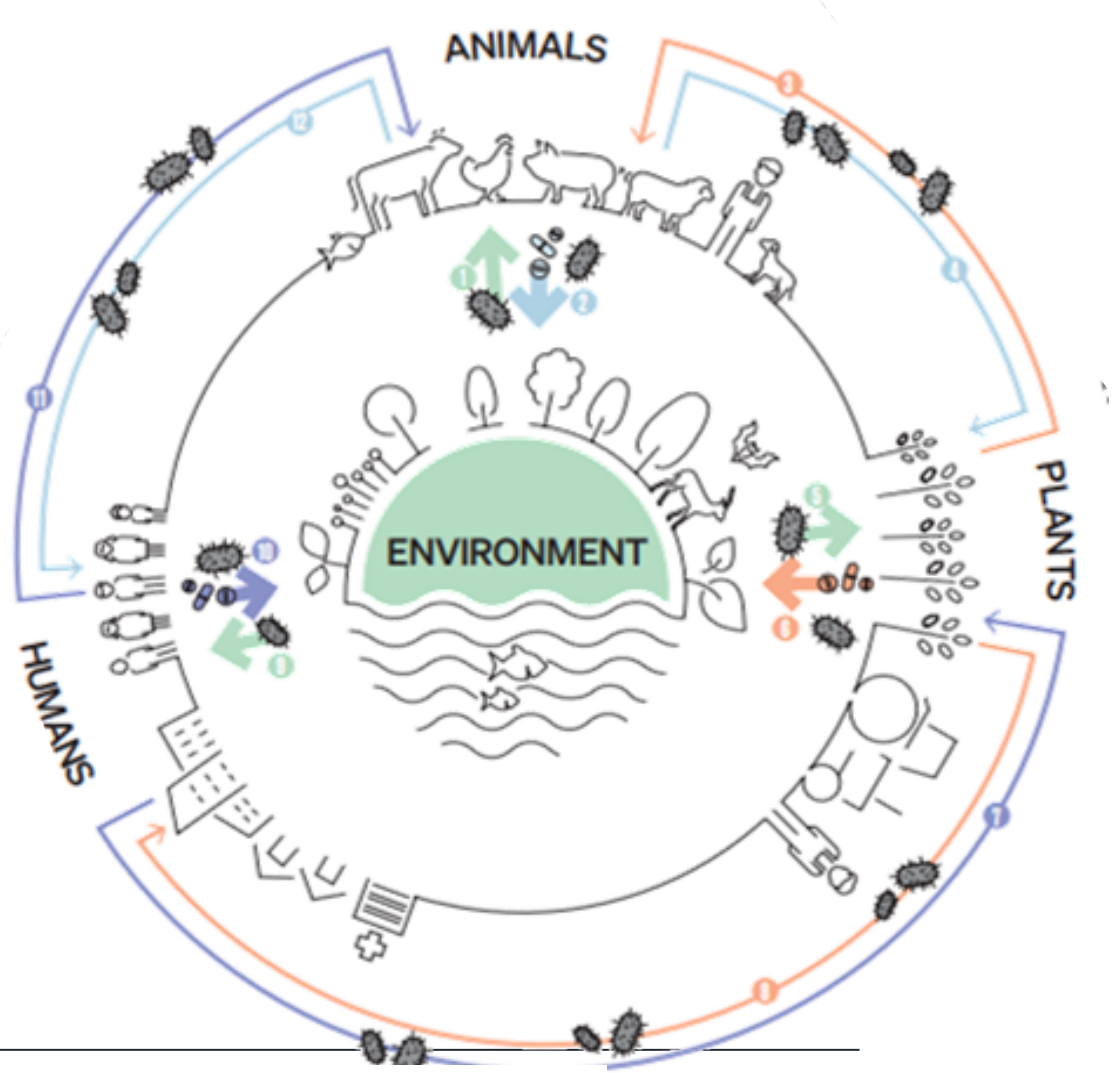
World Organization for Animal Health

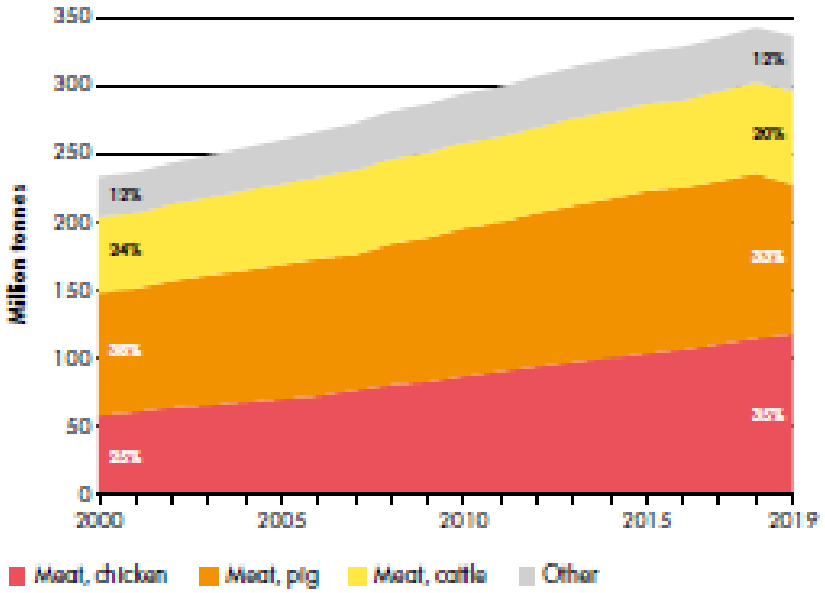
Antimicrobial Resistance: A One health Challenge

Misuse and overuse of antimicrobials can generate antimicrobial resistance. Drug-resistant pathogens can then spread between and within animals, humans, plants and through the environment.



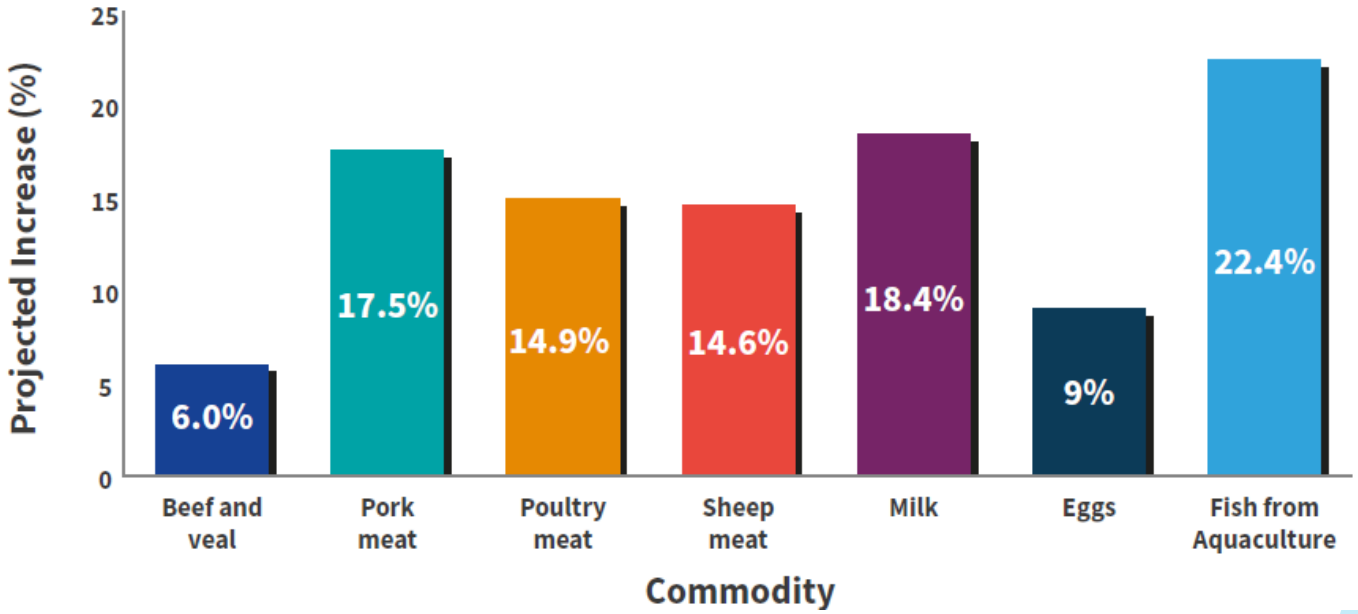
Antimicrobial resistance: a global challenge for food and agriculture

World production meat, main items



Source: FAOSTAT

Projected Increase in Livestock Commodity Production, 2020-2030



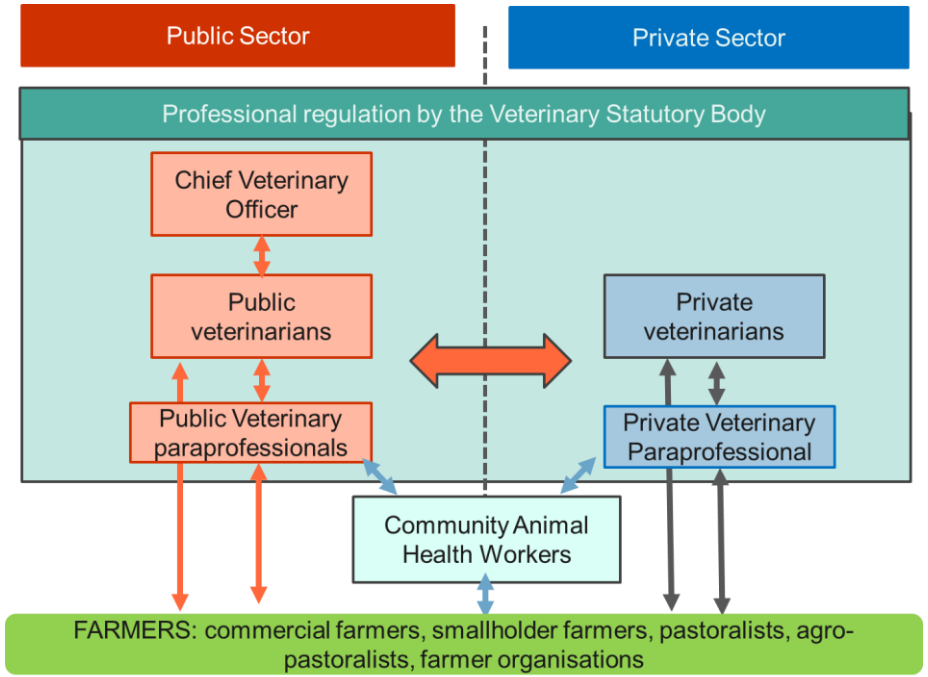
Sources: OECD/FAO (2022), "OECD-FAO Agricultural Outlook"
OECD Agricultural Statistics, Animal for health report, 2022

Animal Health Systems

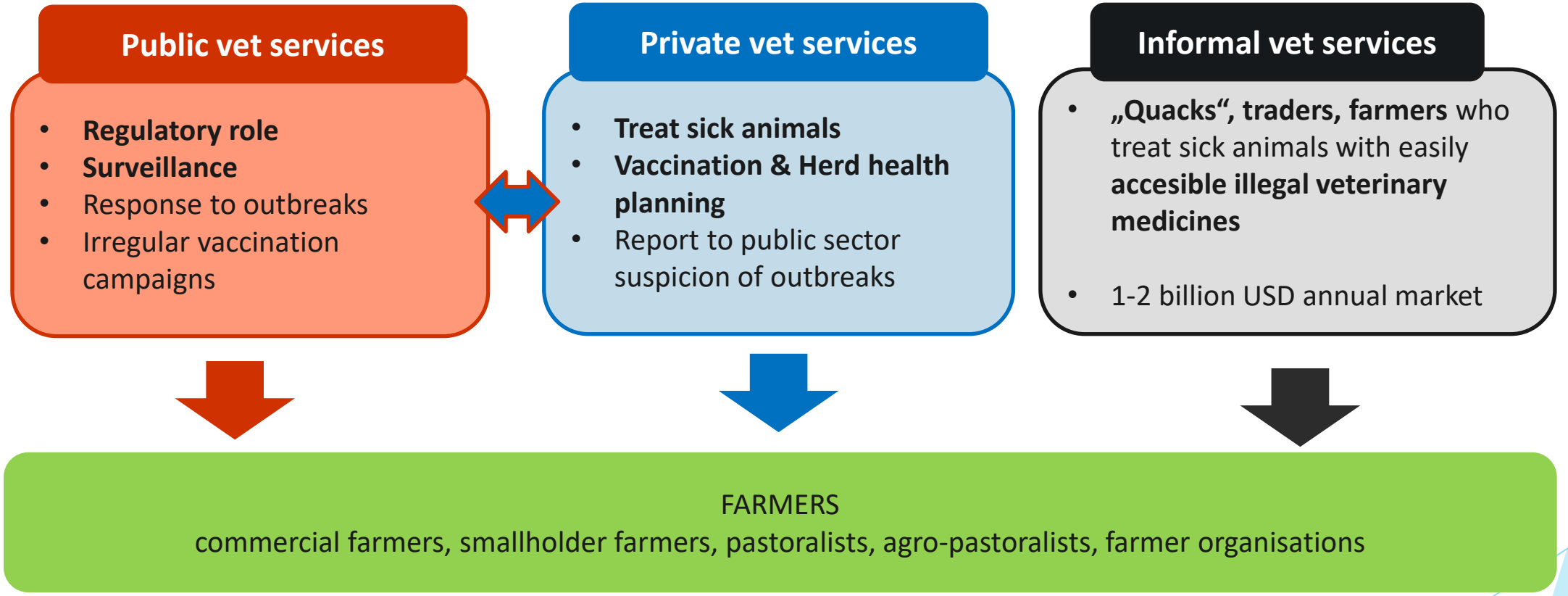
The organisation of people, institutions and resources that ***deliver healthcare services to animals and their owners****.*

It includes animal health ***practitioners*** *(veterinarians and veterinary paraprofessionals),* ***veterinary medicines, surveillance and diagnostics*** *of disease as well as the* ***legal framework and financing*** *of health services*

Source: ACTION FOR ANIMAL HEALTH – Policy Brief, the case for investing in animal health to support for One Health



Animal Health Systems Workforce



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VETERINARY SERVICES WORKFORCES & RESOURCES

There is **great variability in the workforce** of Veterinary Services across regions

Global animal health workforce

9M
Veterinarians

10M
Veterinary paraprofessionals (including community animal health workers)

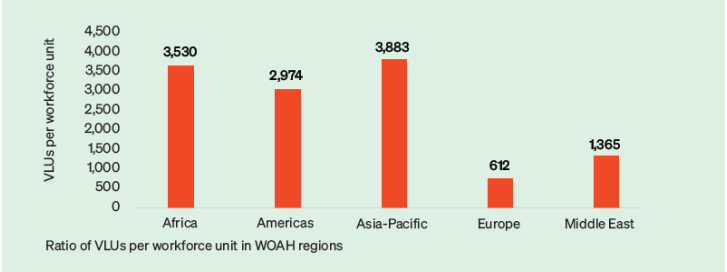
On average,

1 workforce unit is employed

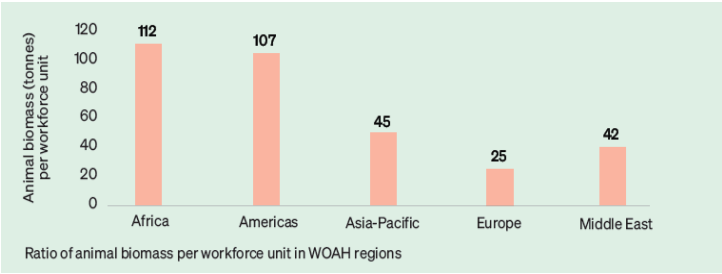
for every **2,611** veterinary livestock units (VLUs)

and **55** tonnes of animal biomass

Source: WAHIS annual reports, 2019



Ratio of VLUs per workforce unit in WOAH regions



Ratio of animal biomass per workforce unit in WOAH regions

Veterinary Services need an enabling environment where they can work to their optimal capacity and receive **adequate training**.

Staffing		Professional competencies			Funding		Veterinary Statutory Body	
Veterinarians and other professionals	Veterinary paraprofessionals and others	Veterinarians	Veterinary paraprofessionals	Physical resources	Operational	Emergency	Authority	Capacity
49%	56%	58%	67%	44%	42%	49%	47%	16%

Percentage of Members with a Level of Advancement of 3 or more for each of the 9 Critical Competencies relevant to workforce

Source: PVS Evaluation or Follow-up missions for 43 Members, 2016-2021 – Analysis of the Level of Advancement for Critical Competencies I.1.A., I.1.B., I.2.A., I.2.B., I.7., I.8., I.9., III.5.A., III.5.B. from the 6th edition of the PVS Tool

Only **7%** of these Members have overall sufficient workforce capacity

(i.e. reached or exceeded the minimal capacity for all 9 Critical Competencies related to workforce and resources)

For further information, please click here

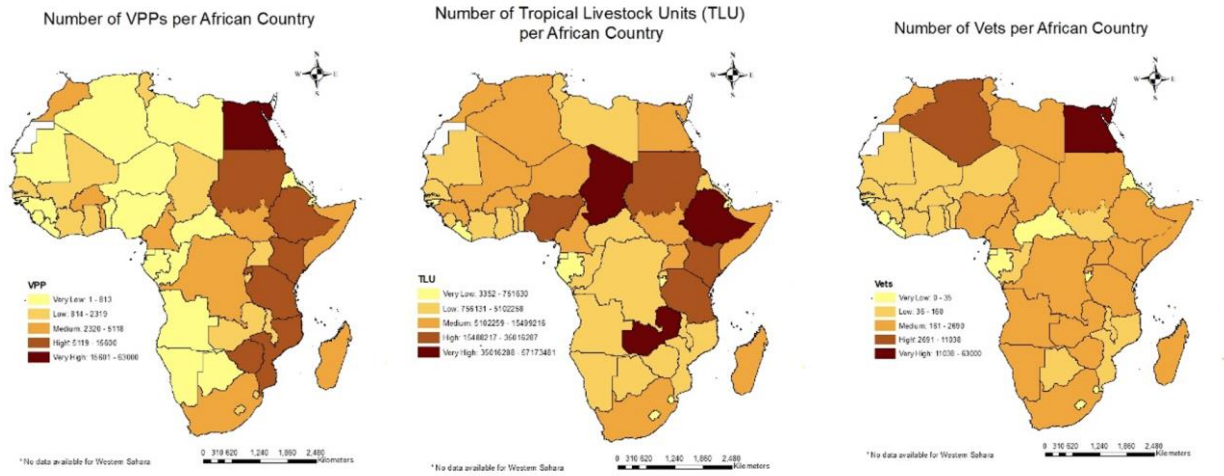
Implementation of WOAH standards: the Observatory Annual Report

observatory@woah.org

Animal Health Systems Workforce

- Veterinarians
- Vet paraprofessionals (VPP)
- Tropical Livestock Units (TLU)

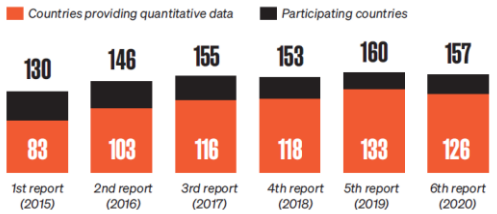
=> Differences in accessibility to veterinary healthcare

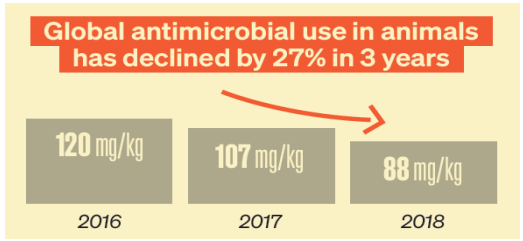


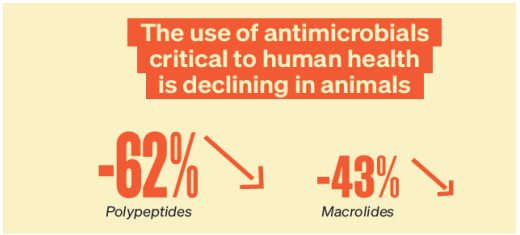
Source: UN. 2019. Map of the World [online]. [Cited 2019]. https://geoservices.un.org/Html5Viewer/index.html?viewer=clearmap modified with FAOSTAT and WAHIS data for TLU, veterinarian and VPP numbers

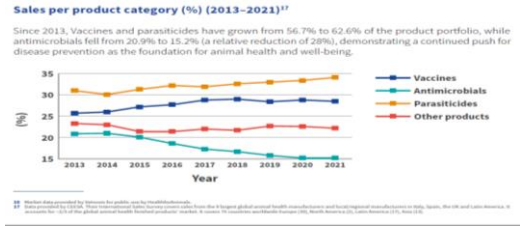
ANTIMICROBIAL USE IN ANIMALS

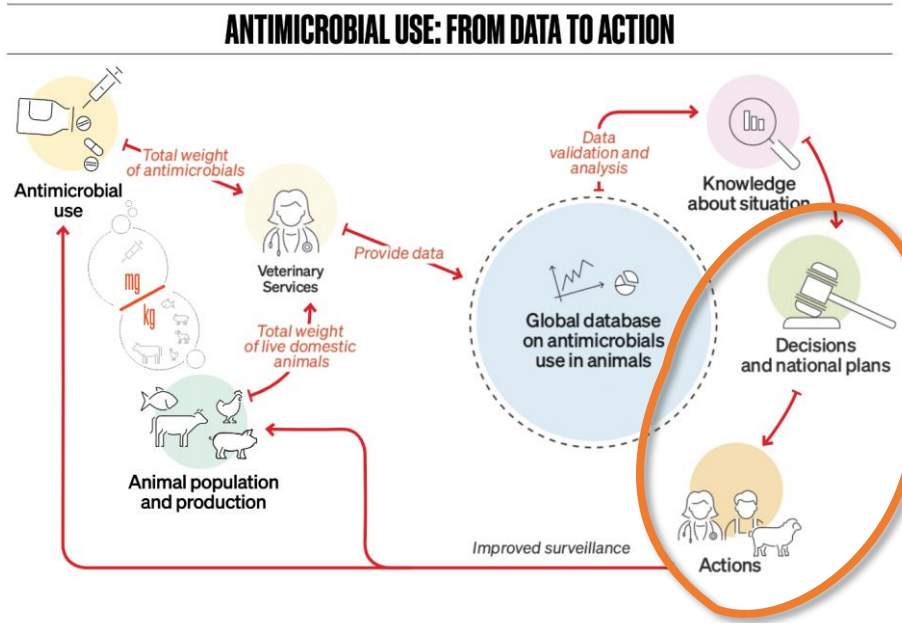
Very good reporting **engagement with promising** downward **trends**



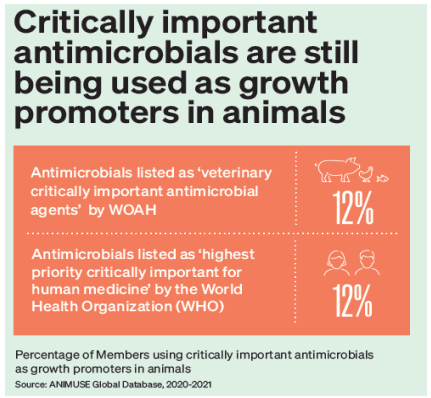


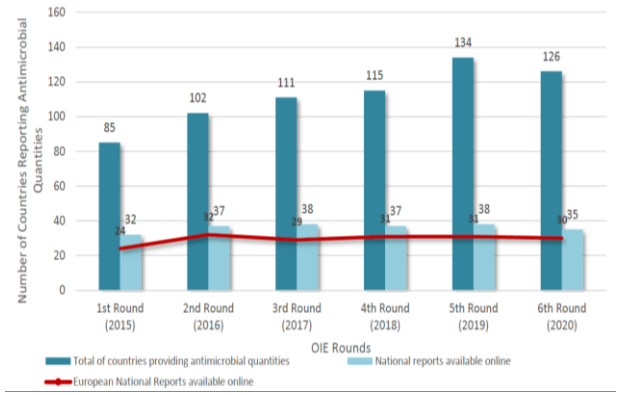






Still improvements to make on non veterinary medical use & transparency





WOAH's International Standards for controlling antimicrobial resistance

Terrestrial Animal Health Code

Chapter 6.7 → Introduction to the recommendations for controlling antimicrobial resistance

Chapter 6.8 → Harmonisation of national antimicrobial resistance surveillance and monitoring programmes

Chapter 6.9 → Monitoring of the quantities and usage patterns of antimicrobials agents used in food producing animals

Chapter 6.10 → Responsible and prudent use of antimicrobial agents in veterinary medicine

Chapter 6.11 → Risk analysis for antimicrobial resistance arising from the use of antimicrobials in animals

Aquatic Animal Health Code

Chapter 6.1 → Introduction to the recommendations for controlling antimicrobial resistance

Chapter 6.2 → Principles for responsible and prudent use of antimicrobial agents in aquatic animals

Chapter 6.3 → Monitoring of the quantities and usage patterns of antimicrobial agents used in aquatic animals

Chapter 6.4 → Development and harmonisation of national antimicrobial resistance surveillance and monitoring programmes for aquatic animals

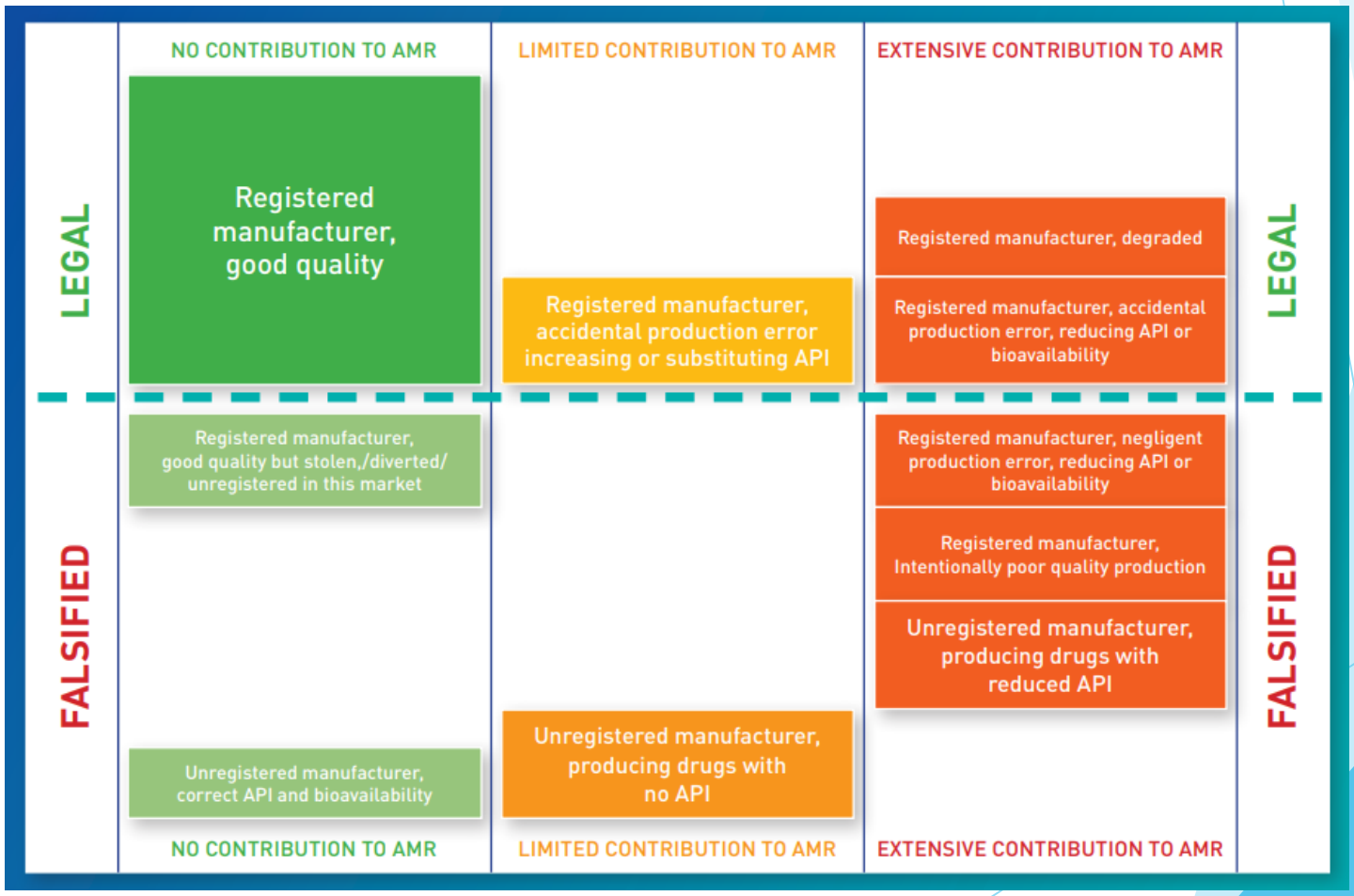
Chapter 6.5 → Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in aquatic animals

Veterinary Medicines

- Authorised (global sales $ 30 bn) vs illigal products (1-2 $bn)

- Medicine quality contributes to AMR

=> regulations, access and use of veterinary medicines, including antimicrobials, differs around the world



Source; Pisani for AMR Review, November 2015

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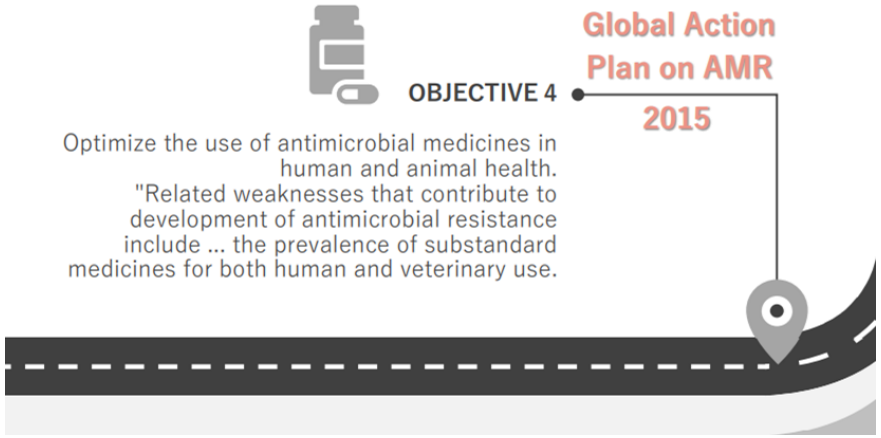
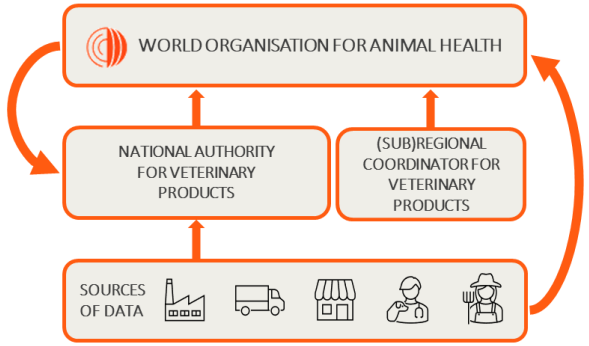
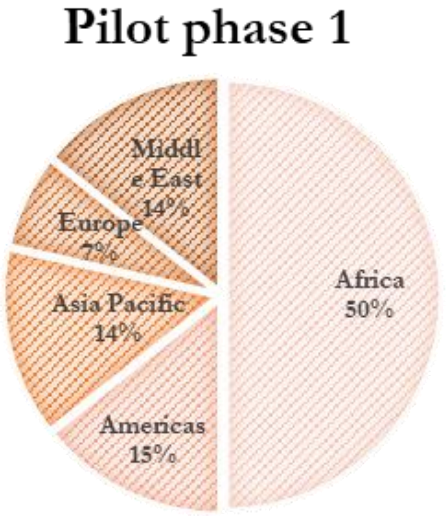
SUBSTANDARDS & FALSIFIED VETERINARY PRODUCTS

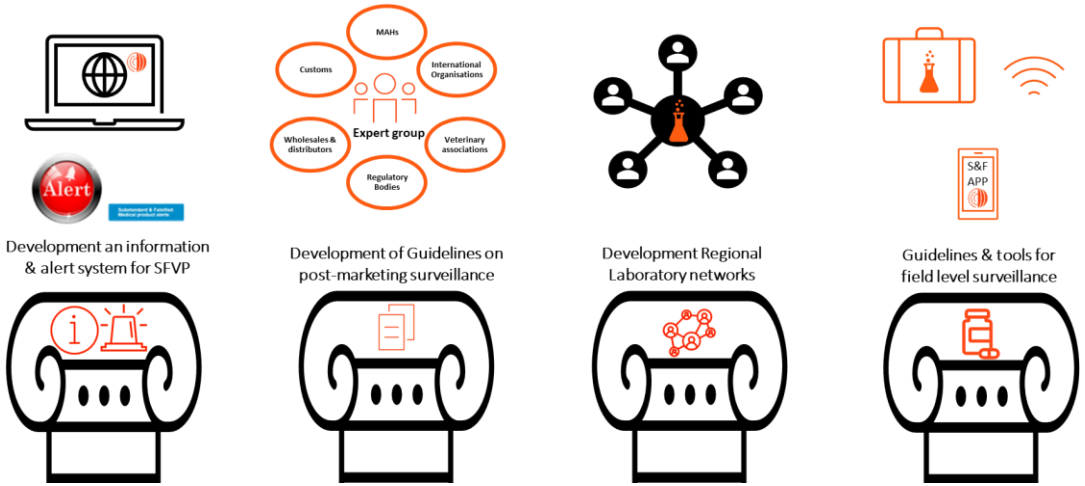


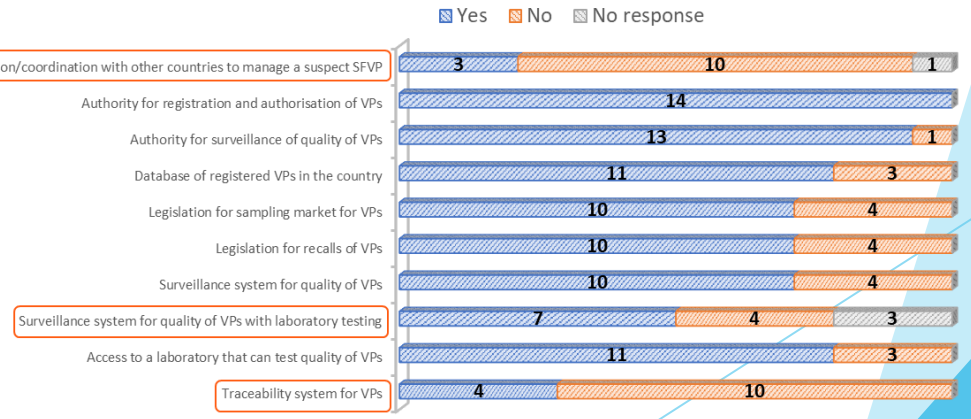
Information & alert system for SFVPs





A project based on four pillars





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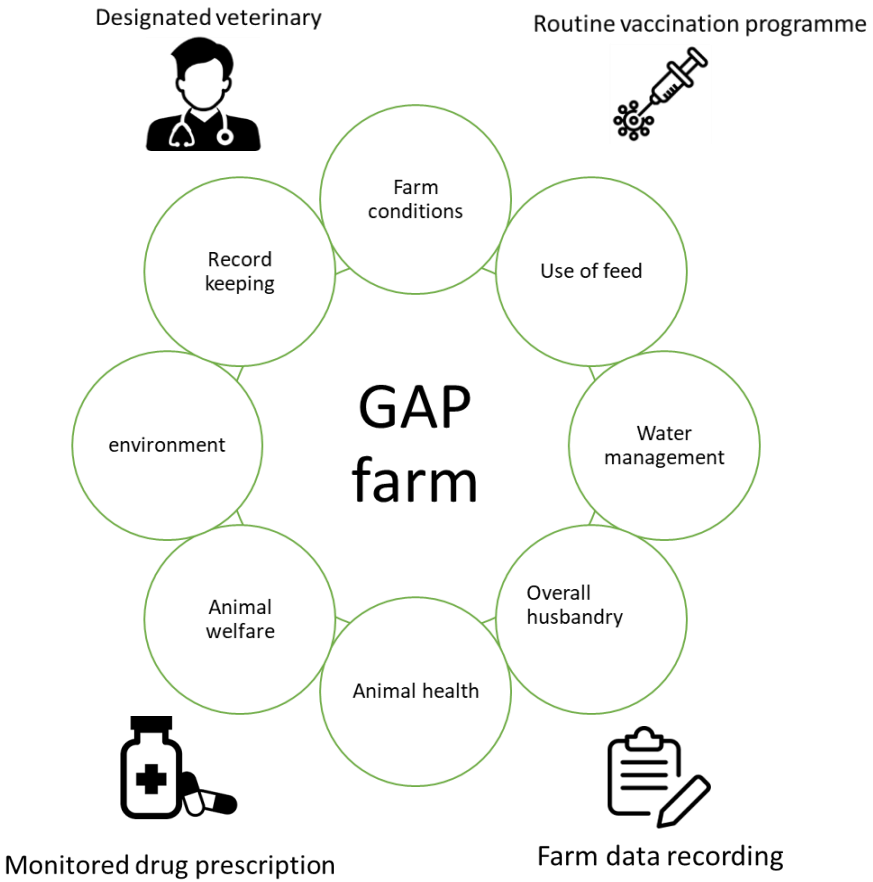
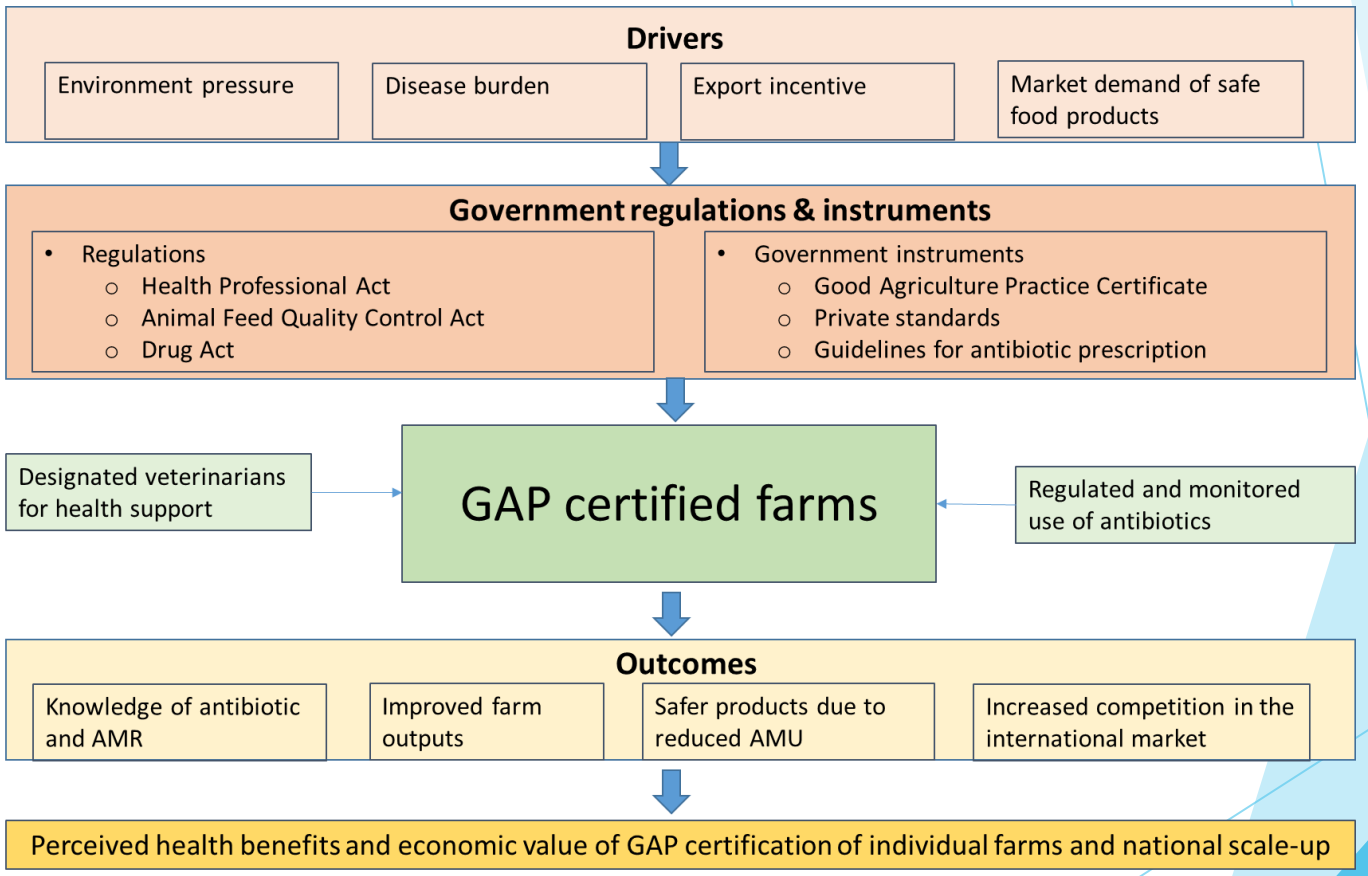
Invest to improve farm management and husbandry practices

The Good Agriculture Practice (GAP) Certification System in Thailand





GAP Certification System in Thailand

- Steady increase in the numbers of pigs and poultry from 2017 to 2019, with increasing proportion produced in GAP farms

- Thailand has **reduced the consumption** of antibiotics by animals since the implementation of the NAP 2017-2022, and there is a **shift to use more CIAs and non-CIAs** than HP-CIAs

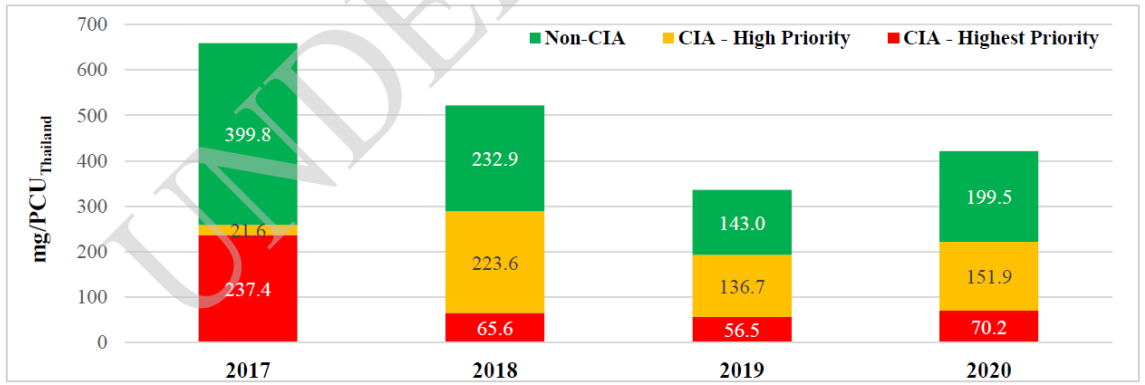
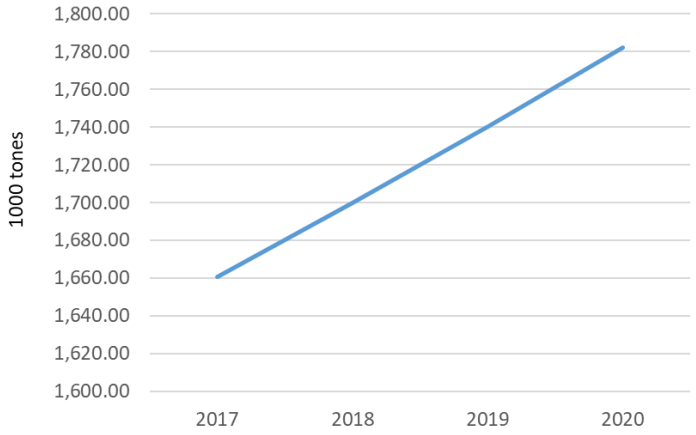
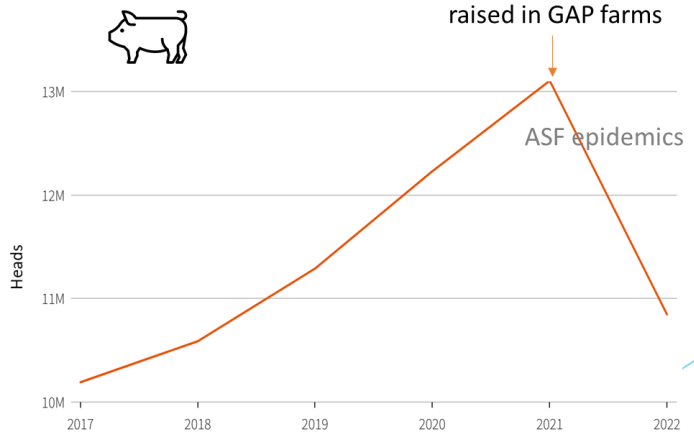


Figure A2.5 Comparative proportional consumption profile of critically important antimicrobials in food-producing animals from 2017 to 2020

>90% of poultry production in GAP farms



11M out of 13M pigs are raised in GAP farms



Source: Thailand's Department of Livestock Development

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Invest in people to drive change in the use of antimicrobials in the animal sector

Bangladesh AMR Response Alliance (BARA)

- Community of Practice of and for **animal health** (livestock and aquaculture) and **human health professionals** committed to responsible AMU

- Membership is granted after successfully pass an exam:

  618 Members (vet-310, human doctor-308)
  + 6 colleagues from Cambodia, Indonesia and Nepal

- Developed **BARA AMU guidelines** for poultry (“Murgi”), for human health (“Manush”) and for finfish disease management and treatment (“MAACH”)

- **Mobile phone app** for veterinarians and human doctors to guide prescriptions

BARA

BARA Initiatives

- **Keep It Simple Stewardship (KISS)** operation in Chittagong Medical College Hospital

- **BARA approach for aquaculture (Upazila-to-Community, U2C)**
  Farmers' perspective => participatory Disease Surveillance => FAO-WOAH joint support for capacity building on sample collection and analysis for laboratory professionals and field officers => guidelines for prevention, control and treatment

- **Social motivation and advocacy to regulatory authorities** by FAO, WHO and BARA community => **ban of colistin in livestock** at the 253rd Drug Control Committee meeting on 20 March 2022

FAO Virtual Learning Centres initiative

- Online hubs established to develop and improve One Health capacities in all FAO regions and subregions

- Provide trainees with access to **inclusive, engaging and high-quality training** (online tutored courses, blended learning, technical webinars and mobile learning)

⇒ Training on AMR surveillance in bacteria from healthy food-producing animals: 74 trainees (Asia and Pacific), July-Aug 2022

⇒ Training of the Trainers for Farm Field Schools in Africa

⇒ Knowledge Nexus / AMR Laboratory Community of Practice

WOAH Platform for the training of the Veterinary Services

- Competency-based Training System
- One competency package dedicated to AMR
- 5 eLearning modules available by end of 2023 in 4 languages

Education levels	Terrestrial animals	Aquatic animals
Day 1 and VPP level e-modules	General introduction to AMR, with WOAH's lens	
	Stewardships on AMR under One Health approach	
Day 2 level e-modules	Stewardships on AMR in terrestrial animals	Stewardships on AMR in aquatic animals
Expert level e-modules	Building a national AMR Action Plan focused on the terrestrial and aquatic animal health sector	

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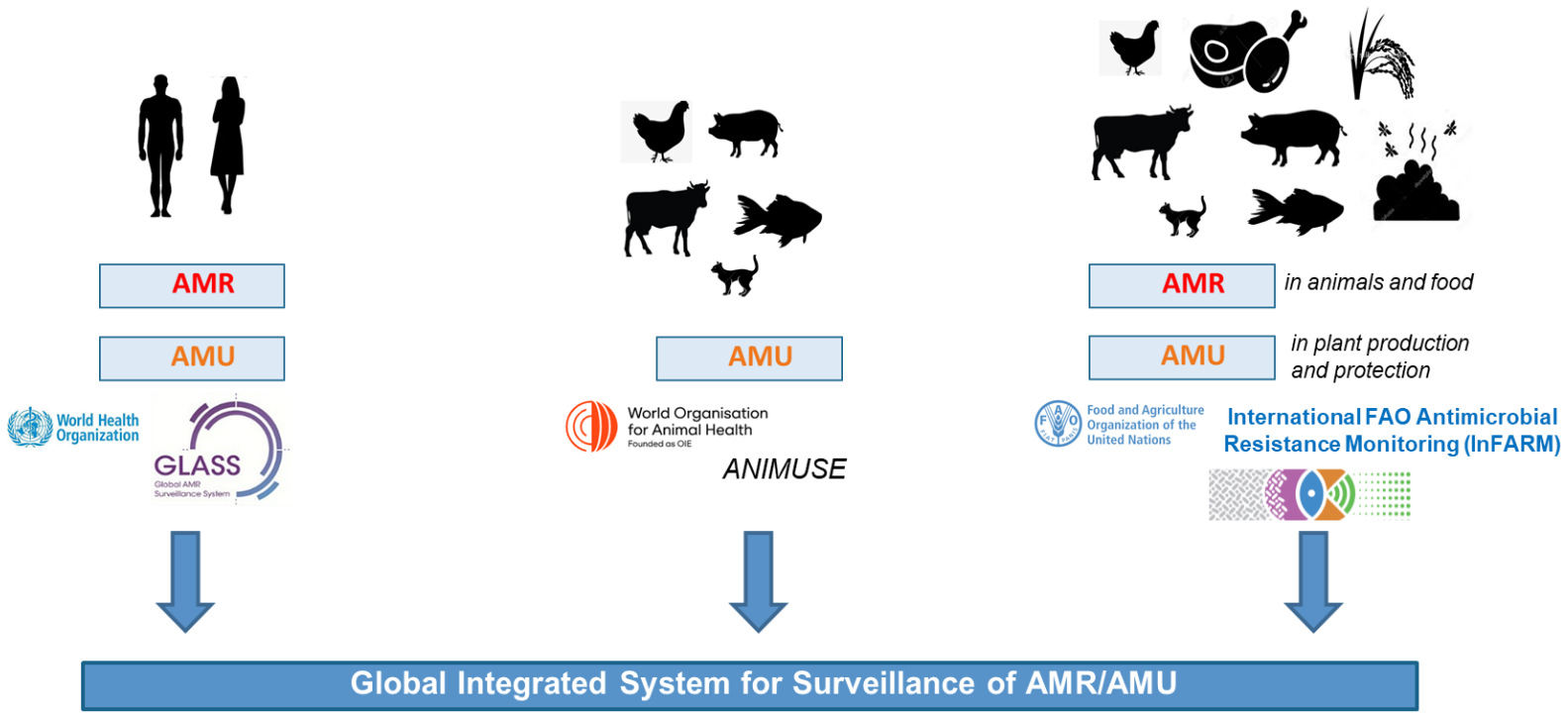
The importance of generating, analysing and using data for action within and across sectors

Global Architecture for Integrated AMR and AMU Surveillance

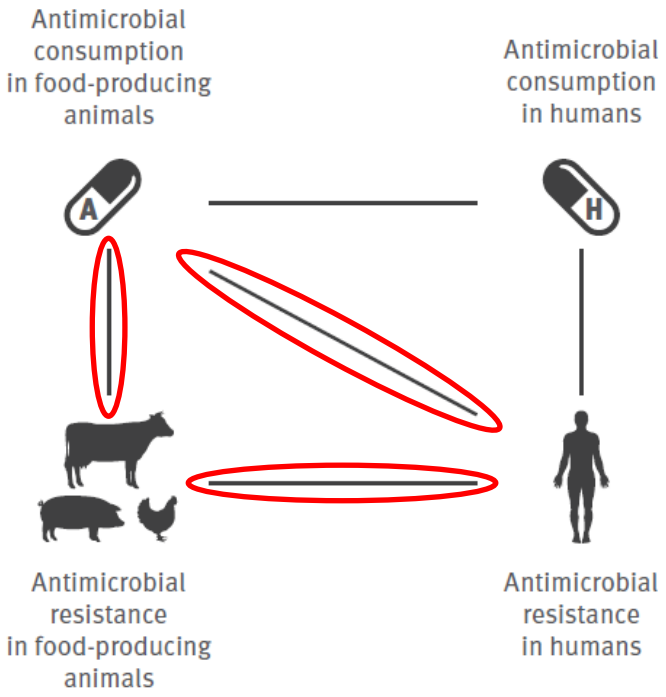


- Surveillance information is **essential to inform and monitor** interventions to tackle AMR in animal health and public health
- **Strong sector specific surveillance systems** are a prerequisite for integrated cross-sectoral surveillance
- Reporting to sector-specific global systems GLASS, ANIMUSE and InFARM is essential to support the Quadripartite GISSA
- Demonstrating **usefulness of data** and **rewarding** countries that share data with extended **capacity-building support** are main drivers for participation

Integrated AMR and AMU Surveillance to inform and monitor interventions

Example 1 - Analysis of antimicrobial consumption and resistance ('JIACRA' reports) ECDC/EFSA/EMA

Figure I: Schematic overview of the potential associations between antimicrobial consumption and antimicrobial resistance in humans and food-producing animals investigated in this report



The case of fluoroquinolones:

- Fluoroquinolones are highest-priority critically important antimicrobials and their use should be restricted in animals
- There are significant AMU-AMR relationships within and between animals and humans
- These results from integrated surveillance provide valuable insights for policy-makers across the EU
- The risk to public health resulting from veterinary use needs to be mitigated by specific restrictions
- In EU fluoroquinolones are now in the “Restrict” category (only to be used for clinical treatment in animals when there are no antibiotics in lower categories
- Public - private partnership and collaboration is essential for reaching consensus (e.g. US ban in 2005, ongoing discussion in some EU countries and beyond)

Integrated AMR and AMU Surveillance to inform and monitor interventions

Example 2 –Empirical AMR-AMU relationship and positive effects of interventions

THE LANCET
Infectious Diseases
Volume 20, Issue 10, October 2020, Pages 1161-1171

"The colistin withdrawal policy and the decreasing use of colistin in agriculture have had a significant effect on reducing colistin resistance in both animals and humans in China."

Source: Wang, Y., Xu, et.al. 2020 The Lancet Infectious Diseases.

- Colistin was widely used as an animal feed additive
- In 2015 first mobile colistin resistance gene, *mcr-1*, was identified in isolates from animals and humans in China. Now *mcr-* genes are expanding globally
- 2016, WHO classify colistin as High Priority Critically Important Antimicrobial
- Many countries approved withdrawal of colistin as a feed additive in animals => AMU colistin has decreased globally
- Still widely used in poultry and pigs in other countries for treatment and prevention

Prevalence of AMR – Colistin resistant E.coli in pigs and chicken

2015-16 → **2017-18**

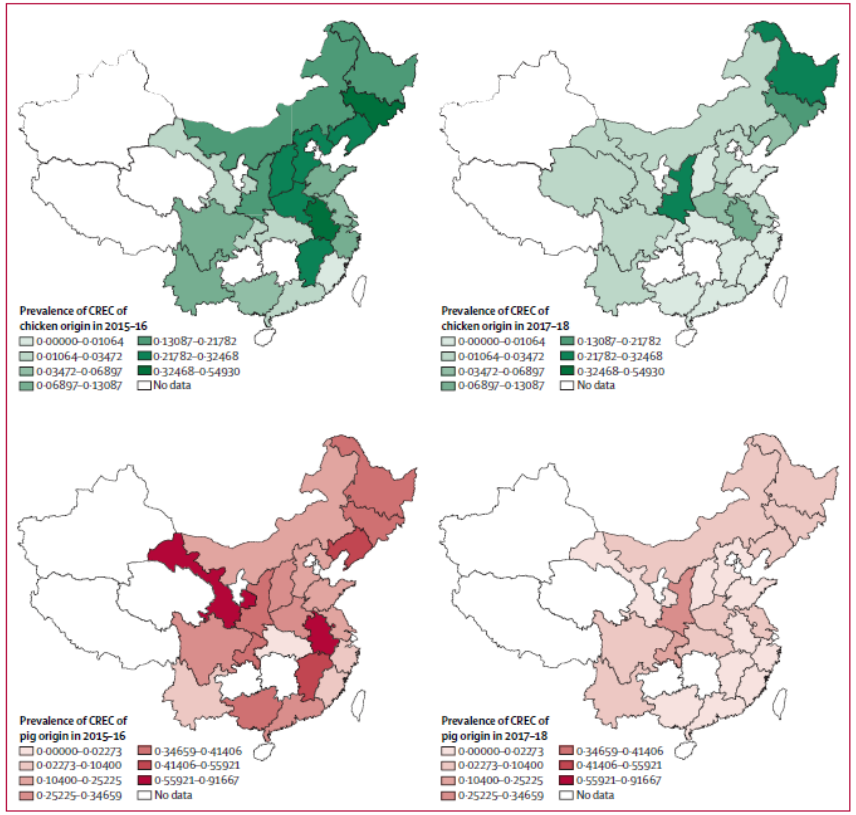


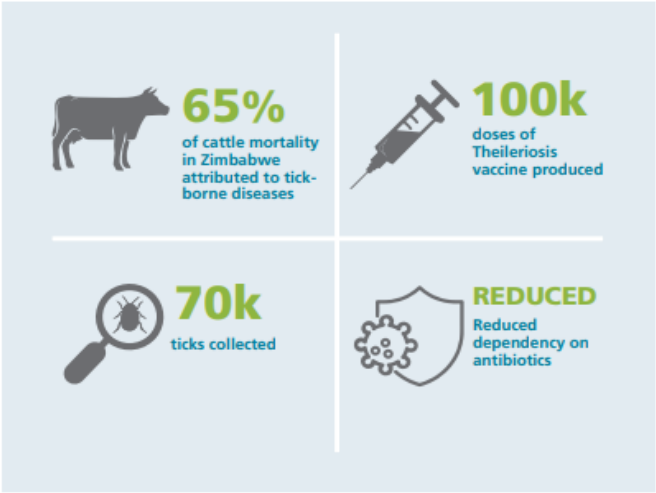
Figure 3: **Prevalence of animal-derived CREC in 23 provinces in China in 2015–16 and 2017–18**
Prevalence is presented as fraction of CREC out of all samples in the CSARAO database from each location during the specified period. Prevalence ranges were set according to the Jenks natural breaks classification method. CREC=colistin-resistant *Escherichia coli*.

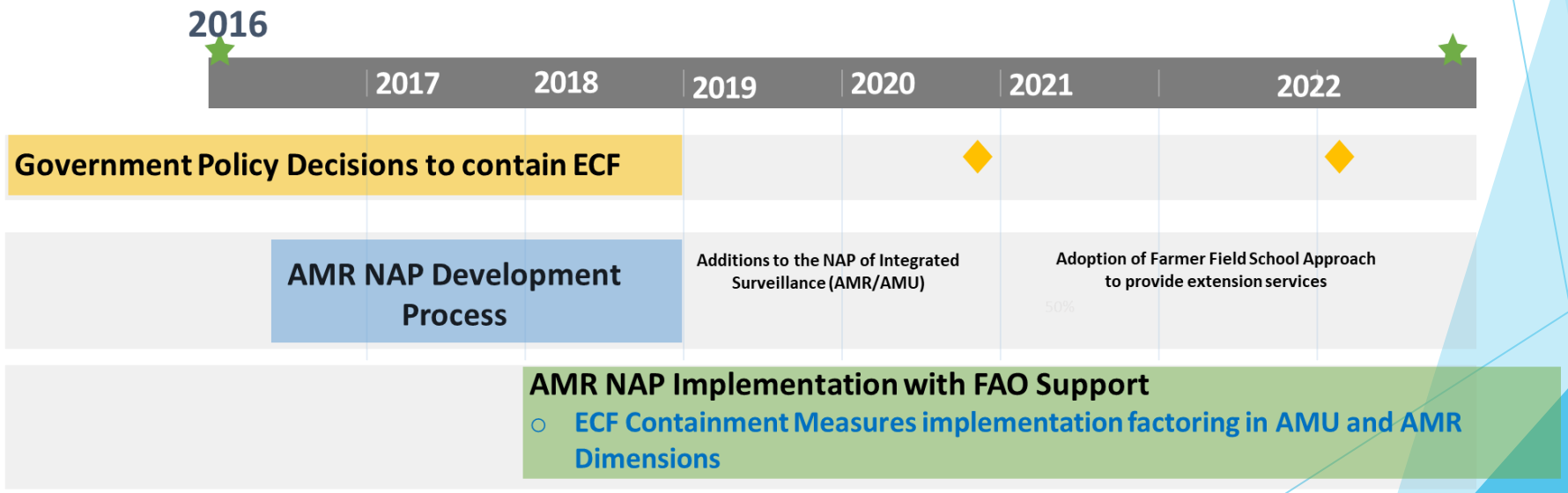
Look at the context to create and implement effective interventions

Alternative control measures to reduce AMU and AMR in Zimbabwe

Prior 2016

- Theileriosis (January Disease, East Cost Fever -ECF) "*Uncontrollable*"
- High Tick Resistance to Dips
- Antimicrobials (Tetracyclines) sold over the counter
    - Farmers called this use "VACCINATION"





Alternative control measures to reduce AMU and AMR in Zimbabwe

Vaccine developed and launched

Farm Field Schools to be used to communicate difference between Vaccination and AMU

is provided for under section 210 of the Constitution.

It states: "An Act of Parliament must provide an effective and independent mechanism for receiving

tion in the Government Gazette as an Act.

Zimbabwe has experienced cases of abuse of civilians by members of the security sector. For example,

were also killed during the January 2019 protests after government announced a 150% fuel price hike.

● Follow us on Twitter @NewsDayZimbabwe

9 000 farmer field schools on cards

BY PRIVILEDGE GUMBODETE

GOVERNMENT yesterday said it would set up 9 000 field schools for farmers to improve the country's agricultural extension services.

Addressing a Press conference in Harare, Lands and Agriculture minister Anxious Masuka said government had upgraded its agricultural extension 2.0 training module into the agricultural education for development module to empower communal farmers.

Under the new module, Agritex officials would be expected to carry out lessons in groups of 300 farmers.

"We also are going to establish 5 000 farmer field schools. Each Agritex officer will lead in practice. In the past, we had Agritex officers as extensionists and trainers," Masuka said.

"Now we have changed our whole extension system from agricultural extension 2.0 for extension and training to agricultural education for development, to include entrepreneurship, innovation, research and development.

He further said: "The Agritex worker will lead in a farmer field school and their 300 farmer group and they will teach best management practices. For veterinary services; that is, livestock, we will have 4 000 farmer field schools – one at each dip tank... where best practices are taught, for instance, how do I apply tick grease, how do I do household manufacturing or processing my household feeds so that farming becomes a business."

Masuka also indicated that government was undertaking the accelerated irrigation rehabilitation and development programme (AIRDP) ... of the enablers for the agricultural ... systems transformation str...

"We are doing the AI... the next three years we an... we will have 350 000 hecta... tion. We must be able t... 50 000 hectares each year... behind.

"We have resources ... 000 hectares and we a... mobilise additional reso... irrigation development ...

● Fol... @New...

Government enforcing alternative control measure for Theileriosis

24 January 2023

To: ALL PROVINCIAL VETERINARY DIRECTORS

NATIONAL DECLARATION OF WAR AGAINST JANUARY DISEASE: 2023

The rain season is always associated with increased tick activity and an upsurge in tick-borne diseases

January disease (JD) has been a problem resulting in thousands of cattle succumbing to the disease in recent years particularly as from 2017 to date. With the huge support from Treasury, we have been able to bring down JD cases and deaths, year on year, by 47% and 31% in 2021 and 2022 respectively. However, we have seen an upsurge in January diseases cases and deaths from the beginning of 2023. It is against this background that the Ministry is declaring a National War Against January Disease in 2023. This War Against January Disease is starting with immediate effect and will last for a month.

This memo serves to inform all Provinces, Districts and Animal Health Management Centres that the following activities will be done:

1. Each Veterinary Extension Officer (VEO) shall ho... meetings at each dip tank under their inspectorate ... meetings all farmers will be engaged for a minimu... particular, farmers will receive information on the f...
   a) January Disease and its epidemiology;
   b) Importance of intensive dipping;
   c) Importance of constructing dipping infras... handling facilities, plunge dips, spray races, a...
   d) Correct spot application of tick-grease;
   e) Correct use of pour-on dip chemicals
   f) Animal movement controls and quarantines, ...
   g) Prosecutions for failure to dip cattle or keepin...
2. A record of all the farmers that would have receive... war against JD campaign must be submitted weekl...

Summary and way forward

In a nutshell

- Strengthening **prevention** is key to curb AMR (animal husbandry, biosecurity, hygiene…)
- **Responsible use** is a must (diagnostics, alternatives to antimicrobials, including vaccination…)
- Implementation of international standards in collaboration **across sectors** (One Health approach) are critical
- **Investments** must fit with the situation (adequately & balanced across sectors)
- Data monitoring and **integrated surveillance** are key to adapt and control this pandemic situation

Knowing is not enough; we must apply. Willing is not enough; we must do. Johann Wolfgang von Goethe (1749-1832)

Challenges and Opportunities

- Not adequate supply of animal healthcare services everywhere: 1. improve access to animal healthcare services, especially in rural areas => increase training and retain veterinarians, VPP and CAHW, 2. Improve regulation and enforcement for animal health services (e.g. VSBs need to register VPPs (and CAHWs)

- Need to improve decision-making and stewardship: invest in behavioural change interventions and scaling up what works, improve access to laboratory services (reduced cost/free-of-charge) and invest in the development of new diagnostics to reduce time for results and more rapidly guide treatment

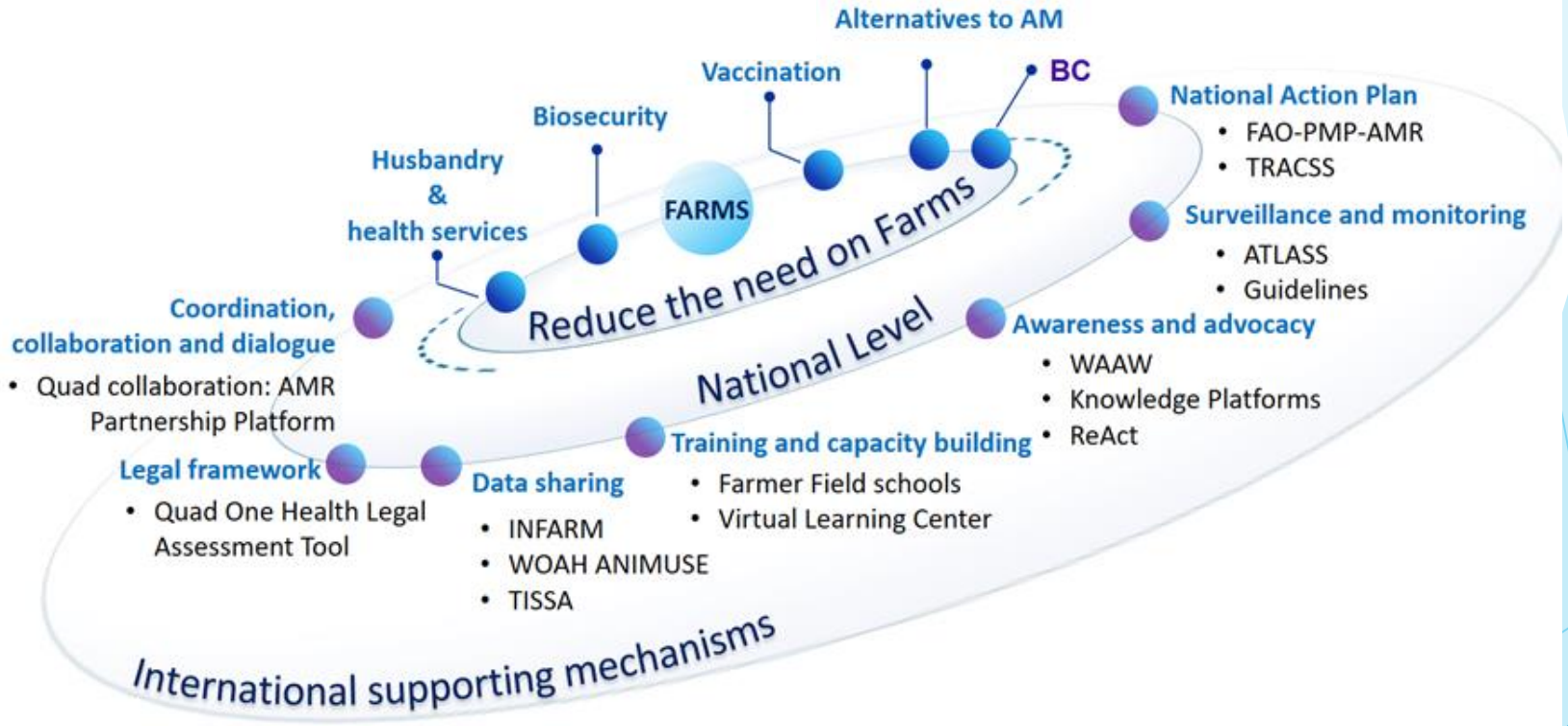
- Scarcity of AMR and AMU data from animal health sectors: improve laboratory and epidemiology capacities for data generation and analysis, and provide incentives to foster data use and sharing within and across sectors at local and global scale

- Poor Knowledge and engagement at farm level: invest in farmers and preventive animal healthcare measures to sustain changes through their active participation together with government regulations

Way Forward

REDUCE THE NEED FOR ANTIMICROBIALS ON FARMS Initiative (RENOFARM)

- Innovation, technologies, and hand-in-hand partnerships
- 10-year initiative
- AMU reduction especially for high priority antimicrobials
- focus on producer level in the agrifood systems
- bottom-up approach



Way Forward

AMR Multi-Stakeholder Partnership Platform

- Part of the AMR Global Governance structures
- Supported by the Quadripartite & hosted by FAO
- Brings together relevant stakeholders across One Health
- Work plan with short (1-2) to medium (3-5) and long-term (10+) priorities

- Build and promote a shared vision for AMR through the One Health approach;
- Global, inclusive, voluntary and collaborative mechanism to drive collective response across sectors, disciplines and countries;
- A venue for information-sharing, networking and building of common understanding of the AMR challenges and opportunities;
- Build and sustain global momentum for AMR through collective advocacy, awareness raising and engagement;
- Aims to attract over 200 stakeholders and establish up to five Action Groups in the first year of activity;
- Aims to support countries and stakeholders in turning the Muscat Manifesto commitments into tangible actions.

Food and Agriculture Organization of the United Nations

World Organisation for Animal Health
Founded as OIE

Thank you
Mercí
Gracias
Спасибо
شكرًا لك
谢谢你

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