



# PREVENTING PANDEMIC RISKS IN EAST ASIA AND PACIFIC (PREPARE)

*presented by*

Sitaramachandra Machiraju, Senior Agriculture Economist, World Bank, Singapore

Daniel Mira-Salama, Senior Environmental Specialist, World Bank, Beijing

*at*

The Regional Meeting for the Greater Mekong Subregion (GMS): How to Successfully Operationalize One Health for a Green Recovery in the GMS?

April 7, 2022



## Background of the Analytical Study

Understanding Emerging Infectious Diseases

One Health Framework

Situating One Health Framework in EAP

Assessment of Animal Health and Wildlife Systems in EAP

Building Foundations for One Health in EAP

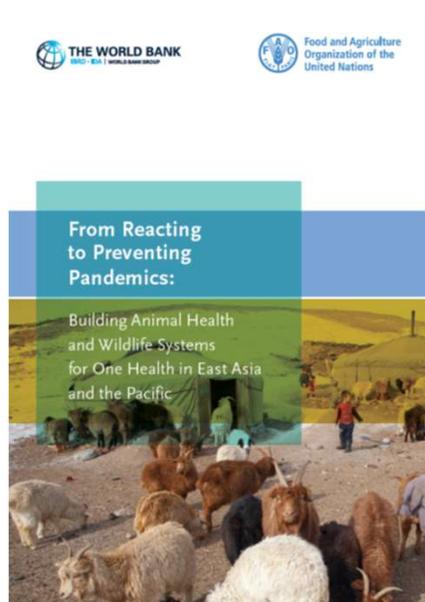
Putting Ideas into Practice



Despite multiple warnings and the inevitability of infectious disease outbreaks, **preparedness of animal disease and wildlife systems** has been undervalued, underfunded, and largely treated as optional.



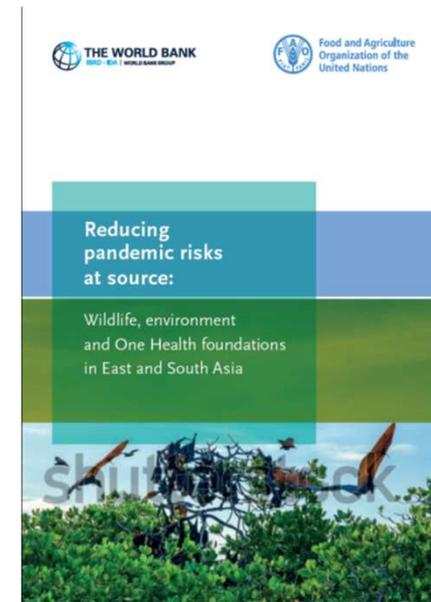
# Regional Studies in EAP by World Bank and FAO



## From Reacting to Preventing Pandemics

Building Animal Health and Wildlife Systems  
for One Health in East Asia and Pacific

<https://openknowledge.worldbank.org/handle/10986/37447>



## Reducing Pandemic Risks at Source

Wildlife, environment, and One Health foundations  
in East and South Asia

<https://openknowledge.worldbank.org/handle/10986/37327>

**Another regional study from the public health security perspective**

**Pandemic Preparedness of Health Systems in EAP is underway and early results are expected shortly**



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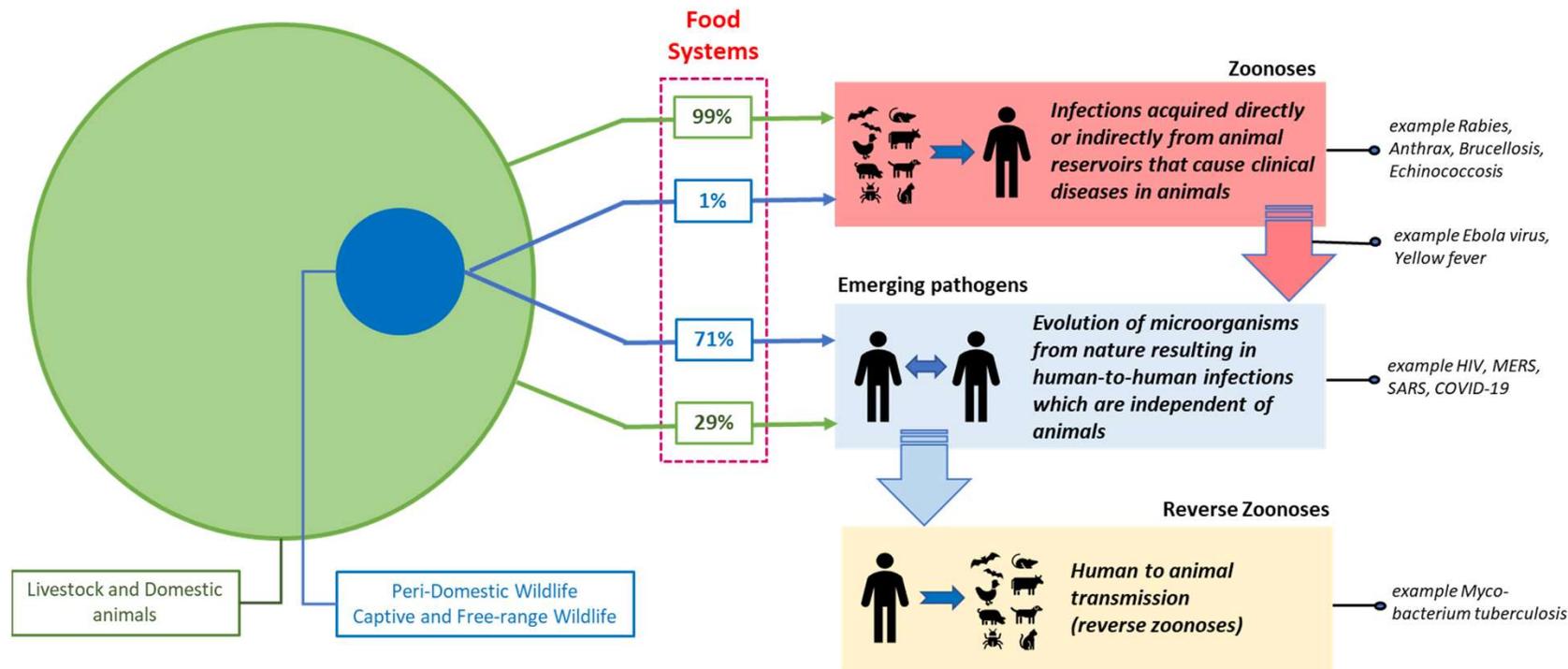
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# Domestic and peri-domestic animals are bridges for pathogen transmission to humans

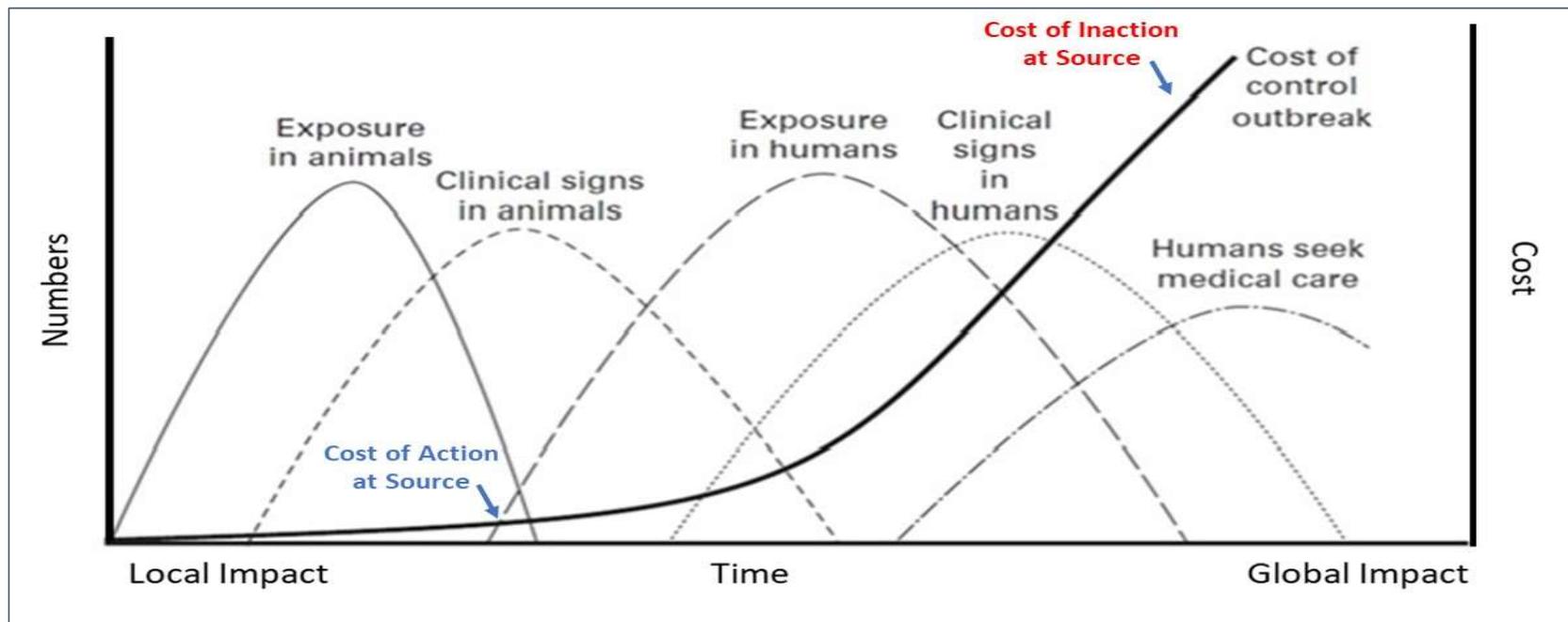
- About 60 percent of EIDs are zoonotic, with 71.8 percent of those found to have wildlife genetic origins.
- Almost 99 percent of zoonotic diseases spill over from domestic animals for direct zoonotic transmission and indirect foodborne infection.
- Food systems lay in the middle of most transmission pathways



Source: Adapted from Haider, 2020



Despite the inevitability of infectious disease outbreaks, animal disease & wildlife systems preparedness has been undervalued and underfunded



Source: World Bank, 2012 Adapted by Authors

**Bottom Line: Cost of actions at source is lowest for preventing future pandemics**

Prevention is always most cost-effective but never absolute unless accompanied by early detection and early action

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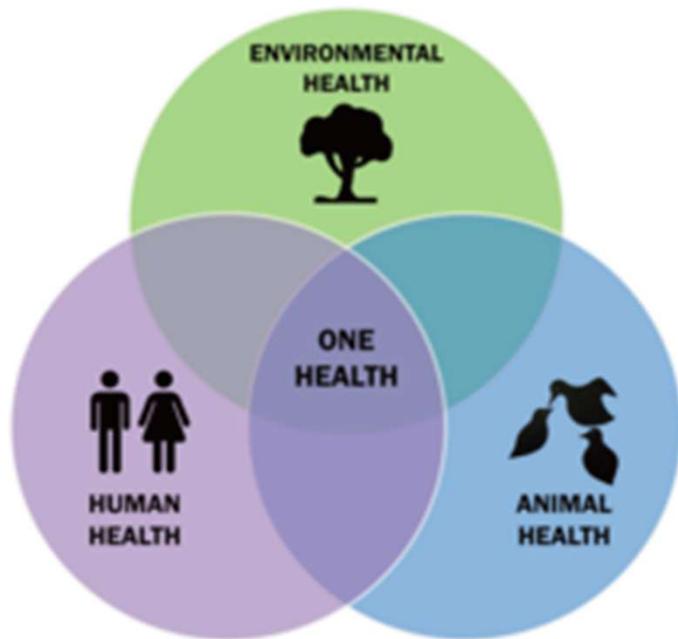
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## OH strengthens human, animal, and environmental health systems at their interface



- **Controlling zoonotic pathogens at their animal source** is the most effective and economical way of protecting people.
- Protection of animal health and welfare meaningfully contributes toward **improving human health, as well as food safety and food security.**
- OH approach supports **reducing the risk of EIDs** and allows for the control of other animal diseases.



# One Health (OH) Framework

## IMPROVED HUMAN HEALTH AND WELL-BEING

Reduced environmental impact

Reduced zoonoses and public health risks

Improved food and nutrition security

Regional/National/Local Coordination

**One Health Approaches:** Joint Risk Assessments, Shared Risk Management, Targeted Risk Communication, Shared Scientific Knowledge, Joint Policies and Regulations, Umbrella Institutional Structures and Shared Infrastructure, Complementary Skills and Capabilities

### Wildlife Systems

Biodiversity Conservation  
Wildlife Health Farming and Trade

Information sharing



Risk-based approaches

### Animal Health Systems

Animal Welfare  
Disease Control  
Biosecurity  
Biosafety  
Food Safety and Sanitary and Phyto-Sanitary Protocols (SPS)

Field training



Early warning and prevention

### Public Health Systems

Zoonotic and EID Prevention, Preparedness, and Control

**Sectoral Approaches:** Risk-Based Approaches, Risk Assessments, Risk Management, Risk Communication, Scientific Knowledge, Policies and Regulation, Institutions and Infrastructure, Skills and Capabilities

Urbanization  
Land Use Change

Climate Change  
Biodiversity Loss

Global Value Chains  
Unsustainable Production

Food Security  
Dietary Habits

Cultural and Social Factors

Building OH Systems from the Bottom Up

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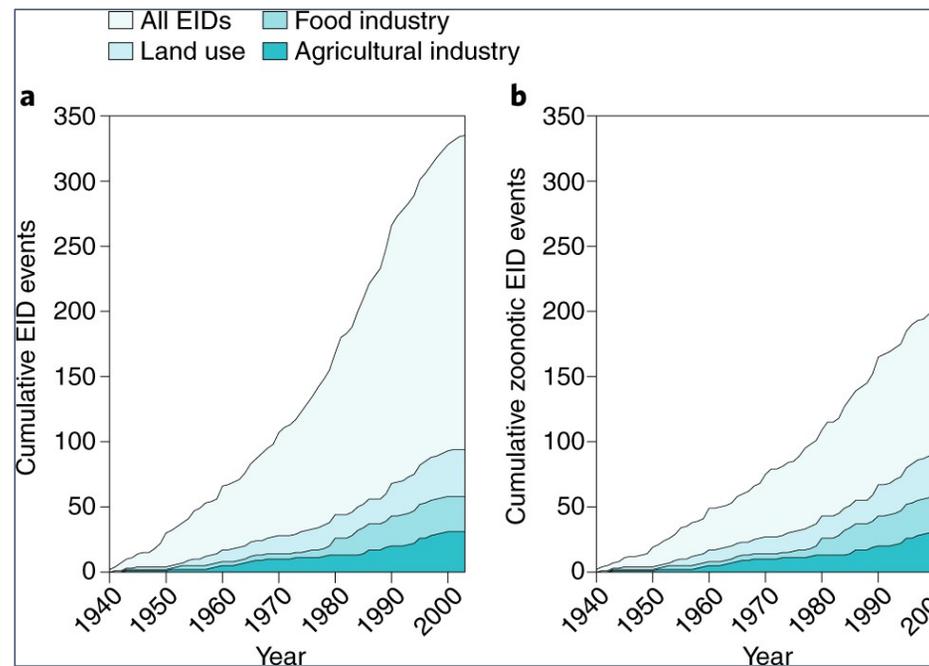
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# Food systems have been associated with zoonotic EIDs since 1940

- **Frequent animal diseases affect livelihoods, food security, trade, and economy**
  - More than 175 million poultry were culled across Southeast Asia due to H5N1 HPAI (2003–2013).
- Agricultural drivers were associated with 25 percent of all EID events **(a)** and nearly 50 percent of zoonotic **(b)** diseases that emerged in humans.
- The impact is even higher if we include the use of antimicrobial agents as an agricultural driver of human disease emergence.

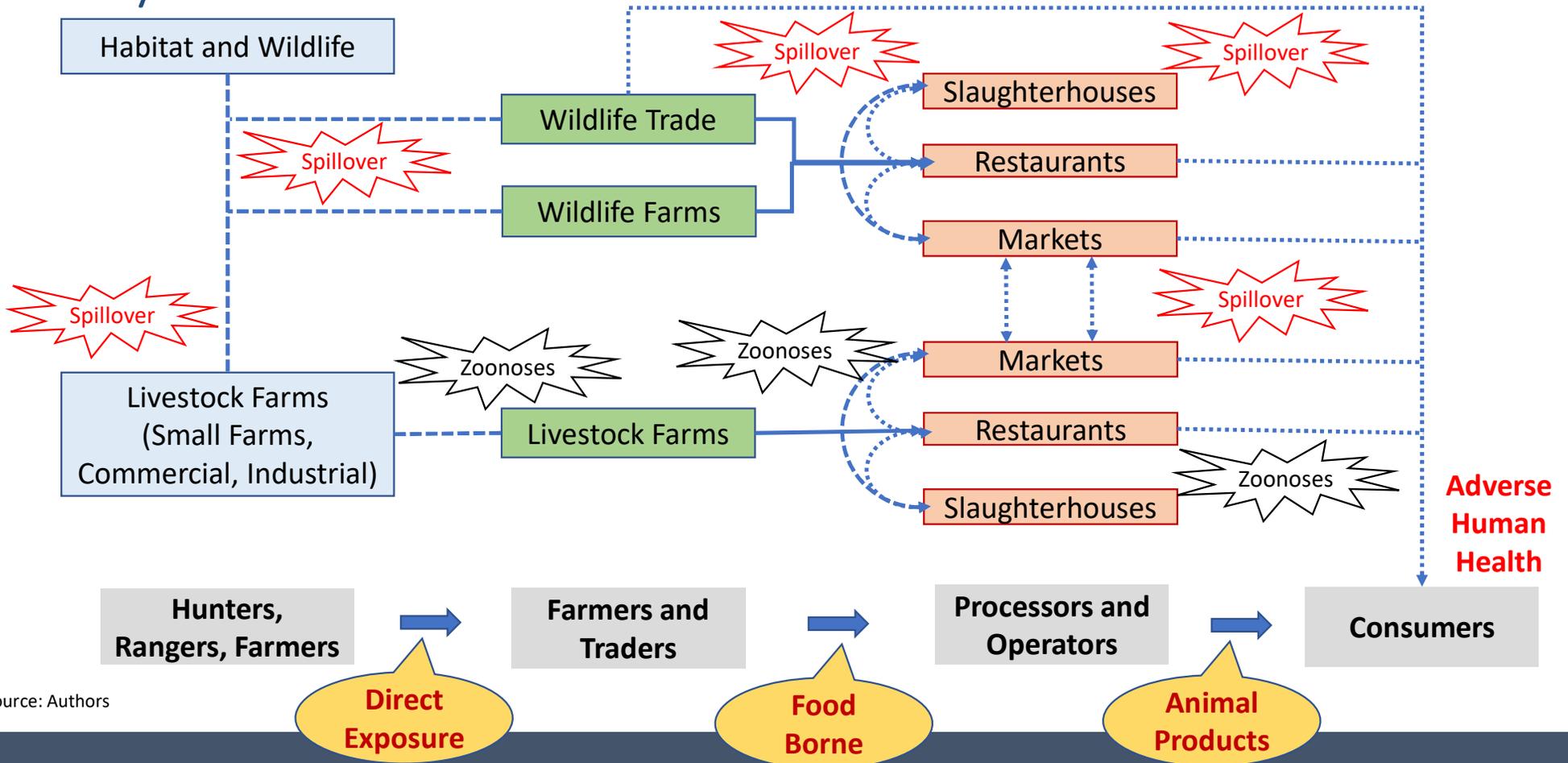
Effects of agricultural drivers on EIDs and zoonotic EIDs of humans since 1940



Source: Rohr, J.R., Barrett, C.B., Civitello, D.J. et al. (2019)



# Paying Attention to Multiple Risk Transmission Points in Wildlife and Food Systems

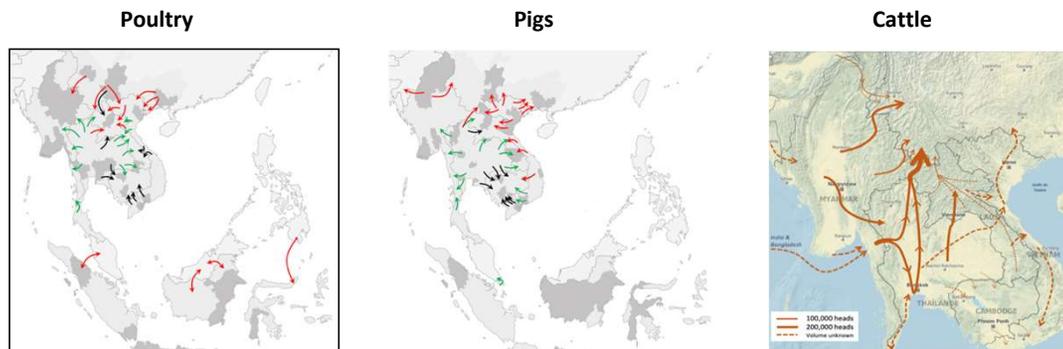


Source: Authors



## Livestock and wildlife supply chains in EAP are expanding and intertwined

- Supply chains for livestock and wildlife animals and products in EAP are complex and intertwined, involving many actors across extensive geographic distances.
- Trade in domestic animals and animal products is a significant activity in many countries in the region, and free trade in livestock and livestock products is a key policy of ASEAN.
- Lack of local processing capacity also results in extensive, within-country movement of live animals.



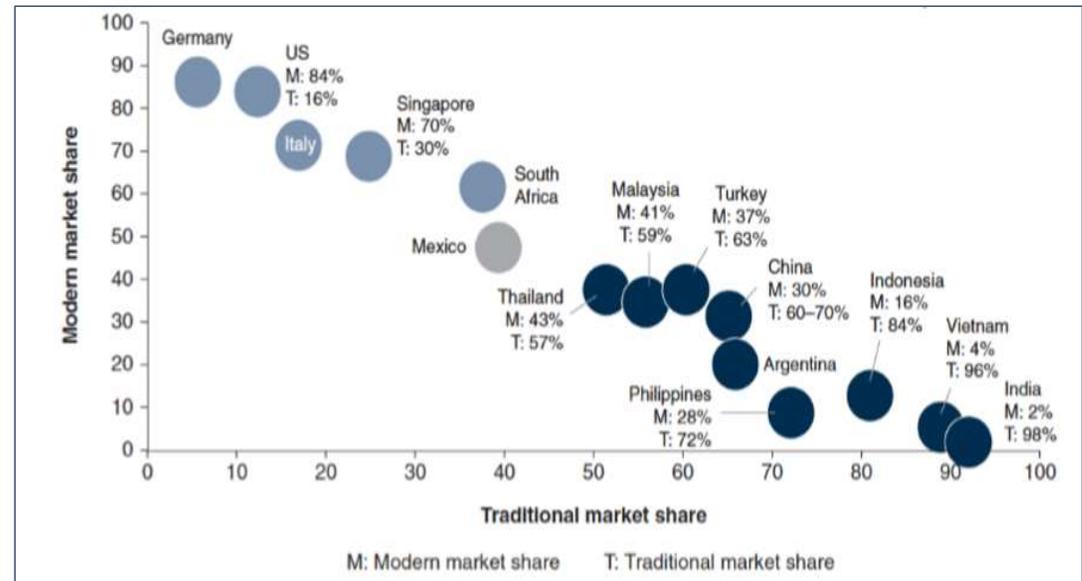
Key to color codes: green – official, red – unofficial, black – official, and unofficial  
Source: FAO



# Traditional markets hold a high risk of exposure to disease agents

- Across the supply chain—from farmgate to retail—hygiene practices and standards vary and remain inadequate. Also, poor standards result in a high risk of exposure to disease agents.
- Traditional markets, or ‘wet’ markets, remain important in EAP for animal trade and the sale of animal-sourced products.
- Actual management of wildlife transport varies widely. A common feature is lack of separation of wildlife from domestic animals and people, and hygiene and welfare standards are poor.

Comparison of modern market share with traditional markets

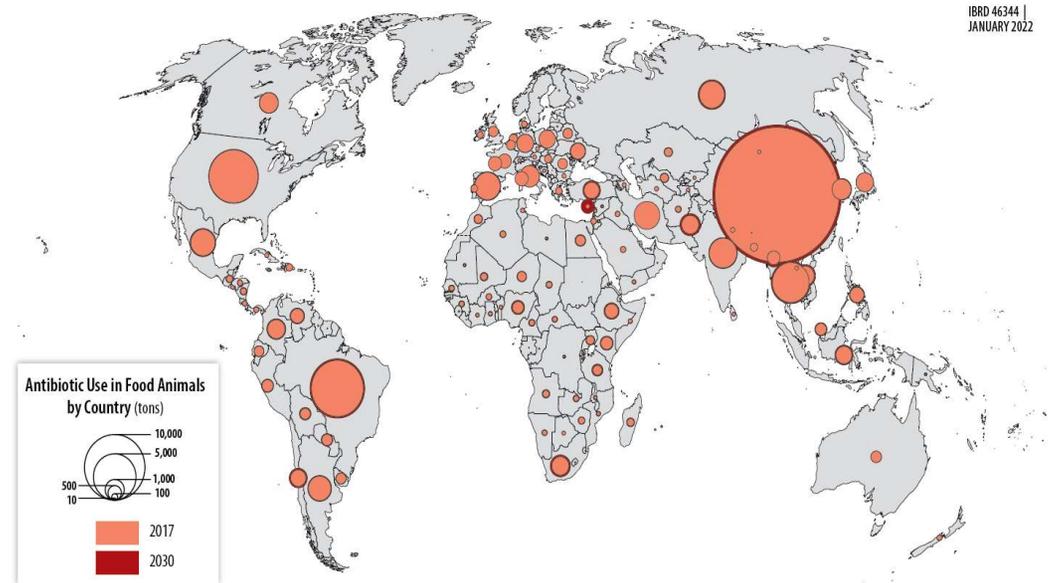


Source: DBS Group Research 2015



Nearly three-quarters of all antimicrobials used worldwide are in livestock production and aquaculture, and EAP consumes more than 50 percent of the global use.

- Poor animal health and inability to comply with appropriate hygiene standards have significant human health and economic impacts.
- Pathogens with significant antimicrobial resistance (AMR) cause 700,000 deaths each year—may rise to 10 million deaths and a global cost of US\$100 trillion by 2050.



Estimates of the use of antimicrobials in the livestock sector in the world (Van Boeckel et al. 2017)



## Demand for wildlife products results in expansion in wildlife consumption, trade, and farming

- With the increase in incomes and the demand for livestock products, the demand for wildlife products has also increased, resulting in increased local hunting, imports of exotic animals and products, and the development of wildlife farms.
- Wildlife farming has become a significant industry in some countries; for example, in China, it is estimated to be a US\$20 billion industry and employs 15 million people.
- Wildlife consumption, trade, and farming can be important economic activities providing food and income for poor and marginalized people and communities.
- Despite both the demand-driven and deliberate expansion of the wildlife sector, appropriate animal health and related food safety standards are not in place and institutional infrastructure is inadequate.
- The lack of health screening and largely uncontrolled distribution and retail conditions results in exposure to both known and unknown pathogens.

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# Assessing EAP's readiness to avert spillover and disease spread

## Regional One Health Coordination

Several regional programs have been developed for diseases such as FMD, PPR and ASF, but despite considerable support, these programs are yet to deliver successful prevention or sustainable control of these prioritized animal diseases.



## Policies and Institutions

Many countries have updated legislation related to animal health, zoonoses, and food safety but there are still considerable gaps in the mandate, implementation, and funding and a risk-based approach to animal disease management policy is largely absent.

## Wildlife Management Systems

Wildlife disease surveillance is limited and usually not shared with animal health and public health sectors.



## Capabilities and Skills

Animal health field services are often provided by poorly qualified staff with insufficient veterinary supervision; capacity for epidemiology in government and other institutions is limited and varies greatly across the region.

## Animal Disease Control Performance

All countries in the region have at least basic capacity to detect and respond to EIDs and emerging issues, but capacity to prevent disease is limited.



## Surveillance and Lab Infrastructure

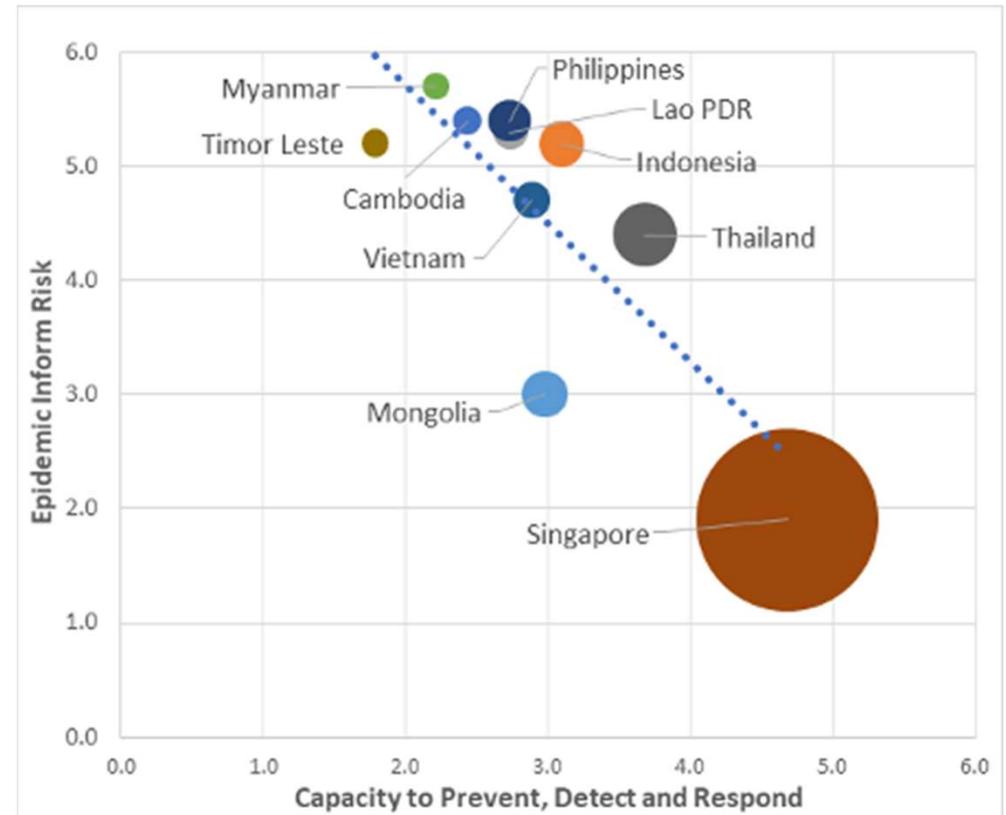
Although border controls are the first barrier to the entry of disease into a country, border security and quarantine infrastructure is weak in many countries in the region.



## Country capacity in EAP incommensurate with risks for future pandemics

- Many countries in the region have medium to high level of risks to future epidemic including zoonoses
- Countries with relatively higher risks for epidemic and zoonoses have lower capacity in prevention and control of EIDs.
- IDA countries have the highest risk level and the weakest capacity.

Country capacity against its risk for future pandemics

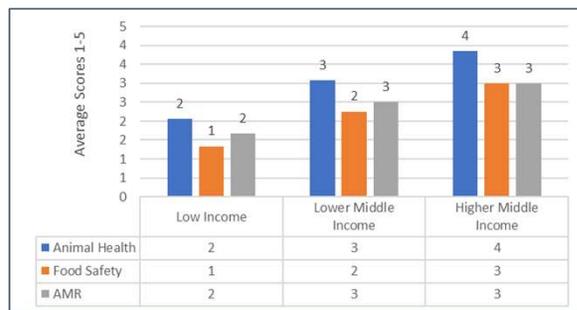


Data Source: Joint External Evaluation (JEE) Reports by Country  
INFORM Epidemic Risk Index 2020

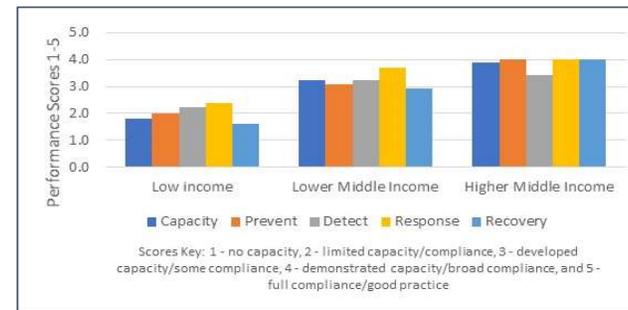


# Animal Health (AH) is the shorter board of the OH bucket

- Countries with higher integrated (One Health) capacity have stronger animal health/veterinary service capacity in preventing and detecting EIDS, indicating that AH lagged in the overall capacity development of the One Health approach.
- Some countries have higher gaps in capacity to detect EID risks (Example: Lao PDR, Indonesia), highlighting the need to prioritize support for AH laboratory capacity, surveillance, risk identification, and traceability.
- Countries with higher OH capacity also have stronger sectoral capacity in animal health (Example: Thailand), suggesting space for peer learning and regional support.



Source: Author's based on the assessment of PVS and JEE reports detailed scores



Source: Author's assessments based on PVS, JEE, and other reports.



# Wildlife health practice underdeveloped

- **Policy frameworks** do not include wildlife considerations
- **Institutions** with unclear/nonexistent mandate for disease risks from wild animals
- **Multisectoral collaboration** around wildlife information is lacking
- **Investments** are insufficient and intermittent
- **Wildlife health information systems** are often ad hoc and tailored
- **Training and career development opportunities** are missing

**Stand-alone report: Reducing Emerging Infectious Disease Risks from Wildlife Building Foundations for One Health in East and South Asia**

Two main objectives:

1. Mainstreaming wildlife into One Health systems
2. Reducing root causes of EID risks from human practices in at least three priority areas: wildlife trade, related food systems, and habitat loss

Indicator	China	India	Indonesia	Laos	Malaysia	Thailand	Vietnam
Policies (such as for livestock or land use development) account for disease risk from wildlife	X				X (for Nipah virus)		
Institutional mandate for managing wildlife disease/pathogen risk	X		X		X	X	X
Wildlife authority included in national One Health body*			X		X	X	X
Mechanism for inter-agency coordination if authority for risk management is shared	X				X	X	
Risk analysis process in place for assessing and managing risk at wildlife-domestic animal and wildlife-human interfaces							X
Plan/strategy in place for systematic surveillance and risk reduction						X (Nat. EID plan)	X (OH strategic plan)
Dedicated budget for wildlife disease system	X	X			X		
Wildlife monitoring network	X		X (not all regions)	X	X (not all regions)	X	
Access to laboratory for testing wildlife specimens	X	X	X	X	X	X	X
Wildlife disease database			X				
Alert system in place for early warning and response			X				
Pipeline for wildlife veterinary/para-veterinary workforce in non-zoo settings		X			X	X	
Applied field epidemiology training program for wildlife surveillance and investigation	X					X	

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# Strength of One Health system is as strong as its weakest links—animal health and wildlife systems



A **One Health approach** for the prevention, detection, and control of zoonoses/ EIDs



**Embed rigorous risk assessments** for science and evidence-based policy making and program development



**Key risk mitigation measures** also include limiting the possibilities of spillover of infection from the wildlife sector



**Prevention a clear priority** for limiting the impact of pandemics



**Use science-based platforms** for risk analytics and advocacy



**Sharing skills, capabilities, and facilities,** both domestically and regionally



# Entry Points for One Health Interventions for **Healthy Agri-Food Systems**

**Food Production**  
Food safety surveillance program



## Enabling Environment

Leadership and Governance  
Policy and Regulation  
Capacity development



## Processing

Regulations and enforcement on hygiene practices and food safety control in packaging and waste treatment

## Distribution and Logistics

Incentivizing private sector to take part in disease monitoring, reporting, and control



## Marketplace

Investment in food traceability, upgrading of infrastructure or processes, training, and transformation of existing marketplaces



## Consumer

Behavior change in eating habits for safe and healthy consumption



## Critical Success Factors

Cross-sectoral coordination  
Information sharing  
Coordination and Partnership



## Farm

Strengthened animal health systems and veterinary services

EID risk assessment and zoonotic disease surveillance

**Wildlife**  
Wildlife disease surveillance and management

**Antibiotics Use**  
Targeted approach to promote rational use of antimicrobial agents

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# Operationalizing One Health Approach in Animal Health and Wildlife Systems Helping Countries Prioritize Actions using Risk Management Framework

(For example, Zoonotic Diseases, Food Safety Management, and Antimicrobial Resistance)





## Practice drills in ‘peace time’ will better equip the OH defense for the ‘war time’

- Multi-sector, multi-domain, multi-jurisdiction collaboration.
  - OH Strategic Plan (Vietnam)
- Collaborate across sectors for OH challenges that confront animal health and wildlife systems daily.
  - Zoonotic diseases (Mongolia)
  - Food safety (China, Vietnam)
  - Antimicrobial resistance (China)
- Build surge capacity for pandemics based on lessons from contingency programming experiences from animal epidemics
  - African Swine Fever (China)



## Key conclusions

- Integrate epidemic prevention agenda for addressing global public health threats.
- Enhance science-policy interface backed by data, evidence, and transparency.
- Prioritize fixing weaker links—animal health and wildlife systems.
- Invest in **‘always on’** multidomain and multisector systems.
- Strengthen regional, national, and subnational coordination.



**Thanks for your attention**  
**For clarifications, suggestions please connect**

[smachiraju@worldbank.org](mailto:smachiraju@worldbank.org)

[dmirasalama@worldbank.org](mailto:dmirasalama@worldbank.org)