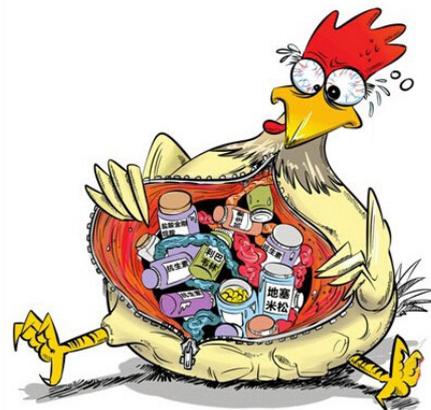


# FOOD SAFETY MANAGEMENT IN CHICKEN CHAIN IN VIETNAM - PROBLEMS & SOLUTIONS

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September, 2018



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Research project: **FOOD SAFETY MANAGEMENT IN CHICKEN CHAIN IN VIETNAM – PROBLEMS & SOLUTIONS**

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Program: Master of Science / Agriculture Production Chain Management / Livestock

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## iv. ABBREVIATIONS

MARD	Ministry of Agriculture and Rural Development
MOIT	Ministry of Industry and Trade
MOH	Ministry of Health
VPQA	Vietnamese High Quality Product Business Association
VietGAP	Vietnam Good Agriculture Practices
VietGAHP	Vietnam Good Animal Husbandry Practices
WTO	World Trade Organisation
WHO	World Health Organisation
FAO	Food & Agriculture Organisation
UNIDO	United Nations Industrial Development Organisation
WB	World Bank
ACIAR	Australian Centre for International Agriculture Research
GSSI	Global Sustainable Seafood Initiative
CABs	Conformity Assessment Bodies
IAF	International Accreditation Forum
FGD	Focus Group Discussion
CFM	Compound feed manufacturing

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## v. SUMMARY

Public standards for chicken chain in Vietnam are mainly offered by MARD. In comparison with international recognized practices, the standard system is not complete in all aspects of governance management, operational management of certification schemes and standard content.

The main problem with governance management of certification schemes is related to its transparency and missing control measures to monitor the program integrity. In its management operation, a competent accreditation body, as defined by national law of standard, is not used to ensure quality and reliability of certification activities.

Standards are not developed based on risk performance approaches. This lead to lack of controls that implemented HACCP principles and absence of communication throughout the chain.

In order to improve existing standards, relevant ministries shall take governance and standardisation into their consideration, include:

- Establish a throughout communication mechanism and synchronous governance between the three ministries.
- MARD should upgrade their standardisation capacity in line with international practice or; MARD should leave standardisation to the National Standard Body (NSB). However, Vietnam got highest score (5 out of 5) for quality policy/legislation framework, technical regulations, metrology and accreditation capacity (UNIDO, 2016). Therefore, relevant ministries should be better in charge for related technical regulations and involve in standardisation process as key stakeholders. A good option then the standardisation should be left to NSB of Vietnam rather than by relevant ministries.
- Complete existing standards in line with international recognised standards or practices.

A part from improvement of existing standards, Vietnamese High Quality Product Business Association (VPQA), as urged by stakeholders also wishes to develop the alternative. The alternative then shall:

- Address deficiency and facilitate to increase the stringency of public regulations.
- Promote public-private partnership to share food safety management challenge.
- Using risk-based approach and an openness and transparency consensus-based system for standard development process.

For realising above mentioned requirements, VPQA should:

- Establish multi-stakeholder partnerships by learning from successful cases, such as GLOBALG.A.P. The process of standard development is participatory that involve all relevant stakeholders.
- Institute a certification process that uses independent third-party entities for certification activities.
- Have accreditation service conducted by an accreditation body that is IAF member.
- Target qualities that excluded by public regulations and make the road map for chain actors to achieve food safety goals.
- Build up a platform for safe meat actors so that they can be recognised by the market.

With regards to enhance competitiveness of the domestic chicken chain, that is fiercely influenced by Free Trade Agreements, feed manufacturers may consider to take the lead in building up capability of safe chicken meat production.

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# I. INTRODUCTION

## A. CONTEXT

*Food safety has become the main public concern in Vietnam in the recent years due to its high-profile food safety incidents. A nationally representative survey found that food safety was one of the two most pressing issues for people in Vietnam, higher than education and health care (WB, 2017)<sup>1</sup>. Management of veterinary antibiotics, growth promoters used in pork and chicken farming, outbreak of Salmonellosis associated with eggs and chicken meat, pesticide residue in vegetables and fruits are most reported by authorities and media. The fact that food contamination hazards appear at all stages of the food supply chain has lead the haze of consumers to crisis level and lost trust in domestic production, although Vietnam has a modern food safety regulatory framework in place (WB, 2017).*

In the other hand, as a consequence of WTO integration, Vietnam has significantly increased import in both animal feed (included its raw materials) and meat (chicken, beef, pork). *The livestock sector is expected to face with more challenges since the country opens up domestic market to imported products from other countries under TPP and AEC commitments (Free Trade Agreements - FTAs).*

Chicken sector is the most influenced by AFTs because it is one of the two most consumed meat sources of Vietnamese by far. In 2016, approximately 1.481 million tons of chicken meat<sup>2</sup> has been consumed in Vietnam, of which 662,000 tons was imported (Orissa International, 2017). Hence, the chicken sector in Vietnam faces with both its own food safety problem and threaten from import chicken. However, there are almost no strong evidences that import chicken is safer than domestic one. From this point, the Vietnamese High Quality Product Business Association (VQPA) believe that if the sector can achieve chicken meat supply capability, there will be opportunities for the sector to sustainably compete with import chicken. For this reason, VQPA decides to figure out the reason why the modern food safety regulatory framework of Vietnam (offered by the public sector) has not resulted in safe chicken meat. This pre-requisite step will enable them to develop the strategy responding to the current threat imposing on chicken sector.

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<sup>1</sup> World Bank. 2017. *Country report: Food Safety Risk Management*. WB

<sup>2</sup> Convert from average poultry meat consumption of Vietnamese was 11.5/kg/person and population was 90.5 million

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Outputs of the study will be used as recommendations to public sector and be inputs for developing its own new set of voluntary standards as an alternative for the whole domestic chicken chain. The VPQA expects that the study will also help to create a safe meat source for poor and low-income people that occupy more than 40% of total population (General Statistics Office of Vietnam, 2016) as well as for children that have their meals at school.

## **B. ABOUT THE COMMISSIONER**

The Vietnamese High Quality Product Business Association (VQPA) is the first business association in Vietnam that has launched the consumer voting program for Vietnamese high quality products, included food and non-food, since 1997. The program is initially based all on social survey all over Vietnam and has been a strategy program of Ho Chi Minh city to support small and medium enterprises (SMEs).

In 2016, many dialogues with provincial authorities of Mekong delta provinces and SMEs about actions to address the public food safety concerns have been held. Stakeholders requested an alternative for the existing food safety management system offered by public sector.

In the other hand, by December of 2017, the VPQA has signed a Memorandum of Understanding with Food Safety Management Board of Ho Chi Minh City (FSMB) for their food safety action collaboration. As a part of the MoU, FSMB will recognise the upcoming alternative initiated by VPQA.

## **C. RESEARCH PROBLEM**

The existing chicken safety management system offered by public sector has failed to result in safe chicken meat. This fact is reflected through incidents of antibiotics and salmonella outbreaks have been detected at selling and consuming points, sources of chicken are not traceable and most of slaughter houses are reported to be in bad hygiene conditions. These have hit the trust of consumers on domestic chicken meat to crisis level.

In addition, recently increasing of import chicken has put the domestic chicken sector under threaten. The VPQA has been urged by stakeholders for an alternative to improve competitiveness of the sector. In order to do so, it's critical for the VPQA to understand reasons of failure of the existing chicken safety management system prior any alternative be developed.

## **D. RESEARCH OBJECTIVE**

The main focus of the research is about reasons failure of existing chicken safety management system offered by the public sector. Based on research results, recommendations for improving of current system and the alternative, as requested by stakeholders, will be developed to fortify competitiveness of the domestic chicken sector.

## **E. RESEARCH QUESTIONS**

In order to achieve above objectives, following research questions are needed to be answered:

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**Main question 1:** What are problems of standards applied for chicken chain, as a part of Vietnam food safety regulatory framework, so that it has not resulted in safe chicken meat?

**Subquestion 1.1:** *What is the structure of the chicken chain in Vietnam?*

**Subquestion 1.2:** *What are chicken meat safety standards applicable to the chicken chain in Vietnam?*

**Subquestion 1.3:** *What is the mechanism of setting, implementing and controlling of those standards?*

**Subquestion 1.4:** *What are the main reasons of failure?*

**Main question 2:** What are critical factors to improve existing standards and/or develop the alternative for effective controlling safety of domestic chicken chain?

**Subquestion 2.1:** *What are internationally recognised standards applied for the chicken chain?*

**Subquestion 2.2:** *What is the mechanism of setting, implementing and controlling of those standards?*

**Subquestion 2.3:** *What is the mechanism of those standards in order to gain acceptance of the market and consumers?*

**Subquestion 2.4:** *What are key elements to successful improve existing standards?*

**Subquestion 2.5:** *What are key elements to successful develop the alternative?*

The research is expected to come up with recommendations to improve existing standards, and establish new set of standards as an alternative, that will:

- be effective controlling safety of domestic chicken chain
- be accepted by the market
- be trusted by consumers
- be compatible with relevant international standards
- enhance the competitiveness of the domestic chicken chain.

## **F. CONCEPTUAL FRAMEWORK**

The regulatory framework that is being applied for the domestic chicken chain will be reflected at different dimensions.

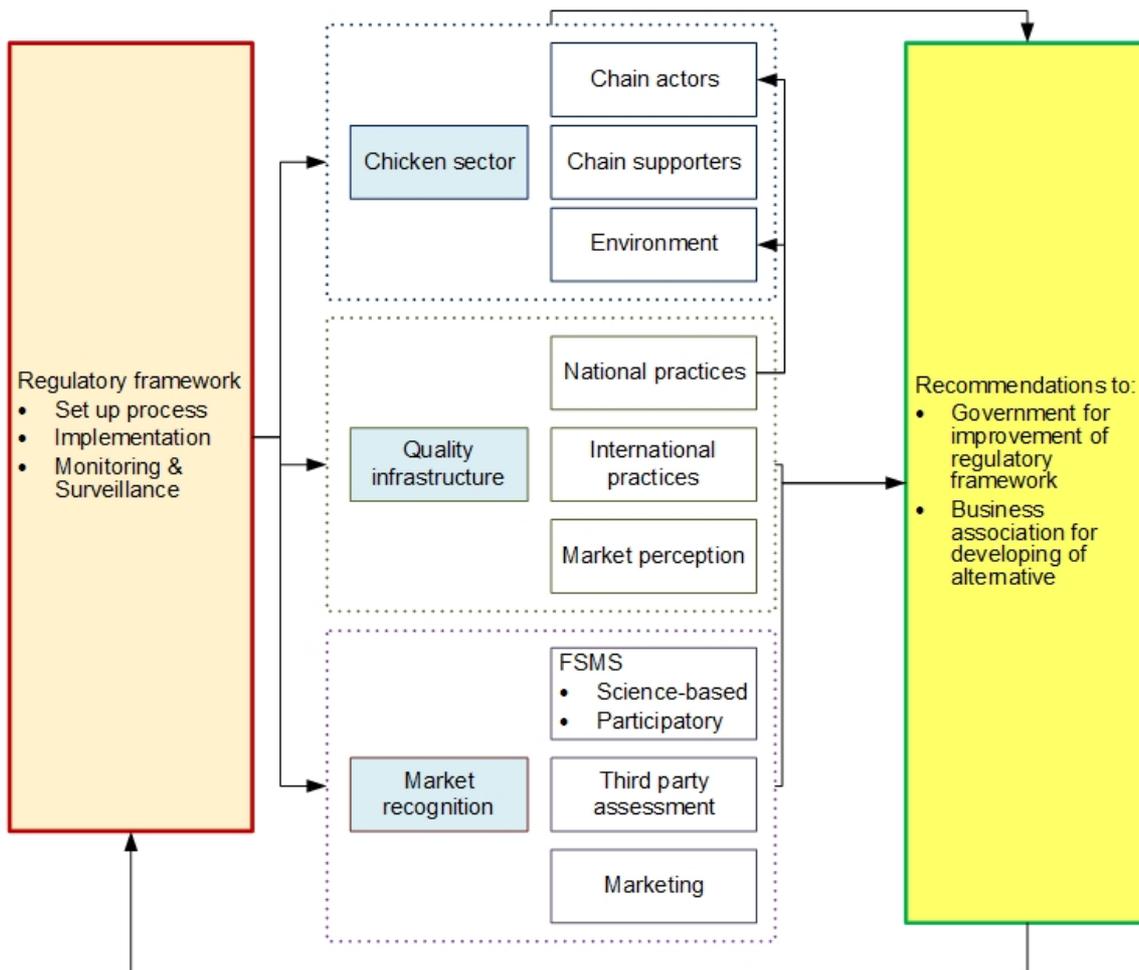
Firstly, this will be looked at the sector itself. Questions here will be what is the structure of the domestic chicken chain, what are roles of chain actors and chain supporters, how are their relationship. Enabling environment for the sector will be also analysed. Understanding the mechanism of operation of the chain will assist what are key factors of failure of the existing management system.

Secondly, it will be useful to study the quality infrastructure that the existing management system is based on, to see whether the national practices are compatible with international practices.

And lastly, mechanism of market recognition as per international practices will be considered.

Outputs of these studies will be used for recommendations to government as well as to developing of the alternative.

Figure 1: Conceptual framework



Source: own drawing

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## II. LITERATURE REVIEW

### A. FOOD SAFETY CONCERNS IN VIETNAM

In 2016, a research, financed by Australian Centre for International Agriculture Research (ACIAR), about Vietnam's Food Security policies remarks that the Vietnamese government would need to intervene in food safety. As defined by FAO, food security is sufficient, safe and nutritious foods that meet dietary needs and food preferences for an active and healthy life. However, with all relevant statutory documents, it seems that food security term is understood as self-sufficient of rice. This may be the reasons why food safety issues are not fully addressed in Vietnamese food security policies, and why although food safety has been a priority since 1990, but level of food poisoning outbreak in 2000 and 2010 was similar (Peterson. 2016).

In the collaboration of Ministry of Agriculture & Rural Development and World Bank, an assessment about Food Safety Risk Management in Vietnam has been conducted a year later. The assessment is in order to provide advices for developing options and policy recommendations on strengthening food safety capacity. The report<sup>3</sup> was published in April 2017 with two of key findings are:

- *The regulatory framework in Vietnam still remains serious concerns over implementation and delivery of the intended regulatory outcomes.*
- *The operational modalities of the Ministries and agencies are not geared to delivering the intended regulatory outcomes. Inherent to better performance management is the use of independent system audit mechanisms to assess performance against agreed outputs and outcomes sought.*
- *The regulatory system is not fully risk-based in its operation.*

In 2018, European Chamber of Commerce in Vietnam released the White Book pointed out that Vietnamese agricultural products have been perceived as of lower quality and often rejected by importing countries because of food safety issues (antimicrobials, hormones, crop protection products, salmonella, mould, mycotoxins, other harmful chemicals).

In the other hand, regulations related to import foods, especially meat products, are considered to aim at protecting domestic producers rather than consumers (Peterson. 2016).

Those reports have reflected the fact that food safety management system of Vietnam is struggling to result in supplying safe foods for both internal market and export, although it is considered as a modern system. Policy makers understand about how to increase global competitiveness of agriculture sector for export, importance of investing in infrastructure, fundamental researches and facilitating extension services. However, implementation is executed by different ministries (Ministry of Agriculture and Rural Development, Ministry

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<sup>3</sup> World Bank. 2017. *Country report: Food Safety Risk Management*. WB

of Health, Ministry of Trade, Ministry of Planning and Investment) in different ways that lead to counter-productive outcomes, inefficiency and wasted resources. In other words, the food safety management system in Vietnam is poor of administration rather than weak in program design (Peterson. 2016).

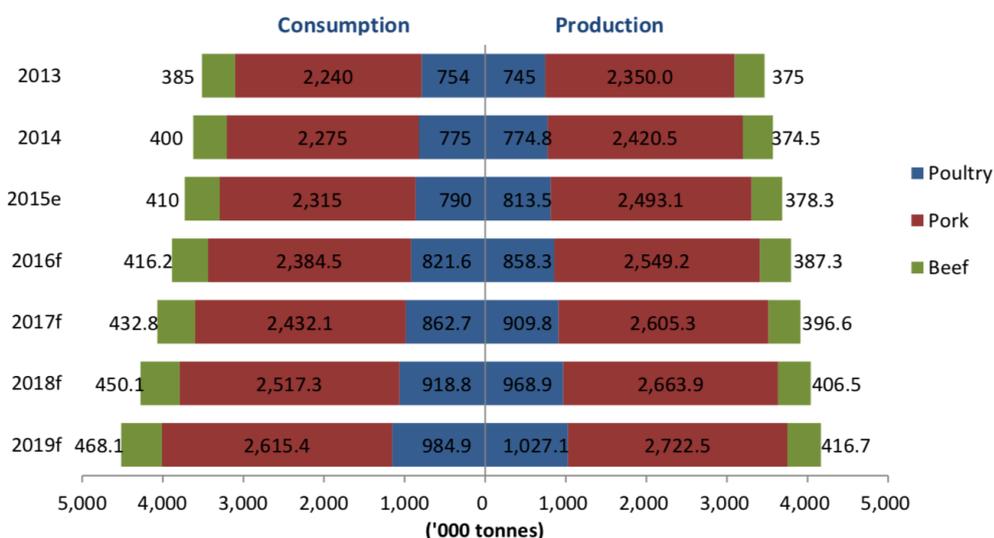
The research by ACIAR shows that stakeholders *perceive that main problems of Vietnam’s food security policies are lack of effectiveness and administrative complexity because of ineffective decision-making process; unreasonable roles among agencies; group who seek to control policy outcomes for private benefit; corruption; poor monitoring and assessment; late issuing of guidance documents and unrealistic policy documents* (Peterson. 2016).

Most common perception of stakeholders about reasons of inadequacy of the national food safety net program include ineffective policy enforcement, inspection neglect, weak sanctions, lack of monitoring and evaluation, and poor program awareness (Peterson. 2016).

## B. OVERVIEW OF CHICKEN SECTOR

The livestock sectors in Vietnam accounts for 19% of Vietnam’s agriculture GDP (IPSOS Business Consulting. 2016)<sup>4</sup>. From 2013 to 2015, poultry sector has achieved average growth rate about 5% per annum and was reported as the strongest amongst the livestock sectors (IPSOS Business Consulting. 2016). Increasing of the livestock production and consumption is give in Figure 2:

Figure 2: Consumption and Production of livestock, 2013-2019f



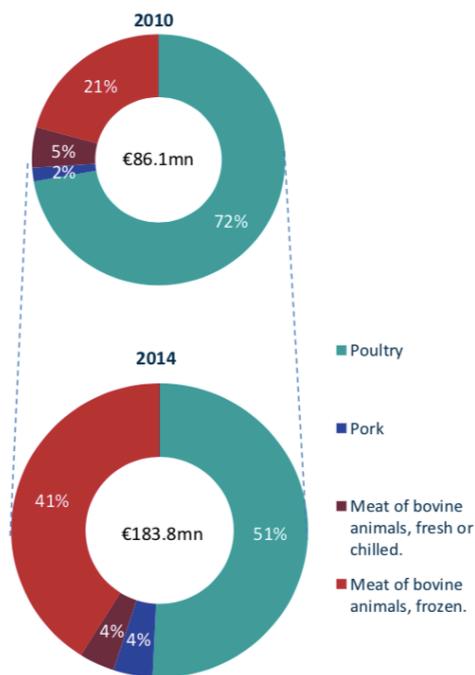
Source: EU-Vietnam Business Network (2016)

<sup>4</sup> IPSOS Business Consulting. 2016. Report: Vietnam Meat Sector. EU-Vietnam Business Network.

The domestic production of livestock is reported fragmented by more than 70% small-scale farms, highly depended on foreign investment in term of feed production and animal breeding.

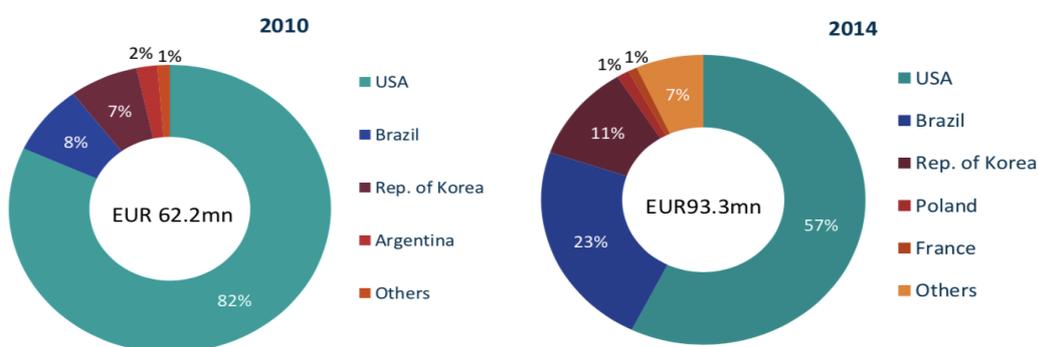
In the other hand, as a result of FTAs Vietnam has signed, imported of livestock has significantly risen, and poultry was the most imported category. US, Brazil and Republic of Korea are key chicken exporters of Vietnam.

Figure 3: Vietnam's meat import structure 2010-2014



Source: EU-Vietnam Business Network (2016)

Figure 4: Poultry meat import value by countries 2010-2014



Source: EU-Vietnam Business Network (2016)

Scandals of antimicrobials and salmonella outbreak from domestic chicken production in last few years has the livestock industry be foreseen under fierce competition (Van Der Pijl. 2018)<sup>5</sup>, especially the poultry sector. Vietnamese consumers have switched to import chicken meat, although domestic production is able to cover demand. It is easier for retailers to sell imported chicken meat from developed countries that is cheaper and perceived to have high quality, comply with high standards of food safety.

Table 1: Comparison of locally produced and imported meat

Meat types	Production cost/kg		References
	Domestic	Import	
Pork	€1.86	€1.26	<a href="http://beefcentral.com">beefcentral.com</a> <a href="http://bloomberg.com">bloomberg.com</a>
Beef	€2.26	€1.58	<a href="http://thanhniennews.com">thanhniennews.com</a>
Chicken	€1.17-1.21	€0.82 <sup>(*)</sup>	VEPR, Impacts of TPP and AEC on Vietnamese Economy

(\*) Selling price in Vietnamese market

Source: EU-Vietnam Business Network (2016)

### C. CHICKEN PRODUCTION SYSTEM IN VIETNAM

There are three main systems of chicken production in Vietnam, include household/non-intensive system, semi-industrial/semi-intensive/system, industrial/intensive system (NGUYEN, 2008<sup>6</sup>; NGUYEN, 2017<sup>7</sup>).

- Household/non-intensive system is a traditional outdoor system, small household that has less than 100 chicken. Most of small households grow indigenous breed. Growers sell their chicken to middlemen. Chicken then may be directly sent to wet markets or to slaughterhouses.
- Most of semi-industrial/semi-intensive system is the combination of outdoor (day time) and indoor (night time), has between 100 to less than 1,000 chicken, can be hybrid or indigenous. Most of growers attend training courses on feeding, rearing, management, breeding and veterinary services provided by national agricultural extension centres, local agricultural extension centres (NGUYEN, 2008). Live chickens are sold at farm gate through collector of slaughterhouses or middlemen.

<sup>5</sup> Van Der Pijl, Marieke. 2018. *Presentation in the workshop: Overcome technical barriers for food and agricultural products to the EU.*

Vietnamese High Quality Product Business Association

<sup>6</sup> FAO. 2008. Poultry production systems in Viet Nam. Prepared by Nguyen Van Duc and T. Long. GCP/RAS/228/GER Working Paper No. 4.

Rome

<sup>7</sup> NGUYEN K.T. 2017. Spotlighting on Broiler sub-sector in Vietnam. VHL

- 
- Industrial/intensive system has more than 1,000 chicken, indoor, exotic breed. This kind of system has *high investment, good management, short husbandry period and represents 18-20% of total chicken production (NGUYEN, 2015)<sup>8</sup>*. Most of the case *farmers have contracts with traders and slaughterhouses (NGUYEN, 2008)*.

The question then how food safety is managed throughout the chain for different production systems? And is there any change regarding to scale of production? These points will be investigated deeper with chain actors during data collection process.

#### **D. PROBLEMS WITH DOMESTIC CHICKEN CHAIN**

The Ministry of Agriculture and Rural Development of Vietnam (MARD), with financial support from World Bank, has run the Livestock competitiveness and food safety project (LIFSAP) from 2010 to 2015 in 12 provinces all over Vietnam. The MARD expected that the project would contribute to significant improvements in livestock production efficiency, competitiveness, and food safety along the pork and poultry value chains.

Under LIFSAP, farmers, extension officers, animal production and veterinary staff were trained about Good Animal Husbandry Practices (GAHPs) and its implementation. Livestock Planning Zones were piloted, aiming to increase competitiveness and safety, while slaughterhouses and meat markets were upgraded to support the establishment of processing and markets linkages with household producers. LIFSAP also supported the capacity building to the technical departments of Animal Husbandry and Livestock Development in MARD for improved policy making processes, strengthened assistance to provinces in inspection, surveillance and monitoring for animal diseases and epidemic.

However, outcomes of several independent researches were conducted from 2012 to 2015 have interest stakeholders doubt about effectiveness of the project.

Firstly, the report of World Bank in 2017 identifies:

- *Vietnam's agriculture and food production is fragmented with very many small farmers and producers involved in food production. Consumers are not fully confident of the safety of products even with certification marks.*
- *The food is typically sold through wet markets, normally fresh and often with only limited processing. Most meat is slaughtered in small (rather micro) slaughtering facilities. Typically, such small and micro enterprises*

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<sup>8</sup> Nguyen, Giap V., Nguyen, Lien T., Tran, Ut Linh T., Do, Hung M., Do Huy D. 2015. Husbandry Market of Vietnam - Changing Structure to enhance Competitiveness. Hong Duc.

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*or wet markets have hygiene and sanitation conditions rarely adequate for good practices in food production.*

- *There still remains a need for some infrastructure improvements but the main need is for change in practices.*

These are signs of absence of a proper mechanism to enable food producers to provide an efficient food safety level, to alert pathogens and food contamination problems and market failure.

### **1. Using of antimicrobials in chicken farms**

In Vietnam, farmers can easily buy antimicrobials without prescription by a veterinarian. High levels of resistance against a number of antimicrobials have been reported in foodborne pathogens, such as non-typhoid Salmonella serovars and Campylobacter spp., in poultry, livestock and meat (Garin et al., 2012; Thai and Yamaguchi, 2012; Thai et al., 2012a, b, c; Carrique-Mas et al., 2014). As a common practices in livestock farming, antimicrobials are mainly used for growth promoter, therapy treatment and/or disease prevention. They can be directly used or added into animal feed.

From March, 2012 to April, 2013, an independent research, noted as the first quantitative research in Vietnam, about 'Antimicrobial Usage in Chicken Production in the Mekong Delta of Vietnam' had been conducted, led by Dr Juan Carrique-Mas of Oxford University. The research covered 208 farms in 3 districts of Tien Giang province that represented for about 40% of poultry population of the whole province. The research targeted farmers of household scale (20 - 200 chickens) and small scale (201 - under 2000 chickens) with production cycle is approximately 20 weeks. Main focus of the research is about the reasons of use (prophylactic or therapy), time of application (continuously, on arrival, in response to disease or periodic), and source of advice of using antimicrobials. The research also calculated antimicrobials used per chicken.

Research results show that 84% percent of antimicrobials using cases was for prophylactic, 34.4% was used on arrival of day old chick, followed by 28% was used periodically. Most of the cases (56%) farmers sought advices on antimicrobials using from drug sellers. Advice from official veterinarians was not common (18% of the cases). It is also reported that higher level of usage fallen in broiler farms and continuous production system. Most common antimicrobials used are macrolides and quinolones that are categorised by World Health Organisation as critical important for human medicine. According to the research, each chicken has consumed 470.4 mg of antimicrobials on its entire life. This number for Norway is 14 mg and for the Netherlands is 165 mg (Anon., 2011b).

This research outcomes explains why the World Health Organisation (WHO) has ranked Vietnam in the group of countries with the highest rates of antimicrobial resistance in the world.

There are recommendations that the *government should increase awareness and educate farmers on the risks associated with the misuse of antibiotics, good husbandry practices should also be applied to reduce demand for*

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*antibiotic treatment in farms through agricultural extension programs and related activities* (Peterson. 2016). These will be dug further during data collection, to figure out whether other proactive measures should be taken to address this issue by having all chain actors engage and commit to supply safe chicken meat.

In addition, since 2017, the Veterinary Department of MARD, in their efforts to reduce overusing of antibiotics, has issued several regulations. However, there are no proper or clear regulations to efficiently control this concern, because only a few types of banned antibiotics are covered; laboratory and frequency of testing are not built up based on risk and performance approach.

## **2. Antimicrobial residue and salmonella contamination in chicken meat from slaughterhouses:**

A research about antimicrobial residue and Salmonella contamination in chicken meat was conducted from September to December of 2015 by researchers of University of Agroforestry of Ho Chi Minh city. There were 70 chicken meat samples drawn from slaughterhouses in Ho Chi Minh city and surrounding provinces (Dong Nai, Tien Giang, Long An). The result shows that about 66% percent samples were detected with antimicrobials, in which 60% were antimicrobials that were not covered by regulations<sup>9</sup> (enrofloxacin, florfenicol) (Le and Ho. 2017)<sup>10</sup>. More than 37% of samples was Salmonella contaminated, because of bad hygiene conditions, water and ice and bad hygiene conditions during transportation. However, chickens can be contaminated from early stage and there is a high possibility for the bacteria is spread out all over rest of the chain. Both guidance documents and regulations related to good husbandry practice and slaughtering practice do not identify Salmonella as a high risk and need to have appropriate control measures.

## **3. Laboratory testing and quality control**

Laboratory testing to monitor antimicrobial residue before animals are sent to slaughterhouses is crucial to ensure meat safety. These activities required a certain investment in both testing equipments and well qualified personnels. Testing parameters and frequency, as required by many well international recognised standards, shall be risk-based and performance-based. However, according to the White Book, although *EU and United Nations Industrial Development Organisation (UNIDO) have donated a fair amount of adequate equipment to carry out standard laboratory testing and quality control for state laboratories. However, this equipment is not put to proper use due to the lack of adequately qualified personnel with up-to-date knowledge and a lack of coordination between involved stakeholders* (Peterson. 2016).

The Joint Circular 20/2013/TTLT-BYT-BCT-BNNPTNT issued in 2013 recognises food safety testing results by private laboratories that are approved by relevant Ministries. However, according to article 3 of this joint circular,

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<sup>9</sup> Ministry of Health. 2013. Circular 24/2013/TT-BYT: regulations about MRLs of veterinary medicine in food. MOH.

<sup>10</sup> Le, V. Du, Ho, T.K. Hoa. 2017. Science & Technology Agroforestry, volume 5: Antimicrobial and  $\beta$ -Agonist residues and contamination of salmonella in pork and chicken consumed in Ho Chi Minh city in 2015. University of Agroforestry of Ho Chi Minh city

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the recognition (also known as accreditation) shall be carried out by Food Safety Department under Ministry of Health, or Science & Technology department under Ministry of Industry and Trade, or National Agro-Forestry-Fisheries Quality Assurance Department under Ministry of Agriculture and Rural Development. However, none of these department are internationally recognised for accreditation activities.

#### 4. Traceability system

There is neither mandatory traceability system nor an identification system in place to address the likelihood of serious food safety issues occurring. This is not in line with international practices, because once food safety incident happens, there is no way for authorities, retailers and producers to trace back and isolate the source of problem and recall all products that have problem in time. In conclusion, the traceability must be a critical requirement to ensure reliability of safety management system implemented. Vietnam should look at best practice from around the world.

#### E. QUALITY INFRASTRUCTURE

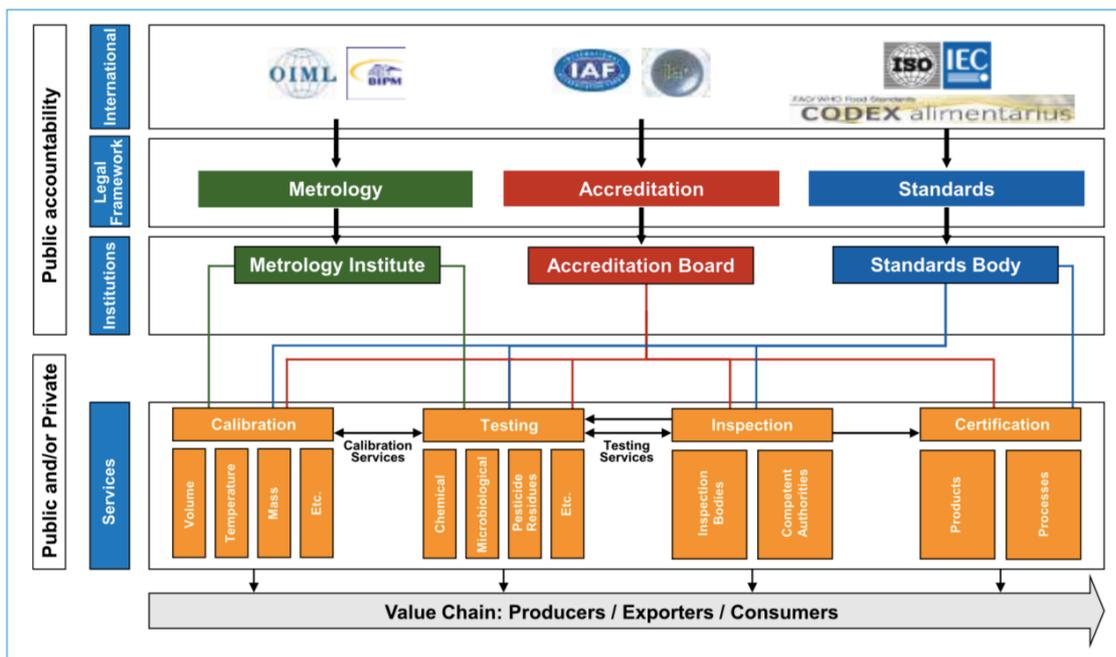
The quality infrastructure, as defined by DCMAS Network<sup>11</sup> and the World Bank in June 2017, is *‘the system comprising the organisations (public and private) together with the policies, relevant legal and regulatory framework, and practices needed to support and enhance the quality, safety and environmental soundness of goods, services and processes’*. *The quality infrastructure is required for the effective operation of domestic markets, and its international recognition is important to enable access to foreign markets. It is a critical element in promoting and sustaining economic development, as well as environmental and social wellbeing. It relies on metrology, standardisation, accreditation, conformity assessment, and market surveillance”* (UNIDO. 2017)

The research will use this definition to reflect the mechanism of developing relevant standards and its conformity assessment process in order to evaluate its robustness and reliability.

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<sup>11</sup> Included: BIPM (International Bureau of Weights and Measures), OIML (International Organisation of Legal Metrology), IAF (International Accreditation Forum), IEC (International Electrotechnical Commission), ILAC (International Laboratories Accreditation Cooperation), ISO ([International Organization for Standardization](#)), ITC (International Trade Centre), ITU (International Telecommunication Union), UNECE (United Nations Economic Cooperation for Europe) and UNIDO

Figure 5: Scheme of quality infrastructure and its building blocks



Source: UNIDO

Vietnam obtained the highest rating from UNIDO for several criteria in quality infrastructure: quality policy/legislation framework, technical regulations, metrology capacity, accreditation capacity. Standardisation, also one of the criteria, is very weak however (2 out of 5). The fact that standardisation has a low score compared to the high scores of the above mentioned criteria is remarkable. One would expect standardisation should be at average level if the others are that high. This fact may indicate that the crucial concern is more about implementation, interpretation and put them all in one matrix.

Table 2: Country distribution by quintile in the 10 capacity areas

Country	Quality policy/ legislative framework	Standardization capacity	Technical regulation capacity	Metrology capacity	Accreditation capacity	Inspection capacity	Testing capacity	Certification capacity	Food safety capacity	WTO-related institutions respective to technical regulations and standards
Maldives	1	1	2	2	2	2	3	1	3	3
Mali	3	4	5	2	2	3	3	4	4	3
Mauritania	2	1	5	2	2	4	4	2	2	4
Mongolia	5	2	4	3	5	4	4	4	5	2
Namibia	4	4	2	4	4	4	4	2	2	3
Nepal	2	2	2	2	3	2	3	2	1	3
Niger	2	2	2	1	2	2	1	1	1	2
Nigeria	5	3	5	4	1	2	1	2	5	4
Pakistan	5	4	2	5	4	2	5	5	5	4
Philippines	2	3	2	3	5	5	5	5	2	4
Republic of Korea	5	3	2	5	5	4	3	5	5	4
Rwanda	4	4	4	3	1	2	1	4	2	4
Senegal	2	3	2	2	2	2	3	5	3	4
Seychelles	3	4	4	4	4	4	4	4	5	2
Sierra Leone	4	4	5	4	1	2	1	2	1	1
Singapore	4	5	4	5	5	5	5	4	5	4
South Africa	5	5	4	5	5	4	5	5	5	4
Sri Lanka	5	5	2	4	5	2	5	5	5	4
Swaziland	4	4	5	2	3	4	3	4	2	4
Tanzania	2	5	5	3	4	5	5	3	3	4
Timor-Leste	1	1	2	1	1	2	1	1	1	1
Togo	3	1	4	1	2	5	5	1	3	1
Uganda	3	3	4	3	4	2	4	3	1	4
Viet Nam	5	2	5	5	5	3	3	4	5	4

Source: UNIDO

Standardisation, as defined by UNIDO, is a process of development, approval and publication of national standards. The process should be carried out by a National Standard Body that:

- Establish and maintain an open and transparent consensus-based system of standards development through technical committees representative of all stakeholders.
- Establish and maintain an up-to-date standards information system that can provide national, regional and international standards to authorities, industry and society.

- 
- *Represent the country in notable international standardisation organisations such as the International Organisation for Standardisation (ISO) and the Codex Alimentarius Commission.*
  - *Represent the country in relevant regional standardisation organisations.*
  - *Create awareness at enterprises and public sector level of the necessity of standardisation, and the compliance to standards as the basis for trade.*

*A good practice indicates that the publication should remain in the hands of only the National Standard Body.*

The standardisation capacity has been interpreted and assessed through 12 indicators:

***National Standards Board (NSB)***

1. *NSB established*
2. *Representatives of private sector on NSB governing body*
3. *Representative of consumers on NSB governing body*
4. *Representative of academia on NSB governing body*

***National Standards Board Independence***

5. *NSB has authority to adopt and revoke national standards*
6. *NSB has authority to select its workforce and determine the position and staffing of its workforce*
7. *NSB has authority to determine its own budget*
8. *NSB has authority to determine the price of standards publications*
9. *NSB has authority to decide on new services or new structures*

***National Standardisation Activity***

10. *Number of national standards*
11. *Number of technical committees established*
12. *Industry participation in technical committees*

Figure 6: Standardisation Capacity Index



Source: UNIDO

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## III. METHODOLOGY

### A. OVERVIEW:

The research is qualitative practice-oriented, with participatory of:

- Technical committee of VQPA, the commissioner
- Chicken chain actors.
- Relevant authorities
- Relevant business associations

The key sampling target is based on their ability to make changes. Questionnaire is only applied for consumers and analysed with SPSS program. Checklists is preferred because it make the conversation more comfortable, suitable with Vietnamese culture. Most of interview is carried in informal way, because informants are afraid of being wrong or taking any responsibilities with what they share. Recorder is used to record conversation, so that informants don't feel annoyed, and researcher is more in the conversation.

### B. DESK RESEARCH:

Desk research is applied for searching background information of main research question no.1 and comparing for subquestions belong to main research question no.2.

The comparison of applicable national regulatory framework, national standards and national guidelines with international standards and practices will consider following aspects:

- mechanism of monitoring compliance
- robustness and reliability in term of certification schemes
- completeness of food safety controls all over the chain
- mechanism for recognition of markets

Resources of information are from website of relevant organisations.

Global Benchmarking Tool by Global Sustainable Seafood Initiative (GSSI) is used to assess governance and operation management of certification schemes. The guidance is recognized by FAO, only relevant principles are used for the assessment.

For the comparison of standard system that is applied for chicken meat production in Vietnam, checklists of standards for compound feed manufacturing, broiler production, slaughtering and veterinary inspection by authority are developed. GLOBALG.A.P and FAO guidance are used as references because these standards and guidance are recognised in international trade. Only food safety related requirements are used for the

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comparison. Social responsibility is not covered by the the comparison. Vietnamese standards are evaluated for level of compatibility. Key issues are figured out from the comparisons.

A case study of successfulness of international certification scheme (GLOBALG.A.P) that is recognised by most key retailers, wholesalers and importers all around the world will be used to explain the mechanism to gain market trust.

### **C. DATA COLLECTION:**

Different ways are applied to collect data based on nature of sources of information, culture, experience of researcher and network of the Commissioner. Main tools are questionnaire, checklist, focus group discussion and observation. Focus points for each group of informants are designed based on their scope of business.

Total number informants for the whole research is 105 includes all chain actors and supporters.

Only the consumer survey is conducted by the team of the Commissioner. The questionnaire has been discussed the researcher.

#### **1. Informant: Chain actors / Input supplying / Feed manufacturers**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: checklist, observation at site via individual formal meeting at their office

Focus points:

- awareness about feed safety as required by laws
- implementation in routine operations
- documentation
- certifications
- interaction with and support for other actors within the chain

No. of samples: 02

Rationale: the feed manufacturers are chosen based on their scope (having poultry feed production), scale (both small and large) and well recognised by growers in the region (south of Vietnam).

Area of sampling: Dong Thap, Long An

#### **2. Informant: Chain actors / Input supplying / Hatcheries**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: reflection of consulting experience with hatcheries in the last 2 years.

Focus points:

- 
- awareness about feed safety as required by laws
  - implementation in routine operations
  - documentation
  - interaction with and support for other actors within the chain

No. of samples: 02

Rationale: consulting projects last for 3-6 months, long enough for understanding operation of a hatchery.

Area of sampling: Lam Dong, Binh Thuan

### **3. Informants: Chain actors / Producing / Growers**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: focus group discussions, checklist, observation via visiting farms, discussions in a 3 days of training course about GLOBALG.A.P standard (module: poultry)

Focus points:

- awareness about good animal husbandry practices as required by laws
- implementation in routine farm operation
- documentation
- certifications
- farming management: species; scale; type of production system; number of crop per year; kind of feed used; disease management; waste management
- food safety management: antimicrobials and salmonella control; communication with slaughterhouses
- sale: client; sale terms; price; perception about markets
- controls of authorities: kind and frequency; trust on competence of state veterinarians and GAP trainers
- interaction with and support from other actors within the chain.

No. of samples: 03 intensive farms, 2 cooperatives of semi-intensive growers, 1 group of 7 non-intensive growers.

Rationale: the sampling only applied for growers/household that growing chicken is their main livelihood.

Medium and small scale chicken farms in Vietnam are well organised in form of cooperatives, hence data collections are arranged based on focus group discussion with members of cooperatives and field trips. The focus group discussion, as agreed with the Commissioner, will be through 3 days training course about GLOBALG.A.P standard, poultry module.

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Large scale farms have strict rules about bio-security, field trip is not feasible hence only individual interviews are carried out.

Growers have direct interaction with authorities through GAP training programs and disease management. Hence for this actor, question about their trust on competence of state veterinarians and GAP trainers is crucial to understand who they will seek advice to ensure of their safe production and safe product supply.

Area of sampling: Tien Giang, Ben Tre

#### **4. Chain actors / Collecting / Middlemen**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: checklist via informal meetings

Focus points:

- awareness about legal requirements for safe meat and trading of live chicken
- documentation
- purchasing: sources, kind of chicken, terms, food safety requirements
- Sale: terms, requirements, clients

No. of samples: 02

Sampling criteria: whoever willing to answer

Rationale: this actor is not easy to find because it's a common practices that they don't register their business with authorities. Their normal network is with retailers in wet markets or small scale slaughterhouses. They are also very careful to share information with ones they don't have business with.

Area of sampling: Ho Chi Minh city

#### **5. Informant: Chain actors / Slaughtering, Packaging / Slaughterhouses**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: checklist, search on website of Veterinary department of Ho Chi Minh city.

Focus points:

- awareness about legal requirements for safe meat and hygiene of chicken slaughtering business
- implementation in routine operations
- documentation
- controls of authorities: kind and frequency;

- 
- purchasing/receiving: sources, kind of chicken, food safety requirements
  - food safety management: antimicrobials and salmonella control; communication with growers
  - sale: client; sale terms; price; perception about markets

No. of samples: 02

Sampling criteria: whoever willing to answer

Rationale: this actor is the most difficult to approach. They are afraid of sharing information. Field trips can't be arranged, only informal meeting and phone.

Area: Ho Chi Minh city

## **6. Chain actors / Retailing / Retailers**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: questionnaire, checklist and observation

Focus points:

- awareness about legal requirements for safe meat and trading fresh meat
- controls of authorities: kind and frequency;
- purchasing/receiving: sources, kind of chicken, food safety requirements
- sale: kind of client; perception about markets

No. of samples: 09

Sampling criteria: butchery in wet market, food shops (minimart) and supermarket.

Rationale: questionnaire is used for interviews with retailers in wet market. Visit foods shop and talk to the owner or quality manager. Discuss with quality manager or purchasing manager of supermarkets within workshop and conference held by the Commissioner and the Ministry of Industry & Trade

Area: Ho Chi Minh city

## **7. Chain actors / Consuming / direct consumers:**

This part is adopted from last survey of VPQA in July, 2018.

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: questionnaire

Focus points:

- awareness about legal requirements for safe meat

- 
- perception about safe meat
  - criteria for buying chicken meat

No. of samples: 56

Sampling criteria: ones who buy foods for the family

Rationale: only person who does shopping foods for the family can properly answer questions

Area: Ho Chi Minh city

## **8. Chain actors / Consuming / Institutional consumers**

Related research questions: main question 1/sub-questions 1.1 & 1.4

Research tools: checklist & observation

Focus points:

- awareness about legal requirements for safe meat
- perception about safe meat
- criteria for buying chicken meat

No. of samples: 13

Sampling criteria: The research targets at kitchen in the industrial factories and restaurants for low income people.

Rationale: in Vietnam, workers and low income people have very limit to access safe foods. This class represents for about 40% of total population, and is considered as a vulnerable group.

Area: Mekong delta

## **9. Chain supporters / Laboratories**

Related research questions: main question 1/sub-questions 1.4

Research tools: checklist

Focus points:

- chicken meat testing

No. of samples: 04

Sampling criteria: laboratory that are ISO 17025 accredited and nominated as approved food testing laboratory by Ministry of Agriculture & Rural Development or Ministry of Health.

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Rationale: this is the step to re-confirm whether chicken meat are really sent and tested for antibiotics residue and salmonella.

Area: Ho Chi Minh city and Can Tho

#### **10. Chain supporters / Authorities**

Related research questions: main question 1/sub-questions 1.1, 1.2, 1.3 and 1.4

Research tools: checklist via informal meetings and search information from website of Ministry of Agriculture & Rural Development; National Agro-Forestry-Fisheries Quality Assurance Department; Ministry of Health; Ministry of Industry & Trade; Board of Food Safety Management of Ho Chi Minh city

Focus points:

- legal framework and national standards, guidelines applied for the chicken chain in Vietnam
- chicken meat safety controls by the government: legal framework and actual situation

No. of meetings: 02

Sampling criteria for meetings: authorities that directly involve in control of chicken meat safety

Rationale: the procedure for official meetings with authorities is complicated. In addition, officers are afraid of being responsible for what they said.

Area: Ho Chi Minh city and Can Tho

#### **11. Chain supporters / Business associations**

Related research questions: main question 1/sub-questions 1.4

Research tools: checklist via meetings

Focus points:

- chicken meat safety controls by the government: effectiveness and reasons of failure

No. of samples: 03

Sampling criteria: organisations that are active in chicken chain in Vietnam.

Rationale: not applicable

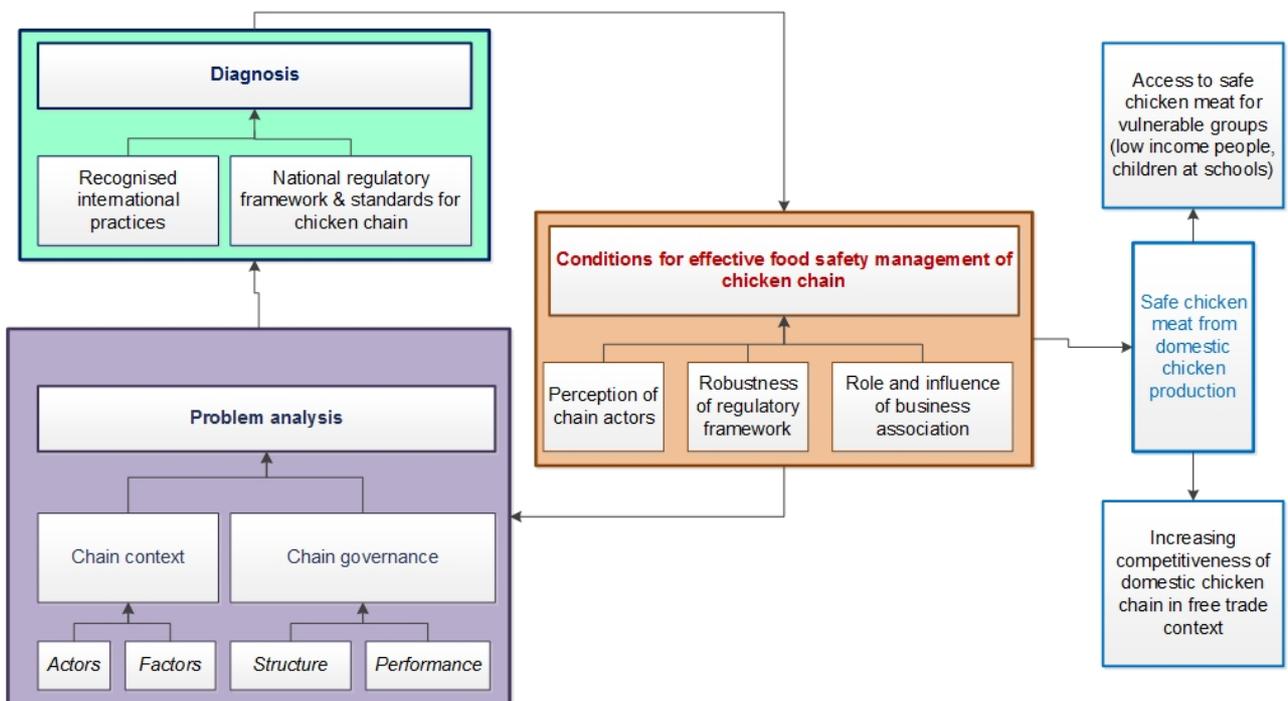
Area: Ho Chi Minh city and Dong Nai

### **D. RESEARCH FRAMEWORK**

The research framework is adopted the one initiated by Andriessen 2007:94. The research will start with problem analysis, where the chain context and chain governance will be looked at. After that, national regulatory

framework and international practices will be diagnosed to figure out reasons of failure of the national system. Lastly, conditions for an effective system will be set based on perception of chain actors, robustness of the regulatory framework and role and influence of the VPQA.

Figure 7: Research framework



Source: own drawing

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## IV. RESULT

### A. SUBQUESTION 1.1: WHAT IS THE STRUCTURE OF THE CHICKEN CHAIN IN VIETNAM?

This section will describe about key characteristics of chain actors and its inter-relationship. Findings are drawn based on desk research, focus group discussion, individual interviews, survey and observations.

#### 1. Input supplying / Feed manufacturers

The desk research shows that:

- The feed production is dominated by about 60% of FDI, 30% held by big Vietnamese feed groups
- All of them are certified for at least one certification scheme (basic HACCP).
- FDI and Vietnamese large scale feed companies that involve in aquaculture feed are also certified for international recognised feed safety management system such as GLOBALG.A.P or ISO 22000.
- Before 2017, antimicrobials are allowed adding in feed to serve prophylactic and growth promoting purposes. In 2016, the circular 06/2016/TT-BNNPTNT by MARD requests all feed manufacturers to stop doing this by 2017.
- The factory audit regarding to feed safety and hygiene is carried out once per year by authority or authorised conformity assessment bodies. As a part of the audit, feed is then sampled by inspectors of those CABs and sent to recognised laboratories for testing the presence of antimicrobials.

Findings from individual meetings with feed manufacturers are cross checked with growers during group focus discussion. The findings that are confirmed correct as following:

- It is a common practice that feed sale agents offer credit to growers.
- In order to maintain good customer relationship, they have a department that provide chicken growers – their clients - extension services such as: training for growing techniques, support for disease diagnosis.
- Several feed companies also collaborate with hatcheries to supply day old chicks.
- Some of them even collaborate with slaughterhouses as an assurance of sale for chicken produced by their clients.

#### 2. Input supplying / Hatcheries

The desk research, focus group discussion with growers and own observations from previous working experience with hatcheries indicate that there are three categories of chicken breed, include indigenous, crossbred and exotic (i.g: Isa Brown, Ross).

- i. FDI companies hold about 80% of exotic day old chicks (DOCs) production. This kind of hatchery has its own breeding farms; high technologies are applied for the whole process from farm to hatchery. Its

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operation is strictly controlled by authority from import of breeding flocks (DOCs), transportation, stocking, hatching and selling. DOCs are checked and vaccinated before sold out. They usually collaborate with feed companies to supply DOCs for feed companies' clients. Growing time of this breed is around 35 to 42 days. Target market is intensive farms.

- ii. The crossbred breed is supplied by Vietnamese medium scale hatcheries. DOCs are checked for sign of disease before sold out to other provinces as required by law. This kind of breed has growing time from 3 to 4 months. Target market is semi-intensive farms.
- iii. The indigenous breed is supplied by local hatcheries, small scale, family business, only for local sale. This kind of hatchery does not have its own breed farm. Hatcheries buy eggs, hatch and sell day old chick. Incoming eggs are only checked for its appearance. There is no evidence that small scale hatcheries are monitored for disease and hygiene by authority. Indigenous breed has growing time around 4 to 6 months. Target market is local non-intensive farms and very small household. Indigenous chicks go to informal chain that is not focused by this research.

### 3. Producing / Growers

Field trips have been arranged for interviews and observations with:

- A group of seven non-intensive growers in Dong Thap province
- A cooperative of forty semi-intensive growers in Tien Giang province.

A focus group discussion (FGD) has been held throughout a three days training course in Ho Chi Minh city for growers of semi-intensive and intensive scales. The training and the FGD has participation of:

- Representatives from a cooperative (40 members, total 100,000 birds per crop)
- The quality manager of one joint stock company that owns 12 exotic broiler farms (32,000 birds per farm) and a slaughterhouse
- The quality manager of one corporation that owns four crossbred hatcheries (supply 24 million of chick per year), an exotic broiler farm, a slaughterhouse and about a hundred contracted growers.

Findings are drawn based on outputs of field trips, FGD and desk research. They are:

#### *a) Overview*

- There are 3 categories of chicken production system, include non-intensive, semi-intensive and intensive.
- In general, regardless growing scale, chicken growers are all aware of VietGAP - a good animal husbandry practice developed by MARD. Most of them are VietGAP certified.
- As required by law, chicken farming shall be registered with authority and subjected to regular official inspections by authority related to hygiene and biosafety conditions during their routine

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operation. A two ways communication (farm to authority and vice versa) about disease outbreak is required by law.

- They have a record system in line with VietGAP's requirements.
- Samples of live chicken, its dung and litter for Salmonella and E.coli testing are regularly taken by local officers.
- They use antimicrobials for both therapy and prophylactic. They are not requested for testing of antimicrobial residue and Salmonella prior selling their chicken. They are not aware of the HACCP<sup>12</sup> concept.
- It is mandatory to inform authority when they plan to sell their chicken.
- They have simple sale terms, include weight, good appearance, no sign of sickness and price.

*b) Non-intensive system*

This system usually has heard of less than 1,000 of free range birds and is the main livelihood of the household. Most of non-intensive farms grow indigenous breed. Growers are organised in small groups of producers with aims of exchange experience, updating regulations and market information (price, demand). Feed used can be compound feed or home-made feed or a combination of two. They have support from local agriculture section for training related to hygiene, biosafety and disease treatment. Using of antimicrobials is based on their own experience or advised by the veterinary drug seller. They sell their chicken to hawkers. Selling price of live chicken at farm gate is about 70000 to 80000VND per kg. This kind of chicken production system is considered as an informal chain, hence it is excluded from the formal chicken chain at the end of this section.

*Photo 1: inside a non-intensive farm*



*Photo 2: outside a non-intensive farm*



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<sup>12</sup> Hazard Analysis and Critical Control Point

Photo 3: free range area



Source: own photo

Photo 4: interview with small grower group



c) *Semi-intensive system*

This system has heard of more than 1000 but less than 5000 birds, partly free range. Farmers take their farming as a family business. They may grow indigenous breed or crossbred. They are organised in form of cooperatives. They may use compound feed, or farm-made feed, or a combination of both. Trainings related to hygiene, biosafety and disease treatment are mainly provided by technical support team of feed companies. They do not trust competence of authority officers. Using of antimicrobials follows their own procedure. Live chickens can be sold to hawkers, slaughterhouses or via contracted hauliers of slaughterhouses. Selling price of live chicken at farm gate is about 60000 to 65000VND per kg.

Photo 5: Semi-intensive farm



Source: own photo

Photo 6: free-range area



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#### d) *Intensive system*

This system has heard of more than 10000 exotic birds, in house, automatically feeding, controlled environment. Most of intensive farms are member of a certain local or regional poultry association and registered as companies. Most of them have a kind of management system. They use compound feed. They have their own veterinarians. Using of antimicrobials follows instruction of the lead veterinarian. Many of them in the chain of feed companies from DOCs to slaughterhouses. Selling price of live chicken at farm gate is about 22000 to 35000VND per kg.

#### 4. Collecting / Hawkers

Interviews with two hawkers were conducted. Information about this actor is not available, hence findings are drawn based on outputs of the two interviews and own observations which may not reflect correctly the real situation:

- None of them is aware of VietGAP or safe chicken farming, trading.
- They sell live chickens to retailers in wet markets in the region.
- They have a holding area for chickens they buy at home. In case that chickens get sick during holding period, they will buy veterinary drugs based on their own experience or recommended by the veterinary drug seller.

#### 5. Slaughtering / Slaughterhouses

Interviews were carried out by both phone calls and face-to-face with participants of the training and FGD that also own slaughterhouses. Findings are drawn based on desk research and outputs of individual interviews. They are:

- Slaughterhouses have contract with companies that own semi-intensive/intensive farms or traders that own transportation means.
- As required by law, slaughterhouses shall register with authority and be subjected to regular official inspections for hygiene and food safety conditions.
- There is always at least one veterinarian in place to check for signs of disease.

#### 6. Retailing

##### a) *Wet markets*

Interviews with butcheries in wet markets were conducted. Findings are drawn based on outputs of these interviews and observations. They are:

- Both live chickens and cut chicken are sold in wet market.

- Live chicken sellers: mostly indigenous or crossbred chicken. Live chicken will be slaughtered at place as per consumers' request. Hygiene conditions of sale point is bad because of waste and effluent. There is no sign of inspection by veterinarian. Sellers can be themselves hawkers or they buy chickens from hawkers.
- Cut chicken sellers: mostly exotic chicken. Chickens can be from slaughterhouses or sale agent of importers. They sell wings, legs, breasts, livers, hearts, stomachs or whole eviscerated chicken. Ice is often used to preserve products.

*Photo 7: Wet market, live chicken area*



*Photo 8: Wet market, preparation of live chicken*



*Photo 9: Wet market*



*Photo 10: wet market*



*Source: own photo*

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## *b) Supermarkets*

Interviews were carried out for minimarts in Ho Chi Minh city. Desk reviews were conducted for groups of supermarkets based on documents provided by them, their presentations and discussion panels during relevant conferences held by the Ministry of Industry & Trade or VPQA. Key findings are:

- Both minimarts and supermarkets require traceability and VietGAP certification as requisite conditions to enter their supplier approval process.
- Most of supermarkets in Vietnam are FDI. The food suppliers are assessed for their ability to supply safe food products. They have their own team to conduct such assessment. They have a sampling plan that specifies food safety parameters and frequency for laboratory tests.
- Minimarts require field trips and interviews with senior management to assess reliability. Many of them even have their own quality assurance team for food safety assurance inspections as a crucial part of their supplier approval procedure.

A crossed check with four key food laboratories (3 FDI and one Vietnamese) in the South region shows that they seldom receive chicken samples. Most of samples are tested for Salmonella for the purpose of VietGAP certification. There is only one FDI lab that regularly has samples from chicken farms for antimicrobials testing as per request of a FDI supermarket.

## **7. Consuming**

### *a) Institutional consumers:*

Interviews were carried out for three kitchens of factories that each has more than 500 employees. Observations and talks were performed for ten low end restaurants in Ho Chi Minh city. Key findings are drawn upon common answers and observations, include:

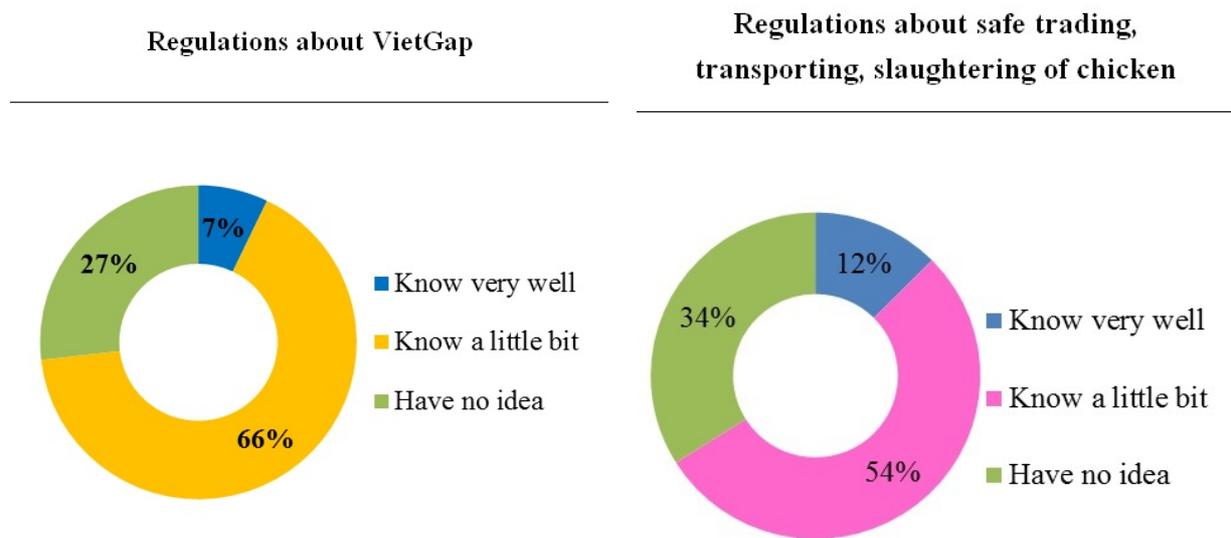
- Both industrial kitchens and restaurants for low income people use exotic chicken legs and breasts because of its affordable price.
- Industrial kitchens buy chicken meat from supermarkets or suppliers that have food safety acknowledgement from authority, as required by law.
- Low-end restaurants choose chicken meat mainly based on its appearance and price. They buy from wet markets or have meat delivered by their suppliers.

### *b) Direct consumers*

A survey with 56 consumers in Ho Chi Minh city was conducted by VPQA team. Questionnaire, as given in Annex D of this document, was discussed and finalised upon the research's goals. Data was analysis by SPSS. Only findings within the scope of this research are presented. They are:

- Most of consumers are aware of legal requirements for safe meat.

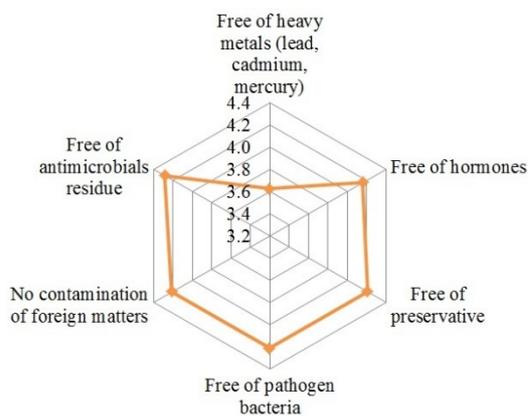
Figure 8: awareness of consumer about legal requirements for safe meat



Source: VPQA

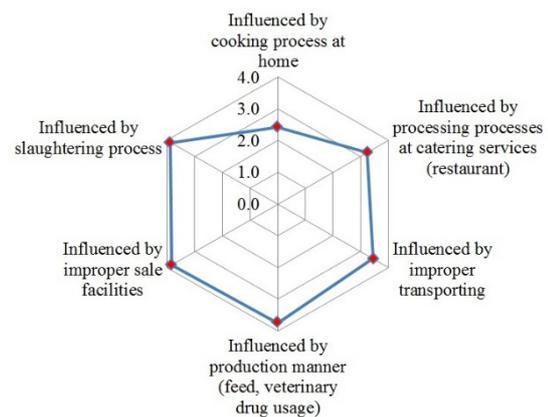
- Their perception about safe meat that meat must be free of antimicrobial residue, parasites, bacteria and preservatives.
- Most of them think that slaughtering is the most crucial drive of unsafe meat. They rank risk of unsafe meat from producing at third.

Figure 9: perception of consumers about safe meat



Source: VPQA

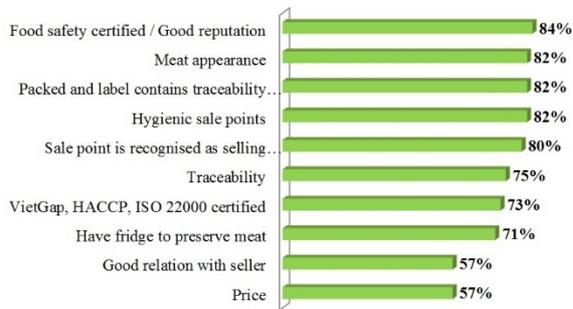
Figure 10: Ranking of consumers about the most influence on safe meat



Source: VPQA

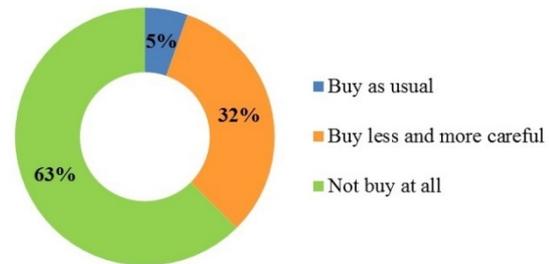
- Meat appearance, food safety certification, brand, packing, labelling with traceability information, hygienic sale points are criteria for consumer to make buying decision. Most of them choosing not buy chicken meat once disease outbreak occurs.

Figure 11: ranking factors for consumers to make buying decision



Source: VPQA

Figure 12: Consumers' reaction once disease outbreak occurs



Source: VPQA

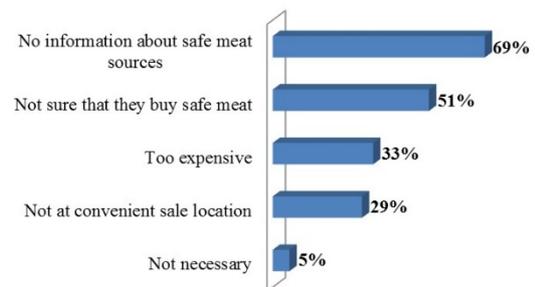
- Their most concern is food safety. They are willing to pay higher price to have safe chicken meat from farms that implement good husbandry practices, well packed, labelled traceability information. Their most challenge with access to safe meat sources is that they have no information about safe meat sale points.

Figure 13: ranking consumers' willingness for buying safe chicken meat



Source: VPQA

Figure 14: ranking barriers for consumers to access safe chicken meat sources

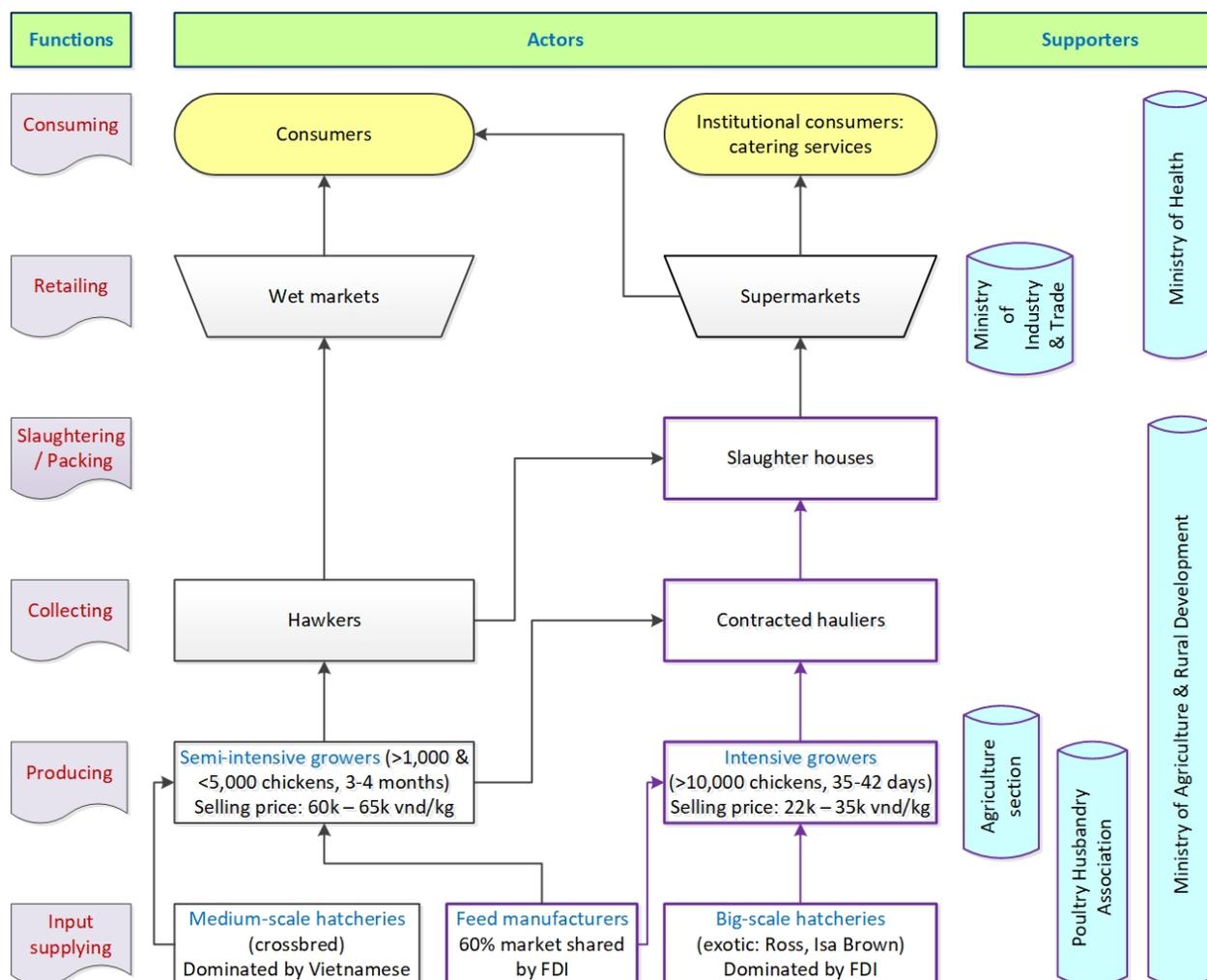


Source: VPQA

## 8. Chicken chain in Vietnam

Chicken chain in Vietnam is drawn upon all above findings as following:

Figure 15: Chicken chain in Vietnam



Source: own drawing

### B. SUBQUESTION 1.2: WHAT ARE CHICKEN MEAT SAFETY STANDARDS APPLICABLE TO THE CHICKEN CHAIN IN VIETNAM?

This section gives a summary about legislations, national standards and good practices that are applied for the chicken chain in Vietnam.

In general, there are three ministries involved in food safety management of the chicken chain in Vietnam: Ministry of Agriculture & Rural Development (MARD), Ministry of Industry & Trade (MOIT) and Ministry of Health (MOH).

MARD covers from input supplying till slaughtering. The food safety management focuses on good practices of:

- Feed manufacturing: control of biological and chemical risks (e.g: antimicrobials, heavy metals, mycotoxin, pathogen bacteria)
- Hatching: hygiene and biosecurity
- Farming: hygiene, biosecurity
- Slaughtering: hygiene and biosecurity

MOIT and MOH share control of retailing with main focus on biosecurity, pathogen bacteria contamination.

MOH also controls institutional consuming related to hygiene and pathogen bacteria contamination.

National standards (QCVN) have been developed to control food safety and veterinary issues all over the chain, except for collecting. MARD is the owner of these relevant standards.

Conformity assessment is opened for organisations that meet requirements as per defined in circular 55/2012/TT-BNNPTNT (2012) by MARD. According to this circular, the authorised conformity assessment bodies (CABs) shall have a quality management system complies with national standard TCVN 7457:2004 or ISO/IEC Guide 65:1996 or relevant guidance of International Accreditation Forum (IAF); national standard TCVN ISO/IEC 17021:2008 or ISO/IEC 17021:2006. The assessment frequency is once per year, or if there is suspicion of serious violation or discrepancy between authority inspection and assessment outcomes of CAB. Department of Animal Husbandry and Department of Veterinary are key accreditation bodies.

Key legislations, national standards and good practices are given in Table 3.

*Table 3: Summary of legislations, national standards and good practices that are applied for the chicken chain in Vietnam*

<b>Chain function</b>	<b>Applicable legislations / standards / good practices</b>
Input supplying / Hatching	National standard QCVN 01-82:2011/BNNPTNT: National technical regulation on veterinary hygiene requirement for hatchery establishments (2011) <u>Key issues:</u> <ul style="list-style-type: none"> <li>• General requirements about infrastructure</li> <li>• Hygiene requirements for eggs, storage and micro environment</li> <li>• Requirements for water supply</li> <li>• Veterinary &amp; hygiene requirements for equipment, utilities and transportation means</li> </ul>
Input supplying / Feed manufacturing	<u>National standard QCVN 01 - 77: 2011/BNNPTNT</u> : National technical regulation for Animal feed mill - Conditions for veterinary hygiene and food safety <u>Key issues:</u> <ul style="list-style-type: none"> <li>• Requirements for infrastructure</li> <li>• Requirements for production:</li> </ul>

Chain function	Applicable legislations / standards / good practices
	<ol style="list-style-type: none"> <li>1. Feed ingredients</li> <li>2. Finished products</li> </ol> <ul style="list-style-type: none"> <li>• General requirements for hygiene</li> </ul> <p><u>National standard QCVN 01 - 78: 2011/BNNPTNT</u>: National technical regulation Animal feeding stuffs - Criteria of safety and maximum level in animal feed stuff  <u>Products</u>: maize; paddy, rice and rice by-products; wheat &amp; wheat flour; glutens; soya bean and soya meal; other oil meals; cassava; seafood by-products; other animal by-products; fats &amp; oils  <u>Food safety issues</u>: sensory, chemicals, mycotoxin and pathogen</p> <p><u>Decree 02/2018/VBHN-BNNPTNT</u>: Management of animal and aquaculture feeds (2018). The decree lays out requirements for:</p> <ul style="list-style-type: none"> <li>• Adding antimicrobials in feeds</li> <li>• Feed manufacturers: infrastructure, food safety and quality management, self-compliance declaration</li> <li>• Feed traders</li> </ul>
Producing	<p><u>National standard QCVN 01-15:2010/BNNPTNT</u>: Biosafety conditions for poultry farms  <u>Key issues</u>:</p> <ul style="list-style-type: none"> <li>• Farm location</li> <li>• Requirements for husbandry farms</li> <li>• Requirements for day old chick</li> <li>• Requirements for feed and water</li> <li>• Requirements for rearing</li> <li>• Requirements for veterinary and hygiene conditions</li> <li>• Requirements for waste management and environment protection</li> </ul> <p>National standard QCVN 01-79:2011/BNNPTNT: Inspection of veterinary and hygiene conditions of husbandry farms  <u>Key issues</u>:</p> <ul style="list-style-type: none"> <li>• Infrastructure, equipment</li> <li>• Veterinary management program</li> <li>• Water supply</li> <li>• Management of feed and using of banned substances in farm</li> <li>• Management of breeding</li> <li>• Rearing procedure</li> <li>• Hygiene and disinfection</li> <li>• Pest control</li> </ul>

Chain function	Applicable legislations / standards / good practices
	<ul style="list-style-type: none"> <li>• Disease management</li> <li>• Personal hygiene</li> <li>• Waste management</li> <li>• Personnel management</li> <li>• Sampling for veterinary testing (when necessary)</li> <li>• Feed sampling</li> <li>• Water sampling</li> <li>• Air sampling</li> </ul> <p>Decision 4653/2015/QĐ-BNN-CN, associated by VietGAHP document: Good Animal Husbandry Practice for Chicken production in Vietnam</p> <p><u>Key issues:</u></p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Farm layout</li> <li>• Rearing houses and equipment</li> <li>• Day old chick and husbandry management</li> <li>• Hygiene</li> <li>• Feed and water management</li> <li>• Disease management</li> <li>• Waste management and environment protection</li> <li>• Pest control</li> <li>• Personnel management</li> <li>• Record, record keeping, traceability and recall</li> <li>• Self-assessment (internal audit)</li> <li>• Complaint handling</li> </ul> <p><u>VietGAHP Manual:</u> interpretation of VietGAHP</p>
Collecting	<p><u>Circular 25/2016/TT-BNNPTNT:</u> Regulations on inspection of terrestrial animals</p> <p><u>Relevant issue:</u> transporting of animals out of province.</p> <p><u>Key points:</u></p> <ul style="list-style-type: none"> <li>• Register with Veterinary department before transporting</li> <li>• Inspection content (by veterinary officer): clinical testing; sampling for disease checking; instruct and surveille for disinfection of vehicles and containers</li> <li>• Issue Quarantine certificate</li> <li>• Inform the authority of destination</li> </ul>

Chain function	Applicable legislations / standards / good practices
Slaughtering	<u>National standard QCVN 01-150:2017/BNNPTNT</u> : National technical regulation on veterinary hygiene requirements for big-scale slaughterhouses <u>Key issues:</u> <ul style="list-style-type: none"> <li>• Location</li> <li>• Infrastructure</li> <li>• Hygiene and food safety</li> <li>• Slaughtering management</li> <li>• Veterinary requirements for cascade after slaughtering</li> <li>• Food safety quality management system</li> </ul>
Retailing / Wet markets	<u>Standard TCVN 11856:2017</u> : Hygiene requirements for wet markets
Retailing / Supermarkets	<u>Circular 16/2012/TT-BYT</u> : Regulations on food safety for processors, traders of food, food packaging under control of Ministry of Health
	<u>Joint circular 13/2014/TTLT-BYT-BNNPTNT-CT</u> : Allocation of tasks and cooperation among regulatory agencies in food safety management

### C. SUBQUESTION 1.3: WHAT IS THE MECHANISM OF SETTING, IMPLEMENTING AND CONTROLLING OF THOSE STANDARDS?

This section describes about mechanism of setting, implementing and controlling of above mentioned standards.

The official procedure for development and control of compliance of national standards, as defined by Law of Standard and National Standard, ensures the participation of relevant stakeholders by publishing and giving enough time for public consultation.

#### a) *Principles of standard development:*

As defined by law, national standards shall ensure improvement of quality and competitiveness of products in domestic and international market.

The operation in standard field shall ensure its publicity, transparency, non-discrimination and hinder production and trade. The standard development process shall engage and gain consensus of all relevant stakeholders.

The national standards are developed based on:

- international and regional standards; and/or
- outcomes of a scientific researches; and/or
- outcomes of relevant assessments, experiment, evaluations or inspections

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**b) Mechanism of standard development:**

Law of Standard and National Standard defines:

- The standard development shall engage participation of authority, science and technology organisations, enterprises, experts, consumers and interest parties;
- The national standard department shall arrange for feedbacks of relevant stakeholders via conference or workshop or any public means. Timeline for public consultation is 60 days;
- The national standard department analyse feedbacks from stakeholders, seek for agreement of relevant ministries and departments and send to the Ministry of Science and Technology for assessment;
- The assessment by the Ministry of Science and Technology shall not be longer than 60 days since the official receipt of the final draft;
- The national standard department finalises and issues national standard within 30 days after receiving assessment result.

**c) Control compliance of national standard implementation:**

The law of Standard and National Standard requires that:

- The relevant ministry nominates conformity assessment bodies that are accredited by accreditation body.
- The accreditation body shall be international or regional recognised.

**D. SUBQUESTION 1.4: WHAT ARE THE MAIN REASONS OF FAILURE?**

Based on findings in sections C and D, this section will figure out reasons of failure of the public existing food safety standard system to result in safe chicken meat in Vietnam. International recognised guidelines and standards are used as references. Comparisons between applicable national standards with international recognized standards and guidance have been conducted, in which:

- Global Benchmark Tool by GSSI is the reference used for the comparison of governance and operational management of certification schemes.
- GLOBALG.A.P standards are used for comparisons of compound feed manufacturing and poultry farming. Only food safety related requirements are used for developing the comparison checklist.
- Guidance of FAO about good slaughtering practice is used for the comparison of good slaughtering practice.

**1. Governance of certification schemes:**

The comparison related to governance of certification schemes has looked at different aspects, include scheme governance, scheme management, and standard setting and maintenance. The complete checklist of the comparison is given in Annex A of this document. Key findings are:

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**a) Scheme governance:**

Existing schemes provided by MARD do not have evidence to demonstrate its:

- compliance with operating procedure criteria as per international recognised practice; and
- transparency of governance and;
- transparent process *to assess complaints based on a publicly available procedure for resolving complaints related to governance, scheme management and executive functions.*

Measures of monitoring its program integrity have not been established and implemented yet.

**b) Scheme management**

The certification scheme offered by MARD is in line with the reference used.

**c) Standard setting and maintenance:**

The main problem is with standard setting procedure that the standard development procedure and a clear work program to inform stakeholders about status of relevant standards are missing.

**2. Operational management of certification schemes:**

The comparison takes accreditation, certification and chain of custody in to account. The complete checklist of the comparison is given in Annex B of this document. Key findings are:

- MARD does not contract with an international recognised accreditation body, although Vietnam has an accreditation bureau that is a member of International Accreditation Forum (IAF). MARD perform the accreditation themselves, neglect the fact that there is not any evidence about their competence for such kind of activity is recognised by IAF.
- The Chain of Custody standard, to ensure that *all certified products are identified and segregated from non-certified products at all stages of the supply chain*, has not been developed yet. This is crucial to prevent mixing and fraud of certified products throughout the chain.

**3. Standards' content**

National standards that are applied for chicken production chain cover operations of hatcheries, compound feed manufacturers, chicken farms and slaughterhouses. The comparisons exclude standard for hatcheries because of its least influence on the safety of chicken meat. Details of applicable legislations and national standards are given in Annex D of this documents.

In general, the applicable national standards are not risk-based. Individual and group discussions with broiler farms show that growers have no idea about HACCP as well as risk assessment.

Antimicrobials has been an obvious problem of chicken meat, however, the related standard does not require any monitoring program, neither at farm level nor at slaughtering level.

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There is not any requirement related to communication between slaughterhouses and broiler farms. This is helpful for improvement of husbandry performance and better chicken for slaughtering.

**a) Compound feed manufacturing (CFM) standard:**

The complete checklist of the comparison is given in Annex C.1 of this document.

In general, the existent CFM standard is in line with most of fundamental food safety requirements of related standard of GLOBALG.A.P. However:

- Requirements regarding controlling of feed ingredient suppliers are totally missing, this may link to the fact that main feed ingredients are imported.
- The cross contaminations concern during processing, specifically during rework and flushing, has been neglected.
- There is not any recall required by the national standard.

**b) Good animal husbandry standard:**

The complete checklist of the comparison is given in Annex C.2 of this document.

Many key issues related to good animal husbandry practices are excluded from the national standard.

- Site management: risk assessment for suitability of the production site, with regards to environment, food safety and animal welfare is not covered.
- Recall/withdraw procedure as well as an annual mock test, to ensure feasibility of recall actions once food incidents happen, are not present. This is critical for all international recognised food safety standards.
- Food defense is necessary for producer to protect their product from intentionally adulteration. It is obligatory by US and EU for food related regulations. However, this issue is also excluded.
- Traceability is not clearly required.
- A proper management of litter hygiene condition is especially important for disease management, but these criteria are absent.
- Regarding to bird health monitoring, scientific methodologies to assess health status of broilers, such as Bristol Gait score and a gut scoring system, are not required. Two ways communication with slaughterhouse about the flock performance is also missing, this is supposed important for improving of bird safety and its suitability for slaughter.
- About bird welfare, neither the stock density is required nor a requirement about the ability of birds to move freely, stand normally, turn around, stretch wings, sit without contact with other birds.
- Related food safety aspect, farmers are not requested to implement a zoonoses and residue monitoring programs.

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**c) Good slaughtering standard:**

The complete checklist of the comparison is given in Annex C.3 of this document. The national standard for slaughtering is quite complete. The significant missing issues are:

- Monitoring of residue that is not arisen during slaughtering process.
- The communication with producers about bird status at slaughterhouse (such as: cull birds, mortality, hock burn, footpad lesions, breast blisters/ammonia burn, dead on arrival, broken and dislocated legs, broken and dislocated wings, bruising on legs and breast, rejected) is missing.

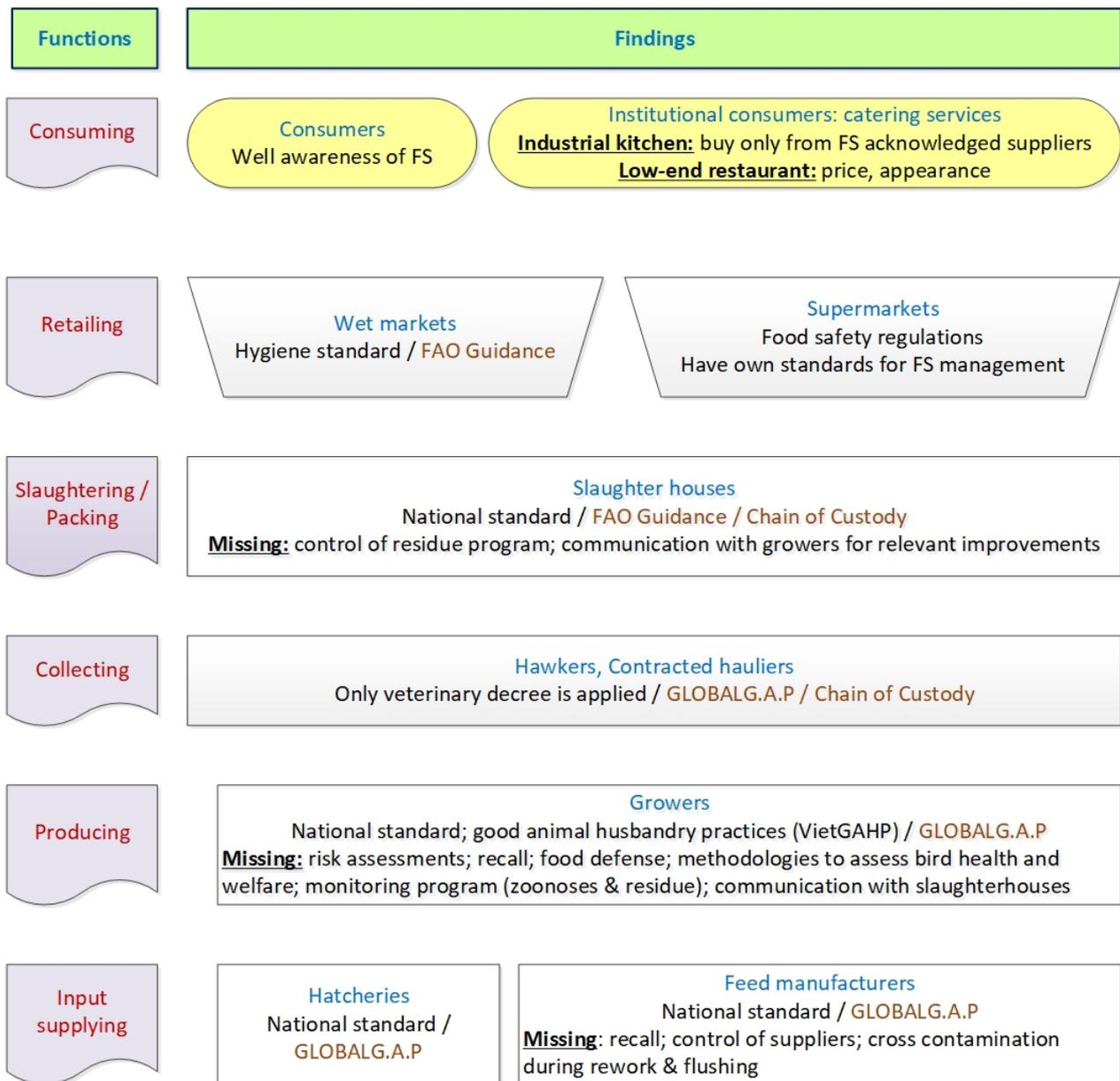
It is not clear whether it is mandatory that performance objectives/criteria of slaughtering process shall be set up, and validation of a HACCP plan should ensure that it is effective to meet such objectives/criteria.

**E. SUBQUESTION 2.1: WHAT ARE INTERNATIONALLY RECOGNISED STANDARDS APPLIED FOR THE CHICKEN CHAIN?**

This section lists relevant international recognised standards and guidances that can be applied for the chicken chain.

These standards and guidances are used as references to figure out incompleteness of Vietnamese national standards. Details of comparison are presented in section D of this document. The summary is given in Figure 16.

Figure 16: Applicable standards & findings



Source: own drawing

From above figure, it is obviously that incompleteness of the food safety assurance system of Vietnam, in comparison with international ones, falls in producing and slaughtering levels. The Chain of Custody standard, a mechanism to ensure food safety information exchange and secure of safe meat throughout the chain, is missing.

#### F. SUBQUESTION 2.2 WHAT IS THE MECHANISM OF SETTING, IMPLEMENTING AND CONTROLLING OF THOSE STANDARDS?

This section will present a study case about GLOBALG.A.P, a private certification scheme that is recognised in global trade. Findings are abstracted from GLOBALG.A.P website: <https://www.globalgap.org>

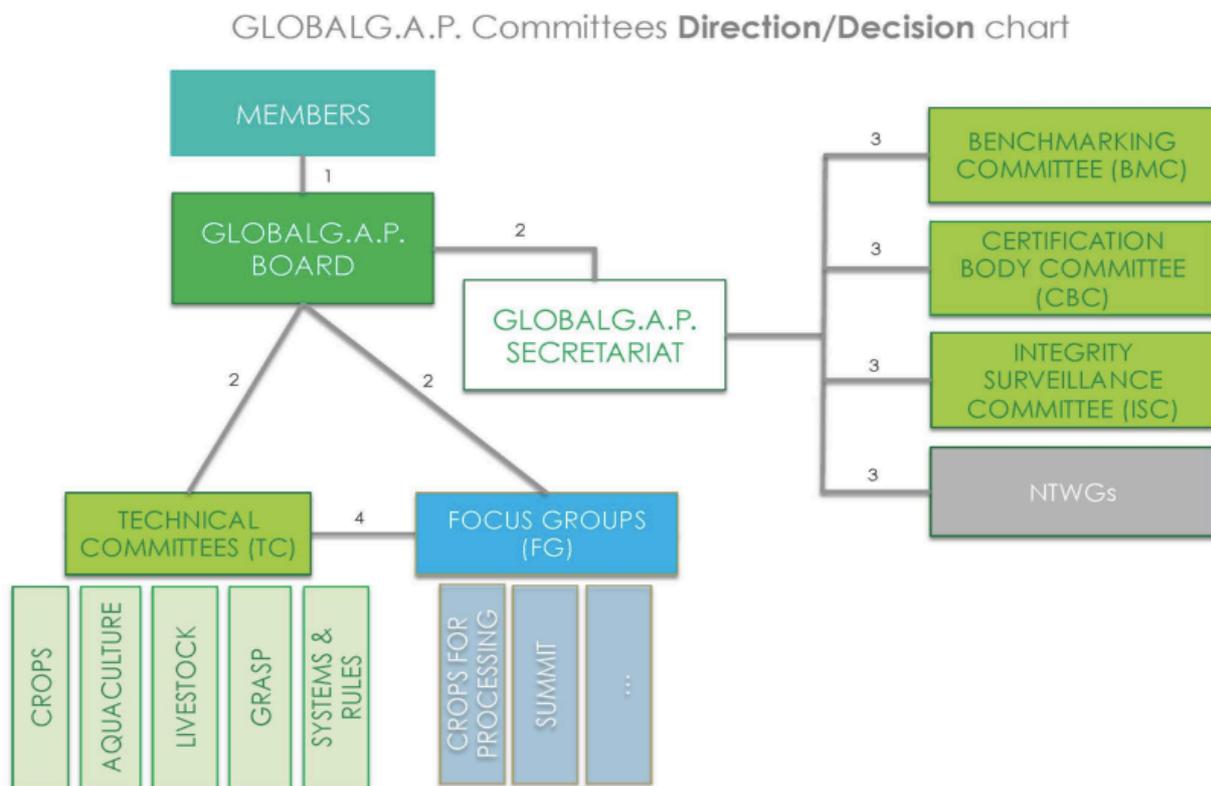
## 1. About GLOBALG.A.P

GLOBALG.A.P is an initiative by retailers belonging to the Euro-Retailer Produce Working Group. It has started in 1997, since British retailers and supermarkets in Europe become aware of consumers' growing concerns regarding product safety, environmental impact and the health, safety and welfare of workers and animals. The initiative set voluntary standards for the certification of agricultural products around the globe and within a short time, GLOBALG.A.P certifications have become a gate-pass for agriculture products wish to enter main European retailers group.

## 2. GLOBALG.A.P. Governance

GLOBALG.A.P. is governed by a Board of elected producer, retailer representatives and headed by an independent chairman. The direction and the decision making process is given in Figure 18.

Figure 18: GLOBALG.A.P Committee Direction/Decision tree



<sup>1</sup> The GLOBALG.A.P. Members elect the GLOBALG.A.P. Board.

<sup>2</sup> The GLOBALG.A.P. Board gives direction to the GLOBALG.A.P. Secretariat, the Technical Committees and the Focus Groups.

<sup>3</sup> The GLOBALG.A.P. Secretariat gives direction within the framework of Board resolutions to the Benchmarking, Certification Body and Integrity Surveillance Committees and the National Technical Working Groups.

<sup>4</sup> The Technical Committees give direction to Focus Groups (as outlined in the respective Focus Group Terms of Reference).

Source: GLOBALG.A.P

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The GLOBALG.A.P. Secretariat supports the work of the Board and all the committees. This function is fulfilled by Food PLUS GmbH, a private limited company based in Cologne, Germany, that acts as a single management platform for GLOBALG.A.P.

Financial and legal ownership and responsibility for Food PLUS GmbH is held by the EHI Retail Institute via its 100% subsidiary EHI-Verwaltungsgesellschaft mbH. The EHI Retail Institute also operates the European Retail Academy, a global network of research institutes linked to retail activities and topics.

### **3. Standard development & implementation**

GLOBALG.A.P standards and implementation are developed and defined by various Technical Committees, Focus Group and the Certification Body Committee. The process is based on a transparent and independent standard setting system that includes intensive collaboration, consultation and communication between Technical Committees, Stakeholder Committees, Certification Body Committees, Board and Secretariat.

- Technical Committees are consisting of GLOBALG.A.P producer/trader and retailer/food service members. These members of the committees, elected by their peers and represent for the stakeholder. The election takes in place every four years.
- GLOBALG.A.P Focus Group are set up on demand after approval by the GLOBALG.A.P Board.
- The Certification Body Committee (CBC) is made up of experts employed by certification bodies (CBs) that are GLOBALG.A.P associated members. The committee discusses GLOBALG.A.P implementation issues and provide feedback. Proposals for change put forward by the CBC are reviewed and approved by the Technical Committees.
- National Technical Working Groups (NTWGs) support the work of the committees on a local level.

### **4. Control compliance of implementation**

The Integrity Surveillance Committee (ISC) is an independent body that makes the final decision on a certification body's approval status. The ISC is made up of industry experts with a local legal background. ISC members are appointed by the Board, but work independently and meet at least 3 times a year.

The ISC plays a key role in the GLOBALG.A.P Certification Integrity Program (CIPRO), which monitors and evaluates the performance of the GLOBALG.A.P approved CBs. They assess integrity issues and certification body non-conformances and proposes correctional measures and sanctions.

## G. SUBQUESTION 2.3 WHAT IS THE MECHANISM OF THOSE STANDARDS IN ORDER TO GAIN ACCEPTANCE OF THE MARKET AND CONSUMERS?

As mentioned above, GLOBALG.A.P initiative has been formed by group of European retailers. This collaboration is to address historical food safety scares<sup>13</sup> in the past that occurred and directly influenced on retailers in Europe. The food safety incidents have urged retailers for a strategy so that pave the way to meet consumer demand, as well as protect the business from threats, such as liability and loss of brand capital associated with failure of control. Hence, it may be said that the drive for GLOBALG.A.P to gain acceptance of the market has started firstly from retailers engagement and multi-stakeholders partnership.

Figure 17: GLOBALG.A.P Retailer & Food Service Members



Source: GLOBALG.A.P

Beside retailers, the initiative has the commitment from producers to fully comply with the GLOBALG.A.P standards and act as industry leaders in good agricultural practice.

GLOBALG.A.P also involves other stakeholders with widespread expertise that valuably contribute to National Technical Working Groups and other consultation processes, without being directly involved in its decision making process.

Second factor is that the initiative prioritises food safety concerns at the first rank. Food safety risk prevention (risk-based approach) is the core of GLOBALG.A.P standards. The completeness of standards is guaranteed by different committees and its participatory standard development process.

<sup>13</sup> Bovine Spongiform Encephalopathy (BSE) in 1996; meat and dairy products contaminated dioxin in Germany and the Netherlands in 1998; animal feed contaminated dioxin and polychlorinated biphenyls in Belgium in 1999

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In addition, a transparent and rigorous governance ensures the scheme credibility, together with using an accredited and purportedly independent third party to certify producers. The aside benefit of this process is that enables retailers to offset certification expenses to the certified party.

And lastly, GLOBALG.A.P. keeps engaging leading stakeholders around the globe. This is realised by their annual tours to many countries around the world, as a part of their stakeholder engagement campaign.

Their philosophy is *'Enhancing safety and sustainability means better access to markets for producers, safer products for retailers and consumers, more sustainable production systems for governments, and greater business opportunities for service providers'*.

## **H. SUBQUESTION 2.4: WHAT ARE KEY ELEMENTS TO SUCCESSFUL IMPROVE EXISTING STANDARDS?**

Section D has figured out reasons of failure of the public existing food safety standard system to result in safe chicken meat in Vietnam. This section will present elements that are crucial for its successful improvement. The improvement should be carried out at two level: governance and standardization.

### **1. Governance**

The safety of the whole chicken chain is regulated by three ministries (MARD, MOIT and MOH), hence throughout communication and synchronous governance between the three ministries are prerequisite to ensure safe meat at the table.

### **2. Standardisation**

The standardisation shall ensure its openness and transparency consensus-based system.

#### Operational management of certification schemes:

- Accreditation shall be performed by an international recognised accreditation body that is a member of International Accreditation Forum (IAF).
- Develop the Chain of Custody standard.

#### Standards' content shall:

- Be risk-based
- Address all missing issues as defined in section D, part 3 of this chapter

## **I. SUBQUESTION 2.5: WHAT ARE KEY ELEMENTS TO SUCCESSFUL DEVELOP THE ALTERNATIVE?**

As presented in section G of this chapter about the mechanism of winning market acceptance of a private certification, elements to successfully develop the alternative are:

- Retailer engagement and multi-stakeholders partnership
- Transparent and rigorous governance

- 
- Participatory standard development process by involving different committees
  - Risk-based standard

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## V. DISCUSSION

This chapter interprets some key points from results that fall under issues related to antibiotics, consumers, standardisation and the alternative.

### A. Antibiotics:

From above findings, it may be said that:

Subquestion 1.1: Growers, neglect their scale, are facing with concern of exceeding antimicrobial MRLs.

Antibiotics residue in chicken meat in Vietnam, with refer to previous researches, not only originates from awareness of growers, but also from the deficiency of a residue monitoring program.

Subquestion 1.4: a better chicken health monitoring system, such as gut scoring method, may help reduce reliance on antibiotics. In addition, evaluation antimicrobial susceptibility will enable effectiveness of antibiotic using.

### B. Consumers:

Subquestion 1.1: consumers are aware of problem with safety of chicken meat and have criteria for such meat. However, they have almost no information about safe sources and how to recognised safe meat at the selling point. Let's assume that with the alternative, VPQA is able to address above mentioned consumer concerns, then will it increase the production cost and the meat price, and who will pay for it? VPQA would need to take this associated challenge into their consideration, so that the alternative won't raise cost problem by fixing food safety problem.

### C. Standardisations:

Subquestion 2.4: as described in section B, standardisation for most of the chicken chain and standard publication are currently carried out by MARD. However, if we look back Chapter II, section E of this document, UNIDO recommends that these should be performed by the National Standard Body (NSB) of Vietnam. The results of assessment for the quality infrastructure of Vietnam indicates that the NSB of Vietnam is capable to do so. Hence there are 2 possibilities: MARD should upgrade their standardisation capacity in line with international practice or MARD should leave the standardisation to the NSB.

### D. The alternative:

Subquestion 2.5: VPQA shall take following into its consideration when develop the alternative:

- The public sector should take the alternative as the result of public-private partnership. It aims to share food safety assurance challenge with public sector rather than to compete with public standards.
- The alternative is able to address the deficiency and facilitate to increase the stringency of public regulations.

- 
- The alternative is also a means of 'going beyond' public regulations to provide credible bases for product differentiation. This can be done by targeting qualities that excluded by public regulations and make the road map for applicants to achieve food safety goals.

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## VI. CONCLUSION AND RECOMMENDATION

A. **Main question 1:** What are problems of standards applied for chicken chain, as a part of Vietnam food safety regulatory framework, so that it has not resulted in safe chicken meat?

Problems of public standards applied for chicken chain are mainly located at level of implementation and interpretation food safety policies in certifiable standards, include:

1. **Governance of certification scheme:**
  - Lack of transparency; and
  - Missing control measures to monitor the program integrity.
2. **Operational management of certification schemes:**
  - International recognized competent accreditation body is not involved in accreditation process as an assurance for quality and reliability of certification activities.
  - Short of a mechanism to preventing fraud and mixing of certified and non-certified products.
3. **Standard content:** incompleteness of standard content in comparison with international recognised standards/guidances:
  - Not risk-based; and
  - Deficient necessary communication between actors that significantly influence on chicken meat safety (growers and slaughterhouses)
  - Insufficient traceability requirements; and
  - Recall procedure is excluded

B. **Main question 2:** What are critical factors to improve existing standards and/or develop the alternative for effective controlling safety of domestic chicken chain?

1. **Improvement of existing standards**

Relevant ministries shall take governance and standardisation into their consideration of improvement, include:

- Establish a throughout communication mechanism and synchronous governance between the three ministries.
- MARD should upgrade their standardisation capacity in line with international practice or MARD should leave standardisation to the NSB.
- Complete existing standards in line with international recognised standards or practices.

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2. Development of alternative

Development of alternative by VPQA shall:

- Address deficiency and facilitate to increase the stringency of public regulations.
- Promote public-private partnership to share food safety management challenge.
- Using risk-based approach and an openness and transparency consensus-based system for standard development process.

## C. Recommendations

### 1. Enhance competitiveness of the domestic chicken chain

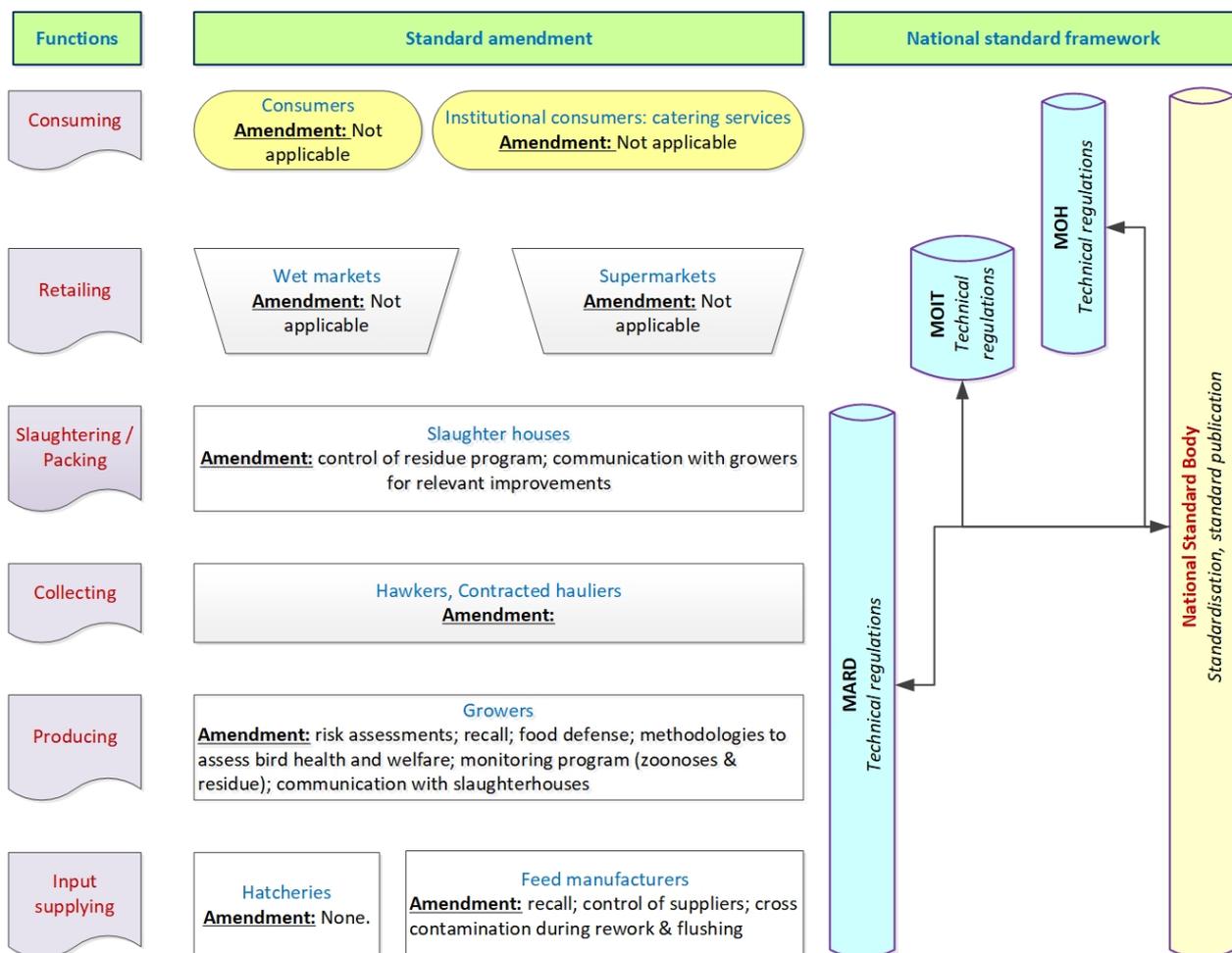
Feed manufacturers have the best food safety performance. They also play an important role in linking farmers to the market. Abundant personnel and financial resources, they seem likely a promising chain leader.

In addition, Free Trade Agreements have influenced fiercely on the chicken sector. If feed manufacturers can take the lead in building up producers' capability to produce safe chicken meat, it will enable enhancing competitiveness of domestic chicken production.

### 2. Standardisation

Vietnam got highest score (5 out of 5) for quality policy/legislation framework, technical regulations, metrology and accreditation capacity. Therefore, relevant ministries should be in charge for related technical regulations and involve in standardisation process as key stakeholders. A good option then the standardisation should be left to National Standard Body (NSB) of Vietnam rather than by relevant ministries. The existing standards would need to be completed align with international recognised standards and guidance.

Figure 19: Recommended National Standard framework



Source: own drawing

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### 3. Development of the alternative

In order to successfully develop the alternative, VPQA should:

- Establish multi-stakeholder partnerships by learning from successful cases, such as GLOBALG.A.P. The process of standard development is participatory that involve all relevant stakeholders.
- Institute a certification process that uses independent third-party entities for certification activities.
- Have accreditation service conducted by an accreditation body that is IAF member.
- Target qualities that excluded by public regulations and make the road map for chain actors to achieve food safety goals.
- Build up a platform for safe meat actors so that they can be recognised by the market.

## VII. ANNEX

### A. COMPARISON OF GOVERNANCE OF CERTIFICATION SCHEME

NIA: no information available

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
SCHEME GOVERNANCE					
1	Governance				
1.1	Legal status	The Scheme Owner is a legal entity, or an organisation that is a partnership of legal entities, or a government or inter-governmental agency.	X		
1.2	Impartiality	The Scheme Owner is not directly engaged in the operational affairs (auditing or certification) of the certification or accreditation program. <i>Note: This does not include complaint resolution or performance review.</i>	X		
1.3	Operating procedures	The Scheme Owner operates to a documented set of governance policies and procedures specifying at least the following: <ul style="list-style-type: none"> <li>• Board or governance body election or appointment process,</li> <li>• Board or governance body representation and Terms of Reference,</li> <li>• Member categories (where applicable),</li> <li>• Income generation or funding processes,</li> <li>• An organisational structure,</li> <li>• The decision making processes of each governance body,</li> <li>• Key personnel roles (responsibility and authority),</li> <li>• Managing conflict of interest, and</li> <li>• A conformity assessment program</li> </ul>		X	

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
1.4	Transparency of governance	The Scheme Owner makes information freely and publicly available about the scheme's governance structure, Scheme Ownership, standards and standard-setting procedures, and the composition, operating procedures and responsibilities of its governance bodies.		X	
1.5	Governance complaints	The Scheme Owner has a transparent process to assess complaints based on a publicly available procedure for resolving complaints related to governance, scheme management and executive functions.		X	
1.6	Governance participation	The Scheme Owner requires that stakeholders have the opportunity to participate in or provide direct input to the top governance body.	X		
2	Scope and objectives				
2.1	Scheme scope	The Scheme Owner has a defined scope for certification under its scheme.	X		
2.2	Scheme objectives	The Scheme Owner has defined objectives for its scheme that aim for responsible use of the resource and has publicly available performance indicators related to scheme objectives.			X
3	Non-discrimination				
3.1	Openness	The Scheme Owner ensures that all types of operations within the scope of its scheme can apply for certification, regardless of their scale, size or management arrangements, and has not set an upper limit on the number of operations that can be certified.	X		
3.2	Market access	The Scheme Owner does not have mandatory requirements that require an operation to be certified in order to access any markets.	X		
4	Scheme integrity monitoring program				
4.1	Internal review	The Scheme Owner undertakes a fully documented annual management review of scheme performance, including its assurance program, and the performance of certification and accreditation bodies. The results of the review are used			X

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
		to revise its operating procedures and practices, where necessary.			
<b>SCHEME MANAGEMENT</b>					
5	<b>Logo use and claims</b>				
5.1	Claims policy	The Scheme Owner has a publicly available policy governing use of symbols, logos and claims.	X		
5.2	Relevant claims	Through the claims policy, the Scheme Owner ensures copyright is protected and that symbols, logos and claims are only applied to activities that are within the scope of certification, do not overstate or mislead users relative to the defined scope, and are relevant to that scope.	X		
5.3	Claims-making requirements	The Scheme Owner requires that the certified organisation does not make or permit any misleading statement or use regarding the status or scope of its certification.	X		
5.4	Logo management	The Scheme Owner or its delegated authority issues written and enforceable authorisations and/or licenses to use the scheme's mark/claim/logo only when the facility and/or product has been certified as being in conformity with the relevant standard.	X		
5.5	Certificate content management	The Scheme Owner requires certificates to include, at a minimum: <ul style="list-style-type: none"> <li>the name and address of the accreditation body or Scheme Owner;</li> <li>the name and address of the certification body;</li> <li>the name and address of the certification holder;</li> <li>the effective date of issue of the certificate;</li> <li>the substance (scope of certification) of the certificate;</li> <li>the term for which the certification is valid;</li> <li>signature of the issuing officer</li> </ul>	X		
<b>STANDARD SETTING AND MAINTENANCE</b>					

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
6	Standard setting body				
6.1	Standard setting body	A Scheme Owner or other suitable arrangement (e.g. technical committee of independent experts, delegated standard-setting body) is assigned with the tasks of setting, reviewing, revising, assessing, verifying and approving standards.	X		
6.2	Central focal point	The Scheme Owner identifies a central point of contact for standards-related enquiries and for submission of comments. The Scheme Owner makes contact information for this contact point readily available including on the internet.			X
7	Standard setting procedures				
7.1	Standards development and maintenance procedure	The Scheme Owner has publicly available procedures for the process under which each standard is developed and revised.		X	
7.2	Work program	A work program is prepared and made publicly available at least every six months, including: <ul style="list-style-type: none"> <li>• Scheme Owner's name and address</li> <li>• the list of standards currently under preparation;</li> <li>• the list of standards currently under reviewing or revision;</li> <li>• the list of standards which were adopted in the preceding period</li> </ul>		X	
7.3	Terms of reference	At the outset of a new standard development or revision process, the Scheme Owner develops or updates terms of reference (ToRs), which includes at least the following elements: <ul style="list-style-type: none"> <li>• Proposed scope of the standard and intended geographic application;</li> <li>• Clear objectives that the standard seeks to achieve and how those are linked to the organisation's intended change</li> </ul>			X

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
7.4	Decision making process	The Scheme Owner strives for consensus decisions on the content of the standard. Where consensus cannot be achieved, the Scheme Owner defines criteria in advance to determine when alternative decision-making procedures should come into effect and what the decision-making thresholds will be.			X
7.5	Complaints	The Scheme Owner, or delegated authority makes impartial and documented efforts to resolve procedural complaints related to standard-setting, based on a publicly documented complaints resolution mechanism. Decisions taken on complaints are disclosed at least to the affected parties.		X	
7.6	Standards review and revision	The Scheme Owner reviews standards at least every five years for continued relevance and for effectiveness in meeting their stated objectives and, if necessary, revises them in a timely manner.			X
7.7	Proposals for revisions	The Scheme Owner allows for comments on the standard to be submitted by any interested party at any time and considers them during the subsequent standards revision process.			X
7.8	Record keeping	The Scheme Owner keeps on file for a period of at least one full standards revision the following records related to each standard development or revision process: <ul style="list-style-type: none"> <li>• policies and procedures guiding the standard-setting activity;</li> <li>• lists of stakeholders contacted;</li> <li>• interested parties involved at each stage of the process;</li> <li>• comments received and a synopsis of how those comments were taken into account; and</li> <li>• all drafts and final versions of the standard</li> </ul>			X
8	Participation and consultation				

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
8.1	Public summary	At the outset of a standard development or revision process, the Scheme Owner makes publicly available a summary of the process that includes: <ul style="list-style-type: none"> <li>• contact information and information on how to contribute to the consultation;</li> <li>• summary of the terms of reference for the standard, including the proposed scope, objectives and justification of the need for the standard;</li> <li>• steps in the standard-setting process, including timelines and clearly identified opportunities for contributing; and</li> <li>• decision-making procedures, including how decisions are made and who makes them</li> </ul>	X		
8.2	Balanced participation	The Scheme Owner or delegated authority ensures participation by independent technical experts and encourages balanced participation by stakeholders in the standard development, revision and approval process.	X		
8.3	Public consultation	The Scheme Owner allows a period of at least 60 days for the submission of comments on the draft standard.	X		
8.4	Public announcement	No later than the start of the comment period, the Scheme Owner publishes a notice announcing the period for commenting in a national or, as may be, regional or international publication of standardisation activities and/or on the internet.	X		
8.5	Stakeholder consultation	The Scheme Owner ensures that interested parties can participate in the standard-setting process through a consultation forum or are made aware of alternative mechanisms by which they can participate.	X		
8.6	Transparency comments received	The Scheme Owner makes publicly available all comments received in the consultation in a non-attributable way.		X	
8.7	Taking comments into account	The Scheme Owner takes into account in further processing of the standard, comments received during the period for commenting.			X
9	Standards content				

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
9.1	Standards content	<p>The Scheme Owner ensures that the standard is consistent with the following requirements:</p> <ul style="list-style-type: none"> <li>only includes language that is clear, specific, objective and verifiable;</li> <li>is expressed in terms of process, management and / or performance criteria, rather than design or descriptive characteristics; (ISO 59)</li> <li>does not favour a particular technology, patented item or service provider; and (ISO 59)</li> <li>attributes or cites all original intellectual sources of content</li> </ul>		X	
9.2	Relevance of standards content	<p>As part of the standard development process, the Scheme Owner assesses the feasibility and audit-ability of requirements in the draft standard.</p> <p>The Scheme Owner demonstrates that all criteria in the standard contribute to the standard's defined objectives. Criteria are related to how the Scheme Owner's objectives are met by identifying the acceptable performance. Often they are logically grouped around principles and objectives. Examples of evidence for scheme alignment:</p> <ul style="list-style-type: none"> <li>comparison of the Scheme Owner performance indicators with the standard's criteria</li> <li>monitoring and evaluation system of the performance indicators</li> <li>criteria that are not monitored and not evaluated may be surplus to the objective of the standards</li> </ul>			X
9.3	Local applicability	<p>The Scheme Owner ensures that the standard is locally applicable. Where the Scheme Owner adapts the standard for direct application at the national or regional level, the Scheme Owner develops interpretive guidance or related policies and procedures for how to take into account local environmental and regulatory conditions.</p>	X		
10	<b>Standards accessibility</b>				
10.1	Standards availability	<p>The Scheme Owner promptly publishes adopted standards, and makes them available for free on the internet, and on request, to any interested party.</p>	X		

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	N/A
11	Transition period				
11.1	Informing enterprises of transition	The Scheme Owner ensures that certified enterprises are informed of the revised standard and transition period, either directly or through their certification bodies.	X		
11.2	Transition period for compliance	The Scheme Owner requires that the unit of certification is given a period of at least one years to come into compliance with revised standards. The Scheme Owner notes in the standard the date of a revision or reaffirmation of the standard along with a transition period after which the revised standard will come into effect.	X		

*Key references:*

1. GSSI. 2015. Global Benchmark Tool. GSSI
2. Ministry of Agriculture and Rural Development. 2012. *Circular 48/2012/TT-BNNPTNT: regulations applied for certification of agricultural, husbandry and aquaculture products that are produced in compliance with good agriculture practices.* MARD
3. Ministry of Agriculture and Rural Development. 2015. *Decision 4653/2015/QD-BNN-CN: Good Animal Husbandry Practice for Chicken production in Vietnam.* MARD
4. Ministry of Agriculture and Rural Development. 2016. *Decision 2509/QD-BNN-CN: regulations applied for certification and good husbandry practices for pig and chicken household.* MARD

## B. COMPARISON OF OPERATIONAL MANAGEMENT OF CERTIFICATION SCHEME

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
<b>ACCREDITATION</b>					
1	ISO-17011 compliance	The Scheme Owner has a contractual, enforceable arrangement or formal understanding that requires accreditation bodies to be compliant with the requirements of ISO/IEC 17011:2004.		X	
2	Non-discrimination	The Scheme Owner ensures that accreditation services are available to certifying bodies irrespective of their country of residence, size, and of the existing number of already accredited bodies, within the scope of the scheme.	X		
3	Specified requirements	The Scheme Owner specifies the requirements for certification bodies that the accreditation body is required to verify.	X		
4	Transition period	Subsequent to any changes in the requirements for assessing certification bodies, the Scheme Owner ensures certification bodies are given a defined time period within which to conform to the changes. Special considerations should be given to accredited bodies in developing countries and countries in transition.	X		
5	Accreditation body competencies	The Scheme Owner only works with accreditation bodies that have personnel with the necessary education, training, technical knowledge and experience for performing accreditation functions in fisheries and aquaculture operations.		X	
6	External review	The Scheme Owner ensures that external audits are carried out on the accreditation body to assess performance.		X	
7	Organisational transparency	The Scheme Owner ensures that the accreditation body is transparent about its organisational structure and the financial and other kinds of support it receives from public or private entities.		X	
8	Office audit	The Scheme Owner ensures that the accreditation process includes an on-site audit of the certification body.	X		

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
9	Field audit	The Scheme Owner ensures that the accreditation process includes a review of the performance of certification bodies and auditors in the field.	X		
<b>CERTIFICATION</b>					
<b>1 Certification process</b>					
1.1	ISO-17065 compliance	The Scheme Owner requires that certification bodies operating in the scheme are accredited to ISO/IEC 17065:2012 for the scope of the respective standard of the scheme.	X		
1.2	Fee structure	The Scheme Owner requires certification bodies to maintain a written fee structure that is available on request and is adequate to support accurate and truthful assessments commensurate with the scale, size and complexity of the operation or chain of custody. The fee structure is non-discriminatory.	X		
1.3	Certification cycle	The Scheme Owner requires that the validity of a certification cycle does not exceed 5 years and 3 years in the case of chain of custody certification.	X		
1.4	Surveillance	The Scheme Owner requires that certification bodies carry out periodic surveillance and monitoring at sufficiently close intervals to verify that certified operations continue to comply with the certification requirements. This should be on an annual basis.	X		
1.5	Assessment methodology	The Scheme Owner ensures that certification bodies apply a consistent methodology to assess compliance with the standard.	X		
1.6	Termination, suspension, withdrawal	The Scheme Owner ensures that accredited certification bodies have consistent documented procedure(s) that specify the conditions under which certification may be suspended or withdrawn, partially or in total, for all or part of the scope of certification.			X
1.7	Audit reports	The Scheme Owner requires CBs to ensure consistency in audit report formats and in how the reports are completed.	X		

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
1.8	Non-compliances	The Scheme Owner requires that certification bodies use a consistent procedure for determining non-compliances, verifying corrective actions arising from non-compliances and allowing for appeals of non-compliances.	X		
1.9	Stakeholder input	The Scheme Owner requires that certification bodies have in place consistent procedures for stakeholders to provide input during the certification process.		X	
1.10	Site audit	The Scheme Owner requires that the scope of the (re-)certification audit includes a visit to locations pertinent to the scope of the certification.	X		
1.11	Transparency on certified entities	The Scheme Owner requires that a list of certified enterprises is made publicly available.	X		
1.12	Transparency on audit reports	The Scheme Owner requires certification bodies to make a summary audit report publicly available (excluding commercially sensitive material) after certification has been granted.		X	
1.13	Notification of changes	The Scheme Owner notifies accreditation bodies, certification bodies and certified enterprises of any change in management procedures which affects scheme rules and procedures for accreditation or certification.	X		
1.14	Timeline for corrective action	The Scheme Owner clearly defines the criteria relating to the classification of non-conformities. Where the Scheme Owner allows for certification of an entity with non-compliances, the Scheme Owner requires that: <ul style="list-style-type: none"> <li>• only non-conformities on minor, non-critical issues are allowed;</li> <li>• a timeline for closing out corrective actions must be defined;</li> <li>• a system to verify that corrective actions have been closed out is in place</li> </ul>	X		
2	Auditor competence				

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
2.1	Requirements for technical knowledge	The Scheme Owner has defined the qualifications and competence criteria required by auditors and audit teams, employed by certification bodies, and it makes this information publicly available.	X		
2.2	Technical knowledge	The Scheme Owner requires certification body auditors to have successfully completed training in the scheme to the satisfaction of the Scheme Owner.	X		
2.3	General auditing skills	The Scheme Owner requires that certification body auditors successfully complete auditor training based on ISO 19011. This does not include technical experts seconded to audit teams.	X		
2.4	Scheme specific knowledge assessment	The Scheme Owner requires that certification bodies include the following in their competence assessment of auditors: <ul style="list-style-type: none"> <li>• an assessment of knowledge and skills for each fundamental area the auditor will be expected to be working,</li> <li>• an assessment of knowledge and the ability to access and be able to apply relevant laws and regulations,</li> <li>• an assessment of the personal attributes of the auditor, to ensure they conduct themselves in a professional manner,</li> <li>• a period of supervision to cover the assessment scope principles, specific audit techniques and specific category knowledge,</li> <li>• a documented sign off by the certification body of the satisfactory completion of assessment requirements</li> </ul>	X		
2.5	Scheme specific knowledge maintenance	The Scheme Owner requires that certification body lead auditors maintain category and scheme knowledge.	X		
2.6	Knowledge maintenance	The Scheme Owner requires that certification bodies have a continuing professional development program in place that provides auditors with current best practice.	X		
3	CHAIN OF CUSTODY (CoC): the CoC standard has not developed yet.				

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
3.1	Segregation	The Scheme Owner requires that all certified products are identified and segregated from non-certified products at all stages of the supply chain.			
3.2	Enterprises to be audited	The Scheme Owner requires all enterprises that are physically handling the certified product to undergo a Chain of Custody audit by an accredited certification body if the product can be destined for retail sale as a certified, labelled product.  Exceptions: No audit is required for storage and distribution of tamper-proof, packaged products.			
3.3	Records for traceability	The Scheme Owner requires certification bodies to verify that all enterprises within the chain maintain accurate and accessible records that allow any certified product or batch of products to be traceable from the point of sale to the buyer.			
3.4	Sub-contractors	The Scheme Owner requires that enterprises are able to demonstrate that these Chain of Custody requirements are met by the enterprise's subcontractors.			
3.5	Auditing methods and frequency	The Scheme Owner has or requires certification bodies to have documented procedures for auditing methods and frequency of audits that meet the following requirements: <ul style="list-style-type: none"> <li>• certificate validity does not exceed 3 years;</li> <li>• periodicity depends on risk factors</li> <li>• changes to an enterprise's traceability system that are deemed to affect the integrity of the Chain of Custody result in a re-audit (onsite)</li> </ul>			

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	NIA
3.6	Non-conformity/corrective actions	<p>The Scheme Owner requires the certification body to record all identified breaches of the chain of custody, including:</p> <ul style="list-style-type: none"> <li>• an explanation of the factors that allowed the breach to occur;</li> <li>• an explanation of the corrective actions required to ensure that a similar breach does not re-occur;</li> <li>• the time frames for the corrective actions to be completed; and</li> <li>• the date of closing out of the corrective actions and how the problem was solved</li> </ul>			
3.7	Audit report	<p>The Scheme Owner requires that certification body audit reports include:</p> <ul style="list-style-type: none"> <li>• the date of the inspection/audit;</li> <li>• the name(s) of the person(s) responsible for the audit and report;</li> <li>• the names and addresses of the sites inspected/audited;</li> <li>• the scope of the inspection/audit;</li> <li>• the non-conformities identified;</li> <li>• the result of at least one mass balance assessment for each product covered by the Chain of Custody audit; and</li> <li>• a conclusion on the conformity of the client with the Chain of Custody requirements</li> </ul> <p>The Scheme Owner requires certification bodies to file reports at their office and to make these reports available to relevant parties upon request.</p> <p>Certification bodies are required to maintain files of Chain of Custody audit reports (paper or electronic) and make these available</p>			
3.8	Record keeping	<p>The Scheme Owner requires that an enterprise keeps records that demonstrate conformity with the Chain of Custody requirements for a period that:</p> <ul style="list-style-type: none"> <li>• exceeds the shelf life of the certified product; and</li> <li>• exceeds the periodicity between audits</li> </ul>			

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*References:*

1. GSSI. 2015. Global Benchmark Tool. GSSI
2. Ministry of Agriculture and Rural Development. 2012. *Circular 48/2012/TT-BNNPTNT: regulations applied for certification of agricultural, husbandry and aquaculture products that are produced in compliance with good agriculture practices.* MARD
3. Ministry of Agriculture and Rural Development. 2015. *Decision 4653/2015/QD-BNN-CN: Good Animal Husbandry Practice for Chicken production in Vietnam.* MARD
4. Ministry of Agriculture and Rural Development. 2016. *Decision 2509/QD-BNN-CN: regulations applied for certification and good husbandry practices for pig and chicken household.* MARD

## C. COMPARISON OF CERTIFICATION STANDARDS

### 1. Checklist for comparison of compound feed manufacturing standard

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
1	Legal compliance	Register and approved by authority	X	
2.1	Quality management system (QMS) and HACCP	QMS in place	X	
2.2		Carry out a formal HACCP	X	
3	Internal audit	Programmed based on risk assessment		X
4.1	Feed ingredients management	Selection of suppliers: <ul style="list-style-type: none"> <li>Define criteria</li> <li>Conduct a risk assessment</li> </ul>		X
4.2		Define specifications for each feed ingredients		X
4.3		Conduct risk assessments for each feed ingredient based upon: their origin, storage condition, kind of processing, handling, transport, bacterial and nutritional characteristics		X
4.4		Control of incoming feed ingredients: <ul style="list-style-type: none"> <li>Define acceptance criteria</li> <li>Procedures for checking and approving before unloading</li> </ul>		X
4.5		Inspection, sampling and testing: <ul style="list-style-type: none"> <li>Define frequencies and testing parameters based on risk assessment</li> <li>Define tolerance limit</li> <li>Assess the results against the specifications</li> </ul>		X
4.6		Define criteria for rejection of deliveries		X
4.7		Transport: <ul style="list-style-type: none"> <li>Exclude a list of materials that shall not be carried in vehicles used for the feed ingredients.</li> <li>Be cleaned before loading and after unloading</li> </ul>		X

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
		<ul style="list-style-type: none"> <li>Inspect the transportation vehicles for cleanliness prior to loading.</li> </ul>		
5.1	Storage facilities	Clear separation and identification of different type of feeds, feed ingredients and materials	X	
5.2		Allow inspection and cleaning		X
5.3		Have quarantine areas for non-conformity products		X
5.4		Be controlled for pests	X	
6.1	Processing	Document: <ul style="list-style-type: none"> <li>Procedures</li> <li>Work instructions</li> <li>Identification system</li> </ul>	X	
6.2		Formulations and specifications: <ul style="list-style-type: none"> <li>Comply with applicable legislations</li> <li>Each formula is uniquely identified</li> </ul>	X	
6.3		Production scheduling: <ul style="list-style-type: none"> <li>Avoid cross contamination of different feed types</li> <li>Be based on HACCP study</li> </ul>		X
6.4		Cross contamination matrix: <ul style="list-style-type: none"> <li>Be covered by HACCP system</li> <li>Consider flushing and cleaning. Amount, type of materials used for the flush is validated within HACCP study.</li> </ul>		X
6.5		Rework materials: Have procedures to control storage, identification and reworking of authorised rework materials		X

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
6.6		Production: <ul style="list-style-type: none"> <li>• Have a preventive maintenance program</li> <li>• Record daily process control</li> <li>• Calibrate measuring equipments at least once per year</li> </ul>	X	
6.7		Packaging: <ul style="list-style-type: none"> <li>• Be clean and suitable for use</li> <li>• Be stored free from contamination</li> </ul>		X
7.1	Site hygiene and management	External environment: <ul style="list-style-type: none"> <li>• Be maintained in a clean and tidy condition</li> <li>• Be free from waste materials</li> <li>• Be well drained</li> <li>• Waste materials are collected, identified and segregated</li> <li>• Be protected from ingress of pests</li> </ul>	X	
7.2		Internal environment: <ul style="list-style-type: none"> <li>• Be well lit and ventilated</li> <li>• Be kept clean, free from condensation, in a good state of repair</li> <li>• Have procedures for routine cleaning and inspection of internal environment, equipments and machinery</li> </ul>	X	
7.3	Site hygiene and management	Pest control: <ul style="list-style-type: none"> <li>• Record of fumigation (if any)</li> <li>• Have MSDS of chemicals used for fumigation</li> </ul>	X	
7.4		Personal hygiene: <ul style="list-style-type: none"> <li>• Health</li> <li>• Smoking areas</li> <li>• Drinking and eating areas</li> <li>• Hand washing facilities</li> <li>• Protective clothings</li> <li>• Record of visitors</li> </ul>	X	

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
8	Quality control of finished feed	Analytical schedule: <ul style="list-style-type: none"> <li>• Have adequate personnel for sampling, inspecting and testing</li> <li>• Have procedures for sampling, inspecting and testing</li> <li>• Define sample retention terms</li> <li>• Be aware of MRLs that are required by law</li> </ul>	X	
9	Recall	<ul style="list-style-type: none"> <li>• Have a procedure</li> <li>• Conduct mock test at least once per year</li> </ul>		X
10	Traceability	Have a traceability system for the entire production process from feed ingredient selection to delivery to customers	X	

**References:**

1. Food Plus GmbH. 2016. Control points and Compliance criteria / Compound Feed Manufacturing, V2.2. GLOBALG.A.P
2. MARD. 2011. National standard QCVN 01 - 77 : 2011/BNNPTNT: National technical regulation - Animal feed mill - Conditions for veterinary hygiene and food safety. MARD.
3. MARD. 2011. National standard QCVN 01 - 78: 2011/BNNPTNT: Regulation food safety parameters and MRLs in animal feed. MARD.
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## 2. Checklist for comparison of chicken farm standard

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
1.1	Site management	Reference system		X
1.2		Risk assessment: Suitability of production sites regarding to food safety, environment, health & welfare of animal		X
1.3		Risk management plan		X
2.1	Record system	Training	X	
2.2		Feed used	X	
2.3		Water quality	X	
2.4		Flock performance		X
2.5		Medicine usage	X	
2.6		House conditions	X	
2.7		Cleaning and disinfection	X	
2.8		Zoonoses monitoring		X
2.9		Residue monitoring		X
2.10		Dispatch	X	
3	Self-assessment	Once per year	X	
4.1	Hygiene (personal, transportation, facilities)	Risk assessment		X
4.2		Related instructions	X	
4.3		Monitoring	X	
5.1	Waste and pollutant management	Identify sources of waste and pollutants	X	
5.2		Management plan	X	
6	Recall/Withdraw	Procedure and mock test		X
7.1	Food defense	Risk assessment		X
7.2		Risk management plan		X

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
8.1	Traceability and identification system	Identification of bird		X
8.2		Traceability system		X
8.3		Mass balance		X
9	DOC sources	Recognised sources	X	
10.1	Feed & water	Recognised sources of feed	X	
10.2		Feeding plans		X
10.3		Storage conditions	X	
10.4		Cleaning and disinfecting of feeding and watering system	X	
10.5		Quality of water	X	
10.6		Stop feeding 12 hours before expected slaughter time		X
11.1	Housing	Ventilation	X	
11.2		Lighting	X	
11.3		Air quality management: air quality parameters	X	
11.4		Hygiene conditions	X	
11.5		Pest control	X	
11.6		Litter management: hygiene, suitable material and particle size, dried, sufficient depth (min. 2cm)		X
11.7		Feeding space		X
11.8		Drinking points		X
11.9		Enough space for inspection and removal of sick/injure birds		X
12	Free range areas	Not become muddy, have well-drained areas for resting		X
13.1	Bird health plan and welfare	Bird health plan	X	
13.2		Vaccination	X	

No	Issues	International standards / practices	Current practices of Vietnam		
			Yes	No	
13.3		Notifying authorities about notifiable diseases	X		
13.4		Post mortem gut scoring conducted for all suspected gut health issues, using standardised scoring system		X	
13.5		Strategies to optimised gut health and reduce the reliance on antimicrobials		X	
13.6		Monitoring of lameness during the later stages of production (using Bristol Gait Score)		X	
13.7		Daily health and culls monitoring	X		
13.8		Flock performance		X	
13.9		Bird health plan and welfare	Level and type of condemnations in slaughter stock		X
13.10			Communication with slaughterhouse about: cull birds, mortality, hock burn, footpad lesions, breast blisters/ammonia burn, dead on arrival, broken and dislocated legs, broken and dislocated wings, bruising on legs and breast, rejected		X
14.1	Medicine usage	Approved by authorities	X		
14.2		Prescribed by veterinarian		X	
14.3		Not for prophylactic		X	
14.4		Storage conditions	X		
15	Fallen stock	Disposal	X		
16.1	Dispatch	Identification of birds		X	
16.2		Withdraw period communication		X	
16.3		Segregation from uncertified birds		X	
17.1	Stocking density	Enough space for birds move freely, stand normally, turn around, stretch their wings, perch, sit without contact with other birds		X	
17.2		Maximum stock density: 38 kg/m <sup>2</sup>		X	

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
18	Zoonoses monitoring	<ul style="list-style-type: none"> <li>Flocks are tested for Salmonella within 3 weeks of going for slaughter.</li> <li>By ISO 17025 certified labs.</li> <li>Testing report is available before the delivery of the birds to slaughter.</li> <li>Inform slaughterhouse in case of Salmonella detected</li> <li>Cleaning and disinfecting of houses</li> </ul>		X
19	Residue monitoring	Monitoring MRLs and banned substances		X

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### 3. Checklist for comparison of good slaughtering practices standard

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
1	Transport of slaughter birds	Shall ensure that: <ul style="list-style-type: none"> <li>soiling and cross-contamination with faecal material is minimised;</li> <li>new hazards are not introduced during transport;</li> </ul>		X
2.1	Information on birds presented for slaughter	<ul style="list-style-type: none"> <li>on-going information on animals presented for slaughter for incorporation into HACCP plans and/or quality assurance (QA) programmes that are part of process control;</li> </ul>		
2.2		<ul style="list-style-type: none"> <li>information back to the primary producer on the safety and suitability status of animals presented for slaughter; and</li> </ul>		X
2.3		<ul style="list-style-type: none"> <li>information to the competent authority that facilitates on-going review.</li> </ul>	X	
3	Lairages	Lairages should be designed and constructed so that: <ul style="list-style-type: none"> <li>birds can be held without overcrowding or injury, and are not exposed to climatic stress;</li> <li>soiling and cross-contamination of animals with food-borne pathogens are minimised;</li> <li>holding of animals so that their physiological condition is not compromised and ante-mortem inspection can be effectively carried out</li> <li>floors are paved or slatted and allow good drainage;</li> <li>there is an adequate supply and reticulation of clean water for drinking and cleaning;</li> <li>there is a physical separation between lairages and areas of an abattoir where edible material may be present;</li> <li>“suspect” birds can be segregated and inspected in separate areas; and</li> <li>there is an adjacent area with adequate facilities for cleaning and sanitation of transport vehicles and crates, unless there are facilities within close distance that are approved by the competent authority.</li> </ul>	X	

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
4	Slaughter areas	<ul style="list-style-type: none"> <li>• easily accessed from pens containing “suspect” or injured birds;</li> <li>• constructed with suitable facilities for hygienic storage of parts derived from “suspect” or injured animals; and</li> <li>• constructed and equipped so as to facilitate effective cleaning and sanitising</li> </ul>	X	
5	Areas where bodies of birds are dressed or meat may otherwise be present	<p>Design and constructed:</p> <ul style="list-style-type: none"> <li>• cross-contamination during operations is minimised;</li> <li>• effective cleaning, sanitation and maintenance can be carried out during and between periods of operation;</li> <li>• floors in areas where water is present slope sufficiently to grilled or otherwise protected outlets so as to ensure continual drainage;</li> <li>• exterior doors do not open directly into the area;</li> <li>• chutes separately conveying different parts of animals are fitted with inspection;</li> <li>• separate rooms are used for: emptying and cleansing of alimentary tracts; handling of meat and inedible parts of animals; storage of inedible animal parts;</li> <li>• there is adequate lighting for hygienic process control;</li> <li>• access and harbouring of pests are effectively restricted; and</li> <li>• adequate facilities are provided for secure storage of chemicals and other hazardous substances so as to prevent accidental contamination of meat</li> </ul> <p>Facilities for cleaning and sanitation of equipment:</p> <ul style="list-style-type: none"> <li>• be designed to effectively clean and sanitise the particular equipment;</li> <li>• be located convenient to work stations; and have waste water ducted to drains.</li> </ul> <p>Ventilation systems:</p> <ul style="list-style-type: none"> <li>• air-borne contamination from aerosols and condensation droplets is minimised;</li> <li>• ambient temperatures, humidity and odours are controlled; and</li> <li>• air flow from contaminated areas to clean areas is minimised.</li> </ul>	X	

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
6	Water supply	<p>Equipment should be installed that provides:</p> <ul style="list-style-type: none"> <li>• an adequate and easily accessible supply of hot and cold potable water at all times;</li> <li>• hot potable water for effective sanitising of equipment, or an equivalent sanitation system;</li> <li>• potable water at a temperature appropriate for hand-washing</li> </ul>	X	
7	Temperature control	<p>Facilities and equipment should be adequate for:</p> <ul style="list-style-type: none"> <li>• Cooling, chilling and/or freezing of meat according to written specifications;</li> <li>• Storage of meat at temperatures that achieve the safety and suitability requirements; and</li> </ul>	X	
8	Facilities and equipment for personal hygiene	<p>Facilities for personal hygiene should include:</p> <ul style="list-style-type: none"> <li>• changing rooms, showers, flush toilets, hand-washing and hand-drying facilities; and</li> <li>• protective clothing that can be effectively cleaned and minimises accumulation of contaminants</li> </ul> <p>All areas in which exposed meat may be present, should be equipped with adequate facilities for washing hands that:</p> <ul style="list-style-type: none"> <li>• are located convenient to work stations;</li> <li>• have taps that are not operable by hand;</li> <li>• supply water at an appropriate temperature, and are fitted with dispensers for liquid soap or other hand cleansing agents;</li> <li>• include hand drying equipment where necessary; and</li> <li>• have waste water ducted to drains.</li> </ul>	X	
9	Sanitation Standard Operating Procedures	<ul style="list-style-type: none"> <li>• a written SSOP programme that describes the procedures involved and the frequency of application;</li> <li>• identification personnel responsible for implementing and monitoring SSOPs;</li> <li>• documentation of monitoring and any corrective and/or preventative actions taken;</li> <li>• periodic evaluation of the effectiveness of the system</li> </ul>	X	

No	Issues	International standards / practices	Current practices of Vietnam	
			Yes	No
10	HACCP	<ul style="list-style-type: none"> <li>Validation of a HACCP plan should ensure that it is effective in meeting performance objectives/criteria, taking into account the degree of variability in presence of hazards.</li> <li>Verification frequency may vary according to the operational aspects of process control, the historical performance of the establishment in application of the HACCP plan, and the results of verification itself.</li> <li>Microbiological testing for verification of HACCP systems is an important feature of HACCP.</li> </ul>		X
11	Outcome-based parameters for process control	<p>Performance objectives/criteria for outcomes of process control systems act to:</p> <ul style="list-style-type: none"> <li>facilitate validation of process control systems</li> <li>provide an objective basis for outcome-driven regulatory guidelines and standards, e.g. statistical process control requirements, prevalence of Salmonella spp.;</li> <li>improve hazard control over time so as to enhance the level of consumer protection; and</li> <li>facilitate determination of the equivalence of sanitary measures</li> </ul>	X	
12	Hygiene requirements for process control	Laboratory testing may be required for:		
12.1		<ul style="list-style-type: none"> <li>residue monitoring;</li> </ul>		X
12.2		<ul style="list-style-type: none"> <li>monitoring of zoonoses</li> </ul>	X	

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D. Questionnaire for consumer survey

**Part 1: Selective questions**

S1. In the last 3 months, do you buy chicken meat?			S2. Do you often cook?		
Regularly	1	Go to S2	Regularly	1	Continue
Often	2	Go to S2	Often	2	Continue
Sometimes	3	Go to S2	Sometimes	3	Stop
Seldom	4	Stop	Seldom	4	
No	5		No	5	

**Part 2: Main question**

1) Please rank your buying frequency per sale points

No	Sale points	Increasing from 1 (never) to 5 (regularly)				
1	Butchery in wet market	1	2	3	4	5
2	Slaughterhouse	1	2	3	4	5
3	Supermarket	1	2	3	4	5
4	Food shops, convenient shops	1	2	3	4	5
5	Food services	1	2	3	4	5
6	Others (please specify) _____	1	2	3	4	5

2) Reason of your above ranking:

- |                         |                     |                                  |
|-------------------------|---------------------|----------------------------------|
| 1. Good location        | 2. Reasonable price | 3. Good relationship with seller |
| 4. Good meat appearance | 5. Reliable         | 6. Origin known                  |
| 7. Well packed          | 8. Safe meat        | 9. Others:                       |

3) Do you know regulations about biosafety chicken husbandry and VietGAP?

- |                   |                      |                 |
|-------------------|----------------------|-----------------|
| 1. Know very well | 2. Know a little bit | 3. Have no idea |
|-------------------|----------------------|-----------------|

4) Do you know regulations about chicken safe trading, transporting and slaughtering?

- |                   |                      |                 |
|-------------------|----------------------|-----------------|
| 1. Know very well | 2. Know a little bit | 3. Have no idea |
|-------------------|----------------------|-----------------|

5) Please rank your perception about reasons of unsafe chicken meat:

No	Reasons	Increasing from 1 (no influence) to 5 (extremely influence)				
1	By production manner (feed, veterinary drug use)	1	2	3	4	5
2	By slaughtering, e.g: slaughter chicken that has disease or bacteria contamination	1	2	3	4	5
3	By transporting	1	2	3	4	5

No	Reasons	Increasing from 1 (no influence) to 5 (extremely influence)				
		1	2	3	4	5
4	By selling points, e.g: using chemicals, no fridge to preserve meat	1	2	3	4	5
5	By cooking in restaurants or food service	1	2	3	4	5
6	By cooking at home	1	2	3	4	5
7	Others					

6) Please rank your perception about safe chicken meat:

No	Reasons	Increasing from 1 (not important) to 5 (extremely important)				
		1	2	3	4	5
1	Free of foreign matters	1	2	3	4	5
2	Free of antibiotic residue	1	2	3	4	5
3	Free of hormones	1	2	3	4	5
4	Free of heavy metals (lead, cadmium, mercury)	1	2	3	4	5
5	Free of parasites and pathogen bacteria	1	2	3	4	5
6	Free of preservatives	1	2	3	4	5
7	Others					

7) Please rank your reasons for your buying chicken meat:

No	Factors	Safe (from 1 to 5)	Importance )from 1 to 5)
1	Food safety certified / Good reputation		
2	Meat appearance		
3	Packed and label contains traceability information		
4	Hygienic sale points		
5	Sale point is recognised as selling safe chicken meat		
6	Traceability		
7	VietGAP, HACCP, ISO 22000 certified		
8	Have fridge to preserve meat		
9	Good relationship with seller		
10	Price		

8) Challenges for your access to safe meat source?

1. No information about safe meat selling points
2. Not convenient location
3. Not trust the selling points about meat safety
4. Expensive
5. Not necessary
6. Others

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9) Do you keep buying chicken meat during disease outbreak periods?

1. Keep buying as usual                      2. Buy less and more selective                      3. Not buy at all

10) Are you willing to pay higher price for chicken meat that:

No	Characteristics	Willing to pay	Not necessary
1	Chicken that are grown by certified farms (VietGAP, HACCP, ISO 22000)		
2	Safe and hygienic slaughtering and transporting		
3	Well packed, label with sufficient information		
4	Selling points are food safety certified		
5	Inspected / approved by authorities		

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