THE NATIONAL STEERING COMMITTEE
FOR AVIAN INFLUENZA CONTROL AND PREVENTION

NATIONAL STRATEGIC FRAMEWORK FOR AVIAN AND HUMAN INFLUENZA COMMUNICATIONS

2008-2010

Hanoi, April 2008

THE NATIONAL STEERING COMMITTEE FOR
AVIAN INFLUENZA CONTROL AND PREVENTION

NATIONAL STRATEGIC FRAMEWORK FOR AVIAN AND HUMAN INFLUENZA COMMUNICATIONS 2008 - 2010

Prepared by the Partnership for Avian and Human Influenza (PAHI)
Hanoi, April 2008

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MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

No. : 2055/QD-BNN-HTQT

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

Hanoi, 9th July 2008

DECISION

Promulgation of the National Strategic Framework on Communications for Avian and Human Influenza Control and Prevention, 2008 – 2010

THE MINISTER OF THE MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

Based on the Decree No. 01/2008/ND-CP dated 03rd January, 2008 of the Government about assigning functions, tasks, rights and structure of the Ministry of Agriculture and Rural Development;
Considering the request by the Director General of the International Cooperation Department, cum Director of the Partnership of Avian and Human Influenza,

DECIDES:

Article 1. Promulgate the National Strategic Framework on Communications for Avian and Human Influenza Control and Prevention, in 2008 – 2010 together with this Decision.

Article 2. Implementation
The Ministry of Agriculture and Rural Development as the standing body for the National Steering Committee on Avian Influenza is responsible for arranging implementation of the Strategic Framework with the following tasks:

1. Direct, monitor and supervise the implementation of the Strategic Framework by Ministries, sectors and localities; act as the national focal point for international organizations regarding communications for avian and human influenza control and prevention.
2. Supervise and evaluate the overall implementation of the Strategic Framework, specific programmes and plans of different agencies.
3. Closely cooperate with the Ministry of Health to implement the Framework in the health sector.
4. Closely coordinate with Ministries and sectors working on communications for avian and human influenza control and prevention to integrate the Framework into their action plans.

Based on the Strategic Framework, organizations working in this field shall develop their own specific strategies, programmes, and plans.

Article 3. This Decision becomes effective from the signing date; the Head of the MARD office, the Director General of International Cooperation Department, the Director of the Department for Animal Health, the Director of the Department for Livestock Production, members of the National Steering Committee on Avian Influenza Control and Prevention, and related agencies, organizations and individuals are responsible to implement this Decision./.

To:
- As stated in item 3;
- Prime Minister (for reporting);
- The Office of Government;
- National Steering Committee for Avian Influenza Control and Prevention;
- Ministries: Health, Investment and Planning; Finance; Education and Training, Science and Technology, Natural Resources and Environment, National Defense, Public Security;
- Vietnam Women's Union, Vietnam Farmers Union, National Veterinary Association, Vietnam Poultry Farming Association, Vietnam Feed Association;
- PAHI Secretariat;
- Filing: Ministry Office, International Cooperation Department (NVH-25)

MINISTER
CHAIR OF THE NATIONAL STEERING COMMITTEE FOR AVIAN INFLUENZA CONTROL AND PREVENTION

Cao Duc Phat
(Signed)

INTRODUCTION TO THE STRATEGIC FRAMEWORK

The Government of Vietnam together with national agencies and international partners responding to the challenge of Avian and Human Influenza (AHI) have agreed to jointly implement and support a single overall framework – the Integrated National Operational Programme for Avian and Human Influenza (OPI), 2006-2010 (also known as the Green Book) – and to promote effective coordination of different activities within this overall programme through the Partnership for Avian and Human Influenza (PAHI).

Within this overall framework, the Government and other members of the Partnership have jointly developed this Strategic Framework for AHI Communications, 2008-2010 to coordinate all public awareness raising and behaviour change communications related to AHI carried out by different activities, projects and programmes within the agriculture and health sectors.

This Strategic Framework focuses on the current WHO global pandemic alert Phase III, and addresses two main scenarios: (i) general communications under Phase III when there are no current poultry outbreaks or human cases detected in the local area, and (ii) communications targeted at areas with a current outbreak and/or human case detected, including both the control itself and neighbouring areas. Planning for pandemic communications related to higher WHO alert phases through to Phase VI will be addressed through a separate process that is outside of the scope of the current document.

Chapter One provides the background to the development of the Strategic Framework for AHI Communications of the current joint strategy, briefly reviewing coordination of AHI communications within the overall national response to AHI from late 2003 until the present. The development of the current Strategic Framework has provided an opportunity to revisit the earlier identification of key messages based on current technical knowledge, practical experience, and the changing context of the national response.

Chapter Two outlines the purpose of the Strategic Framework and describes the main steps to develop and implement the Strategic Framework. In support of the overall Green Book programme, the Strategic Framework for AHI Communications promotes coordinated, technically sound, feasible and effective behaviour change communications in support of overall efforts in the agricultural sector to control and prevent the circulation of Highly Pathogenic Avian Influenza (HPAI) in poultry, and in the health sector to protect humans from infection with the virus and prevent a human pandemic. Chapter two identifies the expected steps to consolidate the overall annual plan for AHI communications activities based on the activities proposed by each participating agency, to evaluate the strategy and to provide for annual review to adjust the framework in the coming years.

Chapter Three focuses on how different agencies, projects and programmes should build on this to apply the Strategic Framework to their work. This chapter outlines in more detail the process for technical and practical ratings of behaviour outcomes linked to specific target groups, as proposed by PAHI members who are implementing or supporting AHI communications.

Chapter Four reviews the overall findings from the analysis of 94 proposed behaviour outcomes for the agriculture sector and 90 proposed behaviour outcomes for the health sector. Overall priorities for behaviour change communications for the agriculture and health sectors are identified.

Chapter Five addresses the rating and analysis of behavioural outcomes of key target groups to be addressed by the agriculture sector. For each behavioural outcome under the relevant scenario as outlined above, a technical and feasibility rating are given. Further detailed analysis of the barriers to achieving these behaviours is available in Annex III.

Chapter Six addresses the rating and analysis of behavioural outcomes of key target groups to be addressed by the health sector. For each behavioural outcome under the relevant scenario as outlined above, a technical and feasibility rating are given. Further detailed analysis of the barriers to achieving these behaviours is available in Annex IV.

Chapter Seven identifies key areas for further research that have been identified through the process of developing the Strategic Framework, related both to technical issues and practical feasibility.

The result of this participatory process is a Strategic Framework encompassing specific target groups and behavioural outcomes that are technically relevant, practically feasible, and prioritized by national authorities. Decision makers and programme planners working on behaviour change communications for AHI control and prevention can use this framework to decide, further prioritize and ultimately plan communication interventions.

It is expected that the use of this Strategic Framework by all AHI activities, projects and programmes will lead to strategic, coordinated, technically sound and practically effective AHI behaviour change communications in the agriculture and health sectors during the coming three years.

OVERALL PRIORITIES FOR AHI BEHAVIOUR CHANGE

Based on the technical and practical ratings of 94 proposed behavioural outcomes for the agriculture sector and 90 proposed behaviour outcomes for the health sector, GoV focal points have identified these overall priority behavioural outcomes.

	Non-Outbreak	Outbreak
Agriculture	Poultry raisers actively comply with official poultry vaccination schedules. Regularly clean poultry raising areas (yards and pens). Clean vehicles, boots, cages, containers, and other equipment after visiting wet markets or raising farms and before returning to the farms. Immediately report of sick or dead poultry to veterinary officials and local authorities.	Immediately report of sick or dead poultry to veterinary officials and local authorities. Culling and disposal of sick and dead poultry is carried out under supervision of local authorities and PPE is used. Poultry and poultry products are not moved from areas with active disease for 21 days. Restocking of poultry is delayed for at least 1 month after an outbreak.
Health	Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Eat only thoroughly cooked poultry and poultry products (no pink meat or runny eggs). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating. Immediately report of sick or dead poultry to veterinary officials and local authorities.	People with fever > 38^{o}C have to go to their local health station for evaluation, especially if there is sick or dead poultry in surrounding environment. Immediately report of sick or dead poultry to veterinary officials and local authorities. Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating.

CHAPTER 1. BACKGROUND

Vietnam has been one of the worst affected countries in the current ongoing highly pathogenic avian influenza A (H5N1) panzootic[1]. From late 2003 through December 2007, there have been five main waves of outbreaks in poultry in the country, with 100 human cases detected, of which 46 were fatal. During the same period, the virus has also been present in many other countries in the region, and has also been detected in birds in the Middle East, Europe and Africa.

There is a strong concern shared by governments and inter-governmental agencies throughout the world that if the virus develops the ability to spread easily from one person to another, a global pandemic[2] could occur, with potentially devastating consequences for human health and the global economy. Since the initial outbreaks and human cases were reported, WHO has issued a global Pandemic Alert Phase III (out of VI), highlighting this potential risk of a new human pandemic[3].

1.1 Overall AHI program and coordination

The Government of Vietnam has been responding to AHI since late 2003 when the first poultry outbreaks and human cases were first confirmed through laboratory analysis. Vietnam's overall AHI response is supervised by the inter-ministerial National Steering Committee for Avian Influenza (NSCAI). Together with international partners the NSCAI has prepared the *Integrated National Operational Program for Avian and Human Influenza (OPI), 2006-2010 (also known as the Green Book).* The overall objective of this program is to reduce the health risk to humans by:

- Controlling the disease at source in domestic poultry
- Early detection and response to human cases
- Preparing for medical consequences of a human pandemic.

As proposed in the Green Book, a Partnership on Avian and Human Influenza (PAHI) was established on 1 November 2006 to support coordination and monitoring of the national response and international assistance on AHI. As of August 2007, the PAHI Framework has 25 signatures including GoV, UN agencies, bilateral and multilateral donors and NGOs. The full list of PAHI signatories is available at Annex I.

1.2 Context of AHI behaviour change communications in Vietnam

The Government of Vietnam has been raising public awareness on AHI through the mass media as well as mobilization of all levels and sectors of government and society since the first outbreaks and human cases were detected, particularly during periods of widespread poultry outbreaks.

[1] Panzootic: wide spread infectious disease affecting multiple animal species

[2] Pandemic: worldwide outbreak of human disease

[3] http://www.who.int/csr/disease/avian_influenza/phase/en/index.html

Vietnam's international partners including UN and multilateral agencies, bilateral donors and non-governmental organizations have also been supporting their national counterparts to conduct AHI communication activities. Following identification of the need to better coordinate these activities, in November 2005 the first coordination workshop for AHI communications in Vietnam was organized through the Government-UN Joint Programme on Avian Influenza. This workshop brought together technical experts and communications personnel from national agencies, donors and non-governmental organizations. The major focus at this time was to prevent a human pandemic through protecting humans from exposure and infection from the virus in poultry. The workshop agreed four key actions (i.e. behaviours) for people to take, as follows:

1. Avoid contact with sick or dead poultry - Report immediately to the authorities.
2. Handle and slaughter all poultry safely (wear mask, gloves, use disinfectant)
3. Cook poultry thoroughly (no eating pink meat and runny eggs or consuming raw duck blood)
4. Wash hands with soap before and after handling live poultry and preparing for cooking

These four actions formed the basis for mass communications campaigns during 2006 and 2007, particularly focused on the period immediately before, during and after the Lunar New Year celebrations in January/February each year, which have been identified as a particularly high risk period for poultry outbreaks and human infections in Vietnam. During this period, there were also some communications focused on the agricultural sector, promoting public awareness and behaviours to help control and prevent the spread of the virus in poultry.

The national task force and international partners who jointly developed the Green Book in the first half of 2006 emphasized the important contribution of public awareness raising and behaviour change communications. Cross-sectoral AHI communication activities are addressed under Part I.D of the Enhanced Coordination component. Overall coordination of different AHI communications activities is also addressed, in part I.C, which proposes to expand and build on the earlier work of the Information, Education and Communication (IEC) Working Group established by the Government-UN Joint Programme on Avian Influenza. The expanded working group is expected to include all AHI communications activities, projects and programmes supported by Vietnam and its international partners within PAHI.

The principles of the working group focus on national ownership, on developing one integrated national strategy, which builds on existing work and has clear, concise, creative and correct messages. The working group recognizes immediate emergency communication requirements, while planning for a long-term campaign with the need to be flexible as the situation evolves.

The development of this Strategic Framework is a major output of the AHI Behaviour Change Communications Working Group. National technical focal points have been assigned to work with the PAHI Secretariat and PAHI members to guide the development of the framework.

1.3 Moving from emergency control to consolidation

The overall national response to avian and human influenza focuses on three main phases:

- emergency response to control of the virus circulation in poultry as well as preventing and responding to human infections
- consolidation of control activities and achievements
- eradication of the virus and sustainable restructuring of the poultry industry to reduce the long term risk of this and other zoonoses

The Green Book is designed primarily to address the *consolidation* phase. The strategic framework for AHI communications 2008-2010 therefore takes the same focus. Evaluations of communications activities on AHI to date emphasise the need for (i) ongoing coordination of communication activities to avoid duplication and gaps, and to ensure that the public receive clear, consistent, technically sound and practically feasible messages, and (ii) moving towards targeted communications based on specific goals for behaviour change.

During the previous period, in line with the focus on emergency activities to prevent a human pandemic, the main focus of AHI communications has been on preventing human exposure to the H5N1 virus, for example through the mass campaigns during the period leading up to the lunar new year celebrations in both 2006 and 2007 which focused particularly on promotion of protective behaviours such as *hand washing with soap*, and *thorough cooking of poultry products for consumption*.

During the current consolidation phase, the focus on protecting humans should be maintained, particularly in the context of actual poultry outbreaks and sporadic human cases. In order to address the source of risk and consolidate the gains that have been made to date, it will also be necessary to strengthen behaviour change communications focused directly on the agriculture sector and to engage veterinarians, para-veterinarians and other frontline agricultural workers in communication activities, particularly directed at poultry raisers in sectors three and four. It is particularly important for these frontline workers to be engaged in behaviour change communications related to prevention and control of AI, particularly when interacting with farmers during activities like disease surveillance, disease investigation, disinfection, culling, vaccination campaigns and other outreach activities. These frontline agricultural workers would need training and tools to carry out these communication activities.

CHAPTER 2. PURPOSE OF THE STRATEGIC FRAMEWORK

The purpose of the communication framework is to provide strategic direction for the development and implementation of Avian and Human Influenza prevention for 2008 – 2010. The framework continues the intentions of the *Integrated National Operational Program for Avian and Human Influenza* (the Green Book) to coordinate public awareness and behavioural change communications in order to avoid overlapping and waste of resources as well as inconsistent messages and unnecessary competition for the target groups' time and attention.

The overall objective of the Strategic Framework is therefore to promote consistent, technically sound, and practically feasible behaviour change communications focused on the Agriculture Sector, with the main aim of preventing the circulation of HPAI in poultry; and the Health Sector, with the main aim of preventing human exposure to and infection with the H5N1 virus from poultry and poultry products.

The Strategic Framework focuses on two main scenarios in Vietnam under the current WHO Global Pandemic Alert Phase III, as follows:

(i) general communications under Phase III when there are no current poultry outbreaks or human cases detected in the local area

(ii) communications targeted at areas with a current outbreak and/or human case detected, including both the control itself and neighbouring areas. Planning for pandemic communications related to higher WHO alert phases through to Phase VI will be addressed through a separate process that is outside of the scope of the current document.

The Green Book outlines the procedure for developing the strategic framework, with the framework itself as the result of a participatory process, while leadership for the actual implementation of communication activities lies with the respective sectors and agencies.

2.1 Key components of the AHI Strategic Framework

The process of developing and applying the Strategic Framework has been designed with the following key steps:

Step One: Strategic Framework developed
- Preparation and information gathering
- Technical assessment of behaviours
- Participatory workshops
- Drafting, review by GoV focal points including identification of priority outcomes
- Approving the framework

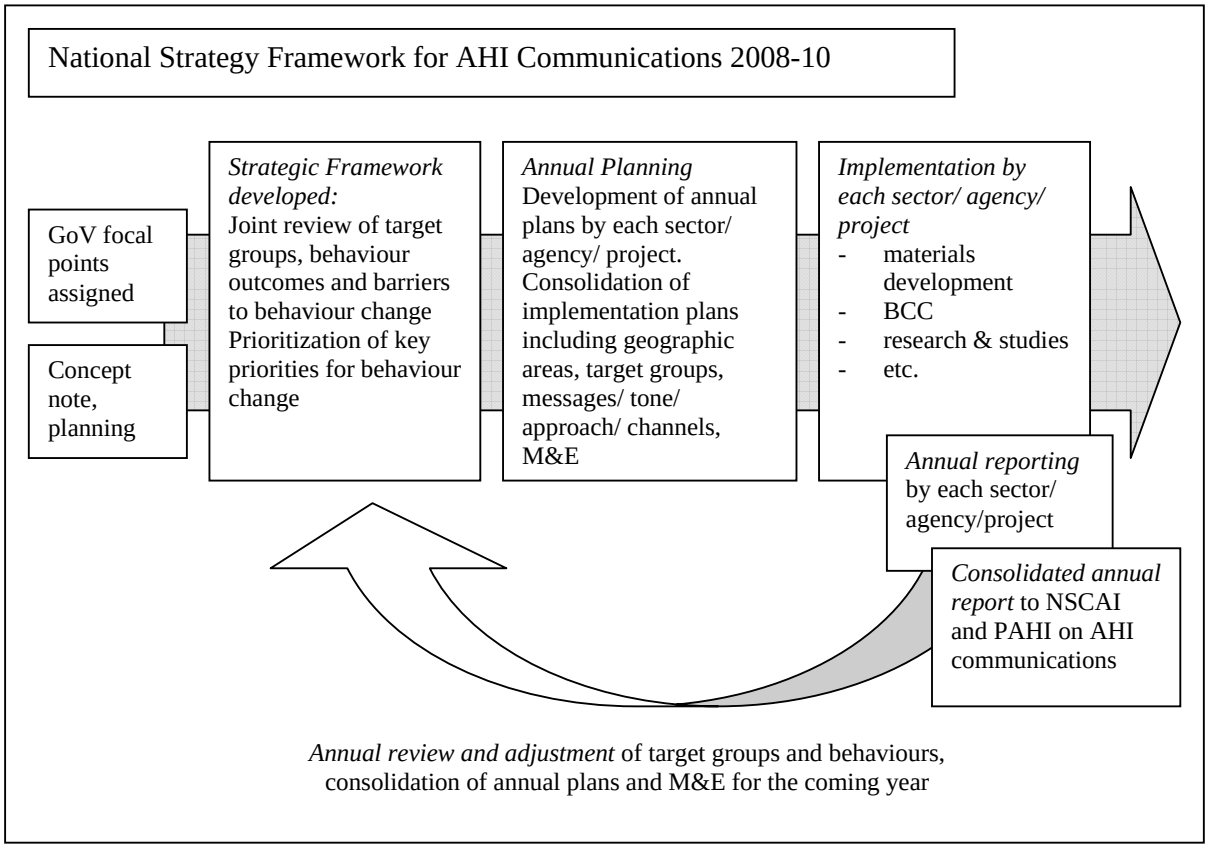
Step Two: Annual planning
- Development of annual plans by agencies, projects and programmes
- Consolidation of agency plans into National Communications workplan

Step Three: Implementation
- Development/adaptation of tools, training, implementation of communication activities, research etc. by each agency, project and programme

Step Four: Annual reporting and review
- Annual reporting by individual agencies
- Annual review and planning for the following year

These steps are outlined in ppFigure 1 and described in more detail below.

Figure 1: Key Components of the Strategic Framework



Step One: Strategic Framework Developed

Preparation and information gathering

During this step, PAHI members working on AHI communications have identified key target groups and proposed behaviour outcomes based on their actual and planned communications programmes. These behaviour outcomes were classified according to sector (agriculture; health) and scenario (general/non-outbreak; outbreak: control zone, neighbouring areas) and consolidated into an overall list.

These consolidated lists address the following key questions:
- Who are the groups whose practices may contribute to AHI transmission risk? (E.g. Sector Four farmers, small-scale farmers, poultry traders, poultry consumers, etc.)
- What are the practices within these groups that contribute to transmission risk?
- Which behavioural changes will mitigate these risks?

Table 1: Number of targeted behavioural outcomes in the consolidated list, classified by sector and scenario

Scenario \ Sector		Agriculture	Health	Totals
General / Non-Outbreak		43	39	82
Outbreak	**Control Zone**	26	51	102
	Neighbouring Areas	25		
Totals		94	90	184

Technical assessment of behaviours

The consolidated list of target groups and behavioural outcomes for each sector was reviewed and assessed for technical relevance jointly by national and international technical experts.

The technical rating expresses the consensus of these national and international technical experts on the degree of impact of the proposed behavioural outcome on prevention as seen from the technical perspective.

Figure 2: Criteria for Technical Feasibility

Rating	Agricultural Sector	Human Health Sector
1. High	Behaviours that are effective in: 1: Preventing the virus entering poultry flocks 2: Preventing virus transmission within a flock	*Directly Preventing Transmission* Behaviours that enable individuals to avoid exposure to the virus Behaviours that enable individuals to kill the virus
2. Medium	Behaviours that have an indeterminate effect on: 1: Preventing the virus entering poultry flocks 2: Preventing virus transmission within a flock	*More General Preventive Practices* Behaviours that enable individuals to actively reduce risk if they cannot avoid contact with poultry
3. Low	Behaviours for which the necessary supporting systems are not in place **or** Behaviour outcomes that are based on technically outdated rationale	*Other* Behaviours for which the necessary supporting systems are not in place. Behaviours that are inconsistent with current operational procedures Behaviours that are poorly defined from a risk reduction perspective

Participatory workshops

The core content of the framework was developed on two sectoral workshops, one for the agricultural- and one for the human health sector.

The workshops included a brief overview of the situation of AHI communications in Vietnam, including the status at present, what has been achieved to date and which lessons have been learned. The main outcome of the workshops however, was for all the gathered stakeholders to give input on two main points:

i. Which barriers exist in the target groups and risk settings to prevent farmers and other defined groups from adopting the described behaviour?
ii. How does that make us rate the practical feasibility of the behaviour?

The criteria for rating the practical feasibility were the same for both the Agricultural and the Human Health Sector

Figure 3: Criteria for Practical Feasibility

Rating	Criteria
1. High	*Likely* that the target group will adopt this behaviour
2. Medium	*Possible* that the target group will adopt this behaviour
3. Low	*Not likely* that the target group will adopt this behaviour

During the workshop, the full list of target groups and proposed behavioural outcomes was discussed in groups comprised of representatives from both the Government of Vietnam and the international partners. Through these discussion groups, key barriers to achieving the behavioural outcomes were identified and recorded. The individual ratings were documented to calculate the total rating of the behaviours.

Drafting, review by GoV focal points including identification of priority outcomes
This step is coordinated by the PAHI secretariat, under the technical guidance and supervision of technical focal points appointed by the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Health (MOH).

During the drafting and review process, the key strategic priorities of the Government based for AHI communications in each sector will be clearly identified based on the technical and feasibility assessment of proposed behaviour outcomes for each target group.

Approving the framework
The framework will be submitted to the National Steering Committee for Avian Influenza (NSCAI) for approval, and shared with the PAHI Plenary for endorsement.

Step Two: Annual Planning

Development of annual plans by agencies, projects and programmes
Annual plans will follow a standard format that identifies geographic focus, target group, target behaviours, channels, coverage, materials development, indicators for monitoring and evaluation, as well as research plans and other activities.

Consolidation of agency plans into National Communications workplan
Based on the annual plans submitted in a standard format by each agency, project and programme, an overall consolidated workplan will be prepared for the Strategic Framework by the PAHI Secretariat.

Step Three: Implementation of Annual Plans

Implementation by each agency, project and programme
Each individual agency, project or programme will implement their activities through each year. Joint meetings organized through PAHI will provide an opportunity for sharing experiences and the results of implementation, monitoring and evaluation, and research activities.

Step Four: Annual Reporting and Review

Annual reporting
Each individual agency, project or programme will share basic information on their annual activities using a standard format based on the Strategic Framework.

Based on the individual annual reports, a brief consolidated overall report on activities within the Strategic Framework will be prepared by the PAHI Secretariat.

Annual review and planning for the following year
The government and international agencies will review the strategic communication framework and its usability annually. They will optimize the process and contents, and the assessment of risk practices, target groups and behavioural goals will be updated based on current research and lessons learned.

CHAPTER 3. HOW TO USE THE STRATEGIC COMMUNICATION FRAMEWORK

The strategic framework for AHI communication will only be strategic to the extent that it is implemented within the agriculture and health sectors by agencies, projects and programmes.

The situation at present points to for coordination between agencies to reduce the number of messages communicated. Developing communication activities that go beyond mere mass communication interventions is also necessary. Communication activities should move towards more specific targeting of population groups and behaviours, based on sound analysis and supported by effective monitoring and evaluation.

Using the strategic framework for communication planning falls in two steps:
1. Overall prioritization of behavioural goals for the agency, project or programme for their communication activities on AHI. This can be done by using the priorities identified for each sector and the ratings of the behaviours.
2. Development of precise target groups, communication channels and messages, and monitoring and evaluation indicators for the selected goals. This can be done by using the barriers listed for each behaviour.

3.1 Overall prioritization

The technical assessment of behaviours listed 90 behaviours for the human health sector and 94 behaviours for the agricultural sector. These behaviours were then rated according to their impact on risk reduction and to how practically feasible they would be. These ratings help to prioritize among the many possible communication goals within the field of AHI prevention by answering the question:

> *Which behavioural changes should communication activities aim at in order to have the highest probability of contributing to AI prevention, by being both technically necessary and practically feasible?*

As examples, the behaviour "Not buying poultry that has been sick" was rated 1 = highest risk reduction impact for technical rating, and it was also rated 1 = likely that the target group would adopt this behaviour for practical feasibility. The behaviour "Not selling poultry that has been sick" was also rated 1 for technical importance, but it was rated 3 = unlikely that the target group will adopt this behaviour for practical feasibility. The low practical feasibility is the result of barriers in the target groups of poultry sellers, who for reasons of for example poverty combined with a low perception of risk will often try to sell the poultry even if it has been sick.

In this way, all behaviours can be placed into a matrix of technical importance and practical feasibility (Figure 4).

The strategic communication framework focuses on behaviours that have been rated as technically sound, i.e. a technical rating of 1 for agricultural sector behaviours; a technical rating of 1 or 2 for health sector behaviours. Rating scores for all behaviours are listed in Annex III (agriculture sector) and Annex IV (health sector).

Figure 4: Matrix of technical importance and practical feasibility

		Practical Feasibility		
		1	2	3
Technical Importance (Risk reduction impact)	1			
	2			
	3			

Based on the overall rating of all behaviours, and taking into account the main objectives and activities of the national response and the current situation, the GoV focal points have identified the prioritised list of behaviour outcomes for the identified target groups. These prioritised behaviour outcomes are listed in Chapter 4, and again at Annex II.

3.2 Communication planning

Using the barriers together with each behaviour can strengthen the development of precise target groups, communication channels and messages.

A first question to ask in relation to every behaviour, is naturally if this is a problem that is best solved by communication activities of if other prevention and control interventions such as legislation, training or development of appropriate infrastructure are needed. These other interventions may be considered sufficient in themselves, or as a necessary precondition for effective behaviour change communications.

3.2.1 Target groups

Each behaviour already has a target group, but the behaviours and barriers in combination should be the starting point for further determining specific target populations. Agencies working in specific provinces should take into account the habits, resources and conditions for poultry production and daily life for households in that particular location.

In relation to the target groups, it is of great importance to coordinate between agencies and even between campaigns from the same agency. Evaluations to date show overlapping of campaigns and messages and the natural result is lack of understanding and lack of remembering messages in the target groups.

3.2.2 Communication channels, dissemination methods

Very importantly, the barriers can be used to choose communication channels. This may be planned by looking at the nature of the barriers. Lack of awareness, for instance, can be addressed very efficiently by mass communication activities. To overcome barriers due to

social or cultural norms, on the other hand, mass communication is completely inadequate. Such barriers must be overcome by communication that takes place in the very social network where the norm exists: among farmers, school children, homemakers etc. For this, communication officers must dig into their toolbox of the optimal use for different communication channels. (See fig. 2) It is important to note that to face-to-face communication, including training in both existing structures such as the Agriculture Extension Services and in other settings is considered an important potential communication channel for AHI interventions.

Figure 5: Examples of efficiency of communication channels

Barriers towards behaviours	Efficient communication channels
Lack of awareness	Mass communication such as TV, radio, posters, print-ads
Lack of understanding	Mass communication such as posters, leaflets, articles
Different attitudes, different perceptions	Mass communication in combination with interpersonal contacts
Social and cultural norms	Network communication
Lack of confidence in ability to change, lack of skills	Interpersonal communication

3.2.3 Messages

Development of messages for each behaviour outcome is a key step. In some cases the behavioural outcome will itself also be the message, however in other cases a different message might be developed to reach the desired outcome.

In each instance it is important to combine knowledge of behavioural goal, barriers, target group & communication channel to develop the best-suited messages. Evaluations of AHI communications to date stress the need for messages that are:

- Well coordinated with other agencies
- Precisely defined ("sick poultry", "contaminated surfaces", "Adequate disinfection", "clean" etc. are descriptions that must be more precise)
- Targeted precisely at their audience in terms of content and language
- Clear and understandable descriptions of desired behaviour
- Practical

The need for a message to be practical reaches further than being something a person is theoretically able to do in a practical sense; if behaviours go against social norms or if the person lacks the skills or the resources to perform the behaviour, then the message might be do-able, but the behaviour will not be done.

3.2.4 Identifying the Motivation for Change

Identifying the motivation for change is a primary consideration in the development of messages and approaches that can overcome identified barriers. For each communication activity, there needs to be analysis to determine the motivation/s or incentive/s that will persuade the target group to change their behaviour. For example, while the primary

motivation of the communications activity might be to reduce the risk to the general population, the targeted individual or household might not share this motivation. Instead, a more effective motivation or incentive could be the individual or household's own self-interest in terms of protecting their own health, the health of their family, or in many cases their own economic returns. Many of the barriers that have been identified focus correctly on the actual or perceived immediate economic costs for the target group.

Behaviour change communications that are implemented without identifying the motivation or incentive for the target group to change their behaviour are very unlikely to be effective.

3.2.5 Approach/Tone

Deciding the approach and/or tone of the development communications is another key aspect of finalizing the messages and communication channels. It will be directly linked to the expected motivation or incentive for the target group to change their behaviour.

Some examples of approach for behaviour change communications include:

- Informing
- Educating
- Entertaining
- Empowering
- Persuading

The tone of the communications is closely linked to the approach. Some examples include:

- Friendly
- Appealing
- Emotional
- Persuasive
- Directive
- Challenging

Effective communications approaches will create a sense that the target group has the capacity to respond positively to the issue and to reduce their risk or maximise their benefit. Behaviour change communications should avoid an approach or tone that stigmatizes individuals, households or population groups that do not adopt the desired behaviour. Fear-based approaches may not be effective beyond the short-term.

3.2.6 Monitoring and Evaluation

During the initial response to AHI, many communication activities focused on emergency awareness raising and promoting key behaviours in the face of a strong concern that a human pandemic concern was imminent. In this context, many of these activities included no or very limited monitoring and evaluation.

As communication activities are designed in the current consolidation phase, where general public awareness of AHI issues is now relatively high, the move towards specific targeting of communications for behaviour change in identified target groups needs to be accompanied by the development of effective monitoring and evaluation of the results.

Monitoring and evaluation enables decision makers and communication planners to identify and understand the results of their work, and to adjust and strengthen the activities for the next period. They also allow the identification of wider barriers that cannot be addressed by communication interventions alone.

CHAPTER 4. OVERALL COMMUNICATION PRIORITIES

This strategic framework offers tools to help decide and prioritize communication activities for AI prevention in Vietnam. The framework aims to assist decision makers and program planners by providing them with a foundation for basic choices.

The framework answers two main questions:

i. Which behavioural changes should communication activities aim at in order to have the highest probability of contributing to AI prevention, by being both technically necessary and practically feasible?

ii. Which barriers exist in the target groups and risk settings to prevent farmers and other defined groups from adopting the described behaviour?

By discussing the barriers towards behavioural change, the framework can compare the efficiency of the behaviours and point out the communication goals most effective in producing change. Furthermore, the framework can start to describe the communication problems related to each single behavioural change, and ensure the basis for communication activities across sectors are consistent and technically correct.

The Framework covers both the agricultural and the human health sector.

4.1 Overall findings

A large number of behaviours are of high technical importance for preventing Avian Influenza as well as being considered of medium or high practical feasibility. This is an encouraging starting point for communication activities. In the health sector especially, many behavioural goals are of high technical importance and high practical feasibility.

On the other hand several behaviours have low ratings for both technical and practical feasibility. This framework points to a strategic direction for communication activities, by presenting and discussing the behaviours that are both relevant and feasible across the sectors at this time.

In both sectors, there is a marked difference in the practical feasibility of behaviours depending on whether these will take place in a non-outbreak or an outbreak situation.

Not only are the behavioural goals the same, so are most of the barriers. The difference in practical feasibility, the difference in how likely it is that the target group will adopt the behaviour, derives from a difference in the perception of risk.
As the perception of risk changes, Avian Influenza stops being someone else's problem and becomes personally relevant for the farmers. The knowledge of prevention behaviours becomes much more relevant. The intention to perform the behaviour is strengthened, and this motivates target groups to overcome or attempt to overcome other barriers.

This means that communication activities in non-outbreak situations and in outbreak situations must take very different points-of-departure, even if the behavioural goal is the same. It also means that prevention in most cases must have a broader goal than

knowledge alone; intentions, perceptions or attitude would be more efficient communication goals.

Across the sectors, there is a need to further define target groups. When addressing severe barriers against a desired behaviour, it becomes the more important to have as comprehensive an understanding of the target group as possible.

As a result of outbreak status and target group being central to the weight of the barriers towards behavioural change, the prevention activities in this framework are organized first by outbreak/non-outbreak situation and secondly by target group.

The behaviours listed are not messages, and when the framework is used as basis for choices in actual communication planning, precise messages need to be developed. Further definition of behaviours and risk settings will be part of this process.

The achievement of some of the behavioural goals reaches far beyond the possible achievements of communication. Government policies, for instance are sometimes necessary support structures. The barriers may be listed, but the focus of this framework is communication activities.

Similarly, the discussion of barriers shows that even when government policies exist, behaviours may not be practically feasible. That policies are in place does not solve the problem of risk behaviour; more may be needed and this is very often strategic communication activities.

4.2 Overall Priority Outcomes for Behaviour Change Communications in the Agriculture and Health Sectors

Based on the technical and practical ratings of 94 proposed behavioural outcomes for the agriculture sector and 90 proposed behaviour outcomes for the health sector, GoV focal points have identified the overall priority outcomes, as listed in Table 2.

Table 2: List of priority behaviour outcomes

	Non-Outbreak	Outbreak
Agriculture	Poultry raisers actively comply with official poultry vaccination schedules. Regularly clean poultry raising areas (yards and pens). Clean vehicles, boots, cages, containers, and other equipment after visiting wet markets or raising farms and before returning to the farms. Immediately report of sick or dead poultry to veterinary officials and local authorities.	Immediately report of sick or dead poultry to veterinary officials and local authorities. Culling and disposal of sick and dead poultry is carried out under supervision of local authorities and PPE is used. Poultry and poultry products are not moved from areas with active disease for 21 days. Restocking of poultry is delayed for at least 1 month after an outbreak.
Health	Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Eat only thoroughly cooked poultry and poultry products (no pink meat or runny eggs). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating. Immediately report of sick or dead poultry to veterinary officials and local authorities.	People with fever > 38^{o}C have to go to their local health station for evaluation, especially if there is sick or dead poultry in surrounding environment. Immediately report of sick or dead poultry to veterinary officials and local authorities. Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating.

CHAPTER 5. THE AGRICULTURAL SECTOR

Public awareness-raising and behaviour change communications in the agriculture sector aim to support the overall objective of the Green Book *to reduce the risk to humans by progressively controlling and ultimately eradicating the circulation of the highly pathogenic avian influenza virus within domestic poultry*.

The national strategy for HPAI control and eradication in the agricultural sector is focused on the following key areas:

i. strengthening veterinary services
ii. disease control, including disease investigation, outbreak control, vaccination, quarantine and movement control, and movement control across international borders
iii. surveillance and epidemiological investigation
iv. poultry sector restructuring

AHI communications programmes in the agricultural sector support these activities through general public awareness-raising as well as promotion of targeted behaviour change based on overall risk analysis and in support of the main national initiatives in the areas listed above.

Behaviour categories in the agriculture sector

The behaviour categories that have been identified for behaviour change communications in the agriculture sector are listed in Table 3, linked to the main areas of the agriculture strategy outlined in the Green Book.

Table 3: categories for behaviour change communications in the agriculture sector

Agricultural Sector area (based on the Green Book)	**Category for Behaviour Change Communications**	
	Non-Outbreak Situation	Outbreak Situation
i. strengthening veterinary services		
ii. disease control, including: - disease investigation - outbreak control		Containment of the virus - handling, culling, disinfecting - disposal of sick/dead poultry Restocking Hygiene (for protection of animals) Preventive measures (ring vaccination, preventive disinfection)
- vaccination	Vaccination of Poultry	
- quarantine and movement control	Safe transport of poultry Egg hatching ban in urban areas	Quarantine/movement control

- movement control across international borders		
iii. surveillance and epidemiological investigation	Surveillance and Reporting	Surveillance and Reporting
iv. poultry sector restructuring	Separation Hygiene (for protection of animals) Traceability Safe slaughtering practices	

Target populations in the agricultural sector

There are six target populations for public awareness-raising and behaviour change communications that have been identified in the agricultural sector:

1. Animal health workers
2. Sector Three Poultry farmers
3. Sector Four Poultry Farmers
4. Poultry slaughterers/butchers
5. Poultry traders and vendors
6. Urban poultry producers/traders

The main target group for the agricultural sector are Sector Three (small scale) poultry farmers. They are assessed to be of the highest risk for Avian Influenza, and at the same time many behavioural changes are considered feasible with this target group. Prevention activities for Sector Three poultry farmers are therefore the most likely to create a substantial result in preventing circulation of the virus in poultry.

For many behaviours, communication activities will need to differentiate Small-scale poultry farmers further into duck-, chicken- and mixed flock farmers. Different concentrations of these activities in different geographic regions of the country also need to be taken into account.

Animal Health workers are another both important and practically feasible target group for prevention work in this sector.

Sector 4 farmers, or backyard farmers, are also of highest risk for Avian Influenza, but due in part to their relative poverty resulting in a lack of resources and in part to the production methods of Sector 4 farmers, there are more severe barriers towards behavioural change in this target group. Particularly in a non-outbreak situation it will be difficult or unlikely to persuade this group to adopt many of the identified preventive behaviours.

The behaviours that are listed and discussed for each target group have been rated as both technical important and practically feasible. More precisely they have received a technical rating of 1 and a practical feasibility of either 1 or 2. This means that these behaviours:

- ***Are effective in preventing the virus entering poultry flocks***
- ***Are effective in preventing virus transmission within a flock***
- ***Are likely or possible to be adopted by the target group***

All the behaviours mentioned are technically important and practically feasible. But a number of behaviours have are considered of both high technical importance and of high practical feasibility. These behaviours are:

Non Outbreak situation

- Vaccinators disinfect syringes and change needles used for vaccination between every flock

Outbreak situation

- Animal health workers report all cases of sick or dead poultry to district veterinary officer
- Animal health workers help secure that poultry and poultry products are not moved from areas with active disease for 21 days
- Poultry cullers use PPE when handling or culling sick or dead poultry
- Animal health workers burn or bury dead poultry
- Small-scale poultry farmers don't throw poultry into the waterways

Priorities for Behaviour Change Communications in the Agriculture Sector

Based on the technical and practical ratings of 94 proposed behavioural outcomes for the agriculture sector, GoV focal points have identified overall priority outcomes for this sector, as listed in Table 4.

Table 4: List of priority behaviour outcomes for the agriculture sector

Non-Outbreak	Outbreak
Poultry raisers actively comply with official poultry vaccination schedules. Regularly clean poultry raising areas (yards and pens). Clean vehicles, boots, cages, containers, and other equipment after visiting wet markets or raising farms and before returning to the farms. Immediately report of sick or dead poultry to veterinary officials and local authorities.	Immediately report of sick or dead poultry to veterinary officials and local authorities. Culling and disposal of sick and dead poultry is carried out under supervision of local authorities and PPE is used. Poultry and poultry products are not moved from areas with active disease for 21 days. Restocking of poultry is delayed for at least 1 month after an outbreak.

5.1 Animal Health Workers

Description of the Target Group

Animal health workers, para-vets and agricultural extension workers at the local level operate under the overall direction of provincial authorities with technical guidance provided by technical departments within the Ministry of Agriculture and Rural Development, including the Department of Animal Health (DAH) and the Regional Animal Health Offices (RAHO), the Department of Livestock Production (DLP) and the National Agricultural Extension Centre (NAEC).

These local personnel are a key component of the overall fight against HPAI in the agricultural sector. Their main roles include:

- providing basic agricultural extension and veterinary services to local populations within the commune/hamlet

- carrying out general control activities under the direction of central and local authorities including mass poultry vaccination campaigns including dissemination of communication materials and promotion of awareness and behaviour change with local poultry raisers
- reporting local outbreaks to district and provincial animal health workers, for entry in the national animal disease monitoring system and follow up investigations and control activities
- supporting specific outbreak response activities in affected localities

Technical and Feasibility Ratings of Behaviour Change Outcomes for the Target Group

Non-outbreak situation

Technically sound key messages that have been identified for this target group focus on surveillance and reporting, and implementation of mass poultry vaccination campaigns.

Behaviour outcomes related to vaccination of poultry have also been rated as being highly feasible to achieve. Based on experience to date, reporting of sickness and death in poultry by AHWs is only rated of medium feasibility. Planning for behaviour change communications to AHWs therefore needs to include concrete strategies to address the identified barriers to achieving this behaviour change outcome.

Central technical agencies and provincial authorities are responsible to develop overall plans and provide training to direct the activities of local animal health workers and agricultural extension workers. However, effective implementation of activities faces challenges due to limited budgets and equipment for extension and active surveillance activities, low salaries, low education levels and limited capacity, etc. Therefore, behaviour change communications targeted at local animal health workers may also be needed to ensure effective implementation of key activities and programmes. Any specific behaviour change communications for AHWs should therefore be planned based on analysis of knowledge, attitudes, practices and behaviours of the target AHW population, both to demonstrate the need for behaviour change communications to support supervision and training, and to provide a baseline for monitoring and evaluation of behaviour change results.

Detailed analysis of barriers to achieving these behavioural outcomes with AHWs in a non-outbreak situation is available at Annex III.

Table 5: Rating of behavioural outcomes for AHWs in a Non-Outbreak Situation

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Vaccination of poultry** 32. Vaccinators follow correct vaccination procedures as specified by the government 39. Vaccinators disinfect syringes used for vaccination and change needles for vaccinating every new flock	**Surveillance and Reporting** 5. Commune animal health workers report all cases of sick and dead poultry to district veterinary officer	
	2.			
	3.			

Outbreak situation

Almost all of the proposed behaviour change outcomes for AHWs in an outbreak situation have been assessed as technically sound.

Technically sound behaviours targeted for the control zone itself (Table 6) relate to surveillance and reporting, quarantine/movement controls on poultry and poultry products, and containment of the virus through handling, culling and disinfection. Only one proposed outcome related to containment of the virus, related to preventing pets and other animals from having contact with leftovers/culling sites was rated as having a less clear technical basis.

Achieving reporting of poultry disease outbreaks in the actual control zone was assessed as being a highly feasible behavioural outcome for small-scale farmers, as they are considered to have a financial incentive to assist with identification of cases and outbreak control once the outbreak has already been detected by authorities. Likewise, compliance with quarantine regulations, use of PPE when handling or culling poultry, and disposal of poultry carcasses through burning or burying were considered to have a high feasibility.

Other behaviours in the control zone related to safe disposal of single-use PPE and cleaning of multi-use PPE were assessed as having medium feasibility. Specific attention should therefore be given to overcoming barriers to these behaviours if they are selected for behaviour change communications.

Table 6: Rating of behavioural outcomes for AHWs in an Outbreak Situation – Disease Control within the control zone

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Surveillance and Reporting** 46. Commune animal health workers report all cases of sick and dead poultry to district veterinary officer **Quarantine/movement control** 47. Poultry and poultry products are not moved from areas with active diseases for 21 days **Containment of the virus – handling, culling, disinfecting** 52. Use PPE when handling or culling sick or dead poultry **Containment of the virus - disposal of sick/dead poultry** 65. Bury or burn dead poultry	**Containment of the virus – handling, culling, disinfecting** 56. Used single-use PPE is safely disposed through burning 57. Multiple use PPE is cleaned thoroughly with recommended disinfectant	
	2.	**Containment of the virus – handling, culling, disinfecting** 53. Pets and other animals are prevented from contact with the leftovers/culling sites		
	3.			

All three behaviour outcomes for AHWs in an outbreak in areas neighbouring the control zone were assessed as both technically sound and highly feasible. As outlined in Table 7,

these behaviours relate to surveillance and reporting, hygiene for protection of animals, and safe disposal of sick/dead poultry.

Table 7: Rating of behavioural outcomes for AHWs in an Outbreak Situation – Disease Prevention in areas neighbouring the control zone

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Surveillance and Reporting** 72. Commune animal health workers report all cases of sick and dead poultry to district veterinary officer **Hygiene (for protection of animals)** 79. Use PPE when handling sick or dead animals **Safe disposal of sick/dead poultry** 92. Bury or burn dead poultry		
	2.			
	3.			

Detailed analysis of barriers to achieving these behavioural outcomes with AHWs in an outbreak situation is available at Annex III.

5.2 Sector Three Poultry Farmers

Description of the Target Group

Sector Three poultry farmers have a 'small-commercial' scale of production, and are mostly located in smaller towns and rural areas. Sector three poultry farms typically have low biosecurity; birds may be housed indoors but are typically put out to forage for food (chickens) or graze on newly harvested rice paddies (ducks). There is no barrier to contact between flocks, with other poultry species, or with wild birds and other animal species.

Sector three farmers primarily raise poultry for sale to local intermediaries and local live markets. This market-orientation means that they are prepared to invest in some inputs, including veterinary services, fencing, feeds, etc. For this reason, they are considered to have potential to develop more concentrated and biosecure operations in future, which would reduce the potential for circulation of the virus.

Technical and Feasibility Ratings of Behaviour Change Outcomes for the Target Group

Non-outbreak situation

A number of technically sound key messages have been identified for this target group, focusing on surveillance and reporting, ensuring separation of poultry moving onto the farm, hygiene (for protection of animals) and vaccination of poultry. Recent studies on the virus in poultry suggest that some of the earlier behaviour-change targets related to separation of poultry may be of little impact on risk reduction. In particular, there is now less concern about asymptomatic cases in ducks, resulting in less emphasis on the need for separation of species. The ratings in Table 8 indicate which behaviour outcomes are now considered to be of little technical benefit, and also those for which further research is still needed.

Achievement of behaviour change outcomes with sector four farmers in a non-outbreak situation is consistently considered to be of medium feasibility.

Overall, sector three poultry farmers are assessed to be of high risk for Avian Influenza outbreaks in poultry and at the same time many technically-sound behavioural change targets are considered feasible with this target group. Prevention activities for sector three poultry farmers are therefore the very important create a substantial result in preventing the circulation of the HPAI virus in poultry. However, specific attention should be given to overcoming identified barriers to behaviour change with this group.

Table 8: Rating of proposed behavioural outcomes for Sector Three Poultry Farmers in a Non-Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Surveillance and Reporting** 1. Immediate reporting of sick or dead poultry to veterinary officials or local authorities 3. Immediate reporting of any unusual decrease in poultry productivity to veterinary officials or local authorities **Separate** 6. "All in, all out" policy (sell all poultry stock at one time, restock all poultry at one time) 7. Separation of new poultry introduced into the backyard/farm and unsold poultry returned from market for a minimum period of 14 days 17. Fencing of poultry **Hygiene (protection of animals)** 19. Regular cleaning of poultry raising areas (yards and pens) 21. Poultry raising equipment (e.g. cages, feed containers, egg trays and other equipment) are regularly cleaned 23. Cleaning of vehicles, boots, cages, equipment, and containers after visiting wet markets or other farms and before returning to the farm **Vaccination of poultry** 33. Poultry raisers actively comply with official poultry vaccination programmes 35. Poultry raisers wait 14 days after vaccination before selling poultry for consumption 37. Ducks are vaccinated (100% target)	-
	2.	-	**Separate** 9. Separate different species of poultry 11. Raise only one kind of poultry	-
	3.	-	**Separate** 13. Separation of sick poultry from the rest of the flock 15. Do not let traders come into poultry raising areas	-

Detailed analysis of barriers to achieving these behavioural outcomes with sector three poultry farmers in a non-outbreak situation is available at Annex III.

Outbreak Situation

Almost all of the proposed behaviour change outcomes for sector three poultry farmers in an outbreak situation have been assessed as technically sound.

Technically sound behaviours targeted for the control zone itself (Table 9) relate to surveillance and reporting, quarantine/movement controls on poultry and poultry products, containment of the virus, and restocking after the outbreak is over. Only the proposed behaviour on preventing pets and other animals from having contact with leftovers/culling sites was rated as having a less clear technical basis.

Achieving reporting of poultry disease outbreaks in the actual control zone was assessed as being a highly feasible behavioural outcome for sector three farmers, as they are considered to have a financial incentive to assist with identification of cases and outbreak control once the outbreak has already been detected by authorities. All other behaviour change outcomes for sector three farmers in the control zone were assessed as having medium feasibility. Specific attention should therefore be given to overcoming barriers to these behaviours in the context of behaviour change communications.

Table 9: Rating of proposed behavioural outcomes for Sector Three Poultry Farmers in an Outbreak Situation – Disease Control within the control zone

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Surveillance and Reporting** 44. Immediate reporting of sick or dead poultry to veterinary officials or local authorities	**Quarantine/movement control** 48. Poultry and poultry products are not moved from areas with active disease for 21 days 50. Poultry are confined **Containment of the virus – handling, culling, disinfecting** 58. Clothing, footwear and equipments used when culling are thoroughly cleaned with recommended disinfectant **Containment of the virus - disposal of sick/dead poultry** 63. Bury or burn dead poultry 66. Don't throw dead poultry into the waterways **Restocking** 68. Restocking of poultry is delayed for at least 2 months after an outbreak	-
	2.	-	**Containment of the virus – handling, culling, disinfecting** 54. Pets and other animals are prevented from contact with the leftovers/culling sites	-
	3.	-	-	-

For the areas neighbouring the control zone (Table 10), technically sound behaviour outcomes relate to surveillance and reporting, hygiene (for protection of poultry), preventive measures and safe disposal of sick or dead poultry. Some preventive measures were assessed as being of unclear benefit from a technical perspective, including preventive disinfection of poultry raising areas. Further research is needed to ensure a

scientific basis for disinfection activities to support identification of appropriate behavioural outcomes for communication activities.

Some behaviour outcomes for sector three poultry farmers in the areas neighbouring the control were assessed as highly feasible, including cleaning of poultry raising areas, participation in poultry vaccination, and not throwing dead poultry in waterways. Other behaviour outcomes were assessed as having medium feasibility.

Overall, there are a significant number of behavioural outcomes for sector three in areas neighbouring an outbreak that are considered to be of high or medium feasibility. The adoption of these behaviours by this target group is considered important for the success efforts to control the outbreak and prevent further spread to neighbouring areas. However, specific attention should be given to overcoming or mitigating identified barriers.

Table 10: Rating of proposed behavioural outcomes for Sector Three Poultry Farmers in an Outbreak Situation – Disease Prevention in areas neighbouring the control zone

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Hygiene (protection of animals)** 73. Poultry raising areas (yards and pens) are regularly cleaned **Preventive Measures** 80. Vaccination of poultry in the area immediately outside the control zone **Safe disposal of sick/dead poultry** 93. Don't throw dead poultry into the waterways	**Surveillance and Reporting** 70. Immediate reporting of sick or dead poultry to veterinary officials or local authorities **Hygiene (protection of animals)** 75. If there is contact with an external poultry flock, footwear is cleaned before returning to your flock 77. If there is contact with an external poultry flock, hands are cleaned before returning to your flock **Preventive Measures** 84. Poultry are confined 86. Farmers do not visit locations/areas with sick poultry **Safe disposal of sick/dead poultry** 90. Bury or burn dead poultry	-
	2.	-	**Preventive Measures** 82. Preventive disinfection of poultry raising areas 88. Farmers do not handle poultry from other locations or poultry brought from locations/areas with sick poultry	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with sector three poultry farmers in an outbreak situation is available at Annex III.

5.3 Sector Four Poultry Farmers

Description of the Target Group

Sector Four poultry farmers have a 'backyard' scale of production, and are mostly located in rural areas. Sector four poultry farms typically have low or no biosecurity; birds range freely and there is normally a high mortality rate even in the absence of avian influenza. There is no barrier to contact between flocks, with other poultry species, or with wild birds and other animal species.

Sector four farmers primarily raise poultry for their own consumption as well as occasional sale to generate funds for immediate household needs. However, a significant proportion of these birds also end up being aggregated into larger flocks by intermediary traders and may find their way into larger markets.

These households are typically poor and apply a 'low input-low output' production model which means that they are reluctant to invest in improved inputs such as veterinary services, fencing, feeds, etc. as there is little likelihood of a sufficient economic return to justify such expenditures. They are considered to have low potential to develop more concentrated and biosecure operations in future.

Sector four poultry farmers are a complicated target group. On the one hand, they are a very large group whose behaviours have a definite impact on AI intervention. On the other hand, experiences show they are a very difficult group to reach with prevention messages.

Interventions aimed at sector four poultry farmers must take into consideration the practical barriers that characterize this target group, and program planning must include a long time frame for achieving behavioural change. This is especially important in a non-outbreak situation. In a non-outbreak situation it is considered unlikely that sector four poultry farmers will adopt most of the desired behaviours. Only in two cases was a medium possibility given on the practical rating.

Technical and Feasibility Ratings of Behaviour Change Outcomes for the Sector Four Poultry Farmers

Non-outbreak situation

A number of technically sound key messages have been identified for this target group, focusing on surveillance and reporting, ensuring separation of poultry moving onto the farm, hygiene (for protection of animals) and vaccination of poultry. Recent studies on the virus in poultry suggest that some of the earlier behaviour-change targets related to separation of poultry may be of little impact on risk reduction. In particular, there is now less concern about asymptomatic cases in ducks, resulting in less emphasis on the need for separation of species. The ratings in Table 11 indicate which behaviour outcomes are now considered to be of little technical benefit, and also those for which further research is still needed.

Table 11: Rating of behavioural outcomes for Sector Four Poultry Farmers in a Non-Outbreak Situation

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Vaccination of poultry** 34. Poultry raisers actively comply with official poultry vaccination programmes 38. Ducks are vaccinated (100% target)	**Surveillance and Reporting** 2. Immediate reporting of sick or dead poultry to veterinary officials or local authorities **Separate** 8. Separation of new poultry introduced into the backyard/farm and unsold poultry returned from market for a minimum period of 14 days 18. Fencing of poultry **Hygiene (protection of animals)** 20. Poultry raising areas (yards and pens) are regularly cleaned 22. Poultry raising equipment (e.g. cages, feed containers, egg trays and other equipment) are regularly cleaned 24. After visiting wet markets or other farms, vehicles, boots, cages, equipment, containers are cleaned before returning to the farm **Vaccination of poultry** 36. Poultry raisers wait 14 days after vaccination before selling poultry for consumption
	2.	-	-	**Surveillance and Reporting** 4. Immediate reporting of any unusual decrease in poultry productivity to veterinary officials or local authorities **Separate** 10. Separate different species of poultry 12. Raise only one kind of poultry
	3.	-	-	**Separate** 14. Separation of sick poultry from the rest of the flock 16. Do not let traders come into poultry raising areas

As indicated in Table 11, achievement of behaviour change outcomes with sector four farmers in a non-outbreak situation related to involvement in mass poultry vaccination programmes including 100% vaccination of ducks are considered to be of medium feasibility. However, other all behaviour change outcomes are rated as being of low feasibility.

Sector four poultry farmers are a complicated target group. On the one hand, they are a very large group whose behaviours have a definite impact on the circulation of the HPAI virus in poultry. On the other hand, experience shows that most technically-sound behavioural change targets are considered difficult to achieve with this group in a non-outbreak situation. Prioritization of prevention activities for Sector Four poultry farmers in a non-outbreak situation needs to take this into consideration. Behaviour change communication planning for this target group should include a cost-benefit analysis

compared to targeting small-scale poultry farmers, as well as concrete plans to overcome or mitigate identified barriers to behaviour change. A longer time period is also likely to be required to achieve behaviour change targets with this group.

Detailed analysis of barriers to achieving these behavioural outcomes with sector four poultry farmers in a non-outbreak situation is available at Annex III.

Outbreak Situation

A number of technically sound key messages have been identified for sector four poultry farmers in an outbreak situation.

Technically sound behaviours targeted for the control zone itself (Table 12) relate to surveillance and reporting, quarantine/movement controls on poultry and poultry products, containment of the virus, and restocking after the outbreak is over. There is one proposed behaviour which is currently assessed as having an unclear technical basis, which is preventing pets and other animals from having contact with leftovers/culling sites.

Compared to the non-outbreak situation, achieving behavioural outcomes with sector four poultry farmers in the control zone in an outbreak situation was assessed more favourably, with almost all behavioural outcomes rated as being of medium feasibility. However, specific attention should be given to overcoming or mitigating identified barriers.

Table 12: Rating of behavioural outcomes for Sector Four Poultry Farmers in an Outbreak Situation – Disease Control within the control zone

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Surveillance and Reporting** 45. Immediate reporting of sick or dead poultry to veterinary officials or local authorities **Quarantine/movement control** 51. Poultry are confined **Containment of the virus – handling, culling, disinfecting** 59. Clothing, footwear and equipments used when culling are thoroughly cleaned with <u>recommended</u> disinfectant **Containment of the virus - disposal of sick/dead poultry** 64. Bury or burn dead poultry 67. Don't throw dead poultry into the waterways **Restocking** 69. Restocking of poultry is delayed for at least 2 months after an outbreak	**Quarantine/movement control** 49. Poultry and poultry products are not moved from areas with active disease for 21 days
	2.	-	**Containment of the virus – handling, culling, disinfecting** 55. Pets and other animals are prevented from contact with the leftovers/culling sites	-
	3.	-	-	-

For the areas neighbouring the control zone (Table 13), technically sound behaviour outcomes for sector four poultry farmers relate to surveillance and reporting, hygiene (for protection of poultry), preventive measures and safe disposal of sick or dead poultry. Some preventive measures were assessed as being of unclear benefit from a technical perspective, including preventive disinfection of poultry raising areas. Further research is needed to ensure a scientific basis for disinfection activities to support identification of appropriate behavioural outcomes for communication activities.

A number of behaviour outcomes for sector four poultry farmers in the areas neighbouring the control were assessed as being of medium feasibility. This indicates that behaviour change communications for sector four poultry farmers in areas neighbouring an outbreak situation are more feasible than those in a non-outbreak situation. However, even in this context, some behaviours will still assessed of low feasibility.

Overall, there are a significant number of behavioural outcomes for sector four poultry farmers in areas neighbouring an outbreak that are considered to be of medium feasibility. The adoption of these behaviours by this target group is considered important for the success efforts to control the outbreak and prevent further spread to neighbouring areas. However, specific attention should be given to overcoming or mitigating identified barriers.

Table 13: Rating of behavioural outcomes for Sector Four Poultry Farmers in an Outbreak Situation – Disease Prevention in areas neighbouring the control zone

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Surveillance and Reporting** 71. Immediate reporting of sick or dead poultry to veterinary officials or local authorities **Hygiene (protection of animals)** 74. Poultry raising areas (yards and pens) are regularly cleaned 78. If there is contact with an external poultry flock, hands are cleaned before returning to your flock **Preventive Measures** 81. Vaccination of poultry in the area immediately outside the control zone 85. Poultry are confined **Safe disposal of sick/dead poultry** 91. Bury or burn dead poultry 94. Don't throw dead poultry into the waterways	**Hygiene (protection of animals)** 76. If there is contact with an external poultry flock, footwear is cleaned before returning to your flock **Preventive Measures** 87. Farmers do not visit locations/areas with sick poultry
	2.		**Preventive Measures** 83. Preventive disinfection of poultry raising areas	**Preventive Measures** 89. Farmers do not handle poultry from other locations or poultry brought from locations/areas with sick poultry
	3.			

Detailed analysis of barriers to achieving these behavioural outcomes with sector four poultry farmers in an outbreak situation is available at Annex III.

5.4 Poultry Slaughterers and Butchers

Description of the Target Group

This target group covers people involved in slaughtering and butchering poultry and poultry products.

Technical and Feasibility Ratings of Behaviour Change Outcomes for Slaughterhouse Operators

Non-outbreak situation

Only one behavioural outcome has been proposed for poultry slaughterers and butchers, related to preventing circulation of the virus in poultry. This is focused on safe slaughtering in a non-outbreak situation. This behaviour relates to the establishment of one-way entry/exit points for poultry to be slaughtered.

This behaviour change outcome requires issuing of clear guidelines and possibly legislation by relevant authorities. It will also require investments in land and infrastructure to ensure appropriate facilities, and may therefore require allocation of budget or investment subsidies.

Behaviour change communications may therefore not be the most appropriate way to achieve this outcome. Consideration could also be given to behaviour change communications to poultry traders and consumers to create a market demand for products produced through safe slaughtering, however this would be better addressed within the health sector, as part of food safety promotion.

Table 14: Rating of behavioural outcomes for Slaughterhouse Operators in a Non-Outbreak Situation

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Safe slaughtering (focus on product)** 31. One-way entry/exit points are organized for poultry to be slaughtered	
	2.			
	3.			

Detailed analysis of barriers to achieving this behavioural outcome with slaughterhouse operators in a non-outbreak situation is available at Annex III.

5.5 Traders and Vendors

Description of the Target Group

This target group includes all traders of poultry between the farm and the consumer. This includes transporters as well as those selling in live markets and selling butchered poultry products.

Technical and Feasibility Ratings of Behaviour Change Outcomes for Traders and Vendors

Non-outbreak situation

Four behavioural outcome have been proposed for poultry traders and vendors related to preventing circulation of the virus in poultry. These are all focused on a non-outbreak situation.

Technically sound behaviours are related to hygiene related to movement of people between markets, farms and other areas where poultry are typically found, as well as safe transport through appropriate cleaning of vehicles and equipment. Both of these outcomes are reported of moderate feasibility, meaning that concrete strategies would need to be developed to overcome identified barriers to these outcomes.

Behaviours related to traceability of poultry products were rated technically as being of low technical relevance as the necessary supporting systems are not in place.

Table 15: Rating of behavioural outcomes for Traders and Vendors in a Non-Outbreak Situation

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Hygiene (for protection of animals)** 25. After visiting wet markets or other farms, clean vehicles, boots, cages, equipment, containers **Safe Transport of poultry** 41. Use recommended disinfectant to clean transportation vehicles and equipment at the end of the day	-
	2.	-	-	-
	3.	-	**Traceability** 27. Poultry traders only buy and sell certified poultry 29. Poultry traders only buy and sell poultry of a known origin or from a trusted supplier	-

Detailed analysis of barriers to achieving this behavioural outcome with traders and vendors in a non-outbreak situation is available at Annex III.

5.6 Urban Producers/Traders

Description of the Target Group

This target group includes poultry raisers and traders located in urban areas.

Technical and Feasibility Ratings of Behaviour Change Outcomes for Urban Producers/ Traders

Non-outbreak situation

Only one behavioural outcome has been proposed for this target group related to preventing circulation of the virus in poultry. This is focused on compliance with the ban on hatching and trading of day-old chicks in urban areas.

This behaviour change outcome is assessed as technically sound and moderately feasible. Attention would need to be given to barriers that have been identified to achieving this behaviour outcome.

Table 16: Rating of behavioural outcomes for Urban Producers/ Traders in a Non-Outbreak Situation

		Feasibility Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Egg hatching ban in urban areas** 43. People in urban areas do not raise, buy or sell eggs for hatching or day-old chicks	-
	2.	-	-	-
	3.	-	-	-

Detailed analysis of barriers to achieving this behavioural outcome with urban producers/traders in a non-outbreak situation is available at Annex III.

CHAPTER 6. THE HUMAN HEALTH SECTOR

Public awareness-raising and behaviour change communications in the health sector aim to support the overall objective of the Green Book *to minimize the incidence of, and mortality from, avian influenza; and to reduce the risk of an influenza pandemic occurring*.

The national strategy for HPAI control and eradication in the health sector is focused on the following key areas:

i. strengthening surveillance and response
ii. strengthening diagnostic capacity
iii. strengthening the curative medicine system
iv. improving research

AHI communications programmes in the health sector support these activities through general public awareness-raising as well as promotion of targeted behaviour change based on overall risk analysis and in support of the main national initiatives in the areas listed above.

Behaviour categories in the health sector

The behaviour categories for the health sector identified by communications agencies in a non-outbreak situation include:

- surveillance and reporting
- safety and hygiene and contact with poultry and poultry products
- safe buying/selling of poultry and poultry products
- safe slaughtering of poultry
- safe preparation of poultry and poultry products

In an outbreak, the behaviour categories include:

- surveillance and reporting
- decreasing potential spread of disease
- safety and infection control practices
- safety and hygiene and contact with poultry and poultry products
- safe buying/selling of poultry and poultry products
- safe slaughtering of poultry
- safe preparation of poultry and poultry products
- safe consumption of poultry and poultry products

Target populations in the agricultural sector

There are seven main target populations for public awareness-raising and behaviour change communications in the health sector:

1. human health workers
2. poultry farmers and other bird raisers, slaughterers
3. poultry buyers and sellers
4. persons preparing and cooking food
5. people eating poultry
6. school children
7. everybody

In the human health sector, the target groups are naturally larger and more general, as this sector encompasses the entire population as raisers, traders and/or consumers of poultry. It is necessary to look at each single preventive behaviour to further define the target groups for communication activities.

In this sector, the difference in practical feasibility of the preventive behaviours in a non-outbreak situation versus an outbreak situation is even more marked than in the agricultural sector.

In a non-outbreak situation, the strategic focus of communication activities is on the process of buying, preparing and eating poultry:

- Not buying poultry that has been sick
- Thorough cleansing of cooking utensils and surfaces
- Not placing cooked meat back on same plate or surface as before cooking
- Cooking poultry and poultry products thoroughly
- Eating only thoroughly cooked poultry and products

The main target group for these behaviours is the person who prepares food, both in the home and at workplaces.

In an outbreak situation, this is supplemented with a focus, which places the primary responsibility for information sharing on the professionals in the animal and human health sectors.

The outbreak situation also points to not touching, slaughtering, buying, preparing or eating sick or dead poultry.

Finally, children are a special target group for behavioural goals of not playing with poultry, not playing near poultry or contaminated areas and not picking up feathers or eggs.

The behaviours that are listed and discussed for each target group are both technical important and practically feasible. More precisely, this means:

- ***Behaviours that enable individuals to avoid exposure to the virus***
- ***Behaviours that enable individuals to kill the virus***
- ***Behaviours that enable individuals to actively reduce risk if they cannot avoid contact with poultry***
- ***Behaviours that are likely or possible to be adopted by the target group***

All the behaviours mentioned are technically important and practically feasible. But a number of behaviours have are considered of both high technical importance and of high practical feasibility. These behaviours are:

<u>Non-Outbreak situation</u>

- Not placing cooked meat back on the same plate or surface it was on before cooking
- Cooking poultry and poultry products thoroughly

Outbreak situation

- Information sharing between animal and human health sector workers about any outbreak situations or potential outbreak situations
- Immediate sharing of information on any poultry or human outbreaks should be shared with the public
- Human Health workers should increase their surveillance for and reporting of severe ILI or SARI cases
- Avoid contact with sick or dead poultry and products
- Children do not play with poultry
- Never buy poultry from an infected area
- Never buy sick or dead poultry
- No slaughtering sick poultry
- Never preparing poultry that has been sick
- Washing hands with soap and clean water between and after handling raw/undercooked poultry and poultry products
- Not placing cooked meat back on the same plate or surface it was on before cooking
- Cooking poultry and poultry products thoroughly
- Eating only thoroughly cooked poultry and poultry products (no pink meat, no runny eggs)
- Not consuming poultry or products that are raw or undercooked, e.g. duck blood pudding
- Not consuming sick or dead poultry or products

Priorities for Behaviour Change Communications in the Health Sector

Based on the technical and practical ratings of 90 proposed behavioural outcomes for the health sector, GoV focal points have identified overall priority outcomes for this sector, as listed in Table 17.

Table 17: List of priority behaviour outcomes for the health sector

Non-Outbreak	Outbreak
Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Eat only thoroughly cooked poultry and poultry products (no pink meat or runny eggs). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating. Immediately report of sick or dead poultry to veterinary officials and local authorities.	People with fever > 38^{o}C have to go to their local health station for evaluation, especially if there is sick or dead poultry in surrounding environment. Immediately report of sick or dead poultry to veterinary officials and local authorities. Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating.

6.1 Human Health Workers

Description of the Target Group

Human health workers at the local level operate under the overall direction of provincial authorities with technical guidance provided by central technical agencies within the Ministry of Health. These local personnel are a key component of the overall fight against avian influenza, including local surveillance, identification and referral of possible human cases of H5N1 infection as well as public awareness raising and behaviour change communications.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for Health Workers

Non-outbreak situation

No specific behaviour outcomes are identified for behaviour change communications to human health workers in a non-outbreak situation.

Outbreak Situation

Key areas that have been identified for behaviour change communications to human health workers in an outbreak situation focus on surveillance and reporting as well as safety and infection control practices. As indicated in Table 18, these behaviour outcomes have been assessed as both technically sound and practically feasible.

Central technical agencies and provincial authorities are responsible to develop overall plans and provide training to direct the activities of local human health workers. However, effective implementation of activities faces challenges due to limited budgets and equipment for extension and active surveillance activities, low salaries, low education levels and limited capacity, etc. Therefore, behaviour change communications targeted at local human health workers may also be needed to ensure effective implementation of key activities and programmes. Any specific behaviour change communications for human health workers should therefore be planned based on analysis of knowledge, attitudes, practices and behaviours (i.e. KAPB studies) of the target population, both to demonstrate the need for behaviour change communications to support supervision and training, and to provide a baseline for monitoring and evaluation of behaviour change results.

Table 18: Rating of proposed human health behavioural outcomes for Human Health Workers in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Surveillance and Reporting** 40. Information sharing between animal and human health sector workers about any outbreak situations or potential outbreak situations 41. Immediate sharing of information on any poultry or human outbreaks with the public **Safety and infection control practices** 50. Human health workers increase their surveillance for and reporting of severe ILI or SARI cases	-	-
	2.	-	-	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with human health workers in an outbreak situation is available at Annex IV.

6.2 Poultry Farmers and other Bird Raisers, Slaughterers

Description of the Target Group

This target group includes poultry raisers in both rural and urban settings: farms, urban Sector Four poultry raisers, raisers of fighting cocks and beautiful birds etc.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for Poultry Farmers

Non-outbreak situation

Technically sound behaviours that allow people working with poultry on a farm in a non-outbreak situation to avoid exposure to the virus or to kill the virus have been identified in relation to surveillance and reporting, safety and hygiene, and safe slaughtering of poultry. Technically sound behaviours that enable individuals to actively reduce risk if they cannot avoid contact with poultry include behaviours related to safety and hygiene, and safe slaughtering of poultry.

In terms of practical rating, these behaviours have either been identified as having moderate or low practical feasibility. In all cases therefore, design of communication activities to protect poultry farmers from infection will need to have concrete strategies to address identified barriers.

The proposed behaviour outcome related safe slaughtering through certification of poultry has been rated as having both low technical relevance and low feasibility as effective certification practices have not been established for small-scale and Sector Four poultry farms. Certification is currently only an effective option for large-scale suppliers to supermarkets in urban areas.

Table 19: Rating of proposed human health behavioural outcomes for Poultry Farmers in a Non-Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Surveillance and Reporting** 1. Immediately reporting sick or dead poultry to local animal health workers or hamlet heads. **Safety and hygiene and contacting poultry** 8. Avoiding contact with (touching) sick or dead poultry and products 9. Avoiding contact with (touching) potentially contaminated surfaces **Safe slaughtering of poultry** 20. Not slaughtering sick poultry 25. Thoroughly and regularly washing tools/utensils and surfaces that have been in contact with raw/undercooked poultry or products e.g. when slaughtering 26. Wearing clean cloth/masks and	**Safety and hygiene and contacting poultry** 2. Keep poultry and waterfowl out of houses where people live **Safe slaughtering of poultry** 21. Not slaughtering poultry in the home 24. Only slaughtering poultry in approved locations 27. Thorough cleaning of slaughtering places with disinfectant or detergent

			gloves, when handling and slaughtering poultry	
	2.	-	**Safety and hygiene and contacting poultry** 3. Always using soap when washing hands 4. Washing hands with soap and clean water after any contact with poultry (incl. touching, slaughtering, degutting, plucking poultry, products,) 5. Washing hands with soap and clean water after any contact with potentially contaminated surfaces **Safe slaughtering of poultry** 19. Slaughtering only healthy poultry 23. Only slaughtering originally known poultry and poultry products	**Safety and hygiene and contacting poultry** 6. Bathing with soap and clean water after working with poultry 7. Avoiding putting fingers in your nose, eyes, or mouth 10. Removing and cleaning shoes before entering households after walking in farms, markets, or backyards with poultry
	3.	-	-	**Safe slaughtering of poultry** 22. Only slaughtering certified poultry and poultry products

Detailed analysis of barriers to achieving these behavioural outcomes with poultry farmers and other bird raisers and slaughterers in a non-outbreak situation is available at Annex IV.

Outbreak Situation – affected and neighbouring areas

Technically sound behaviours that allow people working with poultry on a farm in an outbreak situation to avoid exposure to the virus or to kill the virus have been identified in relation to surveillance and reporting, safety and hygiene, safe slaughtering of poultry, and decreasing the potential spread of disease. Technically sound behaviours that enable individuals to actively reduce risk if they cannot avoid contact with poultry are related to safe slaughtering of poultry.

In terms of practical rating, a few behaviours related to safety and hygiene, and safe slaughtering of poultry have been rated as highly feasible. All other technically sound behaviours have been assessed as having either medium of low practical feasibility. In these cases therefore, design of communication activities to protect poultry farmers from infection will need to have concrete strategies to address identified barriers.

Once again, the proposed behaviour outcome related safe slaughtering through certification of poultry has been rated as having low technical relevance as effective certification practices have not been established for small-scale and Sector Four poultry farms. Certification is currently only an effective option for large-scale suppliers to supermarkets in urban areas.

Table 20: Rating of proposed human health behavioural outcomes for Poultry Farmers in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safety and hygiene, contact with poultry** 53. Washing hands with soap and clean water after any contact with poultry (including touching, slaughtering, degutting, plucking poultry and poultry products) 57. Avoiding contact with (not touching) sick or dead poultry and products **Safe slaughtering of poultry** 71. Not slaughtering sick poultry	**Surveillance and Reporting** 42. Immediately reporting sick or dead poultry to local animal health workers or hamlet heads **Decreasing potential spread of disease** 43. Poultry and poultry products are not moved from an infected area for 21 days. **Safety and hygiene, contact with poultry** 51. Keep poultry and waterfowl out of houses where people live 52. Always using soap when washing hands 54. Washing hands with soap and clean water after any contact with potentially contaminated surfaces 56. Avoiding putting fingers in your nose, eyes, or mouth 58. Avoiding contact with (not touching) potentially contaminated surfaces **Safe slaughtering of poultry** 72. Not slaughtering poultry in the home 76. Thorough and regular washing of tools and surfaces in contact with raw poultry or products 77. Wearing clean cloth/masks and gloves when handling and slaughtering poultry 78. Thorough cleaning of slaughtering places with disinfectant, detergent	**Safety and hygiene, contact with poultry** 55. Bathing with soap and clean water after working with poultry 59. Removing and cleaning shoes before entering households after walking in farms, markets, or backyards with poultry **Safe slaughtering of poultry** 75. Only slaughtering poultry in approved locations
	2.	**Safe slaughtering of poultry** 70. Slaughtering only healthy poultry	**Safe slaughtering of poultry** 74. Only slaughtering originally known poultry	-
	3.	-	**Safe slaughtering of poultry** 73. Only slaughtering certified poultry	-

Detailed analysis of barriers to achieving these behavioural outcomes with poultry farmers and other bird raisers and slaughterers in an outbreak situation is available at Annex IV.

6.3 Buyers and Sellers

Description of the Target Group

This target group covers buyers and sellers of poultry.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for Poultry Buyers and Sellers

Non-outbreak situation

Four technically sound behaviour outcomes for poultry buyers and sellers to reduce the risk of human infection in a non-outbreak situation have been identified.

Not buying poultry that has been sick is rated of high practical feasibility. Other behaviour outcomes have either been identified as having moderate or low practical feasibility. In these cases therefore, design of communication activities targeted to poultry buyers and sellers will need to have concrete strategies to address identified barriers.

The proposed behaviour outcome related to only buying/selling certified poultry has been rated as having low technical relevance because effective certification practices have not been established for small-scale and Sector Four poultry farms. Certification is currently only an effective option for large-scale suppliers to supermarkets in urban areas.

Table 21: Rating of proposed human health behavioural outcomes for Poultry Buyers and Sellers in a Non-Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safe buying/selling of poultry** 14. Not buying poultry that has been sick	-	**Safe buying/selling of poultry** 17. Not selling poultry that has been sick
	2.	-	**Safe buying/selling of poultry** 13. Only buying healthy-looking poultry 16. Buying poultry only from originally known sources 18. Selling only healthy-looking poultry	-
	3.	-	**Safe buying/selling of poultry** 15. Buying only certified poultry where available	-

Detailed analysis of barriers to achieving these behavioural outcomes with poultry buyers and sellers in a non-outbreak situation is available at Annex IV.

Outbreak Situation – affected and neighbouring areas

Technically sound behaviours that allow poultry buyers and sellers in an outbreak situation to avoid exposure to the virus or to kill the virus have been identified in relation to safe buying and selling, and reducing the potential spread of disease. Technically sound

behaviours that enable individuals to actively reduce risk if they cannot avoid contact with poultry are related to safe buying and selling of poultry.

In terms of practical rating, several behaviours related to safe buying and selling of poultry have been rated as highly feasible. Other technically sound behaviours have been assessed as having either medium of low practical feasibility. In these cases therefore, design of communication activities to protect poultry farmers from infection will need to have concrete strategies to address identified barriers.

Once again, the proposed behaviour outcome related safe slaughtering through certification of poultry has been rated as having low technical relevance as effective certification practices have not been established for small-scale and Sector Four poultry farms. Certification is currently only an effective option for large-scale suppliers to supermarkets in urban areas.

Table 22: Rating of proposed human health behavioural outcomes for Poultry Buyers and Sellers in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safe buying/selling of poultry** 63. Never buy poultry from an infected area 64. Never buy sick or dead poultry	**Decreasing potential spread of disease** 43. Poultry and poultry products are not moved from an infected area for 21 days. **Safe buying/selling of poultry** 67. Never sell poultry from an infected area 68. Never sell sick or dead poultry	-
	2.	**Safe buying/selling of poultry** 62. Only buying healthy-looking poultry	**Safe buying/selling of poultry** 44. No transportation of live poultry into cities and towns 66. Buying poultry only from known sources 69. Sell only healthy looking poultry	-
	3.	-	**Safe buying/selling of poultry** 65. Buying only certified poultry where available	-

Detailed analysis of barriers to achieving these behavioural outcomes with poultry buyers and sellers in an outbreak situation is available at Annex IV.

6.4 Persons Preparing and Cooking Food

Description of the Target Group

This target group includes people who are responsible for the cooking in their own home as well as people who are professionally responsible for cooking whether in homes, workplaces, restaurants etc.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for Persons Preparing and Cooking Food

Non-outbreak situation
All proposed behaviour outcomes for persons preparing and cooking food in a non-outbreak situation have been assessed as technically sound.

Behaviour outcomes related to thorough cleansing of utensils and food preparation surfaces, not placing cooked products back on plates or surfaces used before cooking, and cooking poultry products thoroughly, have been assessed as having high practical feasibility for adoption based on behaviour change communications. Other behaviour outcomes have been assessed as having either medium of low practical feasibility. In these cases therefore, design of communication activities to protect poultry farmers from infection will need to have concrete strategies to address identified barriers.

Table 23: Rating of proposed human health behavioural outcomes for Persons Preparing and Cooking Food in a Non-Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safe preparation of poultry and poultry products** 32. Thorough cleansing of cooking utensils and surfaces that have been in contact with raw/undercooked poultry or products 34. Not placing cooked meat back on the same plate or surface it was on before cooking 35. Cooking poultry and poultry products thoroughly	**Safe preparation of poultry and poultry products** 28. Never preparing poultry that has been sick 31. Washing hands with soap and clean water between and after handling raw/undercooked poultry and products and cooked food 33. Using different chopping boards and knives for raw/undercooked poultry or products and cooked or ready-to-eat foods or fruits/vegetables	**Safe preparation of poultry and poultry products** 30. Washing eggs in soapy water and washing hands afterwards
	2.	-	**Safe preparation of poultry and poultry products** 29. Preparing only healthy-looking poultry	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with persons preparing and cooking food in a non-outbreak situation is available at Annex IV.

Outbreak Situation – affected and neighbouring areas
All proposed behaviour outcomes for persons preparing and cooking food in an outbreak situation have been assessed as technically sound.

Table 24: Rating of proposed human health behavioural outcomes for Persons Preparing and Cooking Food in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safe Preparation** 79. Never preparing poultry that has been sick 82. Washing hands with soap and clean water between and after handling raw/undercooked poultry and poultry products and cooked food 83. Thorough cleansing of cooking utensils and surfaces that have been in contact with raw/undercooked poultry or products 85. Not placing cooked meat back on the same plate or surface it was on before cooking. 86. Cooking poultry and poultry products thoroughly	**Safe Preparation** 84. Using different chopping boards and knives for raw/undercooked poultry or products and cooked or ready-to-eat foods or fruits/vegetables	**Safe Preparation** 81. Washing eggs in soapy water and washing hands afterwards
	2.	**Safe Preparation** 80. Preparing only healthy looking poultry	-	-
	3.	-	-	-

Several key behaviour outcomes related to not slaughtering sick poultry, not preparing sick poultry, and hygiene in poultry preparation, have been assessed as having high feasibility for adoption by the target group. Other behaviour outcomes have been assessed as having either medium of low practical feasibility. In these cases therefore, design of communication activities to protect poultry farmers from infection will need to have concrete strategies to address identified barriers.

Detailed analysis of barriers to achieving these behavioural outcomes with persons preparing and cooking food in an outbreak situation is available at Annex IV.

6.5 People Eating Poultry

Description of the Target Group

This target group includes all consumers of poultry products.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for People Eating Poultry

Non-outbreak situation

Four technically sound behaviour outcomes have been identified for safe consumption of poultry in a non-outbreak situation.

The behaviour outcome of eating only thoroughly cooked poultry was assessed as having high practical feasibility. Other behaviours related to hand washing, not consuming undercooked or raw poultry products, and not consuming sick or dead poultry products,

were rated as having moderate feasibility. For these behaviours, design of communication activities will need to have concrete strategies to address identified barriers.

Table 25: Rating of proposed human health behavioural outcomes for People Eating Poultry in a Non-Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safe Consumption** 37. Eating only thoroughly cooked poultry and poultry products (no pink meat, no runny eggs)	**Safe Consumption** 36. Washing hands with soap and water after contact with poultry and before eating 38. Not consuming poultry or products that are raw or undercooked, e.g. duck blood pudding 39. Not consuming sick or dead poultry or products	-
	2.	-	-	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with people eating poultry in a non-outbreak situation is available at Annex IV.

Outbreak Situation – affected and neighbouring areas

Four technically sound behaviour outcomes have been identified for safe consumption of poultry in an outbreak situation. These are the same as in a non-outbreak situation, however three of the four behaviour outcomes are now rated as being of high practical feasibility.

The behaviour outcome related to hand washing is still rated as having moderate feasibility. Design of communication activities to promote this behaviour outcome will need to have concrete strategies to address identified barriers.

Table 26: Rating of proposed human health behavioural outcomes for People Eating Poultry in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safe Consumption** 88. Eating only thoroughly cooked poultry and poultry products (no pink meat, no runny eggs) 89. Not consuming poultry or products that are raw or undercooked, e.g. duck blood pudding 90. Not consuming sick or dead poultry or products	**Safe Consumption** 87. Washing hands with soap and water after contact with poultry and before eating	-
	2.	-	-	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with people eating poultry in an outbreak situation is available at Annex IV.

6.6 Children

Description of the Target Group

Many of the behaviour change outcomes for other identified target groups are also relevant to school-aged and younger children (e.g. "people who consume poultry" clearly' includes children). However, the behaviour outcomes addressed in this section are those which are primarily or only relevant to children, and appropriate for promotion through the education system.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for Children

Non-outbreak situation

Two technically sound behaviour outcomes have been identified for children in a non-outbreak situation.

In terms of practical feasibility, the outcome of not playing with poultry has been rated as medium, while the outcome of no playing near poultry or potentially contaminated surfaces has been rated as low feasibility. Design of communication activities to promote these behaviour outcomes will need to have concrete strategies to address identified barriers.

Table 27: Rating of proposed human health behavioural outcomes for Children in a Non-Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Safety and hygiene and contacting poultry** 11. No playing with poultry	**Safety and hygiene and contacting poultry** 12. No playing near poultry or potentially contaminated surfaces, including picking up feathers or eggs
	2.	-	-	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with children in a non-outbreak situation is available at Annex IV.

Outbreak Situation – affected and neighbouring areas

The behaviour outcomes for children in an outbreak situation are the same as those in a non-outbreak situation. In an outbreak situation, both of these outcomes are assessed as both technical sound and of high practical feasibility.

Table 28: Rating of proposed human health behavioural outcomes for Children in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	**Safety and hygiene and contacting poultry** 60. No playing with poultry 61. No playing near poultry or potentially contaminated surfaces, including picking up feathers or eggs	-	-
	2.	-	-	-
	3.	-	-	-

Detailed analysis of barriers to achieving these behavioural outcomes with children in an outbreak situation is available at Annex IV.

6.7 Everybody

Description of the Target Group

This section covers specific behaviour outcomes that apply to the whole population in an outbreak situation.

Technical and Feasibility Ratings of Human Health Behaviour Change Outcomes for Everybody

Outbreak situation

Two technically sound behaviour outcomes for the general population in an outbreak situation have been identified, related to safety and infection control. Both of these behaviours are assessed as being of medium practical feasibility. Design of communication activities to promote these behaviour outcomes will need to have concrete strategies to address identified barriers.

Table 29: Rating of proposed human health behavioural outcomes for Everybody in an Outbreak Situation

		Practical Rating		
		1.	*2.*	*3.*
Technical Rating	*1.*	-	**Safety and Infection Control** 45. People with a fever about 38 degrees go to their local health station for evaluation, especially if there are sick or dead poultry in the environment	-
	2.	-	**Safety and Infection Control** 46. Covering nose and mouth when coughing or sneezing	-
	3.	**Safety and Infection Control** 49. Caregivers of avian influenza patients should wear protective gear (gloves and mask)	-	**Safety and Infection Control** 47. Using a tissue and disposing of it in a rubbish bin after use 48. Wearing a mask if sick with avian influenza

Other proposed behaviour outcomes for the general public have been assessed as being of low technical relevance. This includes behaviour targeted explicitly towards people infected with the H5N1 virus, as once any such infections are identified these people would be moved into the curative care system under medical treatment. Therefore, there is little technical relevance in promoting these behaviours to the general public.

Detailed analysis of barriers to achieving these behavioural outcomes in an outbreak situation is available at Annex IV.

CHAPTER 7. RESEARCH, MONITORING AND EVALUATION

As part of developing the strategic framework, the Human Health Sector workshop embarked on the discussions of how to set up a Monitoring and Evaluation Framework for assessing the progress of communications activities for the period 2007-2010. This process will continue over the next months, facilitated by the PAHI secretariat.

The purpose of the National AHI Monitoring and Evaluation Framework will be to build on and enhance existing AHI monitoring mechanisms in order to support effective decision-making by national authorities and their international partners. The M&E Framework will provide strategic information on:

- The overall AHI situation
- The allocation and utilization of financial, technical and material resources
- The progress of interventions in agriculture, health and wider areas of preparedness

7.1 Knowledge gaps

The process of developing and discussing the behavioural goals for AHI prevention naturally uncovered areas where new and additional knowledge is needed. These knowledge gaps are on two levels:

1: Overall research gaps
2: Behaviour specific knowledge gaps

Overall research gaps

Both sector workshops raised the central question: Is the present list of behaviours adequate?

The present list is compiled of behaviours that are already being addressed by communication initiatives. More research into the epidemiology of AHI and the behaviours needed to prevent the spread of the decease is called for. Specifically, needs for further research was called for in an outbreak situation; in both the control zone and neighbouring areas, into problems of traceability and the contamination potentials of slaughterhouses.

Behaviour specific knowledge gaps

Research needs for specific behaviours were identified in two ways: through the ratings or through doubts being raised at different times during the process of discussing the behaviours

The need for specific behaviour-related research was expressed in different ways in the two sectors. For the agricultural sector, a technical rating of 2 meant the behaviour had an "indeterminate effect" on prevention. Thus, all behaviours rated 2 for technical importance need further knowledge in order to determine the possible preventive effect. These behaviours are listed in Table 30.

Table 30: Behaviours related to the agriculture sector that need further knowledge to determine the preventive effect

Agricultural sector		
Behaviour	**Target group(s)**	**Knowledge gap**
Separate different species of poultry	Small-scale and Sector Four farmers	
Raise only one kind of poultry	Small-scale and Sector Four farmers	
Pets and other animals are prevented from contact with the leftovers/culling sites	Small-scale and Sector Four farmers & Animal Health workers	Does this behaviour have actual preventive effect?
Poultry raising areas and culling sites are disinfected using recommended disinfectant	Small-scale and Sector Four farmers & Animal Health workers	Need clear guidelines regarding what type of disinfectant/chemicals should be used and what procedure should be followed? This should be based on evidence from research/testing, taking into account current knowledge on the virus.
Preventive disinfection of poultry raising areas	Small-scale and Sector Four farmers	What is adequate disinfection of poultry raising areas, what type of disinfectant/chemicals should be used and what procedure should be followed?
Farmers do not handle poultry from other locations or poultry bought from locations/areas with sick poultry	Small-scale and Sector Four farmers	

For both the Agricultural and the Human Health sector, a numbers of behaviours were listed as in need of being clearer and more defined; for instance no to have “sick” and “dead” poultry in the same behaviour, but to separate the two, or to define un-precise terms as “timely reporting” and “unusual deaths”. This is not really a symptom of a knowledge gap, but of the stage to which the work with AHI communication has reached at present: behaviours and target groups will be further defined as the process moves along.

For the Human Health sector, some behaviours were rated 3, which among other things meant behaviours that are poorly defined from a risk reduction perspective. This does not necessarily mean that the behaviour needs further research, but a number of behaviours did reveal a knowledge gap. These behaviours were related to a specific type of behaviours that are listed in Table 31.

Table 31: Types of behaviour related to the health sector that need further knowledge

Human Health sector		
Type of behaviour	**Target group(s)**	**Knowledge gap**
Wash hands	People raising, trading, preparing and consuming poultry	What are the specific needs: Wash hands with XXX after XXX?
Using recommended disinfectant	Farming households and anyone slaughtering poultry	What is adequate? Where is it available?
... after touching contaminated areas	Farming households and anyone slaughtering poultry	Which surfaces are potentially contaminated and why?
Not selling, buying, slaughtering, preparing or eating sick or dead poultry	People raising, trading, preparing and consuming poultry	How do you know if a chicken was sick and how do you know if it was AI?

Annexes

1. Signatories to the PAHI Partnership Framework
2. Overall priorities for behaviour change communications
3. Analysis of all proposed behaviour outcomes for the agriculture sector
4. Analysis of all proposed behaviour outcomes for the health sector

Annex I Signatories to the PAHI Partnership Framework

Government of Vietnam

1. National Steering Committee on Avian Influenza

UN System & Multilateral Donors

2. Asian Development Bank
3. European Commission
4. United Nations System
5. FAO
6. UNDP
7. UNICEF
8. WHO
9. The World Bank

Bilateral Donors

10. Embassy of Australia
11. Embassy of Canada
12. Embassy of China
13. Embassy of Denmark
14. Embassy of Finland
15. Embassy of Japan
16. Embassy of New Zealand
17. Embassy of the United States of America

Non-Government, Research & Private Sector organizations

18. Abt Associates
19. Academy for Educational Development (AED)
20. Care International
21. Catholic Relief Services
22. CIRAD
23. International Federation of Red Cross and Red Crescent Societies (IFRC)
24. Plan in Vietnam
25. Vietnam Red Cross (VNRC)

Annex II Overall Priorities for Behaviour Change Communications

Based on the technical and practical ratings of 94 proposed behavioural outcomes for the agriculture sector and 90 proposed behaviour outcomes for the health sector, GoV focal points have identified these overall priority behavioural outcomes.

	Non-Outbreak	Outbreak
Agriculture	Poultry raisers actively comply with official poultry vaccination schedules. Regularly clean poultry raising areas (yards and pens). Clean vehicles, boots, cages, containers, and other equipment after visiting wet markets or raising farms and before returning to the farms. Immediately report of sick or dead poultry to veterinary officials and local authorities.	Immediately report of sick or dead poultry to veterinary officials and local authorities. Culling and disposal of sick and dead poultry is carried out under supervision of local authorities and PPE is used. Poultry and poultry products are not moved from areas with active disease for 21 days. Restocking of poultry is delayed for at least 1 month after an outbreak.
Health	Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Eat only thoroughly cooked poultry and poultry products (no pink meat or runny eggs). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating. Immediately report of sick or dead poultry to veterinary officials and local authorities.	People with fever > 38^{o}C have to go to their local health station for evaluation, especially if there is sick or dead poultry in surrounding environment. Immediately report of sick or dead poultry to veterinary officials and local authorities. Not buy or sell poultry that has been sick or dead. Not slaughter or eat poultry that has been sick (or died of a sickness). Avoid contacting with sick and dead poultry. Wash hands with clean water and soap after contacting with poultry and before eating.

Annex III Analysis of all proposed behaviour outcomes for the agriculture sector

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
NON-OUTBREAK SITUATION -- Disease Prevention					
***Behaviour Category*: Surveillance and Reporting** Risk Setting: Rural communities that engage in poultry farming					
1	Immediate reporting of sick or dead poultry to veterinary officials or local authorities	Sector 3 farmers	1	2	This is a central behaviour to preventing AI. There are several severe barriers, but it is considered likely that well planned interventions can persuade the target group to adopt this behaviour. Some barriers are due to the attitude of the farmers. They may have insufficient knowledge of why poultry is sick or dying and not want to report if it has nothing to do with AI. They may not want to face the economic consequences of culling without proper and rapid compensation. The farmers are also faced with constraints from their relatives and neighbours; if AI is confirmed, poultry will be culled within a radius of 3 km. The social pressure here is severe. This pressure might also influence local authorities receiving the report. Finally, standard procedures for reporting need to be developed and implemented in cooperation with existing routines. Farmers need to know who to report to.
2		Sector 4 farmers	1	3	Within this sector a high rate of poultry deaths is considered normal. Farmers consider it is unrealistic to report sick poultry, or just a few deaths. Farmers may have insufficient knowledge of why poultry is sick or dying and not want to report if it has nothing to do with AI. They may not want to face the economic consequences of culling without proper and rapid compensation. There are no legal

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					requirements to report. The farmers are also faced with constraints from their relatives and neighbours; if AI is confirmed, poultry will be culled within a radius of 3 km. The social pressure here is severe. This pressure might also influence local authorities receiving the report. Finally, standard procedures for reporting need to be developed and implemented in cooperation with existing routines. Farmers need to know who to report to.
3	Immediate reporting of any unusual decrease in poultry productivity to veterinary officials or local authorities	Sector 3 farmers	1	2	Small-scale poultry farmers are considered relatively willing to comply with this behaviour in order to protect their investment. However, they may not want to risk the economic consequences of an AI confirmation. The social pressure may also be a barrier.
4		Sector 4 farmers	2	3	People are not interested in People afraid of culling without rational compensation People think chicken/duck dead is normal Social awareness, not get used with reporting Difficult to monitor with small number of poultry for Sector Four farmers Poor vet network, and it is not available in some areas Immediate reporting of decrease in “egg production”
5	Commune animal health workers report all cases of sick and dead poultry to district veterinary officer	Animal health workers	1	2	It is considered likely that this target group will adopt the behaviour of reporting, but there are still some barriers to overcome. These barriers are mostly due to insufficient funding and organization: low or no allowance paid, poor network of animal health workers, insufficient channels of communication and locally different structures. There is no specific financial incentive for reporting. AHWs may have difficulty contacting District level (who to contact, how to contact…).

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					There is also a problem of the relation between the animal health workers and the farmers, as this is a very sensitive mechanism in rural areas. Local poultry farmers may not report sick/dead birds to AHWs.
***Behaviour Category*: Separate Poultry** Risk Setting: Sector 3 and Sector 4 poultry farms					
6	"All in, all out" policy (sell all poultry stock at one time, restock all poultry at one time)	Sector 3 farmers	1	2	In many instances, this behaviour will require that farmers change the usual production circle, which means changing the management of their farm. For duck raisers "all in all out" is more likely than for chicken raisers who traditionally keep breeders. Market prices may be a further barrier.
7	Separation of new poultry introduced into the backyard/farm and unsold poultry returned from market for a minimum period of 14 days	Sector 3 farmers	1	2	The farmers do not have this habit, and lack of knowledge is a main barrier. In many instances lack of resources in the form of conditions for keeping new and returned poultry separate from the rest.
8		Sector 4 farmers	1	3	Farmers have a habit of raising different types of poultry together. Farmers lack sufficient land to confine poultry separately. Setting up separate areas and necessary infrastructure is costly. Sector Four poultry farmers typically apply a low-input, low-output model of poultry production. Farmers lack awareness of why this is necessary.
9	Separate different species of poultry	Sector 3 farmers	2	2	Farm/scale raising place (commercial production) Better knowledge Similar as No 9 (slightly level) More likely for sector 3 Custom and total area for poultry keeping
10		Sector 4 farmers	2	3	The custom of raising different types of poultry together Not interested in

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					Don't have consciousness + lack of knowledge Low economic conditions; resources Habit; infrastructure Custom and total area for poultry keeping Space, cost, hassle (because small numbers of poultry)
11	Raise only one kind of poultry	Sector 3 farmers	2	2	Poultry raising purpose (commercial production) (integrated production system) Similar as No 11 but high practical feasibility Diversity income Mostly sector 3 raise only one species anyway
12		Sector 4 farmers	2	3	Awareness Household conditions (having a pond - duck) References - Separated chicken raising: 8% - Mixed raising of chicken & duck: 69.9% - Separated duck raising: 36% Small raising area Diversity income Custom and total area for poultry keeping
13	Separation of sick poultry from the rest of the flock	Sector 3 farmers	3	2	Farm/scale raising place (commercial production) Better knowledge Not existing Sector 3 should be ok – more monitoring and resources Lack of technical skills to follow correct separation practices
14		Sector 4 farmers	3	3	The custom of raising different types of poultry together; habit No place for confined poultry; resources Not interested in Lack of understanding and knowledge about AI

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					Lack of technical skills to follow correct separation practices
15	Do not let traders come into poultry raising area	Sector 3 farmers	3	2	Similar as No 7 (big quantities) No local quarantine system exists to verify the product quality (chicken, duck,..) Part of process is for traders to come to area, must select poultry Consciousness about the importance of behaviours Disinfect rather than not letting traders come into poultry raising area (hygiene section)
16		Sector 4 farmers	3	3	Buyers request to select poultries themselves Knowledge and custom; habit Area around house poultry raising area Difficult to not have traders in area Consciousness about the importance of behaviours "I don't know if I don't care"
17	Fencing of poultry	Sector 3 farmers	1	2	Even though this requires investments in fencing and there have been some problems with fences being made but not correctly applied, this is considered a behaviour that can possibly be adopted by chicken raisers. For ducks, which are raised in the field, this is much more difficult.
18		Sector 4 farmers	1	3	Sector Four poultry farmers typically apply a low-input, low-output model of poultry production, and rely on foraging/free grazing to supply or supplement poultry feed requirements. Fencing is considered too expensive, and resources are not available. In some cases fences may be made but applied incorrectly for poultry.
***Behaviour Category*: Hygiene (for protection of animals)** Risk Setting: Sector 3 and Sector 4 poultry farms					
19	Regular cleaning of	Sector 3 farmers	1	2	There is a lack of knowledge and recognition of the purpose of this as

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	poultry raising areas (yards and pens)				well as a lack of skills in regard to sufficient cleaning. But it is considered a practically feasible behavioural change as farmers can see results.
20		Sector 4 farmers	1	3	Sector Four farmers may not have anywhere to confine their poultry. The economic value of Sector Four poultry production is low therefore farmers may not see value in the effort required for cleaning. Farmers are not clear about how to effectively clean. Ducks are often kept in water areas so cleaning is not possible.
***Behaviour Category*: Hygiene (for protection of animals)** Risk Setting: Live poultry markets					
21	Poultry raising equipment (e.g. cages, feed containers, egg trays and other equipment) are regularly cleaned	Sector 3 farmers	1	2	As with cleaning of the raising areas, there is a lack of knowledge and recognition of the benefits of this behaviour as well as a lack of skills to clean sufficiently. The resources of the individual farmer depend on the scale of the production, and this influences both the equipment and the facilities for cleaning.
22		Sector 4 farmers	1	3	Sector Four farmers may not have anywhere to confine their poultry. The economic value of Sector Four poultry production is low therefore farmers may not see value in the effort required for cleaning. There is low awareness about the benefit of cleaning. Farmers don't have sufficient economic conditions to purchase tools and equipment for raising, or sufficient facilities for cleaning. There is not place or facilities for cleaning at the market. There is no penalty for not cleaning.
23	Cleaning of vehicles, boots, cages, equipment, and containers after visiting wet markets or	Sector 3 farmers	1	2	There is low knowledge and low recognition of the necessity and benefits of this behaviour.
24		Sector 4 farmers	1	3	Farmers do not have this habit and lack awareness of the need for this. Farmers lack resources (clean water etc.) and facilities for cleaning.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
25	other farms and before returning to the farm	Vendors at live poultry market	1	2	Lack of awareness. Lack of appropriate and convenient facilities and equipment for cleaning. Knowledge of the correct way to clean.
26		Customers at live poultry markets	1	3	The custom of raising different types of poultry together No place for confined poultry Not interested in Don't have consciousness; lack of knowledge; low perception Possible to move to 2 in vet markets in it is separated from other food sold
***Behaviour Category*: Traceability** Risk Setting: Markets and farms that trade in live or processed poultry					
27	Poultry traders only buy and sell certified poultry	Poultry traders/vendors	3	2 3	City consumers > < rural consumers Not interested in Buyers don't have a habit to buy certified products Quarantine system lacks of capacity; insufficient vet monitoring system System is in place (but possible if reliable system is in place) Economic benefit
28	Consumers only buy certified poultry	Poultry consumers	3	2	Not interested in Buyers don't have a habit to buy certified products Quarantine system lacks of capacity System is in place (but possible if reliable system is in place) Distribution Habit Financial benefit
29	Poultry traders only buy and sell poultry of a known origin or from a	Poultry traders/vendors	3	2	Not interested in More expensive Lack of knowledge – where to get certified poultry

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	trusted supplier				How to know poultry is from trusted sources
30	Consumers only buy poultry of known origin or from a trusted supplier	Poultry consumers	3	2	Not interested in What is "reliable"? Habit to buy poultry from known suppliers
***Behaviour Category*: Safe Slaughtering Practices (focus on product)** Risk Setting: Slaughter houses					
31	One-way entry/exit points are organized for poultry to be slaughtered	Slaughter house operators	1	2	The existence and levels of organization of slaughterhouses differs greatly, so this behaviour is already in place in some places, whereas specialized slaughterhouses do not even exist in others. There is no demand from buyers for one-way entry/exit points.
***Behaviour Category*: Vaccination of Poultry** Risk Setting: Sector 3 and Sector 4 poultry farms					
32	Vaccinators follow correct vaccination procedures as specified by the government	Vaccinators (para vets, animal health workers, etc.)	1	1	Some barriers towards adopting this behaviour are lack of knowledge or lack of skills in the members of the target-group. But barriers are also to do with the resources that are at present available to the vaccinators: lack of time, lack of training, lack of staff and finally lack of the vaccine itself. Unclear government rules and insufficient enforcement of vaccination procedures are also considered a barrier. Most of these barriers can be overcome with sufficient resources and proper planning, so it is considered likely that the target group may adopt this behaviour.
33	Poultry raisers actively comply with official poultry vaccination programmes	Sector 3 farmers	1	2	The barrier towards this behaviour is the quality of the vaccine. The period of lower productivity after vaccination make the farmers wary of this behaviour.
34		Sector 4 farmers	1	2	The barriers towards adopting this behaviour are mostly to do with the

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					attitudes of the farmers: They are unsure of the quality of the vaccine. They are afraid of a decrease in productivity following vaccination. They are unsure about the benefits of the vaccinations. Also, there are barriers due to lack of adequate amounts of vaccine.
35	Poultry raisers wait 14 days after vaccination before selling poultry for consumption	Sector 3 farmers	1	2	There is a lack of knowledge of the necessity of this behaviour. But naturally, the barrier towards this behaviour is economic. Small-scale poultry farmers need money for basic necessities such as medication and education and are concerned with even minor losses of income.
36		Sector 4 farmers	1	3	There is no economic incentive for this. Poultry raisers may sell to supply immediate cash needs (illness, children's study, etc.). Sector Four farmers more at mercy of market forces. There is low awareness of why this matters.
37	Ducks are vaccinated (100% target)	Sector 3 farmers	1	2	Lack of knowledge and agreement with this behaviour is a barrier. So is the organization and availability of the vaccine.
38		Sector 4 farmers	1	2	The barriers towards adopting this behaviour are partly due to insufficient organization and availability of vaccines. The logistical challenges are greater in the south than in the north. There are also barriers due to the way poultry is raised and finally to farmers' lack of perception of the benefits of vaccinations.
39	Vaccinators disinfect syringes used for vaccination and change needles for vaccinating every new flock	Vaccinators (para vets, animal health workers, etc.)	1	1	This behaviour is of high technical importance to preventing Avian Influenza and it also has high practical feasibility. Barriers towards this behaviour are low. But vast numbers of poultry must be vaccinated, and it is a huge task. Some vaccinators may have insufficient understanding of the necessity of this behaviour.
***Behaviour Category*: Safe Transport of poultry** Risk Setting: all settings where poultry trading occurs					

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
40	Use recommended disinfectant to clean transportation vehicles and equipment at the end of the day	Poultry transporters	1	2	
41		Poultry traders/vendors	1	2	Lack of awareness. Lack of appropriate and convenient facilities and equipment for cleaning. Knowledge of the correct way to clean.
42		Poultry consumers	1	3	Not interested in Do not follow requirements Regulate cleaning and disinfectants spraying Poor monitoring Lack of equipment and disinfectants Lack of consciousness and knowledge Habit and regulations; consciousness Categorise different transporters – bicycles, motorbikes, trucks, etc. Categorise target groups on the basis of different transporters
***Behaviour Category*: Egg hatching ban in urban areas** Risk Setting: Urban areas (city and provincial)					
43	People in urban areas do not raise, buy or sell eggs for hatching or day-old chicks	People in urban areas	1	2	Some households/economic units in urban areas previously were dependent on poultry hatching for their livelihoods, and prefer this activity.
OUTBREAK SITUATION - Disease Control (Households and farms within the control zones)					
***Behaviour Category*: Surveillance and Reporting** Risk Setting: Control zone					
44	Immediate reporting of sick or dead poultry to veterinary officials or	Sector 3 farmers	1	1	There are no significant barriers against this behaviour, but farmers must be made aware of the necessity of reporting sick or dead poultry. It is important to be specific about the symptoms and circumstances

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	local authorities (case definition includes: watery eyes, swelling of feet, swelling of the head, bluish colour of wattle and comb, ruffled feathers, loss of appetite, diarrhoea))				that should lead to reporting. Procedures for reporting need to be developed and implemented in cooperation with existing routines.
45		Sector 4 farmers	1	2	In an outbreak situation, there are no significant barriers against this behaviour, but farmers must be made aware of the necessity of reporting sick or dead poultry. It is important to be specific about the symptoms and circumstances that should lead to reporting, farmers raising a small number of poultry may be unable to identify sick poultry.
46	Commune animal health workers report all cases of sick and dead poultry to District veterinary officer	Animal health workers	1	1	There are no significant barriers against animal health workers adopting this behaviour in an outbreak situation.
***Behaviour Category*: Quarantine/Movement Control** Risk Setting: Control zone					
47	Poultry and poultry products are not moved from areas with active disease for 21 days	Animal health workers	1	1	There are no significant barriers against animal health workers adopting this behaviour.
48		Sector 3 farmers	1	2	It is likely that the target group will adopt this behaviour. However, for some farmers the potential economic loss will be a factor: Poultry raising periods are precisely planned, and some farmers might be afraid to lose the investment in feed. Currently it is very difficult to control movement of poultry.
49		Sector 4 farmers	1	3	Farmers are afraid of economic loss. Margins are low and Sector Four farmers are often poor. It is relatively easy to take alternate routes and avoid checkpoints.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
***Behaviour Category*: Quarantine/Movement Control** Risk Setting: Sector 3 and Sector 4 farms in the control zone					
50	Poultry are confined	Sector 3 farmers	1	1 2	Lack of conditions for confinement is the main barrier. Also, some farmers may either lack the knowledge or disagree with the necessity of this behaviour.
51		Sector 4 farmers	1	2	Lack of conditions for confinement is the main barrier. Some farmers may either lack the knowledge or disagree with the necessity of this behaviour.
***Behaviour Category*: Containment of the virus – handling, culling, disinfecting** Risk Setting: Control zone					
52	Use PPE when handling or culling sick or dead poultry	Poultry cullers (animal health workers/commune level people responsible for culling)	1	1	Animal health workers in the control zone are likely to adopt this behaviour. This is naturally dependent on the availability of PPE. It must also be known who has this responsibility and a system of enforcement must be in place.
53	Pets and other animals are prevented from contact with the leftovers/culling sites	Poultry cullers (animal health workers/commune level people responsible for culling)	2	1	Not available Hard to control if sick/dead poultry not disposed properly Monitoring system Habit; knowledge, consciousness
54		Sector 3 farmers	2	2	Knowledge, consciousness, custom, habit Hard to control if sick/dead poultry not disposed properly Monitoring system

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
55		Sector 4 farmers	2	2	Knowledge, consciousness, custom, habit Hard to control if sick/dead poultry not disposed properly Monitoring system
56	Used single use PPE is safely disposed through burning.	Poultry cullers (animal health workers responsible for culling)	1	2	This requires awareness that the PPE is only to be used once, and understanding of the reasons for this. It will depend greatly on the availability of single use PPE. Habits of re-use and recycling are also barriers.
57	Multiple use PPE is cleaned thoroughly with recommended disinfectant	Poultry cullers (animal health workers/commune level people responsible for culling)	1	2	This requires understanding of the need for disinfecting rather than just regular cleaning, as well as available of sufficient supplies of disinfectant. AHWs also need to know and apply the correct cleaning technique.
58	Clothing, footwear and equipments used when culling are thoroughly cleaned with recommended disinfectants	Sector 3 farmers	1	2	Lack of knowledge of the correct disinfectant and of understanding of the necessity of this behaviour is a barrier. The disinfectant needs to be available, but this is not expected to pose a significant problem.
59		Sector 4 farmers	1	2	Lack of knowledge of the correct disinfectant and of understanding of the necessity of this behaviour is a barrier. Lack of disinfectant and of resources for buying disinfectant is also a barrier.
60	Poultry raising and culling areas are disinfected using recommended	Animal health workers	2	1	Lack of equipment
61		Sector 3 farmers	2	2	Lack of equipment. Knowledge + consciousness

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
62	disinfectant	Sector 4 poultry farmers	2	2	Lack of equipment Knowledge + consciousness
***Behaviour Category*: Containment of the virus – disposal of sick/dead poultry** Risk Setting: Control zone					
63	Bury or burn dead poultry	Sector 3 farmers	1	2	Some farmers may sell dead poultry, and a monitoring system may need to be introduced. There are some practical barriers against this behaviour in water delta areas.
64		Sector 4 farmers	1	2	Some farmers may sell dead poultry, and a monitoring system would need to be introduced. There are some practical barriers against this behaviour in water delta areas.
65		Animal health workers	1	1	There are restraints on this behaviour in water delta areas, but otherwise no significant barriers.
66	Don't throw poultry into the waterways	Sector 3 farmers	1	2	This behaviour is of high technical importance to preventing Avian Influenza and it also has high practical feasibility. Even the barriers towards this behaviour can be overcome; there are still barriers in the form of lack of knowledge, and lack of agreement that it is necessary to change this habit. Farmers are used to using the waterways to dispose of dead poultry, as this is easy and handy.
67		Sector 4 farmers	1	2	Farmers are used to using the waterways to dispose of dead poultry, as this is easy and handy. The barriers against changing this behaviour are lack of knowledge, and lack of agreement that it is necessary to change this habit.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
***Behaviour Category*: Restocking** Risk Setting: Sector 3 and Sector 4 farms in the control zone					
68	Restocking of poultry is delayed for at least 2 months after an outbreak	Sector 3 farmers	1	1 2	The barriers against this behaviour are basically economic: farmers may not accept the economic losses. Some farmers might disagree with the necessity to wait for 2 months, as they know temperatures of 65-70 degrees can kill the virus. Regulations and rural policy are not uniform, and there is a lack of monitoring as well as enforcement to support this behaviour. Small-scale poultry farmers in areas bordering on the control zone should comply with behaviours similar to those in the control zone. For quarantine, movement control and containment of the virus there are a set of behaviours targeted especially at the farmers in neighbouring areas.
69	Restocking of poultry is delayed for at least 1 month after an outbreak	Sector 4 farmers	1	2	The barriers against this behaviour are basically economic and therefore more severe for Sector Four farmers; they may encounter dire problems because of the economic losses. Regulations and rural policy are not uniform, and there is a lack of monitoring as well as enforcement to support this behaviour.
OUTBREAK SITUATION - Disease Control (Households and farms neighbouring the control zone)					
***Behaviour Category*: Surveillance and Reporting** Risk Setting: Communities neighbouring the control zone					
70	Immediate reporting of sick or dead poultry to veterinary officials or local authorities (watery eyes, swelling of	Sector 3 farmers	1	2	Farmers must be made aware of the necessity of reporting sick or dead poultry. It is important to be specific about the symptoms and circumstances that should lead to reporting. Procedures for reporting need to be developed and implemented in cooperation with existing routines.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	feet, swelling of the head, bluish colour of wattle and comb, ruffled feathers, loss of appetite, diarrhoea)				They may avoid reporting for economic reasons, to avoid culling of their poultry. There may also be social pressure from neighbouring poultry farmers who want to avoid culling of their poultry as well.
71		Sector 4 farmers	1	2	Farmers must be made aware of the necessity of reporting sick or dead poultry. It is important to be specific about the symptoms and circumstances that should lead to reporting, farmers raising a small number of poultry may be unable to identify sick poultry. They may avoid reporting for economic reasons, to avoid culling of their poultry. There may also be social pressure from neighbouring poultry farmers who want to avoid culling of their poultry as well.
72	Commune animal health workers report all cases of sick and dead poultry to District veterinary officer	Animal health workers	1	1	This behaviour is of high technical importance to preventing Avian Influenza and it also has high practical feasibility. There are no significant barriers against animal health workers adopting this behaviour.
***Behaviour Category*: Hygiene (for protection of animals)** Risk Setting: Sector 3 and Sector 4 farms in areas neighbouring the control zone					
73	Poultry raising areas (yards and pens) are regularly cleaned	Sector 3 farmers	1	1	The farmers do not necessarily have this habit, and it must be clear exactly what is meant by “cleaned”.
74		Sector 4 farmers	1	2	The farmers do not necessarily have this habit, and it must be clear exactly what is meant by “cleaned”. There cost of this behaviour is low, but the farmers will need some resources to adopt this behaviour.
75	If there is contact with an external poultry flock, footwear is cleaned before returning to your flock	Sector 3 farmers	1	2	The barrier here is lack of this habit and lack of knowledge that it is necessary. Facilities for cleaning are not available.
76		Sector 4 farmers	1	3	The barrier here is lack of this habit and lack of knowledge that it is necessary. Facilities for cleaning are not available.
77	If there is contact with	Sector 3 farmers	1	2	The barrier here is lack of this habit and lack of knowledge that it is

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	an external poultry flock,				necessary.
78	hands are cleaned before returning to your flock	Sector 4 farmers	1	2	The barriers towards this behaviour are lack of knowledge and lack of routine.
79	Use PPE when handling sick or dead poultry	Veterinary officers or animal health workers	1	1	Animal health workers in areas neighbouring the control zone are likely to adopt this behaviour. This is naturally dependent on the availability of PPE. It must also be known who has this responsibility and a system of enforcement must be in place.
***Behaviour Category*: Preventive Measures (ring vaccination, preventive disinfection)** Risk Setting: Sector 3 and Sector 4 farms in areas neighbouring the control zone					
80	Vaccination of poultry in the area immediately	Sector 3 farmers	1	1	The barriers are lack of resources. This includes lack of time, lack of human resources and logistic hindrances.
81	outside the control zone (the area is based on technical policy)	Sector 4 farmers	1	2	The barriers are lack of resources. This includes lack of time, lack of human resources and logistic hindrances. These barriers are the same as for Small-scale poultry farmers, but they are more severe for Sector Four farmers.
82	Preventive disinfection	Sector 3 farmers	2	2	Availability of disinfectants
83	of poultry raising areas	Sector 4 farmers	2	2	Attitude, consciousness Conception
84	Poultry are confined	Sector 3 farmers	1	2	Lack of conditions for confinement is the main barrier. Some farmers may either lack the knowledge or disagree with the necessity of this behaviour.
85		Sector 4 farmers	1	2	Lack of conditions for confinement is the main barrier. Some farmers may either lack the knowledge or disagree with the necessity of this behaviour.
86	Farmers do not visit locations/areas with sick poultry	Sector 3 farmers	1	2	The main barrier here is partly the need of the farmers to travel and partly the lack of recognition that is indeed necessary to limit visit to affected areas.
87		Sector 4 farmers	1	3	The main barrier here is partly the need of the farmers to travel and partly the lack of recognition that is indeed necessary to limit visit to

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					affected areas.
88	Farmers do not handle poultry from other locations or poultry brought from locations/areas with sick poultry	Sector 3 farmers	2	2	Lack of information Rephrase to "from outbreak locations"
89		Sector 4 farmers	2	3	Difficult/couldn't recognize poultry source Lack of control measure – should not be transporting How can risk be recognized
***Behaviour Category*: Safe Disposal of sick/ dead poultry** Risk Setting: Sector 3 and Sector 4 farms in areas neighbouring the control zone					
90	Bury or burn dead poultry	Sector 3 farmers	1	2	Some farmers may sell dead poultry, and a monitoring system may need to be introduced. There are some practical barriers against this behaviour in water delta areas.
91		Sector 4 farmers	1	2	Some farmers may sell dead poultry, and a monitoring system would need to be introduced. There are some practical barriers against this behaviour in water delta areas.
92		Animal health workers	1	1	There are restraints on this behaviour in water delta areas, but otherwise no significant barriers.
93	Don't throw poultry into the waterways	Sector 3 farmers	1	1	This behaviour is of high technical importance to preventing Avian Influenza and it also has high practical feasibility. Even the barriers towards this behaviour can be overcome; there are still barriers in the form of lack of knowledge, and lack of agreement that it is necessary to change this habit. Farmers are used to using the waterways to dispose of dead poultry, as this is easy and handy.
94		Sector 4 farmers	1	2	Farmers are used to using the waterways to dispose of dead poultry, as this is easy and handy. The barriers against changing this behaviour are lack of knowledge, and lack of agreement that it is necessary to change this habit.

Annex IV Analysis of all proposed behaviour outcomes for the health sector

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
NON-OUTBREAK SITUATION / NON-OUTBREAK AFFECTED AREAS					
***Behaviour Category*: Surveillance and Reporting** Risk Setting: All					
1	Immediately reporting sick or dead poultry to local animal health workers or hamlet heads	General population	1	2	There are several barriers towards this behaviour. One barrier is farmers' lack of knowledge that free-ranging poultry is sick or dead, or lack of realization that the cause of sickness or death might have to do with flu. Lack of understanding of contamination and risk perception; thinking "It will blow over by itself." Another influence on the attitude of the farmer is the fear of the economic effect of having all poultry destroyed. The social pressure, the possible stigmatization and negative repercussions of neighbours etc. are certainly barriers. Compensations are too low and reporting is seen as posing a threat to the livelihood of farmers. Finally there are systemic barriers such as inefficient information flow within the animal health system and limited animal health resources.
***Behaviour Category*: Safety and hygiene and contacting poultry** Risk Setting: Home / Rural Households					
2	Keep poultry and waterfowl out of houses where people live	People in households that keep live poultry	1	3	Small area, no materials, no money Lack of land/infrastructure Tradition to keep valuable poultry close to houses Free grazing: cheaper & taste: preference Economic investment (expensive)

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					Cultural norms, habits Limited living space
3	Always using soap when washing hands		2	2	Due to habit, inconvenience Not understand benefit of washing hands with soap Access to water, soap Habit (don't have) People move between, different tasks, very busy (e.g. house, garden, etc.) Conception: water is enough Lack of awareness Economic (purchase soap) Limited facility
4	Washing hands with soap and clean water after any contact with poultry (incl. touching, slaughtering, degutting, plucking poultry, products,)		2	2	Access to water, soap, etc. Understanding about contamination More likely because emphasis on poultry
5	Washing hands with soap and clean water after any contact with potentially contaminated surfaces		2	2	Unaware of risk Habit Recognising contaminated surface Knowledge (may not know what surface is contaminated)
6	Bathing with soap and clean water after working with poultry		2	3	Unavailable/insufficient water, insufficient knowledge Time - wash at the end of day Will just get dirty again Facilities for washing Practice/habit not bathing everyday (time of bathing) Habit (not immediately after): Contact many times a day, bathe at the

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					end of the day
7	Avoiding putting fingers in your nose, eyes, or mouth		2	3	Subjective, lack of knowledge, due to dirty environment Do without thinking Socially normal Difficult to change practice/habit Impossible
8	Avoiding contact with (not touching) sick or dead poultry and products		1	2	Farmers might not know the cause of death and so rejects the conception of risk. They feel they need to touch the dead birds to dispose of them, and the behaviour "contact" must be precisely defined. Poor households might disregard the risk and try to treat and ultimately eat the poultry.
9	Avoiding contact with (not touching) potentially contaminated surfaces		1	2	
10	Removing and cleaning shoes before entering households after walking in farms, markets, or backyards with poultry		2	3	No habit to wear shoes/slippers, lack of time and water Economic (# of shoes – only having one pair) Cultural/social norms
***Behaviour Category*: Safety and hygiene and contacting poultry** Risk Setting: Home / School					
11	No playing with poultry	Children	1	2	Lack of knowledge and understanding, especially among younger children are barriers. On back-yard farms, there may be on one else to look after free ranging poultry.
12	No playing near poultry or potentially contaminated surfaces, including picking	Children	1	3	Play near risky surfaces: do not know, large surface, lack of playing area. Free grazing means poultry all around, esp. smaller children do not realise danger.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	up feathers or eggs				Collection of feather, eggs: not know of risks, see as achievements. Need to clearly define "contaminated"
***Behaviour Category*: Safe buying/selling of poultry** Risk Setting: All					
13	Only buying healthy-looking poultry	Buyers	2	2	Lack of money so buy unhealthy looking poultry. Cannot distinguish sick poultry when processed. Difficult for buyers to predict/consider producers.
14	Not buying poultry that has been sick		1	1	There are several barriers towards this behaviour. One is lack of knowledge: how do you tell if the poultry was sick? It is difficult for both private and professional buyers to know. Another barrier is lack of resources: Poor people may buy any poultry if the price is reduced.
15	Buying only certified poultry where available		3	2	Stamp on one side of the poultry so that quarantine staff, inconvenient quarantine control points, not quarantine living chicken Depends on "where" primarily in big cities and supermarkets, some markets Important: "where" No certification of live birds Inefficient system
16	Buying poultry only from originally known sources		2	2	Unavailable information. Rural areas sellers/buyers know each other, cities difficult Trust more original source (rural). Inefficient system.
17	Not selling poultry that has been sick	Sellers	1	3	The main barrier is the economic loss suffered by the seller. That is, there is a strong economic incentive to sell sick poultry as rapidly as possible, and not to reveal this to the buyer if possible. In some cases, the buyer may not know that the poultry has been sick.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
18	Selling only healthy-looking poultry		2	2	Economic loss. If healthy, still sell (supply/demand).
***Behaviour Category*: Safe slaughtering of poultry** Risk Setting: wherever poultry is slaughtered					
19	Slaughtering only healthy poultry	Anyone slaughtering poultry. For example: Sector 3, Sector 4 poultry farmers Poultry traders Poultry consumers	2	2	Worried about economic loss Difficult to tell of poultry already healthy Lack of effective control system
20	Not slaughtering sick poultry		1	2	
21	Not slaughtering poultry in the home		1	3	Narrow house, small scale breeding and slaughtering Slaughterhouses are not convenient Habit for fresh poultry to cook If raise at home will slaughter at home Lack of slaughtering house in some areas Raising poultry for eating at home – could potentially slaughter outside but still considered home Impractical for rural areas Economic factor, convenience, habit, beliefs
22	Only slaughtering certified poultry and poultry products		3	3	Lack of information, cannot quarantine control of all poultry, small scale slaughtering Certification – state management is very difficult. Confidence of consumer => doubt the certification Traceability is very difficult Middleman system Slaughter at home, nobody to certify
23	Only slaughtering		2	2	Cannot verify the source of origin, small scale breeding

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	originally known poultry and poultry products				Certification – state management is very difficult. Confidence of consumer => doubt the certification Traceability is very difficult Middleman system More likely in rural areas because source is known
24	Only slaughtering poultry in approved locations		1	3	Market: No place for poultry slaughtering Nobody to approve places No public spaces System (no system in many locations), habit
25	Thoroughly and regularly washing tools/utensils and surfaces that have been in contact with raw/undercooked poultry or products		1	2	Lack of knowledge of when tools and surface is clean enough as well as lack of access to detergent and clean water will be barriers towards this behaviour.
26	Wearing clean cloth/masks and gloves, when handling and slaughtering poultry		1	2	
27	Thorough cleaning of slaughtering places with disinfectant or detergent		1	2 3	No disinfectants Cost and habit and access to resources/materials Lack of knowledge (where to buy, how to clean, etc.) Availability
***Behaviour Category*: Safe preparation of poultry and poultry products** Risk Setting: All					
28	Never preparing poultry that has been sick	General population	1	2	The main barrier towards this behaviour is the difficulty in knowing if the poultry has been sick. There might be an economic incentive to save money by preparing

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					(and thus serving) sick poultry in poor households or even a motive of greed in restaurants etc.
29	Preparing only healthy-looking poultry		2	2	Do not know Avoiding wastefulness Feasible Difficult to define healthy/unhealthy. Despite knowing, people still do due to habit
30	Washing eggs in soapy water and washing hands afterwards		1	3	Quick to be destroyed Awareness, convenience and availability of water If you wash eggs, they will go bad quicker… (practice, culture/belief?) Washed eggs look spoiled Cultural habits, beliefs (eggs may taste of soap)
31	Washing hands with soap and clean water between and after handling raw/undercooked poultry and products and cooked food		1	2	The target group does not know this is important and they have the habit not to do it. Lack of access to soap and water might be barriers as well.
32	Thorough cleansing of cooking utensils and surfaces that have been in contact with raw/undercooked poultry or products		1	1	Lack of knowledge of when tools and surface is clean enough as well as lack of access to detergent and clean water will be barriers towards this behaviour.
33	Using different chopping boards and knives for raw/undercooked poultry or products and cooked or		1	2	It will be more difficult to persuade the target group to adopt this behaviour versus the previous two because the behaviour is more complex and involves the resources to own – and store separately - several chopping boards and knives. This behaviour might be more

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	ready-to-eat foods or fruits/vegetables				feasible for urban households.
34	Not placing cooked meat back on the same plate or surface it was on before cooking		1	1	There are no severe barriers towards adopting these behaviours. But the target group does not have these habits, and must agree with the benefits of the behaviours. Their perception of risk must be high enough to overcome the convenience of just doing as they are used to.
35	Cooking poultry and poultry products thoroughly		1	1	The barrier against these behaviours is not just habit, not just social norms but the deep-rooted cultural standard of taste and tradition. This determines which dishes are prepared and served. Some Vietnamese dishes are just not well cooked. In some target groups, some dishes are believed to give you strength. Cultural standards are the last to change even in a risk setting, and when the perception of risk is low, the incentive to go against cultural habits is weak.
***Behaviour Category*: General** Risk Setting: All					
36	Washing hands with soap and water after contact with poultry and before eating	General population	1	2	Lack of knowledge that this is necessary and a habit of not doing so are definite barriers. Also, soap and clean water might not be available.
37	Eating only thoroughly cooked poultry and poultry products (no pink meat, no runny eggs)		1	1	The barrier against this behaviour is not just habit, not just social norms but the deep-rooted cultural standard of taste and tradition. This determines which dishes are prepared and served. Some Vietnamese dishes are just not well cooked. Cultural standards are the last to change even in a risk setting, and when the perception of risk is low, the incentive to go against cultural habits is weak.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
38	Not consuming poultry or products that are raw or undercooked, e.g., duck blood pudding		1	2	The barriers against this behaviour are not just habit and social norms but the deep-rooted cultural standard of taste and tradition. This determines which dishes are prepared and served. Some Vietnamese dishes are just not well cooked. Cultural standards are the last to change even in a risk setting, and when the perception of risk is low, the incentive to go against cultural habits is weak. This becomes even more marked when particular dishes are associated with achieved values such as strength.
39	Not consuming sick or dead poultry or products		1	2	The main barrier towards this behaviour is the difficulty in knowing if the poultry has been sick. Poor households might feel compelled to avoid the economic loss of simply throwing poultry away unused.
OUTBREAK SITUATION - AFFECTED AND NEIGHBOURING AREAS					
***Behaviour Category*: Surveillance and Reporting** Risk Setting: All					
40	Information sharing between animal and human health sector workers about any outbreak situations or potential outbreak situations	Officials	1	1	There may be limits to information-sharing in the context of vertical reporting structures. Each sector has officially-appointed spokespersons but there are few established procedures for sharing information between sectors apart from the Steering Committees at each level. Informal information sharing depends on personal relations and may not provide a sufficient basis for the other sector to take action.
41	Immediate sharing of information on any poultry or human outbreaks should be shared with the public		1	1	Local health workers need to wait for official confirmation of outbreaks or human cases from the competent authorities.
42	Immediately reporting sick	General	1	2	There are several barriers towards this behaviour. One barrier is

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	or dead poultry to local animal health workers or hamlet heads	population			farmers' lack of knowledge that free-ranging poultry is sick or dead, or lack of realization that the cause of sickness or death might have to do with flu. Lack of understanding of contamination and risk perception; thinking "It will blow over by itself." Another influence on the attitude of the farmer is the fear of the economic effect of having all poultry destroyed. The social pressure, the possible stigmatization and negative repercussions of neighbours etc. are certainly barriers. Compensations are too low and reporting is seen as posing a threat to the livelihood of farmers. Finally there are systemic barriers such as inefficient information flow within the animal health system and limited animal health resources.
***Behaviour Category*: Decreasing potential spread of disease** Risk Setting: All					
43	Poultry and poultry products are not moved from an infected area for 21 days	Transporters	1	2	The barrier here is economic again; whether to avoid a painful economic loss or to increase profits. This behaviour might also need to be supported by law.
44	No transportation of live poultry into cities and towns		2	2	Economic incentive to sell poultry in cities and towns. Very difficult to enforce bans as many alternate routes and authorities have limited staff, vehicles, etc.
***Behaviour Category*: Safety and infection control practices** Risk Setting: All					
45	People with fever >38 degrees going to their local health station for evaluation, especially if	Ill persons	1	2	People have a tradition for looking after their own health and buying medicine for self-medication. They tend to wait to see if the problem gets worse. In some areas the distance to the health centre is a barrier in itself.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	sick or dead poultry in surrounding environment				
46	Covering nose and mouth when coughing or sneezing		2	2	Habit and awareness, will take a long time to change behaviour.
47	Using a tissue and disposing of it in a rubbish bin after use		3	3	Waste bin, habit The availability of tissues
48	Wearing a mask if sick with avian influenza		3	3	No wearing at home Not convenient and doable all times and places Masks not available Person sick with AI will be in hospital Change the words "sick with AI" to "influenza like illness" – possible If AI patient already identified – likely
49	Caregivers of avian influenza patients should wear protective gear (gloves and mask)	Caregivers	3	1	At home: not know, insufficient Availability of masks Clarify – person will be in hospital
50	HCWs should increase their surveillance for and reporting of severe ILI or SARI cases	HCWs	1	1	The barriers towards these behaviours are lack of the knowledge that it needs to be done, and lack of the skills of properly recognizing and reporting.
***Behaviour Category*: Safety and hygiene and contacting poultry** Risk Setting: Home / Rural Households					
51	Keep poultry and waterfowl out of houses where people live	Home / Rural Households	1	2	Breeders of fighting cocks and beautiful birds keep their birds inside their home. In some farm settings, they do not have the facilities to move poultry away from their living quarters. This behaviour will need to be enforced by increasing control in the outbreak situation.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
52	Always using soap when washing hands		1	2	Barriers include habit, lack of convenient facilities for regular washing, and lack of understanding of the need to use soap and how to effectively wash hands.
53	Washing hands with soap and clean water after any contact with poultry (incl. touching, slaughtering, degutting, plucking poultry, products,)		1	1	Barriers towards the target group adopting this behaviour are lack of intention to change into this habit, based lack of knowledge that this is necessary and lack of understanding about contamination. Another barrier might be lack of soap.
54	Washing hands with soap and clean water after any contact with potentially contaminated surfaces		1	2	Barriers include habit, lack of convenient facilities for regular washing, and lack of understanding of the need to use soap and how to effectively wash hands. This behaviour is difficult for the target group to adopt because they lack the understanding of contamination and cannot identify potentially contaminated surfaces. “Contaminated” must be clarified.
55	Bathing with soap and clean water after working with poultry		1	3	Barriers include habit, lack of convenient facilities for regular washing, and lack of understanding of the need to use soap and how to effectively wash hands. Farmers may regularly enter and leave farming areas and consider washing every time is excessive.
56	Avoiding putting fingers in your nose, eyes, or mouth		1	2	This is a difficult habit to develop. Adoption of this behaviour is very difficult to measure.
57	Avoiding contact with (not touching) sick or dead poultry and products		1	1	No serious barriers are listed for this behaviour, but there is a concern of some lack of human resources in the animal health sector.
58	Avoiding contact with (not touching) potentially contaminated surfaces		1	2	This behaviour is difficult for the target group to adopt because they lack the understanding of contamination and cannot identify potentially contaminated surfaces. “Contaminated” must be clarified.
59	Removing and cleaning shoes before entering households after walking in		1	2 3	Some people do not have the habit of wearing shoes or sandals in Sector Four farming areas.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	farms, markets, or backyards with poultry				
***Behaviour Category*: Safety and hygiene and contacting poultry** Risk Setting: Home / School					
60	No playing with poultry	Children	1	1	Barriers to this are lack of knowledge that this should no longer be done and having to change the habits of children. Socially prized poultry such as fighting cocks are a particular problem, as are modes of production: Free grazing poultry means poultry is all around the children's environment and especially younger children will not realize the need to avoid them. Children themselves are not necessarily supervised.
61	No playing near poultry or potentially contaminated surfaces, including picking up feathers or eggs		1	1	Another barrier is lack of resources such as space, since some children on farms live in close proximity with poultry and it would be difficult to avoid. The definition of "contaminated surfaces" must be clarified.
***Behaviour Category*: Safe buying/selling of poultry** Risk Setting: All					
62	Only buying healthy-looking poultry	Buyers	2	1	Lack of money so buy unhealthy looking poultry. Cannot distinguish sick poultry when processed. Difficult for buyers to predict/consider producers.
63	Never buy poultry from an infected area		1	1	There are no significant barriers towards this behaviour.
64	Never buy sick or dead poultry		1	1	The barriers towards this behaviour are the same as in the non-outbreak situation even with the higher perception of danger. One barrier is lack of knowledge: how do you tell if the poultry was sick? It is difficult for both private and professional buyers to know. Another barrier is lack of resources: Poor people may buy any

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					poultry if the price is reduced.
65	Buying only certified poultry where available		3	2	Insufficient staffing for animal health to control all Perception of risk If can buy poultry, will pay more attention Need to clarify outbreak area and neighbouring area Economic factor – certified poultry is more expensive, some do not trust certification system
66	Buying poultry only from originally known sources		2	2	People do not have a habit to ask for certification. Certification authorities lack capacity. Only applies in local context, not in larger markets.
67	Never sell poultry from an infected area	Sellers	1	2	Economic incentive. Farmers and traders reluctant to lose money.
68	Never sell sick or dead poultry		1	2	The barriers here are the attitude of sellers towards the economical loss. They can make higher profits if they buy sick poultry cheaper. If sick birds are sold quickly, there's a social satisfaction because the problem of a potential outbreak has been hidden. This behaviour might need to be supported by law.
69	Sell only healthy-looking poultry		2	2	Economic incentive to sell poultry regardless of health. Healthy looking may not mean risk free.
***Behaviour Category*: Safe slaughtering of poultry** Risk Setting: Settings where poultry is slaughtered					
70	Slaughtering only healthy poultry	Anyone slaughtering poultry. For example: Sector 3, Sector 4	2	1	It is not necessarily possible to tell if poultry are infected, particularly during the incubation period.
71	Not slaughtering sick poultry		1	1	Barriers towards this behaviour are lack or understanding of why this is necessary and also the attitude of agreeing to have enough responsibility to accept this loss. Another barrier is lack of resources: poor farmers may try to minimize their loss by quickly slaughtering and selling sick poultry.

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
72	Not slaughtering poultry in the home	poultry farmers Poultry traders Poultry consumers	1	2	Many farmers in local areas raise poultry for their own consumption. Many people prefer to buy live birds and slaughter them at home so that they can ensure freshness.
73	Only slaughtering certified poultry and poultry products		3	2	Less responsible, insufficient/weak quarantine system Perception of risk
74	Only slaughtering originally known poultry and poultry products		2	2	This is very difficult in the current market situation for poultry.
75	Only slaughtering poultry in approved locations		1	3	Approved locations are not accessible for many people. This is not practical for households that raise poultry for their own consumption.
76	Thoroughly and regularly washing tools/utensils and surfaces that have been in contact with raw/undercooked poultry or products		1	2	Barriers include lack of facilities, habit and knowledge of effective washing practice.
77	Wearing clean cloth/masks and gloves, when handling and slaughtering poultry		1	2	These protective clothes may be uncomfortable or hot to wear while slaughtering.
78	Thorough cleaning of slaughtering places with disinfectant, detergent		1	2	This requires supplies of disinfectant/detergent and knowledge of what thorough cleaning requires.
***Behaviour Category*: Safe preparation of poultry and poultry products** Risk Setting: Settings where poultry is slaughtered					
79	Never preparing poultry that has been sick	General population	1	1	The main barrier towards this behaviour is the difficulty in knowing if the poultry has been sick.
80	Preparing only healthy-		2	1	Healthy-looking does not necessarily guarantee that the poultry is not

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
	looking poultry				infected.
81	Washing eggs in soapy water and washing hands afterwards		1	3	People do not have this habit. People may be concerned that eggs will taste of soap. Low perception of risk.
82	Washing hands with soap and clean water between and after handling raw/undercooked poultry and products and cooked food		1	1	A barrier here is lack of understanding about contamination. Another barrier is lack of access to water and soap.
83	Thorough cleansing of cooking utensils and surfaces that have been in contact with raw/undercooked poultry or products		1	1	Barriers include lack of facilities, habit and knowledge of effective washing practice.
84	Using different chopping boards and knives for raw/undercooked poultry or products and cooked or ready-to-eat foods or fruits/vegetables		1	2	It will be more difficult to persuade the target group to adopt this behaviour versus the previous two because the behaviour is more complex and involves the resources to own – and store separately - several chopping boards and knives. This behaviour might be more feasible for urban households.
85	Not placing cooked meat back on the same plate or surface it was on before cooking		1	1	There are no severe barriers towards adopting these behaviours. But the target group does not have these habits, and must agree with the benefits of the behaviours. Their perception of risk must be high enough to overcome the convenience of just doing as they are used to.
86	Cooking poultry and poultry products thoroughly		1	1	The barriers against these behaviours are not just habit, not just social norms but the deep-rooted cultural standard of taste and tradition. This determines which dishes are prepared and served. Some

No.	Behavioural outcome	Target Group	Technical Rating	Practical Rating	Barriers
					Vietnamese dishes are just not well cooked. In some target groups, some dishes are believed to give you strength. Cultural standards are the last to change even in a risk setting, and when the perception of risk is low, the incentive to go against cultural habits is weak.
***Behaviour Category*: Safe consumption of poultry and poultry products** Risk Setting: Settings where poultry is slaughtered					
87	Washing hands with soap and water after contact with poultry and before eating	General population	1	2	Lack of knowledge that this is necessary and a habit of not doing so are definite barriers. Also, soap and clean water might not be available.
88	Eating only thoroughly cooked poultry and poultry products (no pink meat, no runny eggs)		1	1	
89	Not consuming poultry or products that are raw or undercooked, e.g., duck blood pudding		1	1	The barriers against these behaviours are not just habit, not just social norms but the deep-rooted cultural standard of taste and tradition. This determines which dishes are prepared and served. Some Vietnamese dishes are just not well cooked. In some target groups, some dishes are believed to give you strength. Cultural standards are the last to change even in a risk setting, and when the perception of risk is low, the incentive to go against cultural habits is weak.
90	Not consuming sick or dead poultry or products		1	1	The main barrier towards this behaviour is the difficulty in knowing if the poultry has been sick. Poor households might feel compelled to avoid the economic loss of simply throwing poultry away unused.