

MSU Int. Conference on animal health in AEC, 2– 3 August 2016

PRIORITIZATION AND MAPPING OF ZOOONOTIC DISEASES IN INDONESIA

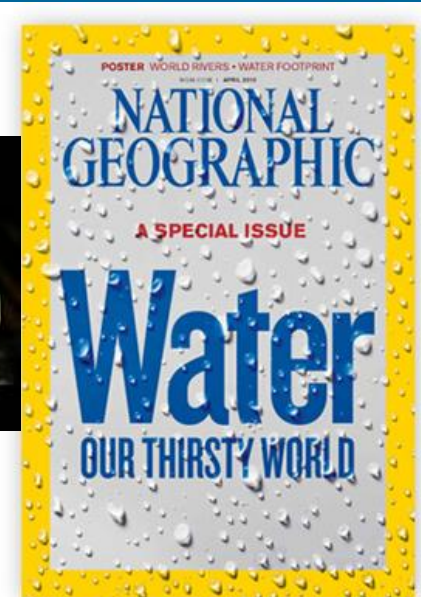
Wayan T. Artama, UGM, IND

4 Key Messages

1. Learning ZD and OH has been a struggle
2. The link between OH concept and practice is tools
3. Zoonoses prioritization is a need
4. Scenario planning is one tool help us deal with Zoonoses complexity

INTRODUCTION

Challenges



Global Food Crisis
The new world of soaring food prices

FUTURE CHALLENGES

Climate Change

- * Historic global warming
- * Weather extremes: heat waves, cold spells, flooding, storms, typhoons, smog periods
- * Sea level increases

20th Century Warming

- The global climate has been warming rapidly since the start of industrialization
- Human activities well explain this change
- According to the Intergovernmental Panel on Climate Change (IPCC) much of this trend is likely due to the increase in carbon emissions resulting from human activities



Climate Changes & Animal Health

Animal health may be affected by Climate Change in four ways:

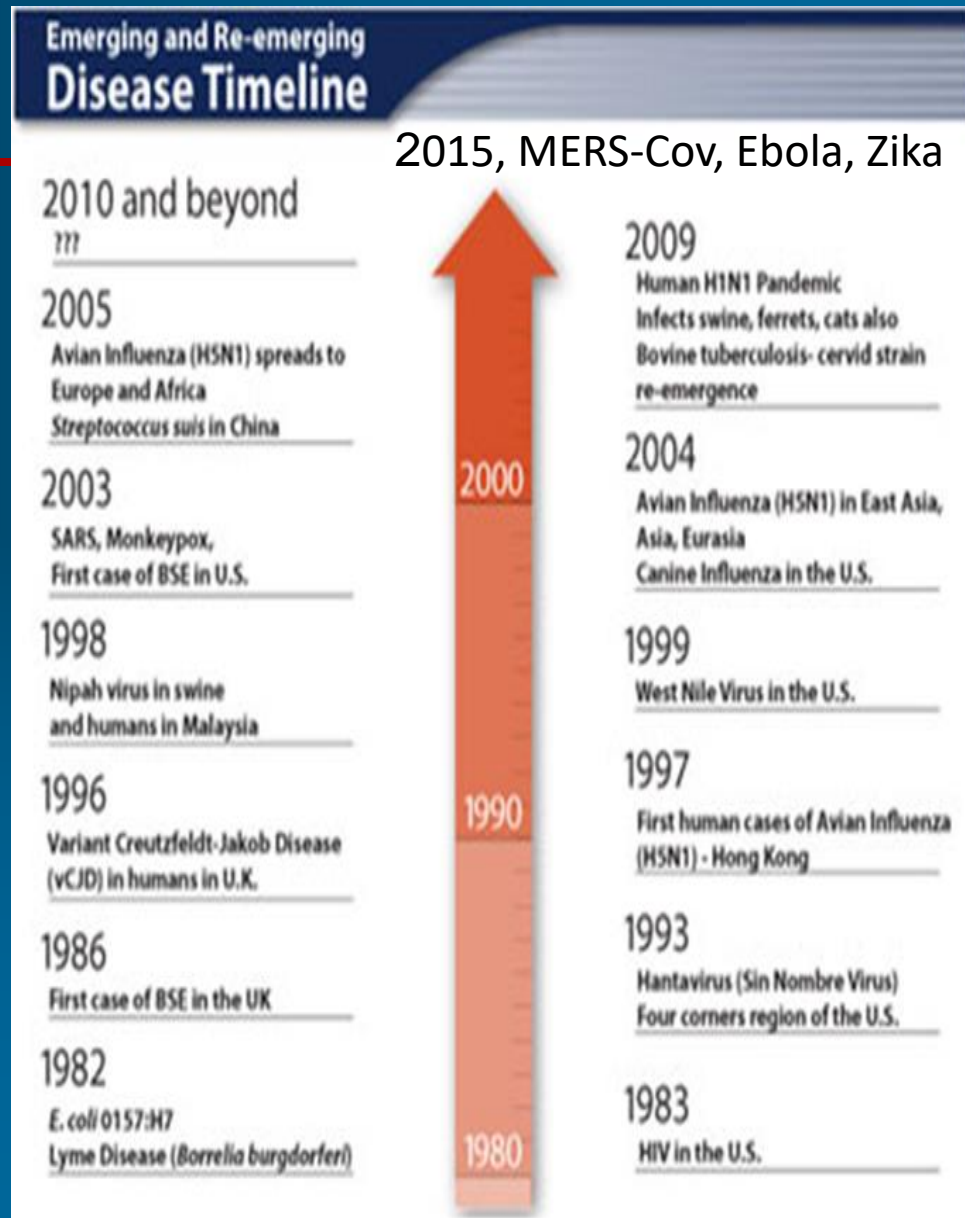
- Heat related diseases and stress
- Extreme wether events
- Adaptation of animal production systems to environments
- Emergence or re-emergence of infectious diseases, especially vector-borne diseases critically dependent on environmental and climatic condtions

Emerging and Re-emerging Infectious Disease

Globalization

- Affects movement of goods and people, trade and transportation
- Affects consumer preferences
- Facilitates infectious disease to spread globally
- Increases the magnitude of spreading

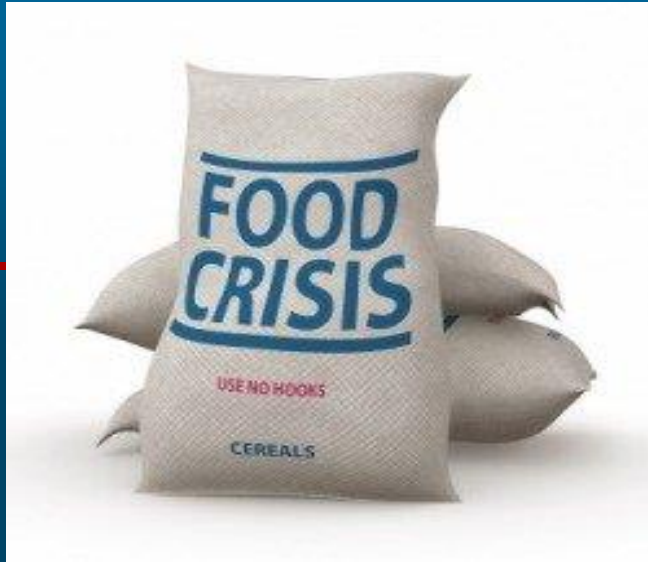
Diseases can become pandemic



THE DISEASES OF TOMORROW



Overpopulation



Food Crisis

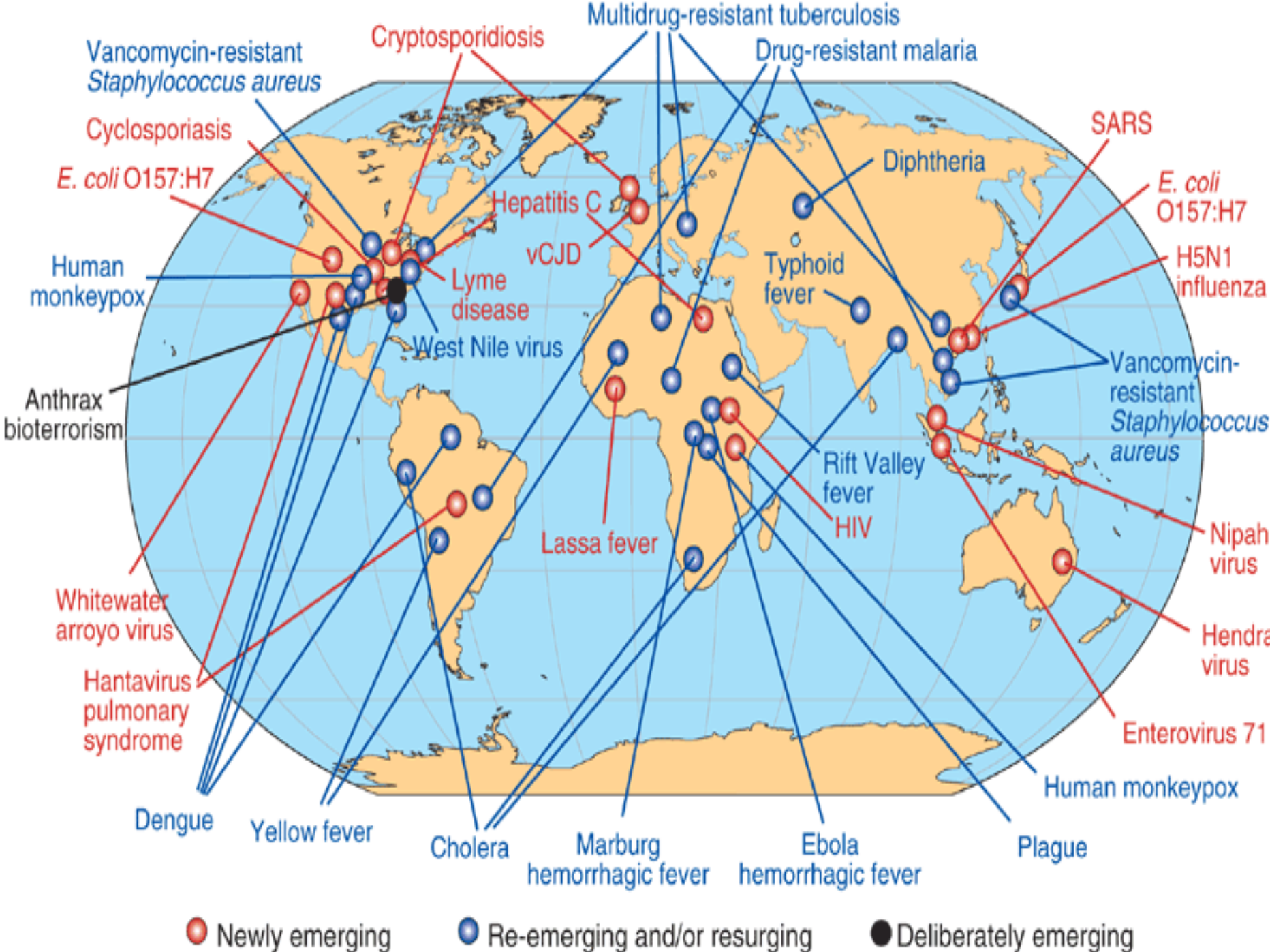


Climate Change



Pollution

Who's
responsibility
?



● Newly emerging

● Re-emerging and/or resurging

● Deliberately emerging

WHY We Need One Health Approach

HUMAN PATHOGENS: 1. 416

61,3% from animals



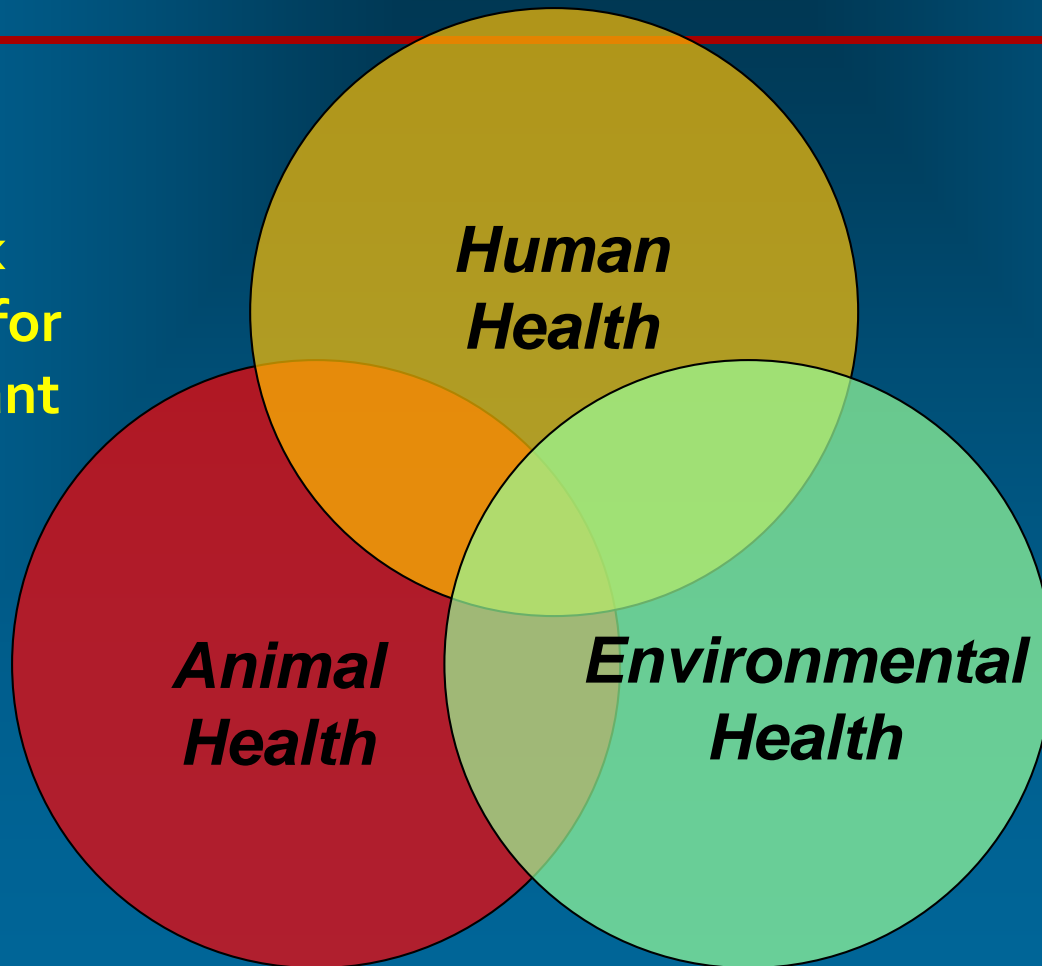
ZOOONOSES....75% from wildlife



ONE HEALTH APPROACH

Grand Challenges need collaboration among stakeholders: **One Health**

Key risk factors for important EIDs



One Health does not change what we do, but rather how we do it...

PRIORITIZATION OF ZOOONOSES

USING IHCR TOOLS:

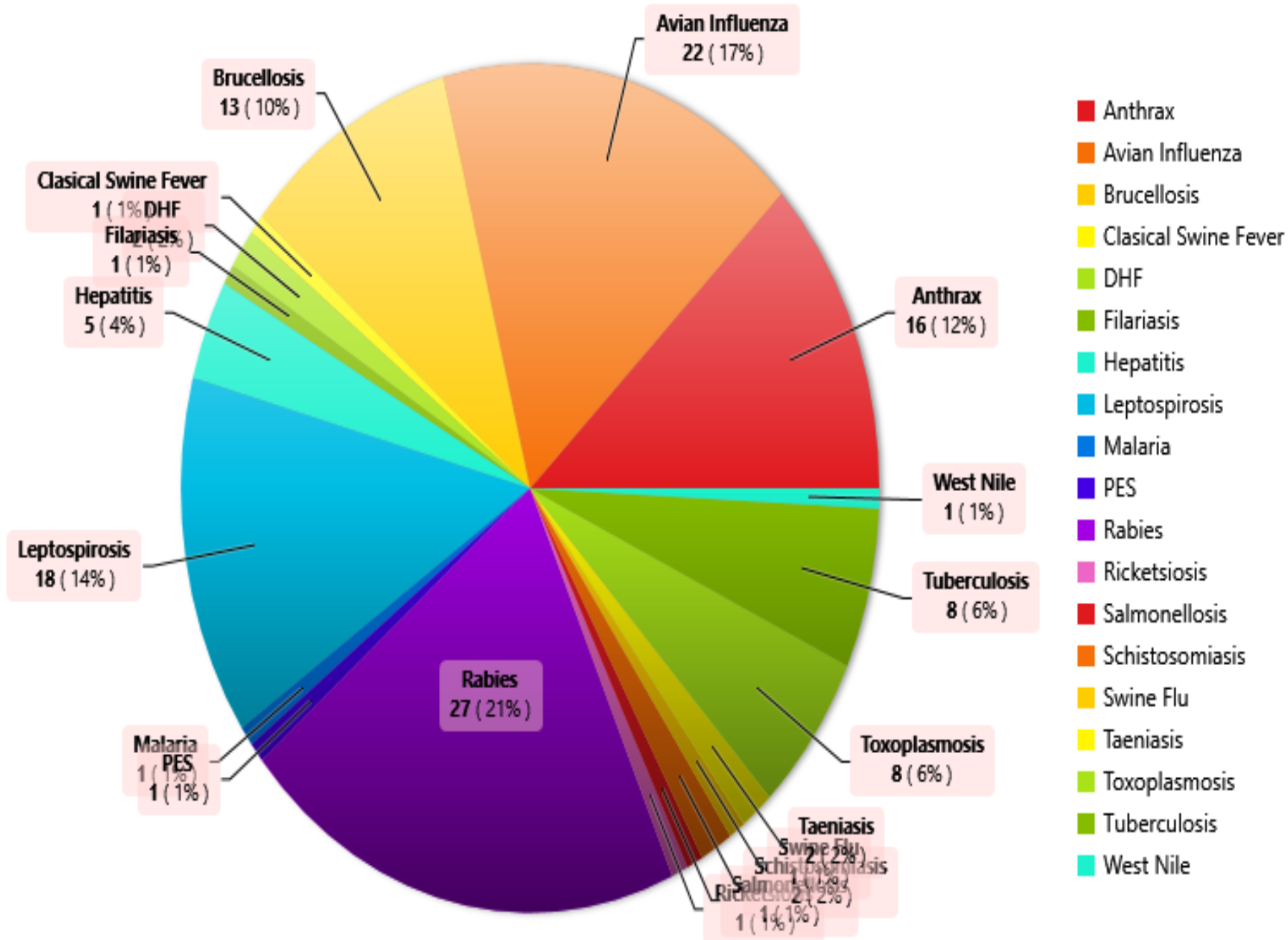
20 Expert Groups

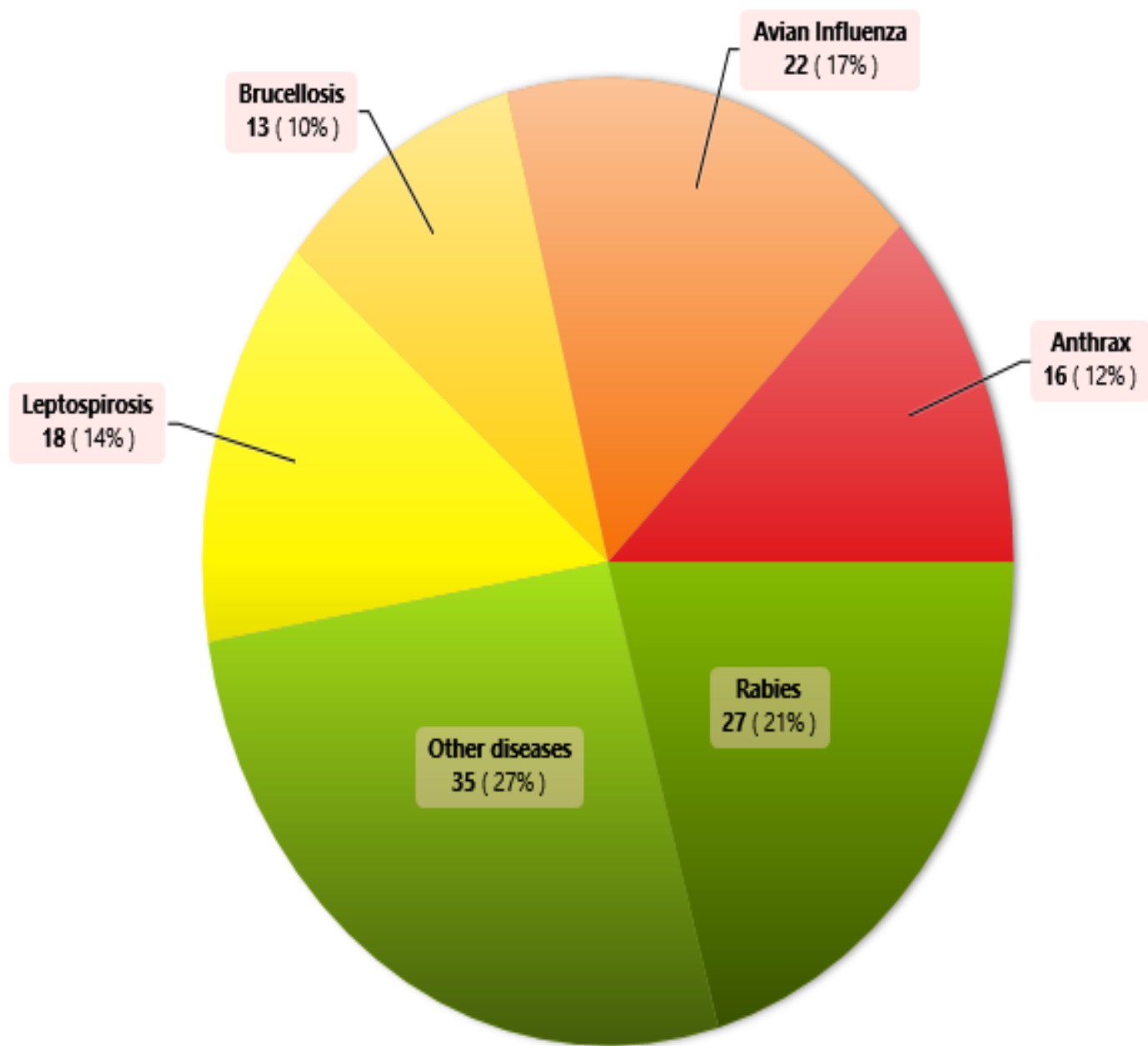
5 Independent Expert

6 Large Group

Five priority zoonotic disease that need to be addressed over the next five years in Indonesia

- 1st Rabies
- 2nd Avian Influenza
- 3rd Leptospirosis
- 4th Anthrax
- 5th Brucellosis

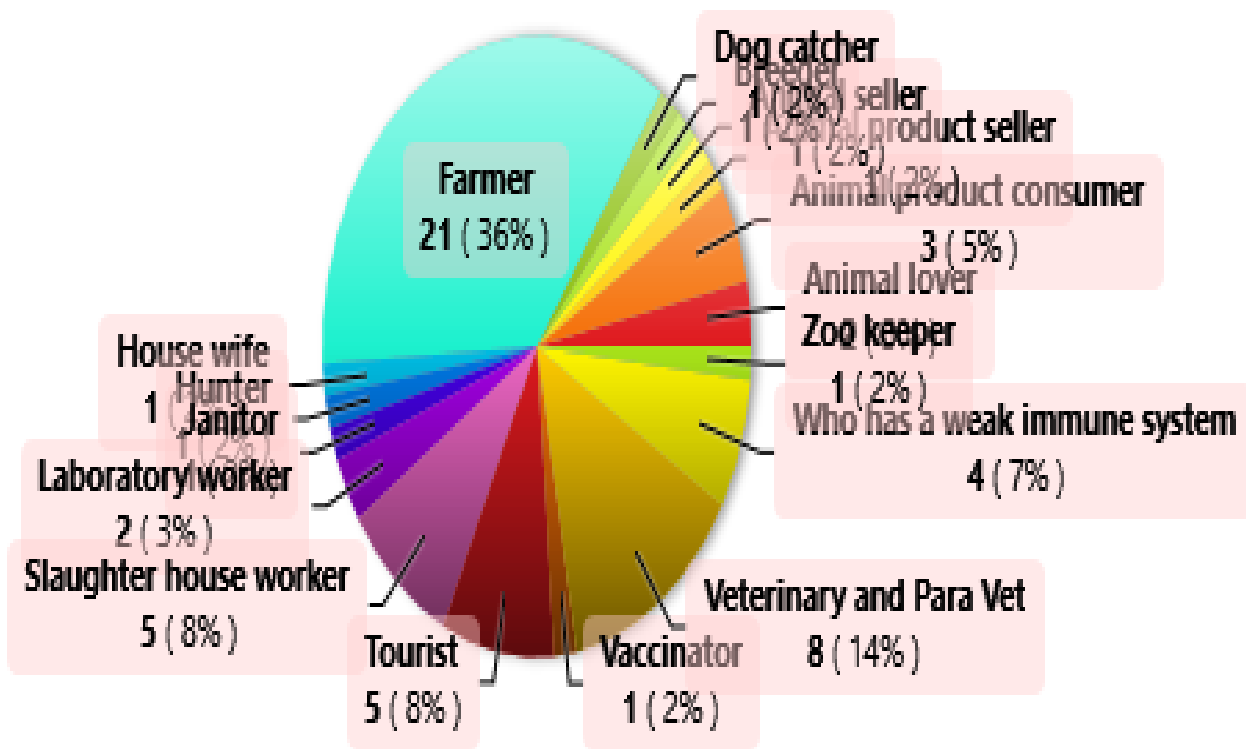




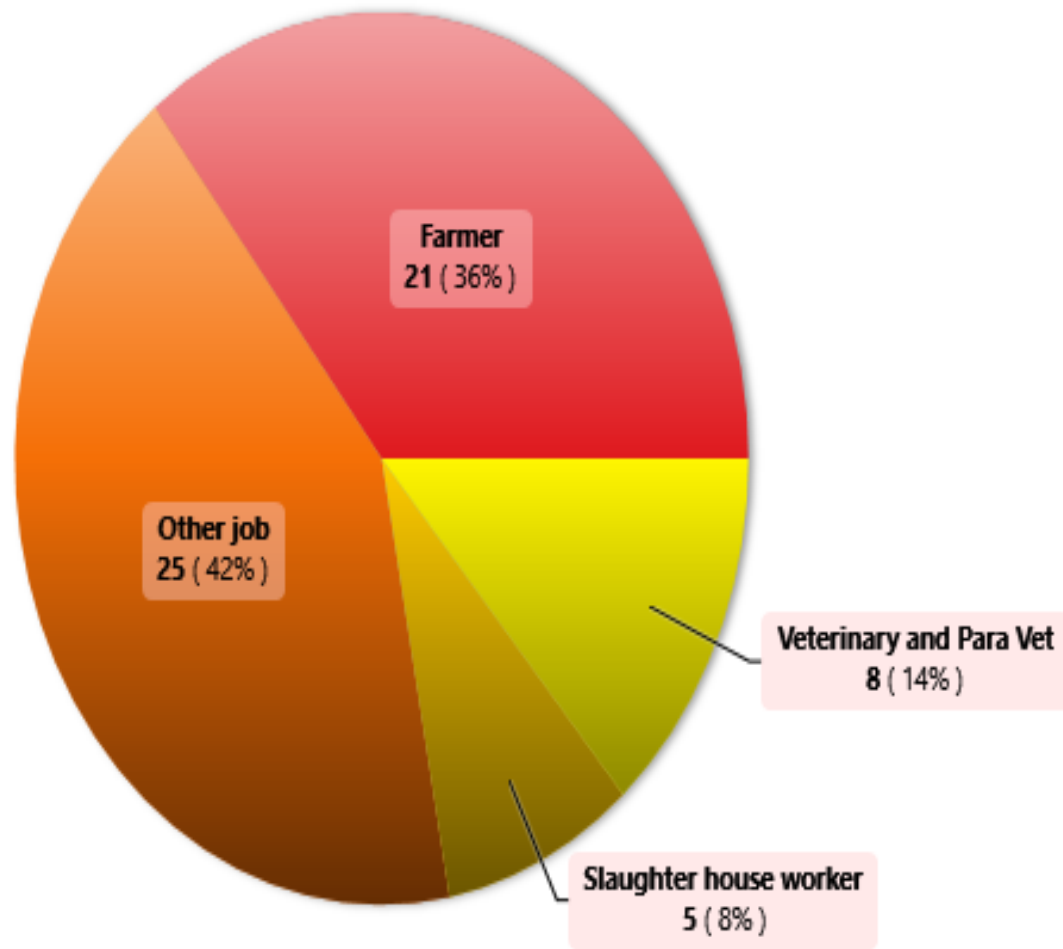
- Anthrax
- Avian Influenza
- Brucellosis
- Leptospirosis
- Other diseases
- Rabies

Three priority human populations susceptible to/affected by zoonotic diseases

1 st	Farmer	(21/59)
2 nd	Veterinary and para vet.	(8/59)
3 rd	Slaughter house workers	(5/59)



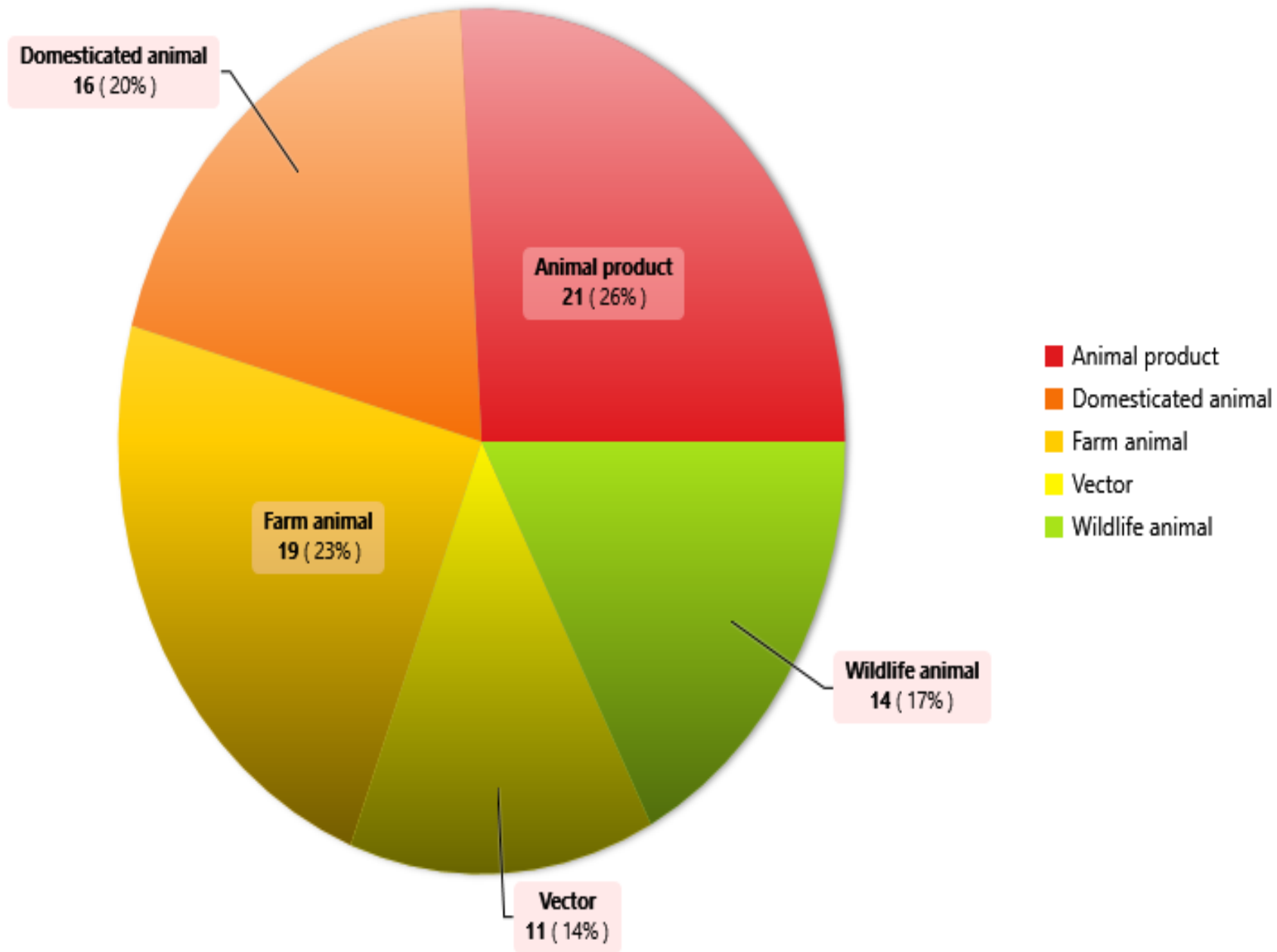
- Animal lover
- Animal product consumer
- Animal product seller
- Animal seller
- Breeder
- Dog catcher
- Farmer
- House wife
- Hunter
- Janitor
- Laboratory worker
- Slaughter house worker
- Tourist
- Vaccinator
- Veterinary and Para Vet
- Who has a weak immune system
- Zoo keeper



- Farmer
- Other job
- Slaughter house worker
- Veterinary and Para Vet

Three Priority commodities important in the context of zoonoses in Indonesia

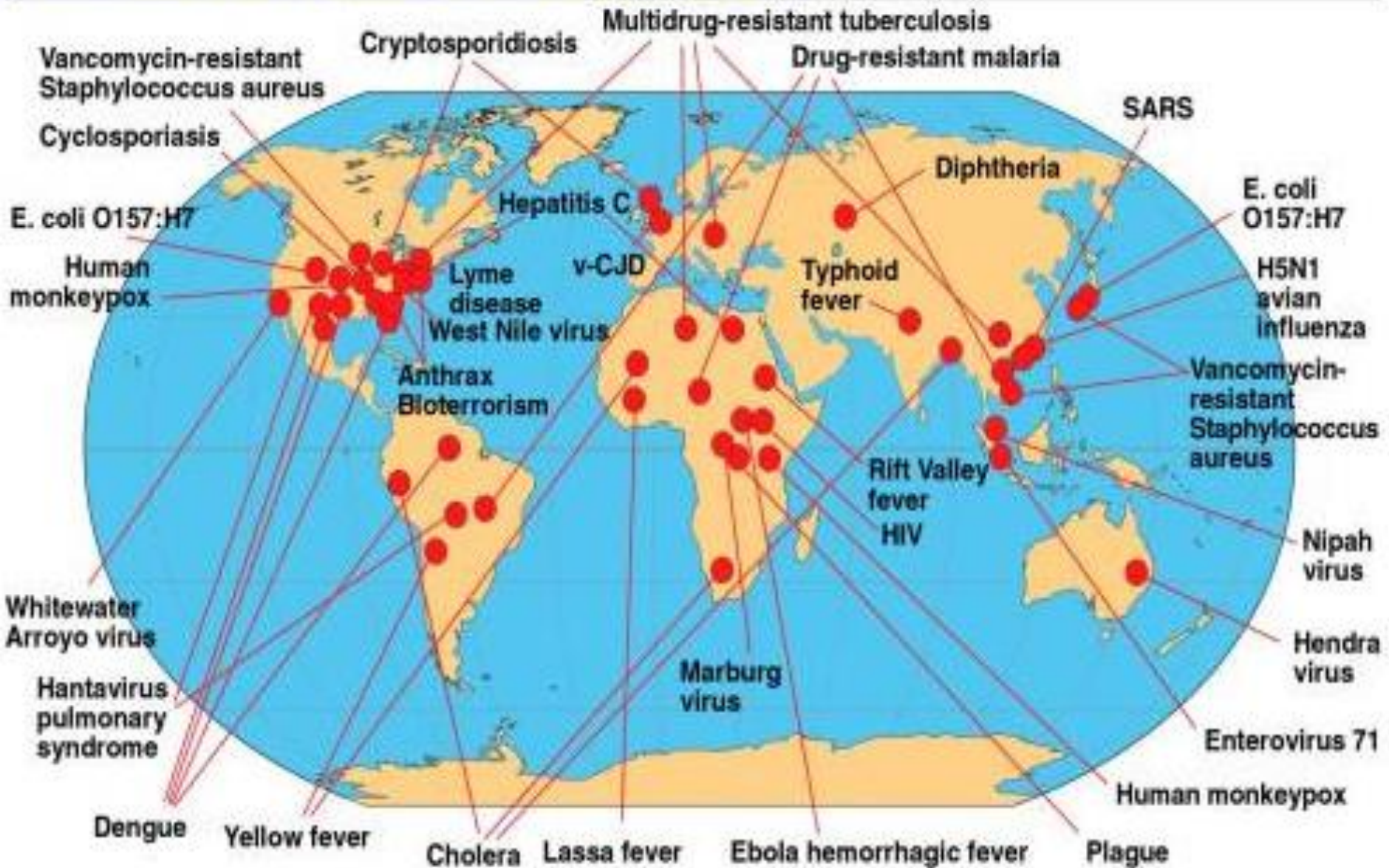
1 st	Animal product	(21/81)
2 nd	Farm animal	(19/81)
3 rd	Domesticated Animal	(16/81)



Factors in Emerging/Re-emerging Infectious Diseases

- Population growth and density
- Urbanization, crowding – social and sexual relations
- Globalization of travel and trade
- Live animal markets
- Intensified livestock production
- Misuse of antibiotics (humans & domestic animals)
- Changes to ecosystems (deforestation, biodiversity loss)
- Global climate change

Examples of Emerging and Re-Emerging Diseases



Zoonoses



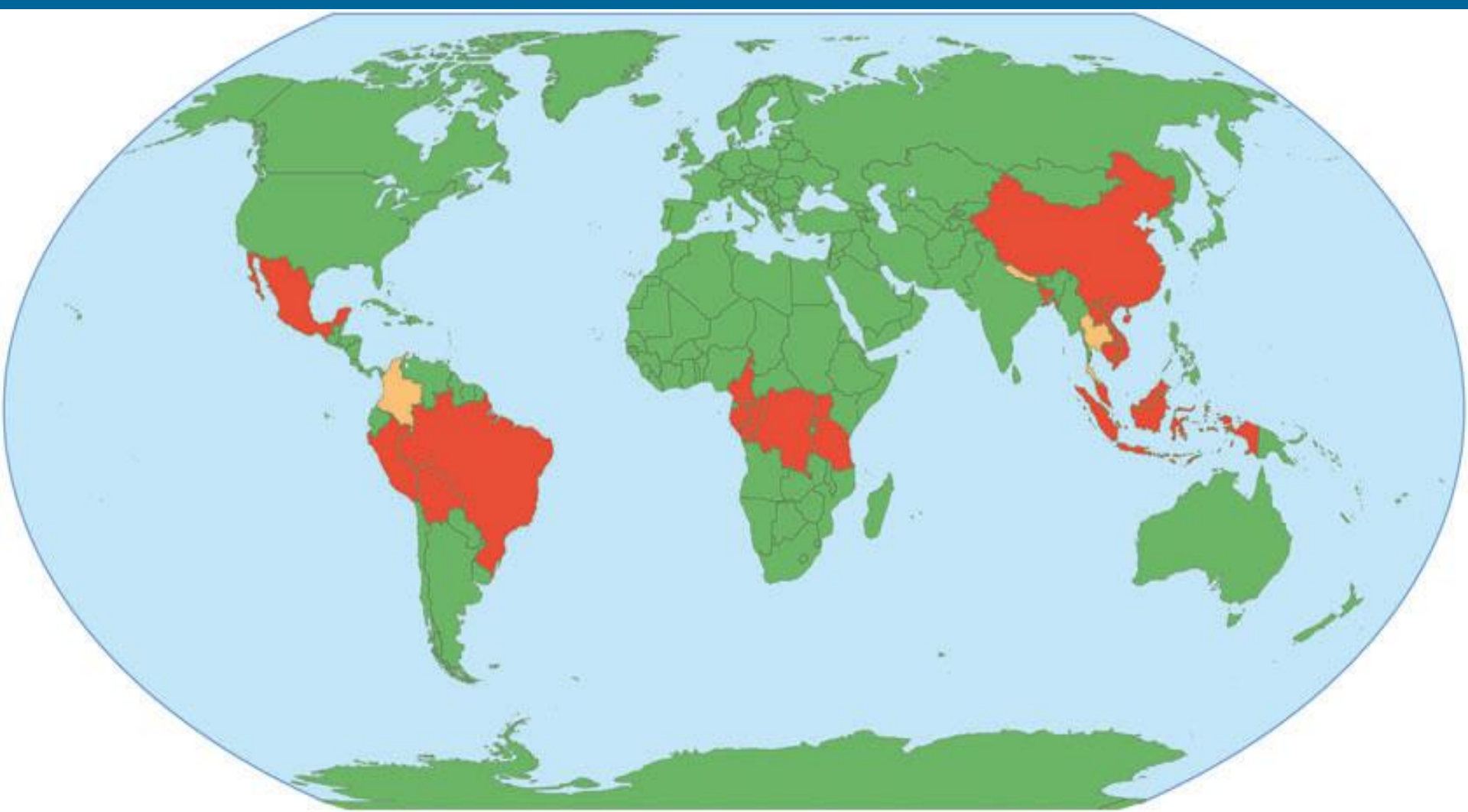
Challenges of Zoonotic Diseases

- * EBOLA
- * MERS
- * BIRD FLU/AI
- * NIPAH
- * SARS
- * **RABIES**
- * **LEPTOSPIROSIS**
- * **TUBERCULOSIS**
- * **TOXOPLASMOSIS**



Government Priority ZD in Indonesia

- * **Rabies** (24 from 34 Prov.)
- * **Birdflu/AI** (33 from 34 Prov.)
- * **Anthrax** (11 from 34)
- * **Brucellosis** (11 from 34)
- * **Leptospirosis** (6 from 34)



A global early-warning system for emerging zoonotic diseases in hot spots around the world.
(From the PREDICT One Health Consortium.)

What to do ?

Mapping diseases???

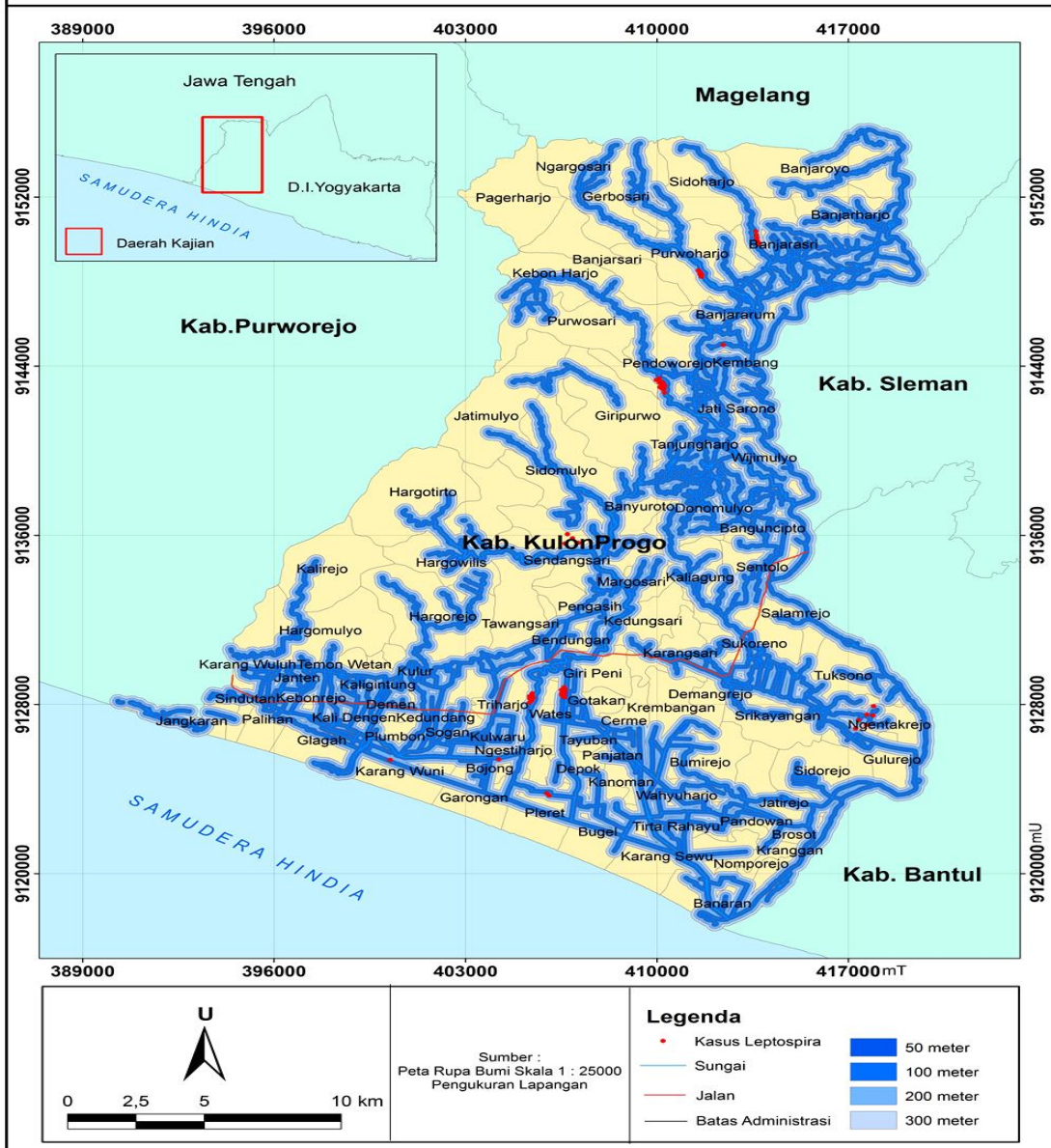


Implementation of OH in practice/ Zoonoses mapping

- ✓ **Leptospirosis in YK**
- ✓ **Toxoplasmosis in YK and Middle Java**

Spatial Analysis

**PETA PERSEBARAN LEPTOSPIROSIS
DI KABUPATEN KULONPROGO**

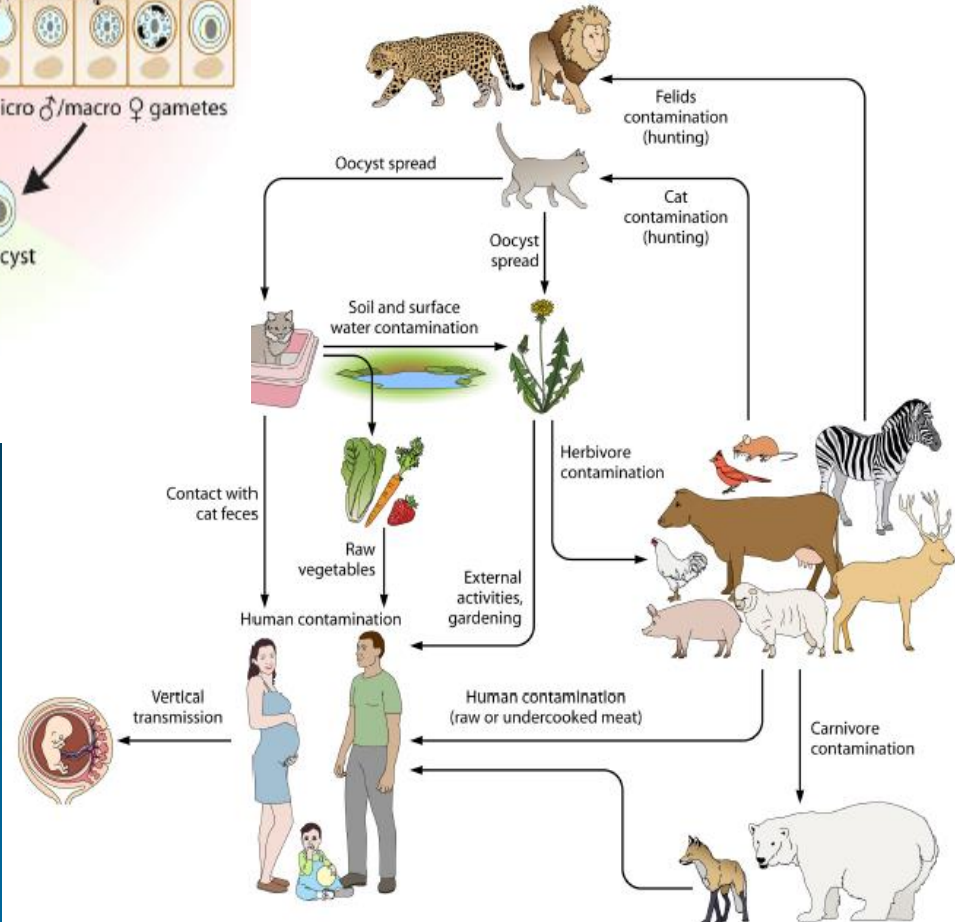
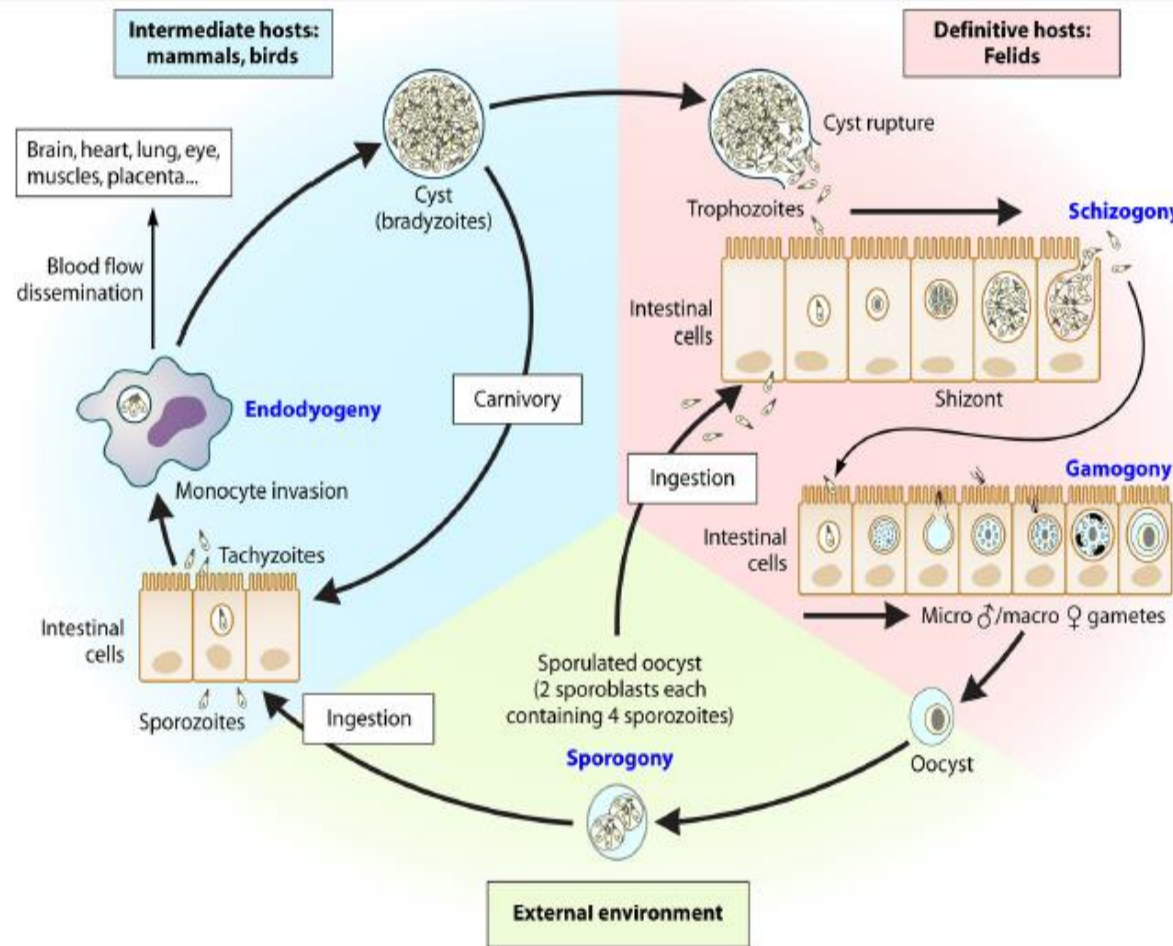


The distribution of leptospires in Kulon Progo in animals.

Positive cases distributed around the river and carried buffer (distance positive leptospirosis cases with watershed) :

1. At a distance of 50 meters (12)
2. At a distance of 100 m (23)
3. At a distance of 200 m (15)
4. Distances greater than 300 m (3)

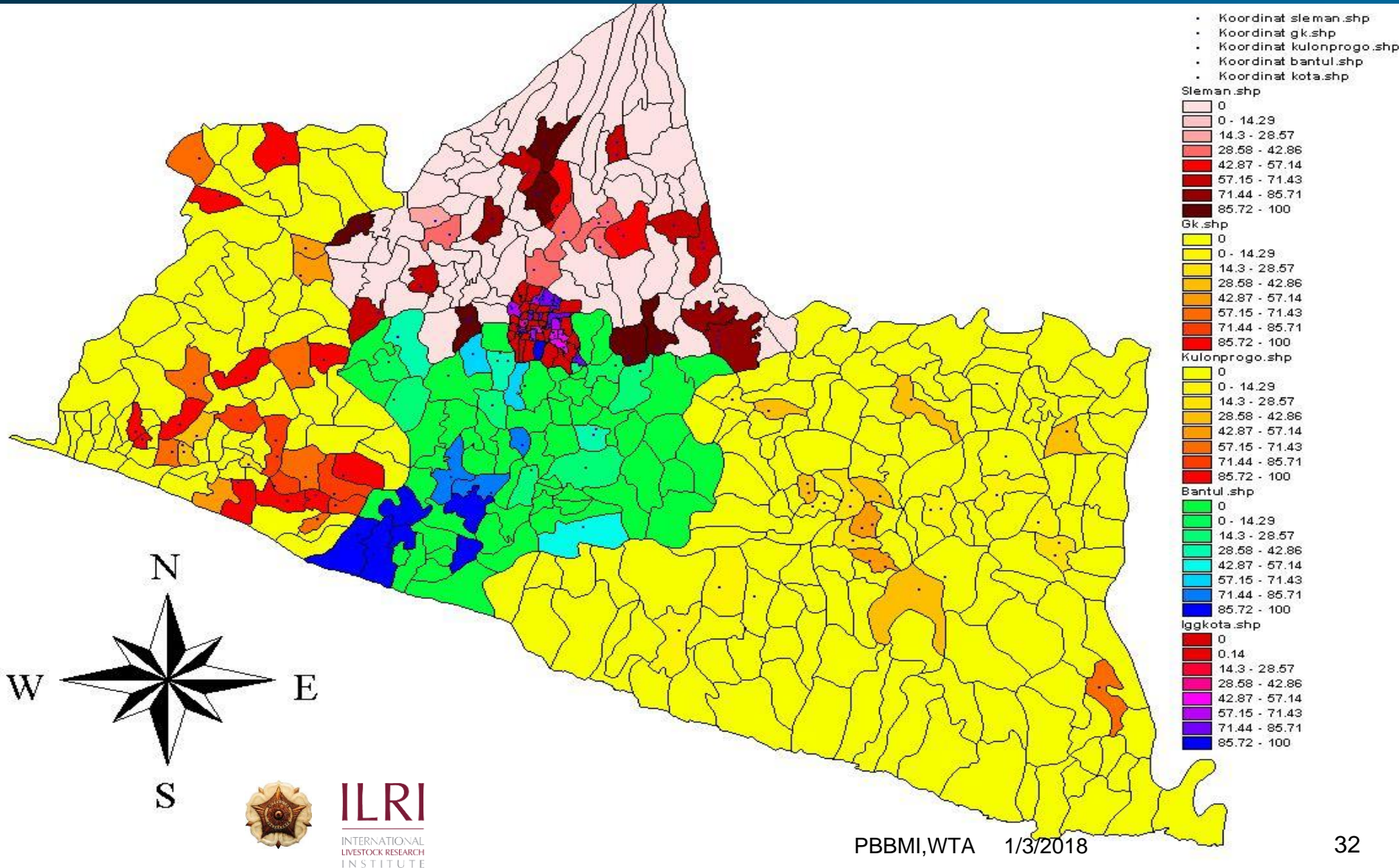
Life Cycle of Toxoplasma



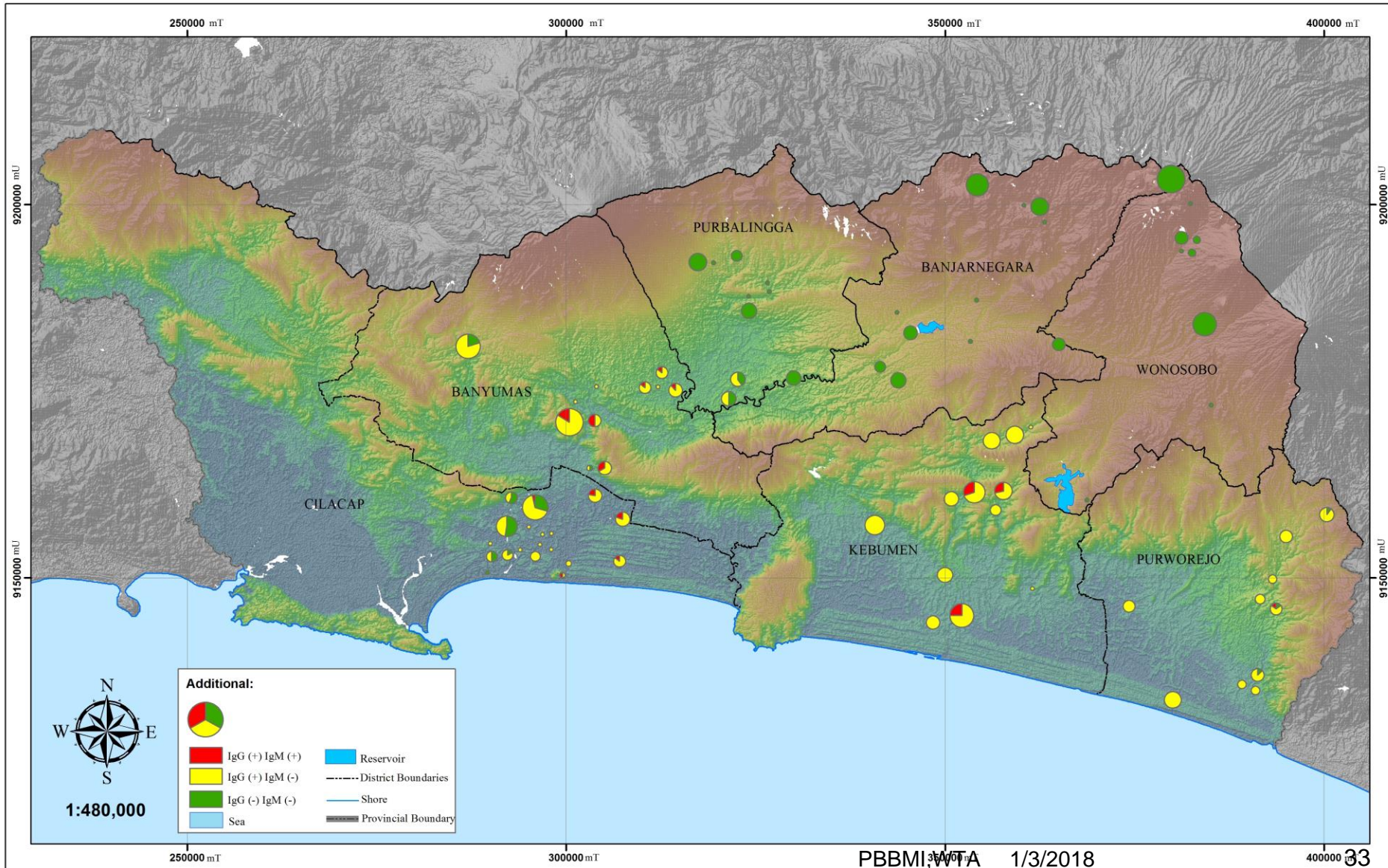
Siklus hidup *T. gondii* ketika menginvasi sel inang (Gangneux and Marie, 2012)

Sumber infeksi toksoplasmosis pada manusia (Gangneux and Marie, 2012)

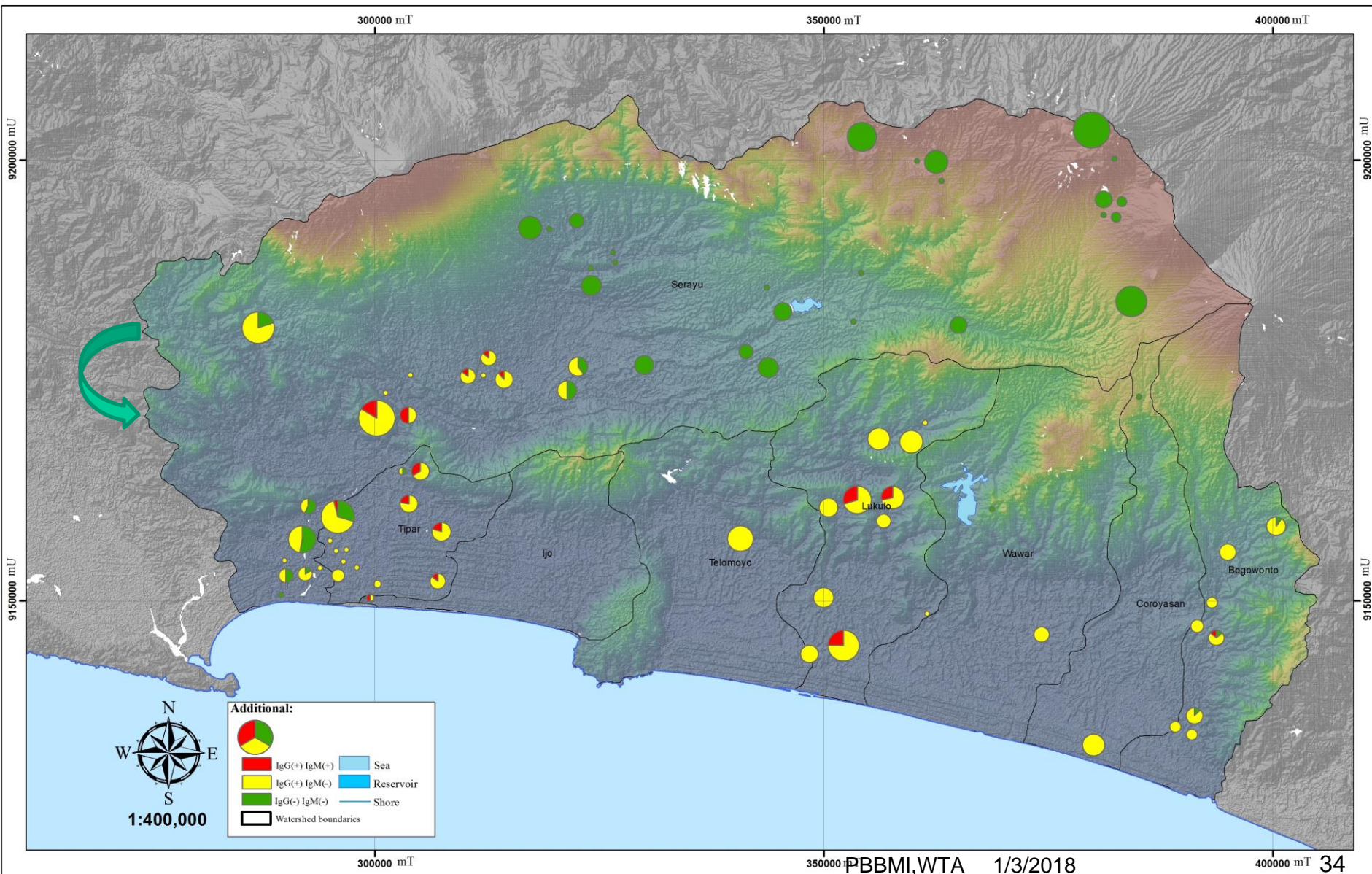
Map of Seroprevalence for Toxoplasmosis at Yogyakarta in Human



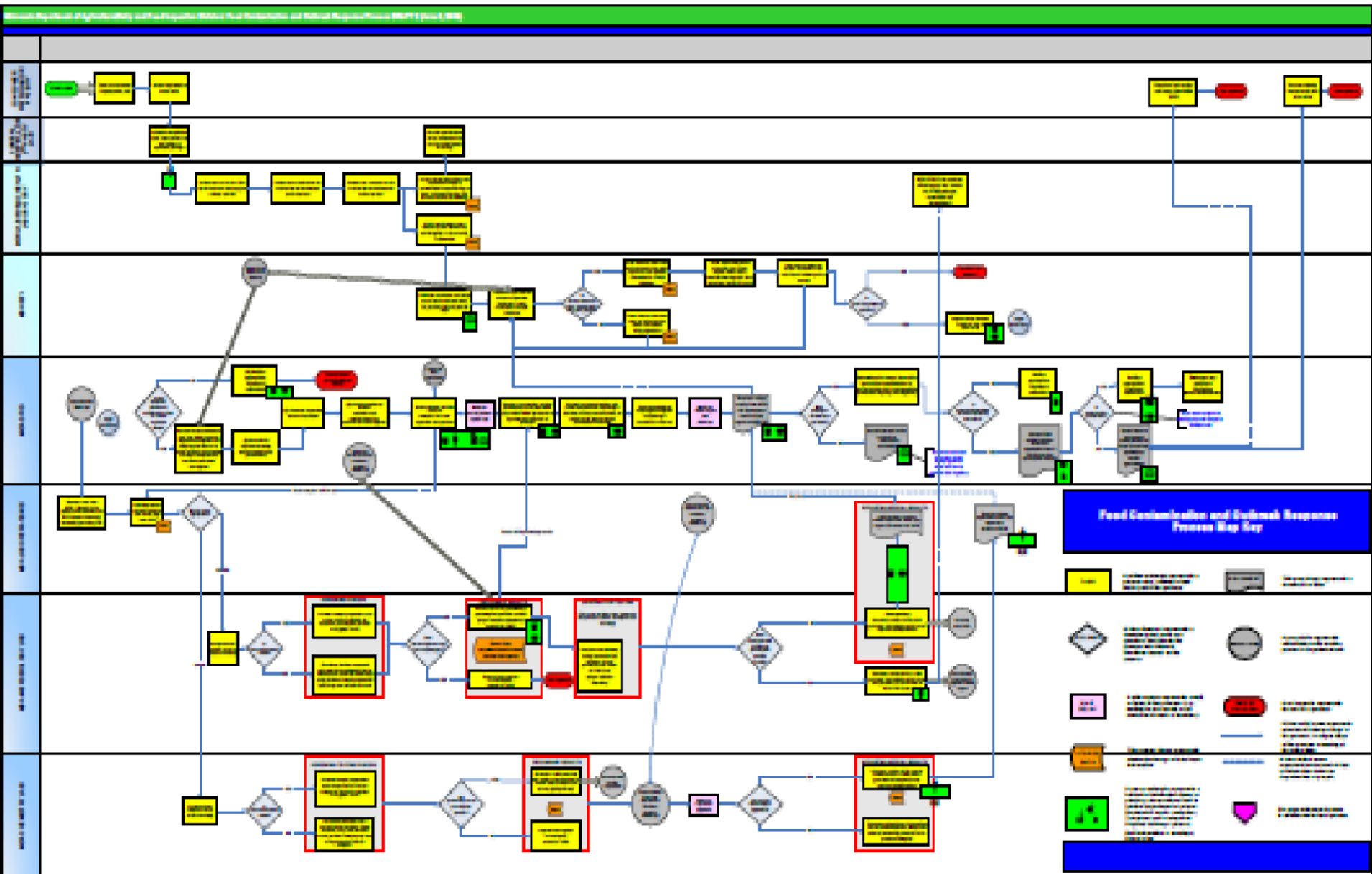
Distribution Toxoplasmosis in Middle Java



Watershed to Toxoplasmosis in Southern Middle of Java



Map the Known/Improve the Future



Concluding remarks

- * **Certainly a need to cooperate/ collaborate/ complement in OH/EH provides one possibility**
 - Clear involvement of environment
 - Tangible, edges (ecosystem) defined
 - Successful case studies
 - But sustained advocacy for incorporation into Govt strategy
- * EcoZD is 'stepping stone' medium to long term



*Thank
you*