

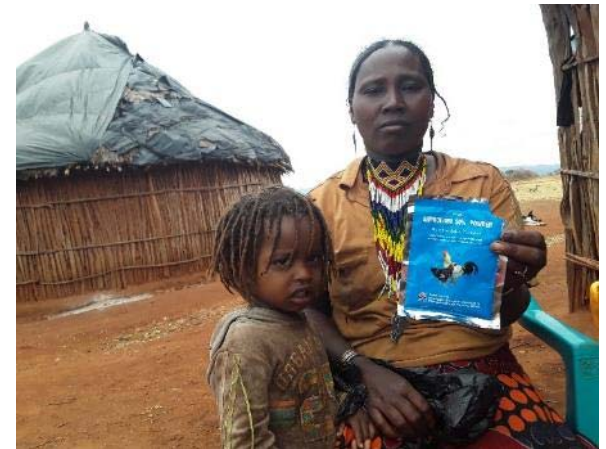
# Investing in agriculture to reduce human health externalities: a low- and middle-income country perspective

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*INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE*

Workshop on “Increasing Investments for AMR R&D”

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**ILRI**  
INTERNATIONAL  
LIVESTOCK RESEARCH  
INSTITUTE



## CGIAR on the ground: 15 research centres | more than 70 countries



REDUCED POVERTY

IMPROVED FOOD AND  
NUTRITION SECURITY FOR  
HEALTH

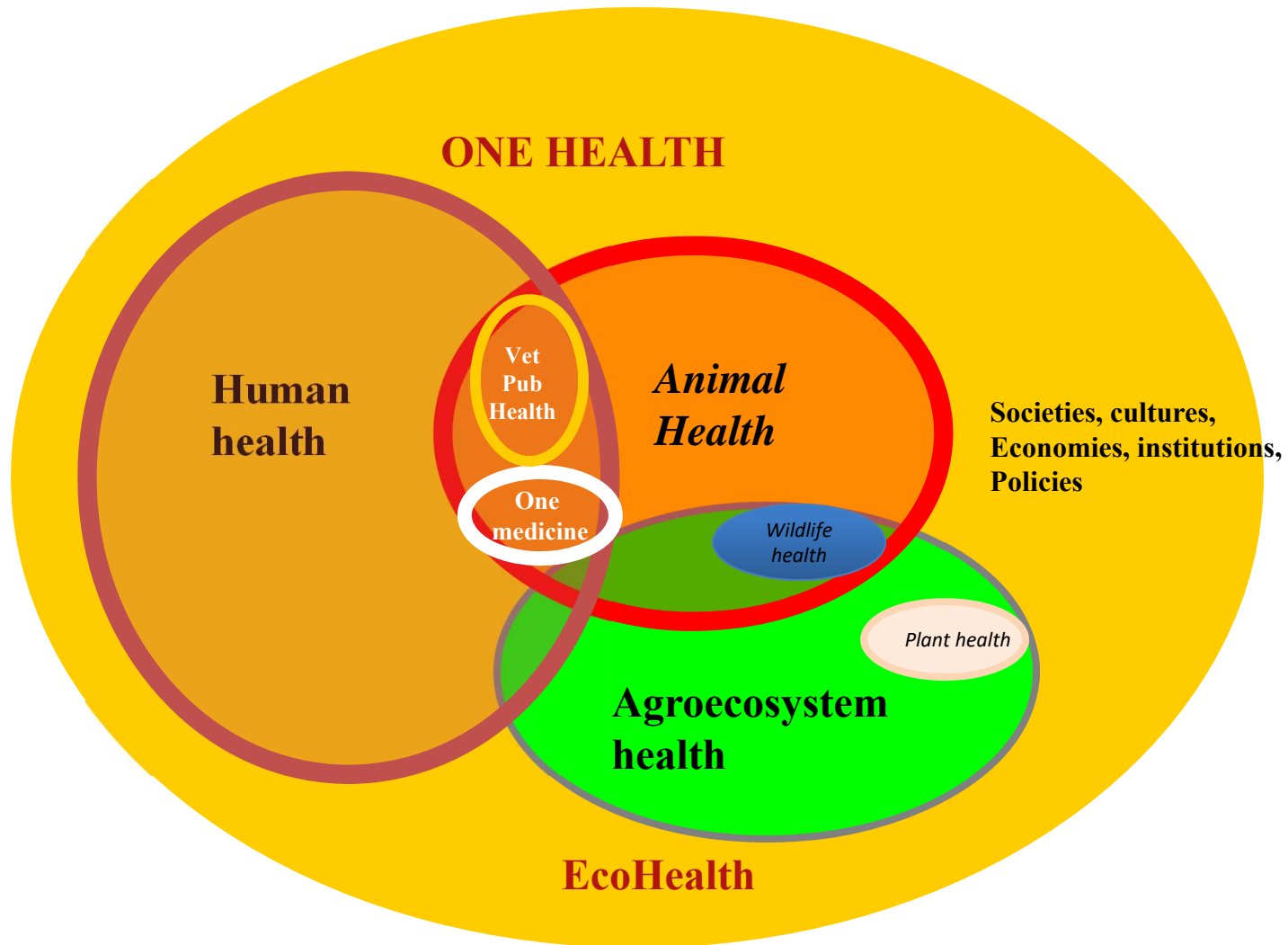
IMPROVED NATURAL  
RESOURCE SYSTEMS AND  
ECOSYSTEM SERVICES



More than 73% of all antimicrobials sold in the world are used in animals  
Van Boeckel et al 2017  
Around 80% of farmers rely on untrained health providers  
Grace, 2015

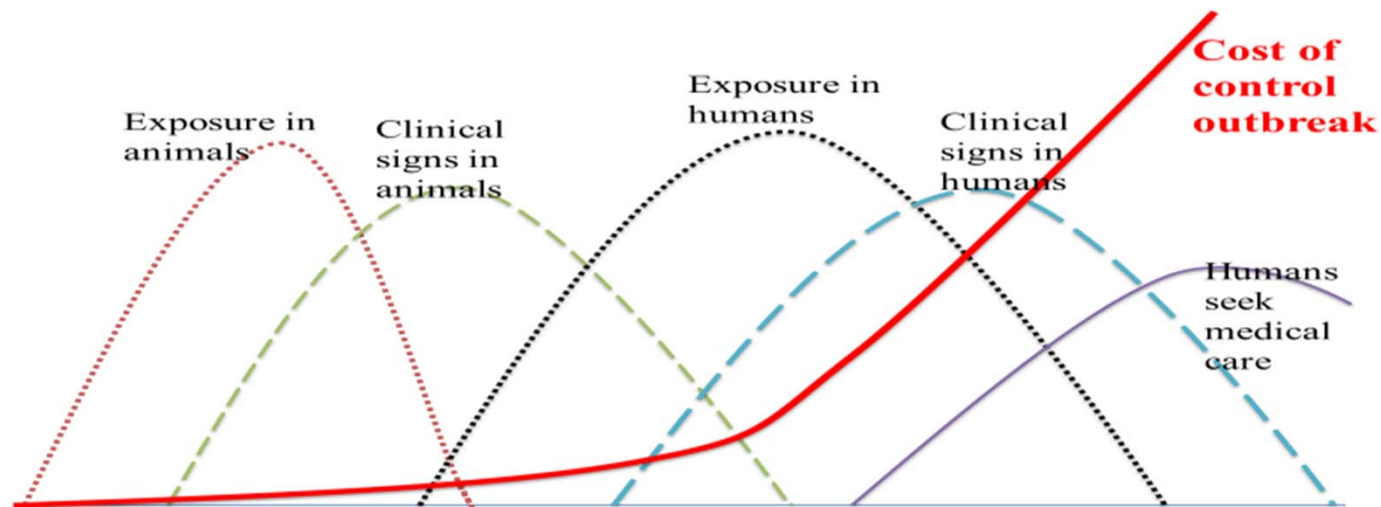


# The One Health Argument



## Better to control disease in the animal host than human victim

Surveillance and response in animal hosts can reduce costs by 90% (Grace, 2015)



*Adapted from IOM 2009*

## Caveat: a problem of access as well as excess

- Animal disease is a key constraint:  
Billions die each year from preventable & curable disease
- As livestock systems intensify in developing countries,  
diseases may increase

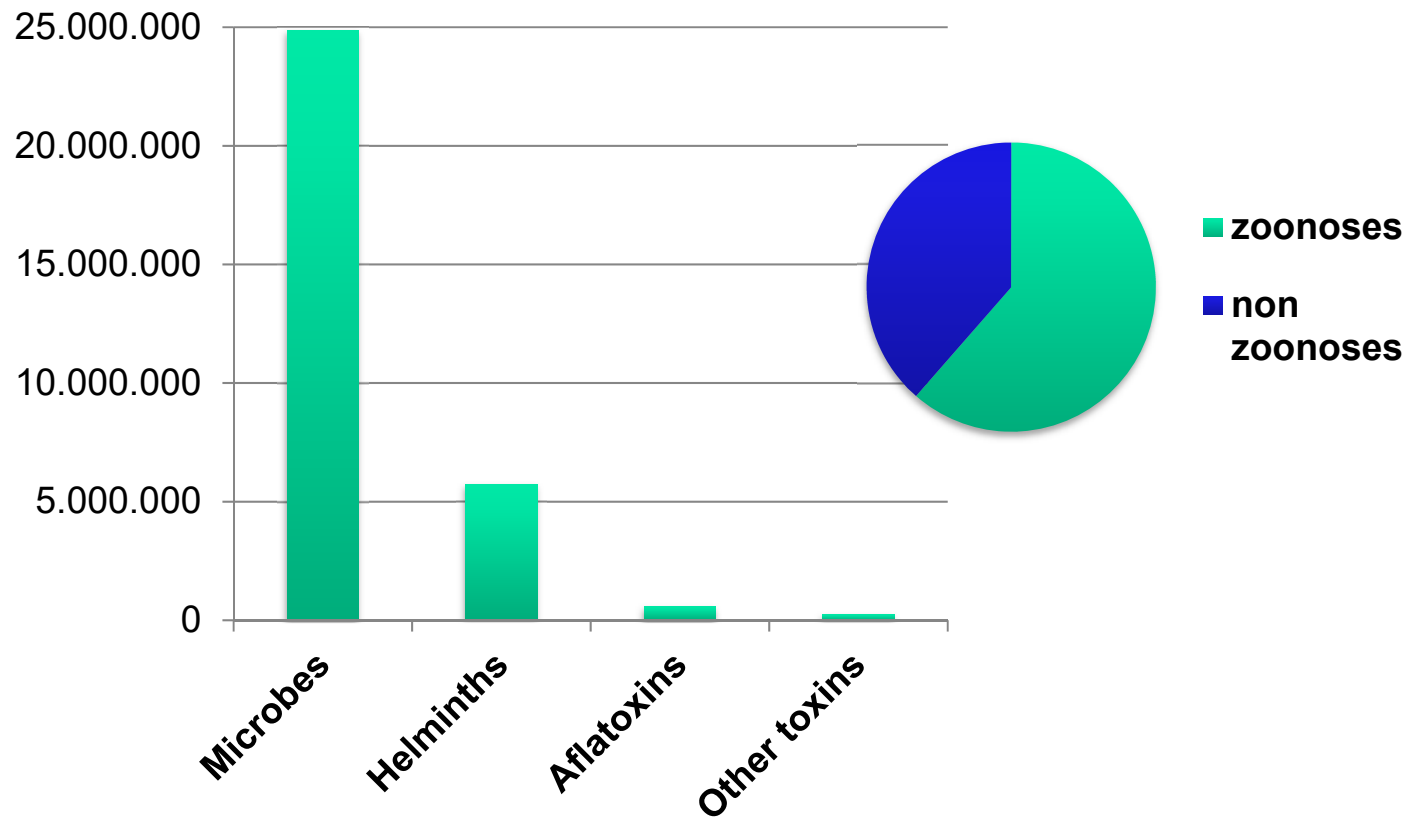


Annual mortality of African livestock  
( Around half due to preventable or curable disease )

	Young	Adult
Cattle	22%	6%
Shoat	28%	11%
Poultry	70%	30%

*Otte & Chilonda,  
IAEA*

## Caveat: what human health externalities?



Health burden of foodborne disease in developing countries is comparable to that of HIV AIDS, TB or malaria

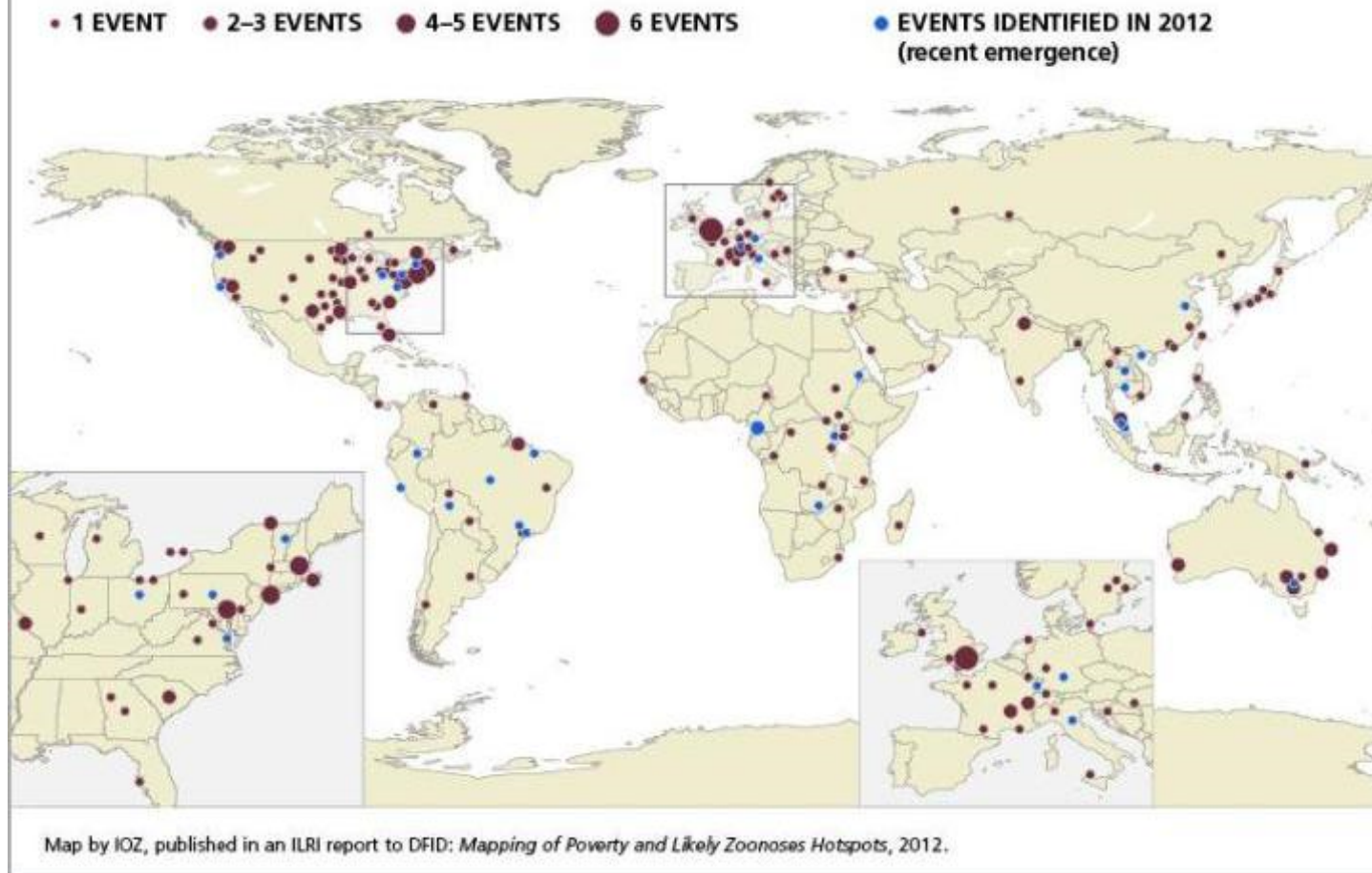
Havelaar et al., 2015



# Emerging zoonotic disease events, 1940–2012

## Potential Hotspots in US, Western Europe, Brazil, Southeast Asia

Most emerging human diseases come from animals. This map locates zoonotic events over the past 72 years, with recent events (identified by an ILRI-led study in 2012) in blue. Like earlier analyses, the study shows western Europe and western USA are hotspots; recent events, however, show an increasingly higher representation of developing countries.



Grace et al.,  
2012



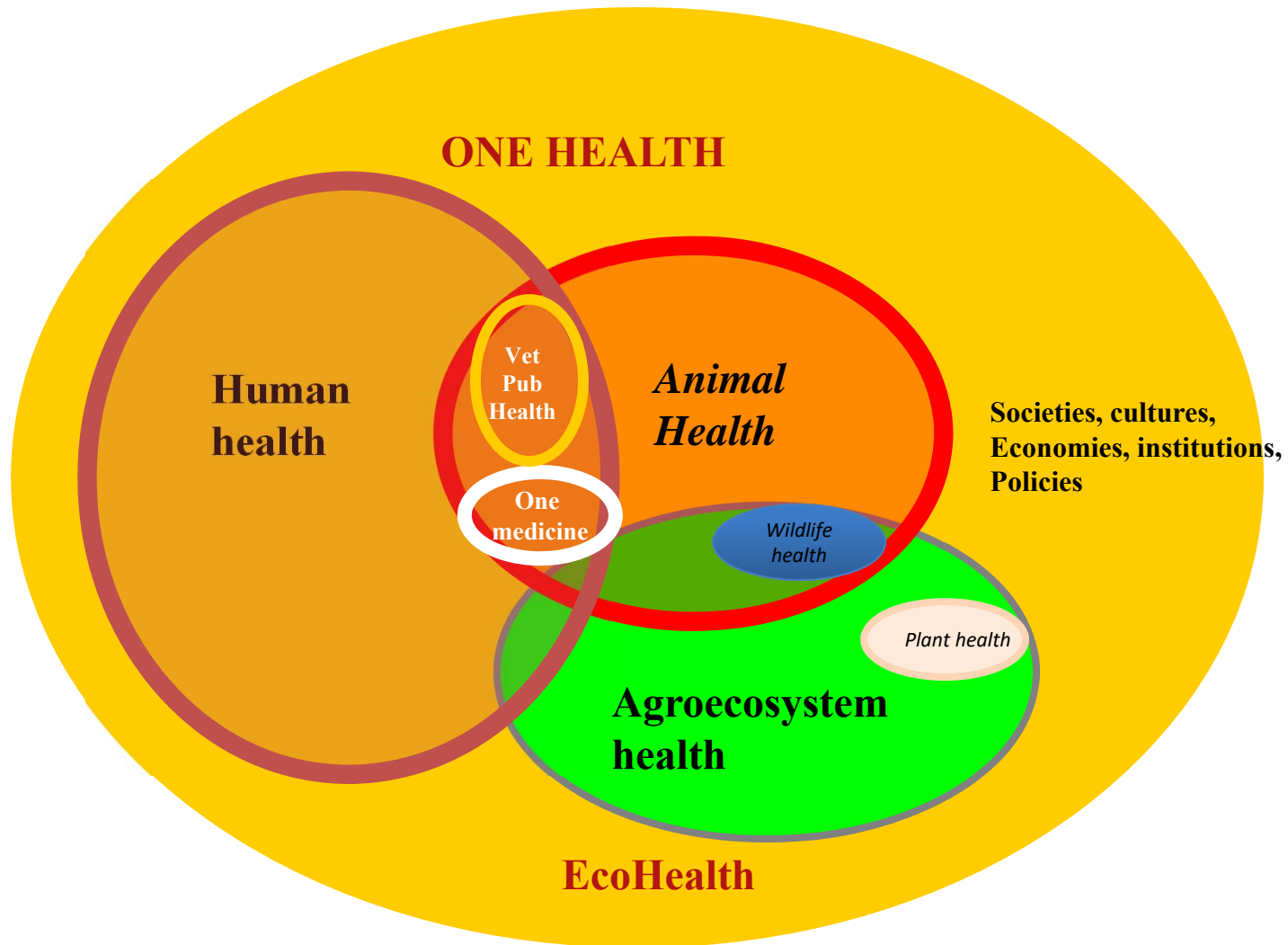
## Investment case

- How much human AMR comes from agriculture?
- What interventions could reduce use in agriculture?
- What are the costs and benefits of these interventions?  
What are the un-intended consequences?  
Are interventions feasible?
- What effect does the intervention have on human AMR?
- What effect does the intervention have on human and animal well-being?

## What we know

	HIC	LMIC
How much AMR from agriculture?	Certainly a little, maybe more	Don't know
Interventions shown to reduce AMU at scale	Yes	No
Interventions are affordable	Yes	Don't know
Interventions are feasible	Yes	Maybe not
Un-intended negative consequences	Likely small	May be large
Interventions appreciably reduce AMR in people	Don't know	Don't know
Effect on human and animal overall well-being	Don't know	Don't know

# AMR is a One World challenge



## Conclusions: 1

- Animal agriculture uses more AM than human health does and is rapidly trending up
- Most use and most growth in use is in LMIC
- Dual challenge: access as well as excess
- AMR is not the only externality of disease in LMIC and trade-offs need to be examined
- Evidence should under-pin a business case but is mostly lacking for LMIC
- Yet there is a strong rationale for One Health as the best approach for solving cross-sectoral challenges



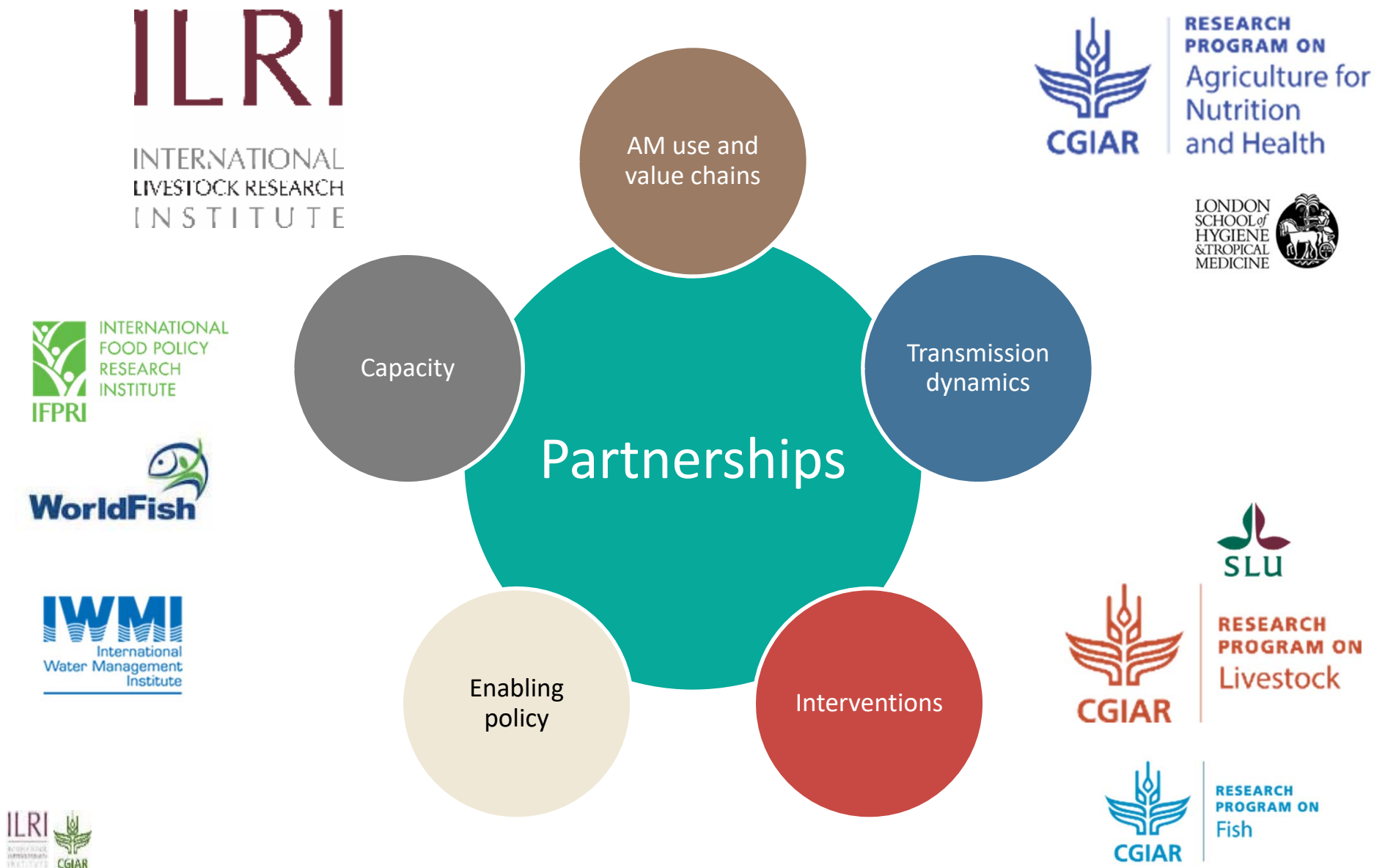


# Antimicrobial Resistance Hub

[www.amr.cgiar.org](http://www.amr.cgiar.org)

Launched during partner event, 21/22 February in Nairobi

# AMR in the CGIAR: Activity focus





For more information:  
[www.amr.cgiar.org](http://www.amr.cgiar.org)

Capacity Development | Antimicrobial Resistance Hub

<https://amr.cgiar.org/pillars/capacity-development>

**CAPACITY DEVELOPMENT**

A key enabler in the fight against antimicrobial resistance is building greater local and national capacity in implementing one-health approaches that address this problem in smallholder aquaculture and livestock systems.

Welcome to Antimicrobial Resistance Hub


<https://amr.cgiar.org>


### Our Approach


We conduct context-driven and systems-oriented research that combines social and biological sciences. With AMR research in agriculture and aquaculture and understanding linkages to public health outcomes, we can reap solutions emerging from our transdisciplinary approach.


We aim to reduce and refine AMU in agriculture and aquaculture and its impact on the environment, and to facilitate evidence-based communication around agriculture-associated AMR. This will help to mitigate AMR risks for people and contributes to improving the sustainability of global food and health systems.


The implementation framework of our strategy is organized into five pillars.

ANTIMICROBIAL  
USE

TRANSMISSION  
DYNAMICS

INTERVENTIONS

POLICY

CAPACITY  
DEVELOPMENT