

**STATUS OF
VETERINARY SERVICES' PREVENTION
AND PREPAREDNESS FOR EXOTIC PIG DISEASES
INCLUDING AFRICAN SWINE FEVER – TARGETED REVIEW
OF OIE PVS PATHWAY MISSION REPORTS IN CAMBODIA,
LAOS, MYANMAR AND VIETNAM**



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Disclaimer

This PVS/ASF review has been conducted by an expert authorised by the OIE. However, the views and the recommendations in this Report are not necessarily those of the OIE.

An Approval and confidentiality form is provided by the OIE along with this Report where the level of confidentiality can be selected by the country.

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List of acronyms, abbreviations and/or special terms

ASF	African swine fever
AHP Law	Animal Health and Production Law (Cambodia)
CDC	City Development Corporation (Myanmar)
CSF	Classical Swine Fever
CAHW	Community/Commune Animal Health Worker ¹ (Myanmar/Viet Nam)
DAH	Department of Animal Health (Viet Nam)
DLF	Department of Livestock and Fisheries (Lao)
DTRA	Defense Threats Reduction Agency (US)
FETPV	Field Epidemiology Training Programme for Vets
FAO	Food and Agriculture Organization (UN)
FMD	Foot and Mouth Disease
GDAHP	General Directorate of Animal Health and Production (Cambodia)
GMS	Greater Mekong Subregion
HPAI	Highly Pathogenic Avian Influenza
LoA	Level of Advancement
LBVD	Livestock Breeding and Veterinary Department (Myanmar)
MoU	Memorandum of Understanding
MAFF	Ministry of Agriculture, Forestry and Fisheries (Cambodia)
NAHC	National Animal Health Centre (Lao)
OAHP	Office of Animal Health and Production (Cambodia)
OIE	World Organisation for Animal Health
PVS	Performance of Veterinary Services (OIE)
PPE	Personal Protective Equipment
PRRS	Porcine Reproductive Respiratory Syndrome
RAHO	Regional Animal Health Office (Viet Nam)
SEAFMD	South East Foot and Mouth Disease Campaign
SOP	Standard Operating Procedure
SDAH	Sub-department of Animal Health (Viet Nam)
TADs	Transboundary Animal Diseases
USAID	United States Agency for International Development

¹ CAHWs and VAHWs are used in different countries for the same, unqualified, private sector field operators. In the text C/VAHWs is used in the general section and covers both names.

PART I: EXECUTIVE SUMMARY

I.1 Introduction

Since the first outbreak in China in August 2018, African swine fever (ASF) has spread rapidly across the country with outbreaks confirmed in an increasing number of provinces. Amongst provinces affected has been Yunnan, a province that has long land borders with Myanmar, Lao PDR and Viet Nam. Considerable formal and informal trade in pigs and pig products is known to occur across these borders and the risk of incursions of ASF into these countries is regarded as very high. Cambodia is also considered at high risk as it imports significant numbers of pigs and pig products, mostly from Thailand and Viet Nam. These four countries are developing fast but have faced many development challenges in animal health including ongoing problems in combating Highly Pathogenic Avian Influenza (HPAI), a disease that is now generally considered to be endemic. The Veterinary Services (VS) have been markedly strengthened as a response to HPAI but many challenges remain.

Cambodia, Lao PDR, Myanmar and Viet Nam are all members of the OIE and have had a strong commitment to the OIE Performance of Veterinary Services (PVS) Pathway. Each country has had a number of PVS Pathway missions including most recently PVS Evaluation Follow-Up and Veterinary Legislation Support Programme missions in Cambodia (May 2018, March 2018), Lao PDR (September 2011, January 2012), Myanmar (November 2018, March 2018) and Viet Nam (March 2010, August 2009) respectively.

To provide an assessment of the four countries' authority, capability and capacity to prevent and respond to an ASF incursion, a review was undertaken of these countries' most recent PVS Evaluation Follow-Up and VLSP mission reports. Using the PVS Tool, 14 Critical Competencies were identified as of the highest priority and evaluated. This report presents these findings and makes recommendations. The more detailed Terms of Reference for this PVS/ASF Review, as formally provided by the OIE to the expert can be found at Appendix A.

The report has been prepared in four main parts – Part 1: Overview of de-identified findings for all four countries; Part II: Individual country reviews, Part III: Assessment of the reports and recommendations for the development of targeted actions, and Part IV: Table of generic and specific findings and recommendations. Appendices contain country specific information. As some of the materials are confidential to the country and OIE, not all materials may be available to the reader.

I.2 Limitations

This review assesses the most recent PVS Evaluation Follow-Up and VLSP reports; these missions were conducted between 2009 and 2018. It should be noted that the Lao PDR and Viet Nam reports are old and significant changes may have occurred. Moreover, the PVS Tool has evolved since 2009 with the addition and changes to the Critical Competencies and their assessment; report writing structures and styles have also changed.

The most recent PVS Evaluation Follow-Up to Myanmar took place in November 2018, that is three months after ASF was first confirmed in China (August 2018). The Myanmar report is therefore biased in its assessment of the country's emergency preparedness and response to ASF given the opportunity for a direct response to the emergent threat.

I.3 Principles

To minimise the risk of ASF incursions and major outbreaks occurring, a country requires effective prevention, detection and emergency preparedness and response systems.

To achieve a high level of performance in these areas requires:

- i) a strong policy commitment to disease prevention, surveillance and emergency response from political leaders, senior managers and VS staff,
- ii) enabling legislation that provides the legal mandate for action,
- iii) a well-defined and functional ‘chain of command’ from central to province/district levels and to the field, with reporting back,
- iv) developed and tested operational systems to carry out the necessary risk analysis, prevention, disease surveillance, disease control and eradication measures with supporting communications and consultations,
- v) documented plans with guidelines and SOPs on what and how activities will be undertaken, and
- vi) the resources to carry out the activities for communication, prevention, surveillance, control and eradication including specifically sufficient and timely funding, including the payment of compensation, staff trained for all the required tasks, and the necessary equipment and materials.

Critical to the effective management of an emergency response to a disease incursion is the need for strong leadership and effective management of the VS and for the strong collaboration and support with the private sector, that is, animal owners, the livestock industry and associated industries (e.g. animal traders, animal product and feed processors etc.).

Figure 1 depicts the hierarchy of emergency preparedness and response. It is noted that in many instances the emphasis of emergency response is on the field activities of detection and control (isolation, culling, biosecurity, etc.) but this alone does not efficiently or effectively control disease outbreaks. The ‘superstructure’ of preparedness is critical to effective control.

Figure 1: Diagram depicting the hierarchy needed for effective emergency preparedness and response



A summary of the main findings of the PVS/ASF review is provided here. For more details by Critical Competency the reader should consult Part I and Part II of this review.

I.4 Prevention/detection/response

No outbreaks of ASF have yet been confirmed (November 2018) in the four countries so the immediate emphasis must be on disease prevention and emergency preparedness. Formal protocols for border control were operating at the main land crossings in three of the four countries. Countries had formal controls in place but these focused on documentation and not the actual checking of animals/animal products or genetic materials. There were no activities being undertaken to address the high volumes of illegal movement of animals across the borders, or to raise awareness and limit the risk from the informal, personal importation of meat and other animal products. There was no control of swill feeding in any country. Some risk analysis capacity existed in all countries with trained staff but was not being used to identify and mitigate risks in any sector of activity.

Passive surveillance systems, critical for the early detection of outbreaks of ASF, in all countries, were very poor. Each VS had some capacity for communications though with no specialist staff being employed. Various campaigns of awareness have previously been targeting HPAI over many years but these have now largely ceased. In only one country was there any development of ASF specific awareness and extension materials – understandably the country assessed most recently. Countries had various levels of consultation with stakeholders from ones with national federations and associated species industry groups to no associations and only limited ad hoc engagement – the focus tended to be on the development of new legislation or on food safety and veterinary public health.

In all countries passive surveillance was based on the variously termed Commune/Community/Village Animal Health Workers (C/VAHWs). These C/VAHWs are unqualified private sector operators with typically less than one month of basic training who provide almost all the field service to villages and smallholders. C/VAHWs make diagnoses based entirely on clinical signs, dispense drugs, administer vaccines (usually as part of government programmes), have minimal veterinary supervision, provide almost no real time reports and may or may not provide periodic (weekly or monthly) reports. In major incidents government veterinarians do get involved and carry out basic outbreak investigations collecting diagnostic samples but do not carry out any epidemiological investigations. In the most recently assessed country, ELISA and PCR tests were available for ASF.

The capability of countries to implement an effective emergency response was variable. Considerable experience had been gained in each country in combating repeated emergency outbreaks of HPAI. Some countries had national contingency plans for some emergency diseases – most commonly for HPAI but one country also for ASF; this country had also conducted a desktop ASF simulation exercise. One country was assessed as having no field network or established procedure to determine whether an emergency existed and no authority to declare the emergency or respond appropriately. It was said that it was possible to restrict animal movement effectively – though this was acknowledged as being unpopular with livestock owners and commune leaders.

It was identified that some countries had reasonable access to emergency funding whereas others did not; emergency funding was generally provided through a ‘political process’. Most of the countries had large numbers of veterinarians, veterinary paraprofessionals and C/VAHWs and these with appropriate training should provide sufficient human resources.

Overall no country has a functional compensation programme for animals culled, additional costs incurred and business interruption. In some situations, compensation had been paid following HPAI outbreaks but the process was described as ‘long and sometimes not functioning’ and had actually hampered the control of HPAI.

1.5 Capacity and capabilities

All countries suffered from a weak chain of command and poor coordination between central and provinces/districts. Three of the four countries had decentralised delivery of the VS with direct line management and funding being provided by the provincial governments; central government were responsible for developing policies, strategic plans, supporting legislation and providing technical leadership and guidance. In the fourth country, direct line management was retained by the central Veterinary Authority through a four level organisational structure. These chain of command problems were recognised by central authorities and considerable effort was being made to overcome this issue with routine reporting and regular regional and national meetings, however reporting remained inconsistent.

The field veterinary service in all four countries is provided almost entirely by the C/VAHWs who are unqualified private sector operators with only short (less than one month) training. The C/VAHWs receive minimal supervision by veterinarians, collect virtually no diagnostic

samples and provide little reporting back to the VS. The large integrated pig producers have their own internal systems providing technical support but also provide little information to the Veterinary Authority.

External coordination was poor to variable and largely focused on food safety and veterinary public health, particularly HPAI. Some of the PVS Pathway mission reports referred to wildlife health and coordination with the Competent Authority, but in other mission reports there was no mention of wildlife. Although recognised in some countries there was very limited coordination of policies or sharing of information on wildlife. This is relevant to pig diseases such as ASF, as the disease may persist in wild pigs and these can act as an epidemiological link between outbreaks.

Collaboration with other government ministries and agencies such as with the police, customs, the armed forces and the national disaster agencies was either not mentioned in the reports or it was mentioned that procedures existed, but little engagement had actually taken place.

No formal continuing education policy was in place in any country with no identification of needs or any human resources development plans. Increasingly the veterinary universities are being engaged to deliver short training courses. Much of the training had been provided by international agencies such as FAO and OIE, with most focused on HPAI; there was no reference to any training on ASF. Some countries have training and development plans to upgrade their C/VAHWs into something closer to OIE's definition of veterinary paraprofessionals.

It was apparent that all countries took the need for effective veterinary legislation very seriously. All four countries had veterinary legislation and some regulations in place with further revisions and new laws in progress. Legislation was of varying ages but almost all was in the process of being revised. Countries had varying capacities, employment of lawyers, etc., to contribute to the preparation of new legislation. Across the countries there were some common gaps and recommendations were made accordingly by the VLSP missions. In summary, legislation was generally missing or in need of strengthening for:

- The clarification and definition of Competent Authorities, their roles and responsibilities (there was no specific reference to the management of wild boars by the wildlife Competent Authority)
- Organisational structure and chain of command with defined lines of delegation and reporting
- Disease reporting and surveillance and notifiable disease lists
- The preparation of contingency plans for TAD outbreaks and specifically for ASF
- Declaration of an animal disease emergency and the implementation of control measures
- Animal identification and movement control
- The ability to pay compensation
- Authority at borders for the effective control of animals and animal product imports
- The safety of animal feeds including the swill feeding restrictions or prohibitions
- The management of diagnostic laboratories
- The establishment and operations of a VSB

Animal feed safety was a Critical Competency recently introduced in the PVS Tool and therefore was only assessed in the two most recent evaluations. One of these countries had the legal authority to regulate animal feed safety but had no resources available and no active programme. Generally, no reference was made to swill feeding in the PVS Pathway mission reports; a recommendation is made in a VLSP report for one country that the management of swill feeding should be included in legislation. One country had a policy on the cooking of swill but it was not being enforced.

No effective animal identification programmes were in place in any country. Three countries had the legal mandate to require livestock registration and/or the use of permits for movement control. In one country pigs were to be identified before movement.

A summary table is provided of general findings, specific findings and recommendations at Part IV.

I.6 Conclusions

The countries reviewed using PVS Evaluation Follow-Up and VLSP reports are all at high risk of uncontrolled outbreaks of ASF. Considerable unmanaged illegal/informal trade occurs across the long land borders and the countries have no effective control in place so ASF incursions are likely. Early detection of outbreaks is unlikely as passive surveillance systems are very poor. Countries have the legal power to respond to emergency disease outbreaks and have adequate numbers of staff. There is no evidence of emergency preparedness and emergency management, coordination and access to logistics and resources are not in place. There is a high risk of ASF incursions and the disease spreading quickly and becoming endemic.

PART II: REVIEW OF DE-IDENTIFIED COUNTRIES

II.1 Introduction

The recent incursion of African swine fever into China has resulted in a high alert situation within South East Asia given the recognised high risks of further spread of this devastating disease, primarily via cross-border movements of both live pigs and pig products from China. A number of regional level meetings have taken place during 2018 with a focus on the issue including:

- i) OIE held a 'Regional Short-term Training on Swine Disease Control and Diagnosis' in July August 2018
- ii) OIE held a 'Regional Workshop on TADs prevention and control' in August 2018;
- iii) FAO hosted an initial meeting in early September 2018 entitled 'Emergency Regional Consultation on African Swine Fever Risk Reduction and Preparedness'
- iv) OIE held a further meeting under the GF-TADs framework titled the '3rd Regional Workshop on Swine Disease Control in Asia' in the Philippines in early October 2018, including a final day discussing ASF risk management;
- v) FAO also coordinated a 'Cross-border coordination meeting between China and Myanmar, Laos and Vietnam' in November 2018.

The meetings agreed four South East Asian countries were at the highest risk of an incursion: Cambodia, Laos, Myanmar, and Viet Nam.

A focused review of PVS Pathway information in these high risk countries was requested by OIE to indicate how OIE might optimise its contribution, aligned with its mandate and particularly its strategic objectives relating to animal health risk management and supporting and strengthening of Veterinary Services.

This review utilises the most recent OIE PVS Pathway reports (PVS Evaluation Follow Up missions and VLSP identification missions) of the target high risk countries and extracts information on the current situation of prevention and emergency preparedness for an incursion of an exotic disease affecting pigs, with a focus on African swine fever (ASF); the report also provides a brief assessment of their usefulness and opportunities in informing future targeted action and support.

A table summarising general findings, specific findings relevant to ASF and recommendations is attached at the end of the review.

II.1.A Methods and limitations

The review was based on the most recent PVS Evaluation Follow-Up and VLSP reports. The reports were based on missions conducted between 2009 and 2018. It should be noted that the country situation may have significantly changed since these missions, especially in relation to the earlier PVS Evaluation reports in Lao PDR and Viet Nam.

II.1.B Structure

This review has been structured as follows: prepared as a background, two parts, a summary table and four appendices, one for each country.

Part I	Executive Summary
Part II	Background and Overview of de-identified findings in all four countries
Part III	Conclusions – overall assessment of the reports and recommendations for priority actions
Part IV	Tabulated summary of general findings, specific findings and recommendations relevant to ASF
Appendix I	PVS/ASF Review Terms of Reference
Appendix 2	Cambodia country review
Appendix 3	Lao PDR country review
Appendix 4	Myanmar country review
Appendix 5	Viet Nam country review
Appendix 6	ASEAN country report status

It should be noted that as some of the individual country reports included in the appendices are confidential they may not be made available to the reader. For further information please contact Dr John Stratton, OIE at j.stratton@oie.int

II.2 Background

II.2.A The disease

African swine fever (ASF) is a highly contagious haemorrhagic disease, that causes high morbidity and mortality in domestic and wild pigs. ASF in its more virulent form can kill up to 100% of affected pigs. The ASF virus is very hardy and can survive for long periods in very cold or very hot weather, and even in dried or cured pork products or carcasses. ASF outbreaks have usually occurred through the import and feeding of waste pork products to susceptible pigs. There is currently no effective vaccine against ASF.

ASF is endemic in most countries of sub-Saharan Africa. In Europe, sporadic cases have been reported from many countries with the disease generally being eradicated; the disease is said to be endemic in Sardinia, Italy.

In 2007, ASF was introduced to Georgia, and then spread to Azerbaijan, Armenia, Russia and also to several Eastern European countries. In 2017, ASF occurred for the first time in Eastern Russia. In August 2018, the first detection of ASF was reported from a pig farm in China. The provincial government in China implemented the 'African swine fever Contingency Plan and Emergency Response Level II' immediately following detection. Pig product value chains in China are extensive with many wide-ranging connections. It is considered that a complete restriction of movement would lead to more illegal movement and not necessarily improve disease control.

Since the first case of ASF was identified in China, the disease has now been confirmed in 13 Chinese provinces – as reported to OIE-WAHIS (28 October 2018). Cases of ASF have been confirmed in many provinces in Eastern and now also in Southern China and pose a serious threat to neighbouring countries.

Map 1: Distribution of ASF outbreaks in China (26 November 2018)

Source: Ministry of Agriculture of the People's Republic of China

Pig value chains in Asia are complex and often cross international borders, especially for pork meat and sausages. Unofficial trade of livestock and livestock products is common in the region and this presents a major risk of disease spread and problems for disease prevention and control. Regional cooperation and coordination is essential to reduce the risk of disease spread and to avoid unforeseen consequences of imposing trade restrictions. In the region there is frequently a lack of disease reporting and therefore responses are delayed. Swill feeding is regarded as a high risk for the introduction of ASF and is largely uncontrolled in the region.

II.2.B International support programmes

Initial international assessments³ of the level of emergency preparedness indicate that only a minority of countries are prepared for ASF. Priority actions identified were:

- i) Capacity building in risk assessment and value chain studies
- ii) Enhanced emergency preparedness including prevention (i.e. biosecurity, legislation, quarantine and inspection, and movement control), early detection (i.e. field and laboratory capacities) and response (i.e. contingency planning, stamping out, etc.).
- iii) Advocacy, awareness and communication to stakeholders
- iv) Coordination and collaboration among countries, public and private sectors and research agencies

³ Emergency regional consultation on ASF risk reduction and preparedness, FAO workshop, Bangkok (September 2018)

II.2.C The OIE PVS Pathway programme

OIE has developed the OIE PVS Tool for the Evaluation of Performance of VS⁴ to assist countries assess the performance of their VS, form a shared vision, establish priorities and carry out strategic initiatives. The OIE PVS Tool consists of four Fundamental Components:

- Human, physical and financial resources
- Technical authority and capability
- Interaction with interested parties
- Access to markets

These four Fundamental Components cover 47 Critical Competencies (as per the 6th edition, 2013), for each of which five qualitative Levels of Advancement (LoA) are described. For each Critical Competency, a list of indicators are used by a team of certified OIE PVS experts to determine the level of advancement.

II.2.D Methodology of OIE PVS review

In assessing the prevention and preparedness of countries for exotic pig diseases, 14 Critical Competencies were identified as being of particular importance and are considered in detail in this review. It is recognised that the veterinary domain is complex and does not fit simply into a finite number of Critical Competencies and considerable crossover occurs so some cross-referencing with other Critical Competencies has been noted. The 14 Critical Competencies identified as most relevant for this review are:

- I.3 Continuing education
- I.6A Internal coordination
- I.6B External coordination
- I.9 Emergency funding
- II.3 Risk analysis
- II.4 Quarantine and border security
- II.5A Passive surveillance
- II.6 Emergency response
- II.11 Animal feed safety
- II.12A Animal identification and movement control
- III.1 Communications
- III.2 Consultation
- IV.1 Legislation
- IV.2 Enforcement of legislation

This review paper utilises the most recent PVS Evaluation Follow-Up and VLSP reports for the four countries in South East Asia considered most at risk from incursions of ASF – Cambodia, Lao PDR, Myanmar and Viet Nam.

⁴ http://www.oie.int/fileadmin/Home/eng/Support_to_OIE_Members/pdf/PVS_A_Tool_Final_Edition_2013.pdf

II.3 Overview of the four countries by Critical Competency and VLSP

Summary information and recommendations is provided here for the 14 priority Critical Competencies and the VLSP missions. Short and longer-term recommendations are presented.

1.3 Continuing education

Level of Advancement – (range 2)

Continuing education was assessed as relevant to addressing risks of ASF incursion as a national basis upon which to develop (or assess existing) targeted or ‘just-in-time’ training in ASF prevention, detection, preparedness and response for relevant Veterinary Services staff and/or stakeholders.

In all four countries continuing education was assessed as being suboptimal with the VS having some access to continuing education on an irregular basis but this did not generally take into account the country needs or new information and changing situations. Continuing education was often being driven by international donor projects, particularly in response to the epidemic of HPAI in the region.

None of the countries had undertaken any baseline assessment or established a policy for continuing education of any of their technical staff, that is veterinarians, veterinary paraprofessionals and associated field support from commune animal health workers.

It was noted that in each country there were critical weaknesses in epidemiology (both at higher level programme design, data analysis and at field level), risk analysis and understanding of value chains, outbreak investigations and the implementation and monitoring of rigorous control measures.

Recommendations:

Short term

- Identify key gaps in technical capabilities such as emergency preparedness and management, risk analysis, epidemiology, communications, disease surveillance, disease control activities
- Identify key target groups that need training in the technical capabilities as above; consider veterinarians (management, field, laboratory, etc.), veterinary paraprofessionals and commune animal health workers
- Design and implement training courses either generically relevant to the above needs, or specifically targeted to the high risk of ASF
- Review and evaluate training and revise as necessary

Longer-term

- Implement an ongoing policy for continuing education for veterinarians with support from the national Veterinary Statutory Body, and also for veterinary paraprofessionals and commune animal health workers
- Provide budget for ongoing continuing education for all technical staff

1.6A Internal coordination

Level of Advancement – (range 2 – 3)

As assessed in the PVS Evaluation Follow-Up reports, most of the countries suffered from a weak chain of command and poor coordination between central authorities and provinces/districts. Three of the four countries had decentralised delivery of the VS with direct line management and funding being provided by the provincial governments; central governments were responsible for developing policies, strategic plans, supporting legislation and providing technical leadership and guidance. In the fourth country, direct line management was retained by the central Veterinary Authority through a four-level organisational structure.

This problem of a matrix management of the delivery of field VS, that is technical leadership from central government and direct line management from provincial government, is recognised as an impediment to service delivery in three of the countries. Considerable effort was being made to overcome this issue with routine reporting and regular regional and national meetings. However, this was generally not overcoming the problem as reporting was inconsistent and meetings being held only infrequently. This issue would be of particular concern in the face of an animal disease emergency where prompt and effective reporting of information and coordination of a response is required.

The field veterinary service in all four countries is provided by the Commune Animal Health Workers (CAHWs)/Village Animal Health Workers (VAHWs), referred to in this section as C/VAHWs. The C/VAHWs are unqualified private sector operators with less than one month of training. C/VAHWs provide almost all clinical services and treatments in these countries with minimal supervision by veterinarians, virtually no collection of diagnostic samples and little reporting back to the VS. (C/VAHWs are included here as it may be considered that they should be veterinarians or veterinary paraprofessionals and part of the VS.)

Recommendations:

Short term

- As part of contingency planning for emergency disease incursions, including ASF, clearly define lines of management, communications and reporting, identifying responsible people/positions and what information is required; prepare organisational charts and templates to define communications required
- Define reporting protocols that allow real time reporting directly to the central Veterinary Authority, in parallel with the established lines of reporting, of critical issues such as suspected incursions of emergency diseases
- Hold regular face-to-face and online formal meetings at regional or national level to ensure a high level of ownership of policies and development of operational plans; record meeting minutes and circulate to stakeholders

Longer-term

- Undertake a formal review of the chain of command for the VS, identifying gaps and weaknesses in the lines of management and communication
- Develop and define a formal chain of command with timelines for reporting for the VS that addresses the problem of delayed reporting and recognises the countries administrative structures and processes

1.6B External coordination

Level of Advancement – (range 2 – 3)

External coordination was poor to variable across the four countries. Generally, external coordination was focused on food safety and veterinary public health. Some of the PVS Pathway mission reports referred to wildlife health and coordination with the Competent Authority, typically their ministry responsible for environment; in other mission reports there was no mention of wildlife. Where mentioned, the focus was generally solely on coordination relating to wild bird surveillance for avian influenza. Although the need for coordination with the wildlife authorities was recognised in some countries there was very limited coordination of policies or sharing of information. The lack of external coordination on wildlife was particularly noted at the subnational level. This lack of coordination on wildlife health is of particular concern with ASF which may have a reservoir in wild pigs.

External coordination is also an important activity for collaboration with other government ministries and agencies such as with the police, customs, the armed forces and the national disaster agencies. For most countries, little information was provided in the PVS Pathway mission reports on formal coordination with these other entities; in one country it was indicated that the mandate to work with the disaster agency was in place but little engagement had taken place. Cross government coordination and access to whole of government resources is critical in implementing a timely and effective emergency response, such as to an incursion of ASF.

Recommendations:

Short term

- Initiate contact with the relevant agency responsible for wildlife to define respective roles and to address the risk of incursion and maintenance of ASF from a wild pig reservoir
- Identify other key government ministries and agencies that will provide important support if an outbreak occurs, as part of developing emergency preparedness and response systems
- Work with priority government ministries and agencies to define their capacity and role in supporting an emergency disease response; prepare formal memoranda of understanding as necessary

Longer-term

- Develop longer-term formal collaborative arrangements (e.g. MoU) with the relevant agency responsible for wildlife to ensure wildlife health issues are addressed appropriately, including disease risks (ASF, FMD, CSF) from wild pigs
- Work with the national disaster agency to include animal disease emergencies under their remit; developing legislation or regulations as necessary
- Prepare an emergency preparedness and response plan with defined working relationships, activities required, logistics support and resources available from other government ministries and agencies
- Undertake simulation exercises (desktop and field) to develop and assess the emergency preparedness and response plan including the involvement of relevant partner agencies

I.9 Emergency funding

Level of Advancement – (range 2 – 3)

Arrangements for emergency funding in the four countries varied from an absence of any funding arrangement with no provision for emergency financial resources, to funding with limited resources being made available and additional funding being made available through a political process.

In some countries, legislation had been passed making emergency funding available, though funding remained unavailable or uncertain as subsidiary regulations had not been prepared; other countries have no legislation providing for the funding of emergency preparedness and response. Countries tend to have a hierarchy of funding response – initial use/re-allocation of existing funds within the VS, followed by ministerial support and then application to the ministries of finance or directly to a 'president's fund'.

Compensation for animals culled, additional costs incurred and business interruption is an important component in promoting community, livestock owner and industry support, both for early detection and emergency response. In some countries, compensation has been paid following HPAI outbreaks but the process was described as 'long and sometimes not functioning' and had hampered the control of HPAI; sometimes compensation had been paid in support of a legal obligation to protect farmers, not a direct payment of compensation. Overall, no country has a functional compensation programme, and none defined for pigs.

Recommendations:

Short term

- Review access to emergency funding and document the procedures required with expected timelines
- Sensitise governments to emergency funding needs and concerns over ASF and its potential impact, and ensure the process is optimised for rapid release of funding at the appropriate levels

Longer-term

- Identify legislation and regulations required to provide a sound footing for emergency preparedness and response; draft legislation and regulations
- Develop a policy and the legal mandate to pay compensation for culled birds/animals and consider also options for paying compensation for the consequential interruption of business/business losses or the destruction of property, feed or other miscellaneous materials
- Implement desktop simulation exercises to test access to emergency funding

II.3 Risk analysis

Level of Advancement – (range 1 – 2)

Some countries recognise the value of risk analysis but none make effective use of risk analysis to identify and mitigate risks and to make best use of limited resources, including at the border and within countries. A number of staff in each country have received international training in epidemiology and risk analysis, or attended 'Field Epidemiology Training Programme for Veterinarians' courses. The countries have various levels of data collection that could be used for risk analysis, at least at the qualitative level. One country has established a working group and undertaken some import risk analyses, but not relating to the import of pigs, meat or other pig products. International partners have led risk analyses for specific issues often associated with HPAI.

At sub-national level, there is no identified risk analysis capacity - one mission report recommends its development.

Overall, risk analysis skills are limited to non-existent and this compromises the ability to design and implement effective disease prevention, detection and control programmes.

Recommendations:

Short term

- Identify and train staff in critical incident management and the use of risk analysis in decision making
- Review and strengthen data capture and information management
- Undertake more detailed national and regional risk assessments, with external expert support, of possible incursions of ASF from China and its onward spread, considering all risk pathways including legal and illegal imports of pigs and pig products, risks of incursion from a wild pig reservoir etc. (Note that some initial risk assessments have been undertaken at a regional workshop, led by FAO)
- Use the risk assessment as a basis to develop risk management and risk communication activities, both at the border (e.g. inspection), in country (e.g. swill feeding) and relating to wildlife.

Longer-term

- Identify legislation and regulations required to provide data for risk analysis – in time develop animal health information systems
- Develop skills in sub-national staff in risk analysis to support disease prevention, surveillance and control activities

II.4 Quarantine and border security

Level of Advancement – (range 1 – 2)

The PVS Evaluation Follow-Up missions determined that all four countries had very limited capability or capacity to control their borders, including the control of live pigs, meat and other pig products. It was considered that most of the countries had legislation that enabled the establishment and application of quarantine and border security procedures but that those developed were not based on international standards nor on the use of risk analysis. One of the countries was considered to be at a lower level with no ability to apply border security procedures. With the widespread outbreaks of ASF occurring in China this is a cause for major concern.

All four countries have long land borders with designated points of entry but it is recognised that considerable informal trade and unregulated movement continues. In some of the countries, the VS had direct control of animal and animal product movement across their borders, whereas others had indirect or limited control and had to work entirely through others, such as through customs or the police. One country was not allowed to inspect at the actual border; another had a staging area at the main crossings situated some miles away. There was no effective control of personal import of animal products in any country.

It was noted that the major international airports had greater resources and were more likely to control cross-border movements. However, resources were poor with no access to sophisticated scanning equipment or the use of detector dogs.

There was no recognition or programme for the control of illegal movement of animals and animal products. The reports made no reference to the value chain for animals and animal products.

Recommendations:

Short term

- Use risk analysis and review value chain information to identify highest risk products and routes; implement awareness and enforcement of control measures for ASF
- Provide appropriate staffing and equipment to priority border posts to mitigate the risks of disease entry

Longer-term

- Develop a strategic plan for improved border security with veterinary service management/chain of command
- Review and prepare legislation and regulations as required
- Improve data capture, analysis and reporting to support border security

II.5A Passive surveillance

Level of Advancement – (range 1 – 2)

Overall, the PVS Pathway missions assessed the four countries as having some capacity to undertake passive surveillance for some 'relevant diseases'; one country was assessed as having 'no passive surveillance programme'.

Early detection of disease outbreaks is dependent on passive surveillance, that is, the detection of a disease event by the animal owner or manager resulting in an investigation by a veterinarian or veterinary paraprofessional, and official notification to authorities if appropriate. As animal owners/managers have the closest daily contact with their livestock, an effective passive system is critical to the early detection of an emergency disease incursion.

All countries had some form of notifiable disease list with some being better defined than others; some of the countries still refers to OIE list A and B diseases, an outmoded terminology. Reference was made to the fact that there was some confusion about notifiable diseases and the principle of surveillance, simple notification and early detection. Some awareness was noted in the countries of the weakness of their passive surveillance systems. In one recently assessed country it was noted that ASF was not included on the list of notifiable diseases – no details of the diseases listed were provided for the other countries.

All countries are highly dependent on their commune or village animal health workers (C/VAHWs) that are typically private-sector or sponsored by their local community, commune or village or an NGO. These workers have minimal training but form the 'eyes and ears' of the surveillance system – they are critically important. Concerns were expressed about the coordination with these workers and the capture of disease information; however, increasing use of mobile communications was recognised and endorsed in one country.

As commune animal health workers are drawn from the local community there is a recognised risk of conflict of interest in reporting an emergency disease which may result in draconian control measures. The lack of compensation exacerbates this problem.

Recommendations:

Short term

- Revise and update notifiable disease lists
- Develop quality standards for the timeliness of outbreak investigation and reporting
- Promote awareness and support from animal owners and industry via a targeted communications campaign targeting ASF

Longer-term

- Introduce more streamlined reporting with the use of SMS or mobile phone apps
- Strengthen the field animal health network through employing public sector or contracting private sector veterinarians and veterinary paraprofessionals trained in disease recognition and investigation
- Conduct more in-depth analysis and reporting of disease data gathered and the epidemiology of disease outbreaks

II.6 Emergency response

Level of Advancement – (range 1 – 3)

The capability of countries to implement an effective emergency response was quite variable. In some countries the VS had the legal framework and financial support to respond rapidly to emergencies, with a caveat that the response was not well coordinated through an effective chain of command. It was also noted that some countries had national contingency plans for some diseases – in particular this was for HPAI following the epidemic in the region. One country had developed a contingency plan for ASF but the plan was not considered to be well prepared – this country had also conducted a desktop simulation exercise for ASF. Other countries performed less well with one country being assessed as having no field network or established procedure to determine whether an emergency existed and no authority to declare the emergency or respond appropriately.

Considerable experience had been gained in each country as all have faced repeated outbreaks of HPAI. This experience will be invaluable in establishing emergency preparedness and response mechanisms for ASF. As indicated in CC I.6B, few Veterinary Authorities had established operational links to other relevant agencies such as those involved in national disaster management, or the police or military which could provide useful logistical support.

It was identified that some countries had reasonable access to emergency funding whereas others did not (see CC I.9). Most of the countries have large numbers of veterinarians, veterinary paraprofessionals and commune/village animal health workers and with appropriate training should provide sufficient human resources.

Recommendations:

Short term

- Urgently develop or strengthen contingency plans for ASF with corresponding emergency funding
- Implement an Information, Education and Communications (IEC) programme with livestock owners and other stakeholders to ensure the timely and effective implementation of emergency response measures; and to seek strong industry support for the emergency preparedness and response programme

Longer-term

- Develop contingency plans for all high-risk diseases and generic emerging infectious diseases with corresponding emergency funding
- Review and revise legislation as necessary
- Review emergency preparedness and response plans and run simulation exercises (desktop and field) to test the plans and to familiarise and train staff, and engage with the private sector

II.11 Animal feed safety

Level of Advancement – (range 1)

Only two countries were assessed against this Critical Competency – as this competency was only introduced in the 6th Edition of the PVS Tool (2013). One of the countries assessed had the legal authority to regulate animal feed safety but had no resources available or an active programme.

The lack of any authority to control animal feed safety is a concern for the control of ASF as this may commonly be spread through swill feeding.

Generally, no reference is made to swill feeding in the PVS Pathway mission reports; a recommendation is made in a VLSP report for one country that the management of swill feeding should be included in legislation.

It is noted that the latest 2019 7th edition of the PVS Tool specifically references swill feeding within this Critical Competency to ensure it will be covered in all future missions.

Recommendations:

Short term

- If no data exists, undertake an urgent study into swill feeding practices in the country, in the context of risk assessment ('release' assessment)
- Develop an awareness programme of the risks of swill feeding using the results of the above study

Longer-term

- Review and revise appropriate legislation to include the management of swill feeding
- Develop and implement a programme to audit swill feeding

II.12A Animal identification and movement control

Level of Advancement – (range 1 – 2)

The PVS Pathway mission reports cite that legislation is in place in three countries to mandate livestock registration and/or the use of permits for movement control. In one country a voluntary registration system was introduced some years ago but only for cattle and buffalo. In another country it was indicated that animals were sometimes identified as part of the FMD control programme, usually to indicate vaccination status. In one country pigs were to be identified before movement.

Domestic check points are mentioned in three country reports. It is stated that in emergency response situations, animal movement control can be effectively restricted – though this was unpopular with livestock owners and commune leaders.

Recommendations:

Short term

- Review understanding of the main pig trading and animal movements (value chain) and identify key points for the control of domestic animal movements
- Establish a network of control points across the country

Longer-term

- Consult and work with animal owners and industry to design and implement a country-appropriate animal identification scheme to support risk-based animal identification supported by a central database to record animal movements
- Provide the necessary legal authority to implement effective animal identification and movement control

III.1 Communications

Level of Advancement – (range 2 – 3)

All countries were recognised as having some capability in basic communications but these depended largely on informal mechanisms or were not being kept up-to-date with current information and technology (e.g. social media). Effective and timely communications are critical to promote awareness of the risk of an ASF incursion, to mitigate these risks and to ensure a high level of compliance with any control activities undertaken.

In some countries, communication was recognised and a department/unit had been established or the task assigned as part of the organisational structure. In two countries it was noted that though communications took place there was no overarching policy or funding for communications.

The communications systems were limited by few staff having appropriate training, no established procedures and limited extension systems in the provinces or at field level. In some of the PVS Evaluation Follow-Up reports reference was made to the use of websites and social media though this approach was generally being underutilised.

Recommendations:

Short term

- Strengthen or establish a communications team
- Develop communications materials with a focus on awareness and mitigating the risks of ASF incursions
- Develop further communications materials on the support required from stakeholders to implement effective emergency disease control measures
- Strengthen and update ministry websites and the use of social media

Longer-term

- Establish a communications policy with a communications strategy and operational plan for the VS; develop funding options to maintain effective and timely communications; engage specialist staff

III.2 Consultation

Level of Advancement – (range 1 – 3)

The capability of the VS to consult effectively with interested parties varied considerably across the four countries. In some countries there was considered to be no mechanism for consultation, in others some informal channels have been established and in some more formal consultation mechanisms were in place.

Consultation is considered to be a two-way process of communication with interested parties such as relevant industry bodies.

In developing new legislation, the countries advised that there had been some level of formal or sometimes only informal consultation with stakeholders.

Consultation tended to focus on high profile issues of immediate concern such as for food safety and veterinary public health. International agencies, donors and support programmes often drive consultations with stakeholders.

It was recognised that there were few properly representative livestock associations that could provide a point of consultation with producers and industry. Consultations were tending to take place more frequently with the large integrated producers.

Recommendations:

Short term

- Identify key stakeholders and establish informal links for consultation
- Hold regular workshops and coordination meetings with interested parties and actively consult and solicit feedback on ASF awareness, prevention, surveillance, and preparedness and response activities

Longer term

- Establish formal consultations with stakeholders with regular meetings and workshops

II.4 Legislation

Veterinary legislation was the focus of two Critical Competencies of the PVS Evaluation Follow-Up missions (IV.1 Preparation of legislation and regulations and implementation of regulations and IV.2 Stakeholder compliance with legislation and regulations - note some name changes occurred as the PVS Pathway evolved) and also of the VLSP mission, which specifically focused on legislation. There is some overlap between the PVS Pathway mission reports and the VLSP reports, but as they were conducted at different times, with different teams and different priorities, summaries are provided here for the two PVS Critical Competencies and also for the VLSP.

IV.1 Legislation

Level of Advancement average – (range 1 – 3)

The four countries were assessed as having various levels of advancement under the Critical Competency for the 'preparation of legislation and regulations'. (Note that this Critical Competency has changed its name in the various editions of the PVS Tool). One country was assessed as having no authority or capability and lacked legislation in most fields of VS activity; some countries had some capability but lacked consideration of the accessibility, acceptability and technical, social and economic applicability of their legislation. One country achieved a higher level of advancement with good standards of legislation but lacked legislation and regulations covering the whole veterinary domain.

Each country had an identified Veterinary Authority, the Competent Authority for the delivery of VS, though sometimes the designation was considered unclear. However, most countries had a weak chain of command for their VS (see also CC I.6A) and it was recognised that legislation would be required to correct this limitation.

A number of new laws and regulations providing for the delivery of the VS across the veterinary domain were in development at the time of the Pathway missions. It will be important to review the progress of these new laws and the development of subsidiary regulations.

The new laws enacted/due to be passed generally covered many of the important legislative elements for animal disease control such as i) notifiable animal diseases and control and the declaration of notifiable disease outbreaks, ii) the obligation to report known or suspected incidences of animal disease, iii) restrictions on movement, trade, sale or slaughter of animals or animal products suspected of being infected with notifiable disease, iv) other sanitary measures to prevent the spread of notifiable diseases, v) the establishment of disease status zones, vi) contingency plans to control and eradicate notifiable disease, vi) the obligation of public or private entities to assist in preventing and controlling notifiable disease and vii) the declaration an animal disease emergency. It was recognised that legislation providing for compensation was often missing. In some countries many of these important elements were missing or at least unclear.

Recommendations:

Short term

- Develop procedures with enabling regulations for the effective management and control of animal movements, particularly in response to an emergency animal disease such as ASF
- Develop the regulations, guidelines and SOPs for the management of swill feeding

Longer term

- Review and revise legislation and regulations to identify and address the gaps, as per the VLSP mission reports
- Provide the necessary legal mandate to the veterinary authority to ensure an effective chain of command
- Review and draft the legislation and regulations necessary to provide a compensation scheme
- Draft the regulations necessary for animal identification and traceability

IV.2 Enforcement of legislation

Level of Advancement – (range 1 – 3)

There was no or only limited activities of the VS to ensure compliance with legislation and regulations in three of the four countries. Some countries had a recognised ability to impose penalties in instances of non-compliance at border inspections. Provincial departments were responsible for the implementation of penalties in one country but no further details were provided.

Problems encountered in compliance were a lack of staff resources, the absence of detailed regulations and procedures, the lack of support from the VS hierarchy, the existence of some powerful private stakeholders and a traditional lack of compliance and controlled culture. A lack of identified coordination with police and customs authorities was also identified.

Recommendations:

Short term

- Set priorities for compliance and develop a work plan
- Promote awareness of legislation and the need for compliance
- Develop and carry out a programme of awareness with the imposition of penalties

Longer-term

- Review and revise legislation regulations as required
- Provide sufficient staff and resources to implement an effective compliance programme

II.4.A Overview of the Veterinary Legislation Support Programme Identification Missions

All four countries had veterinary legislation in place with further revisions and new laws in progress. Countries have varying amounts of enabling regulations already in place and also in draft. Legislation was of varying ages but almost all was in the process of being revised. Lists of laws and regulations were made available. It was apparent that all countries took the need for effective for veterinary legislation very seriously. In some countries, the VS were able to directly employ lawyers, in others lawyers were made available to the VS on loan from other ministries or contracted from the private sector.

In one country the VLSP mission focused almost entirely on the new veterinary law which was in the final stages of preparation before submission to parliament. A number of gaps were identified and recommendations made.

In one country the VLSP made specific reference to the need for legislation governing swill feeding – the issue of swill feeding was not covered in other VLSP mission reports.

Across all countries there were some common gaps and recommendations were made accordingly. In summary legislation was generally missing or in need of strengthening for:

- The clarification and definition of Competent Authorities, their roles and responsibilities
- Organisational structure and chain of command with defined lines of delegation and reporting
- Disease reporting and surveillance and notifiable disease lists
- The preparation of contingency plans for TADs outbreaks and specifically for ASF
- Declaration of an animal disease emergency and the implementation of control measures
- Animal identification and movement control
- The ability to pay compensation
- Authority at borders for delegation, animal feeds and laboratories
- The establishment and operations of a VSB

General recommendations were also made on the need to establish high standards for legal drafting, the need for consultations with stakeholders, impact assessment of new laws and regulations and the consistent use of terms using standard definitions such as those provided by OIE.

Concerns were expressed that there were difficulties in promoting compliance with the legislation because of the limited ability to raise public awareness and conduct enforcement activities.

PART III: CONCLUSIONS

PVS Evaluations and PVS Evaluation Follow-Up reports provide an excellent insight into the authorities and capabilities of country VS as has been recognised by the commitment to the programme by many countries and international donors and partners. Further support to developing country VS is provided by the VLSP missions working to identify and develop the necessary legal mandate. In this review the preparedness of four high risk countries (Cambodia, Lao PDR, Myanmar and Viet Nam) to prevent, detect and control ASF was assessed using the most recent PVS Evaluation reports and the VLSP missions for these countries.

This approach provides a model for the analysis of PVS Pathway mission reports for specific purposes and specifically considers the elevated risk of the incursion of ASF from China. The reports provided a sound baseline of information and data on the authority and capability of the VS to prevent an emergency animal disease incursion and identified the priority targeted support required to mitigate the risk of disease incursion and establishment of ASF in these countries.

III.1 Limitations

A number of limitations should be noted:

III.1.A Date of the reports

The most obvious limitation is how recent or how out of date the country reports were. The mission dates are shown below:

Country	PVS Evaluation Follow-Up	VLSP
Cambodia	May 2018	March 2018
Lao PDR	September 2011	January 2012
Myanmar	November 2018	March 2018
Viet Nam	March 2010	August 2009

It can immediately be seen that two countries, Cambodia and Myanmar, have had very recent missions (2018); whereas the other two countries have not had a PVS Evaluation Follow-Up or VLSP mission since 2012 (Lao PDR) and 2010 (Viet Nam). Further the Myanmar PVS Evaluation Follow-Up mission was undertaken after the first incursion of ASF was announced in China (August 2018). Therefore, some bias is present in the reports with specific emergency preparedness activities being undertaken in Myanmar in response to the threat of an ASF incursion from China.

In addition, the Myanmar report has not yet been finalised with peer review by OIE and acceptance by the country so though few changes are likely, some may occur. All findings on Myanmar should therefore be treated as provisional.

III.1.B Content and consistency of the reports

The PVS Tool has evolved significantly since 2009 and the approach and consistency of assessors has developed markedly. In earlier reports, a previous version of the Tool

was used which had some different Critical Competencies – in particular of the 14 Critical Competencies that were highlighted for review there was no Critical Competency on animal feed safety in the earlier reports. Comparisons between the earlier and later reports need to be made with caution.

Note that the reviewer needs to declare a possible conflict of interest here as he was involved directly in both Cambodia and Myanmar PVS Evaluation Follow-Ups missions in 2018.

III.1.C Focus of the Veterinary Services PVS Evaluation

PVS Evaluation mission reports provide comprehensive but generic information on Veterinary Services performance across the broad veterinary domain and the whole range of animal species, diseases or other hazards (e.g. residues, AMR etc.). Therefore, there is limited detailed information on specific areas of Veterinary Services such as the programmes targeting a particular species or disease.

In this review, generic information was available on most aspects and activities of the Veterinary Services as identified in the PVS Critical Competencies selected as most relevant to ASF incursion and spread (e.g. legislation, surveillance, emergency preparedness and response, communication, legislation, etc.).

Some specific areas were not well covered in the reports due to their focus on the overall VS. As an example, swill feeding, a recognised risk of transmission of some pig diseases including ASF, was not assessed in all the reports. The reasons for this limitation include that animal feed safety was not a Critical Competency in the earlier editions of the PVS Tool, and that the risk of swill feeding and its risk mitigation were not seen as priorities at the time of the evaluations, compared with high risk forms of disease spread via direct live animal movement and contact. It is noted that revised PVS Tool (7th edition, 2019) specifically includes swill feeding and its management under the Critical Competency on animal feed safety.

In addition, though broad areas of VS authority and capabilities such as legislation, surveillance, communications or emergency response are covered in the evaluations, more detailed and specific species or disease focus are not generally available. For example, information was available on generic emergency preparedness and response but much was a legacy of systems and activities targeting the poultry sector and the HPAI crisis. Emergency preparedness and response systems applicable to the pig industry and ASF incursions were less developed and/or not noted.

The PVS Pathway mission reports are valuable in providing a readily available generic overview of the situation, which could then be usefully supplemented with a 'just-in-time' investigation to provide updated information on specific areas such as risk management (swill feeding), industry (pigs) or disease (ASF), of interest.

III.2 Value

The PVS Evaluation Follow-Up and VLSP reports provide useful information on the authority and capability of these countries to combat the risk of ASF covering key aspects including: legislation, coordination and lines of management, emergency preparedness, capability and resourcing, the use of risk analysis and border control and the ability to detect outbreaks and respond effectively. The reports assess these broad aspects of disease prevention and emergency preparedness and response identifying strengths and weaknesses and making recommendations.

Obviously, the more recent reports are more accurate in depicting the current situation and this identifies the need to update country PVS Evaluations more frequently – something that

OIE is strongly advocating and providing, and now being endorsed by countries and donor organisations.

The transparency of countries is sometimes limited because of logistics, politics and security issues and this is apparent within some parts of the reports. Countries need to be encouraged to be as open and transparent as possible, and to recognise that the PVS Pathway process is based on participatory approaches to support Veterinary Services advocacy and capacity building, and not on auditing and confrontation.

PVS Pathway mission reports as independent reviews are useful in evaluating VS capacity and identifying the targeted support required for particular sensitive situations where authorities may be cautious in permitting closer real time scrutiny. This is not considered to be the case with ASF as there is already a high awareness in the region with a number of regional activities, coordinated by OIE, FAO and others. Such a sensitive situation might arise where a new zoonotic disease is actively spreading within a country and might threaten the success of a high profile international or religious festival or event.

Supplementary 'just-in-time' follow up evaluations and investigations should be considered to ensure updated and detailed information on VS performance and capabilities is available. A desktop review of PVS Pathway mission reports information provides a sound baseline from which to undertake such an investigation.

III.3 Targeted actions

III.3.A Countries

It is apparent that all these countries are ill-prepared to prevent, detect and control ASF outbreaks. Though the capabilities of countries vary, there are a number of targeted actions that should be considered in all countries:

- i. Engagement and advocacy with political leaders and senior managers to develop policies and programmes with the necessary resources to mitigate the risk of ASF; economic impact assessments would support this approach
- ii. Undertaking, as a high priority, in each country, a thorough risk assessment of an incursion of ASF from China and its onward spread, considering all risk pathways, including official and unofficial imports of pigs and pig products, domestic pig movements, swill feeding, and the risk from a wild pig reservoir
- iii. Immediate update of key legislation to provide the necessary authority and to support control measures including updating of notifiable lists to include ASF, ensuring the legal mandate is in place for a clear chain of command to strengthen border control, to support early detection/passive surveillance and reporting, to implement effective control measures including with the payment of compensation and to review the risks and mitigation options for the swill feeding of pigs
- iv. Strengthening of systems to prevent, detect and control ASF, considering the above risk assessment, and including:
 - Campaign of awareness and enforcement to reduce the risks from illegal and informal cross border movement of animals and animal products
 - Implement more rigorous border checks for informal movement of products – particularly pork products from China
 - Enhance engagement with pig owners to promote knowledge of how to improve biosecurity considering the risks from swill feeding and from the

- uncontrolled domestic movement of pigs, and to improve understanding of the clinical signs of ASF and the need to report suspect cases
- Increase lines of reporting and veterinary supervision of CAHWs
 - Strengthen disease control and eradication by developing detailed operational contingency response plans with the necessary emergency management, resources and funding and coordination with other government agencies such as customs, police, Ministries of Environment and Commerce.
 - Train staff in emergency preparedness and response including the management of an emergency response, communications, surveillance, disease control, etc., and run simulation exercises in high risk areas
- v. Identify the resources required for prevention, detection and response and ensure their availability. Resources should include:
- Sufficient trained staff in leadership and coordination with stakeholders, emergency management systems, emergency response activities and supervision of staff
 - Adequate equipment and materials including transport, laboratory equipment and reagents, disinfectant plus sprayers, sample containers, PPE, etc.
 - Funding for operations

III.3.B OIE

The PVS/VLSP platform provides OIE with a sound basis to identify the key weaknesses in emergency preparedness and response. OIE should consider:

- i. The urgent updating of PVS Evaluations in high-risk countries where reports are currently outdated.
- ii. Increased collaboration with FAO and other partners, to develop programmes to address the priority targeted interventions, including via the Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) platform and supporting activities such as the Emergency Management Centre-Animal Health (EMC-AH), Global Early Warning System (GLEWS) and Good Emergency Management Practice (GEMP)
- iii. Coordination with development partners and funding bodies to address immediate shortcomings of the high-risk countries

PART IV: TABLE

Summary of general findings, specific findings relevant to ASF, and recommendations

Critical Competency	General Findings	Specific Findings (relevant to ASF)	Recommendations
Continuing Education (CE) Average - 2 (2)	<ul style="list-style-type: none"> No formal needs assessment or CE implementation policies or plans Some CE is being provided on an <i>ad hoc</i> basis mainly by international donors; not country driven Focus has been on HPAI There is no/limited recognition of the different needs of the different staff for their respective roles 	<ul style="list-style-type: none"> Need to recognise that in these countries most of the field VS is provided by lesser qualified C/VAHWs CE needed to target specific training for ASF– e.g. policy and planning, legislation, high level and field epidemiology, laboratory diagnosis, emergency management and emergency response systems and operations (surveillance, isolation, biosecurity, etc.), communications and reporting With time a strategic development plan for CE should be developed and implemented in each country recognising priorities and needs, in short term there are critical weaknesses in epidemiology (higher level and field level), risk analysis and understanding of value chains, outbreak investigation and the implementation of rigorous control measures 	<ul style="list-style-type: none"> Need to define target and content for ASF training – veterinarians, veterinary paraprofessionals and C/VAHWs, including based on risk analysis and related needs assessment
Internal coordination Average 2.5 (2 – 3)	<ul style="list-style-type: none"> All countries suffer from weak chain of command and poor coordination between central and provinces/ districts; all provinces have levels of autonomy Efforts made to improve coordination with regular meetings, reporting 	<ul style="list-style-type: none"> Limited coordination, communication or supervision of the C/VAHWs – who are generally private sector but occupy the ‘veterinary paraprofessional’ space in the VS – critical in the detection and reporting of, and response to, ASF 	<ul style="list-style-type: none"> Clear definition of lines of reporting with timelines; hold regular formal meetings with reports; particular for emergencies Strengthen communications, supervision and reporting by C/VAHWs
External coordination Average 2.75 (2 – 3)	<ul style="list-style-type: none"> Variable with a strong focus on HPAI/Ministry of Health. Limited/no coordination with wildlife services (Ministry of Environment) Limited coordination with customs, police, the armed forces or disaster agencies 	<ul style="list-style-type: none"> No effective coordination on wildlife health, including relevant to risks from wild pigs Countries varied but overall little to no engagement with customs, police on border controls/animal movements and no emergency preparedness plans established with national disaster agencies 	<ul style="list-style-type: none"> Advocate for the inclusion of wildlife in developing contingency plans for ASF, and the environment or its equivalent Establish formal MoUs with customs and police on border and movement control Establish formal MoUs with national disaster agencies and develop operational plans for ASF incursions – consider developing socio-economic studies

Emergency funding Average 2.5 (1 – 3)	<ul style="list-style-type: none"> • Variable – some countries had immediate access to emergency funding at low levels; all countries had access to emergency funding through a political process • Legislation in place provided various commitments to emergency funding • No country had mandatory/operational compensation programmes 	<ul style="list-style-type: none"> • One country has developed a contingency plan for ASF but with no guidelines or requirements on resources, operational costs or emergency funding • No impact studies undertaken on ASF incursions 	<ul style="list-style-type: none"> • Review and document access the process and timeliness of emergency funding mechanisms • Review and update legislation to provide a clear mandate for emergency funding and the payment of compensation • Run desktop emergency operations exercises targeting ASF with funding as a component activity
Risk analysis Average 1.5 (1 – 2)	<ul style="list-style-type: none"> • Risk analysis skills not being used, limiting the ability to design and implement effective disease prevention, detection and control programmes • Some staff in each country trained in epidemiology and risk analysis, or 'Field Epidemiology Training Programme for Veterinarians' • The countries have various levels of data collection • International partners have led risk analyses for specific issues often associated with HPAI 	<ul style="list-style-type: none"> • No use of risk analysis in targeting risk pathways for emergency disease prevention, detection and response, including ASF 	<ul style="list-style-type: none"> • Run risk analysis to target key risk pathways for ASF – develop staff skills with mentoring and further training
Quarantine and border control Average 2 (1 – 3)	<ul style="list-style-type: none"> • Limited capability or capacity to control international borders • Most countries had legislation and were able to apply some border security at main entry points; one country had no ability to apply border control • No effective control of personal import of animal products in any country • Little coordination with customs 	<ul style="list-style-type: none"> • All countries have long land borders with designated ports of entry but considerable informal trade and movement continues including of people, pigs and pork products 	<ul style="list-style-type: none"> • Implement an ASF awareness campaign with traders and others involved in border activities • Use information on value chains and risk analysis to target interventions and control • Work with customs and police, particularly targeting informal trade of pigs and pig products • Improve data capture on animals and animal products crossing the border
Passive surveillance Average 1.75 (1 – 2)	<ul style="list-style-type: none"> • Weak programmes though countries were assessed as having some capacity except one where 'no programme' • Field service largely provided by C/VAHWs • Legislation and notifiable disease lists in place • No compensation programmes 	<ul style="list-style-type: none"> • Ability to detect early/index cases of ASF is poor/likely to be delayed • No awareness programmes with livestock owners, C/VAHWs in most countries • ASF not included in notifiable disease lists 	<ul style="list-style-type: none"> • Implement IEC campaigns on ASF with livestock owners and C/VAHWs and VS staff, targeting high risk geographies and groups • Update notifiable disease lists to include ASF
Emergency response Average 2.5 (1 – 3)	<ul style="list-style-type: none"> • Some legislation in place • Experience with HPAI outbreaks • Few simulation exercises 	<ul style="list-style-type: none"> • One country has a contingency plan for ASF and had conducted a desk top simulation exercise for ASF • Lack of IEC campaigns for ASF 	<ul style="list-style-type: none"> • Develop emergency preparedness systems • Prepare ASF contingency plans with details of management, decision making,

	<ul style="list-style-type: none"> Countries have large numbers of veterinarians, veterinary paraprofessionals and C/VAHWs 		logistics and resources/funding arrangements
Animal feed safety⁵ Average 1 (1)	<ul style="list-style-type: none"> Only two countries assessed No authority in place/being actioned 	<ul style="list-style-type: none"> No control of swill feeding – though one country recommends cooking 	<ul style="list-style-type: none"> Develop necessary legislation Implement an awareness programme Ensure compliance
Animal identification Average 1.75 (1 – 2)	<ul style="list-style-type: none"> Fragmented animal identification – usually associated with FMD Domestic check points can be established in three countries 	<ul style="list-style-type: none"> One country requires identification of pigs prior to moving inter-province 	<ul style="list-style-type: none"> Review value chains and introduce movement checks, including how they might operate during an ASF emergency Provide necessary legislation Develop national identification for pigs, when they move premises or go to market/slaughter
Communications Average 2.5 (2 – 3)	<ul style="list-style-type: none"> All countries had some capability – but no specialist expertise Some use of websites, social and other media 	<ul style="list-style-type: none"> One country has some pamphlets on ASF No campaigns on ASF 	<ul style="list-style-type: none"> Recruit/contract specialist staff Develop ASF specific campaigns and target high risk activities
Consultation Average 2 (1 – 3)	<ul style="list-style-type: none"> Variable – almost no consultation in some countries (common exception was preparation of legislation); others have quite well-developed mechanisms Much driven by international agencies and partners 	<ul style="list-style-type: none"> Few pig associations at national or sub-national levels Some consultation with bigger integrated commercial producers 	<ul style="list-style-type: none"> Identify/establish focus groups of smallholders Hold workshops and consult on ASF risk mitigation activities with stakeholders
Legislation <p>Is considered as three components: reviews of the two primary Critical Competencies that cover legislation (IV.1 – Legislation and regulations, and IV.2 – Compliance with legislation and regulations which has been renumbered as IV.1B in the 7th edition of the PVS Tool) and the VLSP reports. There is some overlap between the PVS Pathway mission reports and the VLSP report but as they were conducted at different times, with different teams and different priorities, summaries are provided here for the two PVS Critical Competencies and also for the VLSP.</p>			
Legislation Average 2.5 (2 – 3)	<ul style="list-style-type: none"> Variable – one country had no authority, another achieved a moderate LoA but with gaps over the whole veterinary domain New laws and regulations in various stages of drafting/approval 	<ul style="list-style-type: none"> Major gaps in some countries including: obligations of a notifiable disease and the need to report, sanitary measures such as restrictions on trade/slaughter, establishment of disease free zones, contingency planning, public support and formal declaration of an emergency 	<ul style="list-style-type: none"> Complete revision/updating of legislation including development of subsidiary regulations Prepare supporting guidelines, MoUs, SOPs etc.

⁵ Only two countries assessed

	<ul style="list-style-type: none"> Some of the new legislation was comprehensive but in others major gaps. There was no provision for compensation in most countries, chain of command was a concern Enabling regulations often missing 		
Enforcement of legislation Average 1.75 (1 – 3)	<ul style="list-style-type: none"> Limited/no compliance activities – some activities at borders and markets and for movement control (with health certificates) No penalties for non-compliance being imposed Lack of compliance programmes and resources 	<ul style="list-style-type: none"> No reference made on compliance issues for ASF prevention, detection, control 	<ul style="list-style-type: none"> Set priorities for compliance to reduce the risk of ASF Work with private sector, promote awareness Provide staff and resources and implement Report back and review programme
VLSP	<ul style="list-style-type: none"> All countries have a legislation programme and veterinary laws in place Considerable revisions in process in most countries Access to lawyers in all countries to support drafting Lack of enabling regulations Some common gaps including definition of Competent Authorities, organisation/chain of command, lists of notifiable diseases, obligation to report, preparation of contingency plans, declaration of an emergency, animal identification, border control, payment of compensation, operation of a VSB 	<ul style="list-style-type: none"> All the general comments apply to ASF 	<ul style="list-style-type: none"> Review and revise legislation including the preparation of regulations Address the gaps identified

PART V: APPENDICES

Appendix 1: Terms of reference

Status of Veterinary Services prevention and preparedness for exotic pig diseases including African swine fever – Targeted Review of recent OIE PVS Pathway mission reports in Cambodia, Laos, Myanmar and Viet Nam (PVS/ASF review)

Background

The recent incursion of African swine fever into China has resulted in a high alert situation within South East Asia given the recognised high risks of further spread of this devastating disease, primarily via cross border movements of both live pigs and pig products from China. Two regional level meetings have taken place with a focus on the issue. FAO hosted an initial meeting in early September 2018 entitled “Emergency Regional Consultation on African Swine Fever Risk Reduction and Preparedness” and the OIE held a meeting under the GF-TADs framework titled the “3rd Regional Workshop on Swine Disease Control in Asia” in the Philippines in early October 2018, including a final day discussing ASF risk management. The meetings both agreed that 4 South East Asian countries were the highest risk of an incursion; Myanmar, Cambodia, Laos and Viet Nam. Given this situation, the idea of undertaking a focused review of PVS Pathway information in these high-risk countries arose from internal discussions on how the OIE might optimise its contribution, aligned with its mandate and particularly its strategic objectives relating to animal health risk management and supporting and strengthening of Veterinary Services.

Purpose

To undertake a review of recent OIE PVS Pathway mission reports (PVS Evaluation or PVS Evaluation Follow-Up, and Veterinary Legislation Identification) of the targeted high-risk countries to extract information on the current situation of prevention and preparedness for an incursion of an exotic disease affecting pigs, with a focus on African swine fever (ASF), and also provide a brief assessment of their usefulness and opportunities in informing targeted action and support.

Terms of Reference

1. To undertake a close review of the most recent PVS Evaluation or PVS Evaluation Follow-Up reports of Cambodia, Laos, Myanmar⁶ and Vietnam targeting areas of key relevance to prevention and preparedness for exotic pig diseases, with a focus on ASF. This will involve detailed analysis of the following 14 Critical Competencies:
 - Continuing Education (targeting existing CE mechanisms that could be platforms for delivery of pig disease or ASF prevention and preparedness capacity building)
 - Internal Coordination (targeting in particular the contexts of early detection and emergency response)
 - External Coordination (targeting liaison with agencies responsible for wildlife and wildlife health, as mechanisms to engage for coverage of pig disease and ASF risks from wild boar populations)

⁶ See below for description of “active” PVS mission review process for Myanmar.

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- Emergency Funding
 - Risk Analysis (targeting import risk analysis coverage and any specific relevance to pigs and pig products)
 - Quarantine and Border Security (targeting border operations of specific relevance to pigs and pig products)
 - Passive Surveillance (targeting any specific references to passive surveillance of pigs including both smallholder and commercial production systems)
 - Emergency Response
 - Feed Safety (targeting specific reference to risks of disease spread via swill feeding of pigs)
 - Identification and traceability (targeting specific reference to pig and pig product traceability and movement control)
 - Communication (targeting specific relevance to communication with pig farmers/processors/vets/paraprofessionals),
 - Consultation with interested parties (targeting specific relevance to consultation with pig farmers/processors/vets/paraprofessionals),
 - Preparation of legislation (targeting cross referencing with the above targeted CCs, and noting legislative preparation and coverage issues are likely to be covered in greater depth in ToR 2 below)
 - Implementation of legislation (targeting cross referencing with the above targeted CCs)
2. To undertake a review of the Veterinary Legislation Identification mission reports targeting the same areas of key relevance to prevention and preparedness for exotic pig diseases, with a focus on ASF, to give an indication of the legislative basis and readiness of the four high risk countries.
 3. To provide a brief assessment of the usefulness of and opportunities for this information to inform targeted action and support to enhance ASF prevention and preparedness at country or regional level, either by national governments themselves or external resource and/or technical partners.