

Strategies to Prevent (STOP) Spillover

Impact Brief - Viet Nam

Behavioral Risk Assessment Along Wildlife Value Chains in Dong Nai Province, Viet Nam

Activity 1.2.6.1: Conduct a behavioral risk assessment to characterize risk associated with the wildlife farming value chain in Dong Nai province.

INTRODUCTION

Wildlife farms in Viet Nam, and particularly in Dong Nai province, are particularly high-risk interfaces for zoonotic pathogen emergence, and the wildlife value chains involve a diverse range of actors who could facilitate the spread of pathogens. As a result of extensive outcome mapping and community and stakeholder input, a social behavior risk study was conducted in 2022 in Dong Nai province to identify (1) actors who are involved in the wildlife value chain; (2) social, economic, gender, cultural, environmental, and other drivers of spillover risk; and (3) the level of knowledge of biosecurity and behavior risk factors of wildlife farmers that can potentially spread zoonotic viral pathogens (e.g. SARS-CoV-2, other coronaviruses). Data were collected from 413 individual questionnaires, 16 key informant interviews, 4 focus group discussions, and 20 behavior observation checklists. This study applied risk frameworks aligned with the Joint Risk Assessment Operational Tool (JRA OT), a multisectoral, One Health approach developed by Food and Agriculture Organization of the United Nations, World Organization for Animal Health, and World Health Organization (WHO et al. 2020).



*In person interview with wildlife farmer
Photo credit: OHDWG member*

The activity provided essential information and worked towards improving Vietnam's score in the Joint External Evaluation index and Global Health Security Agenda indicators for Vietnam (JEE technical area: Risk communication and community engagement, indicators R5.2: Risk communication and R5.3: Community engagement) through the engagement to identify the risk factors and design risk reduction interventions.

Expected Outcomes

The risk assessment process was used to characterize risks associated with the wildlife farming value chain in Dong Nai province, to identify additional knowledge gaps that exist, and to prioritize risk reduction interventions.

Results by Risk Factors

Actors/ Sectors	Activity	Gender - Age	Risk Perception/ Behavioral risk
Wildlife Farmers	Average years involved in wildlife farming: 19.5 (<1 to 35 years) 75.5% of wildlife farms had both wild and domestic species	267 respondents 17 communes 44.6 % women Mean age 48.7 (18-88)	<ul style="list-style-type: none"> 46.3% of wildlife farmers expressed concern about the possibility of pathogen transmission affecting human or animal health Wildlife farmers indicated that they used personal protective equipment (PPE), but they were not frequently observed to have the specified PPE Lack of disease knowledge
Wildlife Traders	60.5% traded both wildlife and domestic animals 79% traded multiple wildlife species	43 respondents 39.5% women Mean age 43.4 (25-64)	<ul style="list-style-type: none"> There are no wildlife markets Wildlife products are unregulated from a health perspective. No inspection or processes to control disease spread or food safety in wildlife products
Wildlife Farm Neighbors	85% reported raising domestic animals 72% raised poultry	103 respondents 46% women Mean age 44 (24-72)	<ul style="list-style-type: none"> 50% concerned about disease in humans and animals 40% expressed no concerns 15% used uncovered rainwater or pond/river water
One Health agencies of government	Veterinary, human health, and forest protection sectors are the wildlife management agencies	16 respondents 31% women	<ul style="list-style-type: none"> Veterinary staff have limited experience treating and handling wild animals and little knowledge of wildlife diseases There are limited resources to monitor the specific health concerns and risks faced by wildlife farmers in human health sector Forest Protection Department staff have limited capacity to address issues of captive wildlife farming or wildlife farmer health issues and risks

Informing Trials of Improved Practices (TIPs)

Improving waste management, handling, and processing on wildlife farms (for civet, bamboo rat, porcupine, and sambar deer)

Three risk levels of potential waste treatment methods were identified: the lower risk methods included composting, treating with probiotics, and biogas technology; the medium risk methods included collection of waste into a bag or cesspit and applying to crops without any treatment; and the higher risk methods included directly applying waste to crops and feeding it to fish. The study showed that 79 farmers (32.2% of 245 respondents) used some low-risk methods for handling waste. There were only 14 farmers (5.7% of 245) that exclusively used lower risk methods, placing them into the low-risk group. The other 65 farmers (26.5% of 245) also used some medium and higher risk methods for treating animal waste. The largest group of farmers (188 farmers, 76.8% of 245 respondents) employed some medium risk methods and no high-risk methods, comprising the medium risk group. There were 43 farms with some higher risk methods for treating animal waste (17.5% of 245 farms) which placed them into the high risk group. Together this identified 94.3% of farms in the medium to high-risk categories based on their waste disposal practices. The hygiene and waste handling issues were further supported by the 20 observational site visits conducted as part of the study. Farmers expressed interest in suitable probiotics (microbial additives) to treat manure, wastewater, and wildlife waste to limit odor and reduce environmental contamination.



*Mixed poultry and wildlife at farm
Photo credit: Country team member*

Enhance PPE use to reduce exposure to wildlife saliva, blood, urine, feces, respiratory droplets and aerosols

Respondents reported that shoes or boots were commonly used when feeding (55%), cleaning cages (65%), and catching/touching animals directly (36%). Gloves are reportedly often used when cleaning the barn (66.7%) and catching/touching animals directly (42.7%). Masks were frequently used during feeding (70%), cleaning of cages (71.9%), and velveting (39.7%). There are still many farmers who do not use any PPE in wildlife production activities (ranging from 11-28%, by species farmed). During 20 visits to wildlife farms, multiple gaps in hygiene and biosecurity practices were observed - PPE use was limited or moderate on most farms and observations did not support the higher levels of use reported in questionnaires.



*Close human-wildlife contact without PPE
Photo credit: Country team member*

Improving biosafety and biosecurity through disease control and monitoring

The biosafety/biosecurity assessment found that there are currently no surveillance, monitoring, or reporting systems for the management of disease transmission risks from captive wildlife to domestic animals or to humans. There is a lack of coordination among veterinary, human health, and forest protection agencies in the management and prevention of zoonotic diseases. Interviewees expressed their hopes of being trained in disease prevention, safe and hygienic captive breeding techniques, and being guided by veterinary authorities on professional sanitation techniques.

Next Steps

- Strengthen One Health stakeholder engagement in biosafe/biosecure farming and zoonotic diseases prevention.
- Implement TIPs for risk reduction interventions in high-risk interfaces and replicate the TIPs in the entire province.
- Promote essential preventive healthcare practices (vaccination, deworming, rational antibiotic use, and disease reporting) at civet, bamboo rat, porcupines and sambar deer farms.
- Reinforce existing inspection regulations for wildlife species traded for consumption or breeding.
- Develop and implement a social behavior change intervention to mitigate the risk of viral pathogen exposure in targeted farmers, workers, and communities.