

Swiss TPH



Swiss Tropical and Public Health Institute  
Schweizerisches Tropen- und Public Health-Institut  
Institut Tropical et de Santé Publique Suisse

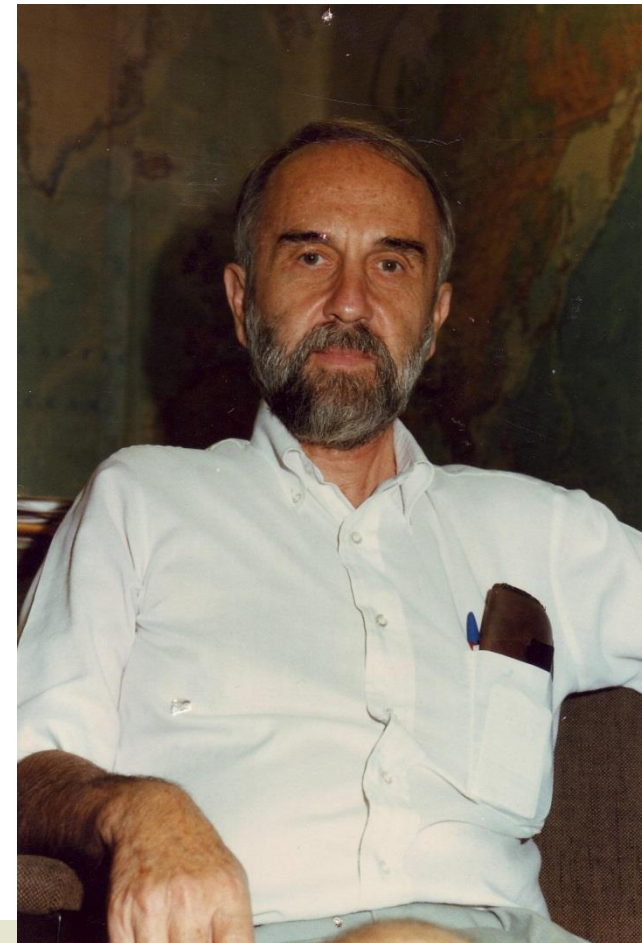
***An introduction to  
One Health and Ecohealth  
and its  
potential for Vietnam***

Jakob Zinsstag

The „one medicine“ by Calvin Schwabe's has its origins in his work with Dinka pastoralists in Sudan in the 1960s

„There is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, on the origins of diseases in all species.“

Schwabe C. (1964, 1984 3rd Edition):  
Veterinary Medicine and Human Health.  
Williams and Wilkins, Baltimore





## „One Health“ requirements

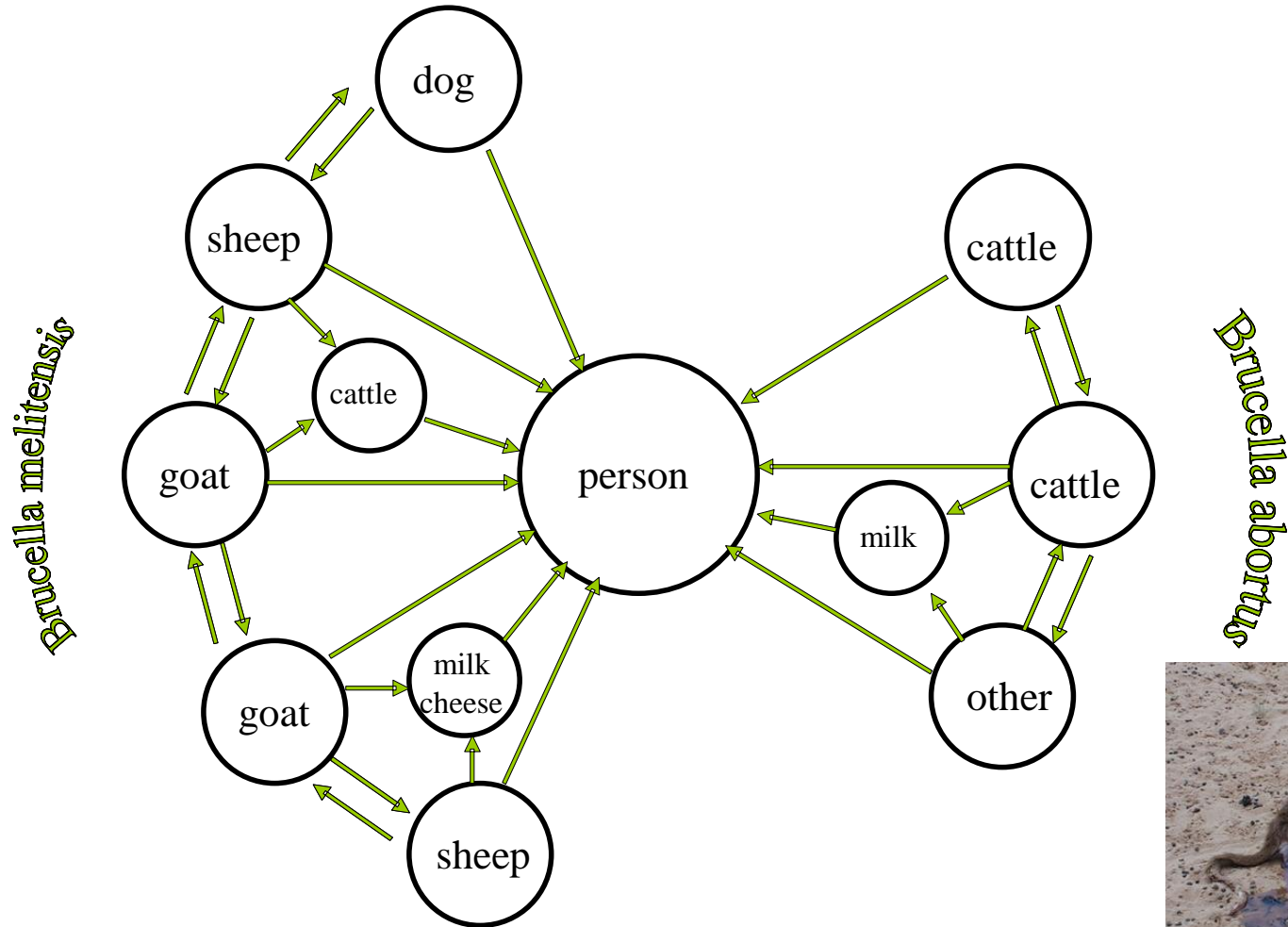
Necessary (but not sufficient) requirements:

- Recognition of inextricable linkage of human, livestock, companion animal and wildlife health.

Sufficient requirements:

- Added value of health and wellbeing of humans and animals and/or financial savings from closer cooperation of human and animal health.

## Example of Brucellosis control in Mongolia

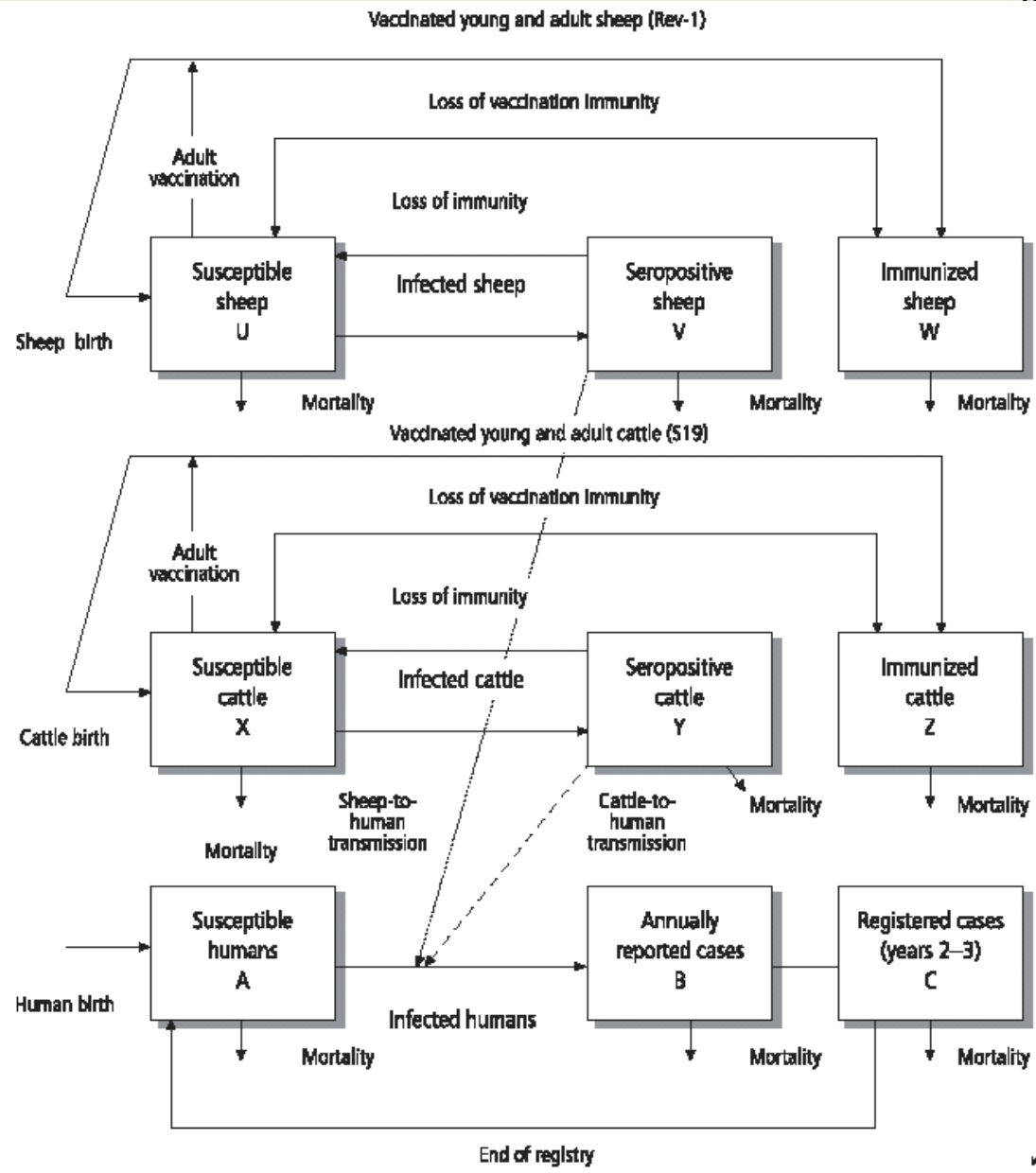


Krauss et al. 1997



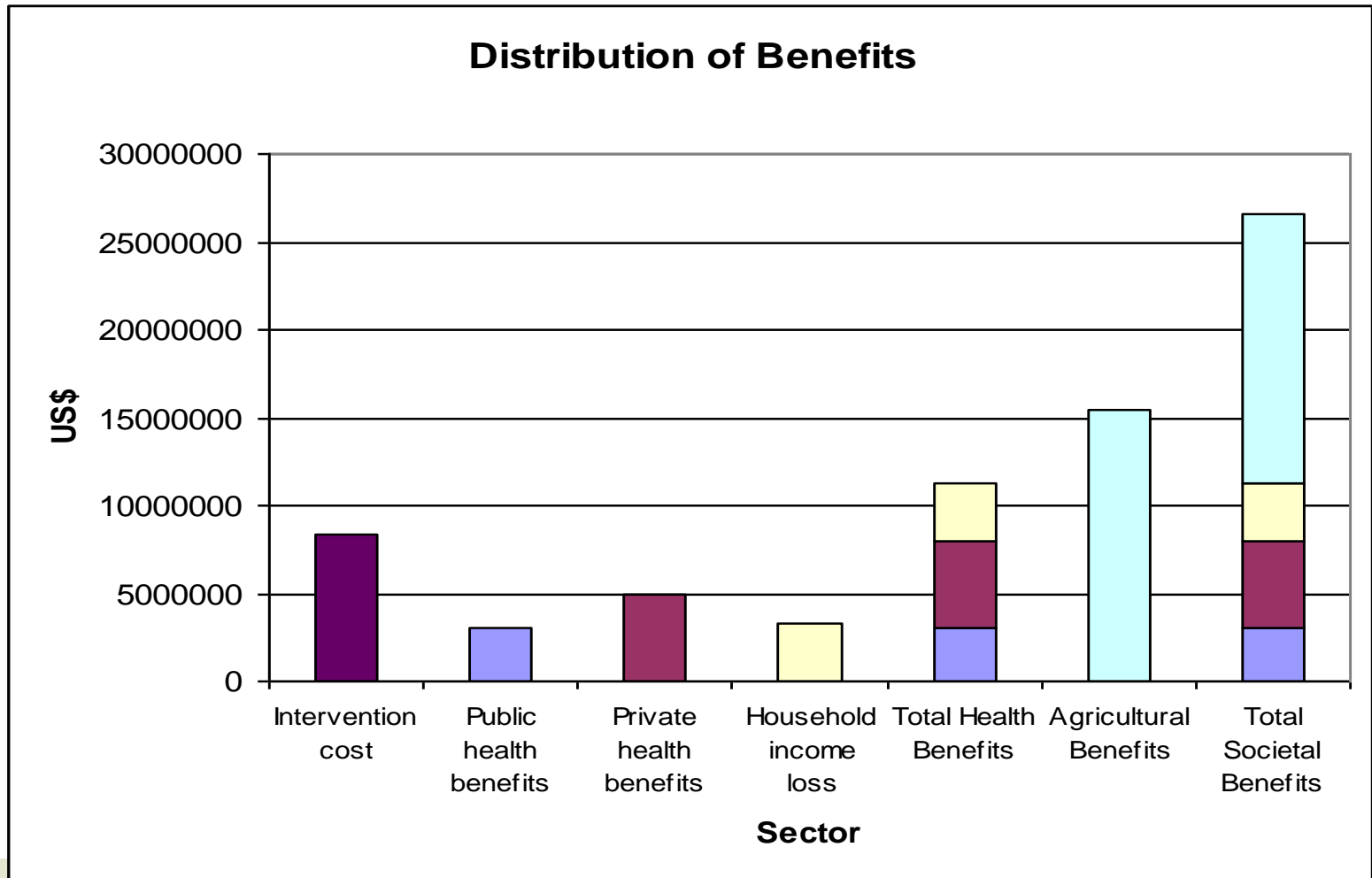


Courtesy: Dr. Jan Kolar, Prague





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



# Example of dog rabies control in Ndjamaéna Chad





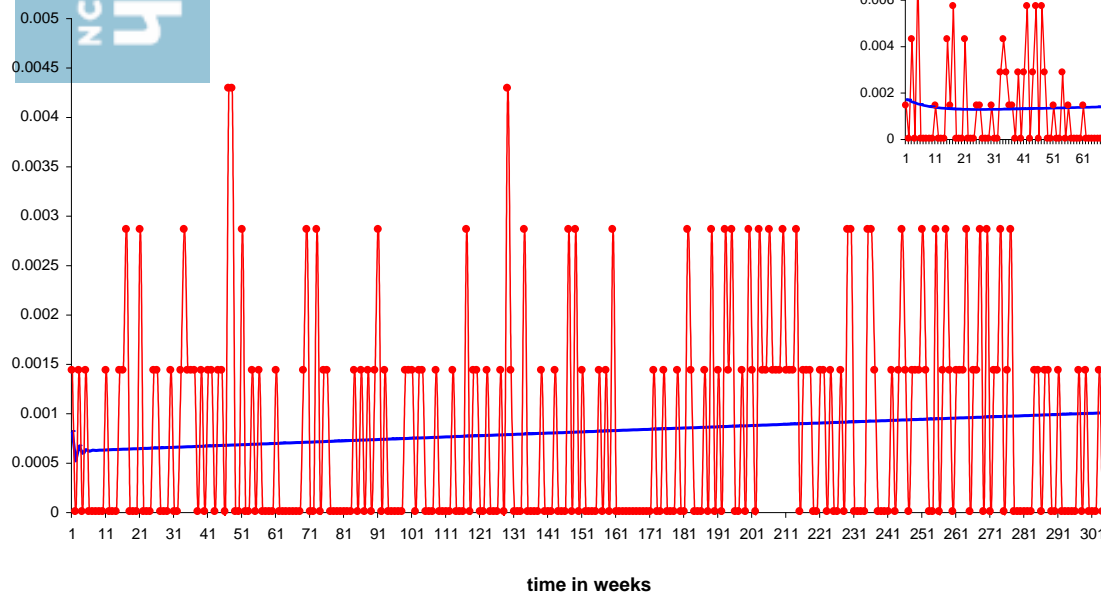




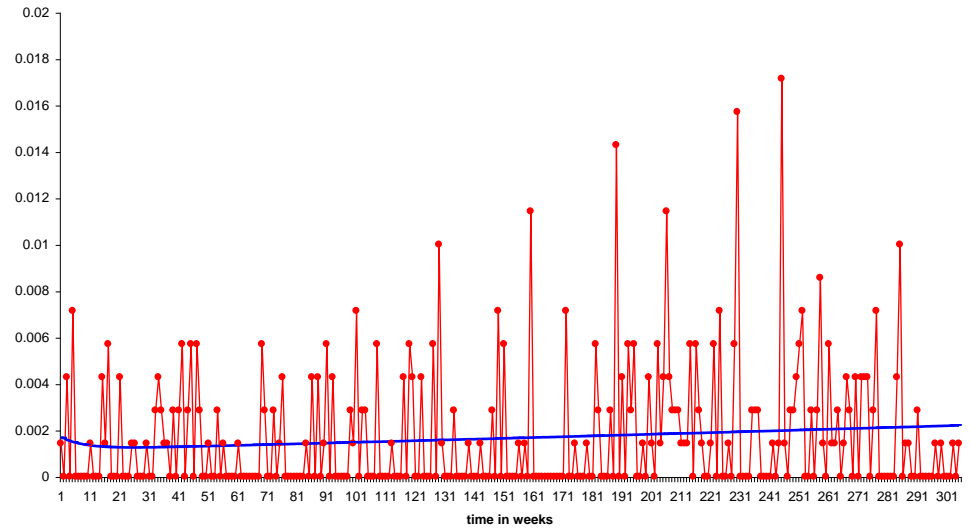
# Endemic stable dog-human rabies transmission in N'Djamena



rabid dogs per km2



exposed persons per km2

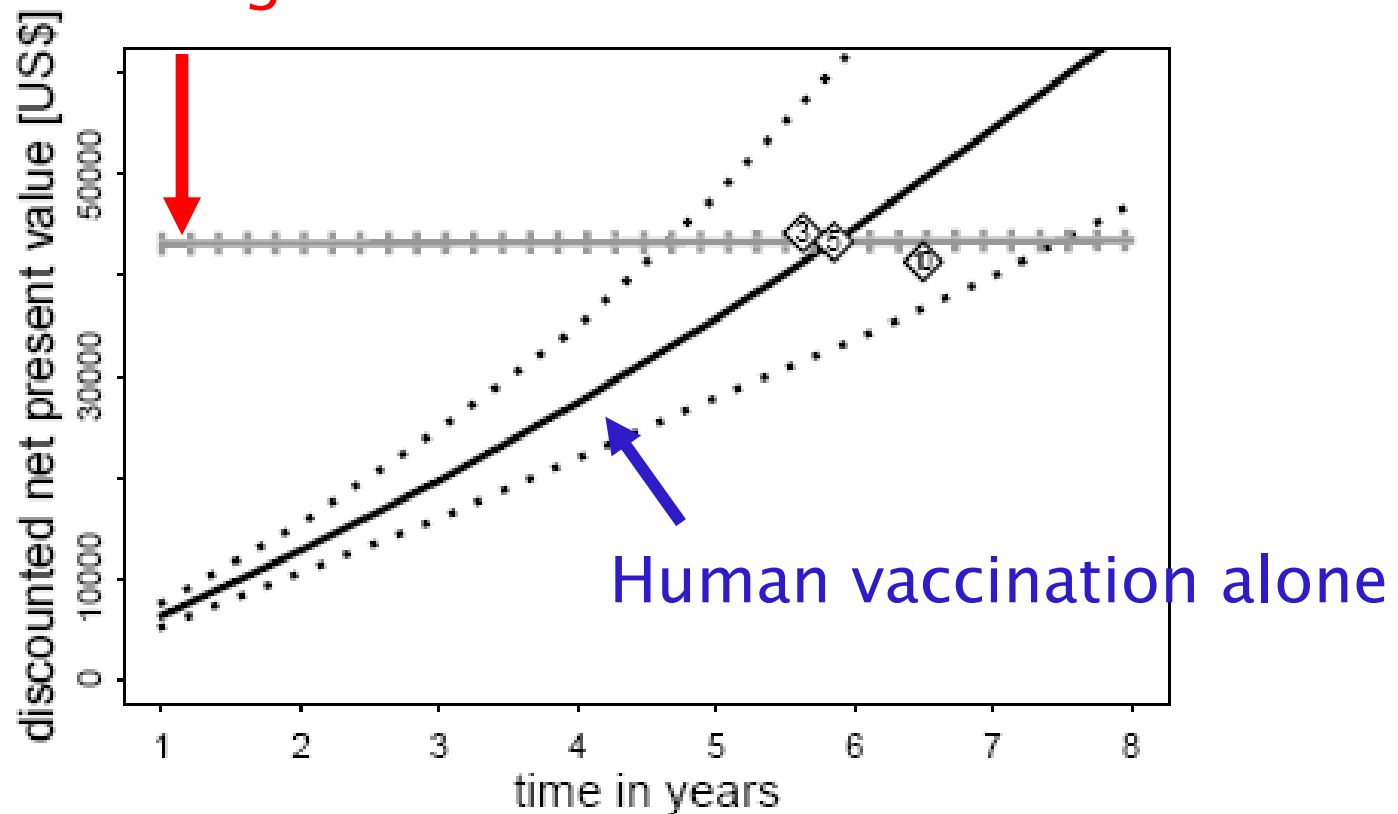




# Comparative profitability of rabies control in N'Djaména

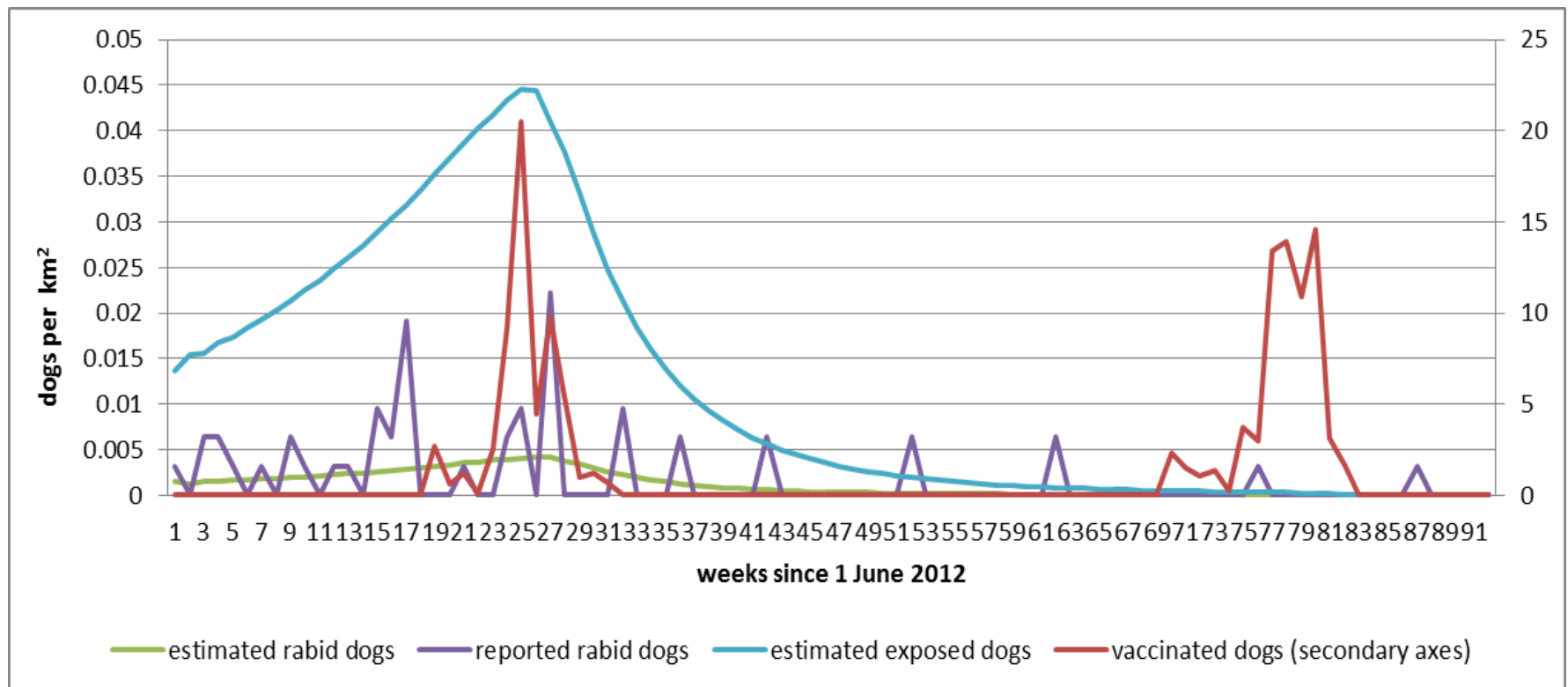
(Zinsstag et al. PNAS 2009, 106(35) 14996–15001)

## Dog and human vaccination



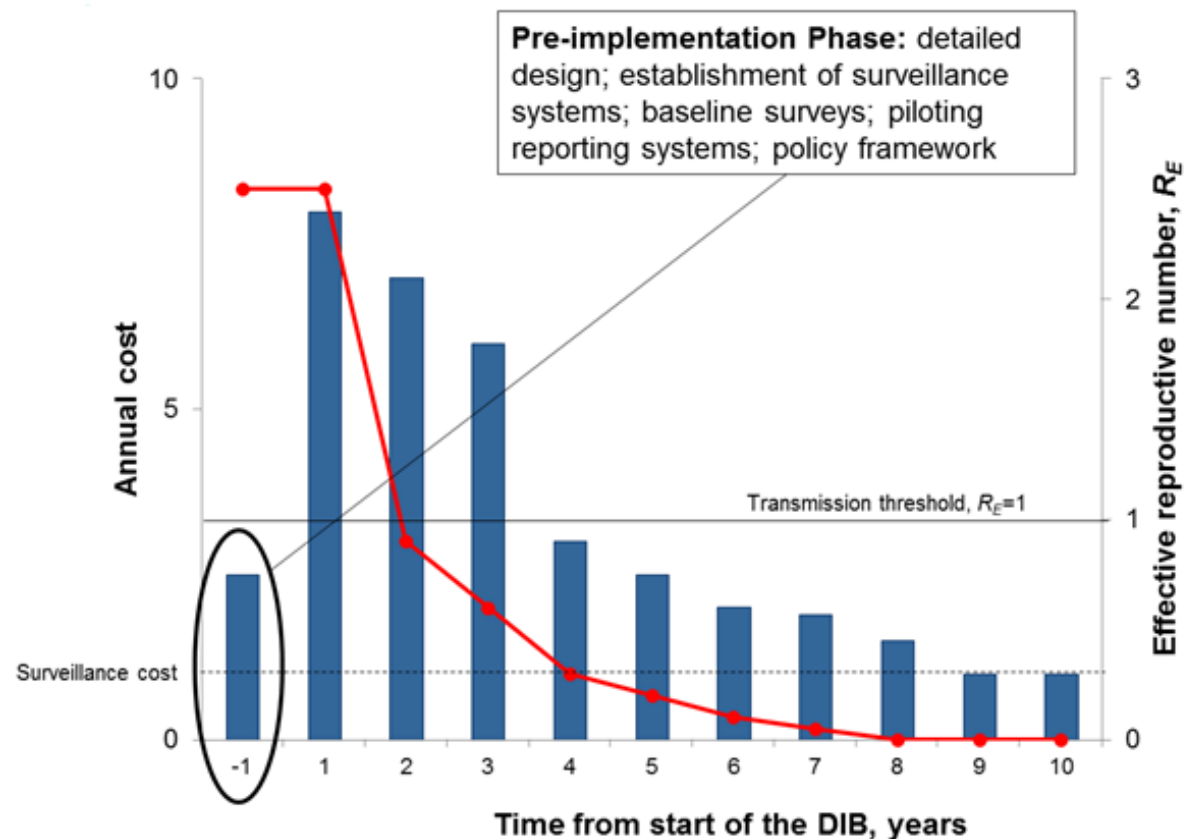


# Ndjaména Dog rabies elimination campaign 2012-2013





# Development Impact Bonds: sharing risk between institutional donors and private investors.





# Effectiveness model of rabies intervention in Bamako Mali: Understanding barriers of access

Parameter	Assessment	Data source	Effectiveness (single parameter, cumulative)	Sensitivity Δ %-points
Efficacy	Vaccination efficacy	Literature	0.98 0.98	0.4%
Availability	Information available	Questionnaire	0.66 0.65	1.4%
Accessibility	Dog handling & barriers	Questionnaire	0.77 0.50	1.2%
Affordability	Perceived (in)direct costs	Questionnaire	0.92 0.46	1.0%
Adequacy	Duration, presence of owner	Questionnaire	0.88 0.40	1.0%
Acceptability	Various & other	Questionnaire	0.52 0.21	1.8%
Targeting	Proportion owned dogs	Bayesian estimate	0.92 0.19	1.0%
Provider compliance	Team present at point	Questionnaire	0.96 0.19	0.8%
Consumer adherence	NA	NA		

0%      25%      50%      75%      100%

## Example of health of mobile pastoralists in Chad



# Mixed teams of medical doctors and veterinarians





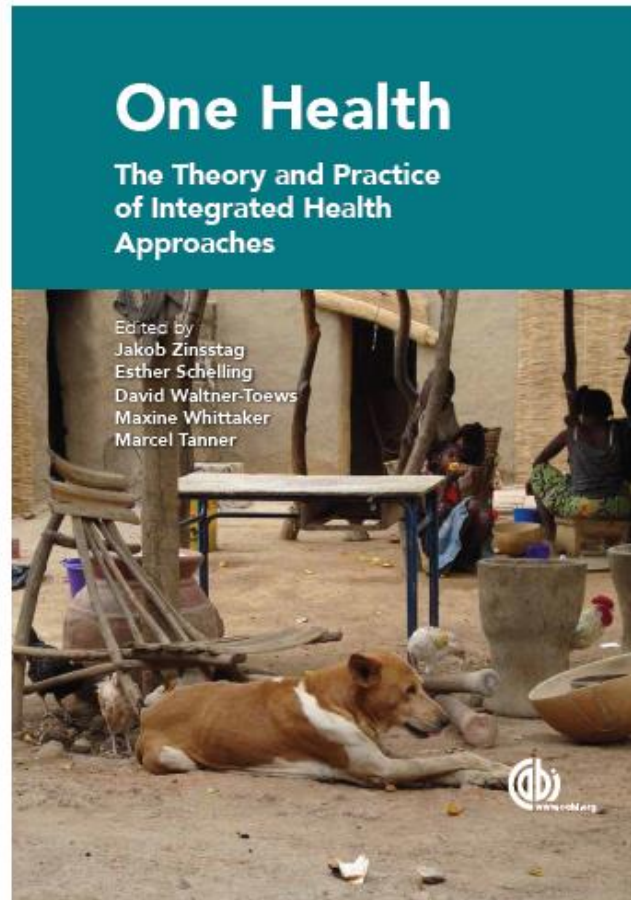
## Joint human and animal vaccinations improve access to health care for pastoralists

(Schelling et al. 2007 EID)



Costing study: public health sector could save up to 15% of infrastructure, cold chain and staff costs

Private veterinarians' interest in capitalising on transportation infrastructure



# One Health

## The Theory and Practice of Integrated Health Approaches

Edited by **J Zinsstag**, Swiss Tropical and Public Health Institute, Switzerland, **E Schelling**, Swiss Tropical and Public Health Institute, Switzerland, **D Waltner-Toews**, University of Guelph, Canada, **M Whittaker**, University of Queensland, Herston, Australia, **M Tanner**, Swiss Tropical and Public Health Institute, Switzerland

### 9 A One Health perspective for integrated human and animal sanitation and nutrient recycling

*Hung Nguyen-Viet, Phuc Pham-Duc, Vi Nguyen, Marcel Tanner, Peter Odermatt, Tu Vu-Van, Minh V. Hoang, Chris Zurbrügg, Esther Schelling and Jakob Zinsstag*

CALGARY'S UNIVERSITY IS RANKED TOP 10 IN CANADA FOR RESEARCH INCOME, FUNDRAISING, ENDOWMENT, RESEARCH COMPETITIONS AND NATIONAL AWARDS.



# Canada's new veterinary school focuses on all animals. Including these two.

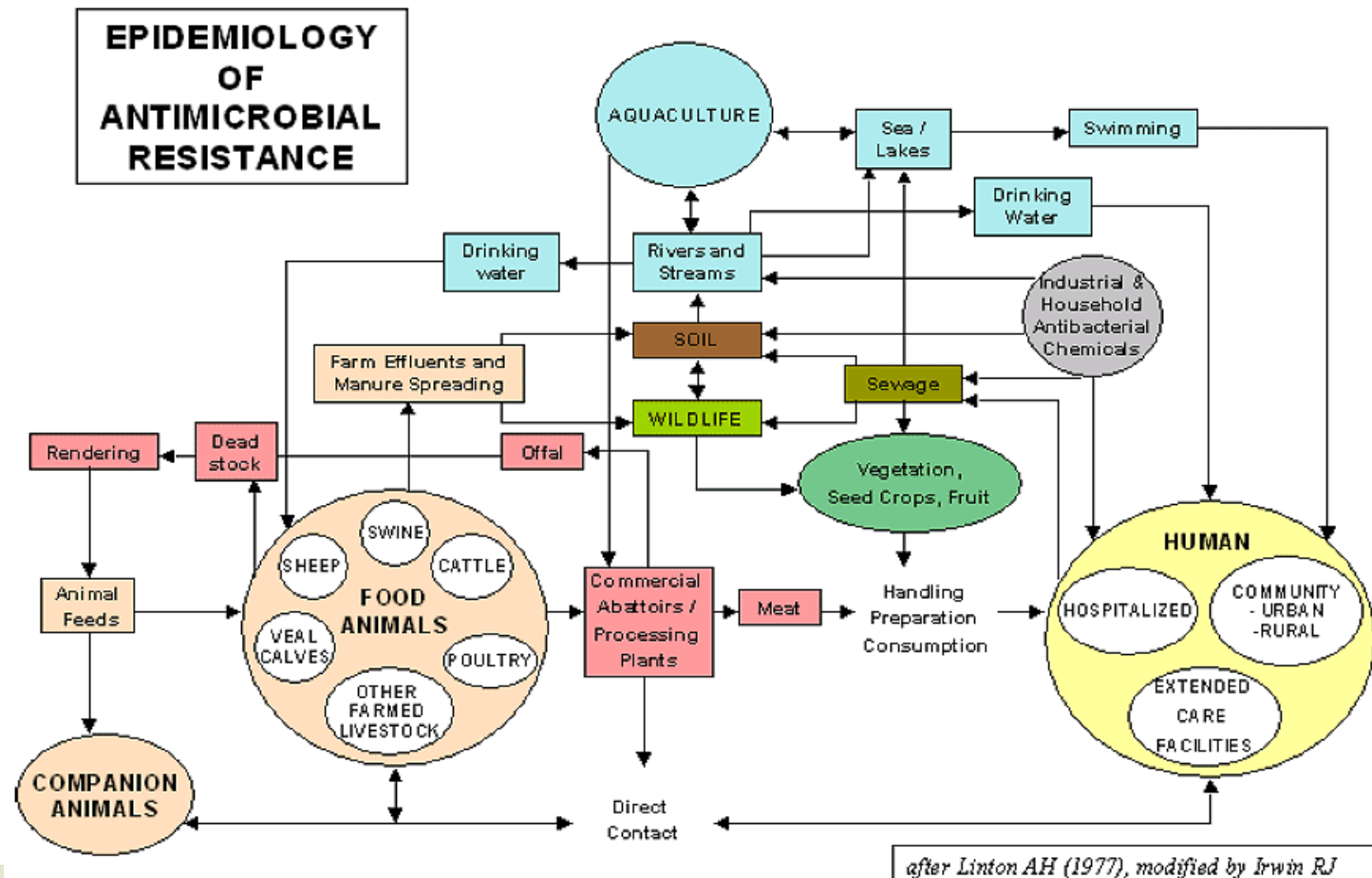
Around the world, scientists are racing to understand the critical health links between all animals. They call this integrated approach One Health, and it holds the keys to preventing devastating epidemics. At the University of Calgary, our new Faculty of Veterinary Medicine will be the nation's first to focus on One Health. We will graduate a new generation of Canadian veterinarians, dedicated to ensuring the health of all animals. Including the ones reading this. Visit [vet.ucalgary.ca](http://vet.ucalgary.ca)

**UOFC**  
**THIS IS NOW**

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# Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS)

[www.phac-aspc.gc.ca/cipars-picra/index-eng.php](http://www.phac-aspc.gc.ca/cipars-picra/index-eng.php)





## *Ecosystem approaches to health*

# ECOHEALTH

INTERNATIONAL ASSOCIATION FOR ECOLOGY & HEALTH

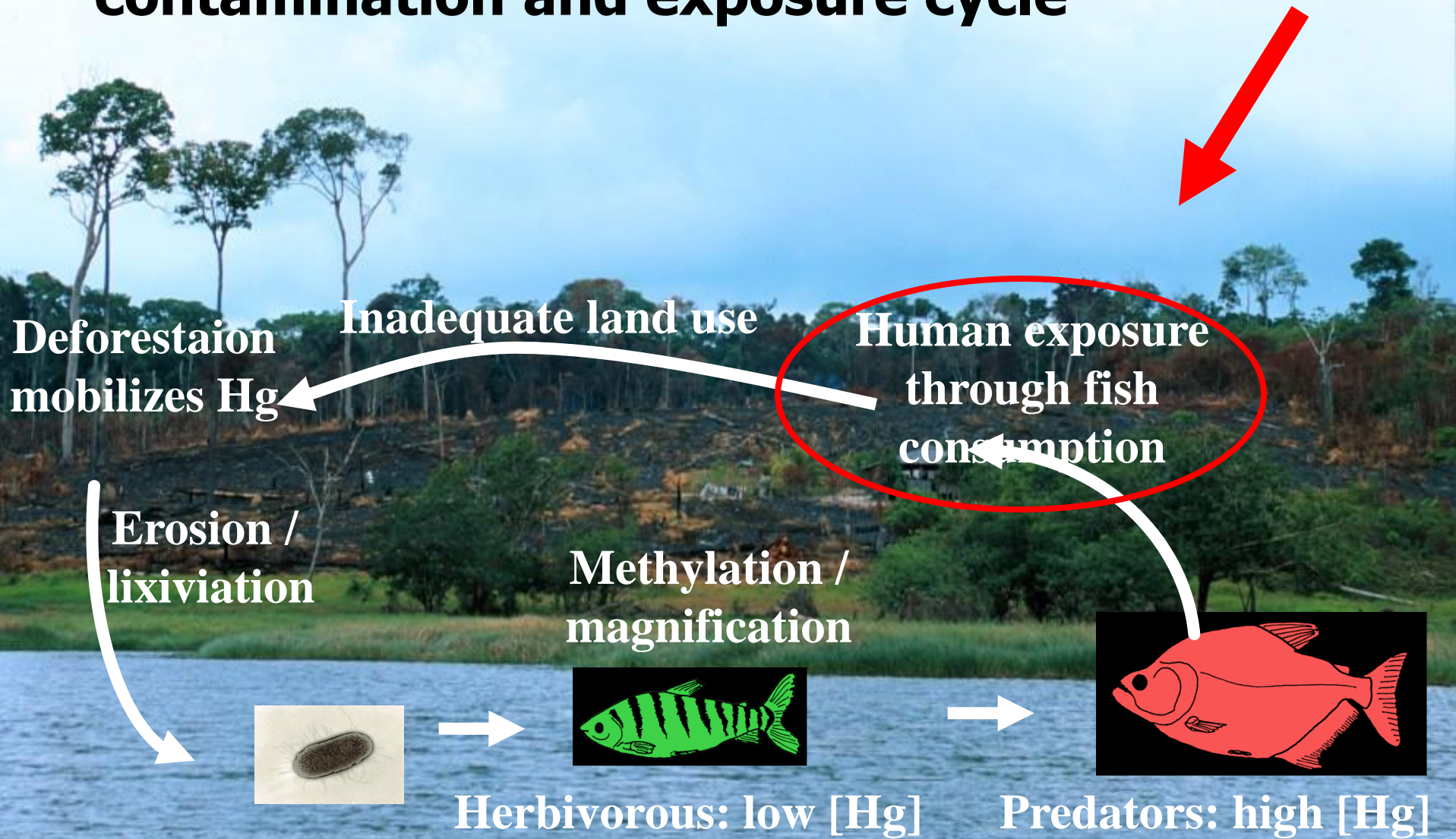
consider inextricable linkages between ecosystems, society and health of animals and humans

mercury poisoning of fish and impeding health risks for human in the Amazon were not due to upstream gold mining but due to soil erosion following deforestation (Forget and Lebel 2001, Passos 2011))

**contemporary complex health problems cannot be solved by “reductionist” approaches and require ecological and social systems thinking.**

**→ EcoHealth seeks to improve the health of humans and animals while preserving eco-system services as part of an integrated systemic research approach.**

# The mercury issue: environmental contamination and exposure cycle





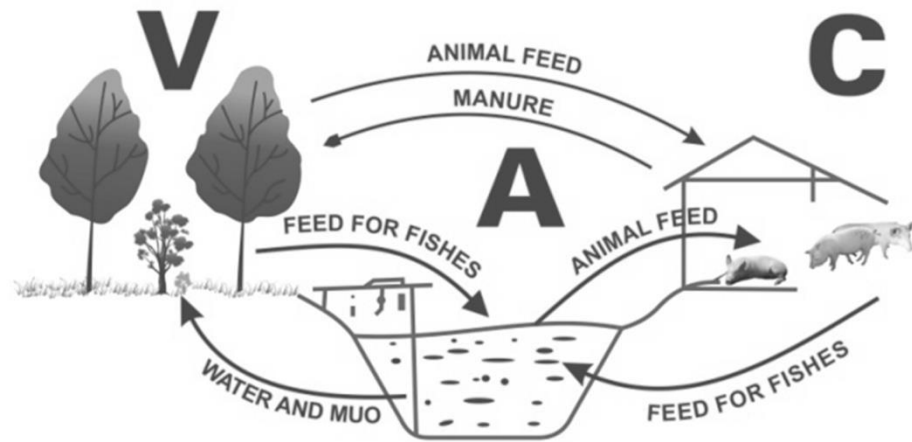
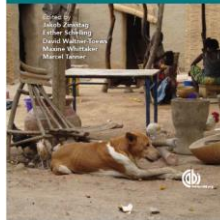
## **An external EcoHealth perspective on Vietnamese research potentials and priorities?**

1. Highly integrated agriculture. Vietnam is a world leader in nutrient recycling → Find ways to do this in a safe way.
2. Tackle the risk of antimicrobial resistance.
3. Reduce the risks from sanitation and chemical contamination for human health, agriculture and aquaculture.
4. Reduce the risks from air pollution and non-communicable disease
5. Risks from key tropical and zoonotic diseases

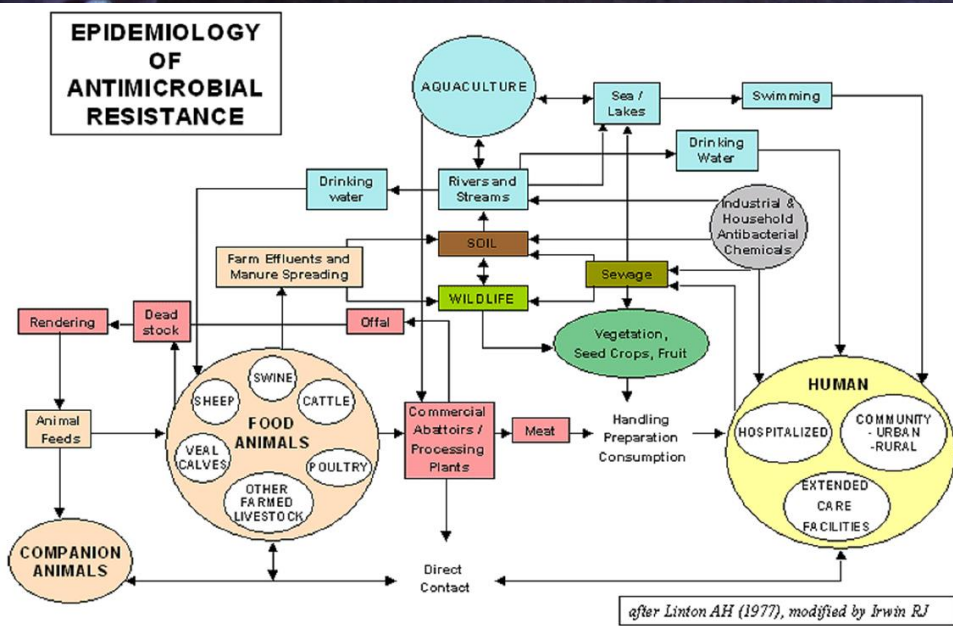
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**One Health**  
The Theory and Practice  
of Integrated Health  
Approaches







# Nue river: risk for human health, agriculture and coastal aquaculture



# Risks from air pollution and non-communicable disease

