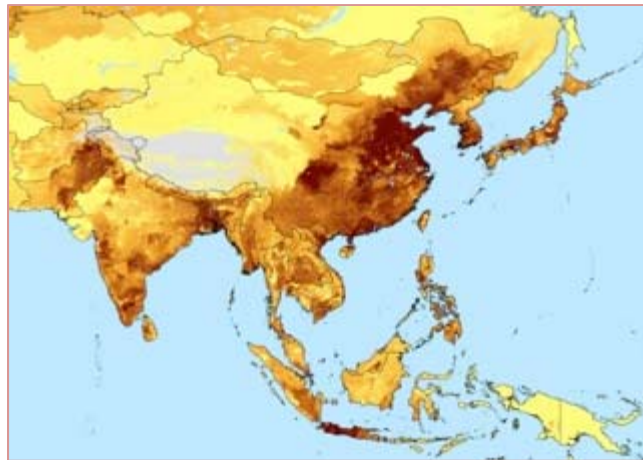


Antimicrobial use in African agriculture and its implications

Delia Grace, Johanna Lindahl, Hung Nguyen-Viet, Fred Unger and Tim Robinson
International Livestock Research Institute, Nairobi, Kenya

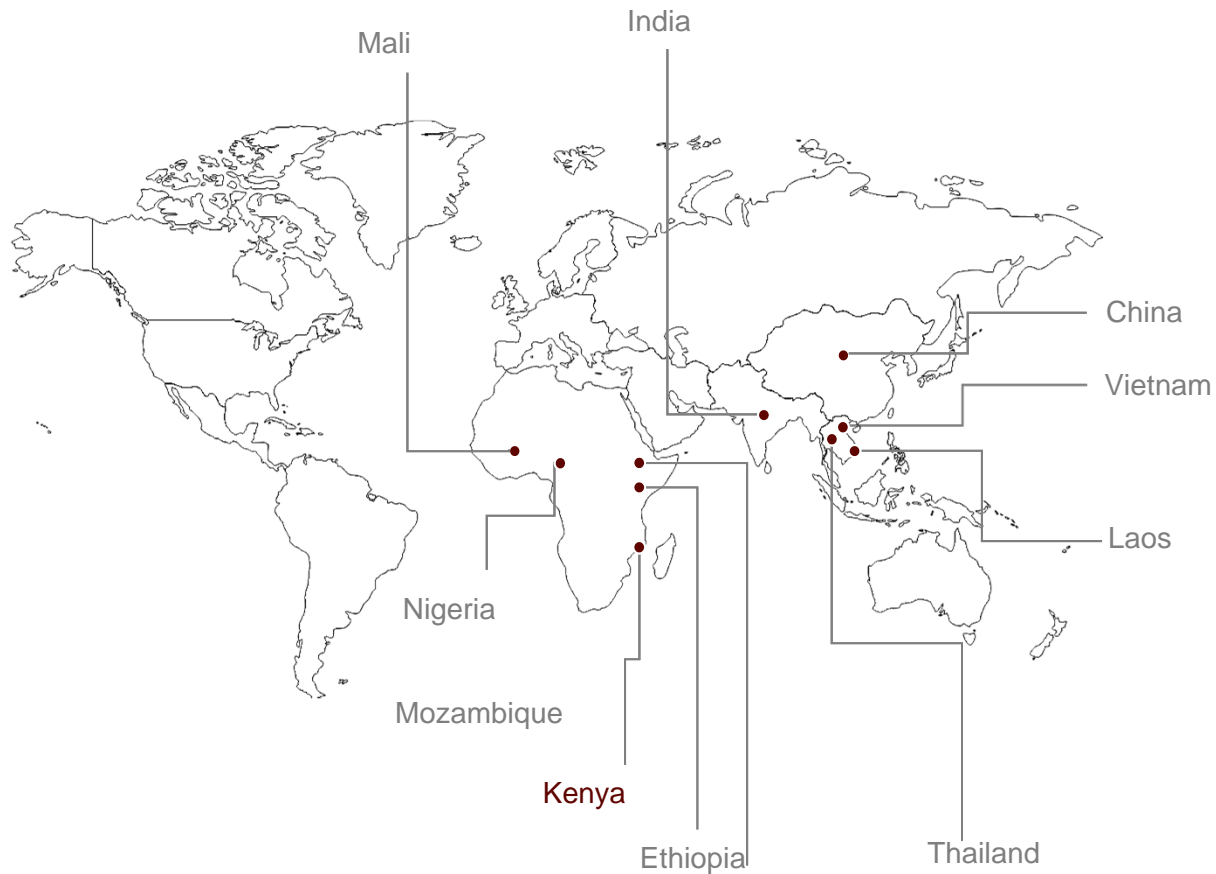
National information sharing workshop on antibiotic use, management and potential risk of antibiotic resistance
National Institute of Veterinary Research, Hanoi, Vietnam
20 September 2016



International Livestock Research Institute

• a member of the **CGIAR Consortium**, ILRI conducts livestock, food and environmental research

- ❖ to help alleviate poverty
- ❖ and improve food security, health & nutrition,
- ❖ while protecting the natural resource base.



International Livestock Research Institute

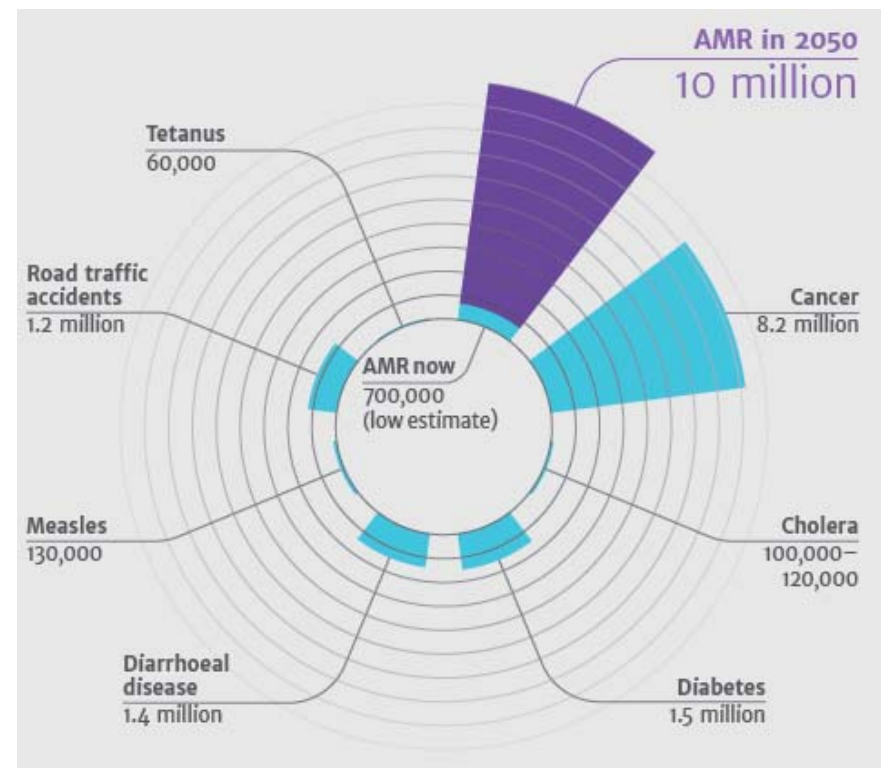
- **Founded in 1974**
- **Budget: nearly US\$90 million**
- **Staff: 700: 130 Senior scientists from 39 countries: >half from developing countries**
- **34% of internationally recruited staff are women --and 50% of the senior leadership team**
- **Main campuses in Kenya and Ethiopia, and offices in 17 other countries around the world (including Hanoi)**



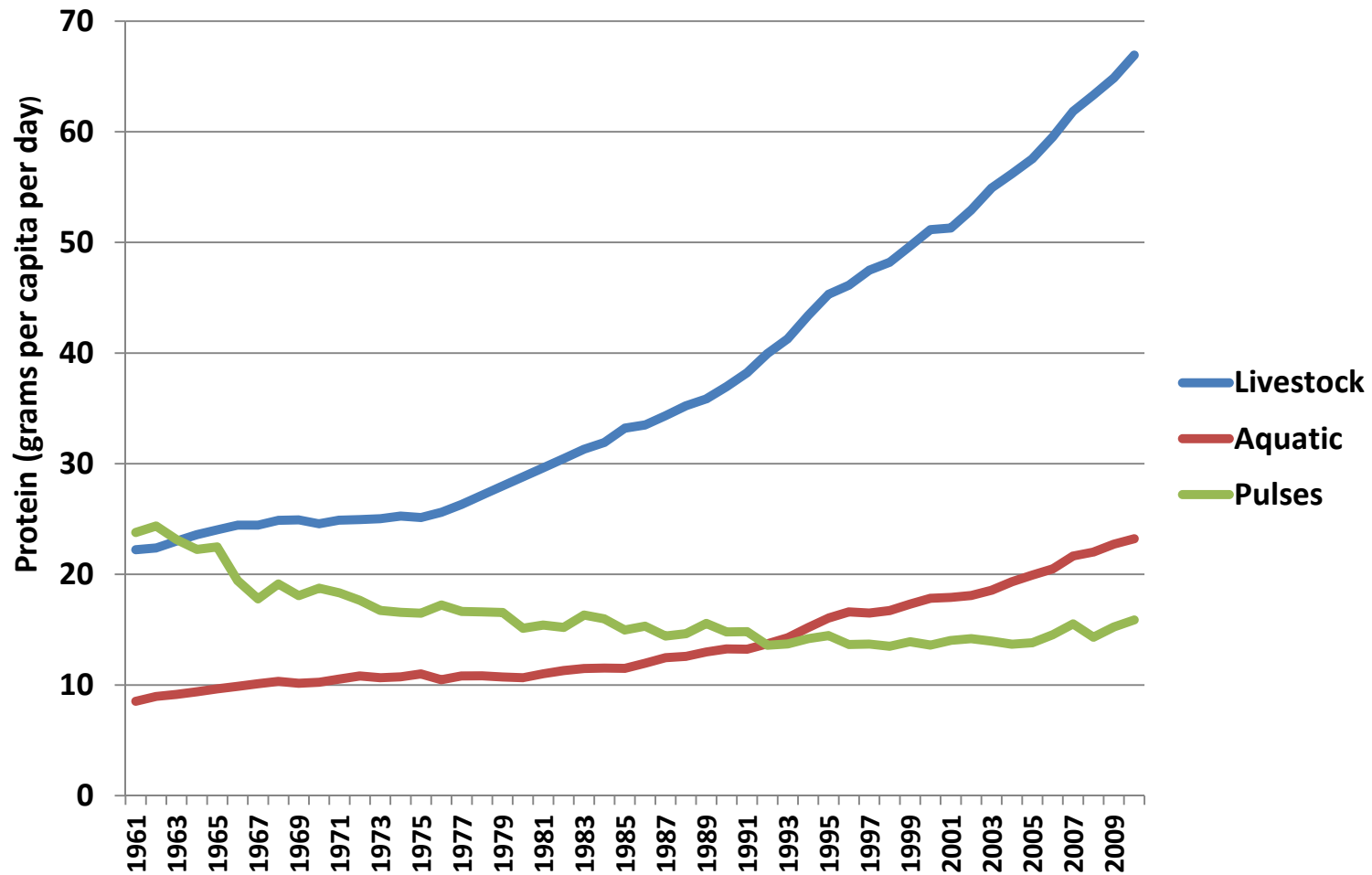
Antimicrobial resistance

The O'Neill Report (2014)

- AMR infections currently **claim at least 50,000 lives each year** across **Europe and the USA alone** with many hundreds of thousands more dying in other areas of the world
- In **15 European** countries more than **10% of bloodstream *Staphylococcus aureus*** infections are **caused** by methicillin-resistant strains (**MRSA**) closer to 50% in several of these

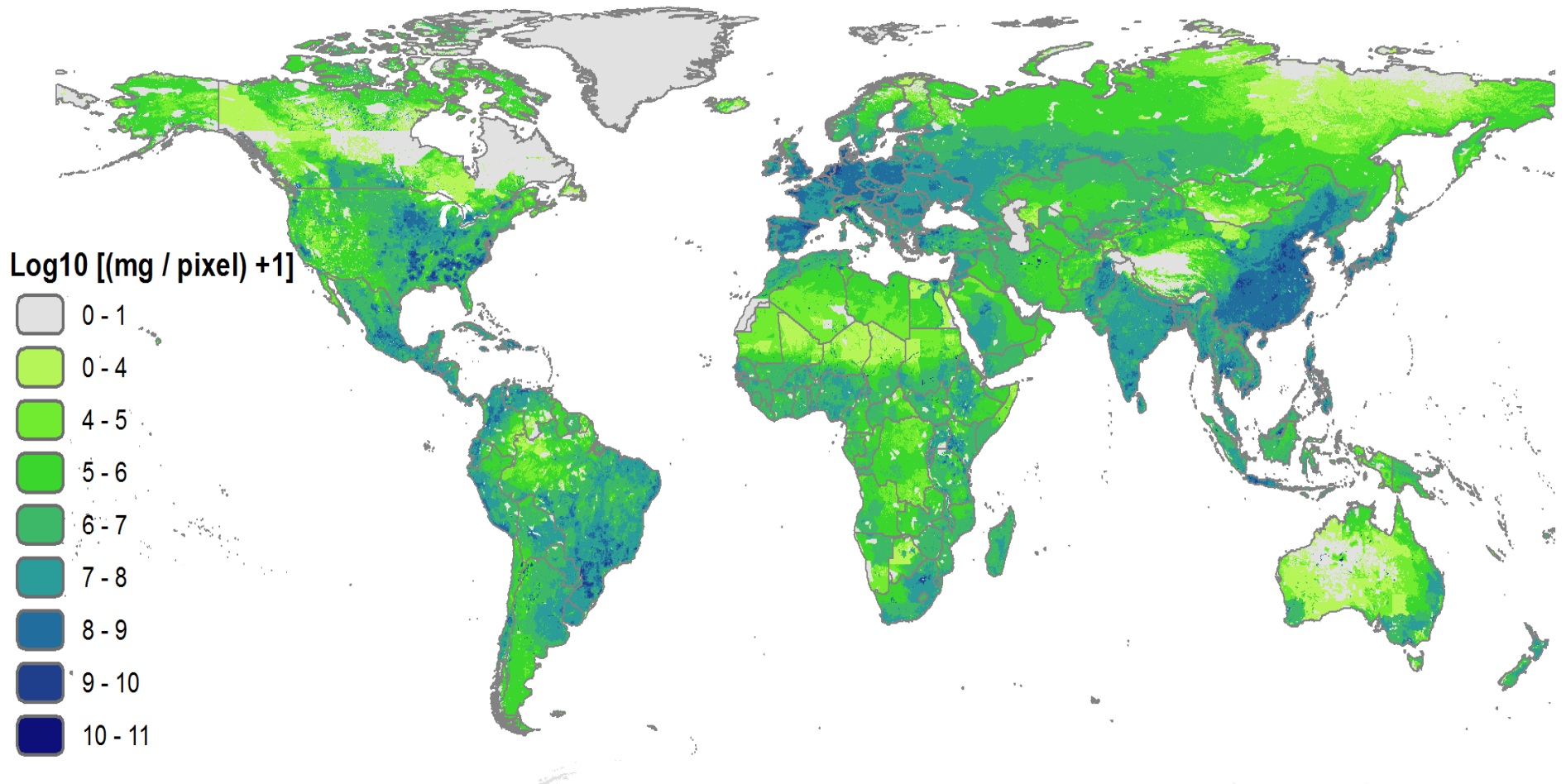


Livestock trending up, fish slower, pulses down



Antimicrobial resistance

Global antimicrobial consumption in livestock (mg per 10km pixel)



Source: Van Boeckel et al. (2015)

Antimicrobial use in livestock

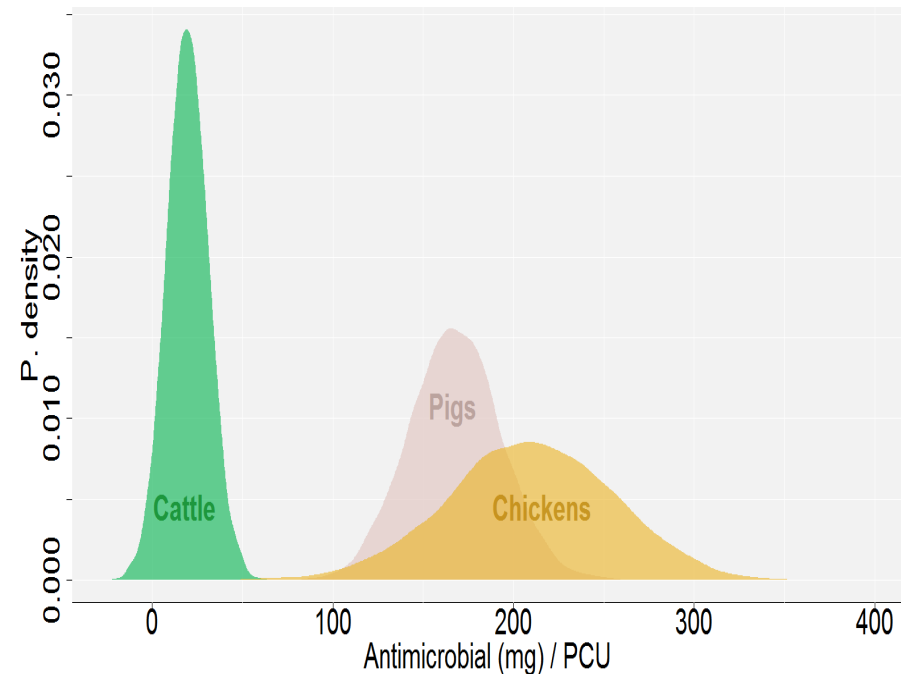
PNAS

Global trends in antimicrobial use in food animals

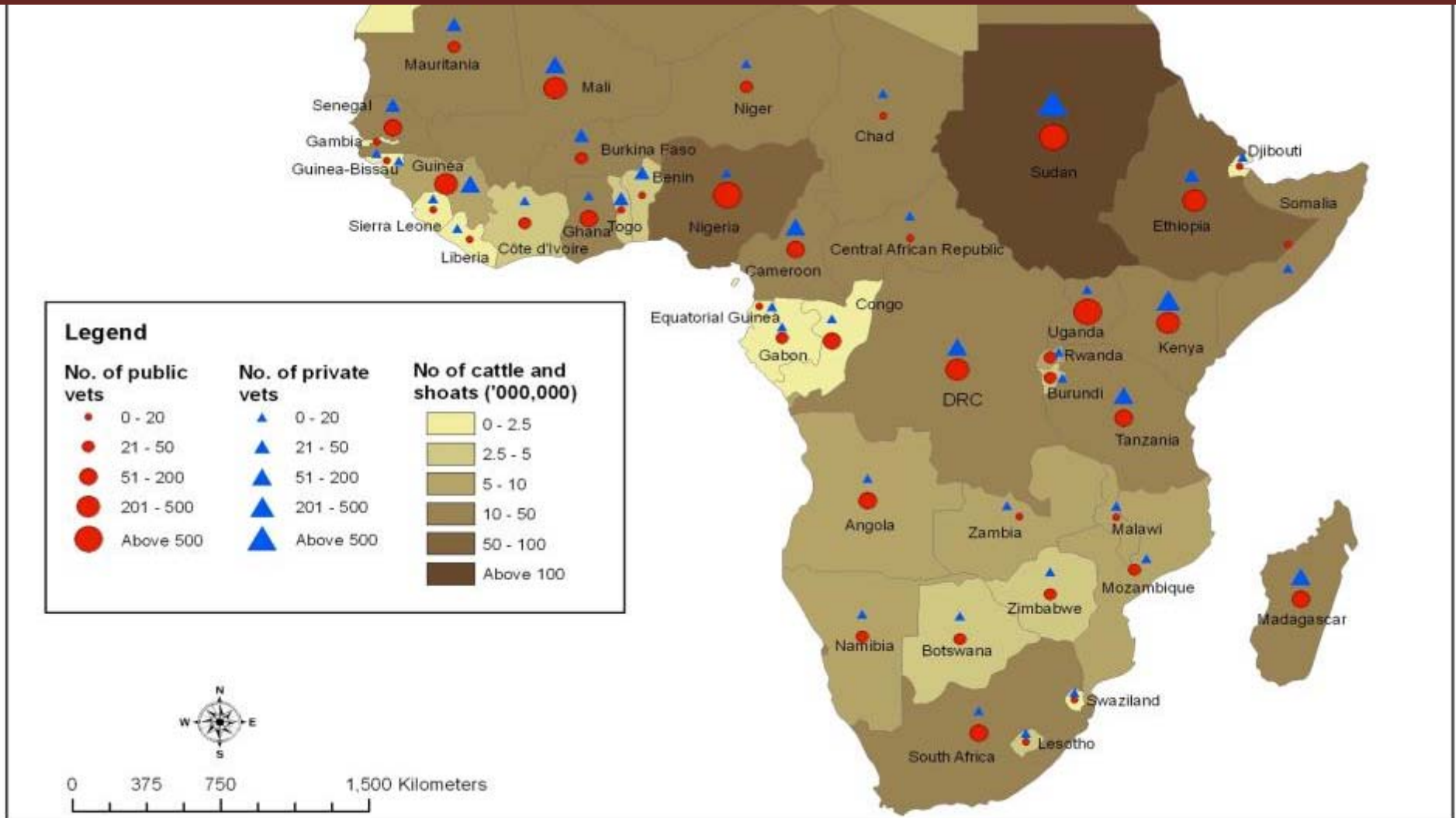
Thomas P. Van Boeckel^{a,1}, Charles Brower^b, Marius Gilbert^{c,d}, Bryan T. Grenfell^{a,e,f}, Simon A. Levin^{a,g,h,1}, Timothy P. Robinsonⁱ, Aude Teillant^{a,e}, and Ramanan Laxminarayan^{b,e,j,1}

Total consumption in the livestock sector in **2010** estimated at **63,151 tons**

- Global antimicrobial consumption **will rise by 67% by 2030**
- It will nearly **double in BRICS**
- Poultry > pork:
e.g. in **Asia**, chicken by 129%,
pork 124% by 2030



Africa: dozens of vets, tens of millions livestock



Situation: Uganda

THE
MONITOR

24 APRIL 2016

Uganda: Lira Farmers Share Arvs With Their Pigs

Tagged: [Agribusiness](#) • [AIDS](#) • [Business](#) • [East Africa](#) • [Health](#) • [Uganda](#)



By Bill Oketch

Lira — The pork you are enjoying for breakfast, lunch or dinner could take you to an early grave. Yes! The same life-prolonging drugs that are prescribed to treat HIV/Aids patients are now being given to pigs that supply the pork we eat every day.

Farmers say they have to feed ARVs to pigs to keep them healthy and meet the area's growing appetite for cheap pork. But public health advocates argue that the practice breeds antibiotic-resistant germs in animals that can cause deadly harm to the consumers.

RELATED TOPICS

[Agribusiness](#) »

- [Zimbabwe: Tobacco Farmers Operating Illegally](#)
- [Angola: 200 Tons of Bananas Exported to DRC](#)
- [Angola: Twenty Eight Thousand Tons of Maize Meal Produced in 2015](#)
- [Angola: Zaire - Nzeto Egg Production Meets Local Market Needs](#)

Situation: Burkina Faso



But access to antimicrobials also important to improve animal health

- Africa: every year **one in two young animals** and one in **five adult animals die**, mostly of preventable disease
- **Better access to antimicrobials** and other veterinary drugs **and services could reduce losses**



Annual mortality of African livestock

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

*Otte & Chilonda,
IAEA*

Current drivers and future directions of global livestock disease dynamics

Brian D. Perry^{a,1}, Delia Grace^b, and Keith Sones^c

^aNuffield Department of Clinical Medicine, University of Oxford, PO Box 437, Gilgil 20116, Kenya; ^bMarket Opportunities Theme, International Livestock Research Institute (ILRI), Nairobi 00100, Kenya; and ^cKeith Sones Associates, Nairobi 00502, Kenya

Edited by Philip Thornton, Consultative Group on International Agricultural Research, Edinburgh, United Kingdom, and accepted by the Editorial Board March 25, 2011 (received for review September 2, 2010)

We review the global dynamics of livestock disease over the last two decades. Our imperfect ability to detect and report disease hinders assessment of trends, but we suggest that, although endemic diseases continue their historic decline in wealthy countries, poor countries experience static or deteriorating animal health and epidemic diseases show both regression and expansion. At a mesolevel, disease is changing in terms of space and host, which is illustrated by bluetongue, Lyme disease, and West Nile virus, and it is also emerging, as illustrated by highly pathogenic avian influenza and others. Major proximate drivers of change in disease dynamics include ecosystem change, ecosystem incursion, and movements of people and animals; underlying these are demographic change and an increasing demand for livestock

Worried
well

Hot spots

Cold spots

AM use in LMIC and its impacts

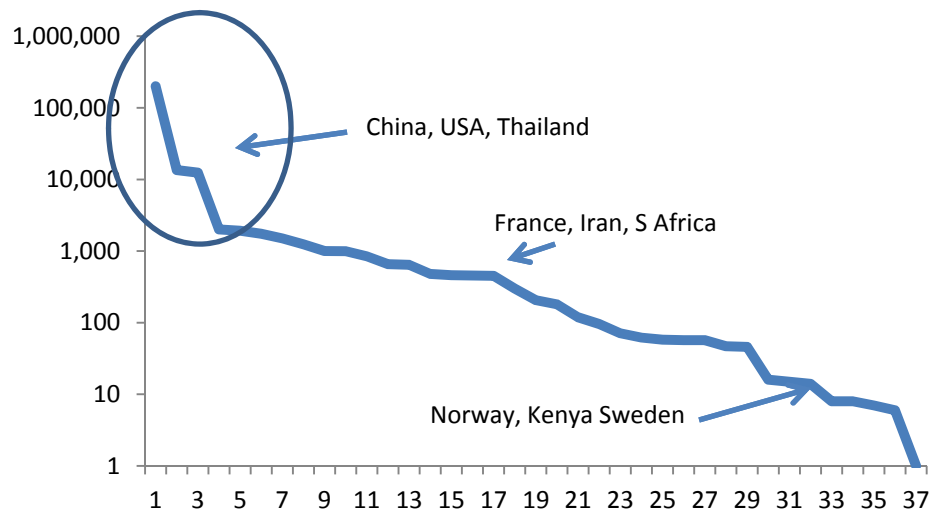
- **Little information** on AM use
- **Some** countries **massively over-use**
- Large problem of antimicrobial under-use
- **Almost no evidence on impacts** on human or animal disease



Global antimicrobial use in food animals

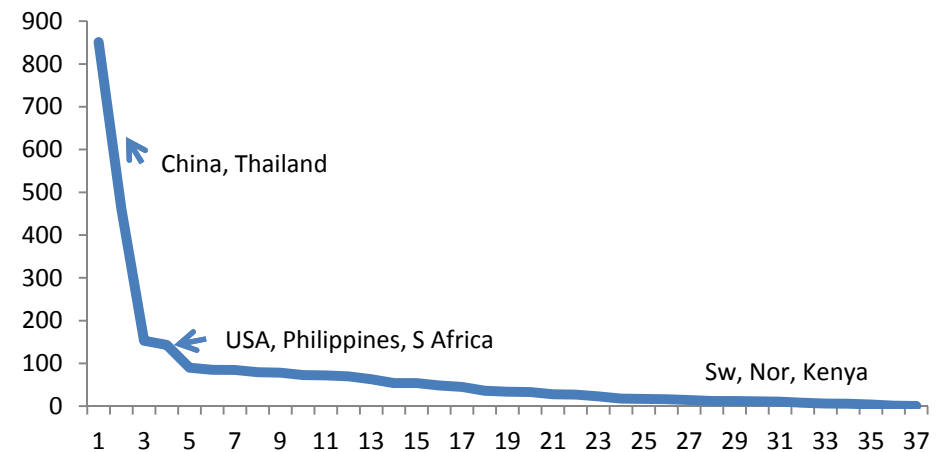
- Total consumption in the livestock sector in 2000s estimated at 400,000 tonnes (vs. 64,000 tonnes from models)

Antibiotics (tn)



Source: Grace, . 2015

Antibiotic grams/VLU



Kampala pork butcheries: *Salmonella*

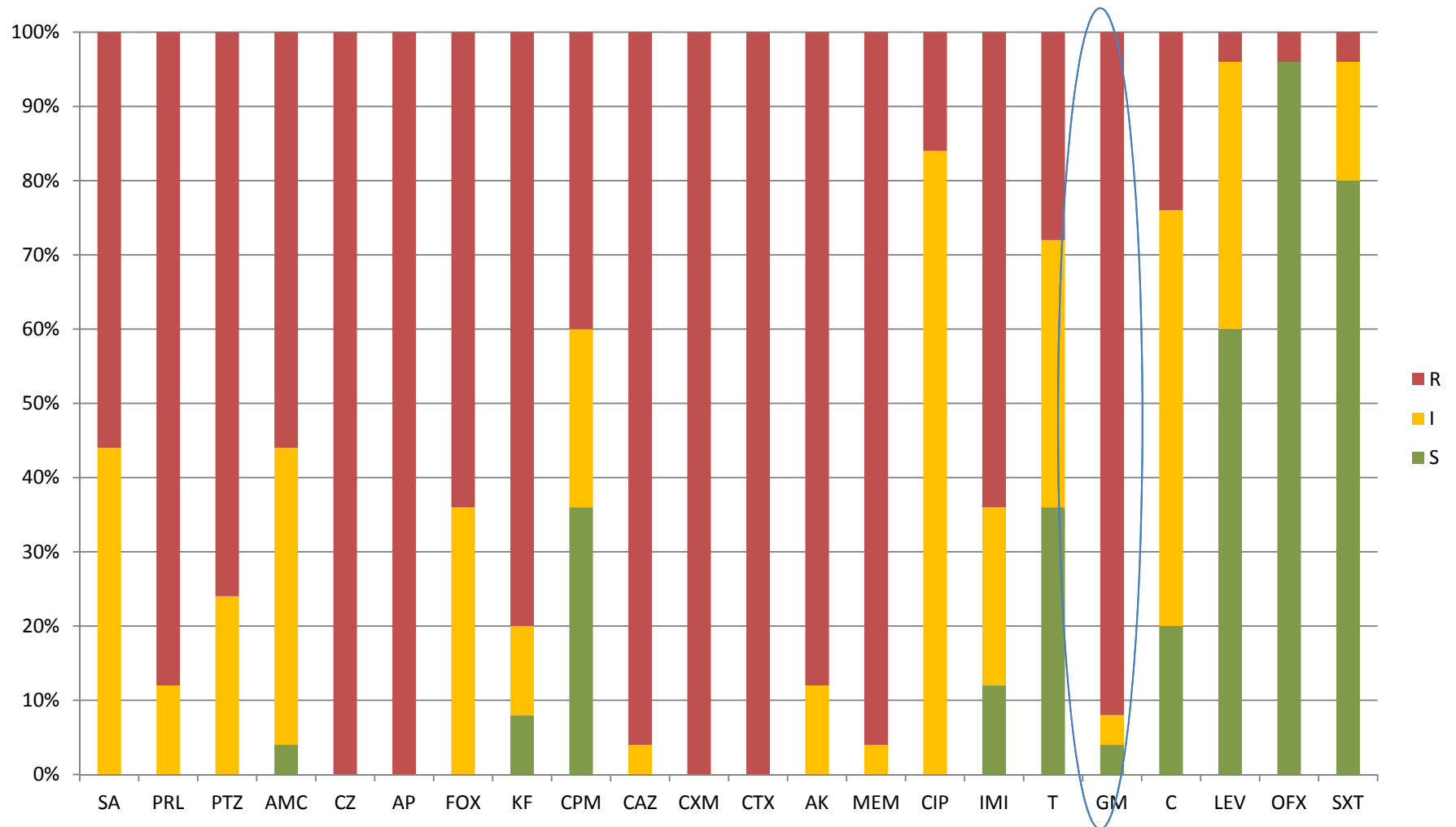


All isolates were confirmed *Salmonella* at FUB using species primer Heilmann & Ndoboli, 2015.



Drug sensitivity tests

- So far 25 of the 60 isolates tested (agar diffusion test)



Acknowledgements

- The research featured in this presentation was funded by DFID, ACIAR, the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) and others

