The Viet Nam One Health Strategic Plan for Zoonotic Diseases 2016 - 2020

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Background

In Viet Nam, zoonotic diseases pose a constant threat and have already caused major health, economic and social impacts. As local and global environments undergo rapid transformations, the risk of zoonoses and emerging diseases appears to be increasing.

The current consensus is that these diseases are best managed using a **One Health**, multi-sectoral approach that encompasses prevention and response (see box). Viet Nam is already applying this approach.

Scope and purpose

This One Health Strategic Plan (OHSP) sets out a 5-year plan for the continued development of Viet Nam's One Health capacities for reducing the health and other impacts of zoonotic diseases. The emphasis is on further development of core One Health competencies and selected attention on nationally defined priority areas and diseases.

This document pulls together the various strands of current and planned work on zoonoses in Viet Nam where a One Health approach will be applied, illustrates where multi-sector involvement is required and describes the activities that will be undertaken. It also highlights gaps in funding or areas where donor support will be required.

One Health approaches to manage diseases of animal origin include:

- Activities where inter-sectoral and interagency collaboration has occurred or should occur to provide the best chance of improving health for humans, animals and the environment
- Activities using Ecohealth approaches to tackle complex disease problems. Ecohealth approaches consider environmental and social factors, and actors from various disciplines work together with local stakeholders to devise and implement solutions to these problems

Both are related and both activities are needed to optimise the likelihood of containing and preventing diseases at the human-animal-environment interface. A One Health approach to zoonotic diseases does not mean that different departments/players must work together to conduct all activities. There will be situations where a multidisciplinary team is best equipped to resolve problems, but in many cases One Health is about ensuring common goals, timely sharing of knowledge and ensuring that the most appropriate people, organisations and agencies are engaged to find solutions to zoonotic disease control and prevention.

The OHSP:

- Builds on previous plans - the Viet Nam National Integrated Operational Program for Avian and Human Influenza (OPI), 2006-2010, and the Viet Nam National Integrated Operational Program on Avian Influenza, Pandemic Preparedness and Emerging Infectious Diseases (AIPED), 2011-2015
- Provides a One Health interface for national plans (including those still under development) that connect with this 5-year plan such as those to strengthen health systems and to address specific diseases
- Includes the priority actions for addressing health threats posed by zoonotic diseases identified at the International Conference on Zoonotic Disease Prevention and Control, Hanoi, August 2015
- Is consistent with international and regional plans for specific zoonotic diseases and health issues (e.g. WHO Antimicrobial resistance, WHO/OIE/FAO rabies)
- Aligns with other international and regional initiatives that include One Health activities on zoonotic diseases such as the International Health Regulations (IHR 2005), the Asia Pacific Strategy for Emerging Diseases (APSED 2010), and the Global Health Security Agenda (GHSA) (See Figure 1, page 3)

Target audience

The OHSP provides a framework for anyone with an interest or stake in the control and prevention of zoonotic diseases in Viet Nam - this includes government and non-government agencies, teaching and research institutions, international financial institutions, donors and the public. Although this plan principally details activities for government and key partners, many of the underlying drivers of disease are related to human actions that can only be addressed with the participation of all parts of society in Viet Nam, particularly those involved in rearing domestic and wild animals, and handling animals and animal products.

Actions will be taken in seven focus areas described below. Additional information on each of the elements of the plan is provided in expanded sections in the attached document.

Guiding principles

The 3 guiding principles for the OHSP are:

1. That it builds on work already undertaken through the OPI and AIPED on zoonotic diseases using a One Health approach
2. That One Health approaches require shared objectives among different partners and, in some cases, shared activities when this is the most efficient way to prevent disease and protect health
3. That strengthening capacity alone is not enough – improved capacity must be applied to tackle specific diseases of local concern

Governance of the plan

Governance of this plan will occur through:

- An annual assembly with partners hosted by MARD and MOH with the participation of MONRE and other related ministries, sectors and stakeholders to report on progress. This assembly will be incorporated into the annual national One Health Forum of the One Health Partnership for Zoonoses.
- An annual written report produced by the One Health Partnership for Zoonoses summarising progress against key targets.

Goal, objectives and areas of focus (See Figure 2)

To achieve the **goal** of reducing the health and other impacts of zoonotic diseases and diseases of animal origin

the OHSP has the following 3 **objectives**:

A. Strengthen One Health capacity for the prevention and control of all zoonotic diseases

B. Enhance preparedness for a human emergency of animal origin

C. Apply One Health principles to limit the public health impact of current priority zoonotic diseases

Seven One Health **focus areas** have been identified to achieve these objectives by 2020 (Figure 2):

1. Building One Health capacity
2. One Health approaches for managing human disease emergencies of zoonotic origin
3. One Health approaches for managing zoonotic agents with pandemic potential that are yet to emerge
4. One Health approaches for managing zoonotic influenza viruses with pandemic potential
5. One Health approaches for managing rabies
6. One Health approaches for managing antimicrobial resistance
7. One Health approaches for managing other priority zoonotic diseases

Figure 1: Relationship between the GHSA, IHR, APSED & the Viet Nam One Health Strategic Plan

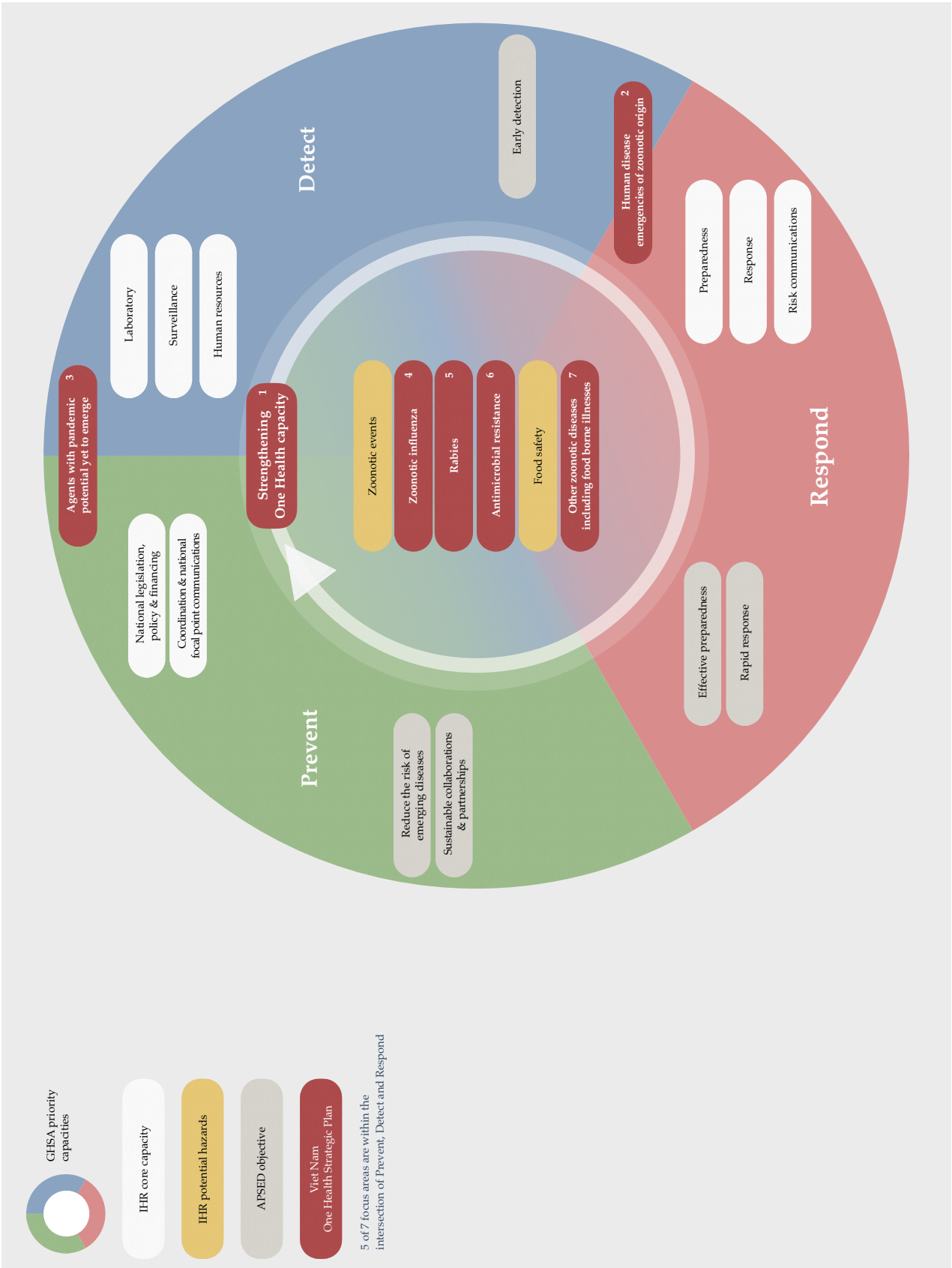
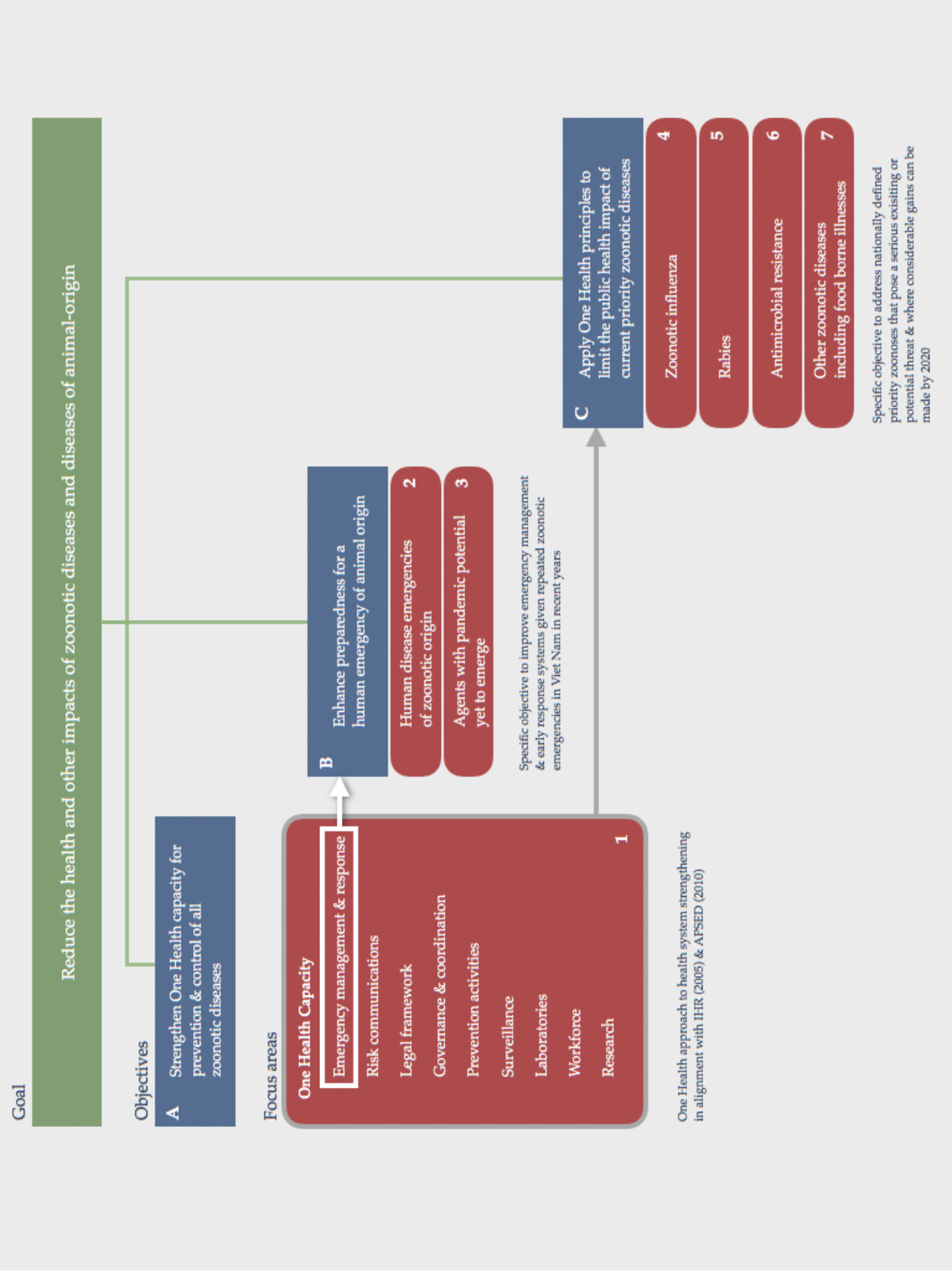


Figure 2: Viet Nam One Health Strategic Plan 2016-2020: goal, objective and focus areas



1. Building One Health capacity

Why is this necessary?

Although much has been achieved in developing One Health capacity in Viet Nam - through work on avian influenza and other diseases supported by government, international agencies and donors - gaps remain. Work conducted in this focus area over the next 5 years will aim to fill these gaps, strengthening the platform on which One Health approaches to specific zoonotic diseases are built. This platform includes high-level coordination and support, suitably trained and resourced teams, as well as the legal framework and formal direction for different sectors to work together. Without these elements, One Health approaches are unlikely to be adopted and opportunities to prevent and control diseases at the human-animal-environment interface will be missed.

The capacity to undertake risk assessments on potential drivers for emergence and re-emergence of zoonotic diseases and appropriate research are needed to advance One Health approaches to zoonotic diseases in Viet Nam. In addition, risk communications that raise awareness and result in appropriate behavioural change are essential to prevent emergence of new potential pandemic threats from farmed and wild animals, and in managing disease emergencies. Surveillance systems that can identify zoonotic and potential pandemic agents in both animals and humans are critical for One Health responses. These systems need to provide accurate and timely data that are fully analysed and shared.

What will be done, how will it be done and who will do it?

1. GOVERNANCE AND COORDINATION - mechanisms to coordinate action across sectors including greater involvement of the environmental sector

What	How	Who
Well-defined **national coordination mechanisms for zoonotic diseases** linking animal health, human health, wildlife, environment and other government sectors that function during emergency and non-emergency periods	Establishment of a new, unified, overall national steering committee Application of Circular 16/2013 on zoonotic diseases	MARD, MOH, Office of Government, MONRE, OHP
Engagement by government partners with key civil society organisations and external stakeholders for specialised information and advice (e.g. clinical, public health, laboratory, risk communications, private sector, international partners etc.) and as partners in disease control and prevention programs	Ensuring industry, subject and discipline specialists are identified and included in One Health approaches to control and prevention of zoonotic diseases through advisory panels and networks.	MARD, MOH, NIHE, other members of the OHP Civil Society
Maintaining the **One Health Partnership on Zoonoses** and secretariat to ensure it can continue to act as a national platform for policy dialogue and knowledge management of One Health and zoonotic diseases, and to facilitate coordination of One Heath stakeholders	Provision of support for the One Health Partnership including involvement in OHP activities organised	MARD, MOH, other members of the OHP UNDP, USAID
Conducting **joint investigations into zoonotic disease outbreaks** whenever this is appropriate (including development of guidelines for situations where joint investigations should be conducted)	Application of relevant provisions of Circular 16/2013	MARD, MOH at national and equivalent agencies at provincial level VOHUN, FAO, WHO, OIE, ADB

2. LEGAL FRAMEWORK - the legislative framework to facilitate multi-sectoral cooperation

What	How	Who
Measures to ensure **wider adoption of Circular 16/2013** that provides a basis for enhanced collaboration between Ministries and Departments on zoonotic diseases, especially at provincial and sub-provincial levels	Training in implementation of Circular 16/2013	MARD, MOH and provincial counterparts, WHO, FAO
Additional legislation/directives/circulars for coordination and formal engagement of the environmental sector and in particular MONRE	Preparation of appropriate directives under the Animal Health law	MARD, MONRE

3. RISK ASSESSMENTS AND COMMUNICATIONS to target upstream determinants of disease emergence

What	How	Who
Build **capacity to undertake risk assessments** at the human-animal-environment interface	Training programs in joint risk assessments through AVET and FETP and other programs	MARD, MOH USAID, VOHUN, WHO, FAO, OIE, ADB
Improve **risk communication** between authorities and to the public on microbial hazards emerging at the human-animal-environment interface	Training in risk communication for disease emergencies and prevention of diseases	MOH, MARD, MONRE One Health Communications Network, farmers animal traders FAO, WHO, ADB, donors

4. LABORATORIES AND SURVEILLANCE SYSTEMS that support testing programs

What	How	Who
Enhance **laboratory capacity** and quality management systems	Provide appropriate resources for undertaking tests and for application of quality management systems	MOH MARD, NIHE WHO, FAO, OIE, USAID, ADB, WCS, US CDC, donors
Enhance **data management systems** to allow rapid analysis and sharing of new findings within and across sectors as well as across borders	Established following the GHSA Roadmap	As above
Conduct **well designed surveillance** to ensure early detection of zoonotic pathogens especially those with pandemic potential	See focus area 3	See focus area 3

5. TRAINED ONE HEALTH WORKFORCE - a cadre of qualified staff to implement One Health activities

What	How	Who
Sufficient numbers of trained professional staff are **proficient One Health practitioners**	Adopt curriculum for One Heatlh training and include One Health as an integral part part of FETP and AVET training	MARD, MOH, MOF, MPI VOHUN FAO, WHO, US CDC

6. APPROPRIATE ONE HEALTH RESEARCH

What	How	Who
Undertake **appropriate research** to fill gaps in application of One Health approaches to policy and practice including research on specific diseases	Identify gaps in knowledge, obtain funding, conduct research and regularly share findings with stakeholders including policy makers (annual meetings)	MARD (research centres), MOH, NIHE, OHP OUCRU, CIRAD, ILRI, Universities including those in VOHUN
Undertake selected **environmental health research** aimed at understanding the drivers of disease emergence and measures to reduce risk to guide practice, for example, enhanced land use planning for the livestock sector (see focus area 3)	Farm locations assessed for potential hotspots for pathogen emergence, amplification and transmission (e.g. effects of developing new livestock production zones)	MARD (DLP), MONRE

How will gains be measured?

Success will be measured by the extent of change in each of the areas above and, more importantly, in decreases in case numbers, fatalities, and the number and size of outbreaks for the priority zoonotic infections/diseases.

It is also expected that by 2020:

- All operational plans for zoonotic diseases will be aligned with the **One Health Strategic Plan 2016-2020** with defined actions for relevant sectors of government at all levels and other partners.
- Government will progressively increase the **share of financing** for core programs related to zoonotic disease prevention and control (including human-animal-wildlife surveillance activities for priority zoonotic diseases) and development of IHR/PVS core capacities
- Dedicated **contingency funding** for infectious diseases emergencies will have been identified, including exploration of opportunities presented by the World Bank's Pandemic Emergency Financing Facility

Annual One Health meetings will be held supported by the One Health Partnership to share information on programs and projects and progress towards objectives

Funds required

The expected cost of these One Health activities over the 5 years of the plan is approximately USD 10,000,000.

Funding for these activities is expected to come from a mix of government and donors (including USAID) with many of the activities falling within the EPT-2 program and plans of other donors such as the ADB, World Bank and via the GHSA funding envelope.

The ADB *Greater Mekong Subregion Regional Health Security Project* (2016-2020) will support MOH activities related to:

- Cross-border collaboration for communicable disease control in border areas [USD 3.8M] - this will encompass development of risk assessment tools and risk communications for mobile populations that may be relevant to other populations in Viet Nam and may address priority zoonoses such as rabies - this supports focus areas 1, 2, 3, 4, 5
- Surveillance and outbreak response systems [20.8M] - this supports focus areas 1, 2, 3, 4
- Laboratory services and hospital infection prevention and control measures [USD 46.2M] - this supports focus areas 1, 5, 6

2. One Health approaches for managing human disease emergencies of zoonotic origin

Why is this necessary?

Viet Nam must be prepared to manage any severe pandemic disease in humans resulting from the spillover of an animal pathogen. These events are rare but can have major, whole-of-society effects (even with relatively short local transmission chains) as illustrated by SARS, MERS and Ebola virus disease.

A One Health approach involving coordinated inter-sectoral collaboration can mitigate the impact of these events. Well-designed and tested systems are required. Building on previous efforts, Vietnam has indicated plans to establish an ongoing prime ministerial-level steering committee to coordinate responses and an Emergency Operations Centre is expected to become fully functional by 2020.

Appropriate activation of the Emergency Operations Centre relies on high quality, timely surveillance systems.

What will be done, how will it be done and who will do it?

In the period from 2016-20, the following will be developed to enhance the structures and processes critical for One Health approaches for emergency zoonotic diseases in humans:

What	How	Who
Steering committee for emergency diseases will be operational	Decisions at Prime Ministerial level required on the nature of the coordinating mechanism	Office of Government, OHP, MARD, MOH
Role of Ministries other than MOH is fully defined	Determine the role of other Ministries in the event of a disease that is yet to spillover to humans in Viet Nam (e.g. if H7N9 is detected in poultry but not yet in humans)	MARD, MOH
A fully functional emergency management centre suitable for responding to all hazards	Established following the GHSA Roadmap	MOH, MARD US CDC, US DoD
Revised and tested whole-of-society pandemic preparedness plans	Existing plans renewed and exercises or live outbreaks used to test these	MOH, MARD, OHP US CDC, donors FAO, WHO
Appropriate surveillance systems for disease emergencies	Established following the GHSA Roadmap	MARD, MOH
Risk communication for outbreaks	Build appropriate risk communication packages in the event of any disease emergency by staff trained in this discipline	MARD, MOH, One Health Communications Network, WHO, FAO, US CDC

How will gains be measured?

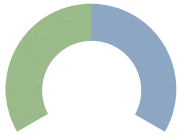
The two major objectives will be that the emergency management centre is fully operational and that pandemic preparedness plans have been revised and tested.

Funds required

Approximately USD 2,000,000 will be required (excluding funds required for any actual emergency disease outbreak – see focus area 1 regarding dedicated funding for severe disease outbreaks).

Resources will be provided by government and through the GHSA funding envelope, ADB (risk communications, surveillance and outbreak response) and the World Bank.

3. One Health approaches for managing zoonotic agents with pandemic potential that are yet to emerge, especially in wildlife



Why is this necessary?

Viet Nam has been classified as a global hotspot for the emergence of novel zoonotic agents with pandemic potential and has recognised the importance of decreasing the risks of disease emergence. Through the GHSA and the linked EPT2 programme of USAID, Viet Nam is working to identify potential zoonotic agents in high-risk species and settings, and to put in place measures to reduce the risk of their emergence. Environmental factors play an important role in these diseases and a broad One Health approach is needed to ensure success in preventing spill over and controlling them if they do.

What will be done, how will it be done and who will do it?

In the period from 2016-20, the following will be undertaken to find out more regarding vial pathogens in important wildlife and farmed animals and to reduce the risk posed by these agents (see also focus area 4 for work done on zoonotic influenza viruses):

What	How	Who
Complete planned work on the identification of zoonotic and potential pandemic agents in animals prior to their emergence	Undertake testing of a range of animals for viruses with pandemic potential	MARD and provincial DARDs WCS, Livestock farmers and traders, Wildlife farmers and traders USAID (EPT-2)
Improve capacity for early detection of spillover to humans of potential pandemic infectious agents	Undertake testing of humans working in association with animals, especially clinical cases	MOH plus above
Implement measures to reduce the risk of emergence of novel agents for specific industries	Develop and introduce industry/sector specific guidance on preventive measures	MARD, MOH, DIE FAO USAID (EPT-2), DAI

How will gains be measured?

In the next 5 years through the EPT-2 programme and other activities it is expected that Viet Nam will have identified most of the potential zoonotic and pandemic risks in important wildlife species and will have introduced behavioural change programmes for selected sectors and “industries” to reduce the risk of disease emergence.

Funds required

The budget required for this work is approximately USD 3,000,000.

Most of the funding will come from government including through ADB support for risk assessments in border areas and enhanced surveillance. Additional contributions will be provided by USAID through the EPT-2 program.

4. One Health approaches for managing zoonotic influenza viruses with pandemic potential

Why is this necessary?

Zoonotic influenza viruses pose a major pandemic threat. Since 2003 when Influenza A(H5N1) virus became widespread in Viet Nam, many actions have been taken to contain it. The virus has not been eliminated and new, related strains have been repeatedly introduced to the country over the past 12 years. The risk of exposure of humans to the virus persists and, therefore, so too does the risk of emergence of a human-adapted pandemic strain of virus.

H7N9 avian influenza, which has already been confirmed in more than 700 people in China, poses a major risk to Viet Nam and active surveillance programs for this disease will continue until such time as the agent is contained in China. It has not yet been detected in Viet Nam despite intensive risk-based surveillance. Swine influenza viruses can become human pandemic agents as demonstrated by H1N1pdm(2009) and it is important to understand the risk posed by local strains of virus in pig populations.

What will be done, how will it be done and who will do it?

In the period from 2016-20, the following will be undertaken to gain a greater understanding of zoonotic influenza viruses and to minimise the threat they pose to human health (see focus area 2 for actions that will be taken if a human influenza pandemic emerges):

What	How	Who
Monitoring programs for avian H5 HPAI and H7N9 (and other) influenza viruses in poultry and other birds, and swine influenza virus in pigs	Regular surveillance in high risk areas and species	MARD FAO USAID
Effectiveness of vaccination programs in poultry	Vaccination programs will be reviewed and studied to determine whether vaccination is reducing shedding of virus in vaccinated ducks	MARD FAO USAID
Progress towards elimination of H5Nx highly pathogenic avian influenza virus	Necessary work to determine the feasibility of an H5 infection-free zone will be undertaken and, if feasible, measures will be implemented to develop a virus-free zone in the south eastern region	MARD FAO USAID
Surveillance of cases of human respiratory illness for novel influenza viruses of animal origin	Human surveillance programs will be reviewed and consolidated	MOH, Hospitals, Sentinel sites OUCRU

How will gains be measured?

In the next 5 years, Viet Nam will consolidate monitoring programs that can detect and characterise changes in the nature of local influenza viruses or incursions of virus (H7N9) so that control and prevention programs can be modified. Poultry vaccination programmes for H5 influenza will be reviewed and, as necessary, modified. Viet Nam will have undertaken work to establish the feasibility of an H5 infection-free zone and, if feasible, will have commenced work to establish a zone. Surveillance of cases of human respiratory illness will continue with testing for influenza viruses of animal origin. All cases of zoonotic influenza will be investigated for evidence of sustained human-to-human transmission and to identify the source of the outbreak.

Funds required

The funding required for these activities is approximately USD 35,000,000 including the cost of poultry vaccination, half of which is paid for by the private sector. The ADB sub-regional health security project will contribute to strengthened surveillance.

5. One Health approaches for managing rabies

Why is this necessary?

Rabies is recognised as a high priority zoonotic disease for which a One Health approach should be applied. It is a disease that can be eliminated with a concerted, coordinated effort. Viet Nam will continue to attempt to control this disease in line with national plans, the ASEAN regional plan for rabies elimination, and the GHSA. Currently, less than 100 human cases are reported each year but there is a very high cost associated with the delivery of some 400,000 courses of post exposure prophylaxis.

What will be done, how will it be done and who will do it?

The main activities will be increased canine rabies vaccination, responsible dog ownership programs to reduce the number of wandering dogs in high risk areas, human post exposure prophylaxis for those exposed to a potentially rabid dog and also selective use of pre-exposure prophylaxis for high risk groups.

What	How	Who
Increased canine vaccination	Support for vaccination campaigns at provincial and district level so that levels of vaccination coverage are maintained above 70%	MARD, Provincial DARD, OHCN WHO, FAO, OIE, GARC Donors
Responsible dog ownership	Behavioural change communications to reduce the number of free wandering dogs and to increase vaccination uptake and dog registration	MARD, Provincial DARD, OHCN WHO, FAO, OIE, GARC, donors
Post-exposure prophylaxis (PEP) for all humans bitten by a dog (or other mammal) that could have rabies	Introduction of district treatment centres to all high risk areas to reduce the need for travel for those requiring PEP	MOH, provincial and district level health services, OHCN
Pre-exposure prophylaxis (PrEP) for high risk groups including dog vaccinators, dog handlers and where necessary children in high risk areas	Identification of high risk groups and implementation of a vaccination program	MOH, MARD, provincial and district level health services
Improved capacity to diagnose rabies	Establishment/maintenance of quality assured testing capacity for rabies in humans and animals	MOH, MARD, NIHE FAO, WHO, OIE Donors

How will gains be measured?

Viet Nam is aiming to have no new human cases[1] of rabies in Vietnam by 2020. This ambitious target will only be achieved if full cooperation is obtained from all stakeholders, in particular dog owners (who are required to pay for vaccination).

Progress towards this goal will be measured by reductions in 3 year rolling averages of human cases.

Funds required

A minimum of USD 24,800,000 will be required, however, this does not cover many of the costs that will be borne by the general public which is expected to be USD 40-45,000,000 (e.g. costs to dog owners for canine vaccines and PEP for bites caused by their dogs). However, sufficient stocks of vaccine and PEP will be required. Funds from ADB may be required to support supplementary activities such as PrEP for children in high-risk border areas.

1 As human clinical cases are invariably fatal once clinical signs develop, cases equates to deaths

6. One Health approaches for managing antimicrobial resistance

Why is this necessary?

Resistant bacteria and viruses can arise in any place where there is indiscriminate use of antimicrobial drugs. Preliminary research and assessments suggest that Viet Nam already has major concerns with antimicrobial resistance (AMR) in hospitals, in the community and in livestock farms and aquaculture. A One Health approach is needed to protect existing antimicrobials given that resistance is transmissible between bacteria and resistant bacteria can be transmitted from one host to another. The overall goal is to reduce the quantities of antimicrobials used, institute systems of antimicrobial stewardship, improve infection control, and limit the use in animals of critically important antimicrobials for humans.

What will be done, how will it be done and who will do it?

Plans for containing AMR, based on the WHO global plan, have been developed and will be implemented during the next 5 years.

What	How	Who
Reduced use of antibiotics in animals including improved controls on antibiotics critical for human use	Assess likely effectiveness and feasibility of bans on the use of medically important antibacterial agents for growth promotion in livestock and drugs critical for human treatment. Where feasible, introduce and enforce bans and require purchase by prescription only	MARD, Provincial DARDs FAO, Feed industry, farmers (livestock and aquaculture)
Reduced and improved use of antibiotics in humans	Widespread implementation of antibiotic stewardship programs and behavioural change campaigns for the public	MOH, Hospitals General public, pharmacists
Improved data on antimicrobial use and antimicrobial resistance	Relevant information collected following the GHSA Roadmap	MARD, MOH, NIHE OUCRU, CIRAD
Improved infection control and prevention (IPC) programs in hospitals	Widespread implementation of IPC programs in hospitals	MOH, Hospitals ADB
Enhanced laboratory capacity for testing for AMR using quality assured programs	Fund existing and new AMR testing laboratories	MARD, MOH, NIHE ADB, donors
Reduced environmental contamination with antibiotics	Reduced use of AM compounds in farms and animals, and improved waste disposal	MARD, MOH, MONRE Donors

How will gains be measured?

Gains over the next 5 years will be measured by reductions in quantities of antibiotics used and through the number of effective antimicrobial stewardship and infection prevention and control programs in place.

Funds required

Much of the work on antimicrobial resistance is cost neutral, nevertheless there will be a need for funds for communications, enforcement of existing and new legislation, and antibiotic stewardship and IPC programs.

It is estimated that USD 20,000,000 will be required for AMR activities. Funds will be provided by government, the GHSA funding envelope, ADB (IPC programs) and other partners.

7. One Health approaches for managing other zoonotic diseases

Why is this necessary?

A number of other zoonotic diseases are present in Vietnam and cause significant health and economic losses but with little or no potential to become pandemic agents. During the next 5 years, work will progress on reducing the impact of the priority diseases - anthrax, leptospirosis and *Streptococcus suis* - using a One Health approach.

Food borne diseases of animal origin also cause a substantial burden of disease in Viet Nam and can best be tackled with a One Health approach. These diseases are caused by zoonotic agents such as Salmonella, Campylobacter, Listeria as well as parasitic diseases/agents like cysticercosis, hydatidosis, and fish-borne trematodes.

Chemical contamination of animals and animal products represent a major food safety challenge and solutions require involvement of the environmental sector. These diseases are managed through mechanisms other than the One Health Partnership and are not considered in depth in this plan. Nevertheless some of the measures needed to improve food safety such as animal identification systems are also highly relevant for addressing chemical contamination of food.

What will be done, how will it be done and who will do it?

What	How	Who
Anthrax control	Improved public awareness in high risk areas and enhanced vaccination	MARD, Provincial DARDs, OHCN, NIHE Farmers
Streptococcus suis	Behavioural change (where possible) especially consumption of raw pig products	MOH, OHCN
Leptospirosis	Community awareness of the dangers of leptospirosis in periods of heavy rainfall	MARD, MOH, NIHE, OHCN
Enhanced traceability of animals and residue testing	Practical animal identification systems such as pig tattoos linking animals in slaughterhouses to individual farms or small scale traders	MOH, MARD Farmers, traders Food safety working group
Risk assessment of food borne illness of animal origin	Conduct a risk assessment to help justify investments in this area	MARD, MOH, NIHE World Bank, Food safety working group
Circular 16 will be fully implemented	See focus area 1	MARD, MOH

How will gains be measured?

Gains will be measured through assessment of progress in application of Circular 16/2013, through reductions in the number of cases of anthrax, and through assessment of adoption of behavioural change for risk factors for *Streptococcus suis* and leptospirosis.

Gains in food safety are expected to be measured by progress towards animal identification systems and changes in case numbers for food borne diseases of animal origin.

Funds required

Approximately USD 5,000,000 will be required for activities on other zoonotic diseases over the next 5 years (this figure does not include costs to manage human cases of these diseases). Funds for control, diagnosis and prevention of these diseases will largely come from government but may be supplemented by funds from ADB, GHSA and the World Bank.

Abbreviations

ADB	Asian Development Bank
AI	Avian Influenza
AIPED	Viet Nam National Integrated Operational Program on Avian Influenza, Pandemic Preparedness and Emerging Infectious Diseases (2011-2015)
AMR	Antimicrobial resistance
ANSORP	The Asian Network for Surveillance of Resistant Pathogens
APSED	Asia Pacific Strategy for Emerging Diseases
ASEAN	Association of Southeast Asian Nations
AVET	Applied Veterinary Epidemiology Training
CDC	U.S. Centres for Diseases Control and Prevention
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
DAH	Department of Animal Health, Ministry of Agriculture and Rural Development
DAI	Development Alternatives Incorporated
DARD	Provincial Department of Agriculture and Rural Development
DLP	Department of Livestock Production, Ministry of Agriculture and Rural Development
DOD	U.S. Department of Defense
EOC	Emergency Operations Centre
EPT	Emergency Pandemic Threats, USAID program
EU	European Union
FAO	United Nations Food and Agriculture Organization
FETP	Field Epidemiology Training Program
FSWG	Food Safety Working Group
GAHP	Good Animal Husbandry Practices
GARC	Global Alliance for Rabies Control
GARP	Global Antibiotic Resistance Partnership
GDPM	General Department of Preventive Medicine
GHSA	Global Health Security Agenda
GoV	Government of Viet Nam
HAEI	Human-Animal-Environment Interface
HIV	Human Immunodeficiency Virus
HMU	Ha Noi Medical University
HPAI	High Pathogenic Avian Influenza
HSPH	Ha Noi School of Public Health
IHR	International Health Regulations
ILRI	International Livestock Research Institute
IMCAPI	Interministerial Conference on Animal and Pandemic Influenza, 2010
IPC	Infection Prevention and Control
JE	Japanese Encephalitis
JICA	Japan International Cooperation Agency
MARD	Ministry of Agriculture and Rural Development
MERS	Middle East Respiratory Syndrome
MOD	Ministry of National Defense
MOF	Ministry of Finance
MOH	Ministry of Health
MOIT	Ministry of Industry and Trade
MONRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NIHE	National Institute of Hygiene and Epidemiology
NSCAI	National Steering Committee for Avian Influenza Prevention and Control
NSCHP	National Steering Committee for Human Influenza Pandemics Prevention and Control
OHCN	One Health Communications Network
OHP	One Health Partnership
OHSP	Viet Nam One Health Strategic Plan for Zoonotic Diseases 2016 - 2020
OIE	World Organization for Animal Health
OPI	Viet Nam National Integrated Operational Program for Avian and Human Influenza 2005 - 2010
OUCRU	Oxford University Clinical Research Unit
PEP	Post exposure prophylaxis
PrEP	Pre-exposure prophylaxis
PVS	Performance of Veterinary Services
SARS	Severe Acute Respiratory Syndrome
SDGs	Sustainable Development Goals
SEAOHUN	South East Asia One Health University Network
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VILAS	Viet Nam Laboratory Accreditation Scheme
VINARES	Viet Nam Resistance Project
VNUA	Viet Nam National University of Agriculture
VOHUN	Viet Nam One Health University Network
WB	World Bank
WCS	Wildlife Conservation Society
WHO	World Health Organization
ZDAP	Zoonotic Disease Action Package

For more details please contact

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