

A REVIEW ON TRAINING AND CAPACITY BUILDING IN PREVENTION AND CONTROL OF FARMED ANIMAL DISEASES AND RECOMMENDATIONS FOR COMMERCIAL WILDLIFE FACILITIES



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November 2022



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Abbreviations



AVET	Applied Veterinary Epidemiology Training
AI	Avian Influenza
BMZ	The German Federal Ministry for Economic Cooperation and Development
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
GIZ	The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
LP-AH	Livestock Production and Animal Health
ASF	African swine fever
FAO	Food and Agriculture Organization of the United Nations
FMD	Foot and mouth disease
ARD	Agriculture and Rural Development
OHP	One Health Partnership

SARS-Cov	Severe acute respiratory syndrome coronavirus
CPC	Commune People's Committee
DPC	District People's Committee
PPC	Provincial People's Committee
UNDP	United Nations of Development Programme
USCDC	United States Center for Disease Control and Prevention
WCS	Wildlife Conservation Society
WOAH	World Organization for Animal Health
WHO	World Health Organization
VAHIS	Viet Nam Animal Health Information System
DAH	Department of Animal Health
RAHO	Regional Animal Health Office
LSD	Lumpy Skin Disease



Executive Summary



Zoonotic diseases cause serious harm to human health as well as significant economic losses. Billions of people worldwide have been infected and millions have died, especially from zoonotic pathogens from wildlife reservoirs. A typical example is that many strains of Coronaviruses, a family of viruses that are causing the COVID-19 pandemic, have been detected in a number of wildlife facilities in Viet Nam, and in some shipments of pangolins confiscated by competent authorities in recent years. Therefore, the wildlife trade chain in Viet Nam poses an extreme risk of transmitting dangerous pathogens from animals to humans.

The Ministry of Agriculture and Rural Development, the Ministry of Health, the Ministry of Natural Resources and Environment and 28 partners signed the One Health Partnership (OHP) Framework for the period 2021-2025, demonstrating strong commitments to work together towards the common goal of reducing risks of future pandemics. The project “Reducing health risks in the wild animal trade in Viet Nam” is funded by the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Viet Nam’s OHP Secretariat Office based in the International Cooperation Department of the Ministry of Agriculture and Rural Development (ICD-MARD). This is part of a global project initiated by the German government through GIZ to support the “International Coalition Against Health Risks in Wildlife Trade” in order to substantially reduce the risks of zoonotic spillover and to step up responses to human and animal health risks from the trade and consumption of wildlife and their products following a One Health approach.

This report focuses on reviewing technical training programs and related materials from the state management agencies for veterinary medicine. The programs and materials at both central and provincial levels relating to livestock and poultry disease control and prevention were assessed, with recommendations for both training and capacity building for veterinary officers at all levels of management in the control and prevention of zoonotic diseases. These recommendations are made with a focus on those of public health significance from wildlife farming facilities in Viet Nam.

1. BACKGROUND

Today, the world is facing an increasing number of emerging or re-emerging diseases, many of which may originate from wildlife, and become pandemics in humans, such as Acquired Immune Deficiency Syndrome (AIDS/HIV), Severe Acute Respiratory Syndrome (SARS-Cov), Ebola, Middle East Respiratory Syndrome (MERS-Cov), COVID-19 pandemic or Monkeypox. According to the World Organisation for Animal Health (WOAH), in the past 60 years, there have been 335 emerging diseases in humans, of which 144 pathogens (43%) are from wildlife. The main cause of pandemics is the close interaction between humans, animals and the environment, which allows the reproduction and spillover of dangerous pathogens.

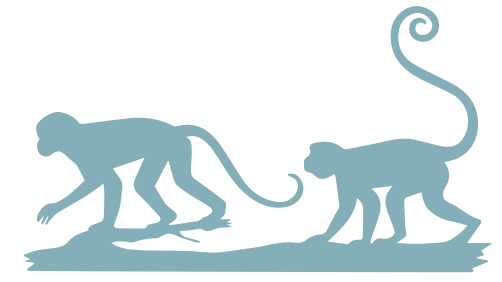
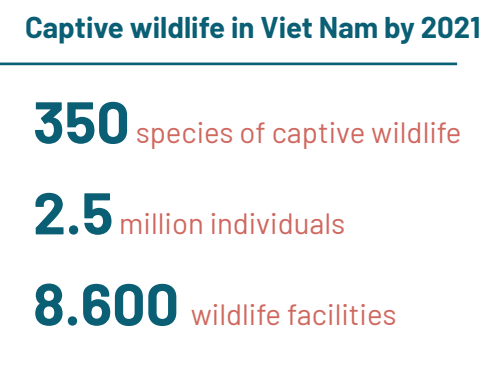
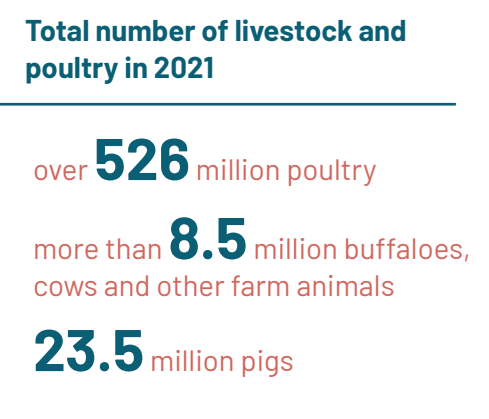
In many cases, wildlife can be a reservoir for pathogens that spread serious diseases to livestock, seriously affecting international trade in animals and animal products. These include, for example, foot-and-mouth disease (FMD) in livestock, bovine tuberculosis in cattle, avian influenza (AI), ect. It is estimated that up to 77% of pathogens in livestock are also present in wildlife populations. [1].

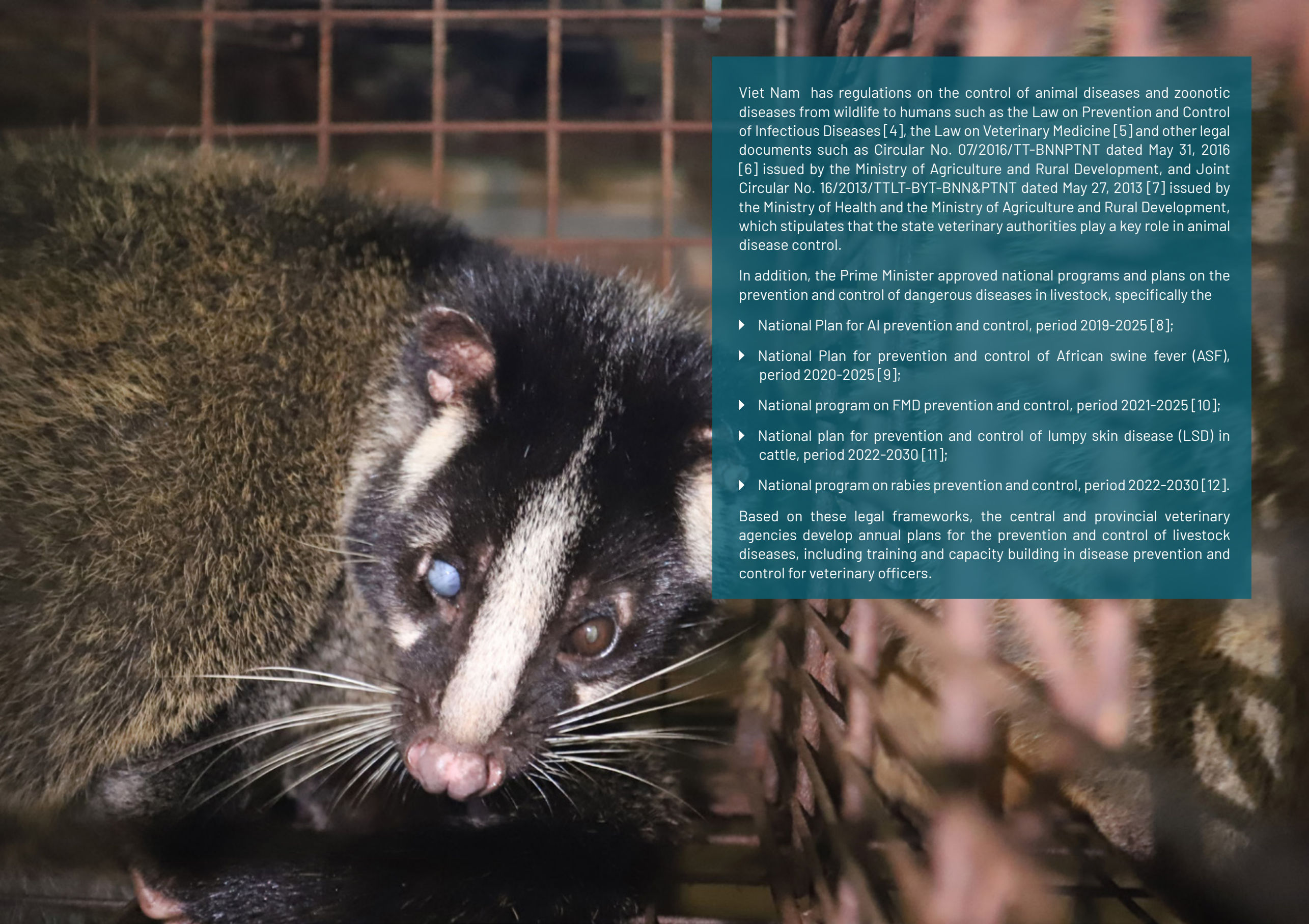
The definition of wildlife has been provided in Decree No. 84/2021/ND-CP [2], which defines wild animals and plants as “animals and plants that live or grow in natural or artificial habitats or those reared or grown in controlled environments but are not considered as domestic animals as defined in the Law on Husbandry, and are for species from one of the following categories:

- 01** Endangered, precious and rare species of fauna and flora prioritized for protection
- 02** Endangered, precious and rare species of forest fauna and flora
- 03** endangered species of wild fauna and flora in CITES Appendices
- 04** Normal species of forest fauna
- 05** Other terrestrial animals in the class of aves, mammalian, reptilian or amphibian, except certain species in the lists announced by the Ministry of Agriculture and Rural Development in cooperation with the Ministry of Natural Resources and Environment and relevant agencies

Captive wild animals are animal that have a phenotype not significantly affected by human selection but which are captive or otherwise lives under direct human supervision or control, including zoo animals and wild pets. According to the provisions of Clause 1, Article 2 of the Law on Animal Husbandary [3], other animals in livestock production are animals other than cattle and poultry and those excluded from the list of endangered, precious and rare species of animals prioritized for protection, the list of endangered, precious and rare species of forest animals and normal forest animals, aquatic animals, and the list of species of wild fauna in CITES Appendices.

According to the General Statistics Office, in 2021 the Viet Nam population reached 98.51 million people; the total number of livestock and poultry was very large with over 526 million poultry, 23.5 million pigs and more than 8.5 million buffaloes, cows and other farm animals. Viet Nam is ranked 16th among the Earth’s most biodiverse countries. According to the CITES Management Authority of Viet Nam, there are currently 322 species of mammals, 397 species of reptiles, 181 species of amphibians, more than 900 species of birds, 120,000 species of insects, about 700 species of freshwater fish and 2,458 species of marine fish recognized throughout the country. Besides, as of 2021, the whole country has about 350 species of captive wildlife with more than 2.5 million individuals in over 8,600 wildlife facilities. Common farmed species include freshwater crocodile, cobra, oriental ratsnake, Burmese python, albino Burmese python, crab-eating macaque, porcupines, common pheasant, palm civet, wild boar, Chinese ratsnake, masked water snake, Bocourt’s water snake, etc. Commercial wildlife farms in Viet Nam mainly provide food, materials for handicrafts (such as skins of pythons, crocodiles, and ostriches), and medicinal ingredients. Some farms export wildlife (e.g, crab-eating macaques) abroad for scientific research.





Viet Nam has regulations on the control of animal diseases and zoonotic diseases from wildlife to humans such as the Law on Prevention and Control of Infectious Diseases [4], the Law on Veterinary Medicine [5] and other legal documents such as Circular No. 07/2016/TT-BNNPTNT dated May 31, 2016 [6] issued by the Ministry of Agriculture and Rural Development, and Joint Circular No. 16/2013/TTLT-BYT-BNN&PTNT dated May 27, 2013 [7] issued by the Ministry of Health and the Ministry of Agriculture and Rural Development, which stipulates that the state veterinary authorities play a key role in animal disease control.

In addition, the Prime Minister approved national programs and plans on the prevention and control of dangerous diseases in livestock, specifically the

- ▶ National Plan for AI prevention and control, period 2019-2025 [8];
- ▶ National Plan for prevention and control of African swine fever (ASF), period 2020-2025 [9];
- ▶ National program on FMD prevention and control, period 2021-2025 [10];
- ▶ National plan for prevention and control of lumpy skin disease (LSD) in cattle, period 2022-2030 [11];
- ▶ National program on rabies prevention and control, period 2022-2030 [12].

Based on these legal frameworks, the central and provincial veterinary agencies develop annual plans for the prevention and control of livestock diseases, including training and capacity building in disease prevention and control for veterinary officers.

2. OBJECTIVES

2.1. Overall objectives

This report aims to review training and capacity building for local veterinary officers in the prevention and control of devastating infectious animal diseases and provide some recommendations on capacity building for the mitigation of disease emergence risks in commercial wildlife facilities in Viet Nam.

2.2. Specific objectives

- ✓ To map existing capacity building efforts for veterinary officers and training materials on the prevention and control of infectious diseases in livestock and poultry;
- ✓ To assess results of capacity building activities implemented by government agencies and development partners to mitigate the risk of zoonosis in wildlife facilities; and
- ✓ To provide recommendations on capacity building to mitigate disease emergence risk in commercial wildlife facilities.

3. METHODOLOGY

- ✓ Review documents, programs and plans of the central and provincial veterinary authorities related to the capacity building in animal disease control over the last 3 years or earlier;
- ✓ Assess capacity building programs for local veterinary agencies in animal disease control, including reviewing training contents and methods;
- ✓ Discuss with at least 05 veterinary officers from the Department of Animal Health, and some provincial Departments of Livestock Production and Animal Health (LP-AH) about the training programs and materials;
- ✓ Review capacity building activities in animal disease control implemented by government agencies and international organization in Viet Nam;
- ✓ Assessment of the existing capacity for the control of diseases in commercial wildlife facilities in Viet Nam following a One Health approach.

4. RESULTS

The consultant worked with officers in charge of animal disease prevention and control from the DAH, RAHO II and VI, as well as Sub-Departments of the LP-AH of Son La, Cao Bang, Quang Nam, Phu Yen, and Dak Lak provinces to learn about their existing training activities for animal disease prevention and control (Annex 1). Some training programs and training materials used in recent years were also collected, compiled and attached to this report.

4.1. State AH system and human resources

The AH system of Viet Nam is structured following provisions of the Law on Veterinary Medicine, with DAH at the central level and its line institutions (National Center for Veterinary Diagnosis, National Center for Veterinary Drugs Control I and II, 7 RAHOs, and 3 Regional sub-Departments of Animal Quarantine) with a total of 646 officers and staff. There are 5 officers from Division of Epidemiology under DAH managing the prevention and control of animal diseases.

In 63 provinces and cities, there are specialized AH management agencies at the provincial level (also known as Provincial Sub-Departments of LP-AH) under the Department of Agriculture and Rural Development. At the district level, there are district Sub-Departments of LP-AH. At the commune level, there are veterinary stations. Heads of commune veterinary stations are entitled to receive allowances. Some localities have village veterinary systems. By May 2022, the whole country had 2,669 veterinary officers at provincial level; 3,524 veterinary officers at district level; 8,903 veterinary officers at commune level; and 10,097 veterinary officers at village level. This is the specialised force directly involved in the prevention and control of animal diseases, including zoonoses.

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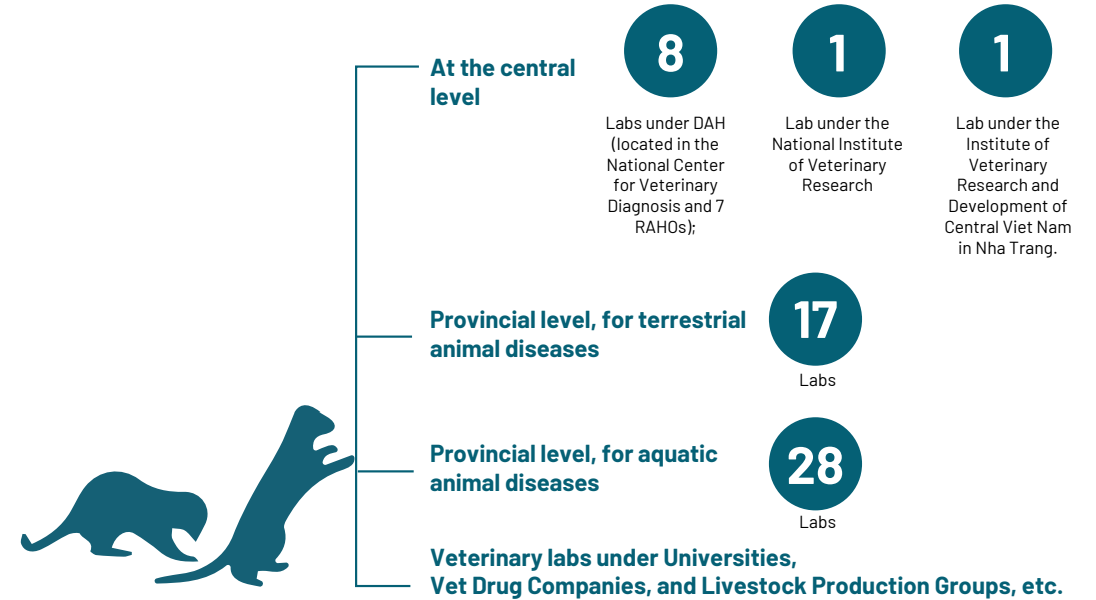


Figure 1: System of veterinary laboratories



Figure 2. AH System in Viet Nam



4.2. Training on animal disease prevention and control of DAH

Every year, the Department of Animal Health prepares work plans, allocates budgets and organises training courses on slaughtering control, veterinary hygiene inspection, food safety and quarantine sampling for veterinary officers from 63 sub-Department of LP-AH and 7 RAHOs. However, DAH does not organise training on animal disease prevention and control. Some reasons include:

- 1 Animal disease prevention and control is mainly provided in legal documents on veterinary medicine
- 2 priority training activities are those related to licensing
- 3 the official technical guide for training in prevention and control of animal diseases is not in place
- 4 lack of lecturers
- 5 limited budget.

Within the framework of national programs and plans approved by the Prime Minister, DAH developed some technical guidelines on the prevention and control of a number of dangerous diseases in livestock, specifically, a Technical Manual for the prevention and control of ASF in 2020, FMD in 2021, Rabies in 2022, LSD in 2022, and AI in 2022. These documents are also attached to this report.

From December 2009 to December 2019, DAH, with the support of FAO and the Viet Nam National University of Agriculture (VNUA), organised 17 training courses on applied veterinary epidemiology (AVET) for a total of 229 participants, most of whom are epidemiological officers from 63 sub-Departments of LP-AH, some district LP-AH stations, RAHOs, the faculty of AH from some universities, etc. The participants also received certificates after completion of the course. The 8-week training program was divided into 3 parts. Part 1 and part 3 took 3 weeks, consisting of theoretical lectures and report writing, while part 2 involved field activities within 5 weeks. The lecturers and field facilitators are epidemiological officers from DAH, teachers from AH Faculty – VNUA and Ho Chi Minh City Pasteur Institute.



From 2020 to now, due to the impact of the Covid-19 pandemic and some funding constraints, DAH has not organised any basic AVET course.

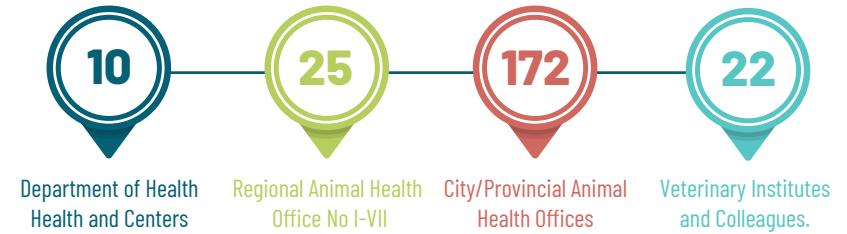


Figure 3: Participants in AVET from 2009-2019

AVET consists of 11 chapters:

- ▶ Chapter 1 Overview about Veterinary Epidemiology
- ▶ Chapter 2 Population Ecology and Epidemiology;
- ▶ Chapter 3 Disease Frequency Assessment;
- ▶ Chapter 4 Disease Surveillance;
- ▶ Chapter 5 Outbreak Investigation;
- ▶ Chapter 6 Data Analysis;
- ▶ Chapter 7 Sampling;
- ▶ Chapter 8 Disease Management and Development of Disease Control Programs;
- ▶ Chapter 9 Reporting and Communication Skills;
- ▶ Chapter 10 Animal Disease Laboratories;
- ▶ Chapter 11 Public Health and Zoonotic diseases.

The AVET document is considered the most complete set of training materials on animal disease prevention and control of DAH.



From 2015 to 2019, DAH invited national and international experts to provide 05 advanced AVET courses (1 week/course) on Risk Analysis (Prof. Dirk Pfeifer - RVC), risk modelling (Prof. Marius Gilbert - BLU), Using R software in biostatistics analysis (Dr. Pham Van Hau - Ho Chi Minh City Pasteur Institute), ASF risk assessment (Prof. Dirk Pfeifer - HCU/RVC), Multivariable Analysis (Prof. Mark Stevenson - University of Melbourne).

In 2013, 2014 and 2016, DAH organised 03 OH Wildlife Training courses (7-10 days/course) for participants from veterinary and health care sector, forest protection departments, and wildlife rescue centers, with Prof. Panthep and Dr. Boripat from Mahidol University.

In addition, DAH also participated in a number of training programs on rabies surveillance supported by the US CDC; wildlife and wildlife habitat sampling supported by WCS; One Health Epidemiology and Interdisciplinary Risk Assessment organised by the Department of Preventive Medicine under the Ministry of Health and the WHO Country Office in Viet Nam.

4.3. RAHO VI's training program on prevention and control of animal diseases

Annually, RAHO VI coordinated with other units to organise training courses on disease prevention and control for officers from Sub-Departments of LP-AH in the region. Similar to DAH, RAHO VI does not incorporate this training plan into its annual workplan.

Table 01. Training courses on prevention and control of animal diseases organised by RAHO VI from 2020 - 2022

No.	Year	Contents of training	Number of participants	Duration	Participants	Location	Organised by
1	2020	Epidemiology training for provincial veterinary officers	40	3 days	Leaders and officers in charge of disease prevention and control of provinces	HCMC	RAHO VI
2	2020	Regulations on prevention and control of animal diseases	110	1 day	Officers in charge of quarantine and slaughter control	Dong Nai	Sub-Department of LP-AH of Dong Nai province

No.	Year	Contents of training	Number of participants	Duration	Participants	Location	Organised by
3	2020	Technical training in taking samples of animals and animal products	110	1 day	Officers in charge of quarantine and slaughter control	Dong Nai	School of Management for Agriculture and Rural Development II (CMARD2)
4	2021	Application of geographic information system (GIS) in veterinary management	18	1 day	Diagnostician of the provincial sub-Departments	Online	CMARD2
5	2021	Regulations on animal disease reporting (2 courses)	80	1 day	Diagnostician of the provincial sub-Departments	Online	CMARD2
6	2022	Regulations on prevention and control of animal diseases	120	Half day	Officers in charge of quarantine and slaughter control	Long An	Sub-Department of LP-AH-Fishery of Long An province
7	2022	Regulations on prevention and control of animal diseases	70	Half day	Officers in charge of quarantine and slaughter control	Tay Ninh	Sub-Department of LP-AH of Tay Ninh province

4.4. RAHO II's training program on prevention and control of animal diseases

RAHO II does not prepare annual training plans for Sub-Departments of LP-AH of provinces in its region.

In 2020, the RAHO II organised training courses with the support of some international programs and projects. From 2021 until now, it has not organised training on animal disease prevention and control.

Table 02. Training courses on prevention and control of animal diseases organised by RAHO II in 2020

Year	Contents of training	Number of participants	Duration	Participants	Remarks
2020	Epidemiology training for provincial veterinary officers	39	03	Technical officers from 13 sub-Departments in the region	01 course
	Training on Brucellosis and Anthrax in Cao Bang and Ha Giang	30-40 participants/courses	01	Veterinary officers from Sub-Department, LP-AH stations, Trăm CNTY; Health officer of provincial and district CDCs	02 courses

4.5. Training on prevention and control of animal diseases of provinces

Every year, in compliance with legal regulations on veterinary medicine, sub-Departments of LP-AH of provinces and cities advise their Provincial People's Committees to issue plans for prevention and control of animal diseases in their provinces, including budget allocation for training on disease prevention and control for local veterinary officers. Among the animal disease prevention and control plans approved by the People's Committees of 29 provinces and cities in 2023, there are 21 plans (accounting for 72%) having training activities for local veterinary officers on prevention and control of livestock and poultry diseases (Details in Annex 2). However, most of these plans only provide general contents and no details about the type of disease, skills, or number of participants, etc.



Some of the provincial training programs implemented in recent years are summarized as follows:

*** Son La province**

Table 03. Training on prevention and control of animal diseases organised by Department of LP-AH of Son La province from 2020 - 2022

No.	Year	Contents	Number of participants	Duration	Participants	Remarks
1	2020	Law on Veterinary Medicine, Circular 07/2016/TT-BNNPTNT on prevention and control of some infectious diseases	40-50	02	Veterinary officers from communes, villages, officers from Centers for Agri Services	03 courses
2	2021	Prevention and control of LSD in cattle	40-80 participants/course	01	Veterinary officers from communes, villages, officers from Centers for Agri Services	One course each district
3	2022	Slaughter control, veterinary hygiene inspection	22	01	Officers responsible for slaughter control from Centers for Agri Services of districts and cities	
		Slaughter control, veterinary hygiene inspection	13	01	Veterinary officers from communes in Moc Chau district	
4	Annual	Veterinary practice training			Students and those wishing to practice veterinary medicine	Collaborate with Son La College to organise 1 course a year

*** Cao Bang province**

Department of Crop and Livestock Production of Cao Bang province organised 3 training courses for grassroots veterinary officers in 2019 and 2020.

Table 04. Training on prevention and control of animal diseases organised by Department of Crop and Livestock Production of Cao Bang province from 2019 - 2020

No.	Year	Contents	Number of participants	Duration	Participants
1	2019	Professional skills for veterinary consulting service providers	25	05	Veterinary officers from communes and towns
2	2019	Prevention and control of animal diseases	18	02	Newly recruited veterinary officers from communes and towns
3	2020	Prevention and control of animal diseases	25	03	Agri extension officers who are also in charge of veterinary services



*** Quang Nam province**

Before 2018, Department of LP-AH of Quang Nam province organised professional trainings for veterinary officers. After restructuring and due to impacts of COVID-19, until now, no further trainings have been organised.

Table 05. Training on prevention and control of animal diseases organised by Department of LP-AH of Quang Nam province from 2016 - 2017

No.	Year	Contents	Number of participants	Duration	Participants	Remarks
1	2016	Dissemination of new legal documents on veterinary medicine (Law on Veterinary Medicine, Decree 35/2016/ND-CP, Circular No. 07/2016/TT-BNNPTNT, Circular No. 09/2016/TT-BNNPTNT)	40 participants/course	01	Head of Veterinary Stations of communes and veterinary officers of communes, wards, and townships	04 courses
2	2017	Training and capacity building in animal rabies prevention and control for veterinary officers	30 participants	02 days theoretical training & 03 days practice	Technical officers from sub-Department of LP-AH and LP-AH stations of 18 districts, town and cities	01 course

*** Phu Yen province**

Table 06. Training on prevention and control of animal diseases organised by Department of LP-AH of Phu Yen province from 2020 - 2022

No.	Year	Contents	Duration	Participants	Remarks
1	2020	Prevention and control of animal diseases	1 day	Grassroots veterinary officers	02 courses
2	2022	Prevention and control of LSD	1 day	Grassroots veterinary officers	01 course
3	2022	Prevention and control of ASF	1 day	District and provincial veterinary officers	01 course (online)



* **Dak Lak province**

Table 07. Training on prevention and control of animal diseases organised by Department of LP-AH of Dak Lak province from 2019 - 2022

No.	Year	Contents	No. of participants	Duration	Participants	Remarks
1	2019	Dissemination of legal documents in the field of veterinary medicine, skills to conduct outbreak investigation	200	1 day/ course /40 participants	Commune and district veterinary officers	
2	2019	Communication on the Law on Veterinary Medicine, Circular 07/2016, Methods of organisation and implementation of epidemic control	100	2 days/100 participants	Students at Tay Nguyen University	
3	2020	Some zoonotic diseases, Methods of organisation and implementation of epidemic control VDNC disease, ASF and disease prevention measures in livestock.	83	2 days/83 participants / course	Students at Tay Nguyen University	

No.	Year	Contents	No. of participants	Duration	Participants	Remarks
4	2021	LSD, ASF and measures of prevention and control of livestock diseases	200	1 day/40 participants / course	Commune and district veterinary officers	05 courses
5	2022	Training on communication about risks of rinderpest emergence	140	1 day / course/ 35/ participants	Commune and district veterinary officers and agri extension officers	In collaboration with the Institute for Environmental Health and Sustainable Development (IEHSD)
6	2022	Prevention and control of animal diseases and vaccination planning for livestock and poultry	130	1 day /course /65 students	Students at Tay Nguyen University	
7	2022	Training on some legal documents on prevention and control of terrestrial and aquatic animal diseases; introduction of VAHIS software	200	200 participants/ course	Commune and district veterinary officers	Zoom training

4.6. Capacity building in animal disease prevention and control for state veterinary officers

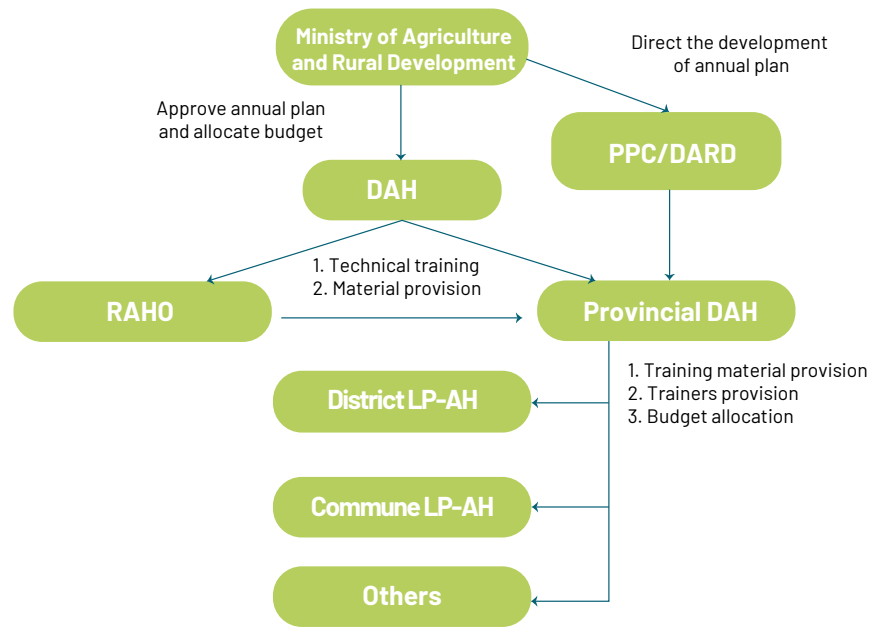
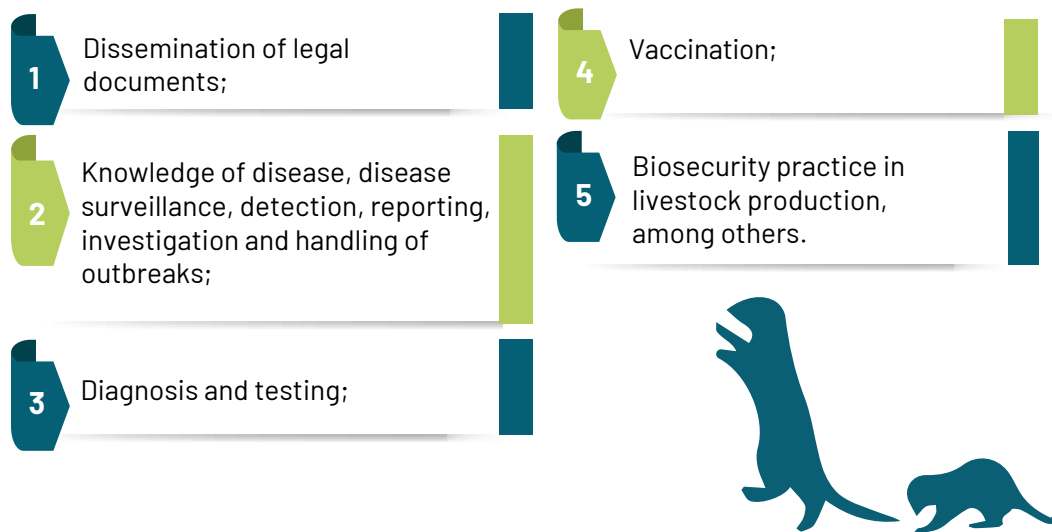


Figure 4: Hierarchy of capacity building responsibilities in animal disease prevention

In order to strengthen capacity in the prevention and control of animal diseases, state AH management agencies at all levels are responsible to develop plans and submit them to competent authorities for review, approval and budget allocation for implementation. Specialised agencies are responsible for developing technical guides and implementation. Common training contents include:



4.7. Training on disease prevention and control for wildlife facilities

According to the CITES Management Authority, there are currently about 350 species of wildlife in captivity with more than 2.5 million individuals in over 8,600 facilities in all 63 provinces and cities across the country. The actual number may be much higher since many wildlife facilities do not register with state management agencies.

According to reports from AH authorities at all levels, there are currently no technical documents and training programs on disease prevention and control for wildlife facilities which presents challenges especially in the context of other problems that AH authorities can face such as:

(1) Lack of specific provisions for:

- Prevention and control of wildlife diseases: natural habitats, environment, behaviors, etc. of different species of wildlife are very different from livestock. Some species can migrate across borders and continents. In Viet Nam, besides wildlife in the natural environment, there are many species of wildlife bred in large numbers to millions of individuals.
- Management of captive wildlife managed by different ministries such as the Ministry of Natural Resources and Environment, CITES Management Authority, Forest Protection Department, etc. However, there are no specific regulations on information exchange between captive wildlife management agencies and AH/veterinary agencies responsible for wildlife disease management.
- In Viet Nam, besides wildlife in the natural environment, there are many species of wildlife bred in large numbers to millions of individuals.
- Wildlife disease surveillance systems: The current animal disease surveillance systems mainly focus on livestock; it is necessary to engage wildlife management agencies, wildlife facilities, wildlife traders and consumers, etc.
- Although provided in Articles 14 and 15 of Decree No. 06/2019/ND-CP [13] that wildlife facilities with endangered species listed in the CITES Appendices shall ensure disease prevention, there are no specific guidance from AH/veterinary management agency for disease control in commercial wildlife facilities, disease control at the live wildlife wholesale market, disease control at places of wildlife meat consumption (such as rat, bamboo rat, *Vivericula indica*, etc.) For example. Guidelines for disease surveillance, vaccination (such as vaccination against Avian Influenza for mallard duck farms), or cleaning and disinfection of wildlife captive areas, etc. Many scientific studies in the world show that rodents and small carnivores are potential reservoirs of many dangerous infectious pathogens for humans.

- In fact, at present, DAH and its units do not have a database on captive wildlife health and diseases in Viet Nam. There is no plan or program for wildlife disease surveillance approved by central authorities.
- The system of laboratories for testing and diagnosis of wildlife diseases: Most state veterinary laboratories focus on livestock diseases (although some diseases also occur in wildlife).
- Wildlife diseases are mainly caused by pathogens that have not been fully studied, many of them can be transmitted to humans and livestock. However, Viet Nam still lacks regulations on biosecurity and biosafety in veterinary diagnosis and testing in (which should be different from regulations on biosafety of the health sector, for example, the veterinary sector deals with alien diseases that are not transmitted to humans but are very dangerous when transmitted to livestock).
- Sanctions for handling violations related to zoonotic disease control are implemented in accordance with the provisions of Decree No. 90/2017/ND-CP issued on 31 July 2017 of the Government [14]. In the past, there have been no reported case of handling violations related to zoonotic disease control from DAH and local veterinary management agencies.
- Section 1 of Appendix 1 of Circular No. 09/2016/TT-BNNPTNT [15] of the Ministry of Agriculture and Rural Development does not provide guidelines for slaughter control for captive wild animals (such as sika deer, crocodiles, bamboo rats, porcupines, wild boars, etc.) Therefore, many pathogens from captive wildlife are not controlled (e.g. *Trichinella spiralis*, Porcine cysticercosis, *Salmonella*, etc.).

(2) Law enforcement on wildlife disease control in Viet Nam

- State Veterinary Management Agencies actually do not receive reports on diseases from wildlife facilities (except for some ASF reports at wild boar farms), and private laboratories for wildlife diseases.
- State Veterinary Management Agencies do not have specific information about the wildlife supply chain in Viet Nam to monitor the diseases across this supply chain.
- Information on wildlife diseases in neighboring countries and risks of dangerous wildlife diseases that can spread into Viet Nam is very limited, mainly from WOAHA.

4.8. Risks of zoonoses in Viet Nam

WOAH provides a list of the most dangerous zoonotic diseases, of which more than 50% are found in Viet Nam.

Table 08. WOAHA's List of the most dangerous zoonotic diseases

Name of disease	Name of disease
1. Anthrax*	14. Marburg virus disease
2. Avian influenza*	15. Monkeypox*
3. Botulism*	16. Plague*
4. Bovine tuberculosis/ zoonotic tuberculosis*	17. Porcine cysticercosis*
5. Brucellosis*	18. Rift Valley fever
6. Bunyamwera fever	19. Haemorrhagic Fever with Renal Syndrome
7. Crimean-Congo haemorrhagic fever	20. Salmonellosis*
8. Cystic echinococcosis*	21. Severe acute respiratory syndrome - SARS*
9. Dengue fever*	22. Tick-borne encephalitis
10. Eastern equine encephalitis	23. Venezuelan equine encephalitis
11. Ebola virus disease - EVD	24. Western equine encephalitis
12. Japanese encephalitis*	25. Zika*
13. Leishmaniasis*	

(* Diseases detected in Viet Nam)



A survey conducted in 2020–2021 identified 75 zoonotic pathogens in Viet Nam [16]. Recent research by WCS and DAH also detected Betacoronaviruses in pangolins (*Manis javanica*) [17], among others. There were also unknown pathogens due to lack of surveillance programs. There are risks of zoonotic diseases emergence from wildlife, including from wildlife facilities in the country, but currently without a wildlife disease risk assessment or surveillance program carried out by management agencies and relevant stakeholders.

4.9. General observations

a) Some advantages in the control of zoonoses from wildlife to humans in Viet Nam

- Viet Nam has a legal framework (Laws, Decrees, and Circulars) regulating the prevention and control of zoonoses (including from wildlife).
- The state veterinary/AH system responsible for the management of animal diseases (including in wildlife) is decentralized from the central (Department of Animal Health) to local (provincial and district levels) leading to more flexibility in how they operate.
- Many provinces and cities have commune and village veterinary networks. This is the force to detect, report and support the prevention and control of animal diseases at the grassroots level.
- The health and veterinary sectors have issued a joint Circular on inter-sectoral coordination in the prevention of zoonotic diseases (Joint Circular No. 16/2013). Accordingly, inter-sectoral coordination is required from national, regional and provincial levels.
- The Government approved the establishment of the Viet Nam's OHP Secretariat Office for zoonoses for the period of 2021 – 2025 (Official Letter No. 10552/VPCP-QHQT of the Government Office on 16 December 2020) on the prevention of zoonotic diseases in the 2021–2025 period). The OHP Technical Working Group on wildlife and pandemic prevention was established under the OHP Steering Committee chaired by the Department of International Cooperation of the Ministry of Agriculture and Rural Development. This shows an awareness and a commitment to tackling zoonoses from the central government.
- There are many international organisations supporting the Government of Viet Nam in the prevention and control of zoonotic diseases such as WHO, FAO, and WOAH.
- There are a number of projects supporting Viet Nam to strengthen capacity in control of pandemic risks related to wildlife by GIZ, WCS, FAO, DEEP VZN, Stop Spillover, etc.
- Some labs are able to perform diagnosis and testing of zoonotic pathogens for wildlife specimens.
- The Viet Nam Animal Health Information System (VAHIS) is operational and collecting data from 63 provinces.
- Competent authorities (Department of Animal Health, CITES) are reviewing, drafting and submitting legal documents on wildlife disease management and wildlife farming for approval and promulgation.

b) Some constraints and shortcomings

- Professional and technical training on disease control in livestock, poultry and other animals (such as dogs and cats) from state veterinary/AH agencies was not implemented regularly and systematically, and mainly uses only existing legal documents such as Circulars on the prevention and control of animal diseases.
- At the central and regional level (Department of Animal Health and RAHOs), technical training on animal disease prevention and control is not included in the regular workplans of these agencies. Currently, the Department of Animal Health only develops technical guides according to national disease prevention and control programs and plans.
- At the provincial level, most of Sub-Departments of LP-AH of provinces and cities submit to competent authorities (provincial People's Committees) for approval of the annual plans for animal disease prevention and control, including training activities for local veterinary officers. In most of the case, the standard training materials are not in place.
- There is no training provided by state management agencies on wildlife disease prevention and control for actors in the wildlife trade chain, value chain and stakeholders in wildlife management, and materials for such training are not available.
- Some international projects (FAO, WCS) supported the Government to develop training materials and organise training to improve animal disease prevention and control capabilities for veterinary/AH management agencies at all levels. These are high quality training courses in terms of expertise and techniques, with support and advice from many national and international experts. However, the continuity and sustainability of these training courses were not ensured after the projects ended.



5. CONCLUSIONS AND RECOMMENDATIONS

Through the report, the advantages as well as some gaps in training programs, plans and materials to strengthen the capacity of veterinary officers at all levels for prevention and control of animal diseases in general and (captive) wildlife diseases in particular by state veterinary/AH management agencies.

In the context of risks of pandemics and dangerous zoonotic diseases in Viet Nam and around the world, strengthening the capacity of (captive) wildlife disease control in Viet Nam is very critical. Based on the current situation and experience in training and capacity building in disease prevention and control in livestock and poultry by veterinary/AH agencies at all levels in the past time, some key recommendations include:

1. GIZ to cooperate with the Department of Animal Health to establish a technical working group to develop training plans on captive wildlife disease control in Viet Nam. The Department of Animal Health will submit this plan to the MARD which shall review and assign the Department of Animal Health for implementation.
2. The technical working group will define specific target species, objectives, contents (e.g., identification of priority species, priority diseases, and pilot sites), time frame, and budget estimates.
3. Develop technical training materials, procedures on epidemiology, laboratory, biosafety for wildlife facilities. Technical support from wildlife experts, international and Vietnamese veterinary experts shall be required.
4. In the long-term, technical working group will advise the Department of Animal Health to develop legal documents on (captive) wildlife disease control which might resemble current legal documents on livestock, and submit to competent authorities for approval and promulgation.
5. Develop strategies for disseminating technical guidelines for wildlife disease control such as e-learning, forums, using websites to share information, etc.



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Annex 01. List of interviewed veterinary officers from government agencies

No.	Name of participant	Agency	Designation
1	Pham Thanh Long	DAH	Senior officer, Division of Veterinary Epidemiology
2	Nguyen Kim Dung	RAHO VI	Head of Division of Epidemiology
3	Pham Xuan Truong	RAHO VI	Deputy Head of Division of Epidemiology
4	Nguyen Thi Trang	Sub-Department of LP-AH of Son La province	Senior officer, Division of Disease Management
5	Doan Thi Tham	Sub-Department of Crop and Livestock Production of Cao Bang province	Deputy Head of Division of AH
No.	Name of participant	Agency	Designation
6	Nguyen Thi Chau Doc	Sub-Department of LP-AH of Quang Nam province	Head of Division of Disease Management
7	Tran Hoang Ngan	Sub-Department of LP-AH of Phu Yen province	Head of Division of Disease Management
8	Le Thi Hong Ngan	Sub-Department of LP-AH of Dak Lak province	Head of Division of Disease Management

Annex 02. Approved training plan on disease prevention and control of provinces in 2023

No.	Province/ City	Training plan		Remarks
		Yes	No	
1	Ba Ria -Vung Tau	1		Organise 14 training courses on prevention and control of livestock and poultry diseases
2	Bac Lieu	1		Organise 21 training courses (one day each course) on prevention and control of livestock and poultry diseases for commune and village veterinary officers (50 participants/course)
3	Ben Tre		1	Provide training for livestock producers only
4	Binh Duong		1	
5	Binh Phuoc	1		
6	Can Tho	1		Training on livestock and poultry disease surveillance, outbreak handling, and vaccination; Training on rabies prevention and control for grassroots veterinary officers
7	Cao Bang	1		Training and capacity building for veterinary officers from provincial to grassroots level and officers participating in livestock and poultry disease prevention and control
8	Da Nang		1	
9	Dak Lak		1	
10	Dak Nong		1	Provide training on biosafety for livestock producers only
11	Dong Thap	1		
12	Gia Lai	1		Use district budget for training
13	Ha Tinh	1		Use provincial budget for training

No.	Province/ City	Training plan	Remarks
14	Hau Giang	1	Organise a training on prevention and control of some serious livestock and poultry infectious diseases
15	Hoa Binh	1	
16	Lai Chau	1	
17	Lang Son	1	Organise a training on prevention and control of some serious livestock and poultry infectious diseases
18	Lao Cai	1	Training on prevention and control of animal diseases for grassroots veterinary officers
19	Nam Dinh	1	
20	Phu Tho	1	Organise technical training courses and communication and dissemination of laws and regulations on livestock production, animal health, and requirements on disease prevention and control for grassroots agricultural extension officers
21	Quang Binh	1	Organise technical training courses for grassroots veterinary stations on disease surveillance and collection of diagnostic specimens
22	Quang Tri	1	
23	Soc Trang	1	
24	Tay Ninh	1	Organise 5 training courses on livestock and poultry diseases
25	Hoa Binh	1	
26	Thai Nguyen	1	
27	Thanh Hoa	1	
28	TT- Hue	1	
29	Tuyen Quang	1	Use provincial budget for training
Total		21	8

Annex 03. List of training materials on disease prevention and control attached to the Report

No.	Compiled by	Name of document	Remarks
1	DAH	Technical guide on prevention and control of ASF 2020	Hard copy
2	DAH	Technical guide on prevention and control of FMD 2021	Hard copy
3	DAH	Technical guide on prevention and control of Rabies 2022	Hard copy
4	DAH	Technical guide on prevention and control of LSD 2022	Hard copy
5	DAH	Technical guide on prevention and control of Avian Influenza 2022	Hard copy
6	RAHO II	Technical guide for research on Anthrax and Brucellosis	Hard copy
7	Sub-Department of LP-AH and Aquaculture of Son La province	Prevention and control of LSD	Powerpoint file
8	Sub-Department of Crop and Livestock Production of Cao Bang province	Training materials for veterinary consulting service points	Hard copy
9	Sub-Department of LP-AH of Quang Nam province	Training materials	Hard copy
10	Sub-Department of LP-AH of Phu Yen province	Training materials	Powerpoint file

No.	Compiled by	Name of document	Remarks
11	Sub-Department of LP-AH of Phu Yen province	Prevention and control of LSD	Powerpoint file
12	Sub-Department of LP-AH of Dak Lak province	Prevention and control of ASF	Powerpoint file
13	Sub-Department of LP-AH of Dak Lak province	Livestock biosafety	Hard copy

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