



*Crossing Borders and Traversing Bridges  
of Partnerships*

**Roadmap for an HPAI-Free ASEAN  
Community by 2020**

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States of the Association are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. The ASEAN Secretariat is based in Jakarta, Indonesia.

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[www.asean.org](http://www.asean.org)

#### Catalogue-in-Publication Data

Crossing Borders and Traversing Bridges of Partnerships – Roadmap for an HPAI-Free ASEAN Community by 2020  
Jakarta: ASEAN Secretariat, September 2010

614.518

1. Prevention – Avian – Influenza
2. ASEAN – pandemics – pathogenic

ISBN 978-602-8411-52-3

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## Foreword

The “Roadmap towards an HPAI-Free ASEAN by 2020” provides a focused, action-oriented and long-term strategy to progressively prevent, control and eradicate the disease in the region. The Roadmap is critical in our continuing regional collective efforts to ensure the attainment of this important vision.

Considering the multi-dimensional importance and impact of HPAI, this Roadmap will promote the overall improvement of the livestock sector particularly in strengthening veterinary services, which serves as the foundation in effectively addressing animal diseases of transboundary and/or zoonotic in nature. It is hoped that the Roadmap will enable the sector to fulfil its promise of contributing to regional economic integration towards a single market and production base by 2015 with free flow of animals and animal products as well as alleviating poverty and enhancing food security in the region.

For being a transboundary animal disease, the successful eradication of HPAI requires concerted regional collaborative mechanisms and actions. This Roadmap will therefore enable us to bring the current concerted efforts to a whole new level characterised by effective collaboration and coordination between livestock and animal health agencies of ASEAN Member States. Such regional collaboration and coordination will also provide a platform for information and experience sharing to support the less developed ASEAN Member States towards reducing development disparities.

HPAI as a zoonotic disease, together with 75% of recent emerging human diseases that originated from animals, calls for the strengthening of multi-sectoral cooperation on health related issues under the broader framework of the “One Health” approach. This Roadmap is a translation of this approach into a regional collaborative framework by adapting existing systems of animal and public health governance at global, regional and national levels to address vulnerabilities associated with the possible spread of the virus.

Furthermore, the complexities and increasing challenges posed by health-related issues due to closer integration and globalisation necessitates strategic partnerships and networking with relevant development partners and donor agencies to tap on synergies and complementarities to better address HPAI and other disease threats. This Roadmap is expected to allow for a useful platform for all parties to cooperate on the common goal of HPAI eradication.

As we all take the journey of establishing an ASEAN Community, let us work together in addressing the eradication of HPAI in our region – this is key to the food and public health safety of our region. I therefore a) call on the relevant Ministries of the ASEAN Member States to continue your political support and commitment by institutionalising policies supportive of HPAI eradication; b) ask our technical partners and stakeholders to join us in launching a coordinated and robust campaign to fight HPAI; c) encourage our private sector to work with us as partners in our common commitment for a prosperous ASEAN; and, d) invite our donor community and dialogue partners to join us in this journey of community building and help our region eradicate the disease that could undermine investments in our economic and social development

Most of all, I express my personal commitment that ASEAN will sustain its leadership in eradicating HPAI in the region. Our collective efforts will eventually be dedicated to the peoples of ASEAN – the center of our community.

**Dr. SURIN PITSUWAN**  
Secretary-General of ASEAN

ASEAN responded appropriately to address the Highly Pathogenic Avian Influenza (HPAI) that affected the region. The Twenty-sixth Meeting of the ASEAN Ministers on Agriculture and Forestry (AMAF, 2004) endorsed the formation of the ASEAN HPAI Taskforce. The Taskforce formulated the Regional Framework for the Control and Eradication of HPAI in ASEAN, which consisted of eight components, namely: 1) disease surveillance; 2) containment measures; 3) stamping out and vaccination policy; 4) diagnostic capability; 5) establishment of disease-free zones/compartments; 6) information sharing; 7) emergency preparedness plans; and, 8) public awareness and communication. The Regional Framework was formally endorsed by the Twenty-seventh Meeting of the AMAF in Manila on 29 September 2005, which also provided the directive for the formulation of the detailed Work Plan and the sourcing of project funds.

While most of the activities in the framework were integrated into the National Plans of controlling and eradicating HPAI, regional activities were also implemented and monitored through meetings of the National Focal Points for HPAI. Concurrently, numerous projects and initiatives are also implemented in ASEAN Member States with involvement of international technical agencies such as FAO, OIE, JICA, etc., and funded by various international donor agencies and developed nations. All of these have significantly enhanced capacity of AMS in responding to the HPAI threat. For this, I wish to thank all the assistance and support rendered to the region.

Taking a more active role in the campaign, the Asian Development Bank (ADB) collaborated with ASEAN and provided funding and technical assistance to implement the ASEAN-ADB HPAI Project. Under this Project, the Regional Strategy (2008-2010) was formulated as well as provided support for the development of long-term and sustainable strategic plans and mechanisms in effectively addressing HPAI and other priority diseases. Major of these, are the development of the Roadmap for an HPAI-Free ASEAN Community by 2020 and the ASEAN initiative of establishing a regional coordination mechanism on animal health and zoonoses. More specifically, I would like to commend the efforts of the Technical Working Group - core members, technical and development partners, health sector and industry organisations, in the development of this HPAI Roadmap.

Based on the current status of HPAI in ASEAN, this Roadmap focuses on three main broad strategies for prevention, control and eradication for the region. Firstly, is to maintain existing freedom status through vigilant border controls and minimising risks of introduction, for HPAI-Free Member States. Secondly, is to strengthen early detection capabilities and respond quickly and effectively once the disease agent is detected, for those countries with sporadic outbreaks. Thirdly, and the most challenging task, is to gradually control and eradicate the infection through progressive zoning based on risk management for the most significant transmission pathways, for Member States where the disease agent is persistent in their duck and chicken population.

The strategies in the Roadmap are time-bound, with logical components of controlling and eradicating HPAI. The most important expectation of the Roadmap from hereon, is for the AMS to ensure that their HPAI national plans are, where necessary, are accordingly adjusted and aligned with the regional strategies and timelines. As the implementation of the Roadmap will require political and financial commitment and support, I am encouraging the national governments and donor agencies for their active participation and valuable contributions towards realising the vision of an HPAI freedom and other HPEDs in ASEAN.

Dr Kamarudin Md Isa, DVM, MSc, Ph.D.  
Chairman  
ASEAN HPAI Taskforce

## Glossary and Definitions

ADB	Asian Development Bank
AMAF	ASEAN Ministers on Agriculture and Forestry
AMS	ASEAN Member States
ASEAN	Association of Southeast Asian Nations
ASEC	ASEAN Secretariat
ASEC-AINRD	ASEAN Secretariat – Agriculture Industries and Natural Resources Division
ASEC-HCDD	ASEAN Secretariat – Health and Communicable Diseases Division
ASWGL	ASEAN Working Group on Livestock
AEGCD	ASEAN Expert Group on Communicable Diseases
AusAID	Australian Agency for International Development
Compensation	Defined here as a monetary scheme or a package of relief system to ensure the cooperation of poultry owners in early identification of HPAI and the immediate culling of diseased or suspected animals thereby reducing the risk of disease spread.
CSF	Classical Swine Fever (also known as Hog Cholera)
EC	European Community
EC-HPED	European Community-Highly Pathogenic Emerging Diseases Project
ECTAD	Emergency Centre for Transboundary Animal Diseases (FAO)
EID	Emerging Infectious Disease is a new infection resulting from the evolution or change of an existing pathogenic agent, a known infection spreading to a new geographic area or population, or a previously unrecognized pathogenic agent or disease diagnosed for the first time and which has a significant impact on animal and human health (OIE Terrestrial Animal Health Code)
FAO	Food and Agriculture Organisation of the United Nations
FMD	Foot and Mouth Disease
GF-TADs	Global Framework for the progressive control of Transboundary Animal Diseases
HPAI	Highly Pathogenic Avian Influenza
HPED	Highly pathogenic emerging diseases are highly infectious diseases due to pathogenic organisms that spread over wide geographical areas and cause significant negative impacts on animal and human health, with major socio-economic consequences.
H5N1	Avian Influenza A subtype (H5 haemagglutinin; N1 neuraminidase)
OIE	World Organisation for Animal Health ( <i>Office Internationale des Epizooties</i> )
OWOH	One World, One Health
Persistence	The existence of HPAI H5N1 virus in a poultry population brought about by complex epidemiological risk factors for the transmission and maintenance of the virus than originally identified such as chicken and duck densities, agricultural population density, rice cultivation intensity, cultural practices, etc.
Poultry	Means all domesticated birds, including backyard poultry, used for production of meat or eggs for consumption, for the production of other commercial products, for re-stocking supplies of game or for breeding these categories of birds, as well as fighting cocks used for any purpose (OIE Terrestrial Animal Health Code)
PSVS	Programme for the Strengthening of Veterinary Services in South-East Asia
PVS	OIE-PVS Tool for the Evaluation of Performance of Veterinary Services
SEAFMD	South-East Asia Foot and Mouth Disease Campaign
SOM-AMAF	Senior Officials' Meeting of the ASEAN Ministers on Agriculture and Forestry
SOMHD	Senior Officials' Meeting on Health and Development
TADs	Transboundary animal diseases
WHO	World Health Organisation
Zoonosis	Means any disease or infection which is naturally transmissible from animals to humans

## Executive Summary

The Roadmap for an HPAI-Free ASEAN Community by 2020 provides a long-term strategic framework towards the prevention, control and eradication of HPAI and other HPEDs in the region. It provides directional and action-oriented strategies and a broad vision that integrates lessons learned and key elements with previous regional frameworks and ongoing regional initiatives such as the Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TAD) and the ONE HEALTH approach.

The economic and public health impacts of HPAI and other highly pathogenic emerging diseases are real threats to the national prosperity of the Member States and the regional development of ASEAN. Since 2003, the expansive and devastating impacts of HPAI H5N1 outbreaks on production, trade and livelihood, were experienced by seven of the ASEAN Member States. By mid-2005, more than 140 million birds had died or been destroyed and losses to the poultry industry are estimated to be in excess of US\$10 billion (World Bank, 2009).

Although concerted international action has successfully eliminated the deadly H5N1 virus from poultry in almost all the 63 countries infected at the peak of the global outbreak, the virus still persists in five nations that include two AMS, Indonesia and Viet Nam. The current thinking is that for as long as the virus is present in even one country, there is still a risk to the ASEAN Community that must be taken seriously, let alone the concern of cross mutation among other pandemic and deadly viruses.

As a community of nations, ASEAN is addressing HPAI with one vision: investing in sustainable prevention, control and eradication strategies at the animal level (at-source) to reduce the threat to humans and to the economic and social development of nations.

Despite the fact that there is no universal solution to control and eradicate HPAI, and that it is a complex task and differs between countries, the basic concept of this Roadmap is that it is possible to build a phased programme for each country and/or cluster taking into account their current status, to identify risks and implement appropriate approaches in a series of steps to progressively manage those risks. This would require an integrated approach targetted specifically to the situation in a country/cluster, based on risk management for the most significant transmission pathways.

This Roadmap provides strategic goals and actions to attain its vision and consists of strategic components that include strengthening of veterinary services, progressive zoning and cross-border management, vaccine and vaccination strategy, stamping-out, surveillance, market chain management and bio-security enhancement. In addition, cross-cutting strategies are also presented reinforcing the fact that controlling and eradicating HPAI as a multi-dimensional disease requires multi-disciplinary, multi-sectoral and multi-agency cooperation and collaboration.

The Roadmap also aims to mainstream HPAI into the broader context of ASEAN's initiative for the establishment of a regional coordination mechanism on animal health and zoonoses. This is also consistent with the ASEAN Charter that calls for strengthening regional solidarity to realise an ASEAN Community that is politically cohesive, economically integrated and socially responsible in order to effectively respond to current and future challenges and opportunities.

The implementation of the Roadmap will be coordinated by the ASEAN Secretariat and HPAI Taskforce by overseeing the implementation and alignment of action plans at the national level, and closely linked with the FAO/OIE Global Framework for the progressive control of transboundary animal diseases (Global Framework for Transboundary Animal Diseases), in the short term, and will become the blueprint for the institutionalised regional coordination mechanism on animal health and zoonoses, in the mid- and long-term. Ultimately, the Member States which implement national programmes for HPAI and other HPEDs, will be the main implementers of this Roadmap.

Resource mobilisation will include funding mechanisms and sources at both national and regional levels. Most of the projects and programmes to be developed from the Roadmap are expected to be implemented through multi-agency and donor support. The ASEAN Animal Health Trust Fund, with contributions from Member States, will be a vehicle to draw resources from other ASEAN and non-ASEAN sources.

## Introduction

The economic and public health implications of Highly Pathogenic Avian Influenza (HPAI) and other Highly Pathogenic Emerging Diseases (HPED) are REAL threats to the national prosperity of the Member States and the regional development of the Association of Southeast Asian Nations (ASEAN). Since 2003, seven ASEAN Member States (AMS) were affected with HPAI H5N1. The outbreaks caused considerable losses of production, and loss of livelihoods of vulnerable people.

As a community of nations, ASEAN is addressing HPAI with one vision: investing in sustainable prevention, control and eradication strategies at the animal level (at-source) to reduce the threat to humans and to the economic and social development of nations.

Numerous efforts by national governments and international agencies were implemented and completed while some of them are still on-going. These efforts improved the capacity and capability of Member States in managing the disease. Laboratory capabilities were enhanced with procurement of equipment, reagents, field investigation vehicles, expansion and construction of new laboratories, etc. Capacities of field personnel and laboratory technicians were also upgraded through various training, workshops and seminars. Currently, almost all Member States are capable of making diagnosis and confirmatory tests for HPAI H5N1 virus infection. As a result, response time from notification to stamping-out operation has significantly improved.

Over the years, ASEAN also responded to the situation collectively. The Twenty-sixth Meeting of the ASEAN Ministers on Agriculture and Forestry (AMAF, 2004) endorsed the formation of the ASEAN HPAI Taskforce. The Taskforce was commissioned to coordinate the prevention, control and eradication of HPAI in the region.

The Taskforce formulated the Regional Framework for the Control and Eradication of HPAI in ASEAN, which consisted of eight components, namely: 1) disease surveillance; 2) containment measures; 3) stamping out and vaccination policy; 4) diagnostic capability; 5) establishment of disease-free zones/compartments; 6) information sharing; 7) emergency preparedness plans; and 8) public awareness and communication. The Regional Framework was formally endorsed by the Twenty-seventh Meeting of the AMAF in Manila on 29 September 2005 which also provided the directive for the formulation of the detailed Work Plan and the sourcing of project funds.

The framework was subsequently converted into a specific time-line period of Regional Strategy (Year 2008-2010) under the First Phase of the ASEAN-Asian Development Bank (ADB) HPAI Project. Focus Areas of the strategy include: 1) Strengthening of regional cooperation through sustained coordination and partnership with stakeholders; 2) pursuing regional arrangements adopted at ministerial level; 3) developing short-, mid- and long-term strategies to eradicate HPAI in ASEAN taking into account the regional and global strategies; 4) enhancing capacities and capabilities (including sharing experiences through training workshops, country visits, etc.; and 5) research and development (R&D).

Under the Second Phase of the ASEAN-ADB HPAI Project, the development of the HPAI Roadmap was identified as one of its main components. The Roadmap proposed in this document provides strategic goals and actions to control and eradicate HPAI in ASEAN by 2020. It consists of strategic components that include strengthening of veterinary services, progressive zoning and cross-border management, vaccination, stamping out, surveillance, market chain management and bio-security enhancement. In addition cross-cutting strategies are also presented reinforcing the fact that controlling and eradicating HPAI as a multi-dimensional disease requires multi-disciplinary, multi-sectoral and multi-agency cooperation and collaboration.

During the development of this Roadmap, references were made from various national experiences and several strategic plans and documents such as the Roadmap for an ASEAN Community 2009-2015, SEAFMD 2020 Roadmap, FAO Regional Strategy on HPAI and EIDs, Regional Strategy on the Progressive Control and Eradication of HPAI 2008-2010, etc.

## Background

Evidence shows that HPAI is now persistent in some parts of Southeast Asia, where Indonesia and Viet Nam are the worst-affected countries. The continuing outbreaks that began in late 2003 and early 2004 have been disastrous for the poultry industry in the region; by mid-2005, more than 140 million birds had died or been destroyed and losses to the poultry industry are estimated to be in excess of US\$10 billion (World Bank, 2009).

Although concerted international action has successfully eliminated the deadly H5N1 virus from poultry in almost all the 63 countries infected at the peak of the global outbreak, the virus still persists and raises serious public health concerns at the global level. The major world animal and human health authorities – Food and Agriculture Organisation (FAO), World Organisation for Animal Health (OIE) and the World Health Organisation (WHO) -- are collaborating closely on a global strategy and regional and country-specific plans, the overall goal of which is to minimise the global threat of HPAI to human and domestic poultry and other animal populations through the control and gradual eradication of HPAI.

Although HPAI is mainly an animal health problem, more than half of the 120 human cases in South-East Asia have been fatal. A number of sources believe that the spread of the H5N1 virus could lead to the next global flu pandemic. Such a pandemic would be the result of the emergence of a strain of virus to which the world's population had little or no immunity.

HPAI being a zoonotic disease, the Roadmap's main focus is to eradicate the disease at source (animal level) in order to prevent the occurrence of pandemic to the human population. Protection and safety of human population exposed to cases of HPAI and its prevention activities would be a conscious and deliberate effort that is emphasised in this Roadmap.

### Status of HPAI in ASEAN Member States

The HPAI situation is different for each AMS. Since HPAI H5N1 was officially declared on 24 January 2004, Cambodia, Indonesia, Lao PDR, Malaysia (Peninsular), Myanmar, Thailand and Viet Nam have experienced outbreaks, while Brunei Darussalam, Philippines and Singapore remained HPAI-free.

**Cambodia** managed to resolve the outbreaks that occurred in 2006, but unfortunately, sporadic outbreaks re-occurred in 2009 and 2010 and are yet to be resolved as of July 2010. Significant reductions in price in poultry products were seen during the first 2 months of 2004, followed by a complete recovery in prices.

In **Indonesia**, 31 out of 33 provinces were affected since the first outbreaks in 2003 with 16.2 million poultry dead or stamped out in control efforts, excluding those lost from backyard farms. The value of birds lost was between US\$16.2 to 32.4 million. In addition to farm level impacts, there were drops of 45 to 60% in the demand for day old chicks and poultry feed during the outbreak and a reduction of just over a third in the employment in the poultry industry. In 2006, HPAI became persistent in the country (based on Indonesia's report to OIE).

In **Lao PDR**, although the total reported losses were only 3% of the national flock, the impact was highly localised, with nearly 80% of the reported loss in commercial farms in Vientiane province. Since the majority of poultry farming in Lao PDR is on a small scale, this means that the small commercial producers suffered badly.

The threat to human and poultry health continues in **Viet Nam** with outbreaks confirmed in 18 provinces in 2009. Human fatalities have decreased from a high of 20 in 2004 to 5 in 2009; however there have already been two deaths from seven cases in 2010. The largest losses were felt by small scale commercial chicken producers with limited numbers of other livestock. Many had borrowed money to fund poultry production and found themselves in debt when their birds died or were culled.

Table 1 shows the HPAI situation of ASEAN Member States based on emergency reports submitted to OIE and the subsequent final reports reflecting if the disease had been eradicated.

**Table 1: Emergency Reports Submitted to OIE on HPAI Status in ASEAN Member States**

Location	Virus Type	Emergency report submitted to OIE	Final Report Submit to OIE						
			2004	2005	2006	2007	2008	2009	2010
Cambodia	H5N1	24/01/2004 13/04/2006 12/04/2007 28/12/2009 05/02/2010	Nil	Nil	04/09	Nil	Nil	Nil	New
Indonesia	H5N1	02/02/2004	Nil	Nil	26/9*	Nil	Nil	Nil	Nil
Lao PDR	H5N1	27/01/2004 04/08/2006 19/02/2007 13/02/2008 25/02/2009	Nil	Nil	04/08	Nil	28/12	04/08	-
Malaysia (Peninsular)	H5N1	19/08/2004 23/02/2006 08/06/2007	Nil	03/01	19/06	07/09	-	-	-
Myanmar	H5N1	12/03/2006 08/06/2007 24/10/2007 05/02/2010 05/03/2010	- - -	-	04/09	16/10	20/04	-	New
Thailand	H5N1	23/01/2004 23/01/2008	Nil	Nil	Nil	Nil	16/02	27/02	
Viet Nam	H5N1	08/01/2004 12/03/2008 01/04/2008 10/04/2010	Nil	Nil	Nil	Nil	Nil	Nil	New

Source: Data are from OIE website: [www.oie.int](http://www.oie.int), \* Indonesia submitted report to OIE stating the disease status has changed to endemic/prevalent.

## **Categorisation of ASEAN Member States Based on Current HPAI Status (as of July 2010)**

Control and eradication strategies formulated in this roadmap are based on the current HPAI status. Figure 1 reflects the status of each country categorized as follows:

### ***States Free of HPAI (Brunei, Philippines and Singapore)***

Since these countries are free of the disease, their main efforts are focused on prevention of introduction of the disease agent and preparedness for early detection of infection.

### ***States that Regained HPAI-Free Status (Malaysia and Thailand)***

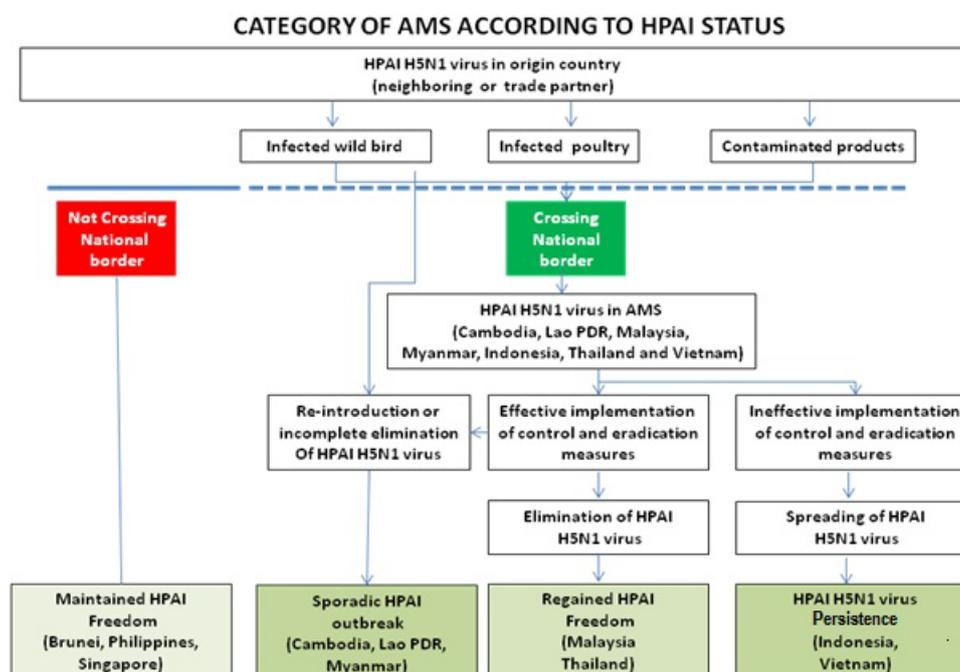
Both countries experienced HPAI outbreaks and efforts should focus on further enhancing existing strategies implemented. Valuable lessons learned from previous outbreaks should enable governments to ensure that the regained HPAI-free status is maintained..

### ***States with Sporadic Outbreaks (Cambodia, Lao PDR and Myanmar)***

As the poultry industry in these countries is less developed and sporadic outbreaks occur as a result of re-occurrence of uneliminated virus or re-introduced through cross-border movement of infected birds. Strengthening of veterinary services for early detection and response is a key area of improvement and investment.

### States with Persistent HPAI status (Indonesia and Vietnam)

The disease is widespread in both countries. Controlling and eradicating HPAI in Indonesia and Vietnam pose the biggest challenge and may take a longer period of time. Thus, the Roadmap is heavily reliant on the regional ability to control the disease in these States.



### Risk Factors for Occurrence and Persistence of HPAI

It is important to identify factors or risks that may be associated with the introduction of disease agent into the Member States. It allows specific mitigation measures to be implemented. Such measures may include risk analysis of importation, targeted surveillance along the border, strengthening border control and other measures to reduce risks of cross-border disease transmission.

#### Cross-Border Risks

Three of the Member States (Lao PDR, Myanmar and Viet Nam) have land borders with a neighbouring country with high persistence of HPAI H5N1 virus. These three countries have a high risk level of getting infection or recurrence of HPAI outbreaks. Therefore, the strategy in the Roadmap must address the cross border movement between countries and active surveillance along the borders. Specific border initiatives such as Upper Mekong Project for Foot-and Mouth Disease (FMD) can be initiated for HPAI as well.

As for Lao PDR, previous risk of introduction and re-introduction of HPAI H5N1 virus was associated with ducks and day-old chicks traded with a neighbouring ASEAN Member State. The risk was multiplied by the difficulty of border control along the Mekong River. Intra-AMS border initiatives may also be initiated in the Roadmap.

Cambodia is dependent on the importation of inputs including day-old-chicks and poultry products from neighbouring States that are still infected. This increases the risk of virus re-introduction. Release of ducklings which are imported into newly planted rice fields in the River Mekong Valley has been associated with outbreaks occurrence. Limited and weak border movement controls are also risks to be considered.

Previous HPAI outbreaks in Myanmar were associated with migratory birds and importation of fertile eggs and day-old chicks from a neighbouring country. These two factors are expected to be the main

risks for re-occurrence of HPAI outbreaks. This is due to the availability of vast wetland and water reservoir in Myanmar and the ongoing trade relations. Applicable mitigation measures must be formulated to address these problems.

Viet Nam faces the greatest challenge with cross border threats. Repeated introduction and re-introduction of HPAI H5N1 virus from neighbouring countries are common. Studies on the HA gene of HPAI H5N1 viruses showed that Viet Nam has six out of the 10 clades present in neighbouring countries (Inul, 2009) as compared with other Member State (Thailand) with two clades at the most. This reflects the active cross-border movement of poultry and related products from neighbouring country to Viet Nam. Thus, border initiatives between Member States will be an important part of the Roadmap.

### ***Intra AMS Risks***

Understanding the disease risk at the national level is important in order to progressively control and eradicate the disease in countries where HPAI is persistent. The situation is complex in both Indonesia and Viet Nam.

Viet Nam implemented large-scale vaccination against HPAI since 2005 to reduce the transmission of the disease to humans and to control the occurrence of HPAI epidemics in poultry. This experience shows that enhancing the control and eradication programme with the exit strategies for vaccination is required, taking into consideration the following factors:

- Traditional, extensive, free-grazing/scavenging duck production systems
- Introduction of non-vaccinated new live animals
- Fomites (human, animal, vehicle, etc.) due to active movement from production to market places
- Tet festival (February) increases the volume of poultry being marketed and thus increasing the risk of spreading the disease

The situation in Indonesia is also unique. The disease is still detected in most of the provinces of the country. Although national vaccination was one of the important strategies in the attempt to control the disease, the government suspended its implementation, and is currently evaluating the suitability of local field isolates as vaccine candidates. Unlike Viet Nam, in Indonesia HPAI H5N1 is only caused by the virus clade 2.1. Local risk factors are described in the box.

#### **Local Risk Factors (Indonesia Context)**

- Decentralization of policy to provincial and districts authority
- Epidemiology of HPAI not fully understood
- Uncontrolled poultry trade and movement
- Poor biosecurity at markets, slaughterhouses and farms (Sector 3)
- Not all provinces and districts covered by PDSR (*Participatory Disease Surveillance and Response*) system
- PDSR is village (not case) reporting system and poor in disease control and elimination aspect
- Large number of Sector 4 poultry population
- Limited information on disease situation in Sectors 1 and 2 poultry

For countries where HPAI is persistent, the strategy to control and eradicate the disease must be based on the identified risk factors. The option available for countries where HPAI is persistent is through progressive zoning.

## Vision

*An ASEAN Community with enhanced capacity to progressively control and eradicate HPAI in domestic poultry and humans, as well as other disease threats, towards food security and public health safety.*

## Purpose

This Roadmap aims to define the long-term strategies and activities toward the control and eradication of HPAI and other HPED in ASEAN.

Specifically, this document is also designed for various purposes, such as to:

- provide information to policymakers and stakeholders;
- guide disease control managers in developing or revising operational plans;
- demonstrate the need for sustained regional coordination and multi-sectoral collaboration in addressing disease threats;
- serve as a basis in strengthening veterinary services at all levels;
- provide evidence for appropriate approaches in managing HPED; and
- serve as supporting document for resource mobilization from development partners and donor agencies.

## Scope and Linkages

The Roadmap is a directional and action-oriented long-term strategy to prevent, control and eradicate HPAI and other HPED in ASEAN. It embraces a broad vision that integrates lessons learned and key elements consistent with previous regional frameworks and ongoing regional initiatives such as the Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TAD) and the ONE HEALTH approach.

This Roadmap also aims to mainstream HPAI into the broader context of ASEAN's initiative for the establishment of a regional coordination mechanism on animal health and zoonoses. This is also consistent with the ASEAN Charter that calls for strengthening regional solidarity to realise an ASEAN Community that is politically cohesive, economically integrated and socially responsible in order to effectively respond to current and future challenges and opportunities.

Guided by the Roadmap for an ASEAN Community 2009-2015, the HPAI Roadmap is aligned primarily with the ASEAN Economic Community (AEC) Blueprint that envisages regional integration by 2015 with the following key characteristics: a) a single market and production base, b) a highly competitive economic region, c) a region of equitable economic development, and d) a region fully integrated into the global economy. The HPAI Roadmap is also aligned with the ASEAN Socio-Cultural Community (ASCC) Blueprint, which represents the human dimension of ASEAN cooperation and upholds ASEAN commitment to address the region's aspiration to lift the quality of life of its peoples. More specifically, this Roadmap is linked with Section B.5 of the ASCC Blueprint under the heading of "Improving capability to control communicable diseases" that has the strategic objective of enhancing regional preparedness and capacity through integrated approaches to prevention, surveillance and timely response to communicable and emerging infectious diseases. Moreover, it is also linked with the EID Medium-Term Plan and the Pandemic Preparedness initiatives.

## Strategic Goals

Based on the current status of HPAI in ASEAN, this Roadmap focuses on three main broad strategies for prevention, control and eradication for the region. Firstly, is to maintain existing freedom status through vigilant border controls and minimising risks of introduction, for HPAI-Free Member States. Secondly, is to strengthen early detection capabilities and respond quickly and effectively once the disease agent is detected, for those countries with sporadic outbreaks. Thirdly, and the most challenging task, is to gradually control and eradicate the infection through progressive zoning based on risk management for the most significant transmission pathways, for Member States where the disease agent is persistent in their duck and chicken population.

The following seven strategic goals are aimed at providing the fundamental and critical achievements to steer action plans towards the attainment of the Roadmap's vision.

### **GOAL 1: Strengthening Veterinary Services for capacity development to prevent, control and eradicate animal diseases of economic and public health importance (Strengthening veterinary services)**

Strengthening the animal health systems and veterinary services is a key element to sustainable prevention, control and management of animal diseases. Countries with adequate veterinary capacities are in a better position to deal with and manage disease outbreaks within the country, and the system further impacts on the control of other important trans-boundary diseases.

The veterinary services of ASEAN Member States have varying degrees of capacity, and there is an increasing need for AMS to allocate resources to build up their veterinary services and infrastructure to the required level. This would depend on the size of the country, the extent and importance of agriculture in the society, the animal disease status and the number of livestock in the country.

The Organisation for Animal Health (OIE) has initiated a major programme called the Performance of Veterinary Services (PVS) scheme to help AMS evaluate the quality and effectiveness of their national veterinary services and identify weaknesses. Evaluations could form the basis for improving deficiencies and building veterinary infrastructure.

Veterinary services cannot develop and operate properly without political commitment and adequate resources. Veterinary services must have enough manpower resources, adequate equipment and training as well as adequate logistic support to carry out their duties.

Strengthening veterinary services also involves a number of other supporting measures such as:

- legislation and veterinary governance;
- epidemiology and surveillance;
- laboratory and diagnosis network;
- reporting and information systems;
- risk analysis and risk assessment;
- emergency preparedness and contingency planning; and
- certification and accreditation.

### **Objective 1: To align animal health legislation and governance for effective disease prevention and control.**

Comprehensive animal health legislation is a key element of effective animal disease control. Without this legislative support, veterinary authorities would be unable to enforce disease prevention or control measures. To be effective in controlling HPAI, basic legislation must provide veterinary authorities with the following powers:

- entry onto livestock-holding premises to inspect animals/livestock and collect samples;
- enforce bio-security measures;

- enforce movement control on animals;
- enforce disinfection, where required;
- enforce culling and other disease control measures; and
- implement compensation measures for culled animals and livestock.

### Key Elements and Proposed Activities

- 1.1.1. Individual AMS must conduct a comprehensive review of their animal health legislation to identify gaps. Some legislation may need to be strengthened or updated for effective disease control. In particular, HPAI should be made a notifiable disease to ensure that timely reporting of outbreaks becomes mandatory.
- 1.1.2. Comprehensive legislation must be supported with effective enforcement measures for disease prevention and control. The enforcement strategies would depend on the specific needs, laws and policies of each Member State.
- 1.1.3. Collaboration with the OIE-AusAID on the Programme to Strengthen Veterinary Services (PSVS) is an option to the Member States to be able to bring national legislation up to global standards. This would also ensure that the animal health legislation at the country level is aligned with the OIE PVS scheme and the Food and Agriculture Organisation (FAO) Draft Handbook on Legislative Alignment.
- 1.1.4. Legislation must also be instituted to strengthen collaboration with livestock keepers and animal production sectors.



**Timeline: 2015**

### **Objective 2: To strengthen the veterinary epidemiology capacity of the ASEAN Member States to detect, report, monitor, investigate and respond to disease threats and outbreaks.**

Rapid detection and reporting of disease are critical elements in HPAI control due to the highly infectious nature of the disease. Outbreaks must be reported to the authorities quickly so that effective control measures can be taken.

A sound animal disease surveillance system is a key tool that provides guidance in the overall disease control strategy. An efficient animal disease surveillance system has several major components such as data collection, collation, analysis and interpretation, and dissemination.

For HPAI control, surveillance (or disease monitoring systems) is essential to:

- detect the presence of HPAI in an area, district or province where the disease has not previously occurred;
- determine the prevalence or level of disease in an area or province where outbreaks have occurred;
- determine the effectiveness of HPAI control programs;
- provide data for the establishment of HPAI free zones; and
- detect the presence of HPAI in different production systems and along the market chain.

### Key Elements and Proposed Activities

- 1.2.1 Member States must establish an effective disease information and reporting system. Depending on the country this system could take the form of a series of village volunteers or reporting centers, veterinary stations or diagnostic centers, electronic transfer of information, etc. Disease outbreak information must be relayed quickly to the appropriate decision making body so that effective disease control measures can be taken.
- 1.2.2 Member States must plan for a surveillance system on a national level, with a mandated Epidemiology Unit within the veterinary service. HPAI must be made a notifiable disease and villagers, farmers and members of the public must be educated to notify the

authorities as soon as possible upon detection of mass mortalities in poultry or other signs of HPAI.

- 1.2.3 Sufficient manpower and resources must be provided for the collection of data, to cover the farms and animal holding premises within their boundaries. Field officers have to be trained to recognize disease symptoms, to collect data and samples and also know some basic epidemiology. They also must have the necessary logistic support.
- 1.2.4 A system to collate, analyze and interpret the data must be established. Statistical and epidemiological tools could be used to analyze and interpret data. This must be supplemented with an efficient dissemination system for information to be used by decision or policy makers in a timely manner. Existing regional reporting system such as the ARAHIS, must be utilised fully.
- 1.2.5 A sufficient pool of trained veterinary officers to carry out surveillance and disease reporting is necessary to operationalise the system. Member States may have to strengthen existing capacity by providing extra manpower and provide adequate training for them. FAO, OIE and some AMS can provide training in epidemiology and surveillance.
- 1.2.6 Appropriate response measures such as movement control, culling, vaccination, etc. must also be institutionalized.



Timeline: 2015

### **Objective 3: To strengthen the capacity of ASEAN Member States to diagnose, confirm and carry out virus characterization for HPAI.**

To support the animal disease surveillance program, a network of diagnostic laboratories is required to test samples and provide diagnostic support. Given the widespread nature of HPAI in some Member States, there will be great demand for laboratory testing for surveillance and disease control.

#### Key Elements and Proposed Activities

- 1.3.1 Reference laboratories are needed as an anchor to support a network of regional laboratories to carry out diagnosis for HPAI. This laboratory network is in turn necessary to support surveillance and disease control measures in the Member States.
- 1.3.2 Member States could use existing laboratory networks, such as the Disease Investigation Centers in Indonesia, or samples could be sent overseas for testing. Laboratories have to be accredited and pass proficiency tests to achieve the required standards.
- 1.3.3 Quality standards for HPAI tests must be established among the existing laboratory network. Test protocols can be harmonized (e.g., Real time, Polymerase Chain Reaction tests) and a system of proficiency tests could be institutionalized to maintain diagnostic standards. AMS may also wish to exchange experts in order to harmonize protocols and standards.



Timeline: 2012

### **Objective 4: To strengthen the capacity of ASEAN Member States for risk assessment.**

Risk analysis is a structured process to evaluate risk. It is frequently used as a tool to estimate the likelihood of an unwanted event occurring and the measures to be taken to minimize the risk of that unwanted event. Under the OIE Animal Health Code, risk analysis comprises the following steps:

- hazard identification;
- risk assessment (this process consists of: release assessment, exposure assessment, consequence assessment, and risk estimation)
- risk management; and
- risk communication.

### Key Elements and Proposed Activities

1.4.1. Regular training programs are required to prepare veterinary officers to carry out risk assessments. These trainings could be done through the Member States, FAO or OIE, and should cover the basic principles of epidemiology, risk analysis and risk assessments.

1.4.2. Risk assessment processes could be developed to support and enhance the effectiveness of HPAI control and eradication strategies. This will allow Member States to identify the risk factors leading to the spread of HPAI and critical areas for successful interventions.



**Timeline: 2015**

### **Objective 5: To enhance the capacity of ASEAN Member States to prepare for and respond to HPAI outbreaks.**

Policies on contingency planning and emergency preparedness vary from country to country depending on disease status (i.e. HPAI-free or persistent), economic circumstances and political commitment.

In order to set up an effective disease detection and reporting systems, Member States must have contingency plans to respond to reports of HPAI outbreaks, focusing on the following key objectives:

- rapidly isolating outbreaks;
- prevent spread of disease through movement controls;
- implement national policy ranging from slaughter to vaccination;
- disinfection of contaminated premises; and
- communication to the public.

### Key Elements and Proposed Activities

1.5.1. Member States should develop appropriate contingency and emergency preparedness plans for HPAI. (Sample activities are described in the box.)

1.5.2. Contingency plans must be regularly reviewed and updated. Where possible, plans should be tested through simulation exercises.

**Emergency preparedness (EP)** covers a wide spectrum of activities including the following:

1. Draw up contingency plans for the veterinary services to respond to disease outbreaks.
2. Make prior arrangements with other government agencies to support the contingency plan.
3. Draw up contracts with commercial companies for provision of manpower resources (i.e. for culling operations), disposal or disinfection and cleaning up services, supplies etc.
4. Stockpile equipment and supplies (e.g. personal protective equipment) for culling or disinfection operations.
5. Develop public communication plans.
6. Train essential staff to implement the contingency plan.
7. Conduct simulation exercises.
8. Coordinate activities between the veterinary and public health sectors.
9. Update contingency plans.



**Timeline: 2012**

### **Objective 6: To strengthen the capacity of ASEAN Member States in establishing a system of farm certification and accreditation.**

A certification and accreditation system is especially important in countries where HPAI is persistent or in countries with sporadic outbreaks. This system encourages accredited farms to put more effort into bio-security measures to retain their accredited status. The certifications give traders and consumers more confidence in poultry and poultry products.

### Key Elements and Proposed Activities

1.6.1 Each AMS should establish a system of accreditation for HPAI free areas or farms and a system of certification to allow trade of poultry and poultry eggs.

- 1.6.2 To take this a step further, the system of accreditation and certification could also be applied on a national basis and between Member States.



Timeline: 2015

## **GOAL 2: Achievement of a disease-free status in progressive manner at compartment, zone, region and country levels (Progressive zoning and cross-border management)**

In situations where the disease is prevalent in one area, eradication can be attempted by progressive zoning. A progressive zoning strategy may provide a solution to ensuring HPAI eradication in the short- to mid-term, for instance, in economically important regions/provinces in relation to poultry trade facilitation.

The progressive zoning approach requires a long-term strategy whereby the progressive eradication of HPAI in designated zones would eventually lead to the complete eradication of HPAI in a given country. This must be applied systematically and requires sustained commitment and resources. A specific timeframe must be defined for each stage of zonal eradication of HPAI.

### **Objective 1: To enable ASEAN Member States to achieve HPAI-free status and expand the free-status in zones and compartments within the respective countries.**

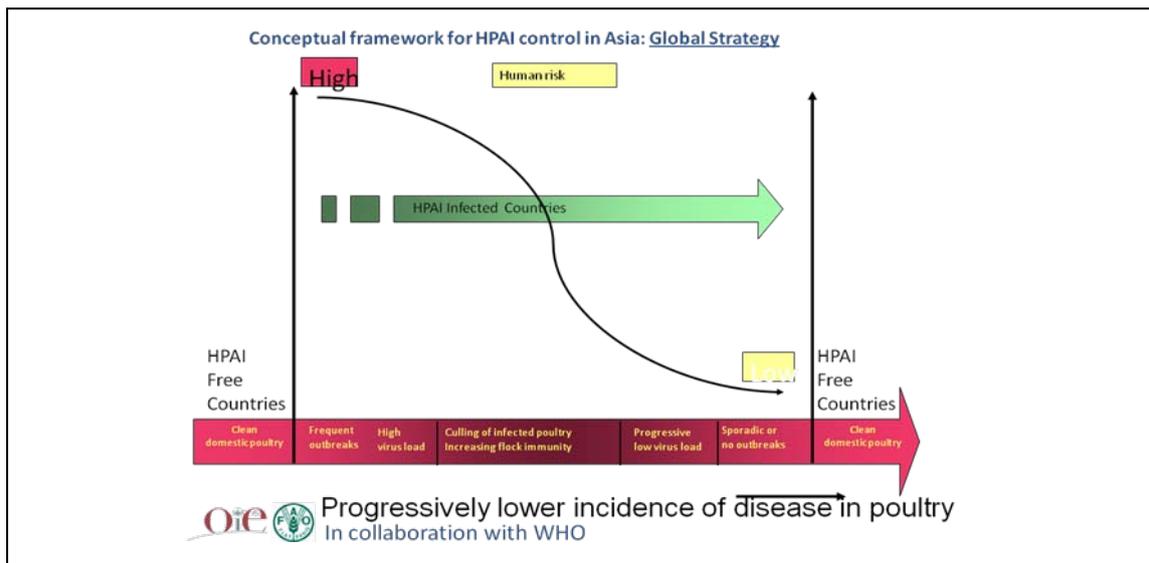
The country may be divided based on the disease status into categories or zones, such as:

- Infected zone (area, district, province, island or region)
- Infected zone with low incidence of disease (area, district, province, island or region)
- Previously infected zone, and no evidence of infection in the past 1 month
- Previously infected zone, and no evidence of infection in the past 3 months
- Previously infected zone, and no evidence of infection in the past 3-6 months
- Free Zone or where there is no evidence of infection in more than 6 months

HPAI eradication measures need to be introduced in the infected zones and the disease situation would be monitored through active or passive surveillance. As the disease situation improves, the zone (area, district, province, island or region) is promoted into a higher category. Gradually, the area eventually becomes a free-zone or a zone where there is no evidence of infection in more than six months. As all the zones (area, districts, provinces, islands or region) reach the status of no evidence of infection, the whole country may be declared as HPAI-free country.

### **Key Elements and Proposed Activities**

- 2.1.1 Develop a zoning strategy based on the disease status of the country and introduce measures appropriate to zones. (*The figure below from FAO shows a progressive zoning approach and some of the recommended measures.*)



2.1.1 Implement progressive zoning by starting from zones that are free of disease backward to infected zones. In this approach, zones of free status are expanded over time.



**Requirements for successful progressive zoning**

1. Movement control can be implemented and the integrity of the zone is maintained for the period necessary before the zone is promoted to a better disease status.
2. Enabling laws exist and supported by enough enforcement officers.
3. Vaccination programmes implemented are able to reduce infection.
4. Stamping out can be implemented when disease incidence is reduced to low level.
5. Surveillance to detect evidence of infection both by means of virology (cloacal swab surveillance) and serology can be conducted.
6. Stakeholders are aware of the programmes being implemented.
7. Bio-safety and containment measures such as disinfection of vehicles that are coming from zones that have lower disease status are implemented.
8. A good recording system for disease monitoring is established.

**Objective 2: To strengthen capacity in mitigating risks of cross-border incursions and harmonising standard operating procedures.**

Border mitigation measures can be introduced to manage the risk of HPAI transmission at borders with the following specific aims:

- to identify high risk areas at the border that are associated with cross-border HPAI transmission;
- to establish specific initiatives based on specific areas;
- to identify common activities to be implemented at the borders;
- to share information on disease situation at the identified borders; and
- to implement border activities in order to reduce disease risk transmission.

### Key Elements and Proposed Activities

- 2.2.1 Understand the production and market chain at the regional level, including the actors and drivers relating to cross border movement of poultry. The Introduction of specific initiatives would enable stakeholders at the borders to be educated and made aware of HPAI.
- 2.2.2 Collaborative actions and activities at border may include harmonization and implementation of quarantine measures, inspection, import-export certification, awareness among traders, and strengthening of human capital.



Timeline: 2016

### **Objective 3: To enable ASEAN Member States to apply the compartmentalisation approach to HPAI as appropriate.**

Compartmentalisation is a practical approach that has high potential for disease management and control. However, a compartmentalisation system can only develop to its full potential in a situation where there is a mutual understanding between government and the farm management sector. Some ASEAN Member States have already moved towards compartmentalisation but have varying levels of partnership status between the public and the private sectors.

### Key Elements and Proposed Activities

- 2.3.1 Explore the feasibility of applying compartmentalisation and facilitate the process of compartmentalisation for adaptation in the AMS with Sectors 1 and 2.
- 2.3.2 Develop guidelines based on OIE standards for compartmentalisation, both for disease control and for trade purposes.



Timeline: 2016

### **GOAL 3: Effective reduction of circulating HPAI virus in the environment leading to its progressive control and eradication (Vaccines and vaccination strategy)**

Member States recognise that effective vaccination of poultry against HPAI to be amongst the important HPAI control measures currently available. However, the adoption of vaccination policy would be in accordance to each country's situation, taking note of the extent and risk of HPAI transmission, the levels and type of poultry production and the capacity to carry out and monitor vaccination. Vaccination is to be considered as an additional measure only if other primary control measures fail, and if applied, it must be in line with OIE/FAO recommendations.

Currently, only Viet Nam and Indonesia have adopted targeted vaccination across all poultry production sectors, and some vaccines used have been produced from local field strains (Indonesia). Amongst the concerns in using vaccination are vaccine quality assurance and monitoring, training of personnel, and inadequate capacities and resources (including local vaccines). Post-vaccination monitoring is done using unvaccinated sentinel birds. The eight AMS that do not practice vaccination have found their present control measures to be adequate.

### **Objective 1: To strengthen the capacity of ASEAN Member States for pre- and post-vaccination surveillance.**

Member States generally agree that vaccination is difficult to carry out, especially if the poultry production system is predominantly sector 4. Member States are enjoined to ensure training in various aspects of vaccination, as well as the availability of resources and capacity to effectively carry out mass vaccination and post-vaccination surveillance.

### Key Elements and Proposed Activities

- 3.1.1 Conduct an inventory of skills and capacity for all aspects of pre- and post-vaccination surveillance.
- 3.1.2 Build the capacity to carry out pre- and post-vaccination surveillance.



Timeline: 2016

### **Objective 2: To strengthen the capacity of ASEAN Member States in ensuring quality and availability of vaccines.**

Implementation of poultry vaccination is based on risk assessment, and that there are available HPAI vaccines that are manufactured and quality controlled to ensure compliance with international standards. Developing an inventory of regional capacity in vaccine production and testing is planned.

What is essentially still lacking is a system for the provision of sufficient quantity of good quality vaccines, effective vaccine delivery, sufficient vaccination coverage, expertise for vaccination monitoring and appropriate exit mechanisms, and research on the dynamics of HPAI infection, disease, transmission and sero-conversion among vaccinated and unvaccinated poultry populations.

### Key Elements and Proposed Activities

- 3.2.1 Develop the capacity and system to store and deliver vaccines cold-chain management and ensure sufficient availability of good quality vaccines.
- 3.2.2 Develop a mechanism to ensure sufficient vaccine coverage



Timeline: 2013

### **Objective 3: To enable ASEAN Member States to develop sound vaccination programmes, including exit strategies.**

Once a vaccination programme is implemented, an exit strategy must be in place to know the end points of the programme and to define determinants of success. Proper surveillance and monitoring tests throughout the vaccination protocol will determine when the virus circulation has been stopped and virus eliminated and vaccination can be halted. An ongoing monitoring programme must also be included to continue active surveillance once vaccination has stopped.

### Key Elements and Proposed Activities

- 3.3.1 The establishment of an Epidemiology Unit within the veterinary services would facilitate the development and implementation of a sound national vaccination programme to achieve sufficient coverage.
- 3.3.2 Allocation of budget and costing for the vaccination programme would ensure that key strategies and activities are implemented.
- 3.3.3 Sufficient and competent staff would be key to the successful implementation of the vaccination programme.
- 3.3.4 An exit strategy should be developed and implemented as part of the vaccination programme.



Timeline: 2013

### **Objective 4: To strengthen engagement of relevant stakeholders, particularly the private sector, in implementing vaccination programmes.**

The decision to implement a national vaccination programme for HPAI is made by the official government veterinary authorities in a given country, with input from local or state authorities and the

commercial poultry industry. Authorities usually consider several factors to assist decision making: the disease situation in the country, structure of poultry production in the country, socio-economic impact, risk of disease, costs and benefits, availability of technology, qualified personnel, and possible impact on markets. These factors make it necessary to engage all the relevant stakeholders in the vaccination programmes.

#### Key Elements and Proposed Activities

- 3.4.1 Conduct consultations and discussions with key stakeholders as part of an overall advocacy strategy to partners.
- 3.4.2 Conduct public awareness campaigns and extension programmes in combination with the control of other diseases.



Timeline: 2012

#### **Objective 5: To ensure preparedness of ASEAN Member States to implement and operationalise effective vaccination strategies, especially in case of emergency.**

Although vaccination should be regarded as just one tool within a broader disease control programme that integrates surveillance, outbreak investigation, disease management systems, and the rigorous implementation of bio-security measures, Member States should have the capacity to implement vaccination programmes, especially during emergencies.

#### Key Elements and Proposed Activities

- 3.5.1 Develop a contingency plan for emergency vaccination that includes the following elements: having sufficient vaccines, as well as a cold chain system to store and deliver the vaccines.
- 3.5.2 Ensure availability of sufficiently trained staff to carry out the vaccination programme.
- 3.5.3 Develop and implement an evaluation of the vaccination programme and an exit strategy.



Timeline: 2013

#### **GOAL 4: Effective and rapid containment of infections and outbreaks in affected flocks or zones (Stamping-out/Culling)**

Stamping-out is the most effective strategy for disease eradication and can only be implemented in animal population. The main objective of stamping-out is to completely eliminate the disease agent from the population. In stamping-out, infected animals and in-contact susceptible animals are culled or destroyed. Elimination of the host (infected and in-contact) will subsequently eliminate the disease agent.

#### **Objective 1: To strengthen existing policies and programmes based on the experiences of the ASEAN Member States.**

There are many factors associated with a successful stamping-out operation in eradicating HPAI. These factors require policy solutions and provision of programmes to ensure that the strategy works on-the-ground.

Policies on culling of poultry when HPAI is detected are noticeably different among Member States. These policies ranged from infected poultry only, infected flock only, infected and in-contact flocks, and poultry in infected zone (zone also varies in size, from a village to an identified area up to two kilometer radius from index case).

Decision on the size of the culling operation is based on availability of resources and concentration of poultry in the area. Some decisions have resulted in the success in eradication, and the others led to disease persistence. Rightly, the decision should be based on disease epidemiology. For example culling of only flocks with positive antibody may overlook in-contact flocks which are still incubating the disease. Culling of poultry based on zone was successfully implemented in Malaysia and Thailand.

### Key Elements and Proposed Activities

- 4.1.1 Review policies and programmes on stamping-out/culling, and identify gaps, strengths and opportunities.
- 4.1.2 Institutionalise national policies/legislations in support of stamping-out/culling.
- 4.1.3 Develop a stamping-out/culling plan based on the situation and needs of the country. The requirements for a successful culling operation are described in the box.



### Factors to Successful Stamping-out/Culling Operation

- **Size of outbreak in comparison with availability of resources to eliminate the infected and in-contact susceptible animals.** Larger outbreaks require more resources and time. Smaller outbreaks are easier to handle. However, failure, slow or ineffective stamping-out may result in further spreading of disease and difficulty of managing in the long-term.
- **Effectiveness of surveillance and notification system.** An effective surveillance system should be able to detect presence of infection or evidence of infection. Good veterinary services with sufficient resources should be able to identify population to be actively surveyed. Early detection of disease presence and quick response is a key to productive surveillance. Notification, on the other hand requires farmers and public at large understand the disease manifestation and know where to report when they notice such signs. Public awareness and campaign to these effects are crucial.
- **Early confirmation** (capable diagnostic laboratory) of outbreaks will limit spreading of the disease.
- Farmers involved giving **full cooperation** (compensation scheme encourage cooperation).
- **Case definition** for HPAI cases should be clearly spelled out.
- Effective **movement control**, including establishment of checkpoint at every exit route from infected area

## Requirements for a Successful Culling Operation

1. Culling operation teams (bird catchers, recording teams for compensation purposes, gassing/slaughtering, carcass transporting teams, carcass disposal and burial teams, disinfection teams, farmers relationship teams, movement controls, check points control, logistic arrangement teams, mopping-out teams, and operation center teams) established, well manned and can be mobilized.
2. Culling operation team members are well briefed.
3. Culling operation teams are well equipped with necessary equipment which includes protective gear, chemical and disinfectant, gassing equipments, plastic bag, etc. as well as food and drinks for the team members.
4. Standard operating procedures (SOPs) are available to all members.
5. Sufficient logistics and vehicles including excavator or back-hoe for burial preparation and disposal of carcasses.
6. Good cooperation from other related agencies such as Public Health, Police, Town Council, Local Community, NGOs and Volunteers.
7. Accurate information on size of poultry population to be culled.
8. Presence of facility in culling operation area that can be used as operation centre, lodging and rest area.
9. Good cooperation received from farmers or individuals whose poultry are to be culled (availability of compensation system to encourage good cooperation).
10. Stakeholders and general public are accurately updated on progress of operation.
11. Operation area is a protected zone, entry and exit routes to the area are well policed.
12. Once culling operation is completed, disinfection of the area can be conducted.
13. Culling and other measures used in the operation should be backed-up by sufficient legislation.

## Objective 2: To reinforce capacity of ASEAN Member States in eliminating the virus from infected environment and facilities and preventing the spread of infection to other areas.

While culling operation takes place in an infected area, it is crucial to ensure that disease agents are contained. Poultry are not allowed to leave the area, vehicles leaving the area must be disinfected, and culling operation workers must not be allowed to enter any poultry farms for at least a week.

### Key Elements and Proposed Activities

- 4.2.1 Organise mopping-out teams for bio-elimination. The teams will disinfect the culling operation area once the culling operation is completed. The teams will pick up any poultry that may be present and disinfect the areas as well.
- 4.2.2 Implement an effective decontamination practice that should be able to kill the virus. Absence of clinical symptoms after 21 days can be used as indicator for successful culling and disinfection.
- 4.2.3 Enact and strengthen sufficient laws related to disease control and eradication including movement control. The objective of movement control is to prevent the spread of infection to other areas. This measure needs strong veterinary services and capable enforcement officers backed by sufficient legislative powers and deterrent penalties exist.



Timeline: 2015

**Objective 3: To strengthen mechanisms within the ASEAN Member States to encourage reporting, enjoin the cooperation of farmers and producers in implementing culling policies and facilitate the implementation of stamping-out measures.**

Compensation is a crucial element of a successful stamping-out operation. Depending on the Member States' capabilities, the compensation scheme varies in amount and form (monetary and/or in-kind). In country where monetary compensation is available, the rates vary from a token amount to 50%, 70% or full market value. Although, a full market value compensation rate is ideal, any rates and other relief systems (i.e. replacement of stocks, provision of feed and other inputs, tax breaks, etc.) that are acceptable to the farmers should be encouraged. In order to eradicate HPAI in the region, a compensation scheme must be established. The schedules for the establishment of the compensation scheme are indicated in the following table.

Establishment of Compensation Scheme

Category	AMS	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
HPAI Freedom	Brunei DS	CSA										
	Philippines	CSA										
	Singapore	CSA										
Regained HPAI Freedom	Malaysia (peninsular)	CSA										
	Thailand	CSA										
HPAI Sporadic	Cambodia	NCS	CSA									
	Laos	NCS	CSA									
	Myanmar	NCS	CSA									
HPAI Persistent	Indonesia	NFCS	CSA	CSA								
	Vietnam	NCS	CSA	CSA								

CSA= Compensation scheme available, NCS= No compensation scheme, NFCS=No functional compensation scheme

**Key Elements and Proposed Activities**

- 4.3.1 Establish an appropriate compensation scheme to facilitate and improve effectiveness of stamping-out operation. The compensation scheme should be able to:
- encourage early reporting and discourage “disease hiding” by the farmers;
  - enable good cooperation received from affected farmers in a culling operation;
  - reduce smuggling of poultry out of infected zones, thus improve bio-containment to minimize the risk of spreading the disease; and
  - compensate owners and farmers for losses due to destruction of poultry by government authority.



#### **Objective 4: To strengthen the capacity of ASEAN Member States in minimising the negative impacts of HPAI and HPED on the vulnerable sector/s.**

Stamping-out does have direct and indirect impact on the livelihoods of vulnerable groups in society. It is therefore necessary that relevant policies recognise these livelihood and social impacts.

##### Key Elements and Proposed Activities

- 4.4.1 Define an emergency response plan, which may take the form of compensation based on market value, ex-gratia payment, in-kind replacement of inputs, or other forms of financial or other resource support to assist in livelihood rehabilitation.
- 4.4.2 Implement the plan as needed, evaluate the effectiveness and revise the plan as necessary.



**Timeline: 2012**

#### **GOAL 5: Effective surveillance capacity to detect and respond appropriately to the presence of H5N1 virus infection and other disease threats (Surveillance and Monitoring)**

Within ASEAN, there are variations and similarities in the structure of the surveillance system of countries, depending on availability of resources and technologies. Member States generally adhere to the FAO and OIE guidelines on surveillance. The presence of a large number of poultry in the sector 3 and 4 production system focuses the emphasis of surveillance at the grassroots level involving community participation.

The immediate aim of surveillance is disease prevention and control, but ultimately for eradication of HPAI. Depending on shifts in the disease status (e.g., zero or low to high prevalence) the surveillance system could either be passive or active.

#### **Objective 1: To strengthen capacity to recognise risk areas and products (carriers) in relation to the dominant poultry production sector in a country.**

Surveillance activities need to be conducted throughout the country, but there are regions that seem to be more at risk or are important poultry-raising regions. Countries should be prepared for changes in their HPAI risk or outbreak situation or epidemiological status.

##### Key Elements and Proposed Activities

- 5.1.1 Develop a surveillance system based on the following HPAI risk criteria:
- areas where there are high (dense) backyard (free-range) poultry population;
  - areas where poultry are raised near wetlands (lakes, rivers, coastal areas) and other areas where wild birds gather;
  - live poultry markets within the above areas;
  - areas with a significant concentration of poultry farms (commercial/industry) in close proximity to villages with free-range poultry;
  - areas where free-grazing ducks are raised;
  - areas (especially markets) along regional trade routes and unsecured borders; and
  - wetlands where wild and migratory birds are present.
- 5.1.2 Conduct monitoring of vaccinated populations for virus circulation as part of the disease control programme.
- 5.1.3 Assess specific risk situations of Member States.



**Timeline: 2013**

**Objective 2: To strengthen the capacity of ASEAN Member States to conduct cost-effective surveillance system and launch appropriate and timely response at both the national and sub-national levels.**

Effective surveillance should start at grassroots level (that is within villages) and all the essential elements must be in place such as -- early detection, collection and reporting of (simple) epidemiological information, and collection of samples for virological and serological diagnosis, especially in HPAI-free areas.

Key Elements and Proposed Activities

- 5.2.1 Establish grassroots surveillance mechanisms based on existing surveillance systems that are known to be effective, such as the Participatory Disease Surveillance (PDS) system in Indonesia, X-ray system in Thailand, village animal health surveillance system in Cambodia, and intensive surveillance applied within a 10-km radius zones in Malaysia.
- 5.2.2 Conduct training programmes for animal health contact persons at village, district and provincial levels.



Timeline: 2012

**Objective 3: To strengthen capacity to integrate/interface surveillance system between animal and human health for policy and for disease mitigation.**

The need to strengthen cross-sectoral and inter-agency partnerships and collaboration between animal and human health is a necessary requirement for integrating surveillance systems for policy and disease mitigation. Some of the specific areas for collaboration involve the conduct of joint outbreak investigation and formulation of communication strategies and mechanisms.

Key Elements and Proposed Activities

- 5.3.1 Establish/harness formal networks and cooperation between the animal health and human health sectors for sharing of surveillance data and best practices, with legal framework as appropriate. This can be done either through formal committees, task forces and working groups as needed.
- 5.3.2 Conduct regular and routine mechanisms for cooperation, at all levels of government (local, sub-national and national levels)



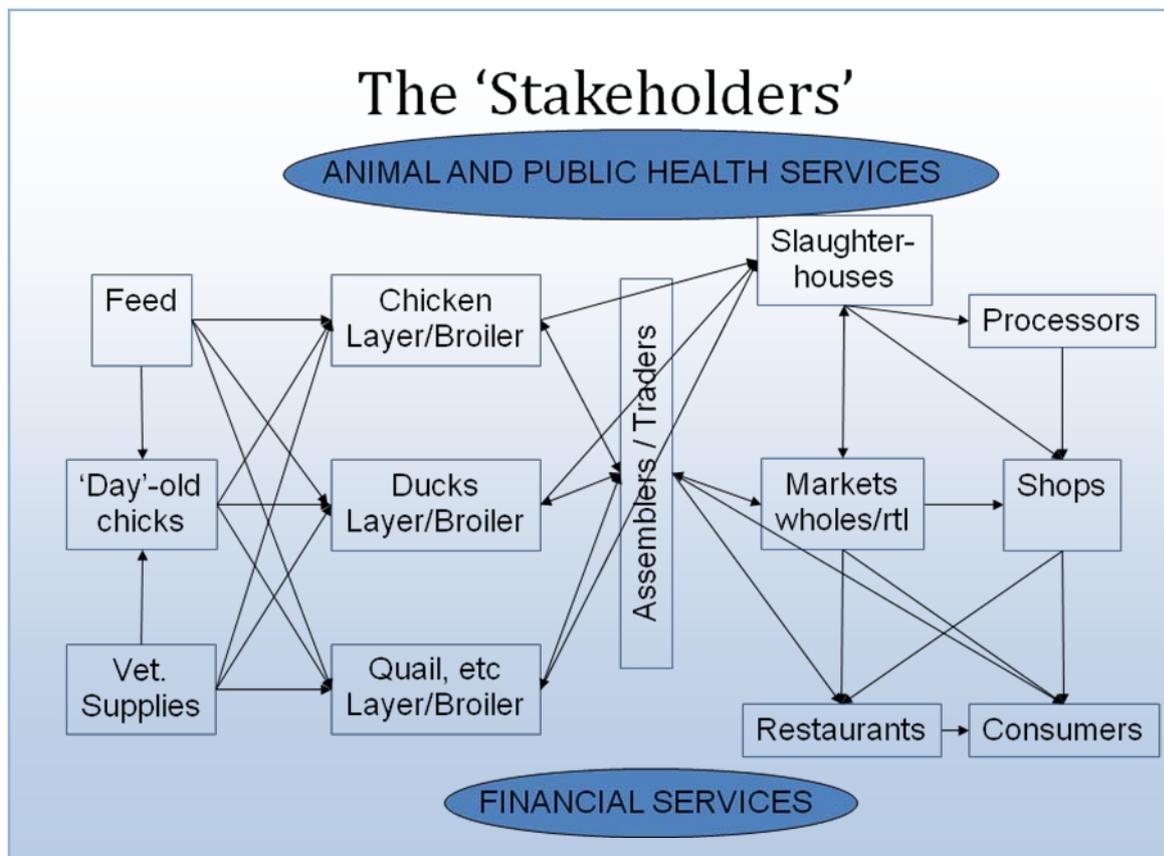
Timeline: 2012

**GOAL 6: Sustainable market chain policies and interventions in reducing risks of spreading and contamination to poultry and human populations (Market-chain management)**

Market chain activities form an integral part of a comprehensive HPAI surveillance, outbreak control, and prevention programme with the ultimate goal of eradicating HPAI. As the experience and knowledge of HPAI control has increased in the ASEAN region since the spread of H5N1 in 2003, the important role played by poultry market systems has become more apparent. In particular, poultry market chains appear to serve as a means of bringing the general human population in contact with the H5N1 virus and also as a means of disease spread among farms and to live birds in the market chain.

Surveillance and risk reduction activities along the market chain are valuable components of a HPAI control and eradication programme. Regular engagement with market chain stakeholders to gather information, plan actions, and implement interventions can reinforce HPAI control and prevention activities at source, such as farm bio-security, compensation, and vaccination. Such engagement can also serve to reduce risk to food-borne diseases and to improve the poultry product quality in general.

Conversely, market chain activities alone may not be sufficient to control and eventually eradicate HPAI, and thus the activities described here should be a part of a broader control programme which also addresses HPAI on commercial farms and in village poultry.



**Objective 1: To strengthen the capacity of ASEAN Member States in better understanding of the market chain and the risks of disease transmission along the market chain.**

A market programme should seek to understand patterns of disease spread and viral contamination within the market chain and reduce viral contamination and spread of H5N1 to humans, birds, and farms. The latter objective can be accomplished by both bio-security and sanitary improvements to market locations as well as long-term restructuring of market systems to better regulate poultry slaughter and the marketing of poultry products. The HPAI Control Programme in Indonesia has activities underway in each of these areas and may serve as a useful model for other Member States.

Key Elements and Proposed Activities

- 6.1.1 Conduct basic profiling of market location and type before initiating longitudinal surveillance. Market chain surveillance can serve two objectives. First longitudinal environmental surveillance of H5 subtype virus in markets can serve as an indirect indicator of public health risk to humans as well as of HPAI prevalence in poultry.
- 6.1.2 Collect detailed information on the geographic origin and contents of all incoming poultry deliveries. Market chain surveillance can be utilized to identify geographic areas where HPAI risk on farms is high and to determine the relative risk associated with different types of poultry. In particular, longitudinal surveillance at intermediate collection points between farms and retail markets, such as collector yards, wholesale markets, and slaughterhouses, can be a powerful means of assessing risk from commercial poultry, especially in the absence of compensation and transparent reporting of outbreaks from commercial poultry farms.



## **Objective 2: To enable ASEAN Member States to implement strategies and structural changes to manage risks in the production and market chain.**

Risk reduction along the market chains can be readily achieved in both the short-term and long-term. For immediate risk reduction, following a basic profiling of marketing locations, movement patterns among market locations should be assessed in order to identify markets with a high degree of connectivity to farms. Network analysis can also be utilized to identify groups of markets which cluster together.

In Indonesia, collector yards were identified as a critical control point for reducing disease spread between farms due to the fact that the vast majority of movements into collector yards are directly from farms.

### **Key Elements and Proposed Activities**

- 6.2.1 Once appropriate critical control points are identified, explore opportunities for sanitary and bio-security interventions in collaboration with public and private sector stakeholders. Even in the absence of strong regulatory capacity, effective interventions can be identified and quickly established. For example, cleaning and disinfection stations can be established to decontaminate trucks leaving large-scale collection areas with cost-recovery applied via a cleaning fee levied on the trucks. In areas with effective regulation, the establishment of checkpoints to verify that trucks returning from marketing areas have been properly cleaned could be a highly effective intervention.
- 6.2.2 In retail markets, improve sanitation through the introduction of market cleaning days in which the market is emptied of live poultry and thoroughly cleaned and disinfected. Segregation of poultry types, especially ducks from chickens, as well as segregation of the slaughter area from the consumer retail area are also effective risk reduction interventions which can be implemented in the short-term.
- 6.2.3 For long-term risk reduction, establish physical infrastructure and restructure regulatory frameworks of the poultry marketing system. This is especially needed in areas where modern poultry production practices have been superimposed on traditional post-production market systems resulting in large volumes of live poultry moving from farms to consumers. Through careful planning, especially with consumers, poultry traders and vendors, market restructuring processes can be gradually implemented in order to phase out high-risk live bird marketing practices and replace with low-risk slaughter and transport practices which can be more easily regulated with the objective of improved food safety. Due to the need for consistent cold chain and reliable monitoring of slaughter practices, restructuring should only be considered if cold chain infrastructure and regulatory capacity is adequate, otherwise the risk of food-borne disease outbreaks will outweigh the benefit of reduced public health risk of H5N1 to consumers.



**Timeline: 2013**

## **Objective 3: To conduct socio-economic assessment as an ongoing activity for the market chain.**

A sustainable and ongoing mechanism for socio-economic assessment should be integrated into the market programme. Regular engagement with market chain stakeholders to gather information, plan actions, and implement interventions can reinforce HPAI control and prevention activities at source.

### **Key Elements and Proposed Activities**

- 6.3.1 Conduct regular monitoring of risk indicators such as price and socio-economics for poultry commodities.
- 6.3.2 Assess production and marketing margins and identify stakeholders along the market chain.



**Timeline: 2012**

## **GOAL 7: Enhancement and promotion of bio-security as a long-term, cost-effective preventive measure to keep the HPAI virus out of the farms/flocks (Enhanced Bio-security)**

Bio-security refers to all measures taken to ensure that the HPAI virus stays out of poultry farms and any other premises that keep poultry or birds. Given the widespread nature of the virus in countries where HPAI is prevalent, enhanced bio-security is important for farms and other bird-keeping premises to remain free from HPAI.

In the Asian context the poultry industry is divided into four sectors (as characterised by FAO) as follows:

- Sector 1 – large integrated commercial poultry farms with high bio-security;
- Sector 2 – small to medium commercial poultry farms with moderate to high bio-security;
- Sector 3 – small commercial poultry farms with low bio-security;
- Sector 4 – backyard poultry with little or no bio-security.

Given the difference between sectors 1-3 commercial poultry farms and sector 4 backyard poultry, the guidelines in this section will be divided between sectors 1-3 and sector 4.

### **Objective 1: To strengthen the capacity of the ASEAN Member States to design and implement effective bio-security measures for Sectors 1-3 poultry farms.**

In these sectors where producers have a tighter control of their operations, policies and measures on bio-security should aim for the prevention and reduction of field challenge in their areas of operation. Besides the suggested guidelines (box), producers need to constantly monitor areas or risk factors such as origin of inputs (hatching egg, feed, beddings, etc.). Commercial operators should also be linked with prevention, contingency and emergency plans at national and regional levels.

#### **Key Elements and Proposed Activities**

- 7.1.1 Implement adequate bio-security measures in commercial poultry farms, poultry slaughterhouses and poultry holding premises in consultation with the poultry industry.



**Timeline: 2013**

#### **Suggested Guidelines for Enhanced Biosecurity in Sectors 1-3 Commercial Poultry Farms**

1. The poultry farm should be located in an area that is free from other poultry or birds (preferably within 1 km radius).
2. The entire perimeter of the poultry farm or bird-keeping premises must be completely fenced.
3. In a commercial farm, the production areas must be completely fenced to prevent unauthorized entry.
4. The farm should restrict entry to essential staff and vehicles only.
5. There should be disinfection facilities for personnel and vehicles at the farm entrance and upon entry into the production area.
6. All persons entering the farm or the production area should undergo appropriate bio-sanitation.
7. Poultry or bird houses must be completely bird-proofed to prevent entry of wild birds.
8. There must be disinfection facilities for vehicles, poultry crates, farm equipment, etc.
9. No bird or avian products (e.g., eggs) should be brought into the farm unless from authorized sources.
10. Replacement birds or day-old chicks must undergo an appropriate period of quarantine.
11. Farm should have proper means of rodent control.
12. No mixing of species (e.g., chickens and ducks) on the farm.
13. Poultry or birds that have been sent to the market or slaughterhouse should not be brought back to the farm.
14. Proper disposal areas of waste and dead birds should be provided.
15. No sharing of equipment or personnel between farms.

### **Objective 2: To enable ASEAN Member States to develop sound, practical and innovative bio-security measures for Sector 4 poultry.**

Sector 4 backyard poultry, unlike other sectors, has essentially free-ranging poultry, and there is little or no bio-security. In this scenario, it is difficult to apply the guidelines described in the box.

### Key Elements and Proposed Activities

7.2.1 For Sector 4 poultry, implement risk communication and public education activities. It is important to educate the villagers about the risks and threat from HPAI and the importance of taking appropriate measures to prevent their poultry from being infected by HPAI.

7.2.2 Conduct regular consultations between villagers and the veterinary services on HPAI and its threat to poultry and humans. These consultations need not be restricted to HPAI but could also cover animal husbandry issues and how to improve general animal health. This could be a form of public private partnership (PPP) as practised in Indonesia or community participation as practised in Viet Nam.

7.2.3 Conduct technical consultations to review existing bio-security guidelines for Sector 4 poultry and also provide documentation on health and production systems that could lead to development of trigger mechanisms for outbreak investigation.

#### Examples of Key Messages for Risk Communication and Public Education

- Caging of poultry (where possible)
- How to identify sick poultry (for backyard chicken)
- Not to harvest or eat dead or dying poultry
- Proper disposal of dead poultry
- Avoid introducing poultry from unknown sources
- Report high poultry mortality to the veterinary authorities
- Use of vaccines (if appropriate)



Timeline: 2014

## Cross-Cutting Strategies

### Multi-sectoral collaboration

The multidimensional nature of HPAI, which involves different health domains and socio-economic dimensions, requires a wide range of stakeholders and strengthened collaboration and partnerships across various disciplines, sectors, departments, ministries, institutions and organisations at country, regional and international levels. The success of the HPAI Roadmap is dependent on synergy and complementarity of collaboration taking into account comparative advantages of all the relevant stakeholders in this campaign.

At the national level, cross-sectoral collaborative activities for priority actions need to be better defined. Clear mechanisms and agreements will have to be developed for increased collaboration and interaction at all levels. These mechanisms should be sustained beyond crisis situation.

At the regional and international levels, ASEAN will continue to strengthen collaboration with technical and development (FAO, OIE, WHO) as well as dialogue (Plus Three countries – China, Japan and Republic of Korea) partners through established frameworks and regional networks on diagnosis, surveillance, research and development, and socio-economic issues.

To enhance ASEAN cooperation on animal and human health, the ASEAN HPAI Taskforce and the ASEAN Sectoral Working Group on Livestock (ASWGL) will also strengthen its collaborative efforts with the ASEAN Expert Group on Communicable Diseases (AEGCD) and ASEAN Technical Working Group on Pandemic Preparedness and Response (ATWGPPR) as well as the implementation of the ASEAN Plus Three Joint Recommendations and Workplan on Animal and Human Health Collaboration for Emerging and Neglected Zoonotic Diseases.

*Multi-sectoral collaboration is expected to be further strengthened with the institutionalisation of a **regional coordination mechanism** on animal health and zoonoses to consolidate regional capacity to address disease threats to animal and human health, food security, rural development and poverty alleviation in the region.*

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## Communication

At all levels, the Roadmap gives primacy to the prevention of disease emergence and spread through dialogue, participation and community “ownership” of interventions. This also recognises the importance of two-way communication to ensure that not only is the public informed about new health threats but the information and practices at the community level influence national, regional and international disease response strategies.

*To complement and synchronise with the Roadmap, a Regional Communication Strategy will be developed to provide communication support, recognising that the public is a key partner in the effective implementation of the Roadmap.*

Moreover, the Roadmap aims to facilitate an enabling policy and social environment that contributes to disease prevention and response through strategic communication approaches and campaigns that are collaborative, coordinated and guided by experts.

To complement and synchronise with the Roadmap, a Regional Communication Strategy will be developed to provide communication support, recognising that the public is a key partner in the effective implementation of the Roadmap.

## Private Sector Engagement

Effective long-term public-private partnership (PPP) is necessary for the success and sustainability of the Roadmap. This would involve a strong coalition of specialised international agencies, donors and various government ministries with the key private sector players composed of poultry and livestock producers, farmer cooperatives, input suppliers, traders, extension workers, etc.

At all levels, engagement and partnership with the private sector will have to be strengthened by establishing and sustaining constructive mechanisms for dialogue, consultation, joint initiative and support.

## Research and Development

Research activities have to constantly address demand for information that supports further capacity building and the application of cost-effective and science-based interventions and control measures. This will be enhanced by identifying strategic research initiatives appropriate to the region and facilitate the engagement of national governments, research institutes, technical and development organisations, and private industry in collaborative research undertakings.

Priority research areas should include socio-economic assessments of risk factors and strategic interventions to improve understanding of impacts and benefit-cost ratios of various interventions from surveillance, capacity building and disease control options.

## Narrowing the Development Gap

There are significant development challenges that need to be overcome for some ASEAN Member States in order to fully address HPAI at the national level. The regional initiative should acknowledge the social and economic differences among Member States and the realities that there are varying levels of resources allocated for HPAI.

Enhancing regional and sub-regional cooperation frameworks would pave the way towards reducing the development gap in ASEAN, and in ensuring that the region would address HPAI in a united and coordinated way.

## Implementation Arrangements

Current institutional arrangements for the control and eradication of HPAI reflect a multi-agency and multi-sectoral cooperation among ASEAN Member States, international organisations and donor agencies.

### Implementation Mechanism and Workplan

In the short-term, the Roadmap will be coordinated by the ASEAN Secretariat and HPAI Taskforce by overseeing the implementation and alignment of action plans at the national level, and closely linked with the FAO/OIE Global Framework for the control of transboundary animal diseases (Global Framework for Transboundary Animal Diseases).

In the mid-and long-term, the Roadmap will become the blueprint for the institutionalised regional coordination mechanism on animal health and zoonoses for the control and eradication of HPAI.

Ultimately, the Member States which implement national programmes for HPAI and other HPEDs, will be the main implementers of this Roadmap.

A strategic schedule that includes key milestones to progressively control and eradicate HPAI shall form an integral part of this Roadmap.

### Targets and Timeline for HPAI-Free Status

Progression of the campaign based on HPAI clusters in the region

Cluster/Category	2010	2013	2016	2020
HPAI-Free (Brunei Darussalam, Philippines, Singapore)	Free	Free	Free	Free
Regained HPAI-freedom (Malaysia, Thailand)	Free	Free	Free	Free
Sporadic outbreaks (Cambodia, Lao PDR, Myanmar)	Sporadic	Sporadic	Free	Free
HPAI-Persistent (Indonesia, Viet Nam)	Persistent	Persistent	Sporadic	Free

### Funding Arrangements and Resource Mobilisation

Resource mobilisation will include funding mechanisms and sources at both national and regional levels (e.g. the continuation of project/programmes-implementations through grants from dialogue partners, donors and collaborative arrangements with FAO and OIE). Most of the projects and programmes to be developed from the Roadmap are expected to be implemented through multi-agency and donor support.

The ASEAN Animal Health Trust Fund, with contributions from Member States, will be a vehicle to draw resources from other ASEAN and non-ASEAN sources. Regional experts' utilisation will also be maximised

## Monitoring and Evaluation

Progress in the implementation of the activities and programmes under the Roadmap will be monitored, reviewed and disseminated to all relevant stakeholders. The ASEAN Secretariat shall review and monitor compliance of implementing the Roadmap. Indicators and tools for evaluation will have to be identified to monitor progress.

Monitoring and evaluating the progress of implementation of each elements of the Roadmap will be done through the establishment and maintainance of a set of performance indicators and regular progress reporting to all relevant stakeholders.

This Roadmap is a living document and be reviewed periodically, taking into account dynamic regional and global developments, to ensure that the activities and programmes are focused on achieving its set goals.