

IMPACT OF NEGLECTED DISEASES ON ANIMAL PRODUCTIVITY AND PUBLIC HEALTH IN AFRICA

21st Conference of the OIE Regional commission for Africa,
16th-20th February, 2015, Rabat, Morocco

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ILRI
INTERNATIONAL
LIVESTOCK RESEARCH
INSTITUTE



Survey methodology

- Survey commissioned and supported by OIE
- Sent to 54 Member Countries
 - 34 responded in time for inclusion:
 - 63% response rate
 - Covers 87% of ruminant, 82% poultry, 64% pig population in Africa
- December 2014-January 2015



Survey Content

1 DISEASE PRIORITIES



2 MULTIPLE IMPACTS



3 DISEASE PREVALENCE AND CONTROL



4 TRENDS, DRIVERS AND CHANGE



5 COSTS



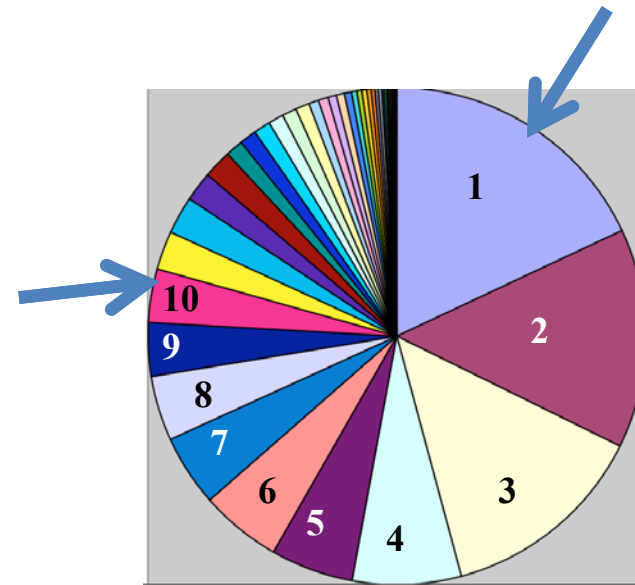
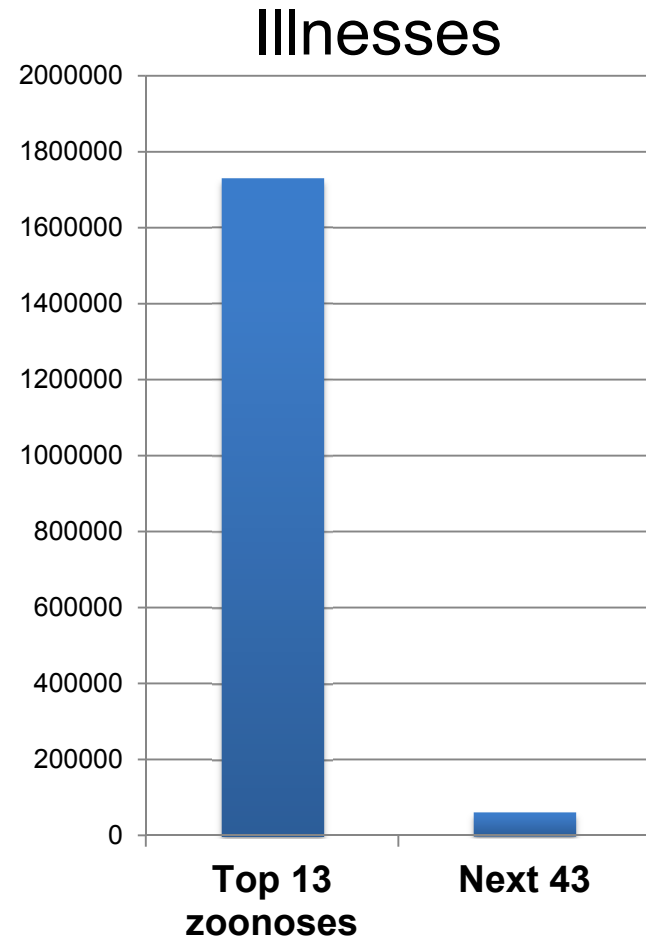
6 OPPORTUNITIES



1. Disease priorities

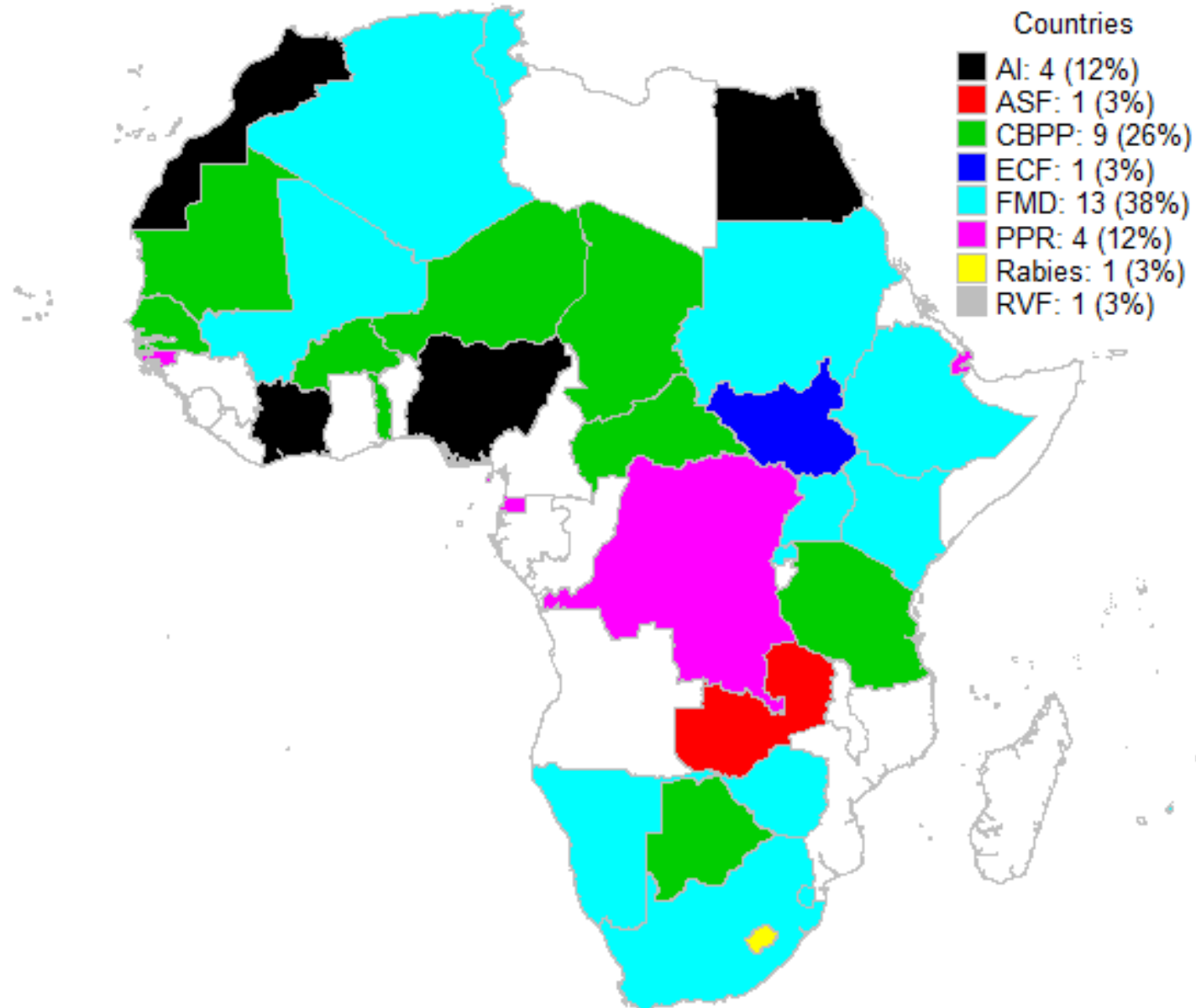


Pareto principle: the vital few & trivial many



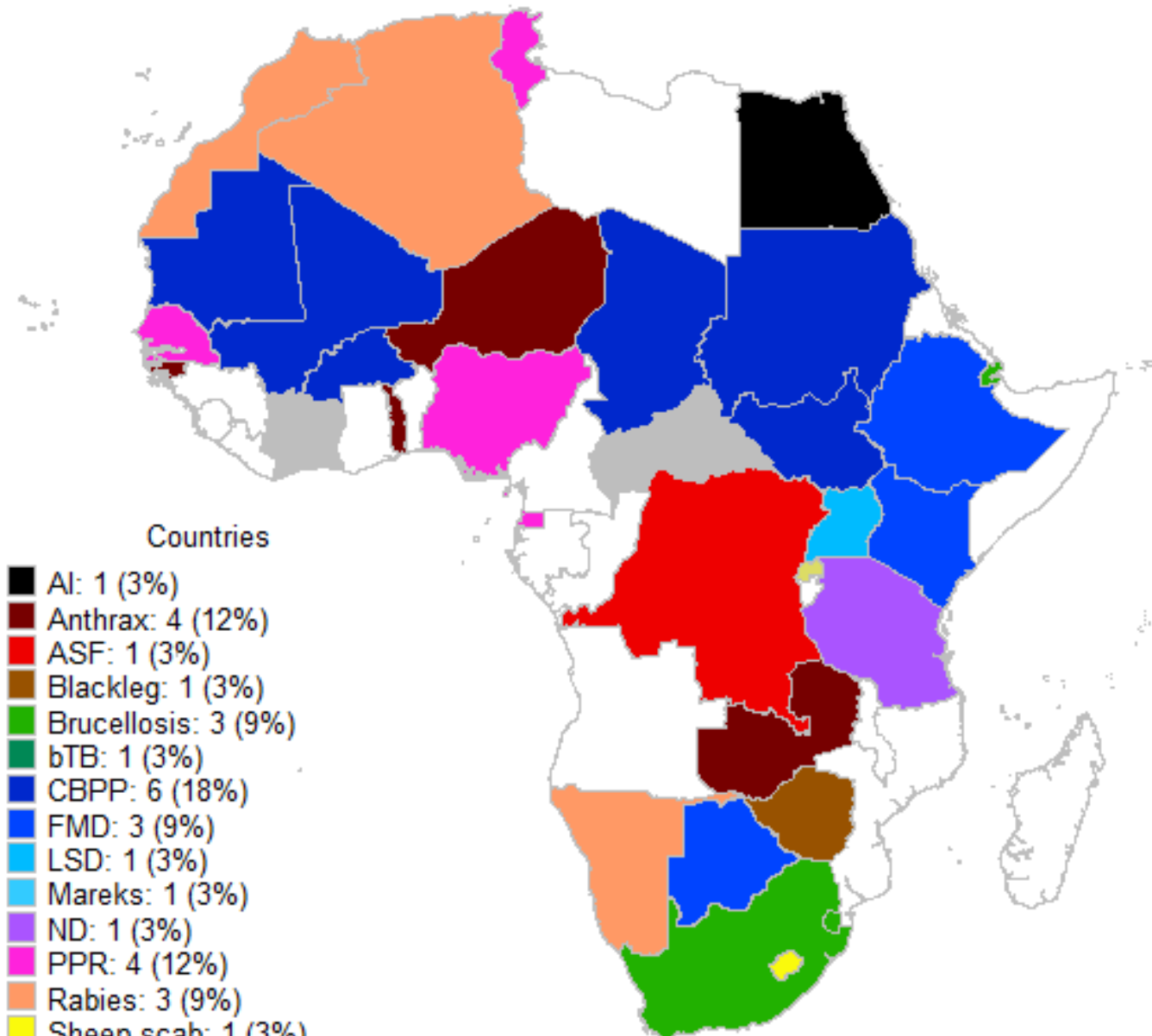
GBD: top 10 human disease cause 90% burden

1st priority epidemic disease



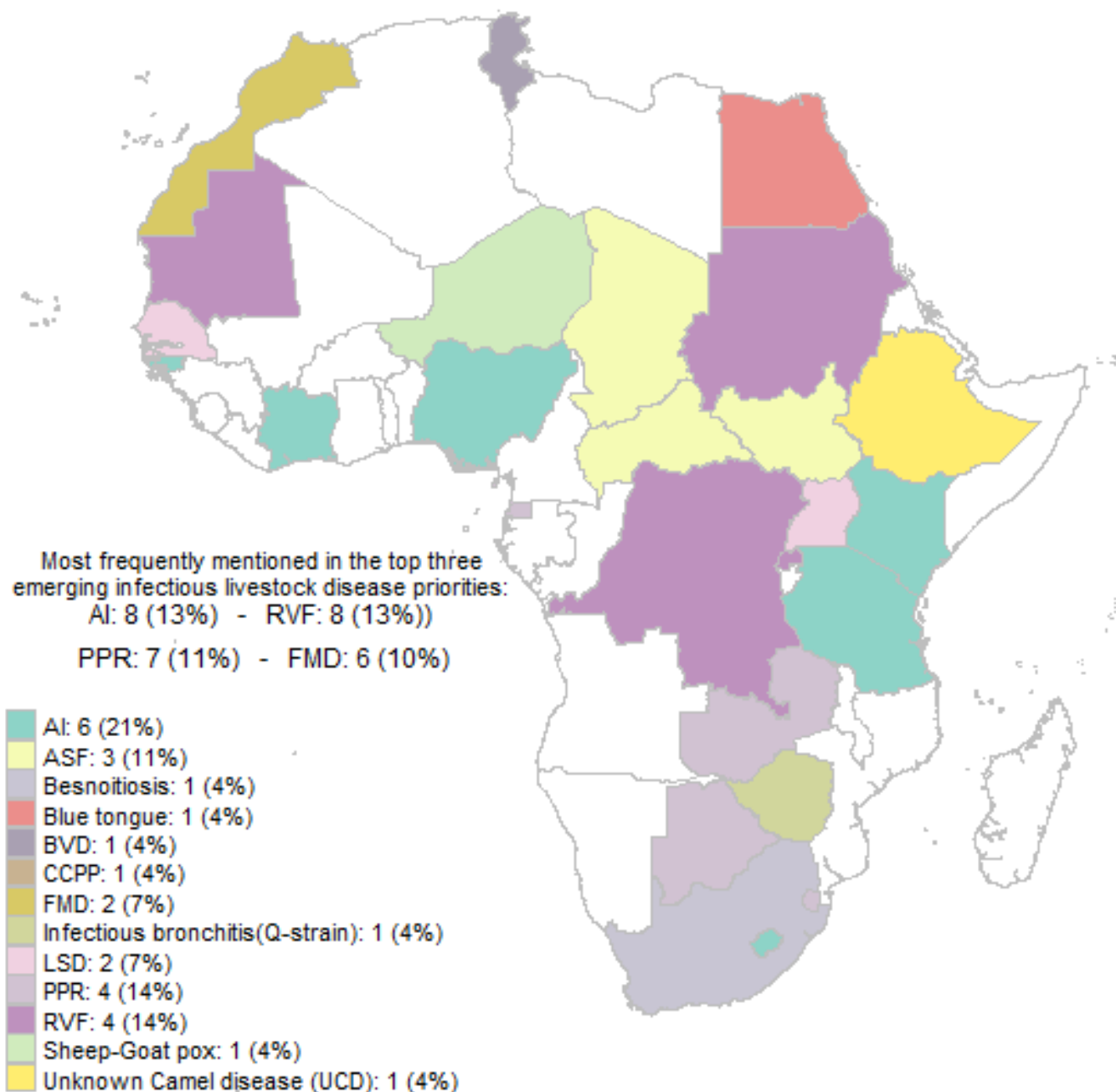
Most frequently mentioned in the top three epidemic priorities
FMD: 24 (24%) - PPR: 20 (20%) - CBPP: 17 (17%) - AI: 7 (7%)

1st priority endemic disease

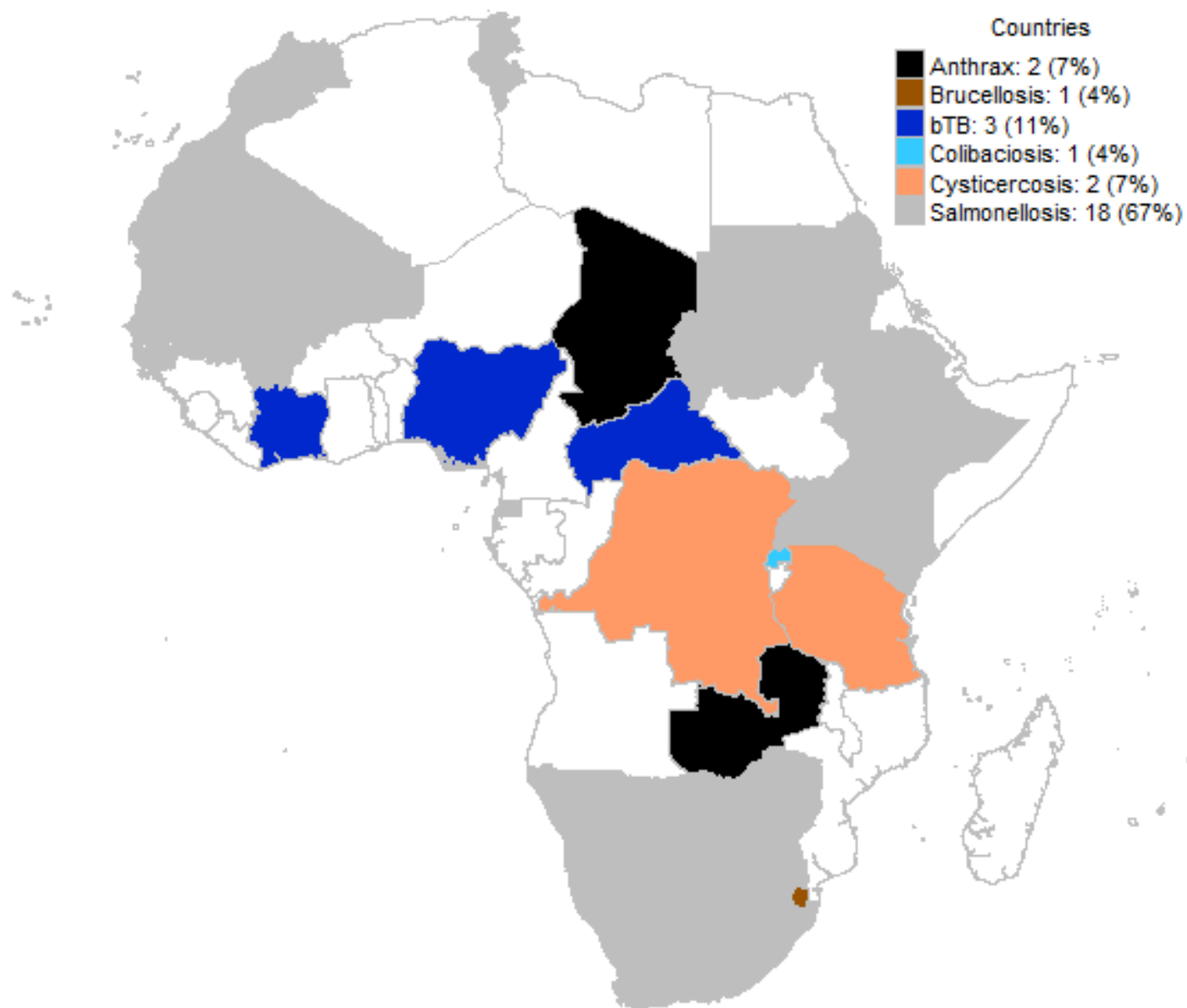


Most frequently mentioned in the top three endemic priorities
 PPR: 12 (12%) - CBPP: 9 (9%) - ND: 9 (9%) - FMD: 7 (7%)

1st priority Emerging infectious livestock disease



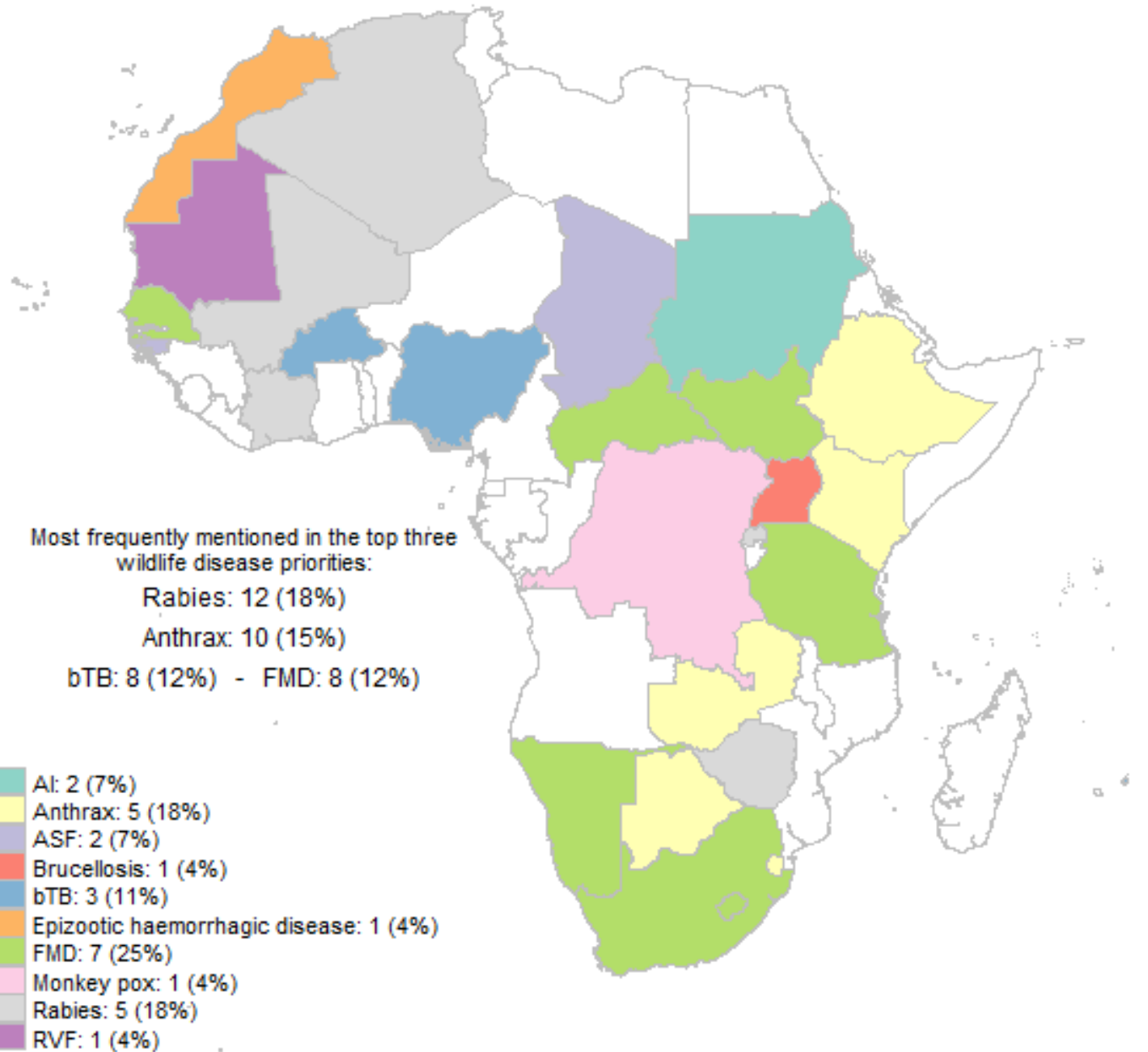
1st priority foodborne disease



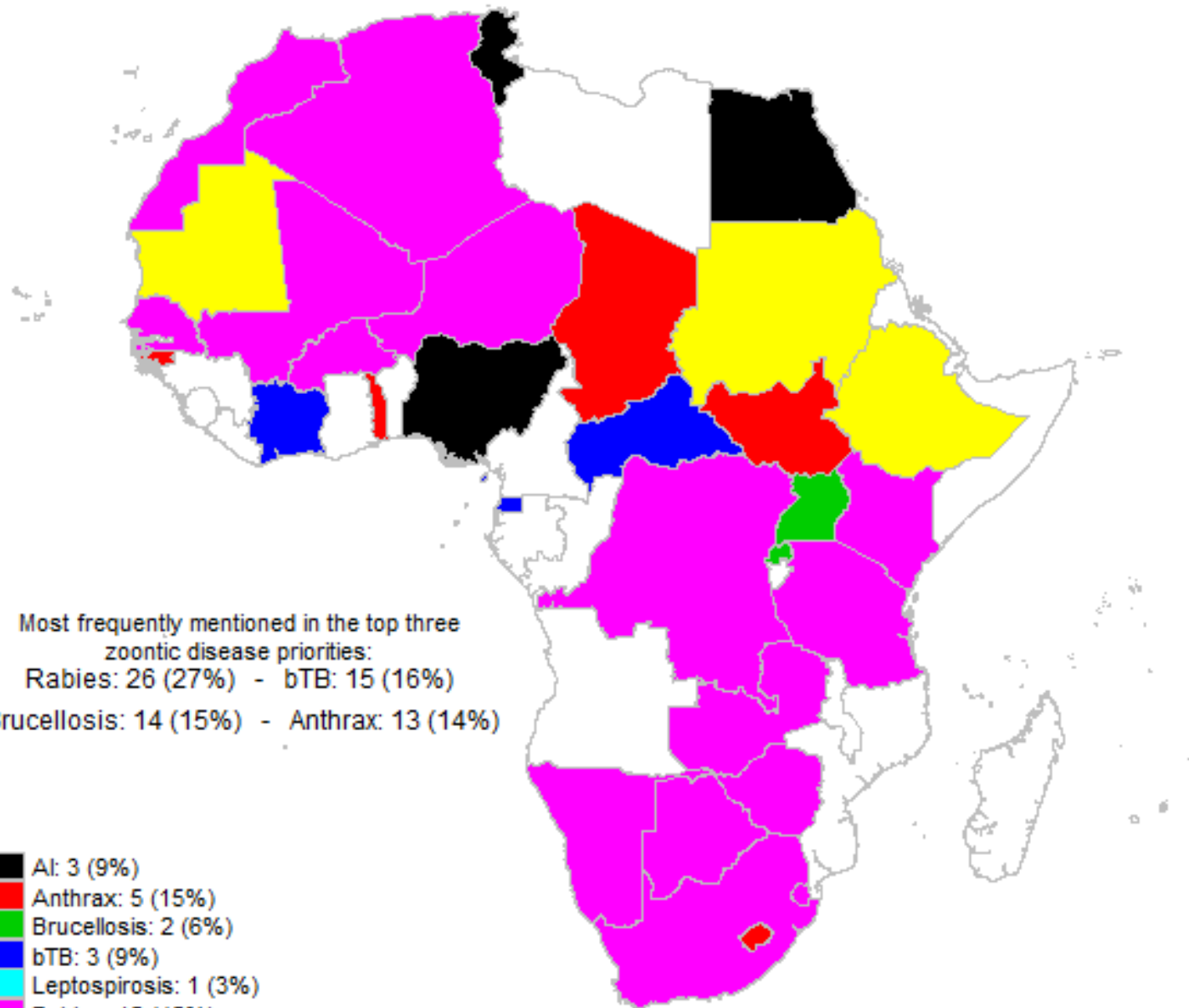
Most frequently mentioned in the top three foodborne disease priorities

Salmonellosis: 24 (32%) - Colibaciosis: 10 (14%) - Cysticercosis: 6 (8%) - bTB: 5 (7%)

1st priority wildlife disease

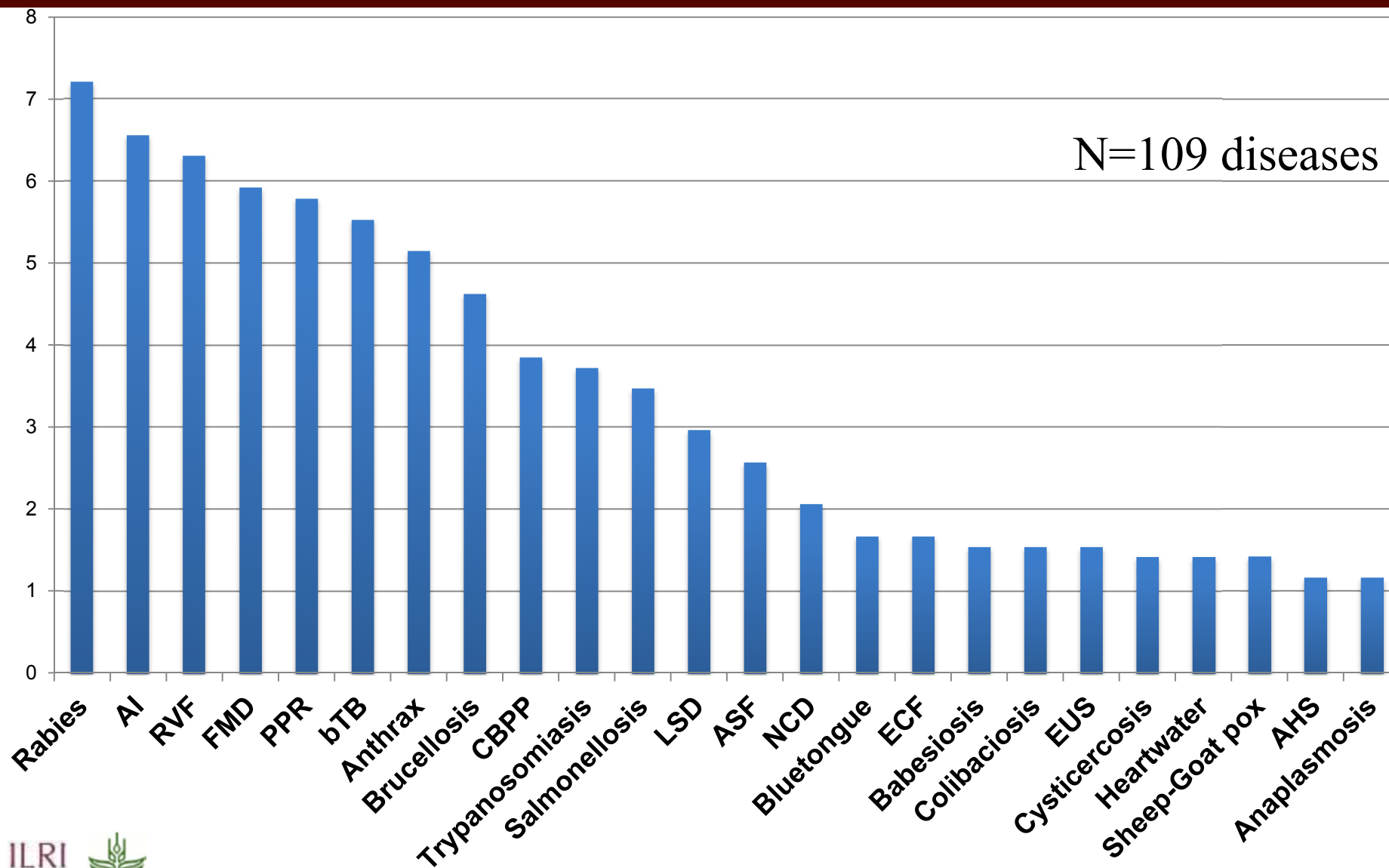


1st priority zoonotic disease

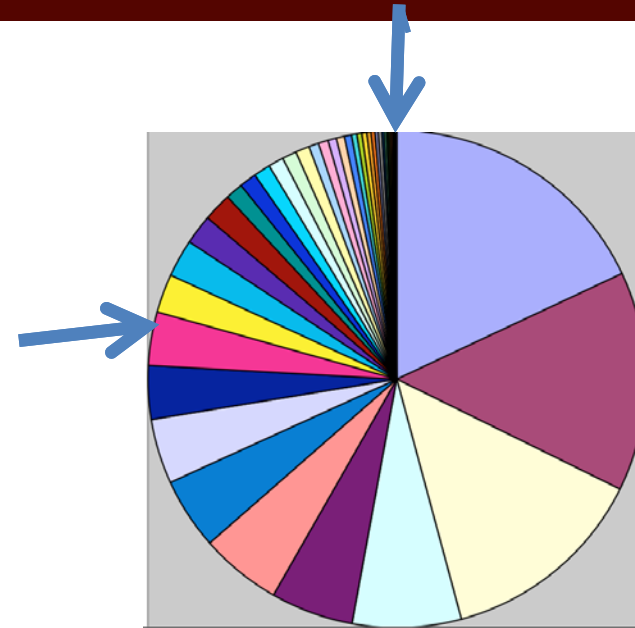
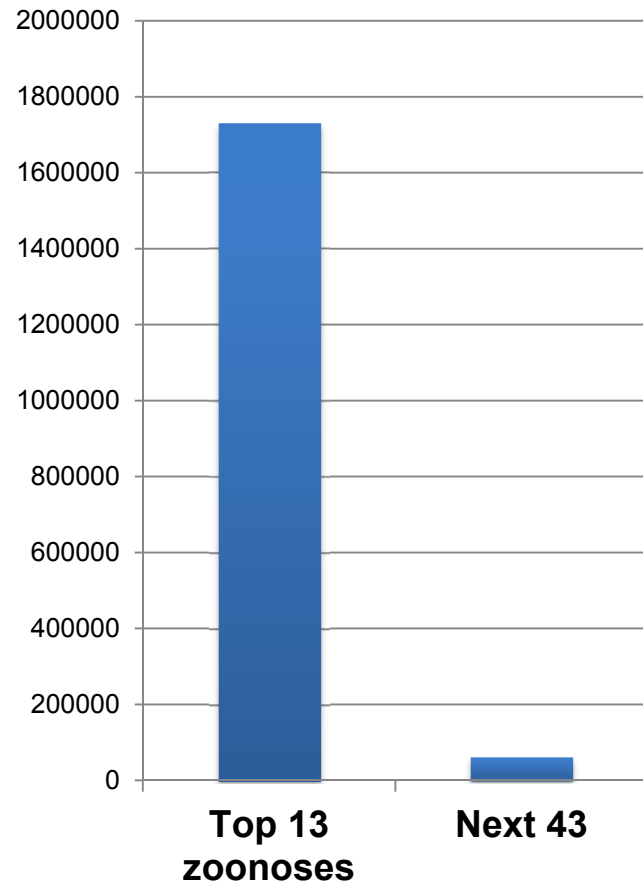


AI: 3 (9%)
Anthrax: 5 (15%)
Brucellosis: 2 (6%)
bTB: 3 (9%)
Leptospirosis: 1 (3%)
Rabies: 15 (45%)
RVF: 3 (9%)
Salmonellosis: 1 (3%)

Most commonly cited priority diseases



Pareto principle: the vital few & trivial many



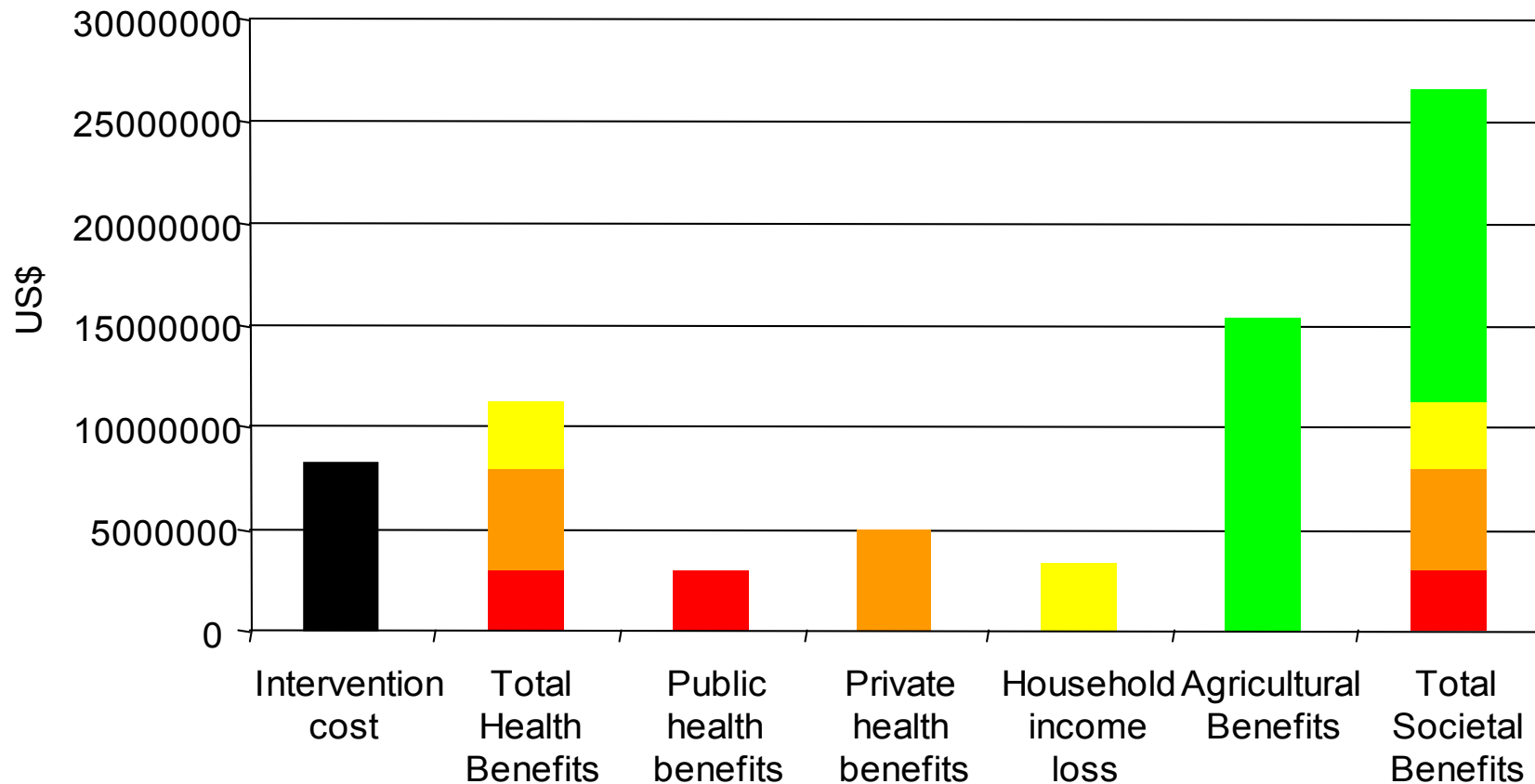
GBD: top 10 human disease
cause 90% burden

This survey: 20% of diseases
got 78% of cites

2. Multiple impacts



Synoptic view of benefits and costs of animal brucellosis mass vaccination in Mongolia



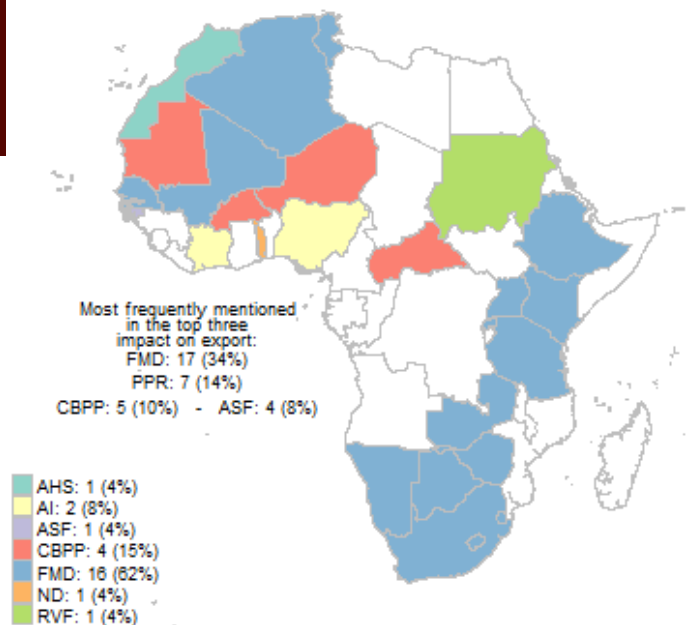
‘Combining the total societal benefits, the intervention in the animal sector saves cost, provides the economic argument and thus opens new approaches for the control of zoonoses in developing countries through cost contributions from multiple sectors.’

A business case for One Health

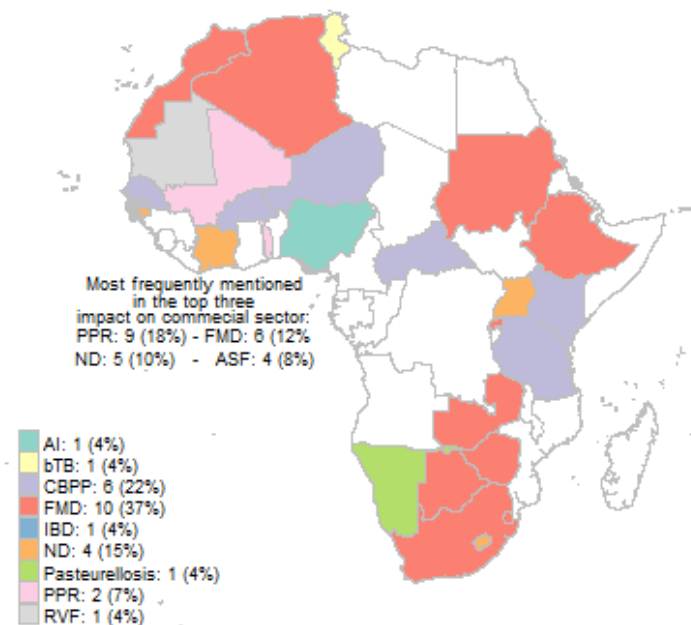
	Annual benefit	Annual cost	Confidence in investment
Sharing resources	4 billion	1 billion	++
Controllable zoonoses	60 billion	20 billion	+++
Timely response	6 billion	3.4 billion	++
Averting pandemics	30 billion		+
Bottom line	100 billion	25 billion	+++

Disease impacts

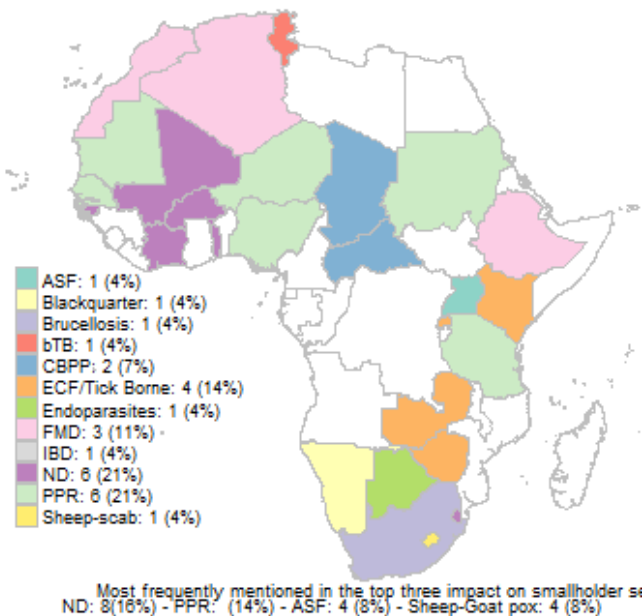
Greatest impact on export



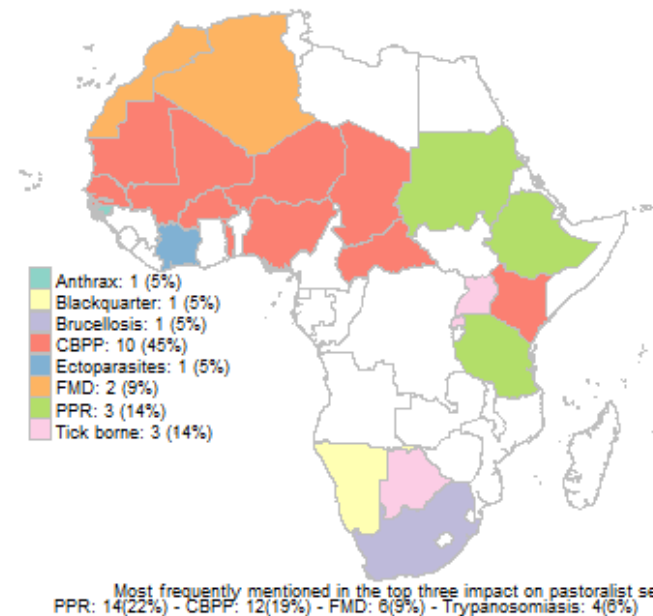
Greatest impact on internal trade



Greatest impact on smallholders

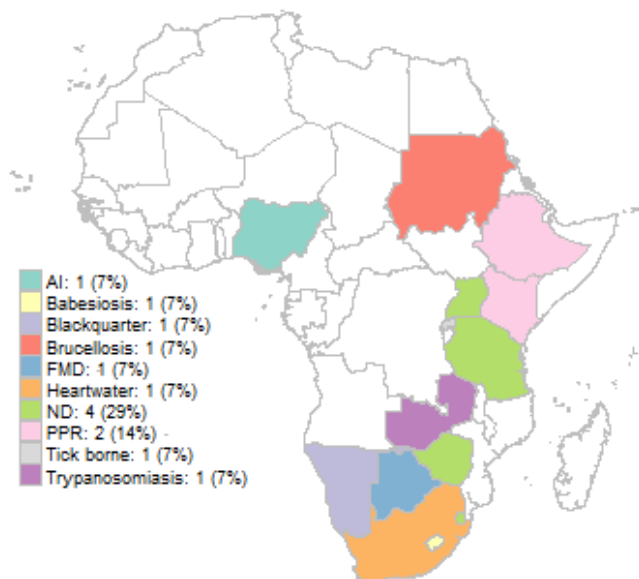


Greatest impact on pastoralists

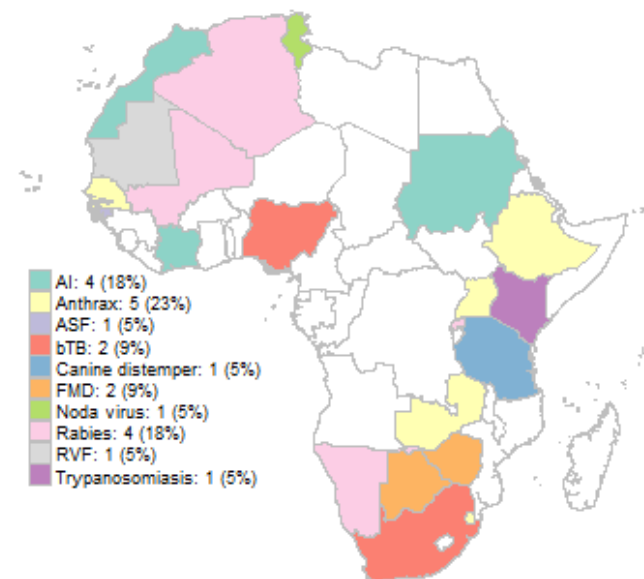


Disease impacts

Greatest impact on food security (anglophone only) Greatest impact on wildlife and the environment

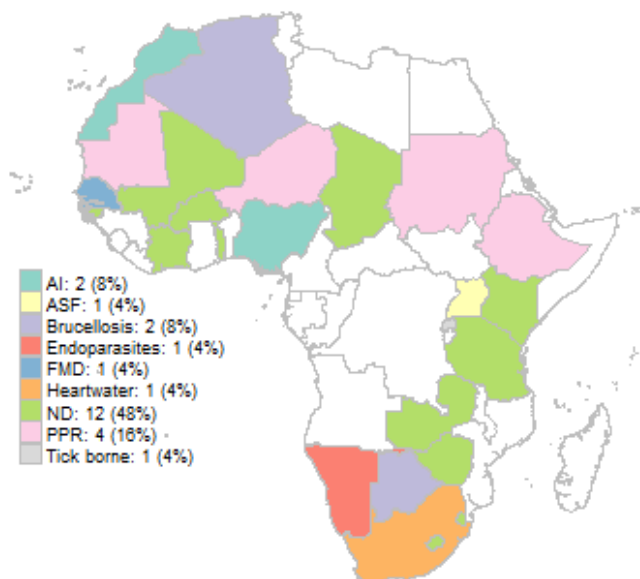


Most frequently mentioned in the top three impact on food security
Brucellosis: 8(11%) - bTB: 7(9%) - Anthrax: 6(8%) - ND: 6(8%)



Most frequently mentioned in the top three impact on wildlife and the environment
Rabies:11(21%) - Anthrax:10(19%) - FMD: 6(11%) - AI:4(8%)

Greatest economic impact on women



Most frequently mentioned in the top three economic impact on women
ND:16(37%) - PPR:7(16%) - Brucellosis:3(7%) - Endoparasites:3(7%)

SVS considerations in deciding most important diseases

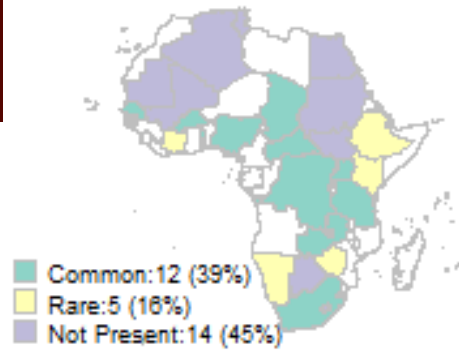
	Most important	2 nd most important	3 rd most important
Impacts on food security	65%	18%	6%
Impacts on the smallholder sector	47%	18%	24%
Impacts on the pastoralist sector	41%	9%	9%
Impacts on the export sector	35%	21%	18%
Impacts on the commercial sector	32%	38%	9%
Impacts on public opinion	15%	18%	21%
Impacts on wildlife and the environment	6%	26%	24%



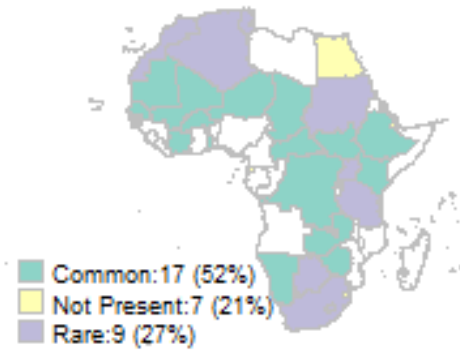
3. Prevalence and control



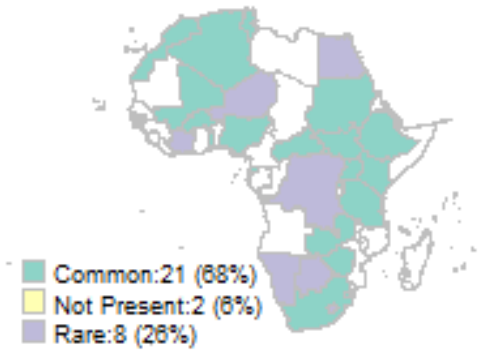
a) ASF



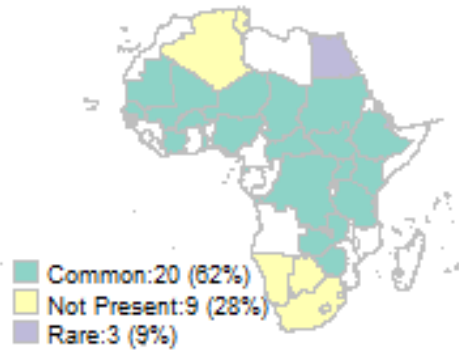
b) Anthrax



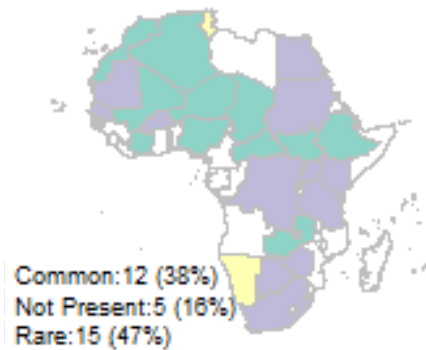
c) Brucellosis



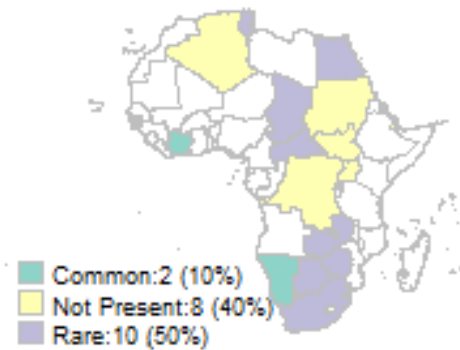
b) Trypanosomiasis



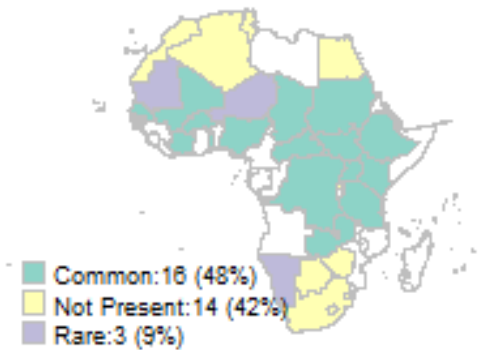
d) bTB



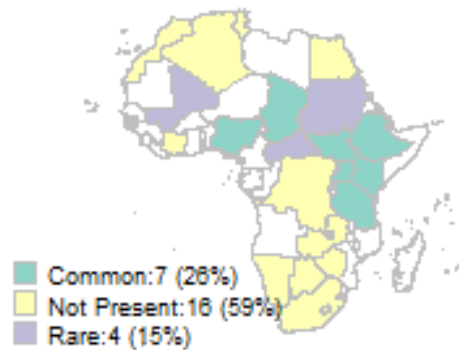
e) BVD



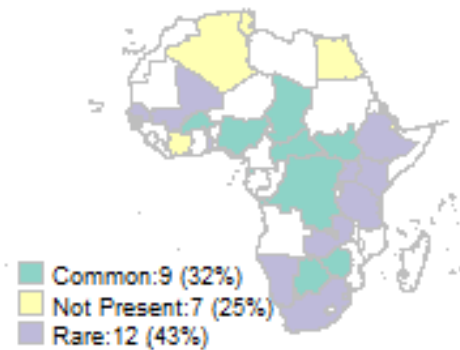
f) CBPP



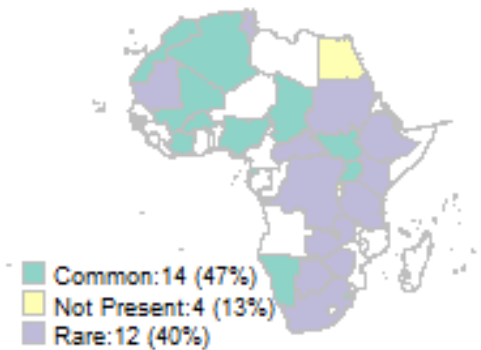
g) CCPP



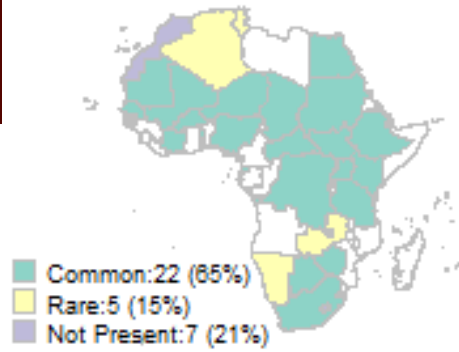
h) Dermatophilosis



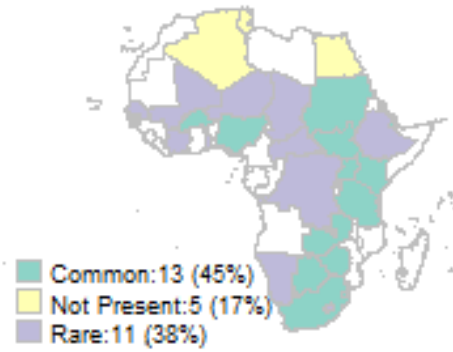
i) Echinococcosis



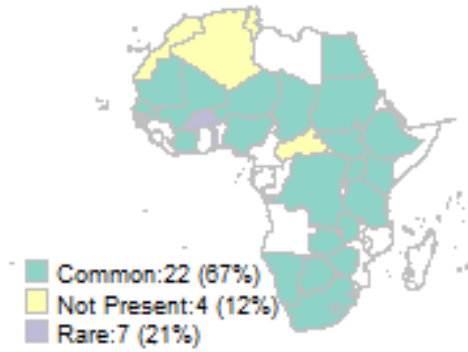
a) FMD



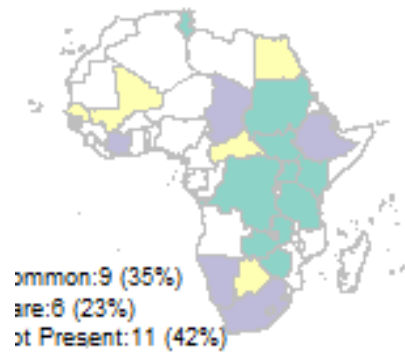
b) Heartwater



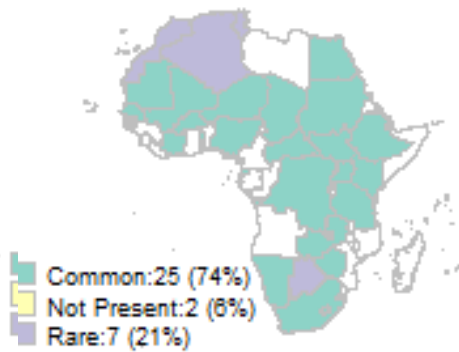
c) LSD



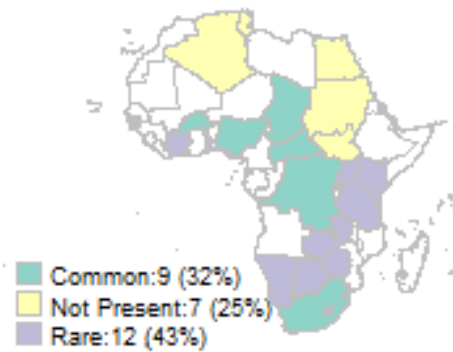
a) ECF



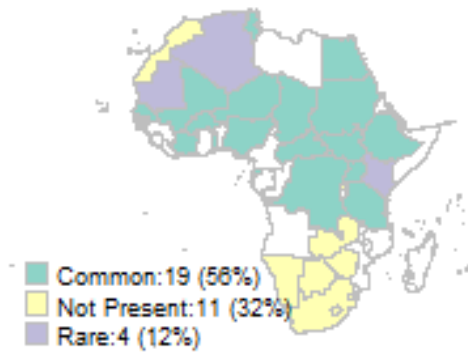
d) ND



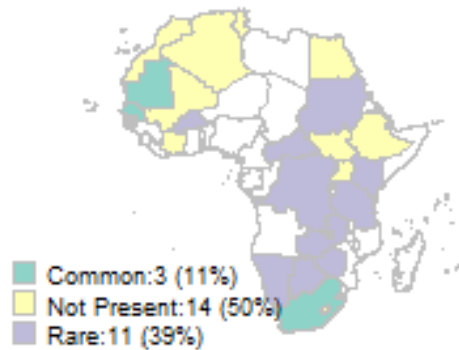
e) Porcine cysticercosis



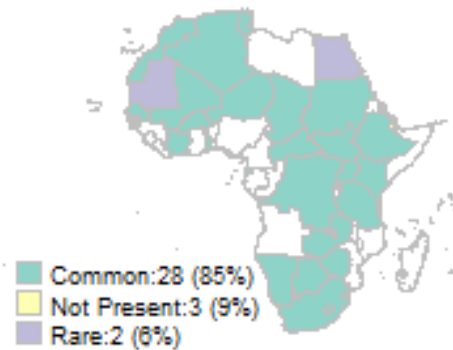
f) PPR



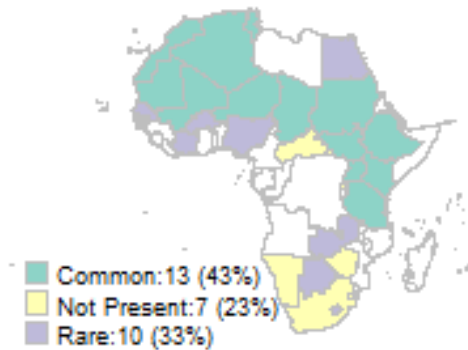
g) RVF



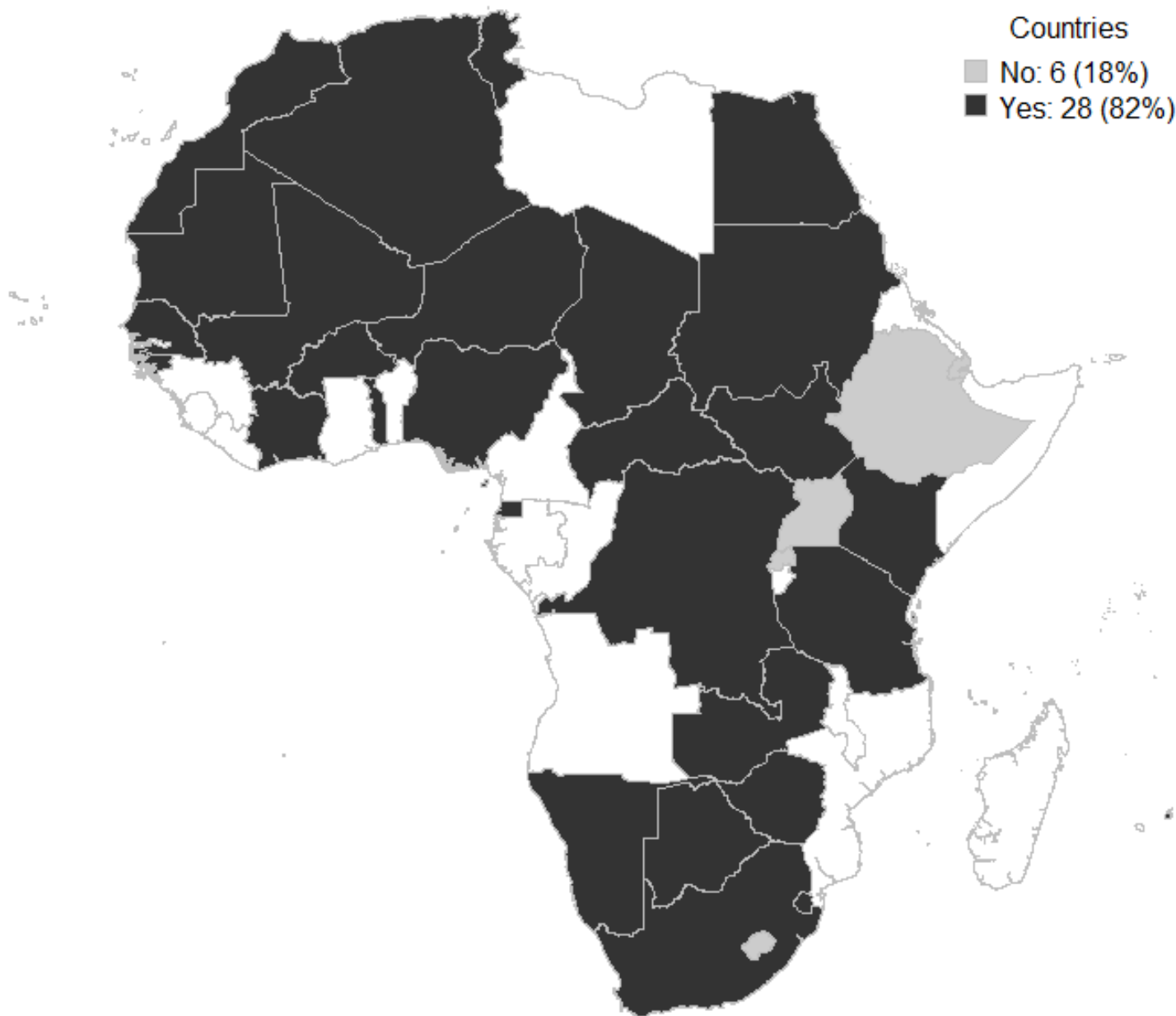
h) Rabies



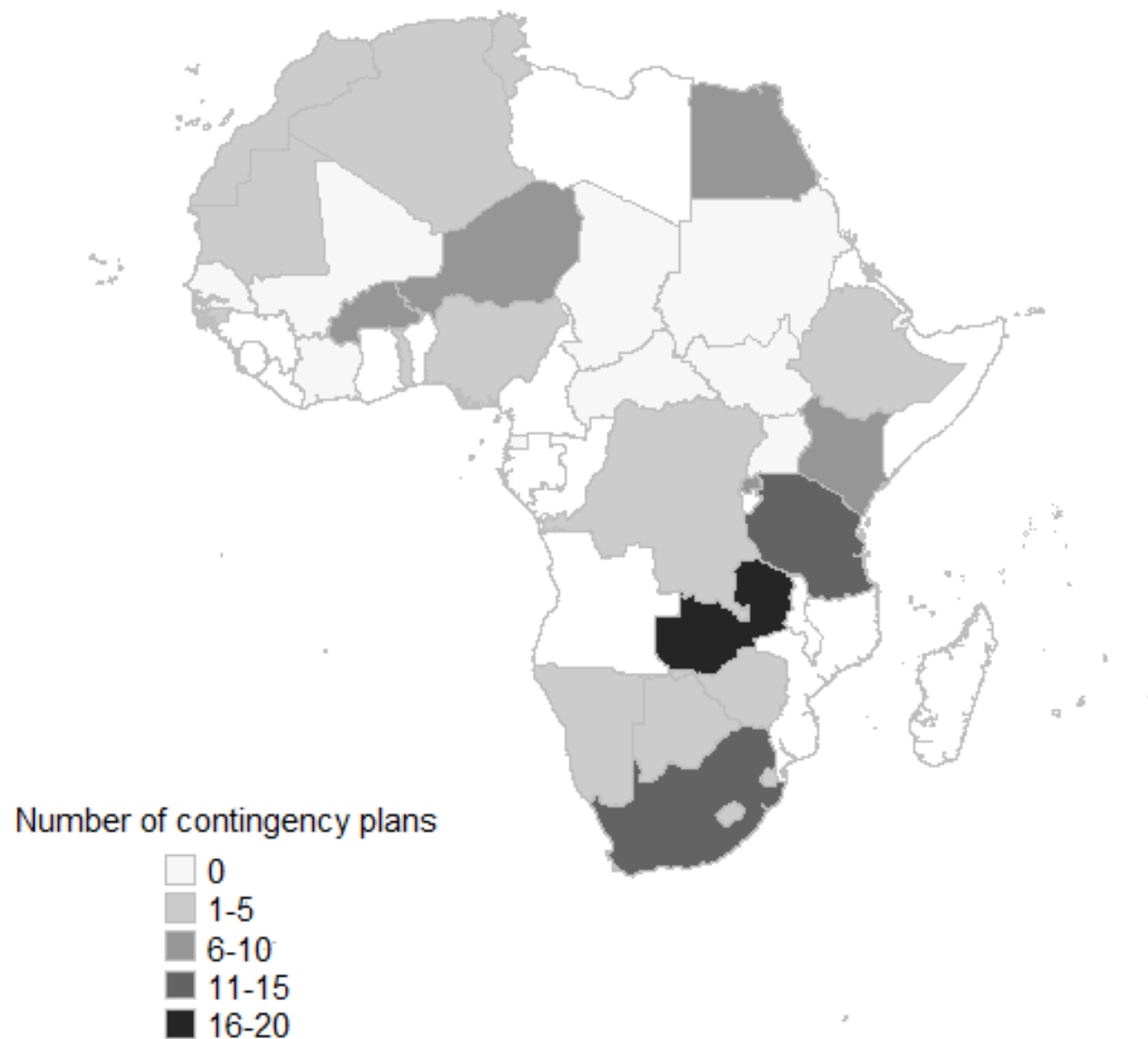
i) Sheep-Goat pox



Is there a national list of notifiable animal diseases?



Number of contingency plans - max 20



Africa: Priority list well aligned with important diseases

Priority List Diseases

FMD

PPR

ASF

CBPP

NCD

Anthrax

bTB

RVF

IMPORTANT DISEASES

RVF

FMD

PPR

bTB

Anthrax

Brucellosis

CBPP

SE Asia: Priority disease not aligned with important diseases

PRIORITY DISEASES

- 1: Avian influenza
- 3: Leptospirosis

IMPORTANT DISEASES

- 1: Vector-borne disease
- 2: Food borne disease

Author's personal copy

EcoHealth 8, 55–62, 2011
DOI: 10.1007/s10393-010-0357-3

ECOHEALTH

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Original Contribution

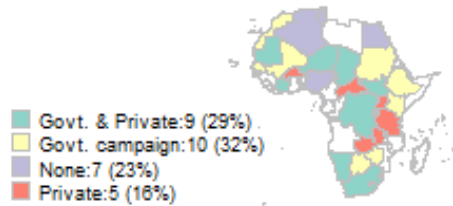
Zoonotic Emerging Infectious Disease in Selected Countries in Southeast Asia: Insights from Ecohealth

Delia Grace,¹ Jeffrey Gilbert,¹ M. Lucila Lapar,¹ Fred Unger,¹ Sonia Fèvre,² Hung Nguyen-Viet,^{3,4,5} and Esther Schelling³

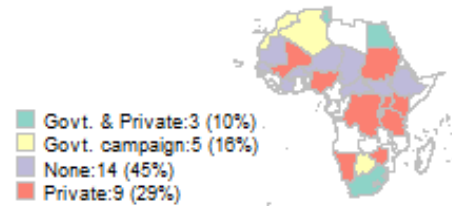
¹International Livestock Research Institute (ILRI), 30709, Nairobi, Kenya

Vaccination for priority diseases

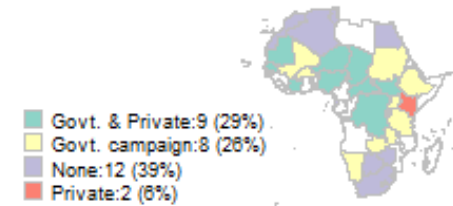
a) Anthrax



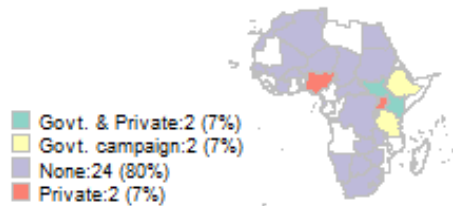
b) Brucellosis



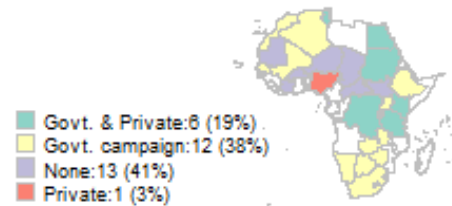
c) CBPP



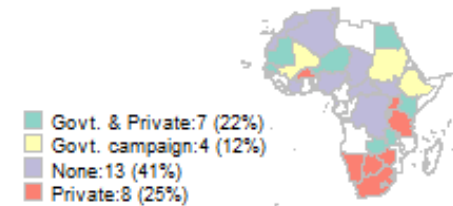
d) CCPP



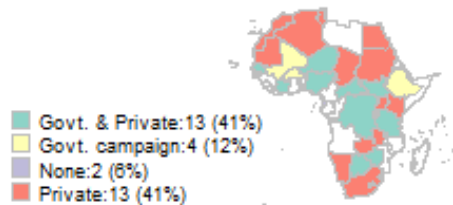
e) FMD



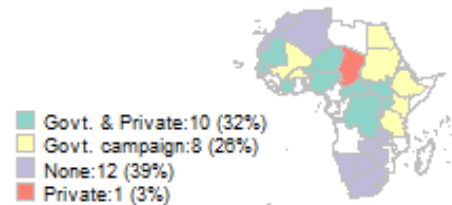
f) LSD



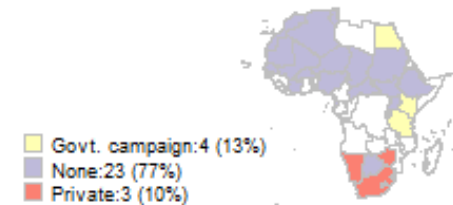
g) ND



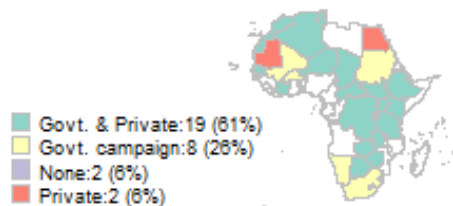
h) PPR



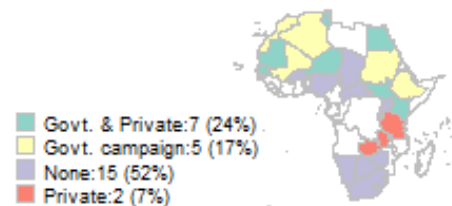
i) RVF



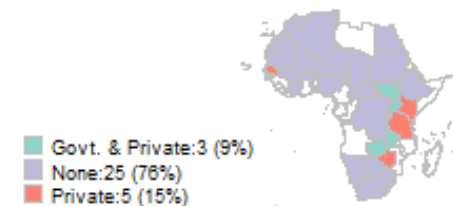
j) Rabies



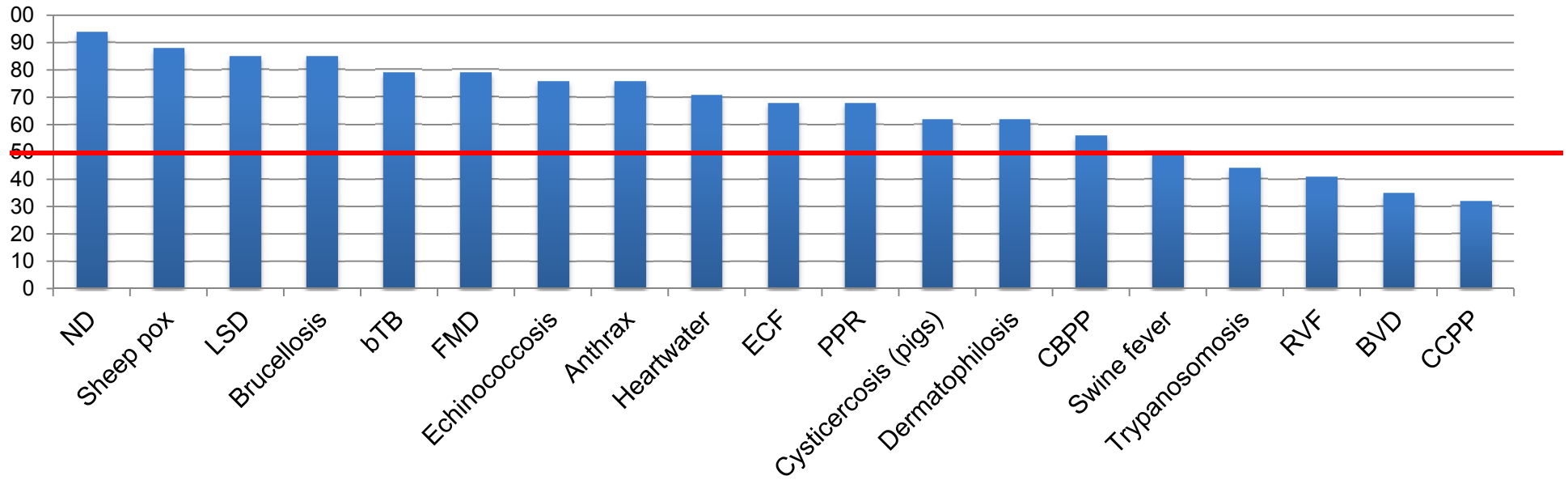
k) Sheep-Goat pox



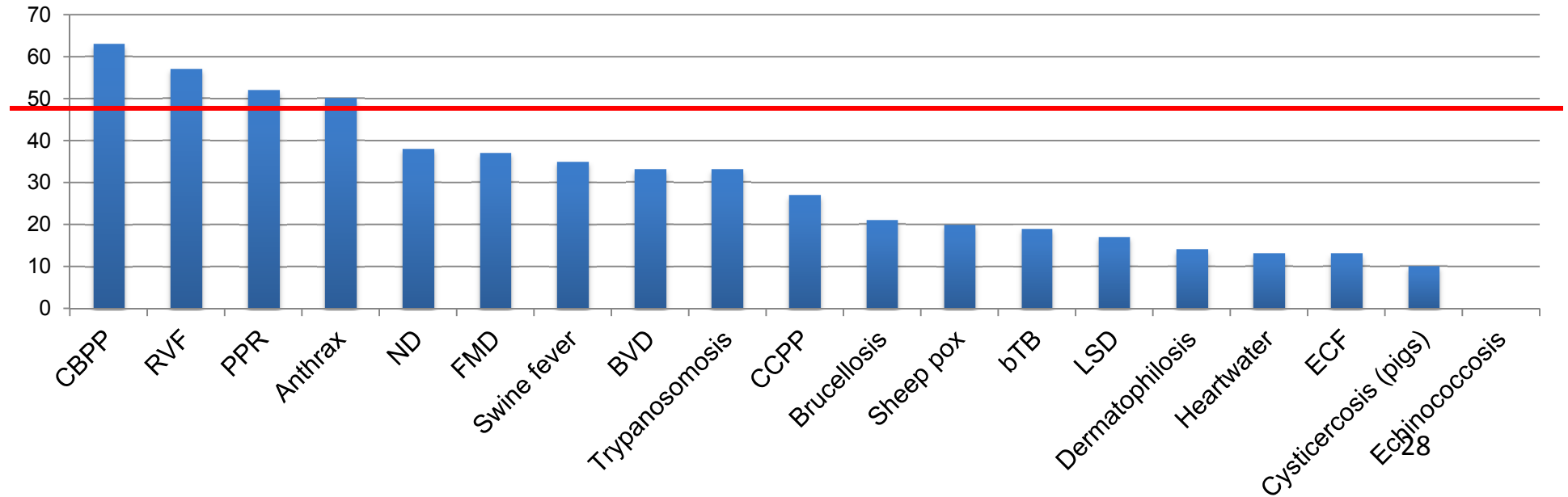
l) ECF



Countries with disease present %



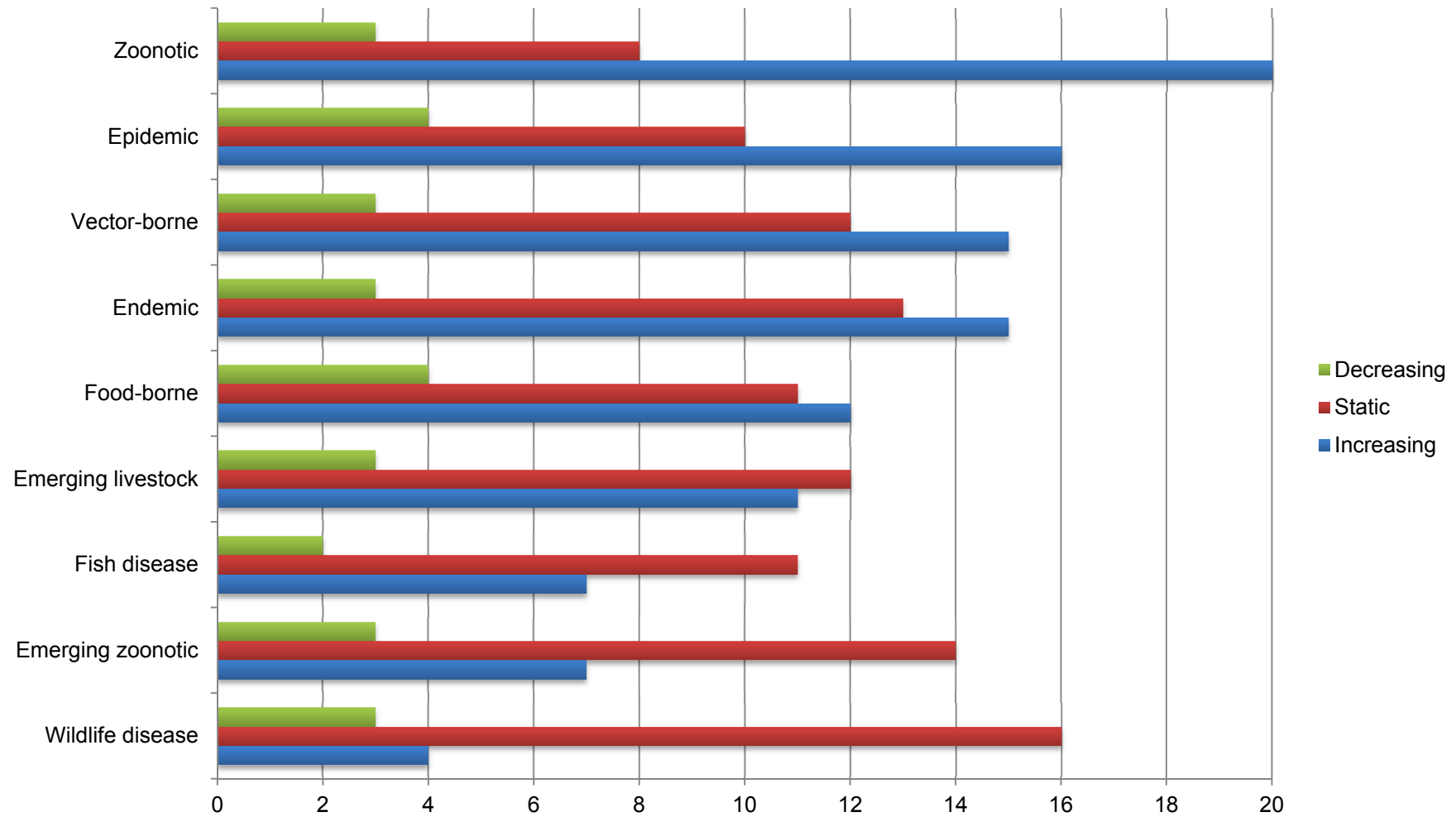
Good control (as % of countries with disease)



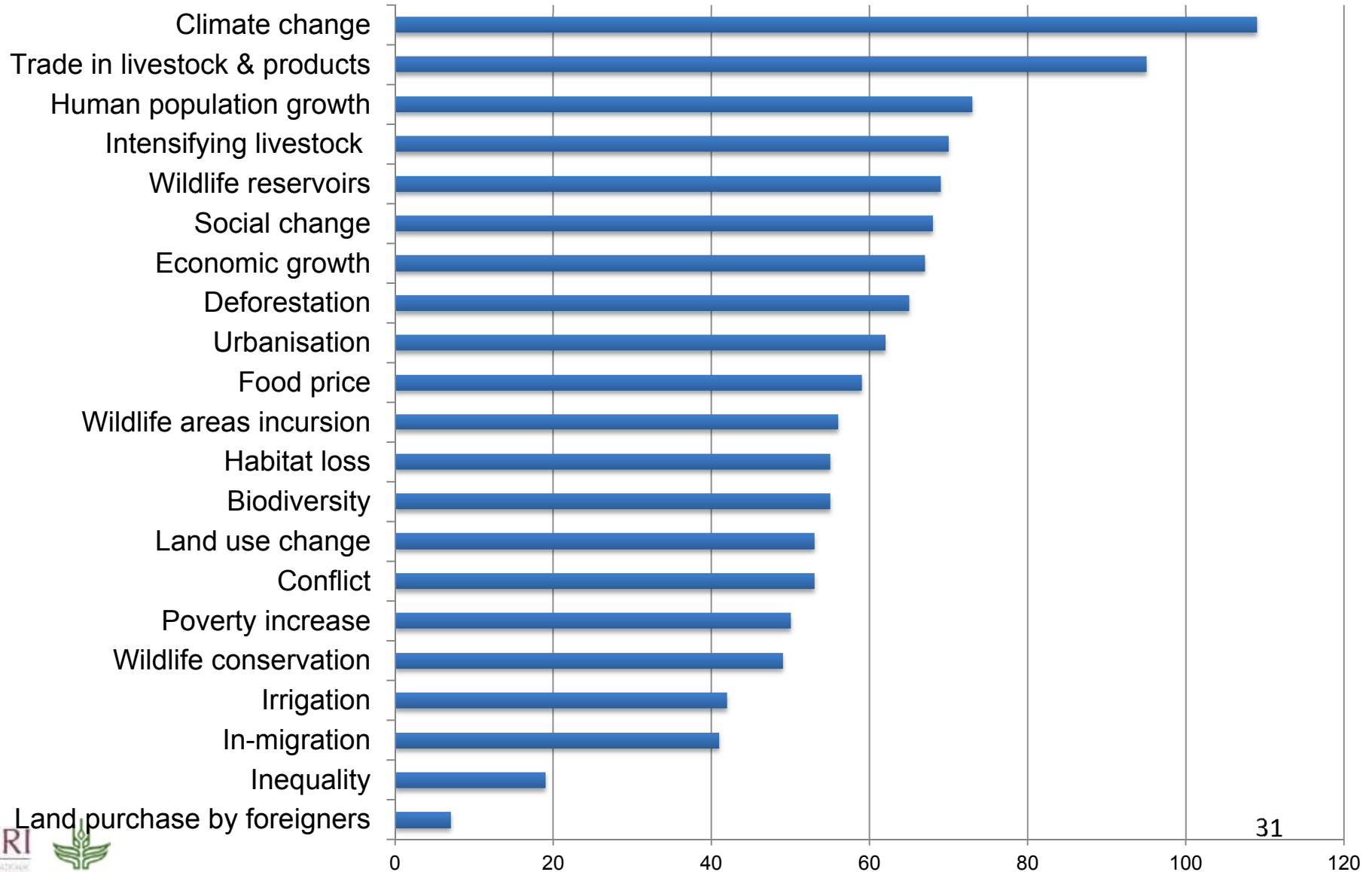


**4. Trends,
drivers and
change**

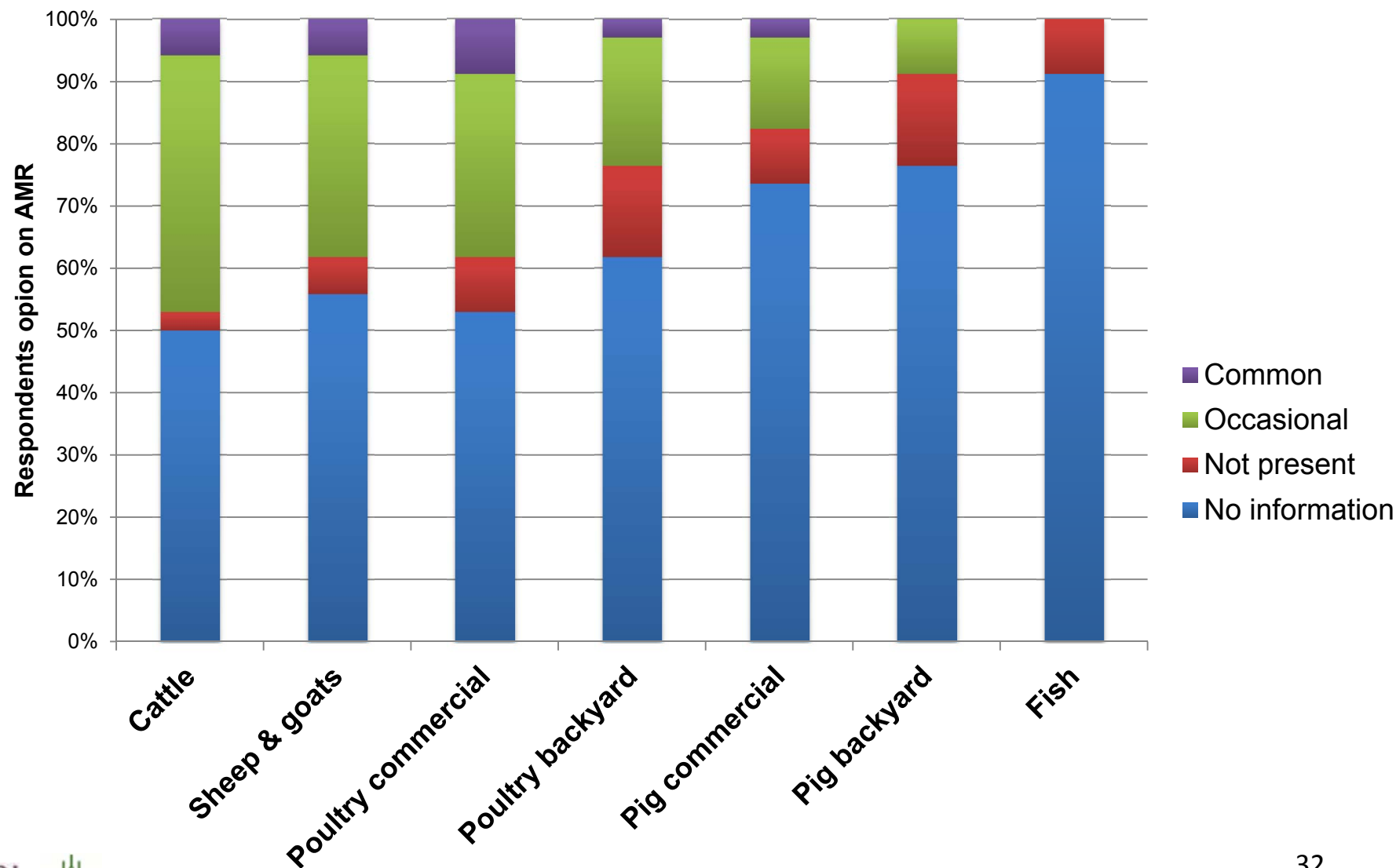
Most diseases are increasing or static



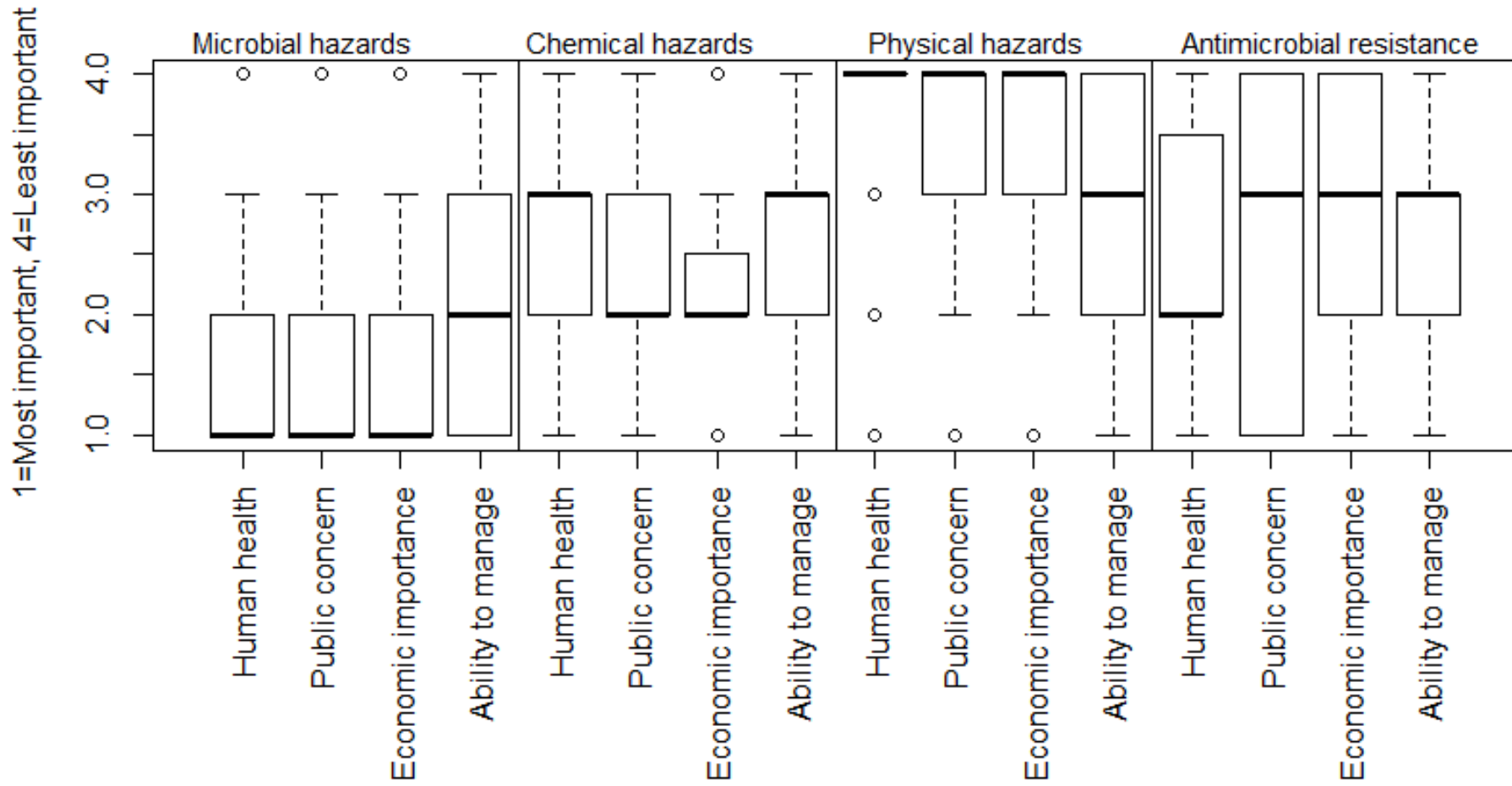
These trends have important drivers



Drug resistance an increasing threat






Foodborne disease a public concern



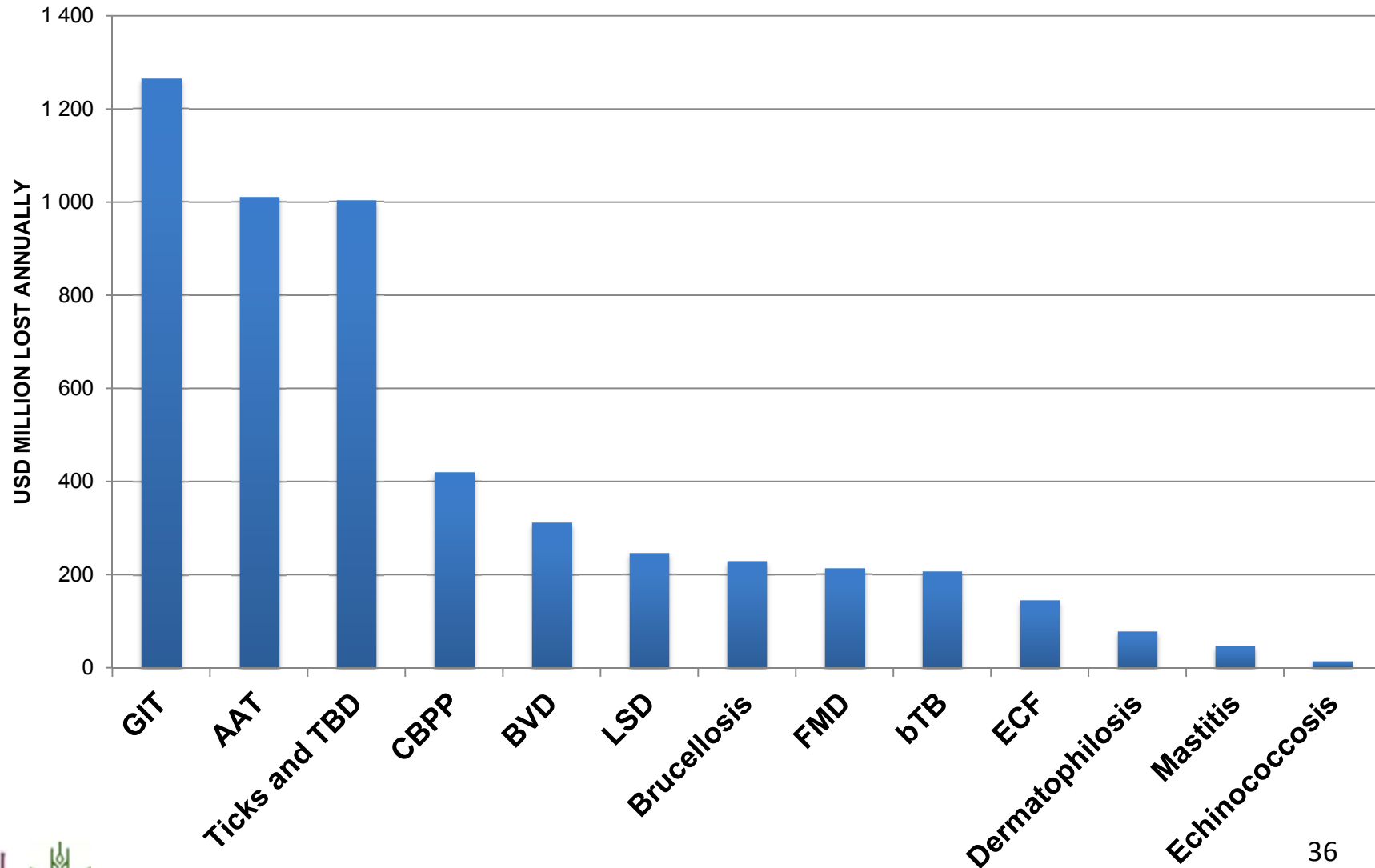


5. Costs

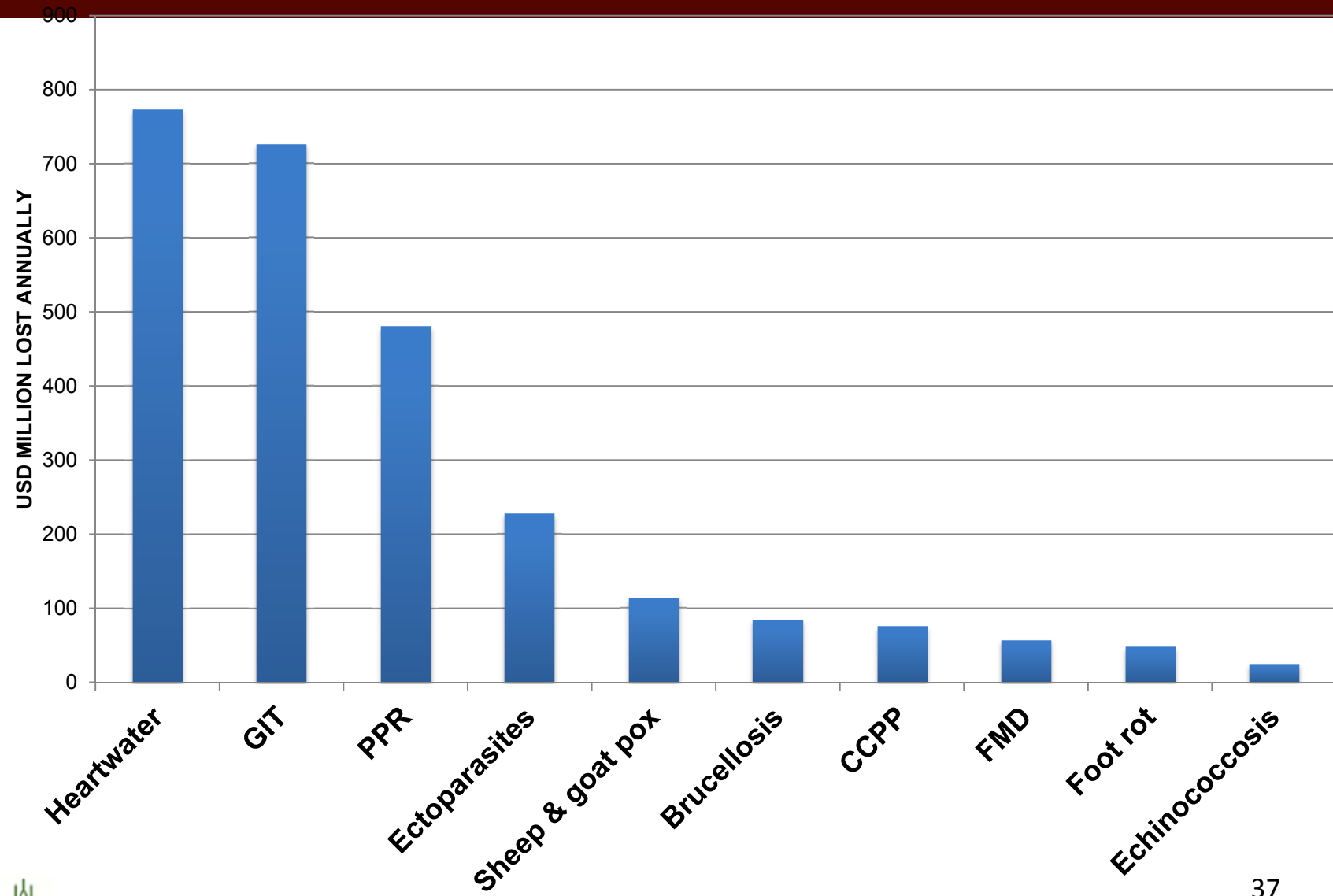
Multiple burdens of animal disease

	Direct impact	Treatment	Prevention	
	Burden of illness in people (DALY's)	Costs of treating disease in people (\$)	Costs of preventing disease in people	People
	Losses in agri-food chains (\$)	Costs of Responding to disease in food chains(\$)	Costs of preventing disease in food chain	Animals
	Losses due to ecosystem impacts (?)			Ecosystem

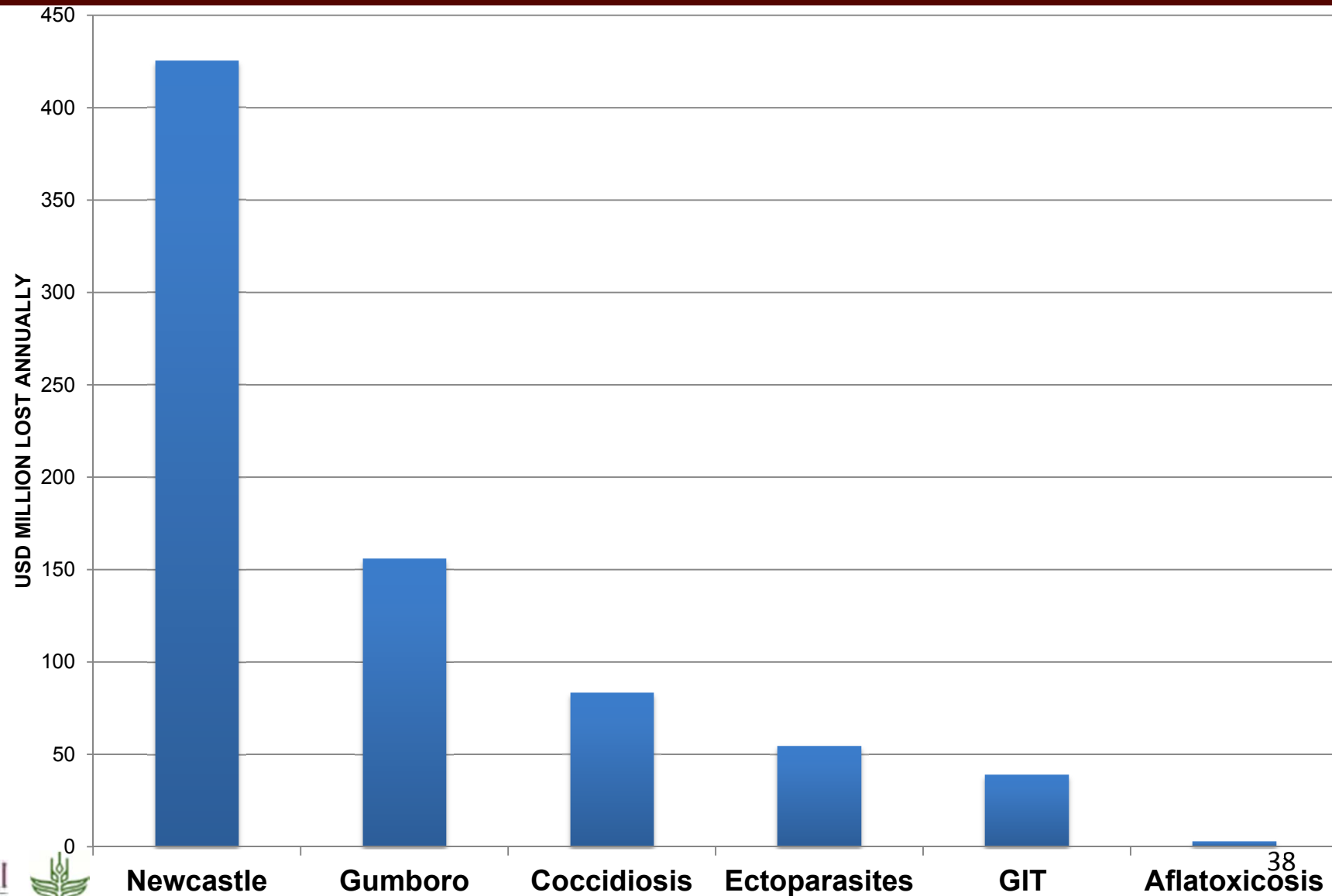
Losses from cattle disease



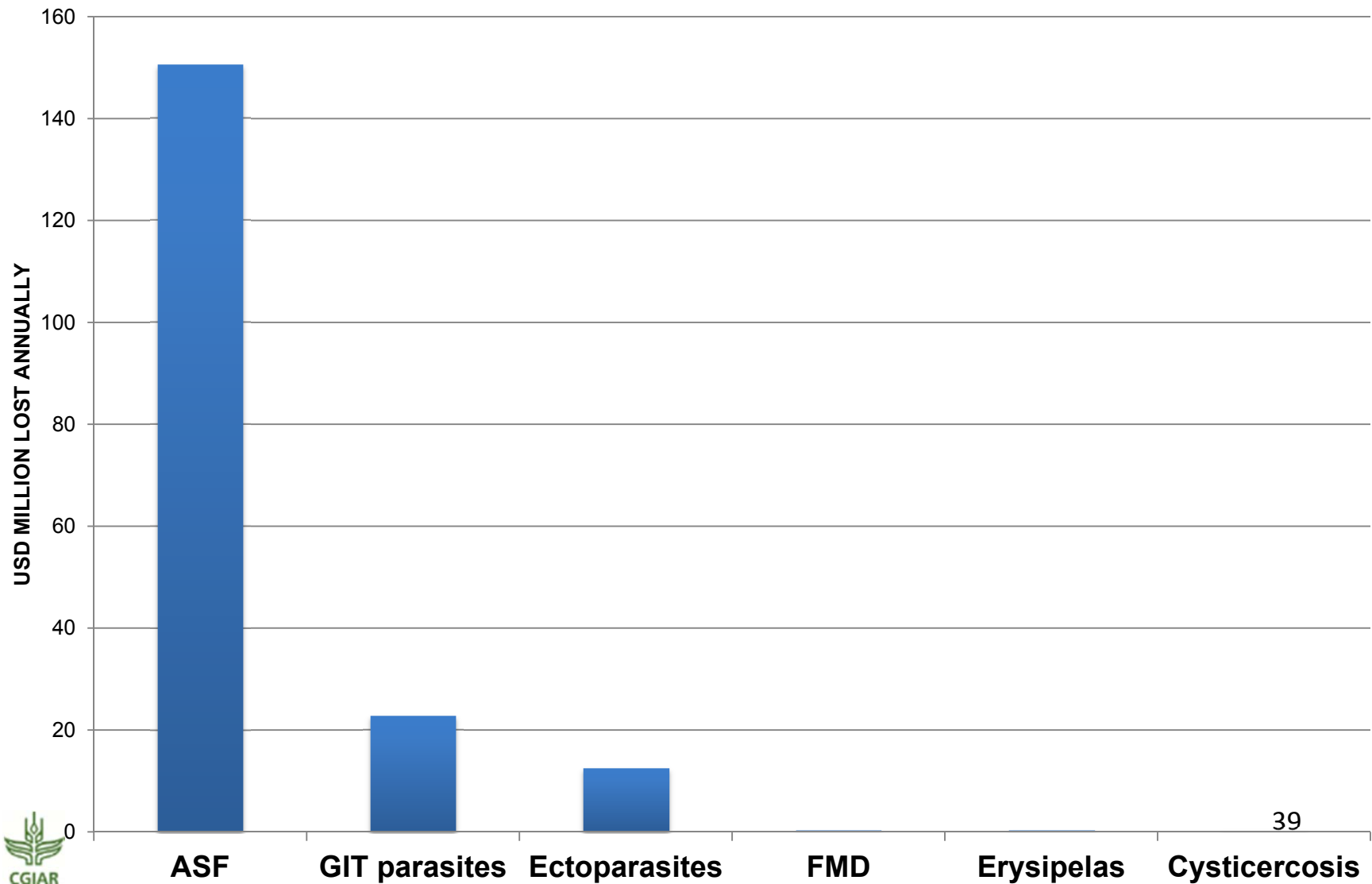
Losses from sheep & goat disease



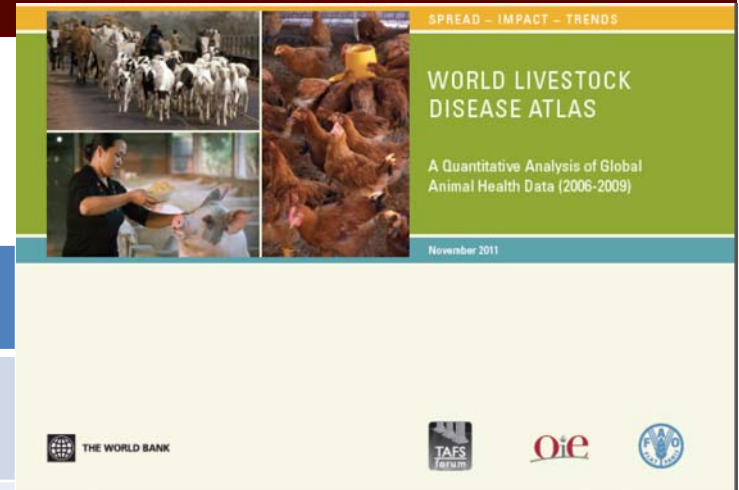
Losses from poultry disease



Losses from pig disease



How does this compare to other estimates?



	Million USD	Value sector
WLDA	\$39	0.03%
SVS estimate	\$9,000	6%
Literature	\$30,000	21%
BMGF	\$35,000	

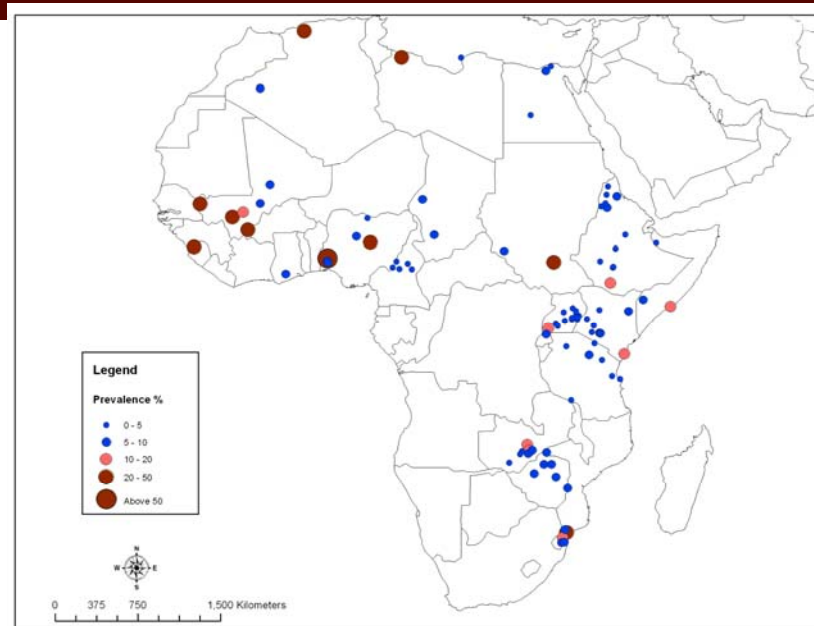
Only death or control

2/3 from death
1/3 production

	Million USD	Value sector
Australia	979	16%
UK	1,178	8%

Reporting common, non-pathognomonic disease a challenge

Bovine brucellosis according to 440 surveys



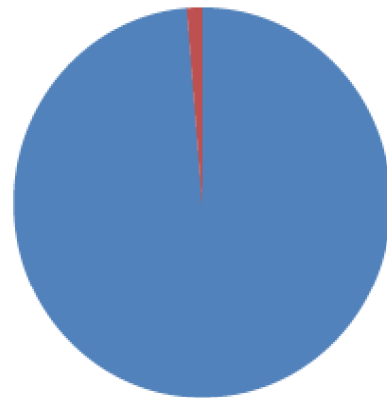
Bovine brucellosis reported 2008-2012

	Bovine brucellosis Predicted cases annual	Bovine brucellosis Cases reported 2010
East Africa	21,104,976	12
West Africa	30,646,060	37
South Africa	8,492,555	6305
North Africa	7,952,853	1073

Source: LRI report to DFID Mapping poverty and likely zoonosis hotspots

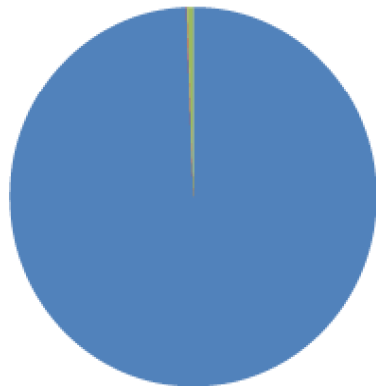
Diagnosis a challenge

Cases from Bura health centre



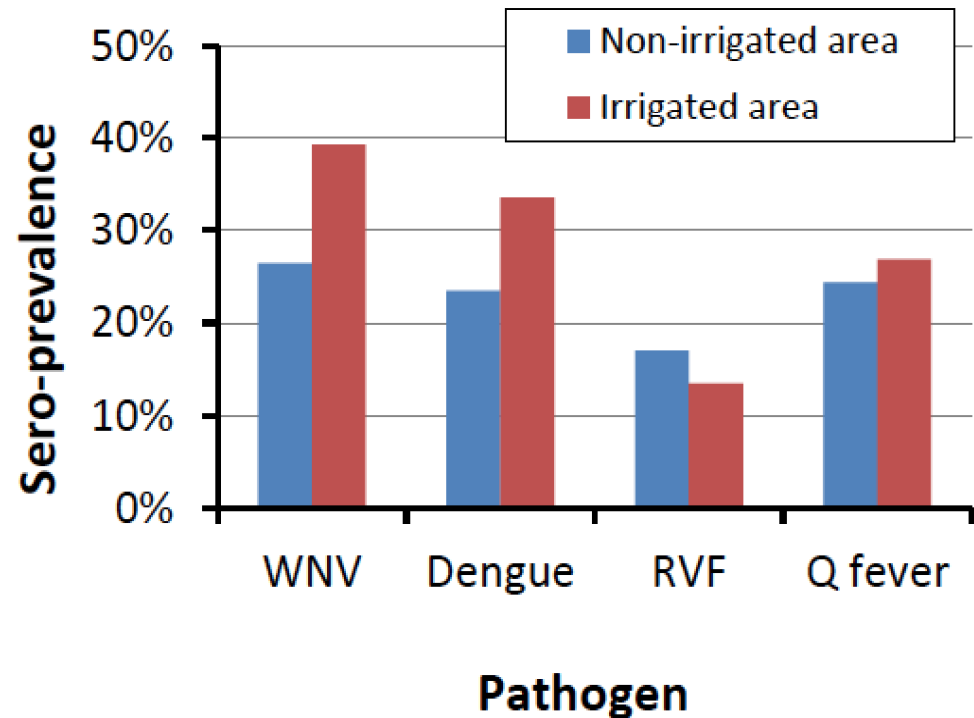
■ Malaria ■ Typhoid

Cases from Hola health centre



■ Malaria ■ Typhoid ■ Brucellosis

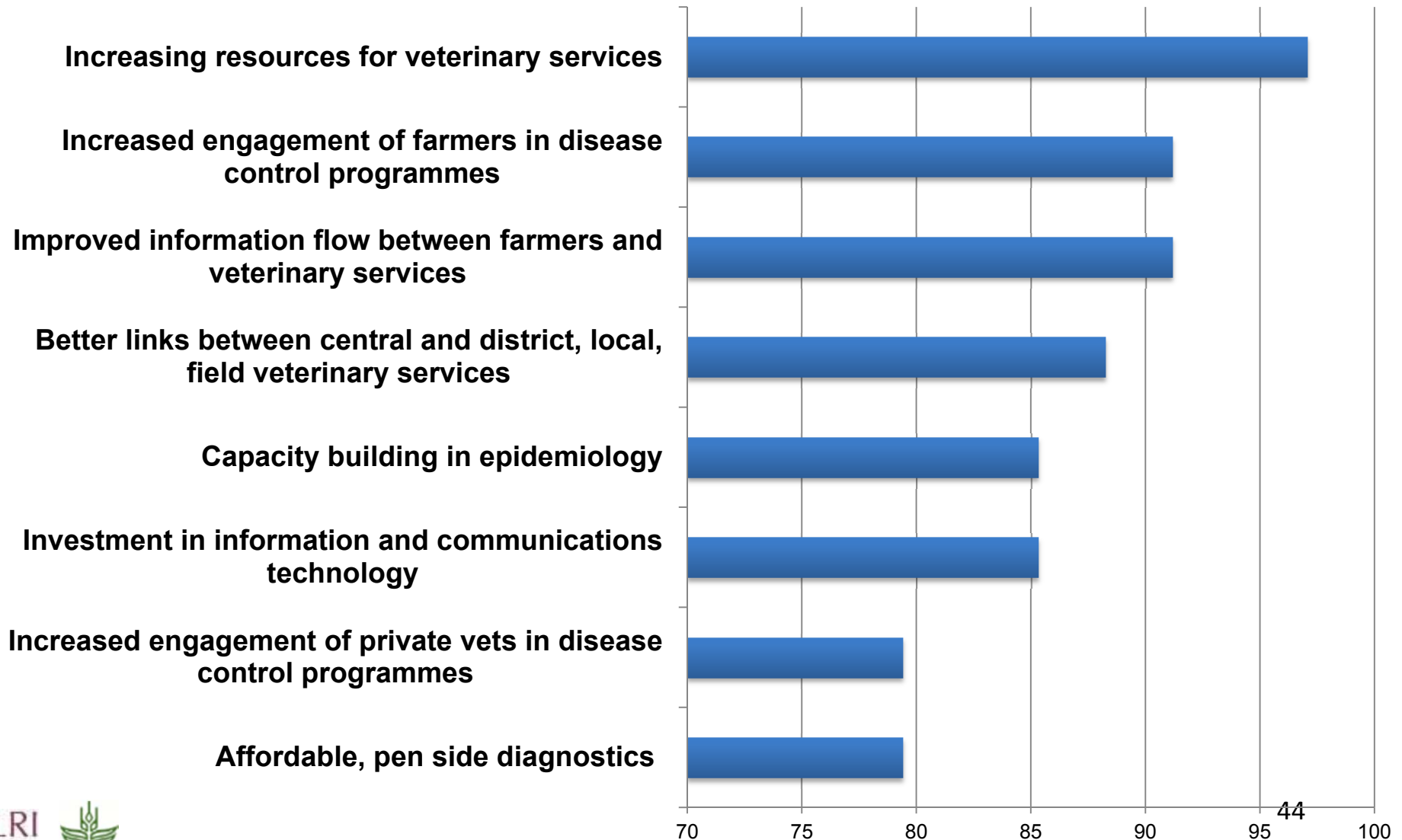
- A total of 1,323 samples collected in cross-sectional surveys, 481 already screened



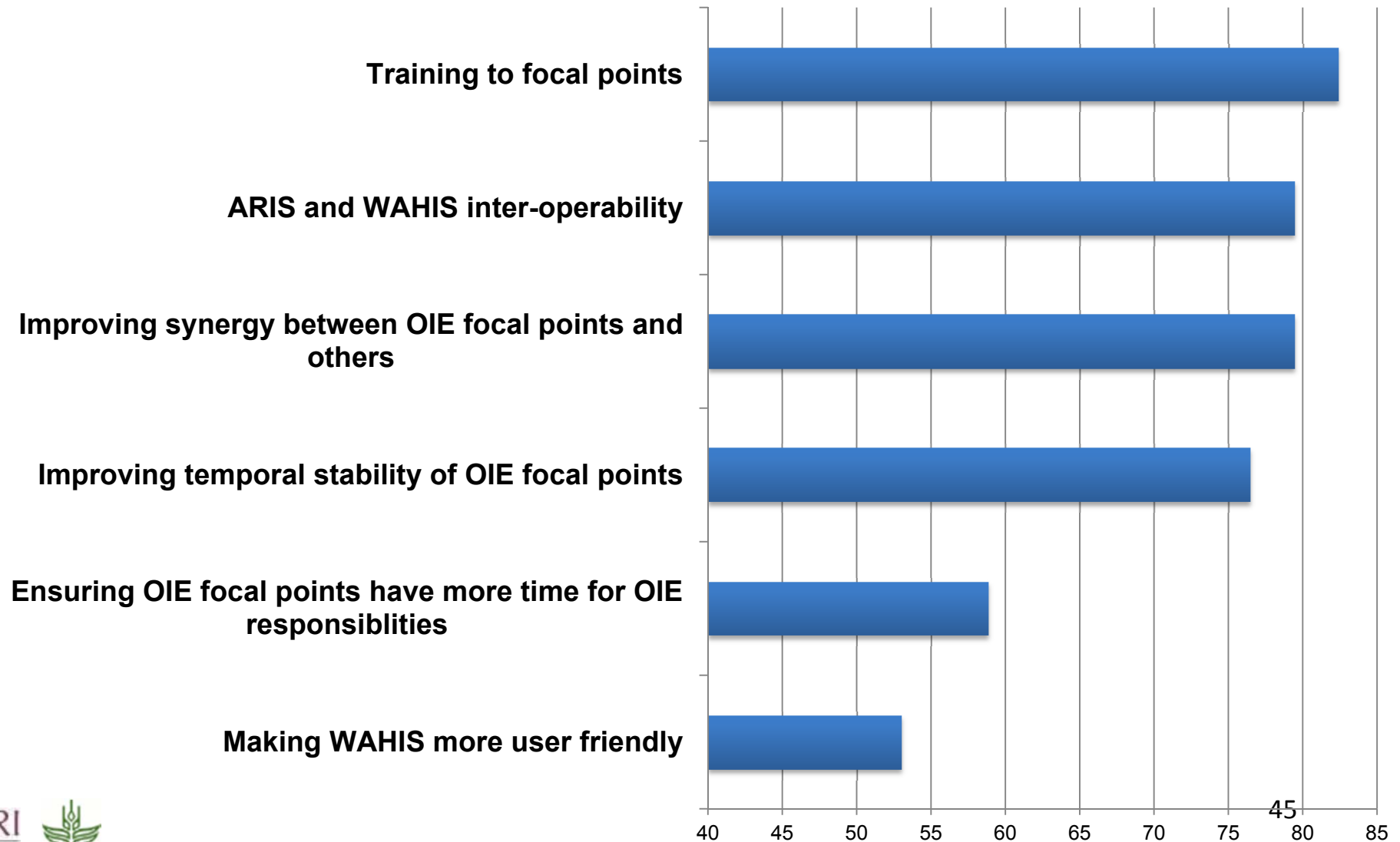
6. Opportunities



How to improve disease reporting



How OIE can help reduce disease impact



Take homes

- Unlimited wants in a world of limited resources
- Vital few and trivial many: Pareto principle
- The multiple burdens of animal disease
- What cannot be measured, cannot be managed
- Foreseen is forearmed

Ways Forward

- An Africa list of “neglected animal diseases”?
- More detailed disease impact studies?
- Sharing & harmonisation of contingency plans?
- Pilot novel ways to improve reporting?
- A One Health system for monitoring animal use of antimicrobials?
- Norms for informal food markets?

Conclusion

- Good progress has been made on disease control, priority lists, contingency plans, and vaccination
- SVS have broad-based, equitable, development-oriented approach to disease control
- ***But*** diseases have multiple, heavy burdens and trends are upwards
- ***While*** new and important threats emerge (climate sensitive disease, EIDs, FBD and AMR)
- ***And*** limited quantification of impacts may chill investment in disease control

Therefore improved reporting, more information, stronger engagement, and deeper co-operation, is needed to tackle neglected animal disease in Africa.

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