Case Study
VIETNAM

WORLD BANK GROUP
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1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

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The World Bank Group
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fax: 202-522-2625
e-mail: pubrights@worldbank.org
# Table of Contents

I. Executive Summary .................................................................3

II. The One Health Approach .....................................................4

III. Vietnam: a snapshot ..............................................................6

IV. Identifying vulnerabilities and main drivers .........................9
   A. Core vulnerabilities ........................................................... 9
   B. Risk hotspots of EIDs .......................................................10
   C. Main drivers of EIDs .........................................................11
      1. Drivers that increase interactions between livestock and wildlife ........11
      2. Drivers that increase interactions between humans and wildlife ..........12
      3. Drivers that increase interaction between humans and livestock ..........12
      4. Factors that exacerbate outbreaks ...........................................13

V. One Health in Vietnam ..........................................................14
   A. Enabling environment for implementing a One Health approach ..........14
   B. Existing efforts .................................................................14

VI. One Health Actions: recommendations ...............................20

VII. Key Takeaways .......................................................................20

VIII. References ............................................................................21

Annex I ......................................................................................23

Annex II .....................................................................................24
### ACRONYMS ANDABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<td>AMR</td>
<td>Antimicrobial resistance</td>
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<td>CHC</td>
<td>Vietnam Commune Health Centers</td>
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<td>CHS</td>
<td>Vietnam Commune Health Stations</td>
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<td>CPF</td>
<td>Country Partnership Framework</td>
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<td>COVID-19</td>
<td>Coronavirus disease 2019 caused by the SARS coronavirus 2 (SARS-CoV-2)</td>
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<td>EIDs</td>
<td>Emerging Infectious Diseases</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GHS</td>
<td>Global Health Security</td>
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<td>GHSA</td>
<td>Global Health Security Agenda Program</td>
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<td>HPET</td>
<td>Health Professionals Education and Training for Health Systems Reform Project</td>
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<td>JEE</td>
<td>Joint External Evaluation</td>
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<td>JRA</td>
<td>Joint Risk Assessment</td>
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<td>MARD</td>
<td>Ministry of Agriculture and Rural Development of Vietnam</td>
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<td>MOH</td>
<td>Ministry of Health of Vietnam</td>
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<td>MONRE</td>
<td>Ministry of Natural Resources and Environment</td>
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<td>NCDs</td>
<td>Non-Communicable Diseases</td>
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<td>NGOs</td>
<td>Non-governmental organizations</td>
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<td>PAHI</td>
<td>Partnership on avian influenza and human influenza</td>
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<td>PVS</td>
<td>Performance of Veterinary Services</td>
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<td>OHP</td>
<td>One Health Partnership</td>
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<td>OHSP</td>
<td>National One Health Strategic Plan for Zoonotic diseases</td>
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<td>SARS</td>
<td>Severe Acute Respiratory Syndrome</td>
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<td>SCD</td>
<td>Systematic Country Diagnostic</td>
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<td>SEAOHUN</td>
<td>Southeast Asia One Health University Network</td>
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<td>UHC</td>
<td>Universal Health Coverage</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>VINARES</td>
<td>Vietnam Resistance Project</td>
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<td>WASH</td>
<td>Water, sanitation, and hygiene sector</td>
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<td>WBG</td>
<td>World Bank Group</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>WOAH</td>
<td>World Organisation for Animal Health (previously known as OIE)</td>
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<td>ZDAP</td>
<td>Zoonotic Diseases Action Package of Vietnam</td>
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In May 2022 the World Organisation for Animal Health started officially using the acronym WOAH. Before its official acronym was OIE which stands for Office International des Epizooties.
I. Executive Summary

The term “One Health” refers to an integrated approach that sustainably balances the health of people, animals, and the ecosystem and is a key element for pandemic prevention. Old and new health threats demonstrate how our changing interactions with animals and the environment affect development outcomes. In a post-COVID-19 world, where emerging infectious diseases (EIDs) are becoming more frequent and worsening in impact, preventing pandemics should be a primary focus for policymakers, public health officials, and citizens. This case study targets policymakers and teams within the World Bank and other organizations who aim to prevent future outbreaks by adopting a One Health approach. It also analyzes the health situation in Vietnam and the progress it has made toward implementing One Health, identifies vulnerabilities and drivers, and presents key recommendations to prevent future pandemics.

ONE HEALTH IN VIETNAM

Vietnam has made remarkable progress economically in recent years, rising from being one of the world’s poorest countries to thriving as a lower-middle-income country. However, Vietnam is extremely vulnerable to epidemic and pandemic risks and impacts, as shown by the number of outbreaks a decade ago (e.g., SARS, avian influenza). The success of a One Health approach requires acknowledgement of vulnerabilities and the drivers of potential pandemics, identification of hotspots for zoonoses and potential areas of collaboration, and joint action among various sectors.

The government of Vietnam has made significant strides toward the implementation of One Health, applying it to several initiatives for disease prevention and control. The Ministry of Agriculture and Rural Development (MARD), the Ministry of Health (MOH), and the Ministry of Natural Resources and Environment (MONRE) launched the One Health Partnership (OHP), which is now in its second phase through 2025. The government has also regularly signaled strong political will to strengthen capacity for One Health in collaboration with international agencies and through a favorable regulatory framework.

Two key factors increase the country’s vulnerability to EID outbreaks. First, Vietnam is among the five countries most likely to be affected by climate change, which brings high exposure to flooding, which breeds disease, and is particularly dangerous because a large proportion of the population and economic activities (including irrigated agriculture) are located in coastal lowlands and deltas. Second, its overcrowded hospitals and healthcare system in urban areas and lack of resources and infrastructure in rural areas pose additional risks; hospitals in major cities like Ho Chi Minh city and Hanoi often do not have the capacity to serve both local and provincial patients. Third, growth in population is also accompanied by a lack of water and sanitation infrastructure.

Implications of One Health must be understood for collaboration and coordination to succeed. Vietnam has done a very good job in promoting collaboration, addressing drivers of EIDs, and implementing a coordinated One Health approach.

Of course, there is room for improvement. Considering the main drivers that increase interactions among humans, livestock, and wildlife, this case study includes short-, medium- and long-term recommendations at the human, animal, and ecosystem levels. For humans, Vietnam can promote public awareness, strengthen Commune Health Centers (CHC) in rural areas; improve data collection for antimicrobial resistance (AMR); and invest in water, sanitation, and hygiene (WASH) infrastructure. For animals, the country can develop policies for small farm livestock production, establish a laboratory network, and leverage the existing disease surveillance system. For the ecosystem, it can decentralize management of environmental regulations, expand protected areas, and keep promoting anti-flood projects in mega-cities and through the Red River and Mekong River deltas.
II. The One Health Approach

The term One Health refers to an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems (Figure 1). It recognizes the connections and interdependency among the health of humans, domestic and wild animals, and the wider environment, including ecosystems.

This approach aims to mobilize multiple sectors, disciplines, and communities at different levels of society to work together to foster well-being, tackle threats to health and ecosystems, and address the collective need for clean water, energy and air; safe and nutritious food; climate change resilience; and sustainable development (FAO, OIE, UNEP and WHO 2021).

EIDs are becoming more frequent and worsening their social and economic impacts, exposing the world to repeated pandemic threats. The yearly probability of an occurrence of extreme epidemics may increase up to threefold in the coming decades (Marani et al. 2021). In 2020, the global economy contracted by 4.3 percent because of COVID-19, which amounts to about US$3.6 trillion worth of lost goods, services, and other output (Figure 2).

Old and new health threats, resulting in pandemic risks, demonstrate how our changing interactions with animals and the ecosystem can impact development outcomes. Human population is increasing, intensive farming practices are growing, environmental disruptions and deforestation are worsening, and the movement of animals and animal products has shifted from increased trade (CDC 2014).

Preventing pandemics should be a primary focus for policymakers, public health officials, and citizens. Implementing a One Health approach will improve countries’ ability to effectively prevent; detect; respond to, and recover from, outbreaks; prepare for future pandemics; and accomplish development goals such as improved health and economic security, climate resilience, and food safety.
Almost 75% of EIDs in humans have their origin in animals (domestic or wild).

Less than 100 outbreaks per year until the 1980s, to 400+ since 2000.

SARS (2003): $30-50 billion
H1N1 (2009): $45-55 billion
EVD (2014): $10-53 billion
Zika (2015): $7-18 billion


SARS: Severe Acute Respiratory Syndrome; H1N1: Swine Flu (primarily caused by the H1N1 strain of the flu virus); EVD: Ebola Virus Disease; Zika: Zika Virus; COVID-19: Coronavirus disease caused by the SARS coronavirus 2 (SARS-CoV-2)
III. Vietnam: A SNAPSHOT

Vietnam is prone to serious EIDs of a zoonotic nature with pandemic potential (USAID 2019). A combination of vulnerability to climate change, access to healthcare, and risky practices related to biosecurity of wildlife and livestock farming, trade, and consumption of animal products create constant opportunities for spillover of diseases from animals to humans.

Vietnam has risen from being one of the poorest countries in the world to a becoming a thriving lower-middle-income country: its GDP increased at a fast pace from USD$31.18 billion in 2000 to USD$271.16 billion in 2020, with remarkable results in the fight against poverty and hunger (WBG 2020). By 2016, the incidence of poverty had fallen to 9.8 percent from nearly 60 percent in 1993, as the economy became market-oriented and connected to the global economy (PID 2021). However, despite the country’s strong efforts to contain the COVID-19 outbreak, which included the allocation of USD$80 million for the health response, a credit package of USD$1.086 billion, and fiscal stimulus of USD$15.3 billion, the pandemic has had high social and economic impacts (PAD 2020 and WBG & ADB 2021 and Bloomberg 2022), which highlighted inequalities between rural and urban areas.

Vietnam is one of the top 10 fastest-growing countries in terms of population—with a booming middle-class. In 2020, the country had 97.34 million people, which is expected to increase to almost 110

**BOX 1: Impact of the COVID-19 pandemic**

The government’s fast response at the beginning of the COVID-19 pandemic resulted in Vietnam having some of the lowest numbers of cases in the world. The decline in Vietnam’s GDP at the height of the crisis in 2020 was the smallest of any country in the East Asia and Pacific region. Exports also grew as some manufacturing production relocated to Vietnam. However, households and businesses reported experiencing adverse shocks affecting employment, incomes, and daily activities. GDP growth was four percentage points lower in 2020 than in 2019. Real household income per capita in 2020 declined by 5 percent compared to 2019. About 30 percent of households reported having lower incomes in March 2021 than a year before. Around 9.1 million workers (12.8 percent of total workers) had either lost their jobs or had reduced wages. But COVID-19 was not the only crisis happening in Vietnam: weather events, natural disasters, and diseases affecting crops and animals were the most common causes of farming disruptions during COVID-19 (WBG 2021). The government now has a unique opportunity to create a more sustainable, inclusive, and resilient economy (WBG & ADB 2021).
million by 2050. Rural residents make up 63 percent of the total population, but the rural population is steadily decreasing from fast-paced urbanization. One-third of the population now lives in two mega-cities—Hanoi and Ho Chi Minh. But Vietnam has been ranked among the five countries most likely to be affected by climate change, given that a high proportion of the population and economic assets are in coastal lowlands and deltas and that rural areas are generally poor and economically deprived (WBG & ADB 2021).

**Agriculture is an important economic sector, but it is severely affected by climate change and sea level rise.** Agriculture occupies almost 40 percent of Vietnam’s land area and represents 37 percent of total employment (WBG 2019). In 2020, the agriculture, aquaculture, and forestry sectors contributed 14.9 percent to Vietnam’s GDP. However, because of climate change, agricultural lands have shrunk, especially within low-lying coastal lands. Elsewhere, the Red River and the Mekong deltas are experiencing saltwater intrusion from rising sea levels. As a result, growth and productivity of crops and cultivation schedules have been affected, and the population of pestilent insects is expected to increase.

**BOX 2: Antimicrobial resistance in Vietnam**

AMR has been recognized as a major health threat in Vietnam for over two decades (Van Kinh et al. 2017). In recent years, AMR has become a growing threat, stemming from the irrational use of antibiotics at all levels of the healthcare system, in aquaculture and livestock production, and in the community (WHO 2016). To comply with international recommendations on multi-sectoral surveillance policies, the Vietnamese government issued an inter-ministerial surveillance strategy for antibiotic resistance, including an integrated surveillance system (Bordier et al. 2018). In 2013, Vietnam became the first country in WHO’s Western Pacific Region to approve a national action plan to combat AMR, which focused on establishing a national surveillance system and improving laboratory capacity to track and detect resistant bacteria (CDC 2018). When the surveillance network of 16 central and provincial-level hospitals was created, it was known as the Vietnam Resistance project (VINARES). The Ministry of Health now calls the network the National AMR Surveillance Network (Van Kinh et al. 2017).
Vietnam has made remarkable progress on health outcomes, but shortages of staff and infrastructure remain. Life expectancy is the highest in the region for countries at a similar income level. In Vietnam, public hospitals dominate the healthcare system, which account for 84 percent of total hospitals, and public health expenditures per capita are expected to grow 9.2 percent per year from 2009 to 2025, reaching US$184 in 2021 (ITA 2021). But most hospitals are outdated and face chronic overcrowding, medical equipment needs replacement, medical staff are in short supply, and people in rural areas don’t have the same access to hospitals as their urban counterparts. Furthermore, Vietnam’s diverse socioeconomic, demographic, and environmental factors facilitate the emergence and spread of zoonotic diseases (WBG 2019). The country has faced recurring outbreaks and public health emergencies, including SARS in 2003, avian influenza (H5N1) in 2003, influenza H5N6, and the pandemic strain of the flu (H1N1) in 2009 (WBG 2019). History gives sufficient evidence to invest in prevention through the continued implementation of a One Health approach.


1 Hospitals in Hanoi and Ho Chi Minh City receive up to 60 percent of the country’s patients and operate at 200 percent capacity.
IV. Identifying vulnerabilities and main drivers

As discussed above, Vietnam is extremely vulnerable to outbreaks of EIDs that have the potential to become pandemics. Climate change is a key factor that increases the country’s vulnerability to EIDs, along with a mostly public-funded health sector that is overcrowded and insufficient for the rising demand. These vulnerabilities, main hotspots for EIDs, and core drivers of risk are explored below.

A. CORE VULNERABILITIES

1. Climate change

Vietnam’s long coastline, geographic location, and diverse topography and climate contribute to the country being one of the most hazard-prone in the Asia-Pacific region. Vietnam has been ranked among the five countries most likely to be affected by climate change (CGIAR) and recognized by the ND-GAIN Index as highly vulnerable to climate change impacts, ranking 102 out of 182 countries with a high vulnerability score, but also as responding effectively to climate challenges (ND GAIN 2020). Vietnam has high exposure to floods—it is ranked 1st jointly with Bangladesh—which account for 97% of average annual losses from natural hazards. It also has high exposure to tropical cyclones and associated hazards (WBG 2021). These extreme climate events increase the country’s vulnerability to EIDs, since a large proportion of the population and economic activities (including irrigated agriculture) are in coastal lowlands and deltas. Despite the government’s efforts to prevent outbreaks, studies suggest climate change is likely to delay the eradication of infectious diseases and increase the likelihood of EIDs (WBG 2021).

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2 The ND-GAIN Index ranks 181 countries using a score that calculates a country’s vulnerability to climate change and other global challenges and their readiness to improve resilience.
Furthermore, the adaptive capacity of the health sector is an important determinant of community vulnerability to climate change. The health system faces increasing challenges from changing climatic conditions and extreme weather events, especially in rural areas (Tuyet Hanh et al. 2020).

2. Overcrowding of the healthcare system

In 2013, the Ministry of Health partnered with the World Bank and the European Union to launch the Health Professionals Education and Training for Health Systems Reforms (HPET) project to execute a more sustainable and effective human resources for health development strategy. Through HPET, Vietnam increased investments in the health sector to implement a series of primary healthcare-oriented workforce reforms that aimed to improve the quality of education and training for the health workforce and strengthen primary health care (PHC) capacity across 15 of the poorest provinces (PHCPI 2020).

Despite these efforts, many hospitals are outdated and face chronic overcrowding. Hospitals in major cities often do not have the capacity to serve both local and provincial patients. Vietnamese public hospitals rely largely on the state budget to upgrade their facilities, equipment, and services. But while the total budget for the healthcare sector has grown, it is still too low to meet demand. Increasing population density not only affects the spread of infectious diseases directly (for example, through increased human-to-human contact), but also underpins many other ecological driving forces such as changing land use, agriculture, and livestock intensification.

In addition, the health sector is severely impacted by climate change. In rural areas, for example, Commune Health Stations (CHS) often do not have enough equipment and medicine for first aid and treatment during and after heavy rainfall and floods. To reduce the adverse effects of changing climatic conditions, the health sector needs to be actively involved in developing long-term plans to respond to climate change (Tuyet Hanh et al. 2020).

B. RISK HOTSPOTS OF EIDs

Heat maps of predicted relative risk distribution of zoonotic EID events show a pronounced risk in Vietnam’s northeastern and southern provinces, especially around Hanoi and Ho Chi Minh City. These hotspots of zoonotic EID risk, shown in Figure 5 (Allen et al. 2017), also coincide with higher numbers of exposed population to floods, shown in Figure 6.
C. MAIN DRIVERS OF EIDS

Vietnam has faced regular infectious disease threats in recent decades, which are expected to increase in frequency. South East Asia region is a major hotspot for EIDs. Therefore, addressing the main drivers of EIDs in Vietnam is crucial to prevent outbreaks and to implement a One Health approach.

1. Drivers that increase interactions between livestock and wildlife

- **Increased cross-border trade of livestock and wildlife.** Trading centers, for example, can act as mixing bowls for humans and dozens of other species before animals are shipped to other markets, sold locally, or even freed and sent back into the wild. Live animal markets of all scales, where animals are transported, held, and slaughtered on-site in high-density situations, are a particular concern. Data for wildlife trade is scarce, although some have estimated that thousands of wild animals cross borders each year regionally for use in Vietnam as food or pets or ingredients in traditional medicine.
2. Drivers that increase interactions between humans and wildlife

- **Population mobility increases contact with wildlife.** Population mobility within Vietnam and international cross-border migration are both rising. Large-scale migration of economic and political refugees, including the frequent movements of hill tribe populations and their livestock, present substantial challenges to cross-border disease control in the Mekong Basin subregion. Furthermore, low-income immigrants often live in unhygienic and overcrowded areas with poor access to health services, where infectious diseases such as malaria are important causes of morbidity and death.

- **Intensive agriculture and land use change.** Human-induced changes in land use are key driving forces of EIDs and can also modify the transmission of endemic infections. Agriculture occupies over 39 percent of the land in Vietnam. Moreover, there has been a particularly large increase in the land area used for rice cultivation. Rice paddies can promote transmission of vector-borne diseases such as Japanese encephalitis through their role as vector-breeding sites and by attracting water birds, which are the natural reservoir of Japanese encephalitis. Transmission between birds and mosquitoes is further amplified by transmission in pigs. The attraction of various birds to rice paddies has also been associated with an increased risk of H5N1 outbreaks in Vietnam.

- **Intensifying wildlife farming and wildlife trade.** Wildlife farming is an emerging industry in Vietnam. Poor tracking of the species and scale of these farming operations presents a challenge in estimating risk. Potential issues involve mixing of species, including wild and captive-source animals, providing opportunities for pathogen evolution and spillover seen with livestock farming. The sale of wildlife in markets and consumption in restaurants also provides potential opportunities for mixing and spillover. Markets in Vietnam are typically regulated by the Ministry of Trade and Commerce, requiring coordination across ministries to effectively regulate the industry.

3. Drivers that increase interaction between humans and livestock

- **Intensive livestock production.** This industry is increasingly prevalent in Vietnam. Urban and peri-urban livestock-keeping provides employment and access to nutritious food. However, it can also contribute to the transmission of zoonotic infections, sanitary problems, and conflicts (Pham-Thanh et al. 2020). Increased poultry density is associated with the cumulative number of H5N1 cases in humans. Many species often coexist in backyard and village farms, increasing the potential for cross-species transmission. Although these farms remain the predominant environment for poultry producers, industrial production systems are quickly gaining prominence in Vietnam. As intensive production of single species in large-scale industrial and commercial sectors is becoming more dominant, this industry may reduce the risk of cross-species infection but also may amplify diseases during the

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**BOX 3: Livestock development in Hanoi**

Rapid urbanization and human migration in Hanoi require the means to develop the agriculture and livestock sector to cope with food security needs. City authorities have developed a plan to increase livestock productivity and the quality of animal-sourced food by 2030. Current policies for the development of livestock target industrial farms, concentrated outside the most highly populated areas. In Hanoi, city officials expect to complete the relocation of most livestock farms from residential areas in rural districts and removal from urban districts by 2030. (Adapted from Pham-Thanh et al. 2020)
emergence of large-scale outbreaks. Moreover, cross-infection can still occur within the marketplace, where economic imperatives override public health concerns. Pig farming is also intensifying, with densities having at least doubled since 1990. This trend is arguably a cause for concern in view of the role of pigs in the transmission of zoonoses such as Nipah virus, Japanese encephalitis, and influenza, particularly in areas with wildlife presence (e.g. bats, birds) and poor biosecurity.

4. Factors that exacerbate outbreaks

- **Population growth and urbanization.** In addition to high population growth, Vietnam is rapidly becoming more urbanized. As of 2020, roughly 37 percent of people live in urban areas, a figure that is expected to grow to more than 50 percent by 2050. Urbanization is a driving force behind some vector-borne diseases such as dengue, which has seen a resurgence during the past 50 years and has been linked to the establishment of (often impoverished) peri-urban areas where the lack of reliable water and sanitation systems and the accumulation of debris such as used tires provide breeding sites for Aedes aegypti mosquitoes.

- **Sea level rise and salinity intrusion.** Vietnam’s low-lying coastal and river delta regions have very high vulnerability to rising sea levels. Depending on the emissions pathway, 6–12 million people will potentially be affected by coastal flooding between 2070–2100 without effective adaptation action (WBG 2021). In the past 50 years, sea level has risen about 20 centimeters. Rising sea levels and intensification of extreme weather events will exacerbate the risks posed by river floods (WBG 2021). The Intergovernmental Panel on Climate Change (IPCC) estimates that if the trend worsens, parts of Ho Chi Minh City may be underwater by 2050 (Southerland 2019).

- **Lack of access to water, sanitation, and hygiene infrastructure (WASH).** Although the country has made rapid progress in improving water supplies, large swaths of the country—mainly areas heavily populated with ethnic minority groups and remote communities—remain without access to appropriate WASH infrastructure. For example, in rural communities, open defecation and the use of sub-standard latrines are common practices (UNICEF 2020), which paves the way for breeding grounds of diseases; coupled with proximity to livestock and wildlife, this can trigger outbreaks of zoonotic diseases.
V. One Health in Vietnam

The success of a One Health approach requires acknowledgement of the vulnerabilities and drivers of potential pandemics, identification of hotspots for zoonoses and potential areas for collaboration among sectors, and joint action. This case study attempts to fill that gap: it addresses how actors came together in Vietnam, which components are missing, and the main drivers and vulnerabilities to EIDs at the human-animal-ecosystem interface. It also assesses viable targeted interventions to reduce risks.

A. ENABLING ENVIRONMENT FOR IMPLEMENTING A ONE HEALTH APPROACH

Governments play a pivotal role in creating an enabling environment for One Health: it depends not only on the presence of law and regulations, but also on their implementation. The implementation of a One Health approach requires strong political support at the highest levels but also at the local levels (FAO 2021). (Annex I provides an overview of actors and stakeholders from the government and other organizations that are key to the prevention of EIDs and the operationalization of a One Health approach.)

Since facing several outbreaks of SARS and avian influenza, the government of Vietnam has made impressive strides toward the implementation of a One Health approach (Annex II provides a complete overview of the institutional and legal framework relevant for One Health). During the avian influenza H5N6 in 2013, the government issued guidelines for coordinated prevention and control of zoonotic diseases and implemented the Vietnam Integrated National Operating Program on Avian Influenza, Pandemic Preparedness, and Emerging Infectious Diseases. In 2016, this program evolved into the Vietnam One Health Strategic Plan for Zoonotic Disease. Around this time, the government issued relevant One Health-related laws and regulations, such as the Veterinary Law of 2015, the Animal Husbandry Law of 2018, and Regulations of Wildlife Trade in 2021 (Nguyen-Viet et al. 2022).

Vietnam has a presence at different levels of One Health. Globally, Vietnam has been supported by the Quadripartite3 and is also co-leading the Zoonotic Diseases Action Package of the GHSA.4 Regionally, Vietnam contributes to One Health initiatives of the Association of Southeast Asian Nations, Asia-Pacific Economic Cooperation, and the Southeast Asia One Health University Network (SEAOHUN), a forum facilitating sharing, connection, and cooperation in One Health education and research projects in Southeast Asia, which is a hotspot for EIDs (Nguyen-Viet et al. 2022). At the local levels, commitments toward One Health are reflected in a strong legislative and regulatory framework (JEE 2016).

B. EXISTING EFFORTS

The government has several initiatives for disease prevention and control from a One Health perspective. International organizations taking a One Health approach have a very strong presence in Vietnam. Between 2006 and 2015, the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Health (MOH) established the Partnership on Avian and Human Influenza (PAHI), which then evolved into the first phase of OHP launched in 2016 to support the Vietnam Zoonotic Diseases Action Package (ZDAP) and the Global Health Security Agenda (GHSA) to address the growing threat of EIDs. In Vietnam, One Health is primarily operationalized through the OHP. To strengthen ongoing work to control zoonotic diseases, the Vietnamese government in 2021 launched the second phase of the OHP, which will run until 2025. Supported by 31 Vietnamese and international agencies, including the MARD, the MOH, and the Ministry of Natural Resources and Environment (MONRE), the OHP aims to minimize the risk of

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3 The Quadripartite is an alliance to advance the One Health approach comprising FAO, WHO, WOAH, and UNEP
4 The GHSA is a 70-country effort to build capacities to prevent, detect, and respond to infectious disease threats.
spreading pathogens transmitted from animals and the environment to humans and of AMR through enhanced multisectoral collaboration using the One Health approach.

The second phase of the OHP shows the government’s appreciation of One Health in managing zoonoses and paves the way for development partners to continue their support by contributing knowledge and expertise to One Health programs in the country and region. The second phase will promote the achievements of the partnership through multidisciplinary cooperation and coordination among ministries and agencies, especially the MARD, MOH, and MONRE (ILRI 2021). Technical assistance and policy and financial support will also be mobilized from international and national development partners to ensure partners can better and more consistently address epidemic disease challenges that affect humans and animals. The government also recognizes the need for stronger cooperation within OHP in capacity development for One Health, control of diseases in humans whose pathogens are of animal origin including zoonotic influenza and rabies, control of environmental agents that have potential impacts on human health, and enhanced advocacy and mobilization of resources for prevention and control of zoonoses.

The MARD, MOH and MONRE issued, in March 2022, the Master Plan for the One Health Partnership Framework for Zoonoses, 2021-2025 which marks an important milestone and was written in collaboration with several stakeholders. It addresses strategies to deliver outcomes of the One Health Partnership, as well as risk scenarios and budgeting (OHP 2022).

The Vietnamese government has continued to signal strong political will to strengthen capacity for One Health in collaboration with international agencies. In 2016, the WHO conducted a Joint External Evaluation (JEE) mission in Vietnam, which showed Vietnam’s political willingness to invest in International Health Regulations (IHR) capabilities, strong partnerships, and stakeholder involvement. Although the JEE found that Vietnam had made significant progress—in terms of capacity and a favorable enabling environment—it also showed room for improvement in multisectoral coordination, information-sharing, and distribution of professional public health staff (JEE 2016). In 2019, a Coordinated Surveillance Joint Risk Assessment (JRA) workshop was conducted by the MOH with the goal of reviewing One Health practices and identify risks of influenza and other viruses with spillover potential.

### TABLE 1: Summary of key assessment and coordination instruments in Vietnam

<table>
<thead>
<tr>
<th>Process</th>
<th>Performance of Veterinary Services (PVS Evaluation)</th>
<th>Joint External Evaluation (JEE)</th>
<th>National One Health Strategic Plan (OHSP) for Zoonotic diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>2010</td>
<td>2016</td>
<td>2016</td>
</tr>
<tr>
<td>Key outputs</td>
<td>2010: OIE PVS Gap Analysis report</td>
<td>Main findings show that Vietnam has made significant progress in meeting the IHR core capacity requirements</td>
<td>The plan calls for the continued development of core One Health competencies. Second phase was launched in 2021 and will run until 2025.</td>
</tr>
</tbody>
</table>
VI. One Health actions: recommendations

Focusing on prevention is key to reducing risks—and therefore to addressing drivers—of EIDs. As the analysis shows, humans, animals, and ecosystems are deeply entwined. Therefore, prevention and preparedness should reflect the interconnectedness throughout sectors through targeted actions.

A. HUMANS

Short-term interventions

1. **Enact public awareness and education campaigns**

   Regular public awareness campaigns should emphasize how to reduce risks of zoonotic diseases. A crucial aspect of these campaigns is to empower low-income households to strengthen knowledge and skills for effective diseases prevention and control, and promote healthy practices. Communication and outreach activities at the community level are also needed, especially in rural areas.

2. **Strengthen the capacity of Commune Health Centers (CHCs)**

   CHCs are the grassroots public healthcare system in rural Vietnam (Luong 2019). CHCs are crucial for rural healthcare because they provide basic preventive care along with diagnosis, treatments, and referrals to public hospitals. Strengthening their capacity to monitor and test patients who may be infected with an EID is crucial for prevention and containment of potential outbreaks.

Medium-term interventions

3. **Promote knowledge among government agencies**

   Establishing an open, online knowledge-sharing and dissemination hub will allow the government to increase capacity on One Health. Information-sharing between the human and animal health sectors appears to be present but the wildlife sector is not involved in the coordination mechanism and thus can make only limited contributions (JEE 2016). The wildlife and environment sectors must be included in coordination activities in a more robust way.

4. **Improve data collection for AMR**

   Although there is a high level of commitment from the government to combat AMR and elements of a comprehensive policy framework are in place (JEE 2016), data collection is limited and often insufficient. As described in Box 2, AMR has become a serious threat in Vietnam, but the capacity of the VINARES project needs to be strengthened and expanded to a One Health scope so it can be fully operational and capture relevant sources of AMR risk.

Long-term interventions

5. **Improve WASH infrastructure**

   There is a lack of WASH infrastructure in high-density slums in urban areas and communities with ethnic minorities. Investment in appropriate WASH infrastructure can help promote effective prevention and control of infection by healthcare providers and significantly reduce the risk of EIDs.

B. ANIMALS

Short-term interventions

1. **Empower communities and promote dialogue**

   Empowering rural communities is crucial to ensure participation in wildlife management primarily in rural areas that have increased contact with wildlife, and will help with disease management. Additionally, it is necessary to create general awareness of risky practices around interacting with wildlife. However, this requires local government support to enhance the process as without their cooperation, activities at the local level might be hindered.
2. Focus policies on small farm livestock production

Most livestock production is performed by small farmers. As Box 3 shows, cities have strong plans to ensure safe and efficient livestock production. However, these plans are mostly targeted at industrial farms, which are far fewer in number. The government should aim to regulate small farms, including wildlife farming, to prevent exposure to zoonotic diseases and promote food safety.

### Medium-term interventions

3. Establish a One Health laboratory network

The government should leverage existing laboratories used for human testing, and expand their infrastructure to be used for animal testing as well, primarily in areas with a high density of livestock farmers. In addition, the JEE reported that there is no link between epidemiology and laboratory reporting, which is a missed opportunity. The same report stated that the laboratory analysis capacity at the national level is inadequate (2016).

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**FIGURE 8:** Key recommendations to prevent EIDs through a One Health approach

<table>
<thead>
<tr>
<th>HUMANS</th>
<th>ANIMALS</th>
<th>ECOSYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term interventions</strong></td>
<td><strong>Medium-term interventions</strong></td>
<td><strong>Long-term interventions</strong></td>
</tr>
<tr>
<td>Enact public awareness and education campaigns</td>
<td>Empower communities and promoting dialogue</td>
<td>Empower communities and promoting dialogue</td>
</tr>
<tr>
<td>Strengthen capacity of Commune Health Centers</td>
<td>Focus policies towards small farm livestock production</td>
<td>Decentralize management of environmental regulations</td>
</tr>
<tr>
<td><strong>Medium-term interventions</strong></td>
<td><strong>Establish a One Health laboratory network</strong></td>
<td><strong>Implement early warning systems</strong></td>
</tr>
<tr>
<td>Promote knowledge among government agencies</td>
<td>Establish a One Health laboratory network</td>
<td>Leverage the existing disease surveillance system</td>
</tr>
<tr>
<td>Improve data collection for AMR</td>
<td>Leverage the existing disease surveillance system</td>
<td>Expand protected areas</td>
</tr>
<tr>
<td><strong>Long-term interventions</strong></td>
<td><strong>Develop early-detection programs</strong></td>
<td><strong>Continue the promotion of anti-flood projects in megacities and rural areas</strong></td>
</tr>
<tr>
<td>Improve WASH infrastructure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Leverage the existing surveillance system in the human health sector

Joint and interoperable information systems that support surveillance systems are in place in Vietnam for the detection of diseases of public health importance (JEE 2016). The government implemented web-based reporting software at the district level in all 63 provinces in 2011, but the JEE reported that the system needs serious improvement to provide holistic reporting of all diseases. The same software can be expanded to cover livestock and wildlife disease reporting.

Long-term interventions

5. Develop early detection programs

Vietnam has established surveillance systems for early detection of animal diseases, and the 2015 Veterinary Law strengthened and streamlined mechanisms for surveillance. Scaling these to include relevant pathogens and interfaces where wildlife-human, wildlife-livestock, and livestock-human interactions are occurring will better capture changing risks and allow for more proactive risk management strategies.

C. ECOSYSTEM

Short-term interventions

1. Decentralize management of environmental regulations and heighten enforcement

The government should strengthen environmental policies, especially for highly damaging sectors such as logging, mining, and industrial agriculture. Similarly, it should decentralize control and inspection for compliance with environmental standards set forth by the MONRE.

An additional aspect lacking in regulations is wildlife trade. In July 2020, the Vietnamese Government called for heightened enforcement of existing laws on illegal wildlife trade but did not include new restrictions on trade and consumption of wild animals to reduce the risk of pathogen transmission (WCS 2020). However, there are no reported reductions of activities and some reports state that wildlife trade might be a hub of impunity for traffickers (EIA 2021).

2. Promote community dialogue

Vietnam should strengthen governance at the county level by encouraging community dialogue and actions and setting rules on the collection of forest products. Improving tracking of wildlife farms and markets selling wildlife, will better inform risk analysis processes and guide needed surveillance and management strategies.

Medium-term interventions

3. Implement early-warning systems

Early-warning systems for natural hazards in highly vulnerable areas can diminish the impact of climate change, especially in the case of floods and typhoons. The government should evaluate the possibility of incorporating predictions on sea-level rise for communities and farmers to preempt future damage from increased sea levels.

4. Expand protected areas

The government should consolidate and expand Vietnam’s network of protected areas and empower communities to enhance their awareness of forest conservation issues.

Long-term interventions

5. Continue promoting anti-flood projects in megacities and expand to rural areas

With increasingly intensive floods a permanent occurrence, Ho Chi Minh City has undertaken anti-flood projects with an estimated expenditure of USD$345 million (Southerland 2019). In 2021, the city launched 11 projects to build and update drainage systems. These and further investments must continue across the country, especially through the Red River and Mekong River deltas.
Prevention through a One Health approach—and further recommendations at the human, animal, and ecosystem levels—should also be based on additional careful analysis—by the government or implementing institutions—of alternative interventions, their associated costs, benefits, feasibility of implementation, and effectiveness in reducing risks of outbreaks of EIDs.
VII. Key Takeaways

1. One Health is an integrated unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems.

2. The success of a One Health approach in Vietnam requires joint action among various sectors, acknowledging the vulnerabilities and drivers of potential pandemics and identifying hotspots for zoonoses and areas for collaboration among sectors.

3. Vietnam has risen from being one of the poorest countries in the world to becoming a thriving lower-middle-income country. By 2016, as Vietnam’s economy became more market-oriented and global, the poverty rate had fallen to 9.8 percent from nearly 60 percent in 1993.

4. Vietnam is one of the top 10 fastest growing countries in terms of population and has a booming middle-class. The country has made remarkable progress on health outcomes, but shortages of staff and infrastructure remain. Most hospitals are outdated and face chronic overcrowding.

5. Vietnam has been an epicenter of emerging diseases over the last decade. It has faced recurring outbreaks and public health emergencies, such as SARS in 2003, avian influenza (H5N1) in 2003, and influenza H5N6 and the pandemic strain of the flu (H1N1) in 2009 (WBG 2019).

6. The country’s extreme vulnerability to climate change and the lack of a resilient healthcare system are the two main issues that significantly increase the country’s vulnerability to the spread of pandemics.

7. Vietnam has been ranked among the five countries most likely to be affected by climate change, given that a high proportion of the population and economic assets are in coastal lowlands and deltas, and that rural areas face issues of poverty and deprivation.

8. Since facing outbreaks of SARS and avian influenza, the Government of Vietnam has made impressive strides toward the implementation of a One Health approach. The One Health Partnership (OHP), which was launched in 2016, seeks to address the growing threat of EIDs and is the main institutional framework that operationalizes One Health.

9. This case study identifies several drivers that increase interactions among humans, livestock, and wildlife. These include increased cross-border trade of livestock and wildlife, population mobility, intensive agriculture, wildlife farming and trade, and land-use change which increase human contact with wildlife. The growth of livestock production to cope with growing food security needs has exposed humans to increased contact with livestock, including in live animal markets.

10. This case study identifies short-term, medium-term, and long-term interventions that the government of Vietnam can take at the human, animal, and environmental levels, which leverage existing institutions and programs and address core drivers of EIDs.
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### Annex I

Actors and stakeholders for prevention of emerging infectious diseases and a One Health approach

#### I. HUMAN HEALTH

<table>
<thead>
<tr>
<th>Actor/Stakeholder</th>
<th>Category</th>
<th>Role</th>
</tr>
</thead>
</table>
| Ministry of Health                 | Government     | • Health security: health policy, plans and standards  
|                                    |                | • Laboratories                                   
|                                    |                | • Disease reporting                              |
| Ministry of Industry and Trade     | Government     | • Market management                             |
|                                    |                | • Food safety                                   |
| Ministry of Education and Training | Government     | • Education                                     |
|                                    |                | • Awareness                                     |
| Ministry of Transport              | Government     | • Prevention and control activities             |
| Local communities                  | Stakeholders   | • Prevention of EIDs, wildlife and forest management |

#### II. ANIMAL HEALTH

<table>
<thead>
<tr>
<th>Actor/Stakeholder</th>
<th>Category</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Trade and Commerce</td>
<td>Government</td>
<td>• Regulating markets (wild animal and livestock trade)</td>
</tr>
<tr>
<td>Department of Livestock Production</td>
<td>Government</td>
<td>• Livestock policy</td>
</tr>
</tbody>
</table>
| National Institute for Animal Husbandry | Government | • Scientific research on health of animals  
|                                    |                | • Biosafety, food safety, and hygiene of animal products |
| The International Cooperation Department | Government | • International cooperation and integration  
|                                    |                | • Management of foreign investment           
|                                    |                | • Secretariat Office for the Vietnam One Health partnership for Zoonoses |
| World Food Programme               | Development partner | • Value chains  
|                                    |                | • Food security                                
|                                    |                | • Traditional agricultural practices           |
| FAO                                | Development partner | • Fisheries and agriculture  
|                                    |                | • Laws and regulations                          
|                                    |                | • Infrastructure                                
|                                    |                | • Institutional and formal context             |
| USAID                              | Donor          | • Policy environment                            |
|                                    |                | • Financing for animal health projects          |

#### III. ECOSYSTEM HEALTH

<table>
<thead>
<tr>
<th>Actor/Stakeholder</th>
<th>Category</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Meteorology, Hydrology and Climate Change</td>
<td>Government</td>
<td>• Environmental policy</td>
</tr>
<tr>
<td>Ministry of Construction</td>
<td>Government</td>
<td>• Environmental protection</td>
</tr>
<tr>
<td>Ministry of Public Safety</td>
<td>Government</td>
<td>• Environmental police</td>
</tr>
<tr>
<td>USAID</td>
<td>Donor</td>
<td>• Concession-based development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Policy environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Informal and traditional context</td>
</tr>
</tbody>
</table>
Annex II

Institutional and legal framework in Vietnam, relevant for One Health: An Overview

Ministry of Health (MOH)

- National AMR Surveillance Unit 2016
- Law on Communicable Diseases 2017
- Environmental Protection Law 2020
- Regulations of Wildlife Trade 2021

One Health Partnership

- Ministry of Agriculture and Rural Development (MARD)
- Ministry of Natural Resources and Environment (MONRE)
- Ministry of Industry and Trade
- Ministry of Social Affairs and Family
- Ministry of Vertebrate Animal Health
- Ministry of Science and Technology
- Ministry of Planning and Investment
- Ministry of Science, Technology, and Environment

- National Institute of Hygiene and Epidemiology
- Vietnam One Health Strategic Plan for Zoonotic Diseases 2016-2020
- National Plan on Avian Influenza Prevention and Control 2019-2025
- Veterinary Law 2015
- Animal Husbandry Law 2018
- Vietnam One Health Strategic Plan 2016-2020
- National AMR Surveillance Unit 2016
- Law on Communicable Diseases 2017
- Environmental Protection Law 2020
- Regulations of Wildlife Trade 2021

- Vietnam One Health Strategic Plan for Zoonotic Diseases 2016-2020
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