Chapter 15
Managing Global Risks: Vietnamese Poultry Farmers and Avian Flu

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Abstract This chapter documents the logics underpinning farmers’ management practices of an emerging disease. In the area of our survey, Vietnamese farmers, who are one of the front lines of the fight against H5N1, are called upon to collaborate to the international fight against the virus. Our study highlights that direct (poultry mortality) and indirect impacts (consequence of the measures imposed by the government to contain the virus, fluctuation of consumers’ demand, etc.) tend to be relatively limited when compared to the permanent state of instability which characterises the context of poultry production in the surveyed village. This instability is mainly related to numerous and regular poultry infectious diseases and market fluctuations. If international community considers H5N1 as a zoonotic risk and a pandemic threat which asks for emergency tools, H5N1 is framed by the farmers of our study as an epizootic problem manageable through routinised measures. These measures aim at minimising the economic impact of the disease rather than preventing poultry and Human from the disease. Consequently, local management of the disease cannot fit with the precautionary approach promoted by the international community.

15.1 Introduction: Management of Emerging Infectious Risks by Poultry Farmers

The current context of emerging risks, and in particular emerging diseases, requires international and inter-sectorial cooperation (human health, animal health, etc.) as well as multi-scale cooperation (from local to international level). It is a question of encouraging very diverse operators to collaborate on what would be a common project, formalised by UN agencies in the “One Health” Initiative of the Food and Agriculture Organisation [FAO], the World Organisation for Animal Health [OIE],

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the International the World Health Organisation [WHO] and others international organisations (FAO et al. 2008).

Farmers are asked by international organisations to cooperate in this project of global health governance (OIE 2008) but are also often pointed at for their low compliance with the biosecurity measures that they are asked or recommended to apply in their farm. The gap between their behaviour and the recommendations addressed to them is often interpreted as a lack of knowledge or a problem of perception. On the contrary, we will focus in this chapter on the active role of farmers in risk management and on the constraints, opportunities, values and interests that underpin their behaviours. The purpose is to understand the logic of disease management at the local scale. We apply this approach to the case of poultry farmers facing H5N1 in a village in Vietnam.

15.2 The Context: Avian Flu in Vietnam

Vietnam is a rural country (70 % of the population lives in rural areas) where 90 % of households rear poultry. These birds, which are both consumed by the household and sold on the domestic market, account for 19 % of the incomes of agricultural households (Desvaux and Ton 2008). Vietnam was the first country to officially declare the re-emergence of the H5N1 avian flu virus to the OIE at the end of 2003. Vietnamese poultry farmers were affected not only by the virus itself but also by the preventive culling measure (in total, 17 % of all fowl died or were killed during the first months of 2004, GSO 2004), by the restrictions concerning the transport and commercialisation of poultry, by the regulations introduced to control the virus (and the related risk of a flu pandemic) and by the reactions of Vietnamese consumers.

Primarily in 2004 and 2005, poultry farmers were therefore required to deal with a context of high uncertainty linked to the epizootic situation [declarations of new outbreaks (see Pfeiffer et al. 2007 for the history of these outbreaks)], the market situation [strong fluctuations in demand and price (Figuié and Fournier 2008)] and the regulatory context [changing context depending on new outbreaks, international pressure, the development of scientific knowledge concerning the virus, etc. (Agrifood Consulting International 2007)].

In the Vietnamese Capital, Hanoi, the sale of poultry was entirely prohibited on two occasions from the beginning of the flu outbreak: in February 2004 and in November/December 2005 (periods during which Hanoi was officially declared to be infected by the virus), affecting greatly the poultry farmers supplying the area (like farmers of our zone of studies). Furthermore, to satisfy the resumption of consumer demand, the Vietnamese government reduced import taxes on poultry from 2006 onwards, generating a new situation of competition for locally produced poultry [taxes were reduced by between 20 % and 60 % depending on the product cate-
Various sanitary control measures were implemented along the value chains following the emergence of the H5N1 virus. In addition to the preventive culling operations (the extent of which varied according to the intensity of the outbreaks and the policy of the different provinces within the country), these measures essentially relied on the traceability of the vaccination of the animals and their slaughter in certified abattoirs.\(^1\) Our surveys enabled us to estimate that these measures lead to a surcharge of about 2,750 dongs per bird (i.e. almost 0.13 euros).\(^2\) Furthermore, in order to limit the number of ducks being bred (ducks being considered at that time as a probable reservoir for the H5N1 virus), the incubation of duck eggs was officially banned from November 2005 to February 2007 (Agrifood Consulting International 2007).

15.3 Impact of Avian Flu in Vietnam

The economic impact of this sanitary crisis has been evaluated at national level [loss of between 0.3 % and 1.85 % of GNP in 2004 (McLeod et al. 2004)] and at value chain level [effect of concentration and contractualisation (Agrifood Consulting International 2007; Figuié et al. 2013)]. From a political standpoint, Figuié (2013) and Tuong (2010) have demonstrated the local objectives (legitimisation of the Communist Party and the central government) and international objectives (adhesion to the World Trade Organisation) which have influenced the design of H5N1 management policies by the Vietnamese authorities.

At the level of rural households, research works have essentially highlighted:

1. The economic dimension, thereby demonstrating that avian flu has had a particular short-term impact on integrated industrial and industrial farmers (type 1 and 2 according to the FAO classification). However, in the long term, these farmers would have benefitted from their capacity to adapt to new market demands, in particular to new safety standards. Semicommercial farmers (type 3) could have suffered more lasting effects due to their more limited financial capacity to reconstitute their livestock after the crisis and to invest in equipment.

\(^1\) Moreover, the government intends to modernise poultry farming in the long term and to facilitate the introduction of various biosafety measures, in particular with the support of the agro-industrial sector (e.g. the Thai group Charoen Pokphand) by means of a process of implementing contracts with farmers and relocating farms.

\(^2\) Cost per bird evaluated for flock of approximately 100 animals. It can be broken down as follows: 200 dongs for the vaccination, 550 dongs for the transport certificates and 2,000 dongs for the culling operations carried out in a certified slaughterhouse (with one euro equivalent to approximately 20,000 dongs over the period being studied).
enabling them to improve the safety of the flocks. Sector 4 (backyard poultry farmers) was not particularly affected in terms of income as the poultry is intended for consumption within the household or for sale on a local market less concerned by the transport restrictions imposed (Agrifood Consulting 2007).

2. The cognitive dimension: this was highlighted through studies based on the KAB approach (Knowledge/Attitude/Behaviour). These studies have recorded a poor or incorrect knowledge of avian flu on the part of the farmers, served to justify numerous projects aimed at educating and sensitising farmers with regard to this new risk (UNICEF, Academy for Educational Development, etc.).

3. The nutritional dimension: without really studying them, several expert reports have referred to the potential negative effects of avian flu on the nutritional situation (fall in self-consumption of poultry) with regard to type 4 households (backyard poultry farmers).

These studies failed to analyse the role that farmers play in risk management. Local stakeholders are directly exposed to policies implemented by the States and respond to this pressure. But we make the hypothesis that they have also their own dynamic and logic: no matter the opinion of these stakeholders on messages and recommendations emitted by the national and international authorities to cope with risks, these front-line players keep a relative autonomy in their assessment of the situation. This autonomy mainly relies on laymen knowledge mobilised by these local stakeholders to assess risk, to adapt to it or even to build suitable answers to it.

The aim of the study presented here is therefore to analyse the responses (or absence thereof) adopted by Vietnamese poultry farmers to cope with the outbreaks of the H5N1 virus in Vietnam. Our starting point is to consider poultry farmers as risk assessors and managers rather than as the victims of a new epidemic of which they must be made aware. We therefore want to link the responses implemented with the manner in which the problem has been defined by these social actors. Our hypothesis is that this definition is not only linked to the information they may have received from Vietnamese authorities or from the different media (often identical in the context of Vietnam) but also to local experience of health risks and risks in general as well as to the opportunities that the risk situation might generate.

In July and November 2008, interviews (survey 1) were conducted with 20 poultry farmers from the village of Duyen Yet (commune of Hong Thai, district of Phu Xuyen, province of Ha Tay in the Red River delta in northern Vietnam). These interviews, which form the basis of this work, were in part intended to provide a better interpretation of quantitative data drawn from studies conducted previously in the same zone: study on the farming and commercialisation practices for poultry and poultry products [conducted the same year in the same village, survey 2 (Payne et al. 2009)] and an assessment of the information and education campaign concerning avian flu [conducted in villages in the same district in 2006, survey 3 (Figuié et al. 2006)].
15.3.1 The Village of Duyen Yet

Ha Tay is a province in the Red River delta in northern Vietnam (under the administrative aegis of the city of Hanoi since August 2008). It is an important production area for poultry destined for the Vietnamese domestic market. Duyen Yet is a village in this province, sitting in a bend of the Red River. Before 1993, most of the inhabitants of this village derived their livelihoods from small-scale agriculture (essentially rice) and pig farming. From 1993 onwards, a highly proactive government policy encouraged the zone to specialise in poultry production. A state farm was set up in Dai Xuyen in a neighbouring parish to provide farmers with day-old chickens (DOCs) with a view to rearing broilers. The state farm subsequently encouraged the diversification of poultry farming activities in the area by also supplying parental chicks for the production of chicks and ducklings. In the village of Duyen Yet, the production of chickens which had been developed was for the most part quickly replaced by the production of chicks and ducklings with the installation of several private hatcheries. At the start of the new millennium, a land reorganisation policy enabled the creation of farms devoted to fish farming and intensive poultry farming in the lower parts of the village, thanks to major earthmoving works (allowing the raising of ground for the houses and rearing pens to be built). These farms are called “breeding farms” as opposed to “village farms”.

15.3.2 Poultry Farming Systems

At present, all farms practise agricultural activities (essentially rice) while also rearing animals.

A small number of these farms focus primarily on pig farming (maximum of ten animals). Occasionally, these families rear a small number of poultry (traditional breeds) sold at periods when the demand is high (e.g. the New Lunar Year, the Tet festival). These are backyard poultry farmers (type 4 according to the FAO classification).

However, for the majority of the 700–800 agricultural households in the parish, poultry farming represents the main activity (in about 600 households). It is important to distinguish, as mentioned above, between:

- “Village farms”. These represent the vast majority of poultry farmers in the parish. They are small farms (100–300 animals per batch) relying on family labour. Half of them have a park adjacent to the poultry house thereby enabling the farmers to rear Muscovy ducks (these last ones are considered as too dirty to be kept in confinement). A small proportion of them (5–10 %) have an adjacent

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3 Pig farming is combined with the production of alcohol, with the residues being used as pig feed (in addition to corn produced on land outside the dykes). This generally concerns families with little capital (in particular young couples).
body of water enabling them to rear Peking ducks. These farms correspond to the commercial type (type 3, according to the FAO classification). The main factor limiting the size of the batch in the village is the lack of space.\textsuperscript{4}

– “Breeding farms”. These farms (there are around 30 of them) are more highly capitalised and specialised than those above. The main activity conducted in these farms is fish and poultry production with generally between 500 and 1,000 chickens per batch (the manure serves to fertilise the ponds). The labour force is based on paid labour. Access to water offers them the advantage of being able to breed Peking ducks in addition to other types of poultry. These farms correspond to the industrial type (type 2, in the FAO classification).

Interviewed farmers consider that breeding farms are less exposed to diseases affecting poultry in general because they are more isolated and better ventilated, unlike village farms.

\subsection*{15.3.3 The Types of Poultry Production}

In addition to a limited production of traditional chickens (\textit{Ga ta}) for its own consumption or, as mentioned above, in low-capital farms, the village specialises in the following productions:

– \textbf{Broilers}: These chickens can be one of two types: “white chickens” (high-performance industrial breeds with taste qualities judged to be poor by consumers) and more often “red chickens” (Asiatic breed such as \textit{Tam Hoang} or \textit{Lu Phuong} breeds), which are more rustic. Because the broilers’ production cycle is short (45 days for white chickens, 3 months for red chickens) compared to laying hens, the farmers produce several batches per year and therefore devote more time during the year to the young chicks, making it a labour-intensive activity. It nevertheless requires very little space (no water pond, no park). As a result of all these considerations, this activity is deemed suitable for farmers with little experience or limited capital.

– \textbf{Day-old chickens (DOC)}: These chicks are intended for the production of broilers. They come from Vietnamese breed (\textit{Ga Luon Phuong, Xa So}), Chinese or Thai ones. This accounts for the majority of the production within the village. The chickens are better adapted to confinement than ducks and are therefore preferred by farmers who have neither a park nor a body of water. Nevertheless, they are sensitive to Newcastle disease which may cause numerous deaths.

– \textbf{Day-old ducklings}: Farmers rear parental breeds and sell the day-old ducklings. As already mentioned, these ducklings are of two types: Muscovy ducks and Peking ducks (\textit{ngan} and \textit{vit}, respectively, in Vietnamese). Peking ducks require

\textsuperscript{4}When rearing laying hens for the production of chicks or ducklings, the farmers consider that a single person can deal with 1,000 animals.
less work (due to the maintenance of their coop) than chickens or Muscovy ducks since they are considered less dirty.

Furthermore, farmers consider Peking ducks to be less sensitive to disease and cold weather than Muscovy ducks (and therefore more suitable for winter rearing). Moreover, Peking ducks have another advantage compared to Muscovy ducks: their embryos can be marketed for consumption. Many farmers nevertheless prefer rearing Muscovy ducks (which account for the second-largest production in the parish after the production of DOCs) because of their higher selling price (a particularly high demand for ducklings in July, August, and September intended for rearing animals to be consumed for the New Year).

15.3.4 Insertion in the Value Chains

Farmers buy chicks and ducklings (parental breed) from the state farms in Dai Xuyen (ducks) and Thuy Phuong (chickens) or from local private hatcheries. The poultry feed is bought in stores located within the parish. Fertilised eggs are incubated either in private hatcheries within the parish or, in the case of almost half of the breeding farms, in hatcheries of the state farms. The hatcheries also act as intermediaries when marketing the chicks (sold to the nearby provinces of Hai Phong and Quang Ninh). Often, the hatchery lends the farmer the money required to purchase the chicks and the feed (in particular, in the case of laying hens when the farmer must wait 6 months before selling the first chicks. In the hatchery we visited, the owner informed us that he offered credit to half of his customers). Broilers and discard layers are sold to the numerous collectors who operate within the village and supply the Ha Vi wholesale market through which passes almost half the chickens supply to the city of Hanoi (Agrifood Consulting International 2007). The farmers are thus integrated into value chains which are geographically limited to northern Vietnam and in which no economic stakeholder would appear to enjoy any marked domination. These value chains are relatively fragmented, thereby making traceability somewhat problematic.

15.4 Avian Flu in the Village of Duyen Yet, Province of Ha Tay

15.4.1 The Presence of the Virus in the Village of Duyen Yet

The H5N1 virus was first observed in Vietnam in the province of Ha Tay in June/July 2003. Since then, the province officially declared the presence of the virus in February 2004 and then again in August 2004 (declarations made to the OIE in 2004). According to Delquigny et al. (2004), it can be roughly estimated that
between 5% and 10% of the birds in the province were affected by the H5N1 virus. Preventive culling affected only 0.5% of the poultry farms in Ha Tay, primarily the large industrial farms [which explains the much higher percentage of animals culled, reaching 13.6% of the Ha Tay poultry population (Agrifood Consulting International 2007)]. Despite the fact that outbreaks continue to be declared in the rest of the country, no further outbreak had been declared in Ha Tay province since August 2004 at the moment of the survey (except one very localised outbreak in 2007). Several information sources would nevertheless suggest that the virus continues to circulate there below epidemic thresholds, but with local management of clinically suspicious cases. The fact that these outbreaks are not declared is aimed at protecting the economic interests of the province which is, as already mentioned, the main poultry production site in northern Vietnam.

At the level of the district of Phu Xuyen, only 10 of the 28 communes were officially spared from the virus in 2004 (making it one of the most seriously affected districts in Vietnam in 2004). One of these ten communes was the commune presented in this study (Hong Tay), which declared no outbreaks and was not affected by the massive culling operation.

Nevertheless, several farmers interviewed in Duyen Yet (a village of Hong Tay commune) relate cases of mass mortalities among birds, which were then thrown into rivers, lakes and canals or buried, without the cause of the illness being clearly identified.

One of the farmers interviewed claimed to have lost two thirds of his 800 birds in 2005 to an unidentified illness. Another lost 2,000 of its 7,000 birds in 2007. Before our interview in this farm, another 500 had died (November 2008), and the farmer had quickly sold the surviving birds fearing further deaths and because his farm was flooded. His fish farming activity has enabled him to cope with the situation by providing a stable income.

While the farmers in the commune were not affected by the emergency measures, they were nevertheless affected by the direct loss of their chicken (which they cannot ascribe to a specific infectious agent) and then by the indirect effects of the avian flu outbreak (regulatory constraints and impacts on the markets). Before assessing these indirect effects, we will examine the effect resulting from these losses.

15.4.2 The Avian Flu Reference: SARS or Newcastle Disease?

Within the international community and at domestic level, the avian flu phenomenon was compared to SARS (severe acute respiratory syndrome, which appeared the previous year) and was treated in a similar way, that is, a crisis and emergency linked to the fear of a human pandemic and justified by a high level of uncertainty concerning the very nature of the risk relating to the virus. Was this the case among the farmers in the commune?

According to the farmers, 2004 and 2005 were bad years from the standpoint of animal health, but it is difficult to assess whether or not the deaths recorded really
reflect an exceptional situation. Before the emergence of avian flu, the main cause of death of chickens was linked to Newcastle disease (chickens in type 3 or 4 farms are rarely vaccinated; ducks are not affected by this virus), the symptoms of which are very similar to those associated with avian flu.

According to the Agrifood Consulting report (2007), contagious avian diseases such as Newcastle disease have a much higher impact on small-scale Vietnamese farms than the H5N1 virus. In a survey conducted in four provinces of Vietnam, 49% of poultry farmers claimed to have been affected (between October 2005 and September 2006) by contagious diseases other than the flu compared to only 1% who claimed to have been affected by the flu itself. Data from the Ministry of Agriculture (Division of Animal Health) confirm a relatively low risk of infection associated with the H5N1 virus, ranging from 0.8% to 6.5% at the level of the communes (for the last four of the six waves of the virus). However, the relative incidence of H5N1 and other contagious diseases is difficult to assess in that we do not have data concerning the mortality rates of poultry before the emergence of the H5N1 virus or their causes. The Agrifood Consulting data are based on farmers’ declarations and therefore primarily indicate that, in the opinion of the latter, the H5N1 virus (rightly or wrongly) plays only a secondary role in poultry infections (vaccination of poultry against H5N1 has moreover modified the clinical picture and made it more difficult to recognise an outbreak of H5N1) or that the farmers have no interest in declaring cases of flu within their farms.

The emergence of the H5N1 virus became a much more important subject for farmers in relation to its consequences for human health, although only very temporarily. At the beginning of 2005, the province recorded 3 of the 33 deaths caused by the virus in the country since the end of 2003 (WHO 2005). The farmers claimed to have been worried the first year, but then as the number of human cases failed to rise, their concern rapidly disappeared: “People here feared for their safety due to the flu during the first year. We heard a lot about it on the TV. And there was the flu in Dong Thai. But as time went by, the people were no longer worried”.

While these deaths alarmed the international community, the small number of victims led the farmers to reject the idea of a risk to human health and retaining only the threat to animal health. At local level, H5N1 therefore shifted away from the SARS model to move closer to that of Newcastle disease and other diseases common to poultry.

With this rapid refocusing on the part of the farmers, avian flu became a relatively classic problem in large part handled as a question of routine. But the manner in which other actors (economic actors, legislators) perceived the problem naturally had indirect effects and may have introduced new elements into this routine.

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5The Agrifood Consulting survey concerns 1,360 outbreaks in the four provinces of Vietnam, including Ha Tay province.
15.4.3 Flu: Another Factor of Instability in an Already Highly Unstable Market

Before considering the indirect effects of the disease, we must first examine another element enabling us to explain the limited importance of the problem for the farmers: while the disease occurs in a context marked by a high level of infectious pressure, it also arises in a context already characterised by a very high level of market instability. Thus, according to one of the parties interviewed in relation to the general instability of agricultural prices, “farming is a bit of a lottery, it’s a question of luck… we can’t plan for every eventuality. Man can’t calculate as well as God”.

This instability is linked to the fact that poultry prices and day-old chicken and duckling prices vary considerably under the effects of a wide range of factors. Many of these factors are seasonal (high consumer demand, in particular at New Year, high demand for ducklings after the rice harvest, low demand for chicks and ducklings in the cold season, etc.). However, beyond these seasonal variations and their complex interactions which are nevertheless more or less predictable, there are other accidental factors. This is the case of the frequent risk of flooding which is particularly important for breeding farms, not only directly affecting the farms (flooded buildings) but also impacting the demand for chicks or ducklings from other farmers. The diseases which regularly affect other species (mainly pigs) also impact the supply of meat and the demand for poultry meat.

The sale price of chicks and ducklings (farm gate prices) recorded in one of the hatcheries in the village is highly variable: for the period January 2006–October 2008, prices varied from 2,700 to 12,400 dongs for a Muscovy duckling (average price of 5,600 dongs for the period for a production cost between 4,000 and 5,500 dongs according to the data provided by the farmers interviewed), from 1,500 to 9,300 dongs for a Peking duckling (average price of 4,700 dongs, no data on production costs) and from 1,400 to 4,800 dongs for a red chicken (average price of 3,100 dongs for a production cost of 2,000 dongs).

According to one farmer interviewed, “there are ups and downs, but on the whole, the economy of the village improves with the development of poultry farming… One year, I earned 20 million dongs while my neighbour earned nothing! Another year, she earned 70 million and I earned 20 million…”.

It is in this context that we must analyse the economic impact of avian flu. In light of the market instabilities, what might be interpreted as a certain fatalism on the part of the farmers (“it’s a bit of a lottery”, “it’s a question of luck”, etc.) is accompanied by practices designed to limit the effects of these hazards rather than the hazards themselves. But first we must examine the new regulations adopted by the government to face H5N1 and how they have been implemented at the local level.
15.4.4 Safety Regulation: Little Restriction at the Field Level

The regulations adopted by the government to limit the propagation of the virus and, more generally, to improve the levels of biosafety in the poultry value chains had highly variable impacts on the farms in the village.

The most significant impact concerned the restriction on transporting animals outside the district imposed at the beginning of 2004 and then again at the end of 2005 (two periods lasting about 2 months when poultry marketing in Hanoi was interrupted).

Nevertheless, these restrictions were to a certain extent circumvented (night transport or circuitous routes, corruption at inspection posts, selling in Hanoi via informal networks, etc.). Compared to the option of discarding the production, the risk of seeing the animals transported being confiscated by the police (in this case the transporter would not pay the farmer who supplied him) was actually a preferable alternative.

The vaccination of animals against avian flu became mandatory at the end of 2005. In theory, chicks and ducklings must be accompanied by a vaccination certificate until they reach the final buyer. In light of the complexity of the traceability, it is difficult to ensure that this regulation is applied meticulously; in practice, certificates would often appear to be issued by the veterinary services without their really having all the necessary documentation to be able to prepare them. These certificates can be subject to inspection, primarily when the animals are being transported. In practice, interviewed farmers declared that transporters prefer running the risk of a fine and the goods being confiscated rather than be subject to this regulation: indeed, there would be a “tax” to be paid in the event of an “inspection” whether there is certificate or not.

The government took the decision also to prohibit the rearing of ducks, but this decision was not followed up by any restrictive measure and did not therefore have any significant effect in our study area (as already mentioned, hatcheries temporarily interrupted their activity as a result of the poultry transport restrictions implemented in 2004 and 2005 and not as a result of any ban in their activity).

15.4.5 Impacts on the Size of the Poultry Flocks

According to the local veterinarian, all the farmers in the parish were affected to different extents by avian flu or the resulting consequences. At the end of 2008, 50% of them had yet to recover the number of poultry they had before the outbreak of the flu, and 10% had not resumed their activity. This estimation is completed by survey data (survey 2), according to which 25 of the 71 farmers interviewed (of about 150 farmers in the village of Duyen Yet) had fewer birds than before the flu, 19 had almost as many and 27 had more.
Another study already mentioned (Agrifood Consulting 2007), examining four provinces in Vietnam, confirmed that in 2006, the majority of farmers (more than 90 %) had succeeded in returning to pre-flu levels and that almost 20 % of them had more animals than before the outbreak of the virus.

In many cases, farmers were able to resume their activity by means of credit. Although the different lending organisations were somewhat reticent to lend money to poultry farmers in light of the flu, the Agricultural and Rural Development Bank implemented a credit policy in 2006 at a rate of 8 % intended to enable farmers to resume their activity upon condition that they modernise their farms and improve the “biosafety”. This credit policy has primarily targeted breeding farms. Village farmers have resorted to mortgaging their houses or to more informal sources of income involving interest rates of up 20 %. It would be interesting to assess this debt burden more precisely.

The increasing number of contracts signed with private firms, like Charoen Pokphand (supplying credit, inputs and advice and guaranteeing the sale of the production) mentioned by certain experts in the context of Vietnam, was not observed in the village we studied.

15.4.6 The Strategies Developed by Farmers in the Context of Avian Flu

Neighbouring farmers are identified as the main source of contamination, but they are not charged for any “responsibility”: it is up to each farmer to protect his farm individually. There are no risk factors, which are perceived to be specific to avian flu, and thus, the strategies developed by farmers to face H5N1 are the ones used usually for poultry diseases. Factors linked to the different species also come into play: Peking ducks are considered as more resistant to diseases than Muscovy ducks.

Safety preventive measures (certain farmers interviewed claimed that they prevented the collector from entering their farm and they disinfected their poultry house when they heard of problems affecting their neighbours) are limited. Major measures aimed at limiting the economic impact of the disease rather than avoiding the disease itself.

15.4.7 Sell

For eggs to be hatched during the closure of the hatcheries in 2004 and 2005, farmers were forced to convert their production of fertilised eggs into eggs for consumption (in particular, as the transport of eggs was subject to limited inspections compared to the transport of animals), representing a major loss of earnings (during the crisis, a hen’s egg for consumption was sold at a price of 200–500 dongs,
whereas a fertilised egg had a pre-flu value of 3,300 dongs. These “average” figures must be placed in perspective in light of the elements on price instability already presented).

With regard to the disease itself, during the outbreaks of 2004, animals were quickly sold, whenever possible, at very low prices while some were consumed by the farmers themselves or buried (dead birds). One of the farmers interviewed claimed “I put on three kilos during the flu!” With regard to sales, a parallel market usually exists for animals infected with or having died from disease on which the farmers were able to rely. In 2004, according to the farmers interviewed, the price on these markets was generally a quarter of the normal price. The major beneficiaries in these cases were the collectors who would sell the carcasses to restaurants at the price of healthy birds.

Furthermore, consumer demand was greatly affected, with periods of significant falls (in particular, according to the farmers, during periods of strong government communication), as well as periods of high demand (demand remained high during festive periods with consumers keen to maintain tradition), whereas supply was still in decline. The farmers have experienced a period of 6 months when the market was at the lowest point: the farm gate price for broilers price fell to 7,000 dongs per kilo compared to 50,000 dongs before the flu (and to 15,000 from 70,000 dongs for discard layers). Moreover, the competition faced by farmers from imported chicken meat (with the reduction in import duties) was exacerbated by the increased price of food following the global crisis of 2007–2008 (Vietnamese poultry farming is highly dependent on imported corn; e.g. the price of this feed for laying hens available in the village stores increased by a factor of 2.5 at this time).

Farmers therefore had to cope with very low selling prices or even a situation whereby they were unable to sell their eggs or poultry. To minimise this impact, other strategies than the selling and destocking ones were developed.

### 15.4.8 Wait

In light of the difficulty to sell, one commonly implemented strategy was to “wait until it has passed”, the benefits for those able to wait being considerable: “People are used to it. When there is an outbreak of a disease, we try to wait until it passes as prices generally rise afterwards… if not, we lose everything.” So in the case of the flu, “people waited hoping to sell their birds at a later date”.

This strategy involves increased production costs. For laying hens, farmers try to reduce this increase by reducing their feed and stopping them from laying as they wait for the market to pick up. This strategy entails a certain risk as it is difficult to predict how long one will have to wait.

A much more marginal strategy adopted by some involved storing production by transforming it: one farmer claimed to have prepared dried chicken meat (*ruoc*, usually made with pork). However, we note that the “100-year egg” technique (a traditional means of conserving eggs) was not adopted on this occasion.
15.4.9  **Diversify the Species**

Considering price instability and different disease’s susceptibility between species, the most common strategy is to diversify the poultry species on the farm over the year within the limits of the constraints presented above. Diversification extends beyond poultry species. As we have seen, several farmers also rear pigs or fish, and they were able to offset the lost earnings from their poultry farming activity during outbreaks benefiting from a co-related increase in the price of pork or fish, in particular in 2004 and 2005, as consumption moved away from poultry in favour of these products. Nevertheless, this production is also regularly affected by a range of diseases (foot-and-mouth disease, blue-ear disease, etc.). According to one pig and poultry farmer, “it was more difficult when the pigs were affected by blue-ear disease”.

15.4.10  **Always Ready to Start Again**

All the farmers claimed that they never hesitated in renewing their flock and reinvesting in poultry farming because in any case, “here, you have to combine agriculture and rearing animals,” as one farmer succinctly explained. Even in the event of losses linked directly to mortalities, the farmers rebuilt their flocks twice, three times as they do after deaths resulting from Newcastle disease. One claimed to have lost two thirds of his 800 birds to disease in 2005, although he did not know which disease. He mortgaged his land to borrow money to buy new birds. In 2007, he lost a large sum of money, not because of disease but because prices were too low. At present, he only has 80 traditional chickens, *Ga ta*, but as soon as he has saved more money (he cannot borrow any more), he will once again begin with a new flock of broilers.

And as explained by farmers: “We were able to start again quickly because the government said that it was finished. Anyway, here, we have to rear animals because rice doesn’t pay well”; or: “We are obliged to continue rearing poultry because the district specialises in it”.

The renewed activity did not necessarily involve the same species as before. We have already explained that farmers increase the number of species raised to cope with the hazards of the market. Ducks are considered to be less sensitive than chickens to the H5N1 virus. To what extent did avian flu influence the choice of these species? The answers vary considerably: In several cases, the activity was renewed with broilers as they follow a rapid production cycle and the return on investment is quick. However, according to certain farmers, there are fewer broiler

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6The possibilities for taking up an activity again are limited by financial capacities, borrowing capacity and the availability of chickens from state hatcheries. To overcome this final constraint, many farmers renewed their flock with “false F1s”. 
chicken farms following the outbreak of avian flu because chickens are more sensitive to the virus and farmers do not want to vaccinate animals with a relatively short cycle. Some farmers believe it is more judicious to rear red chickens rather than white chickens and Peking ducks rather than Muscovy ducks because they are less vulnerable. Others feel that the market is currently highly favourable to Muscovy ducks, thereby explaining why some farmers opt for this species. In light of this wide range of arguments, it is difficult to identify a clear trend in terms of the choice of species; the predominant strategy remains the diversification of species: “Ducks are more resilient than Muscovy ducks and the vaccination of ducks against avian flu is more efficient. During an outbreak of the flu, it is therefore better to keep ducks. But people continue to combine the two”.

15.5 Conclusion

In the opinion of international organisations (FAO, OIE, WHO), H5N1 is an event which justifies unprecedented international mobilisation. This study shows that farmers in the village studied – and who are in the front line of the issue – have considered it as such only during a short period of time, when they feared for their own health. But this fear was transitory, and the problem related to H5N1 only persisted for them, in a much subdued form, as an epizootic disease (transmission from animal to animal) with direct and indirect consequences (economic and regulatory impacts). The pandemic potential (transmission from person to person on a global scale) or even zoonotic dimension (transmission between man and animal) of the virus which justified the international concern does not figure in the local framing of the disease.

Farmers have taken H5N1 into account as a poultry disease, but H5N1 is simply one of a number of problems that farmers have to deal with. There are numerous other poultry diseases. The economic impact of H5N1 has been however quite specific due to the new regulations adopted by the government to face it (under international pressure), but this impact was limited if we consider the context of a generally unstable market. In the past, farmers developed strategies, which they once again called on in the context of the avian flu outbreaks. These strategies aim more to minimise the indirect effects of the disease (i.e. strategies of alleviation) than to avoid the disease itself (i.e. strategies of prevention and precaution) and would appear to have been relatively successful, at the scale of the village.

We can therefore conclude that while avian flu (H5N1) and other infectious diseases affecting poultry are a problem, this problem is not perceived in terms of risk in the sociological sense of the word (i.e. a problem that could be avoided and with identified responsibilities to avoid damages or to pay reparations). Similarly, avian flu has been responsible for a national and international crisis: avian flu outbreaks encouraged to revise scientific knowledge on the ecology of viruses (in particular

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7 A Muscovy duck vaccination campaign was launched in 2007 before being abandoned.
with regard to ducks); to review the governance, in particular international health governance; to design new decision-making process in situations of uncertainty; and to rethink the relations of the Vietnamese authorities with the international community, but at the level of the farms in the village concerned by the study, the reaction was limited to a half-hearted criticism of the government (within the limits of what is possible within the country) for what was perceived as excessive communication concerning the flu (and the negative impact that this had on consumption) and on its decision to lower taxes on imported poultry.8

The potential contribution of social sciences to the study of infectious diseases is not limited to the analysis of their social factors, in an operational objective, nor to a critical analysis of the inequalities in front of the diseases, in relation with differences in social classes or territories; it is also to contribute to the understanding of the social dynamics that give existence to a phenomenon (Barbier and Prete 2010). Our contribution is to show that this dynamic takes place at different levels, from local to international, mobilising different framings of the disease. These framings evolve with time, with periods of alignment and divergences. These divergences may lead to competing answers to the problem.

References

Agrifood Consulting International (2007) Poultry sector rehabilitation project: the economic impact of highly pathogenic avian influenza – related biosecurity policies on the Vietnamese poultry sector. Prepared for FAO and WHO, Bethesda. p 254

Barbier M, Prete G (2010) Un regard sociologique sur la biopolitique des maladies émergentes et ré-émergentes. In: Barnouin J, Sache I (eds) Les maladies émergentes. Epidémiologie chez le végétal, l’animal et l’homme, Paris, Edition QUAE ed, pp 411–422

Delquigny T, Edan M, Nguyen DH, Pham TK, Gautier P (2004) Evolution and impact of avian influenza epidemic and description of the avian production in Vietnam. Vétérinaires sans frontières, Hanoi, p 119

Desvaux S, Ton DV (2008) A general review and description of the poultry production in Vietnam. Prise, Agricultural Publishing House, Hanoi

FAO, OIE, WHO, UNSIC, UNICEF, WB (2008) The strategic framework for reducing risks of infectious diseases at the animal-human-ecosystems interface. Contributing to one World, one Health [online]. http://un-influenza.org/files/OWOH_14Oct08.pdf

8Does this mean that avian flu was a case of “much ado about nothing”? Certainly, in light of our study, we might be somewhat surprised by the contrast with certain newspaper headlines seen in the foreign press, such as “Vietnamese farmers ruined by the flu” (Syfia press agency, 03/02/2004). At the same time, we must place this contrast in perspective, noting that the province of Ha Tay adopted a highly defensive attitude most likely by refusing to report any new outbreaks since 2005. In light of the statistics, however, we observe that even in the other provinces, mortalities and culling were not significant in terms of the number of farms concerned. Furthermore, our survey was conducted in 2008, 4 years after the beginning of the events at a time when floods, food prices and import taxes were the main concern of the farmers interviewed. Nevertheless, the flu was still present in Vietnam in 2008 and climatic and economic hazards are part of the daily routine of these farmers.
Figuié M (2013) Global health risks and cosmopolitisation: from emergence to interference. Sociol Health Illn 35(2):227–240
Figuié M, Fournier T (2008) Avian influenza in Vietnam: chicken-hearted consumers? Risk Anal 28(2):441–451
Figuié M, Nguyen MH, Tham TT (2006) Assessment of the pre-tet information, education and communication campaign (IEC) of the joint United Nations-Vietnamese Government Programme to fight highly pathogenic avian influenza (HPAI) in Vietnam. Socialist Republic of Vietnam, FAO, USAID, CIRAD-Malica, Hanoi, Prepared for FAO by CIRAD-MALICA. p 63
Figuié M, Pham AT, Moustier M (2013) Grippe aviaire dans la filière. La réorganisation du secteur agro-industriel au Vietnam. Revue d’Études en Agriculture et Environnement 94(4):397–419
McLeod A, Morgan N, Prakash A, Hinrichs J (2004) Economic and social impacts of avian influenza. FAO, Rome, p 10
OIE (2008) Resolutions adopted by the international committee of the OIE during its 76th general session 25–30 May 2008 [online]. http://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/A_RESO_2008.pdf/
Payne A, Desvaux S, Chalvet-Monfray K, Renard J-F, Bicout DJ (2009) Flux de volailles et propagations de l’influenza aviaire dans la filière avicole au Vietnam. Epidémiologie et Santé animale 55:137–152
Pfeiffer DU, Minh PQ, Martin V, Epprech M, Otte MJ (2007) An analysis of the spatial and temporal patterns of highly pathogenic avian influenza occurrence in Vietnam using national surveillance data. Vet J 174(2):302–309
Tuong V (2010) Power, politics and accountability: Vietnam’s response to avian influenza. In: Scoones I (ed) Avian influenza: science, policy, politics. Earthscan, London, p 52
WHO (2005) Avian influenza: assessing the pandemic threat. World Health Organization, Geneva, p 64