

# ASF risk assessment study and development of Risk-based ASF Control Strategy for Malaysia

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## OBJECTIVES

1. Characterize ASF situation
- ASF situation analysis
  - Host and pig value chain
  - Risk Factor and Risk pathways assessment

2. Risk-based control strategy



# ASF CONSULTATIVE PROJECT

## METHODOLOGY



Literature review  
(2022-2023)

30 scientific publications

WOAH + FAO documents and reports

DVS documents

News



Data analysis  
(2023-24)

Outbreak and surveillance spatial analysis (WOAH, DVS)

Network análisis pig movement data

Potential risk factor data (WB hábitat, conflict, roads, rivers, oil palm plantations) (DVS)



Online questionnaire  
(Dec. 23-Jan.24)

Pig value chain

Biosecurity data

Socioeconomic data

- 50 participants (producers, vets, transport, government...)
- 9 sections



Consultative workshop  
(Jan. 24)

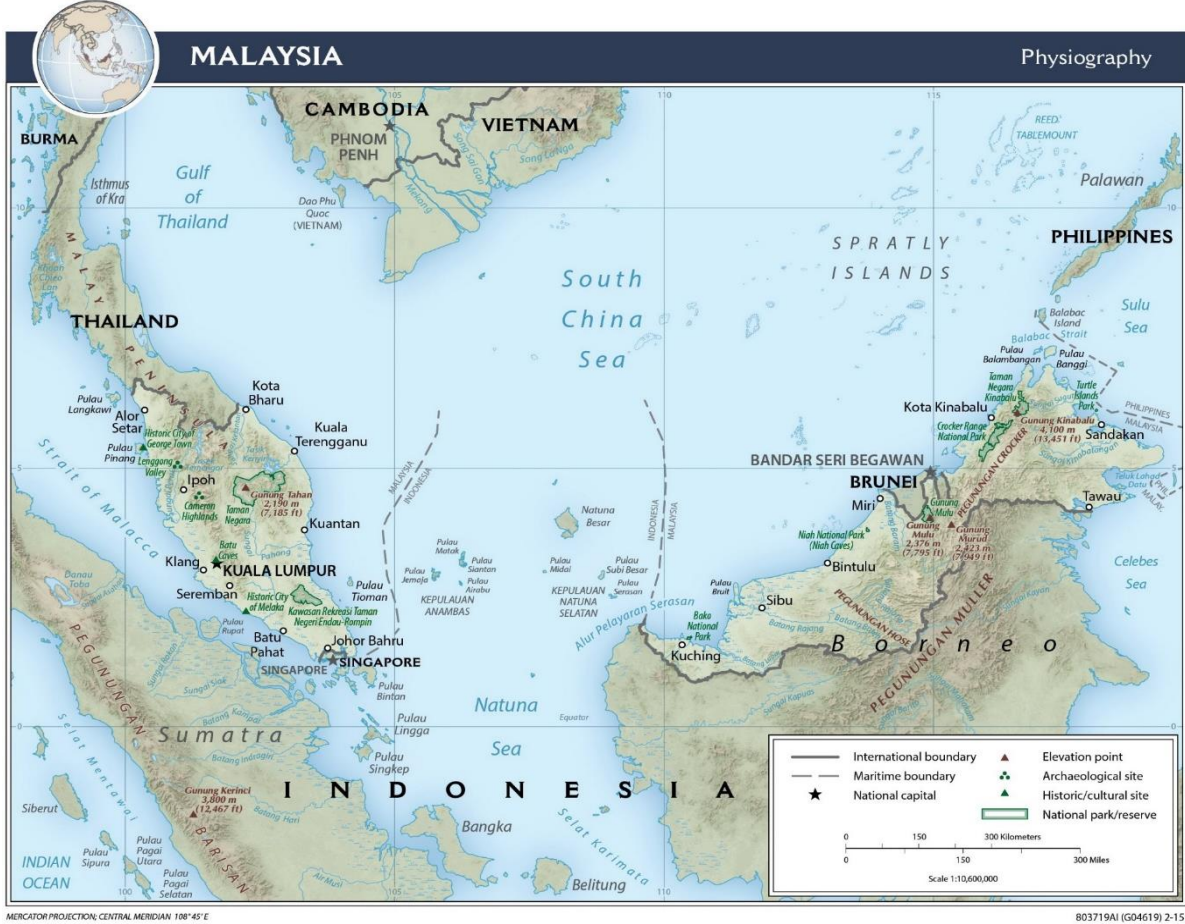
Validation of results

Risk pathways of introduction and spread

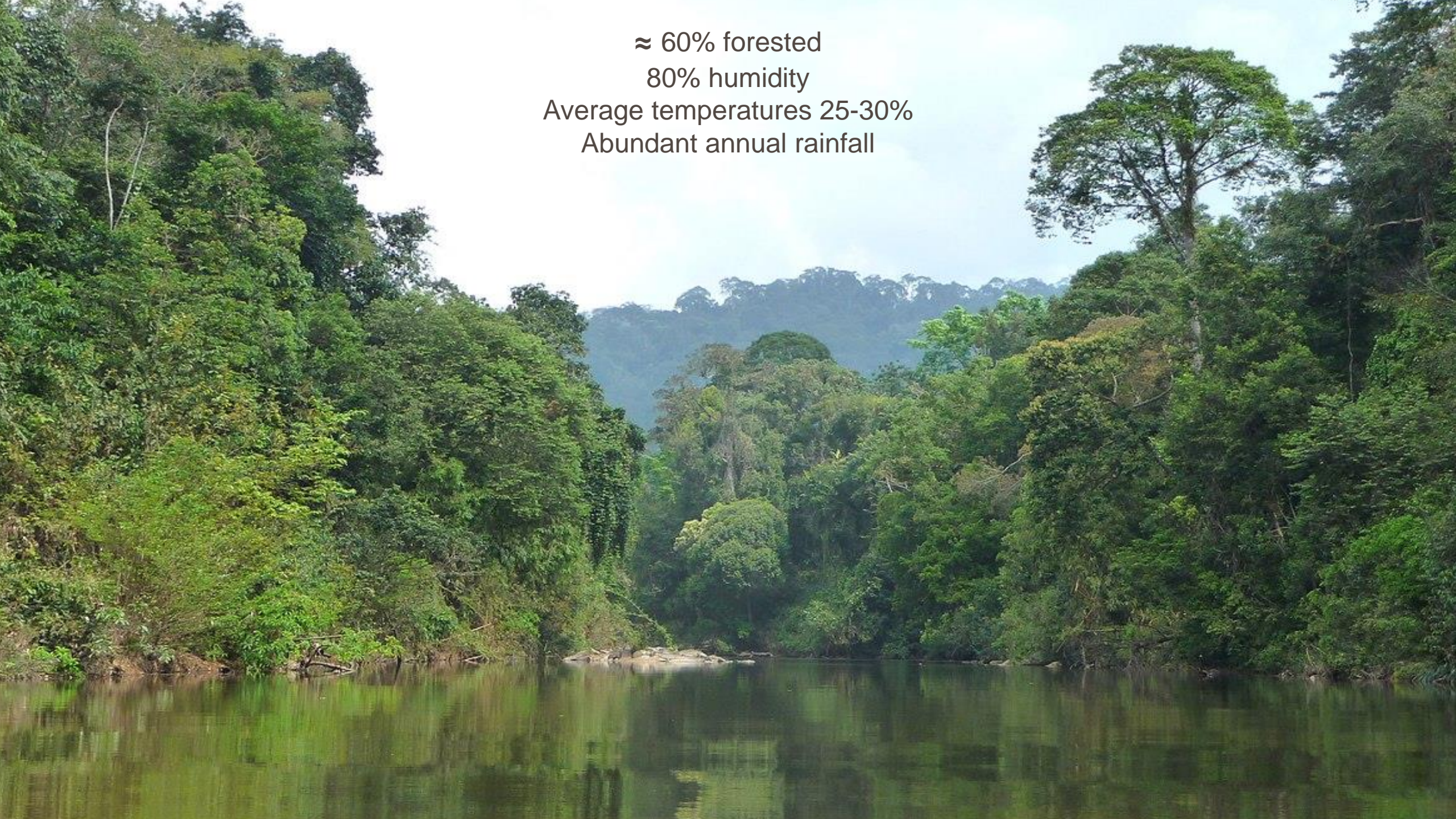
- 30 participants
- Peninsular and E. Mal
- DVS, wildlife, producer, academia, lab



# INTRODUCTION





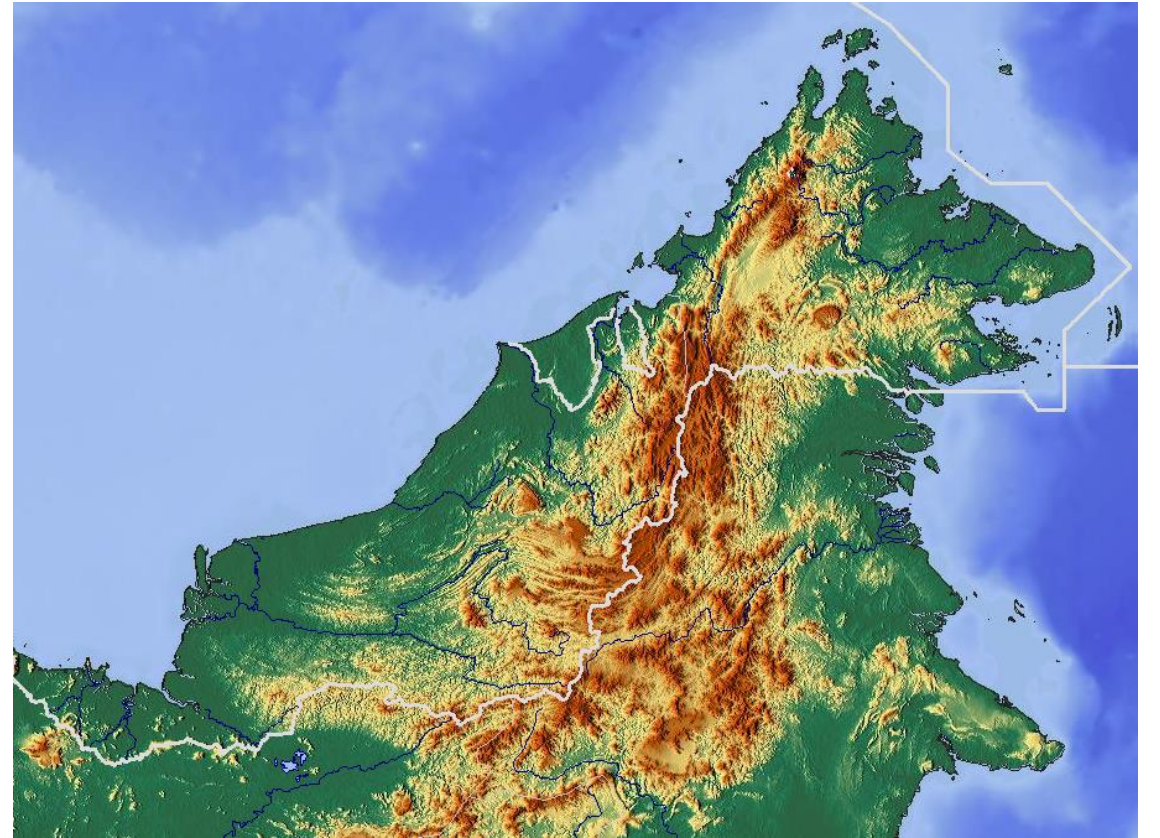
A wide-angle photograph of a tropical forest. In the foreground, a calm river reflects the surrounding greenery. The middle ground is filled with dense, multi-layered trees of various shades of green. In the background, a range of mountains is visible under a bright, slightly hazy sky. The overall scene is peaceful and verdant.

≈ 60% forested  
80% humidity  
Average temperatures 25-30%  
Abundant annual rainfall

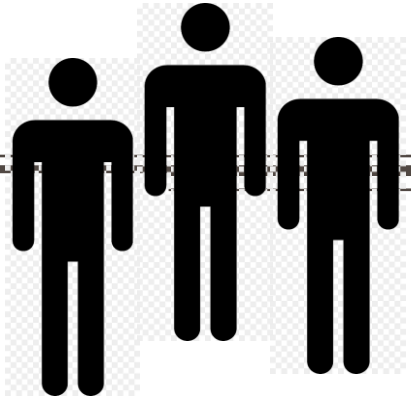


# Mountainous country

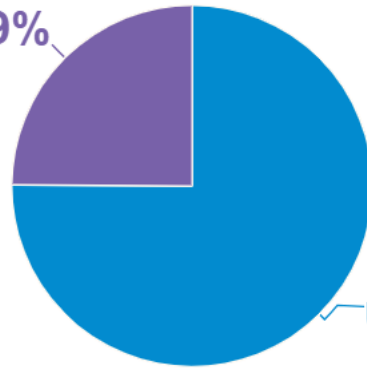
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35 mill



rural 24.9%



urban 75.1%

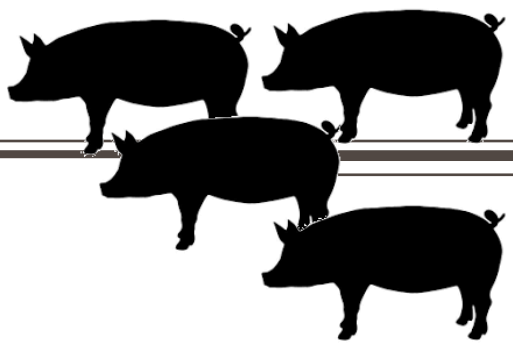
# Human population

© Encyclopædia Britannica, Inc.





# Pig distribution

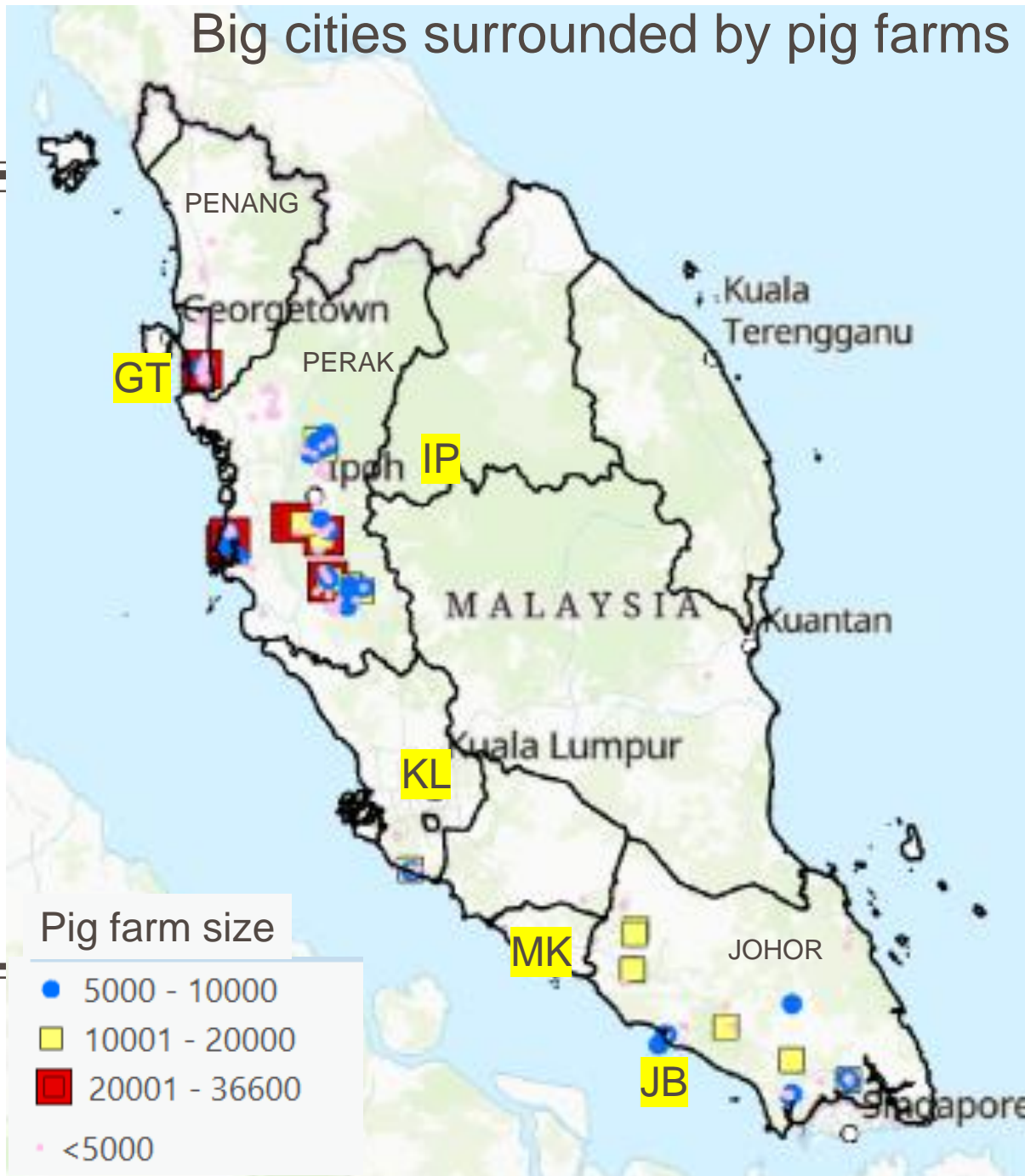


**1.86 million heads**  
(2021)

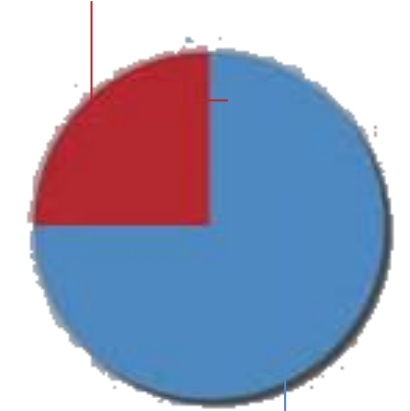
All commercial farms  
**(447 farms)**  
(2021-23)



Big cities surrounded by pig farms (except for KL)



Pig farm size  
**>5000 pigs/farm**



**<5000 pigs/farm**

Median= 2000 pigs/farm



98%



Median=11 pigs/farm  
Max=280 pigs

Median=263 pigs/farm  
1 farm with 230 thous pigs

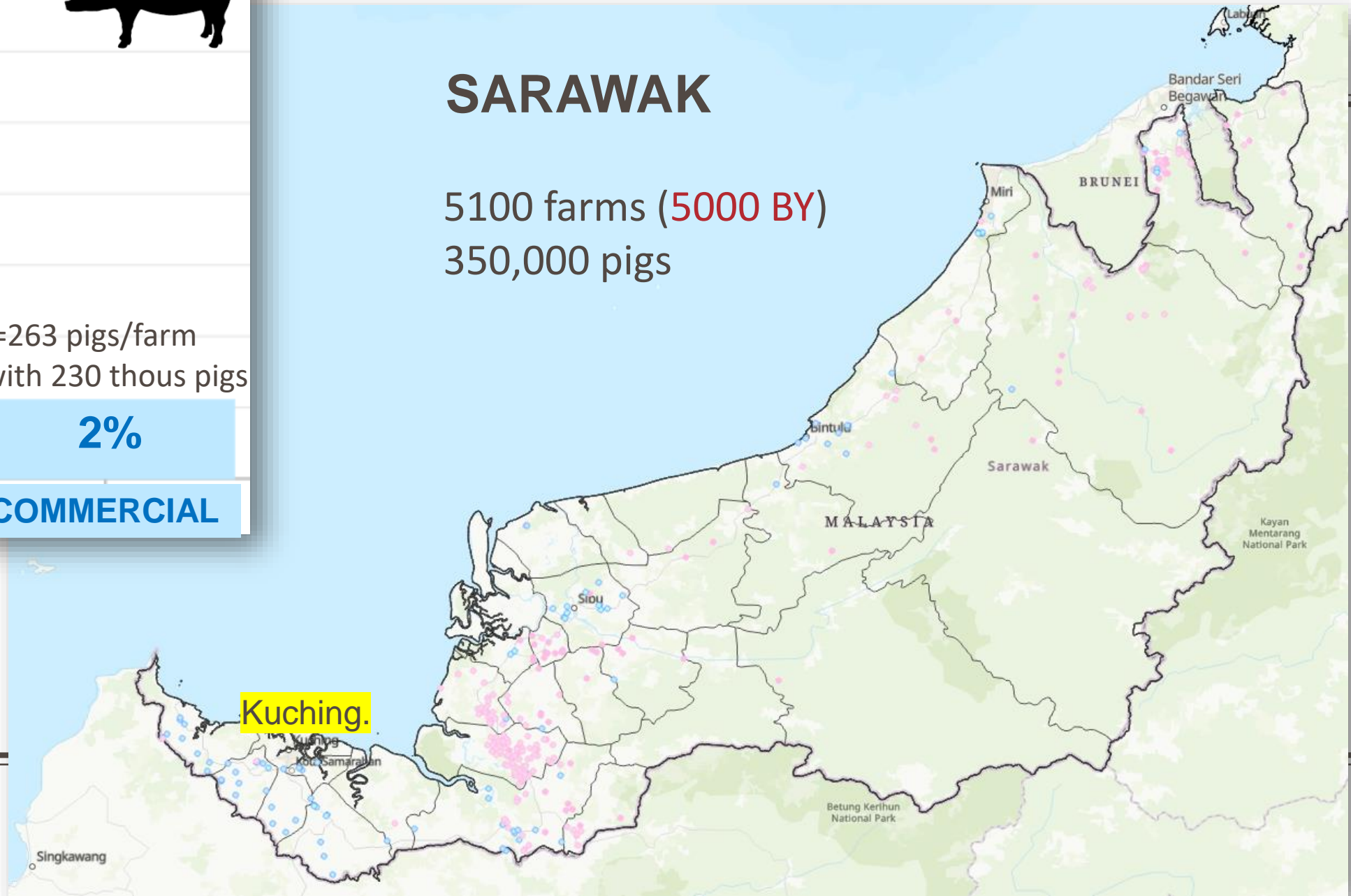
BACKYARD

2%

COMMERCIAL

# SARAWAK

5100 farms (5000 BY)  
350,000 pigs

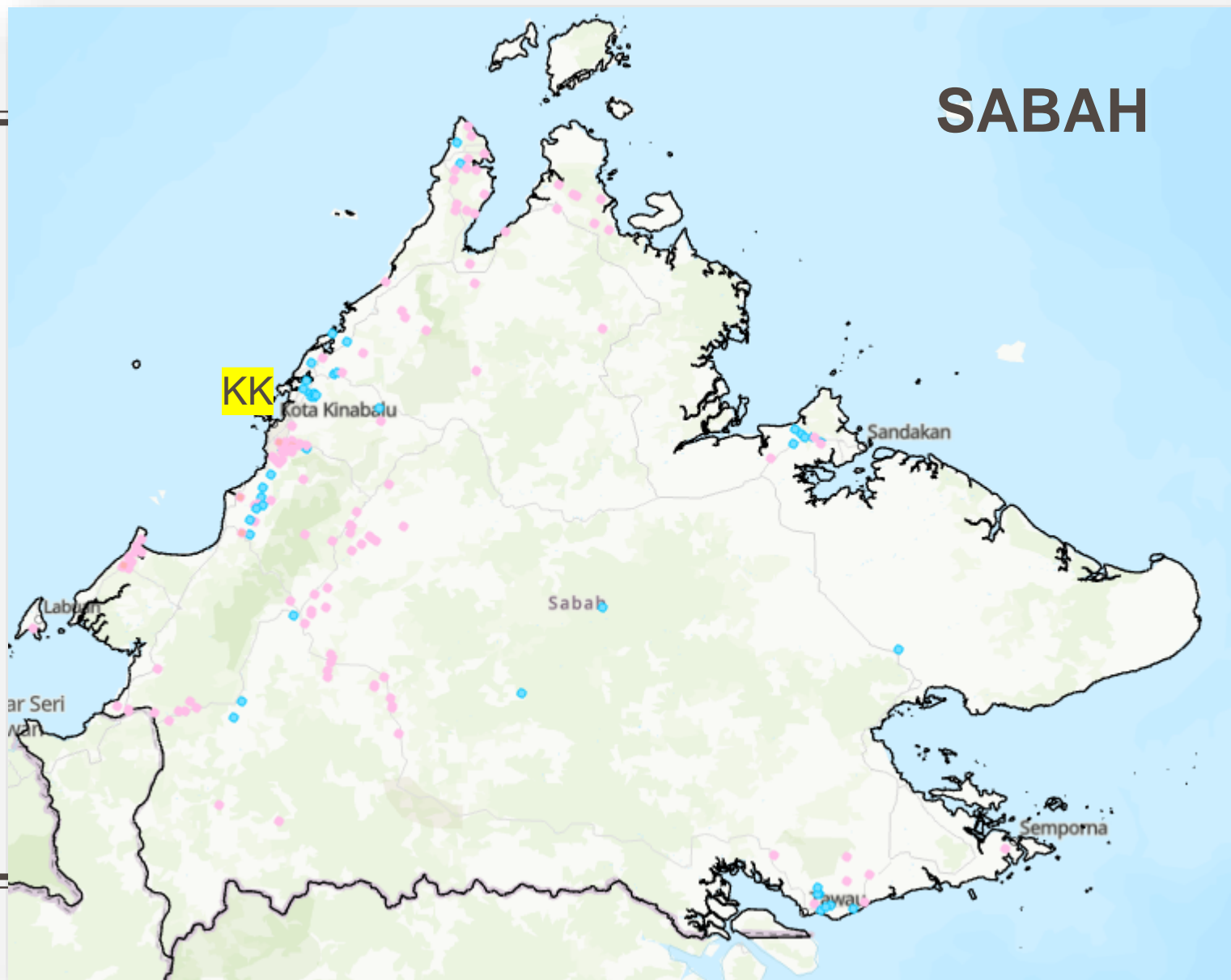


# SABAH



230 farms (179 backyards, 77%)  
100,000 pigs

48 commercial farms  
Median=604 pigs/farms





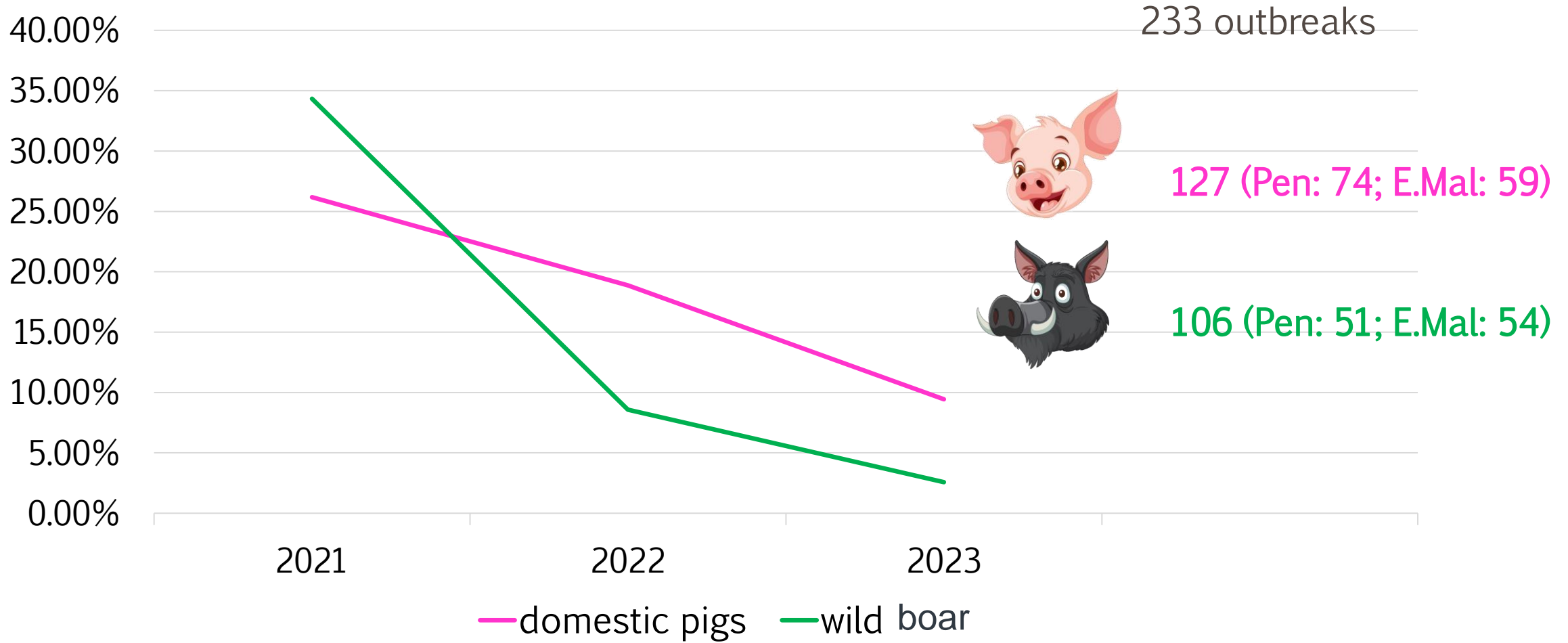
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# ASF SITUATION IN MALAYSIA

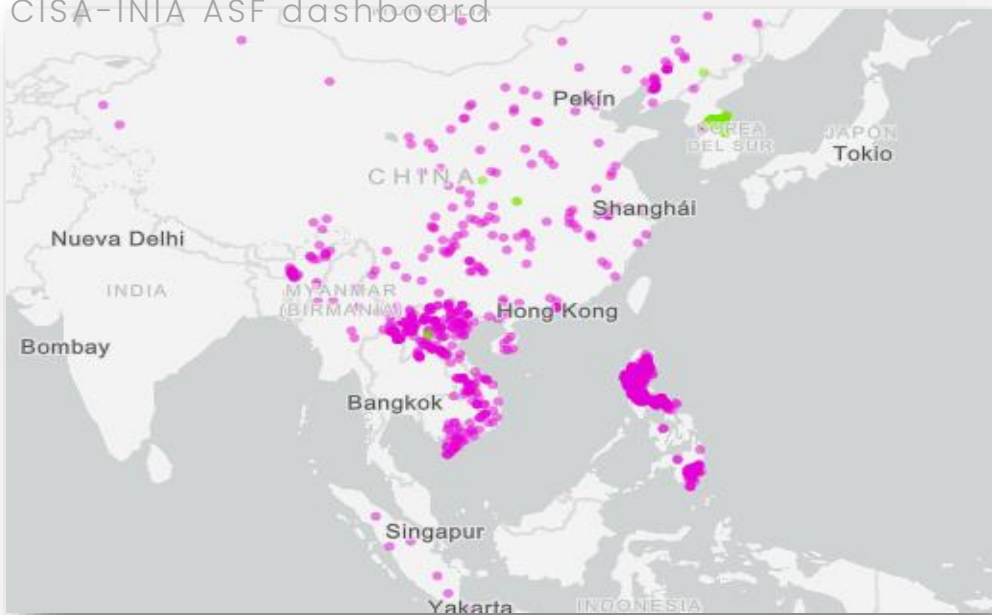


# ASF IN MALAYSIA 2021-2023

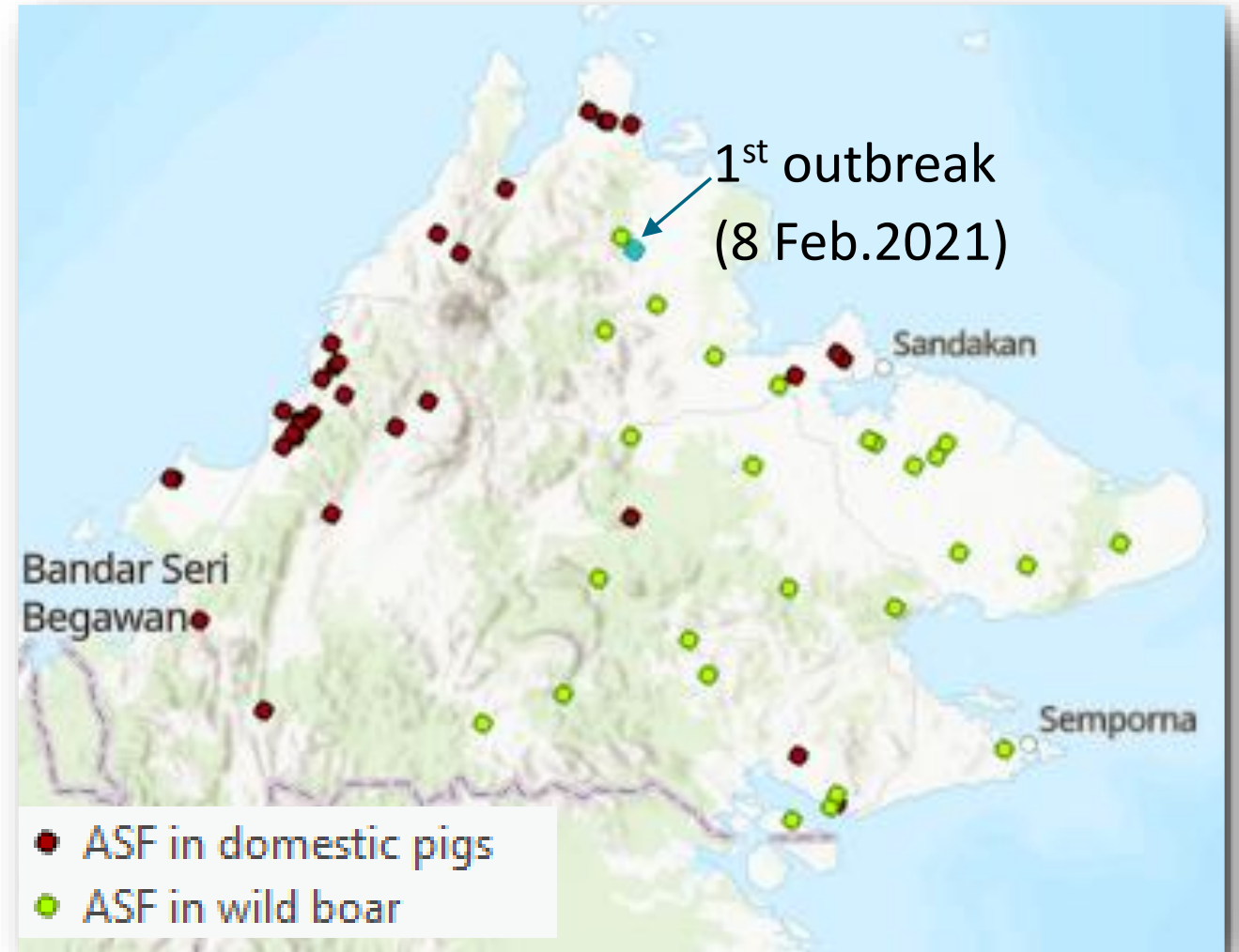
(INFUR data up to 24.06.24)







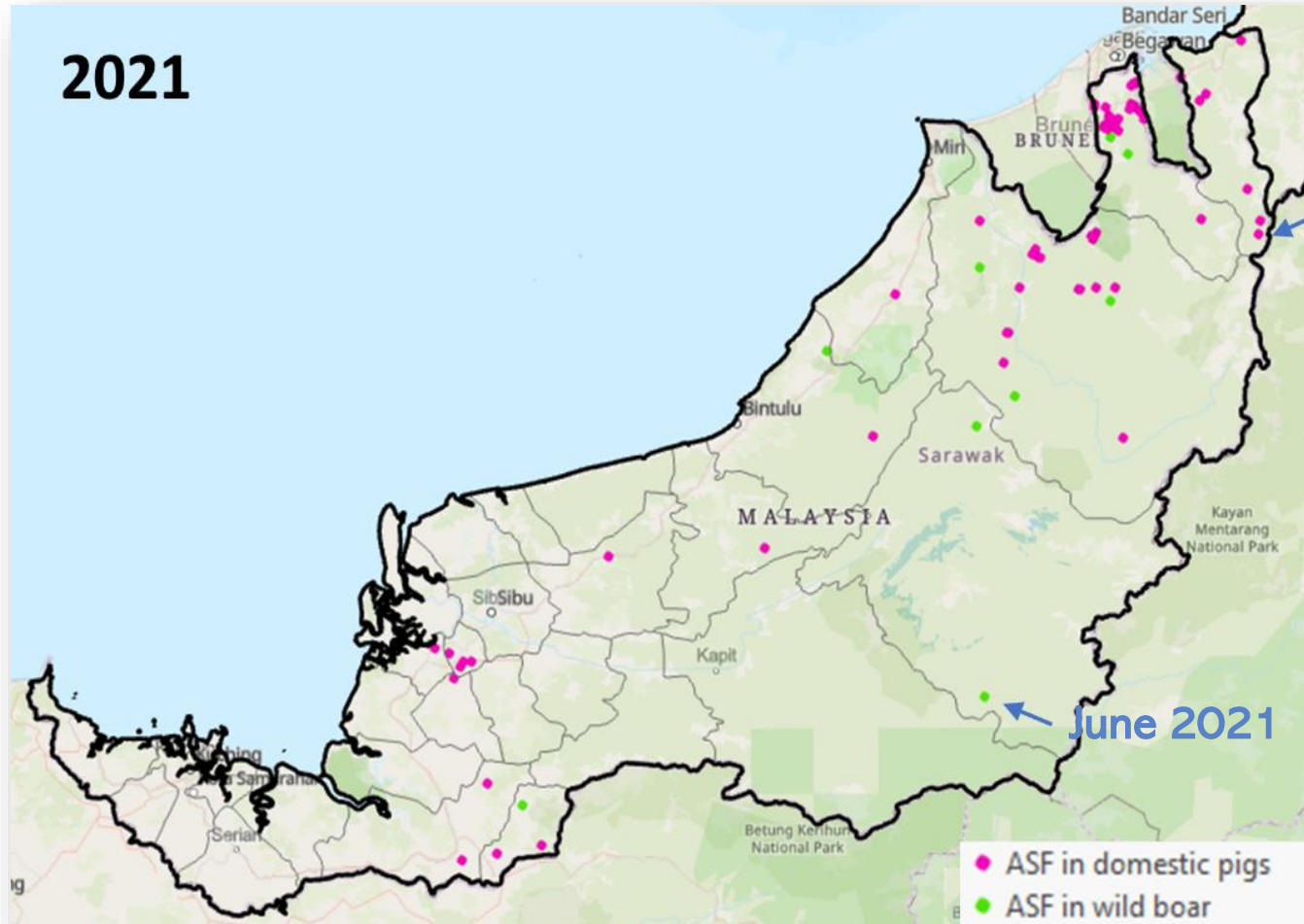
# INTRODUCTION AND SPREAD OF ASF IN SABAH, 2021



## ASF IN ASIA 2018-2021

- Most notifications in DP
- PRC, MN, PRK, KOR, IN, VNM, LDPR, KHM, MYM, PHIL, IND affected
- COVID-19 movements restrictions in place in 2020-2021

# INTRODUCTION AND SPREAD OF ASF IN SARAWAK, 2021



June 2021



CREDIT: Suzanne Lee



# Spatial surveillance data analysis

DVS Sarawak data 2021-2023

## ASF+



Abattoir, pork product, frozen pork, wet market, mart

2021: Limbang; 2022: Miri, Sarikei, Sibu; 2023: Kuching, Sibu



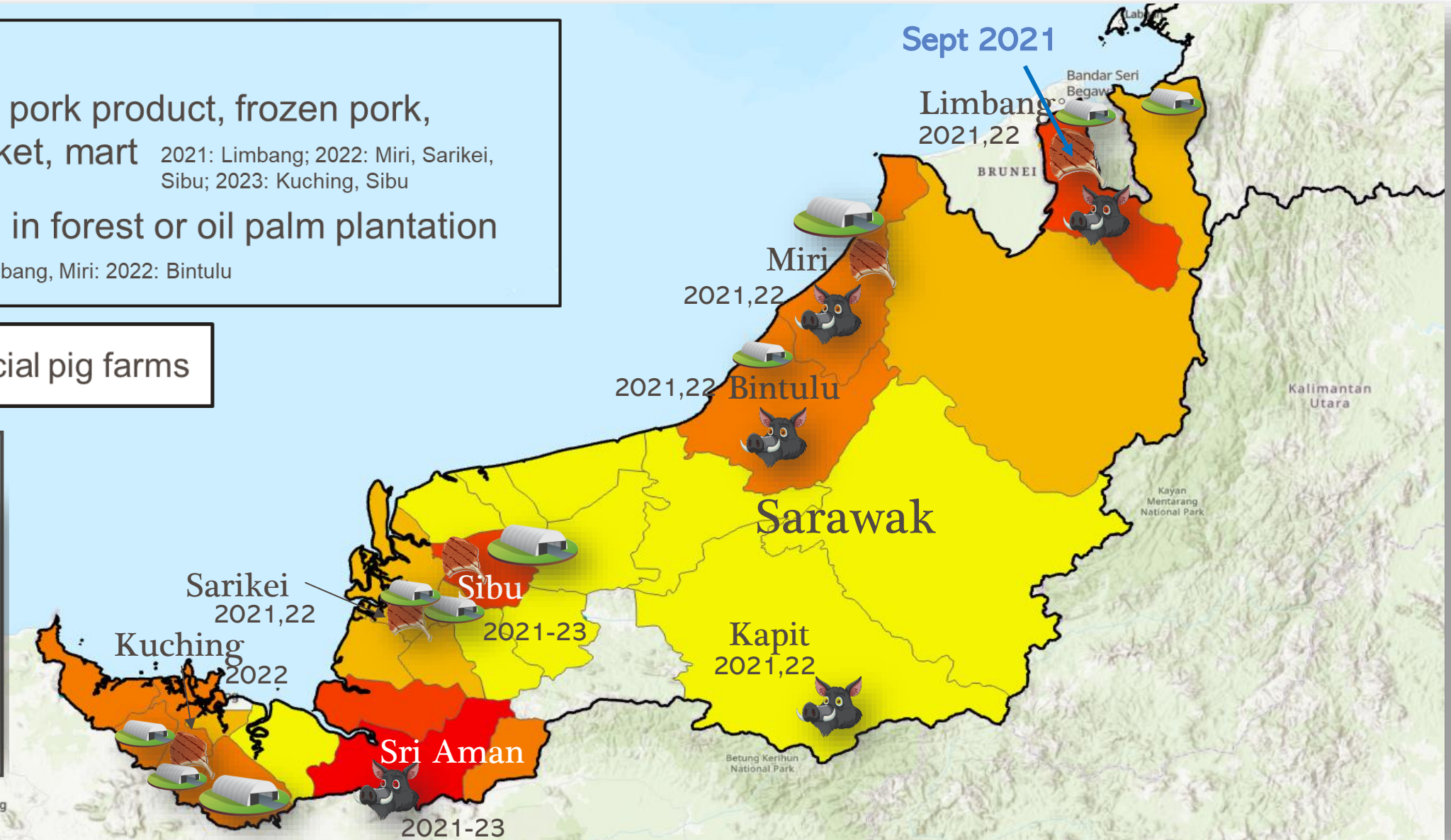
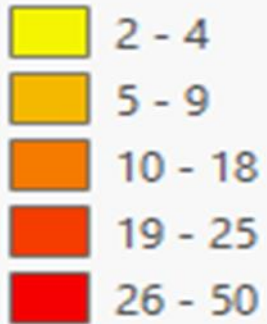
WB dead in forest or oil palm plantation

2021: Kapit, Limbang, Miri; 2022: Bintulu



Commercial pig farms

## ASF+ counts



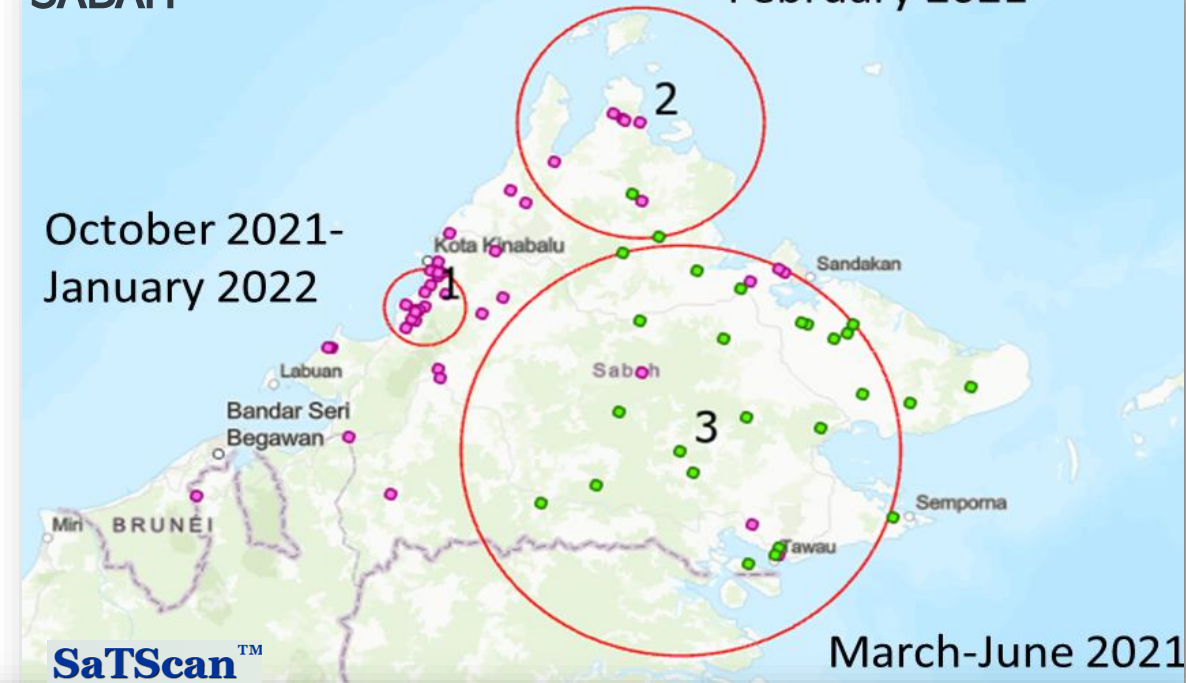
# Space-time outbreak data analysis East Malaysia

INFUR data up to 30.10.24  
DVS Malaysia data 2021-2023

SABAH

February 2021

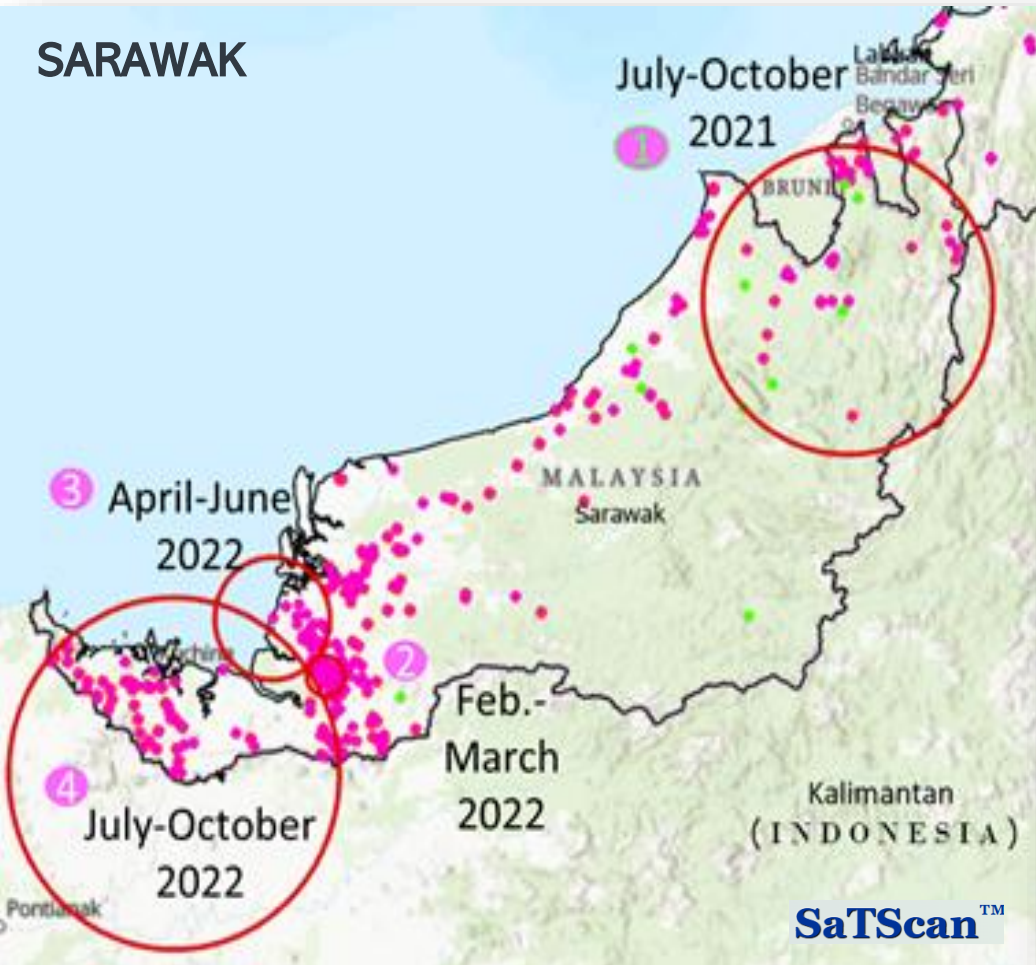
October 2021-  
January 2022



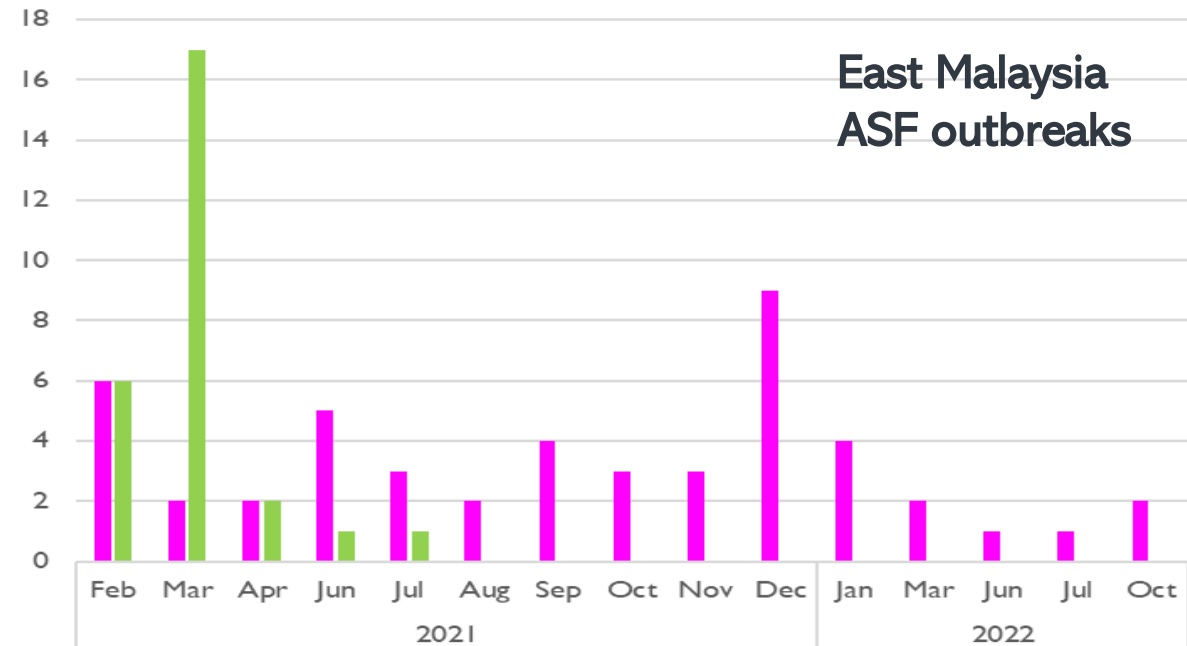
March-June 2021

SARAWAK

July-October  
2021



East Malaysia  
ASF outbreaks



Domestic pigs  
Wild boar

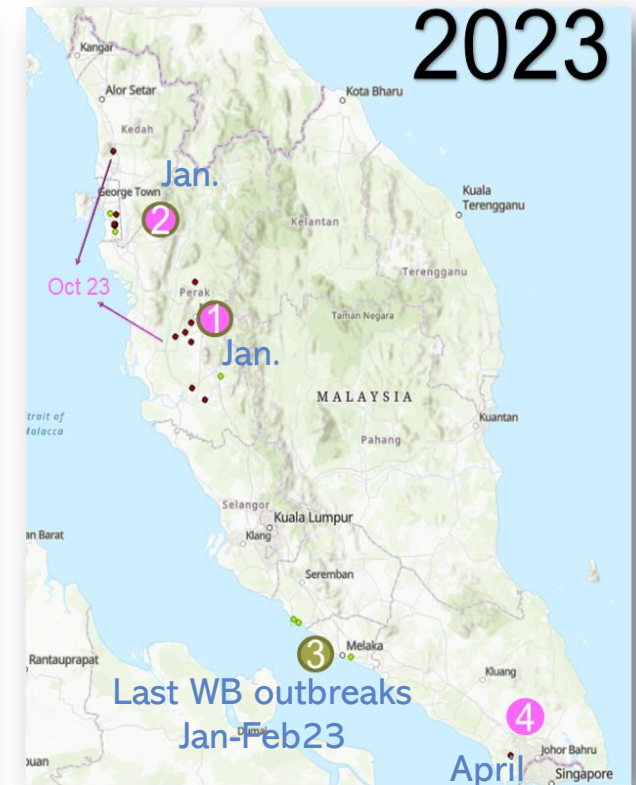
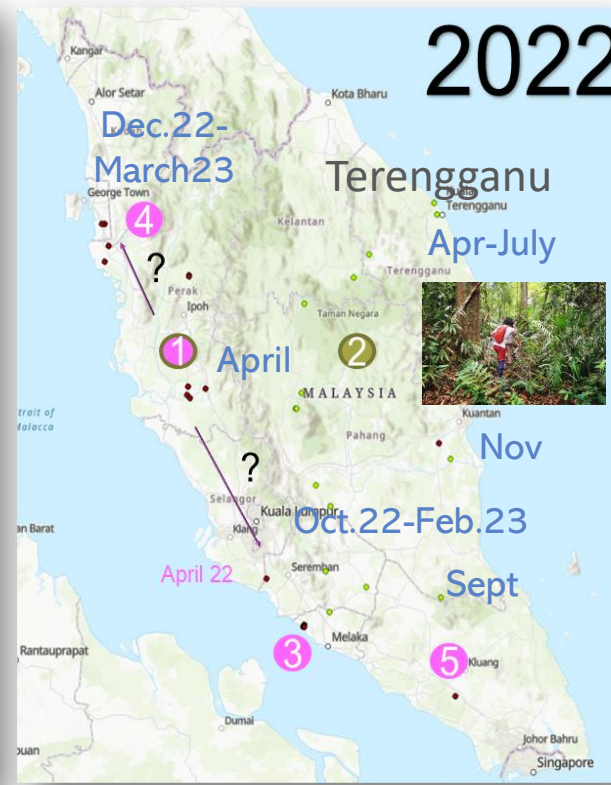


# INTRODUCTION AND SPREAD OF ASF IN PENINSULAR MALAYSIA, 2021-23



1st cases wild boar <10 km from agricultural plantation areas (oil palm, rubber, pineapple...)

October-December

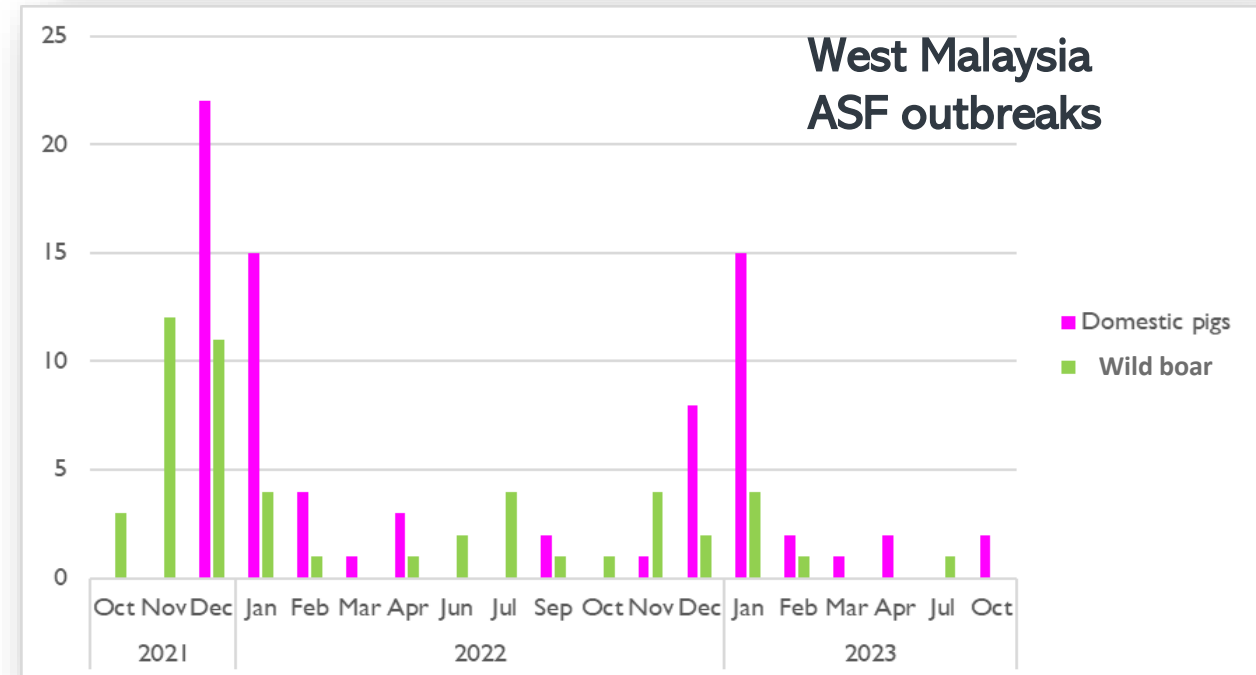
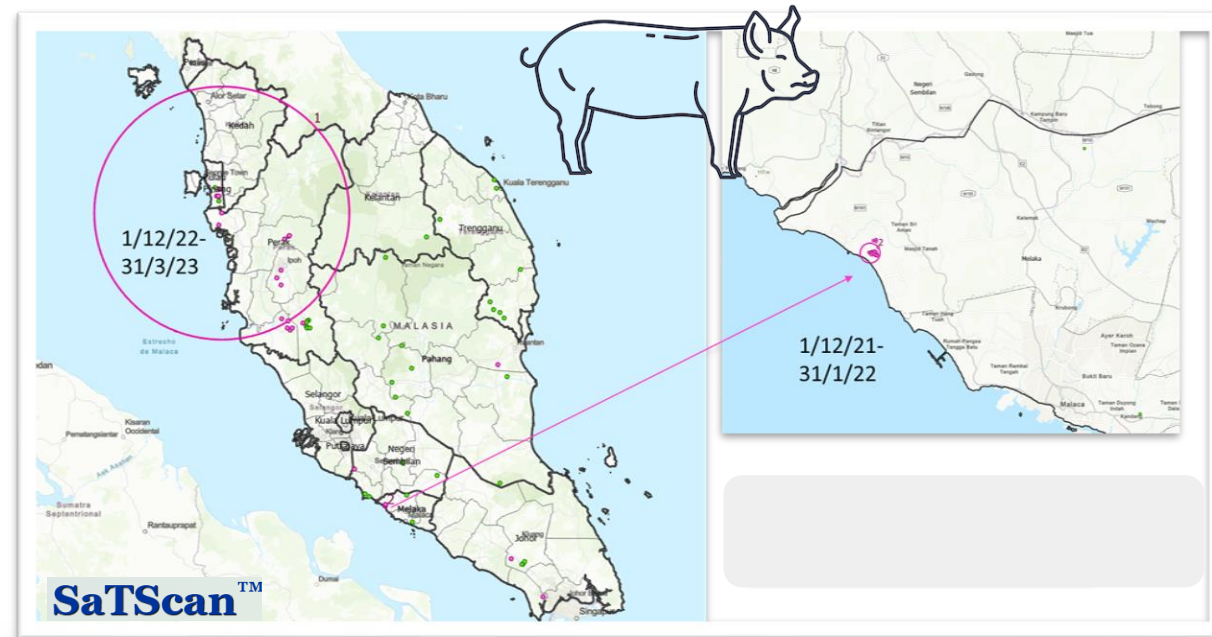
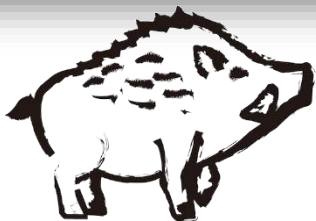
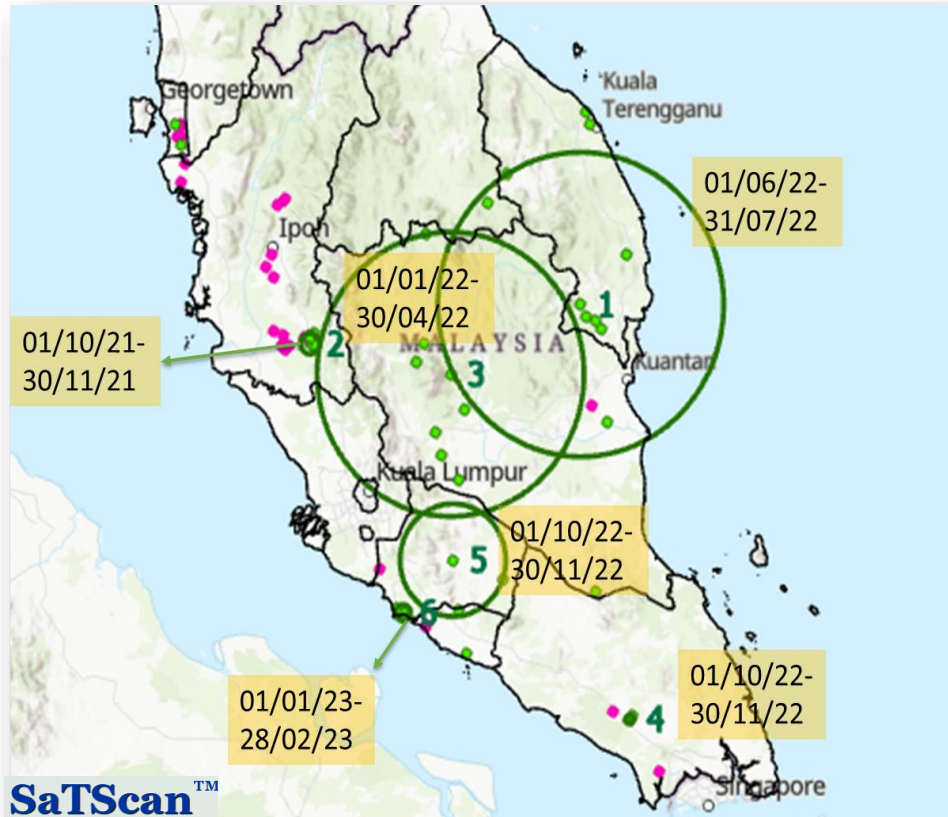


WB cycle natural areas

DP cycle

# Space-time outbreak data analysis West Malaysia

INFUR data up to 30.10.24  
DVS Malaysia data 2021-2023



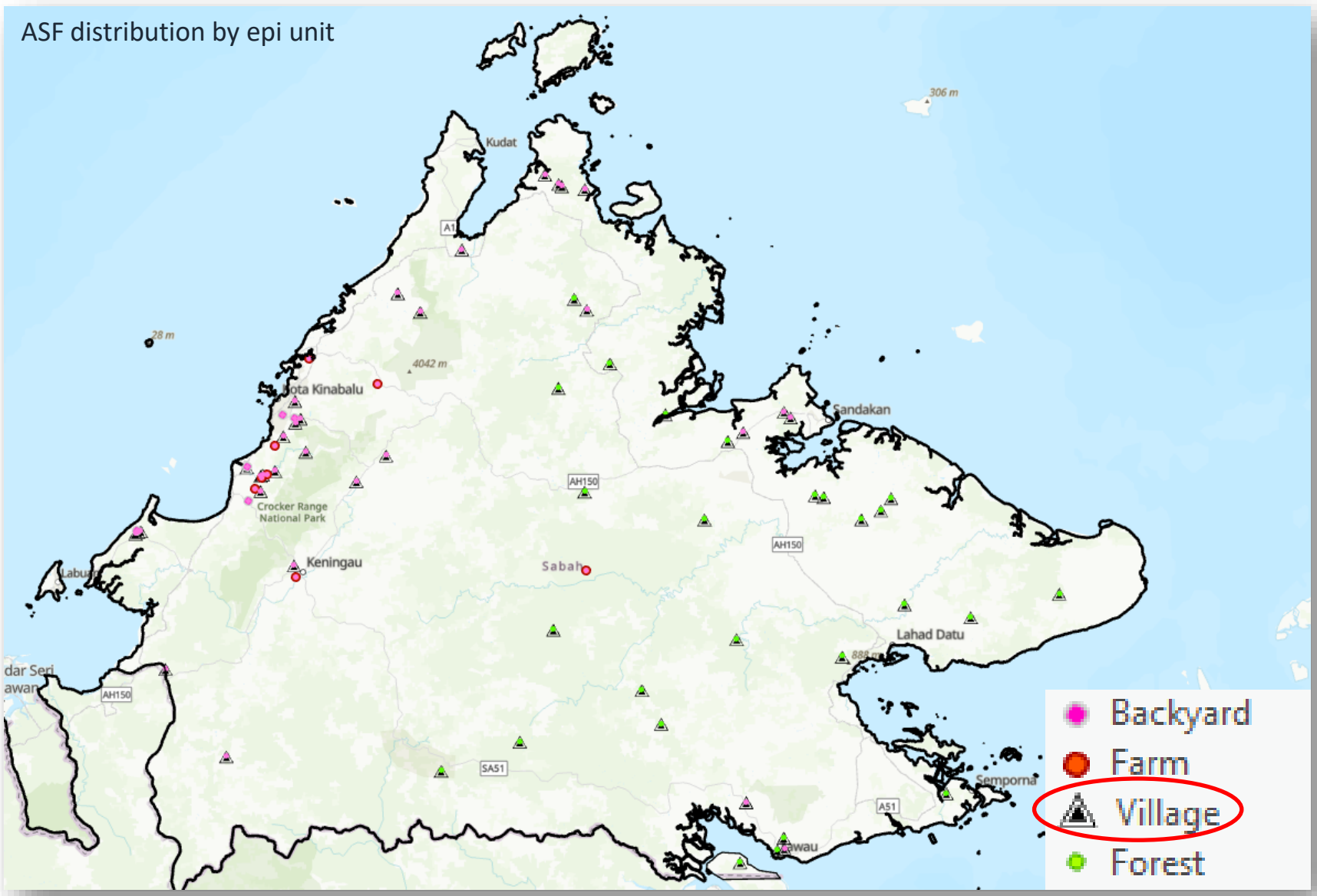


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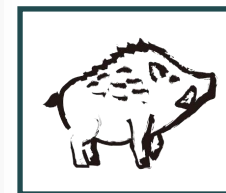
# ASF POTENTIAL RISK FACTORS IN MALAYSIA



# ASF RISK FACTORS IN SABAH (EAST MALAYSIA)



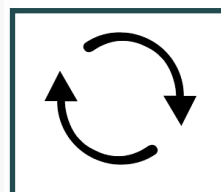
## Epidemiological unit



Wild boar processing for various markets



On-site slaughtering



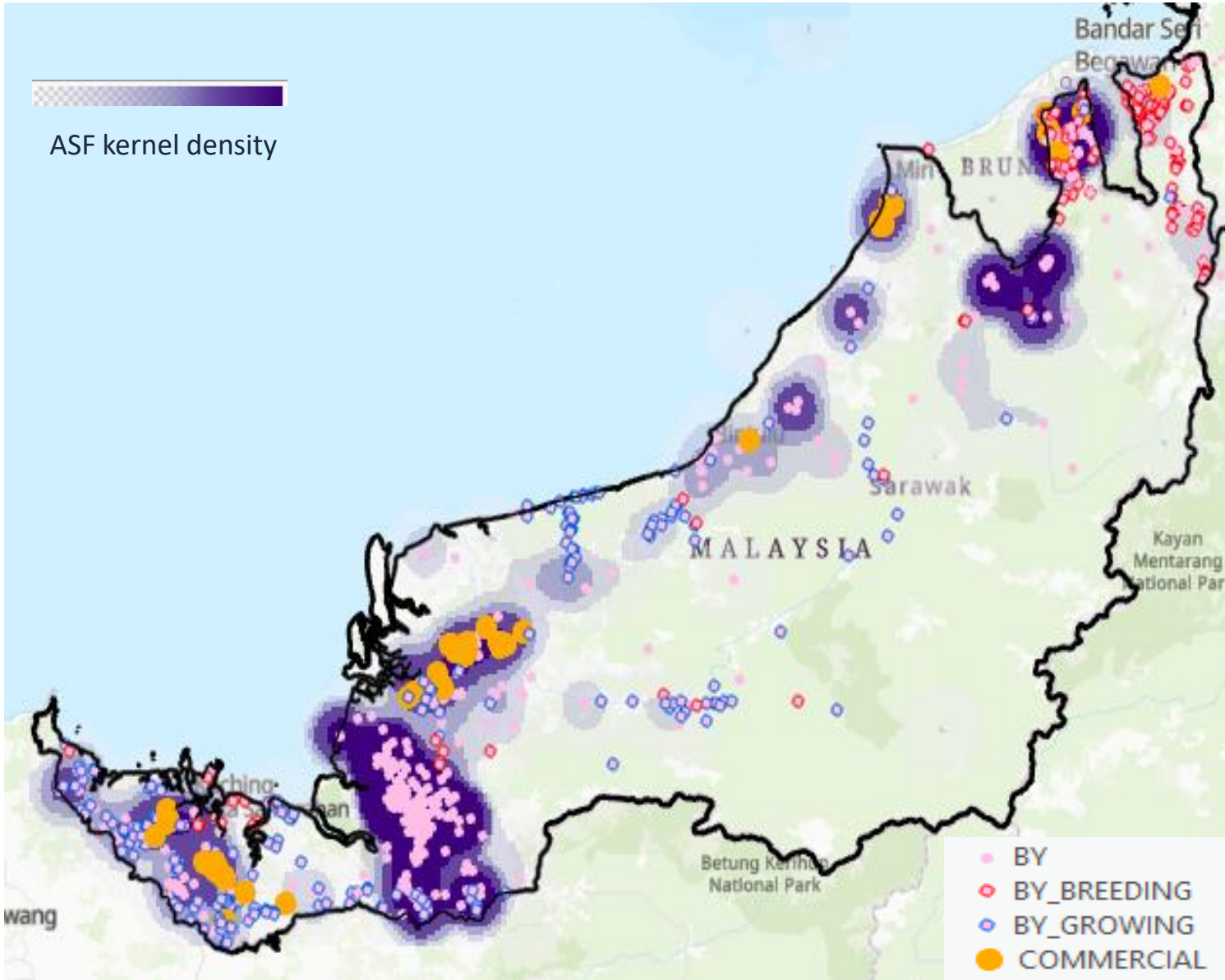
Interaction backyards with commercial farms



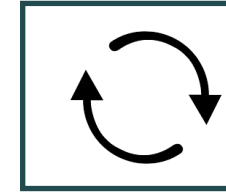
Low biosecurity



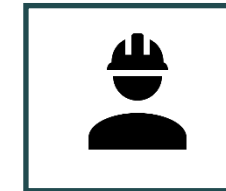
# ASF RISK FACTORS IN SARAWAK (EAST MALAYSIA)



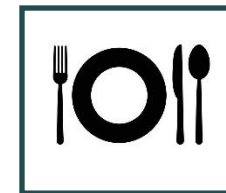
## Pig value chain



Interaction backyards with commercial farms



Shared workers, breeders and feed between commercial-backyards

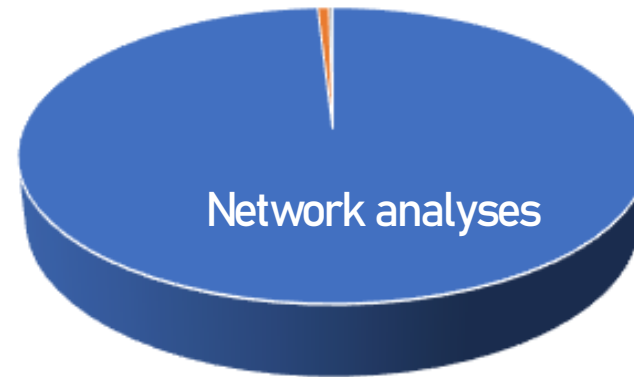
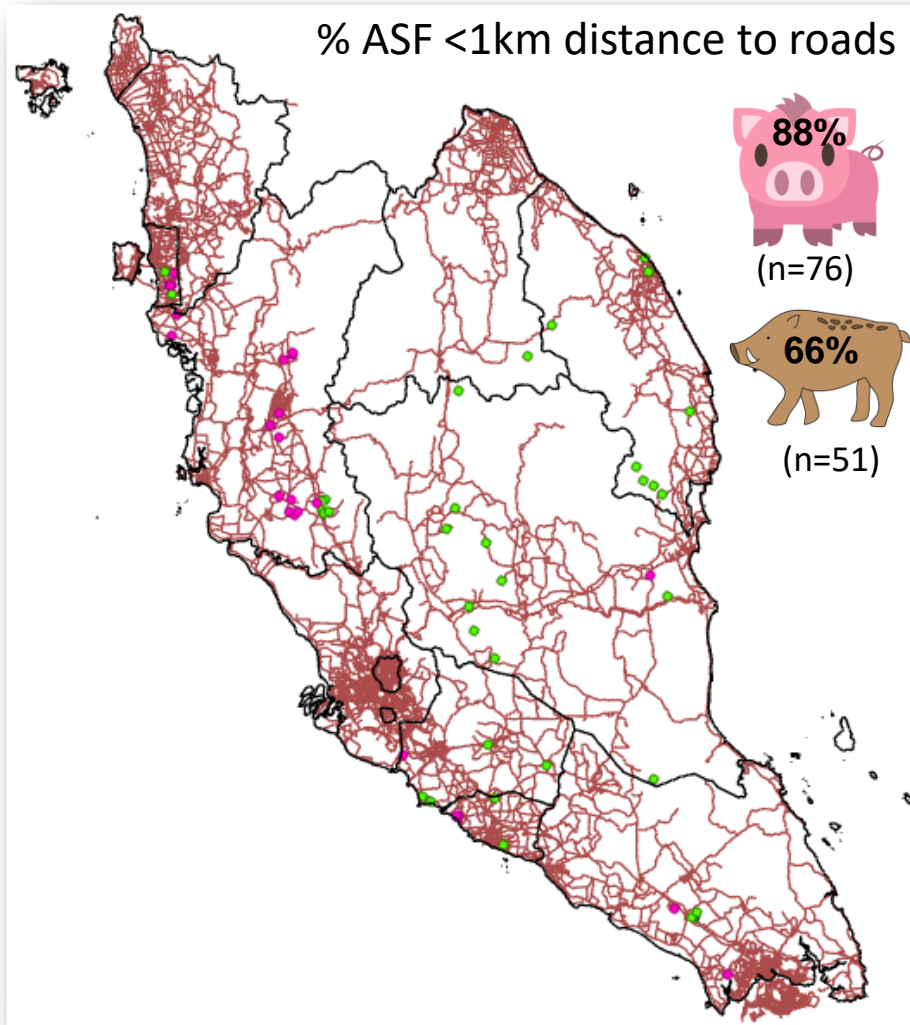


Swill feeding



Illegal trade of pork products

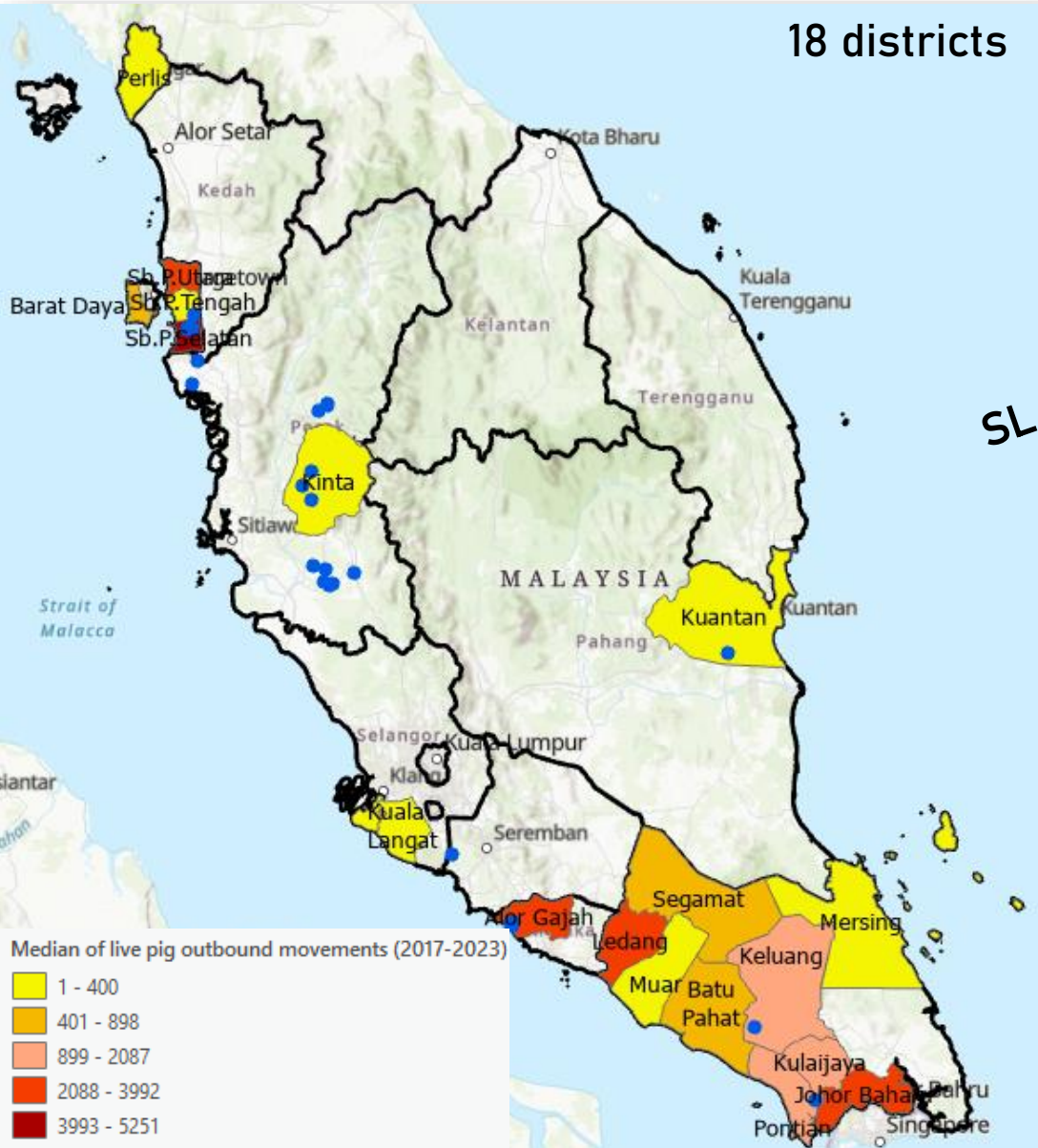
# ASF RISK FACTORS IN PENINSULAR MALAYSIA



- 99% LIVE PIG MOVEMENTS
- <1% Pig carcass, frozen pork, pork product



# Live pig outbound movements (retrospective) and ASF



SLAUGHTER (97%)



Breeding (3%)



The rest for rearing, religious use or transit





2021

2022

Penang

George Town

Perak

Ipoh

Kuala Terengganu

MALAYSIA

Kuantan

Selangor

Kuala Lumpur

Pahang

Malacca

Johor

Singapore

George Town

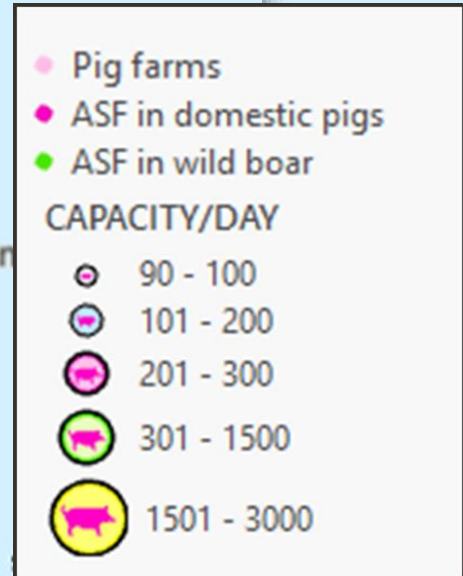
Kuala Terengganu

MALAYSIA

Kuantan

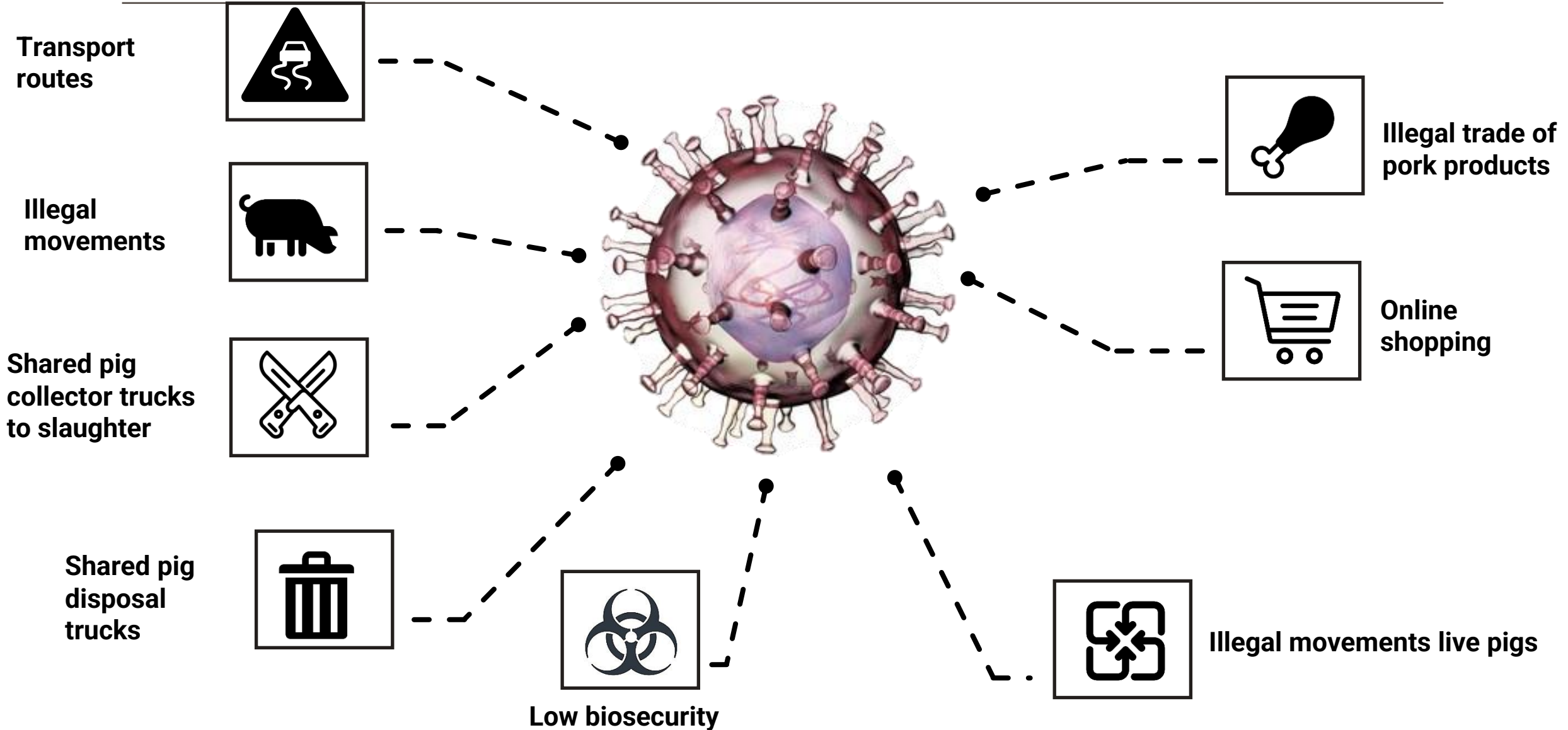
Kuala Lumpur

Singapore



# RISK FACTORS IN PENINSULAR MALAYSIA

Related to the pig value chain





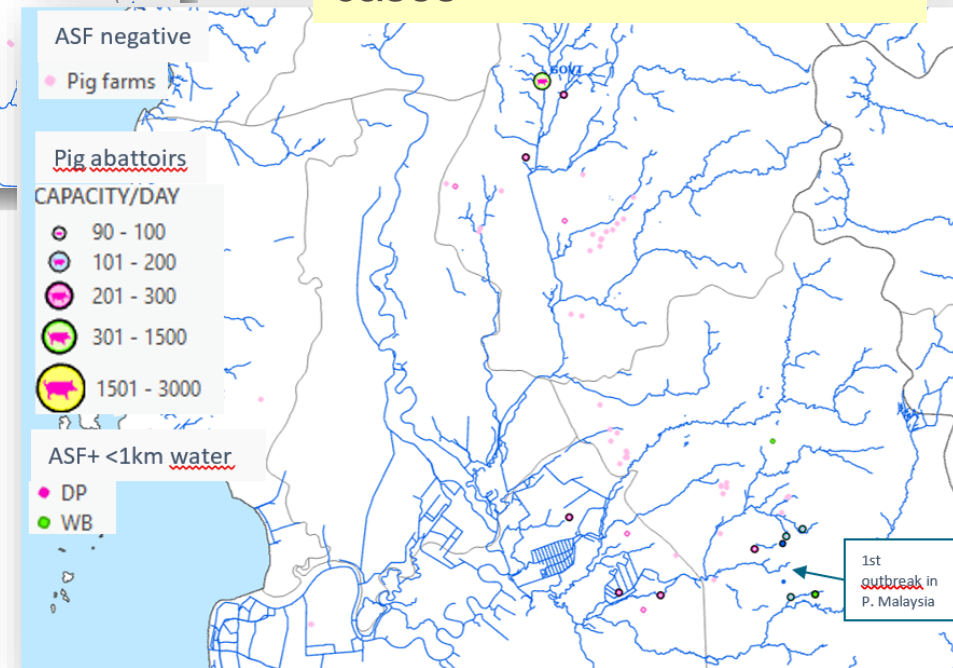
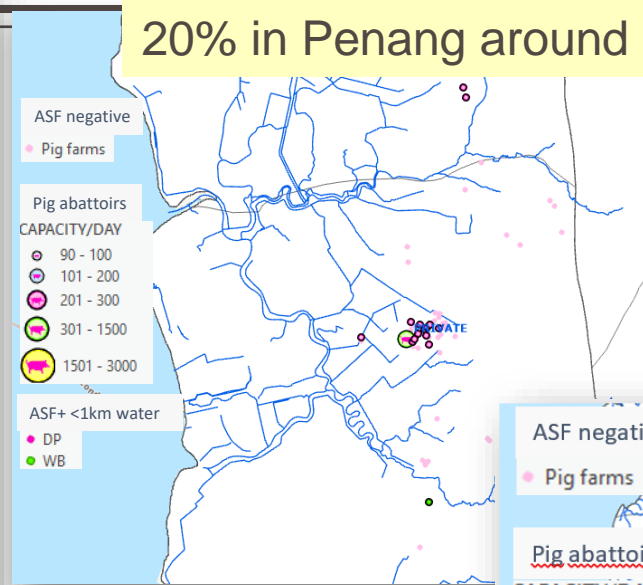
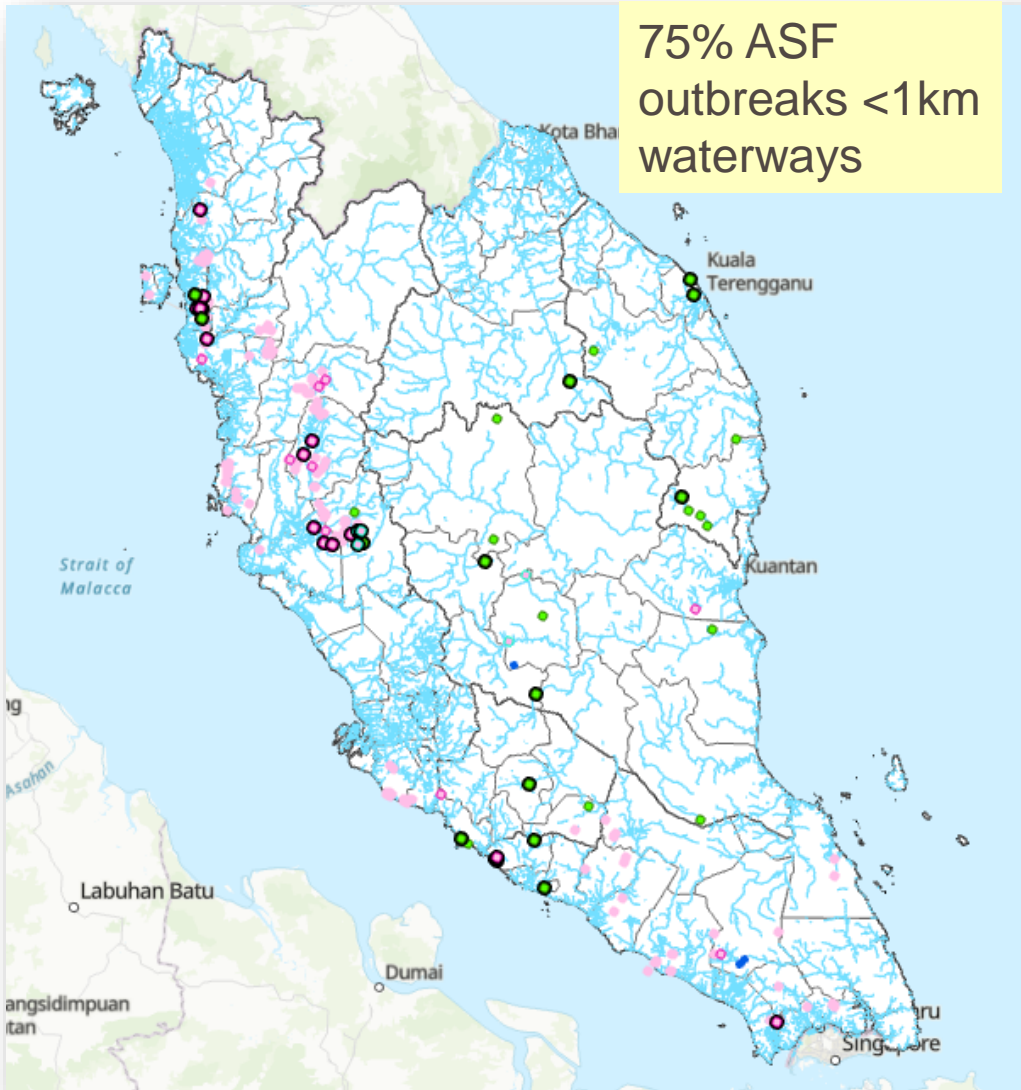
# RISK FACTORS IN PENINSULAR MALAYSIA

## Related to waterways

75% ASF outbreaks <1km waterways

20% in Penang around a private SH

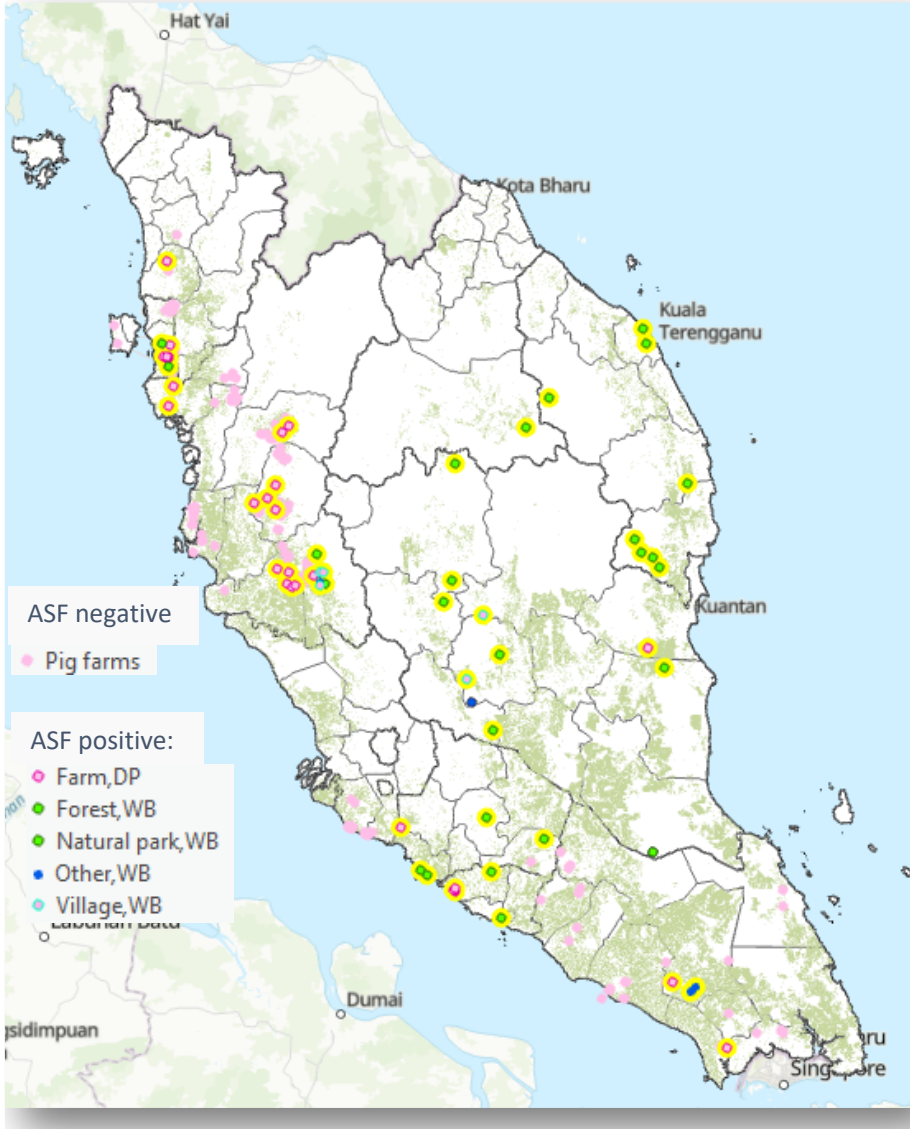
20% in Perak, of which most are WB in villages, including close to first cases



- Pigs' drinking water: 41% do not treat water (n=27)

# RISK FACTORS IN PENINSULAR MALAYSIA

## Related to oil palm plantations



98% ASF outbreaks <1km from an oil palm plantation farm

The distribution of oil palm plantation farms in Peninsular Malaysia is very widespread, and close to pig farms, natural parks and villages.



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# MALAYSIA RISK-BASED STRATEGY



# Objective and main elements

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To reduce the impact of ASF on the pig sector and contribute to food security

## Main elements:

1. Strengthen surveillance system, not only on clinical signs: extent? LP? Recombinants?
2. Enhanced communication and stakeholder engagement in surveillance and control
3. Collaboration with pig sector ready for compartmentalization
4. Improve movement control and quarantine
5. Enhancement of biosecurity
6. Enforcement of online shopping



## Scenario 2:

### Living with the disease

- Acceptance that the disease is in some subpopulations
- Exploration of strategies to limit spread for business continuity
- Community apply effective measures to limit spread
- Vaccines may be used to slow down spread
- Some zoning and compartmentalisation
- Some PPP collaboration

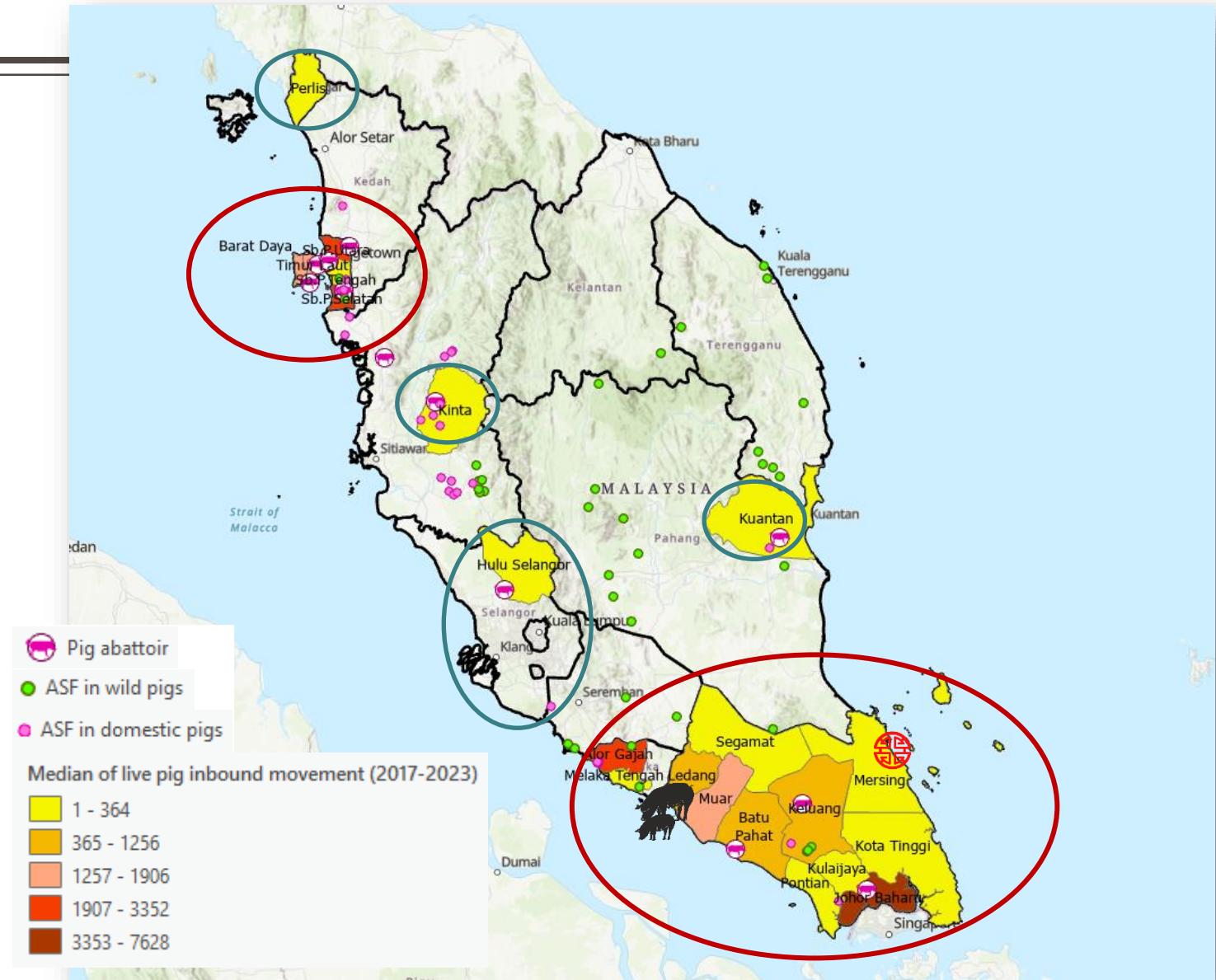
Sequentially....

Breeding zone: JOHOR

Rearing zone: PENANG

MIX: PERAK

WILDLIFE: PAHANG and TERENGGANU



# Monitoring and evaluation

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Expected outcomes and outputs	Description	Risk or gap mitigated (use number from section 1.7)	Indicator	Target	Risk/ Assumption
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- Samples submitted to labs
- Number of labs diagnosing ASF samples and with which tests
- Frequency of sample submission/diagnosing
- Who collects the samples and sends them to the lab
- Number of suspect results
- Veterinary supervision per area
- Meetings with stakeholders
- Compartmentalization plans checked
- Biosecurity plan
- Awareness campaigns
- Contingency and outbreak plans updated



# Financial considerations

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- Commercial farms supporting backyards, and government supporting commercials
- PPP required
- Consider cultural and social differences and not always a profit for money in terms of production but in terms of prevention and peace of mind
- Wildlife...?



THANK  
YOU