

Enhancing Control of Highly Pathogenic Avian Influenza in Developing Countries through Compensation:

Issues and Good Practice





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Acknowledgments

This report was drafted by an interdisciplinary and interagency task team led by Christopher Delgado of the Agriculture and Rural Development Department of the World Bank, involving staff and consultants from the World Bank, the Food and Agriculture Organization (FAO), and the International Food Policy Research Institute (IFPRI). The core drafting team consisted of Christopher Delgado, Patricia McKenzie, and Cornelis de Haan (World Bank); Anni McLeod and Ana Riviere-Cinnamond (FAO); and Clare Narrod (IFPRI). Additional contributions were received from: Jimmy Smith, Samjhana Thapa, and Melissa Williams (World Bank); Jim Hancock, Dan Vadnjal, and Jonathon Rushton (FAO); and Marites Tiongco and Devesh Roy (IFPRI). Funding was provided by the Operations Policy and Country Services and the Agricultural and Rural Development Departments of the World Bank, and by FAO, IFPRI, and the World Animal Health Organization (OIE). OIE kindly provided a venue for and supported a review meeting to discuss an earlier draft at its headquarters in Paris. Cordial thanks are extended to the participants of that meeting and multiple meetings with colleagues on the World Bank's Avian Influenza Regional Focal Points team in Washington. Very helpful written reviews of an earlier draft were provided by Mario Bravo, Christiane Brusckke, Alain Dehove, Jacqueline Dubow, Simeon Ehui, Eric Marin, Piers Merrick, Stephen Mink, Laurent Msellati and Klaus von Grebmer. Overall assistance with funding and guidance was received from Henning Steinfeld and Joseph Domenech (FAO); Bernard Vallat (OIE); Maximo Torero (IFPRI); and Sushma Ganguly, Olga Jonas, and Francois Le Gall (World Bank). Although every attempt was made to incorporate fully all suggestions received, the core drafting team accepts responsibility for the views expressed in the report and resolution of multiple valuable suggestions for revision.

Acronyms and Abbreviations

AHF	animal health fund
APHIS	Animal and Plant Health Inspection Service
AoA	Agreement on Agriculture
BSE	bovine spongiform encephalopathy
CBPP	Contagious Bovine Pleuropneumonia
CSF	Classical Swine Fever
CTAs	community thematic associations
DOC	day-old chicks
EC	European Commission
ELGA	Greek Agricultural Insurance Organisation
EU	European Union
FAO	Food and Agriculture Organization
FMD	Foot and Mouth Disease
GDP	gross domestic product
GPAI	Global Program for Avian Influenza
HPAI	highly pathogenic avian influenza
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFPRI	International Food Policy Research Institute
LFAs	less favored areas
LPAI	low pathogenic avian influenza
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
OIE	World Animal Health Organization
PCR	polymerase chain reaction
PVS	performance, vision, and strategy
PVS	performance, vision, and strategy
SMEs	small and medium enterprises
SOEs	state-owned enterprises
TB	tuberculosis
TSK	Animal Disease Fund
UK	United Kingdom
WTO	World Trade Organization

Executive Summary

Highly pathogenic avian influenza (HPAI) under current conditions poses a major risk to human and animal health. Efforts to contain the disease are therefore in national and global interest. As the most widely practiced control methods for poultry involve culling birds that are infected or in regions immediately around infected animals, the most common practice to ensure the cooperation of owners of birds is to compensate them for the culling of their animals to achieve this public goal. Early identification of HPAI and the immediate culling of diseased or suspected animals are critical elements of reducing the risk of the disease spreading. The international community and national governments have responded to this challenge by establishing funding mechanisms to enable compensation to assist in this strategy.

Payment of compensation to farmers whose animals are being culled enhances producer cooperation through better motivation to comply with the disease reporting and culling requirements of disease control packages. It reduces the time lag between an outbreak and containment actions, and hence diminishes the overall cost of control. To the extent that it reduces the virus load, it also reduces the risk of the virus mutating to becoming transmissible from human to human. Enhancing early reporting and complete culling of diseased or suspected birds is thus the first objective of compensation schemes. A second objective can be to reimburse losses of private citizens who have complied with a disease control process for the public good. This is compatible with the first objective.

While the imperative of disease containment drives compensation schemes, the reality of the severe impact of culling on very poor people cannot be ignored. However, a compensation scheme cannot cover all livelihoods losses caused by livestock disease control and it cannot replace social safety nets. This requires other measures, outside the scope of this paper.

The report seeks to provide guidelines on good practice for payment of compensation as part of HPAI stamping-out strategies. It is meant for national and international managers and project staff involved in containing HPAI. It responds to a request of the Senior Officials Meeting on Avian and Human Influenza held in Vienna, June 6–7, 2006, and the result of the work of a multidisciplinary team from the World Bank, FAO, and IFPRI. The report is based on review of the well-established literature of compensation practices in the developed world, staff interviews, experience, and newly emerging gray literature (project documents, mis-

sion reports, and so forth) on compensation in the developing world, and specific field visits to Egypt, Indonesia, and Vietnam.

Preparedness Is Key

An effective and efficient compensation scheme will compensate the appropriate beneficiaries for the appropriate losses and at an appropriate level, with only a short interval between culling and payment of the compensation. This will only be possible if a number of elements are already in place before an outbreak. There needs to be appropriate legislation for the control of animal disease in force that spells out clearly the rights and responsibilities of government, livestock sector and marketing personnel, and farmers in animal disease control. There needs to be widespread awareness of the dangers of the disease and how to mitigate them. Funds have to be readily available and the procedures and sequencing of actions to be followed for compensation need to be agreed in advance. Preparations for the implementation of expedient and transparent payment schemes need to be in place.

Procedures and sequencing of compensation require knowing who to compensate, when, how much, and how, and all the stakeholders have to be aware of and have faith in the system. Widespread knowledge in advance of what the stakes are (including poultry holdings) and identification of the stakeholders are key elements in improving the governance of the use of compensation resources, which is especially difficult in emergency situations.

Because preparedness is essential to using culling and compensation effectively and efficiently for disease control, countries need to make a host of arrangements without necessarily having national precedents to guide the way. The present document tries to illustrate key lessons from countries such as Thailand and Vietnam (and others) that have learned by doing and incorporated many of the lessons in revised strategies. Even with guidelines from elsewhere, national avian influenza committees will still need to negotiate specific arrangements with national stakeholders in a way that fits local conditions, and this takes time and effort.

Countries faced with outbreaks before they have their contingency plans in place will need to adopt the most basic measures. Even so, the same issues of who to compensate, when, for what, how, and how much still apply. However, the need to move quickly for disease control will force many of the normal oversight tasks to a later date and is likely to make governance issues even more difficult.

Finally, it will be difficult to delink compensation practices from both changing needs for effective disease control and the issue of equitable production systems change as the disease becomes endemic. This aspect is also introduced briefly in the concluding chapter.

Identification of Beneficiaries

As a general rule, the beneficiaries of compensation are the owners of the animals. Other supply chain participants, such as feed suppliers and market operators, may also incur losses when livestock production and sales are disrupted by disease, but they have not normally benefited from compensation schemes. The type of production system significantly shapes feasible identification procedures. Large, highly biosecure poultry farms (the so-called sector 1 and 2 under FAO/OIE nomenclature) have generally good inventory records and culling is well controlled. Farmer documents are then a basis for compensation.

Under conditions of contract farming in these systems, ownership of the birds decides the beneficiary. If the contractor is the owner, he/she would be compensated, and takes the responsibility for reimbursing the integrator. If the integrator owns the bird, he/she will receive the compensation. In a few cases, arrangements have been made to pay the contractor for lost income on a wage per day basis, with funds subtracted from the integrator share before payment. The issue of how to incorporate contract growers into compensation process remains a problem that many countries are only now beginning to look into. More attention needs to be addressed to this issue lest it becomes a loophole limiting effective control of the disease.

Identification of the beneficiaries for small enterprises and back yard systems (the FAO/OIE denominated sectors 3 and 4) is more complex, as records are normally not available, and factors such as differential ownership by gender come into play. Surveys as part of the preparedness planning (not after the disease emerges), including the identification of ownership patterns, broad awareness of the existence of compensation and payment as an integral part of the stamping-out process, are then key factors to ensure a broad participation of the sectors 3 and 4.

Type of Losses to Be Compensated

Normally, compensation covers only the so-called direct losses, which include the value of the animals,

and sometimes also (in richer countries) the costs related to the disposal of dead animals and cleaning and disinfection. So-called farm-level consequential losses, due to business interruption, movement control, and price effects are not compensated, although in many developed countries private insurance schemes exist for such losses. Dead animals before culling are often not compensated, however there may be a rationale to do so at least partially where either dead animals have market value (and thus there is the danger they will be sold) or disease control teams cannot respond within 72 hours of disease reporting by the farm in question. In all cases the accurate computation of losses is greatly aided by having adequate farm-level records of poultry holdings, and it will be important to promote such a database prior to disease outbreak. Finally, the lion's share of actual economic losses to the countries in question may be indirect: lost feed sales, diminished tourism, absenteeism at work, and so forth. These losses are never covered by public compensation schemes. In principle, they could be insurable under private sector contracts outside the livestock sector if risks are well known, but they rarely are.

Setting Compensation Rates

Compensation rates are variously set on the basis of (a) market value; (b) budget availability; and (c) production costs. Setting the cost on the basis of market value, wherever possible, is the preferred policy, as basing the cost on budget availability often leads to underpayment, and hence poor compliance with the culling operation, and production cost would favor inefficiencies, and is more complex to establish. Experience that emerges from the review in establishing compensation rates based on market values shows:

- Compensation rates as a percentage of a reference market price should be set before the disease emerges, as part of an overall preparedness plan, using average preoutbreak market prices at the farm gate, computed with due regard for seasonality and the transport costs from the local community relative to the reference market. For special category birds (rare breeds, indigenous poultry, fighting cocks, grandparent stock, other bird types), where market prices are not readily available, consultation with the stakeholders is required to set realistic levels.
- Uniformity of rates across the country and for different classes of birds improves the implementation efficiency of the program, and should be pursued in situations with good control. However, in situations of poor movement control,

differentiation by type of bird (layer, broiler) and age/weight of the group might be needed to fit compensation as close as possible with prevailing market prices. An interesting intermediate solution might be to pay not on the basis of numbers but on the basis of the total weight of the flock.

- Compensation rates should be no less than 50 percent of the reference market value of suspected birds at the farm gate, and no more than 100 percent. The rationale for the preferred range of 75–90 percent of the reference price and multiple considerations for being closer to one or the other limit are discussed in the report. Rates should be considerably lower for diseased birds and even less, but positive, for dead birds, to provide positive incentives for early and complete reporting. Careful attention needs to be paid to bird movements during compensation to ensure that an incentive is not being created for the influx of healthy birds to disease zones or diseased birds to disease-free zones.
- In dealing with small farmers in developing countries, compensation should be paid within 24 hours of culling by cash (or possibly voucher where handling cash presents a security threat and credible local formal financial institutions such as rural post offices are available); any delay is likely to have a significant effect on reporting.

Establishing Awareness

Experience from on-going campaigns highlights the absolute necessity of communication on disease control and compensation, which when done properly may run from 10 percent to 20 percent of the total package cost. The package should contain components of consultation with the beneficiaries, advocacy, and information, using multiple media and channels. The specific messages on compensation should explain to affected farmers the need for mandatory culling in cases of suspicion of avian influenza as a necessary measure to protect the health of the entire human population. They should contain the principles, procedures and grid of compensation levels, precise information on the exact amounts, and payment procedures. Messages and media should be prepared ahead of time with inputs from both technicians and communication specialists. They should also be consistent over time, since frequent policy and message changes undermine the credibility of the campaign. Private sector operators, such as para-veterinarians, can play a critical role in awareness raising and overall support to the campaign, and their input on retainer fees should be more encouraged than is currently the case.

Payment Systems

To promote early notification of suspected outbreaks, compensation for culled birds must be paid promptly following the birds' destruction. Critical elements from an appropriate payment system follow.

- Rapid access to adequate funding for immediate deployment as needs arise is essential. Sources typically are government's own funds from the National Treasury, farmer's contributions, and those of donor partners. National budgets need contingency funds of at least 3–5 percent of total budget to facilitate a rapid central contribution in the event of an outbreak; alternative contingency planning will be necessary where this is not available.
- The share of compensation payments in total animal disease control expenditures under outbreaks ranged from 0–45 percent in the cases studied, with a central tendency of about 35 percent. Holding large sums as contingency reserves to allow a rapid response engenders a considerable cost. For compensation planning purposes, the upper range of foreseen culling during a severe outbreak should be capped at 10 percent of the national flock. Many outbreaks are controlled with culling of less than 1 percent of the national flock. Once the share of infected and closely associated birds exceeds 5 percent of the total national flock, vaccination typically starts substituting for culling and compensation. These percentages, multiplied by the size of the national flock and again by 75 percent of the average farm-gate poultry price, provides a rough estimate of the range of funds that need to be accessible for compensation payments per se on short notice. Countries that are important poultry exporters and wish to avoid vaccination (such as Thailand under its 2004 outbreak) should plan at the 10 percent (high) limit, countries with little in the way of poultry exports and a large percentage of smallholder poultry producers at 5 percent, and countries with little trade concern, a high degree of biosecurity, and a creditworthy public finance system at 1 percent.
- The system should be simple enough to be used in difficult field situations and should make use of existing institutions (for example, line ministries, veterinary services, financial institutions). It is important to clarify responsibilities in advance, make provincial cross-agency coordination arrangements, and establish local contingency funding. If no system is in place when the disease emerges, the focus will need to shift to a greater reliance on ex post independent scrutiny to avoid inordinate delays in paying compensation.
- Eligibility databases and emergency payment (see above) procedures should be prepared as

part of the emergency part preparedness plans; where lacking, they will both need to be set up when the disease emerges, posing considerable difficulties.

- The veterinary services (assessing the need and reliability of the culling), the Ministry of Finance (payment), civil authorities (security), and community leadership (transparency) should all be directly involved in the payment process.
- For sectors 1 and 2, bank transfers are the most adequate instrument; cash payments are the preferred method for those farms of sectors 3 and 4 without banking access. Vouchers are often less credible for immediate motivation of rural households, but may work where they can be integrated with a dense local network of trusted financial institutions, such as rural post offices.
- To the extent possible, maximum use should be made of local banking entities, producer's organizations, veterinary services, and nongovernmental organizations (NGOs). Their fiduciary assessment should be part of the preparedness planning.

The Way Forward

While over time the international public good argument regarding the risk of human-to-human transmission of HPAI might diminish, transmission between animal populations of different countries will continue to be a main reason for international funding of disease control in developing countries. Moreover, in the likely event of the disease becoming endemic within certain countries, this will have major effect on the poor, and interventions under those conditions therefore deserve international support from an equity perspective. Stricter disease control requirements will have a major effect on the structure of the industry, with implications still to be clearly identified for the future viability of the sectors 3 and 4. Nonetheless, compensation is likely to remain necessary for many years to come to promote the early eradication of outbreaks and to avoid the spread of transmissible animal diseases.

Under such conditions, compensation will:

- Become part of modified stamping-out strategies, with probably a lower priority to culling. Clear principles of how stamping-out strategies should evolve, and how compensation fits into such evolving strategies are needed.
- Have to become more dependent on the countries proven political will to improve the key institutions for animal health, in particular for early alerts and independent disease reporting. The OIE tool for Performance, Vision and Strat-

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- egy (PVS) is a useful instrument to assess government capabilities.
- Be restricted to sectors 3 and 4, and be funded from a mixture of national and international public funds, the latter in particular for the poorer countries.
 - Be funded for the large commercial sectors through private initiatives, probably as a mix between mandatory levies and voluntary insurance; in many cases the public sector needs to work with the private sector to find equitable ways to develop these systems.

Compensation as used in this paper relates to indemnification of private actors for losses incurred as a result of public action undertaken to promote the public good, such as in the case of payments to farmers for culled birds. Compensation is typically used as part of a stamping-out strategy in emergency situations or in support of interventions for eradication after successful reduction of incidence.

Compensation is fundamental to control strategies for the H5N1 strain of highly pathogenic avian influenza (HPAI for short), as it provides an incentive to the producer to report suspected disease outbreaks and comply with culling actions. It therefore reduces the time lag between an outbreak and containment actions and hence the overall control cost, and to the extent that it diminishes the virus load, reduces risk of the virus mutating to become transmissible from human to human. However, the implementation issues are extremely tricky, as poorly designed schemes can in fact hasten the spread of the disease. Compensation can also mollify the effects of critical social and political shocks where large numbers of farms are decapitalized through culling of their stock. However, as will be discussed, mixing greater social objectives with compensation for disease control typically lessens the effectiveness of the latter without bringing to bear what is required for the former.

Implicitly this report treats compensation as an international public good. This stems from the possibility of catastrophic international spillovers from HPAI outbreaks affecting human health. Compensation remains a key tool in support of stamping-out strategies for animal disease control even when human health is not at stake (as with Foot and Mouth Disease), but does not involve the same degree of priority, nor the implication that funding dedicated to the creation of international public goods should assist in meeting needs.

Objectives of the Report and of Compensation

Objectives of the Report

The main objectives of the report are to discuss the purposes of compensation, review experience, link compensation practices to success in culling strategies, analyze how inappropriate compensation pack-

ages (such as in overcompensation) can create perverse incentives, illustrate pitfalls and uncertainties, and develop recommendations based on observed good practice.

The desired outcome is to facilitate changes in compensation practices that improve disease control through more prompt reporting of disease and better compliance with culling initiatives. The primary target audience consists of decision makers in the public sector of developing countries, their development partners in international agencies, bilateral donors and international NGOs, and public/private coalitions, producer organizations, and NGOs in developing countries.

The paper will review issues and formulate recommendations on the following items of good practice:

- Deciding who to compensate;
- Types of losses to be compensated;
- Setting the level and timeliness of compensation;
- Promoting awareness, communication, and capacity building;
- Organizing payment while promoting accountability; and
- Shifting compensation strategies as the disease becomes endemic.

Purposes and Scope of Compensation Schemes

Compensation schemes have been implemented for other diseases of livestock, including highly contagious animal diseases such as Foot and Mouth Disease (FMD), Classical Swine Fever (CSF) and Contagious Bovine Pleuropneumonia (CBPP) and zoonotic diseases such as rabies, bovine spongiform encephalopathy (BSE), and brucellosis. Appendix 1 lists examples of different sorts of compensation schemes that have been applied for animal disease outbreaks. HPAI is a recent entrant to the scene, and is now included in compensation schemes in a growing list of countries, shown in the appendix. Compensation processes are most fully documented in industrialized countries and those with highly developed commercial livestock industries such as Brazil and Chile.

Historically, governments have entered into animal health compensation programs for a variety of reasons. These range from the productivity cost of letting a disease spread throughout the country, to avoid restrictions on exports as in the case of OIE-notifiable diseases such as FMD and CSF, to emergency measures to protect human health (such as in the case of BSE or most recently HPAI). The first

documented compensation schemes were applied to owners of cattle slaughtered due to infection of cattle plague (Rinderpest) in Britain and Ireland under the Cattle Disease Prevention Act of 1866, and then in 1884 in the United States (Wiser 1987).¹ Compensation schemes today continue to be designed primarily as part of a disease control strategy, to encourage farmers to report outbreaks or potential disease problems, and to discourage them from selling animals rather than presenting them for culling (FAO e-consultation 2006).

Animal diseases that warrant compensation systems typically have several dimensions: (a) the type of disease is highly contagious, may be zoonotic, and potentially engenders serious economic impact; (b) the type of animal is typically of importance to commercial farming (cattle, small ruminants, swine, or poultry), or closely related to these animals; (c) the source of funds involves a mix of public and private cost-sharing with the mix depending on the diversity of production systems (from large integrated farmers to backyard smallholders); and (d) the disease status of the country in question, with compensation being less prevalent if the disease is endemic.

HPAI in most developing countries fits all of these conditions to varying degrees, but above all has the potential to inflict devastating damage on global public health if the virus mutates (or more specifically is reassorted) to become transmissible among humans. The human health dangers alone are enough to justify using international development funds to speed control through culling and compensation schemes, as the international “public bad” of transmission across borders of a mutated virus dangerous to humans is clear to all.

It is tempting to mix the issue of compensation for disease control purposes with a host of issues beyond disease control. It can be argued that there is a moral obligation of states to compensate for private property destroyed in the public good, where the destroyed property is a legally held and productive asset, especially in the case of very poor people. Furthermore, poultry is often a significant share of the assets of the poor in developing countries, in particular for women and rural people with few collateral assets with which to obtain finance for rebuilding their source of livelihood. In Muslim countries located in the humid tropics, poultry is the main source of animal protein, raising particularly thorny problems for achieving rural acceptance of stamping-out policies in countries such as Indonesia and Malaysia. Poultry also

remains one of the best options for future pro-poor agricultural growth (poultry and pork consumption have been growing at 5 percent plus per capita per annum in developing countries over the last 25 years compared to less than 0.5 percent for cereals) (Delgado et al. 1999).

Yet compensation for disease control needs to be kept conceptually and operationally separate from compensation for damages or asset rebuilding of the poor. Both are vital issues, but they require different conceptual approaches, different operational measures and time frames, and have separate constituencies (and thus funding sources). As will be discussed below, the losses from animal disease outbreaks go far beyond lost sales of animals by farmers and cannot all be realistically addressed by programs designed to speed up reporting of outbreaks and facilitate compliance with culling.

Furthermore, as the disease becomes endemic, outbreaks go from being new natural catastrophes to more predictable occurrences. The latter may require different measures for containment, including other methods for disease control such as vaccination, and practically-speaking local HPAI outbreaks may be harder to distinguish from those of other poultry diseases that are endemic, such as Newcastle Disease. Containment when the disease is endemic will surely require greater cost sharing by producers and consumers. Finally, recapitalizing the rural poor after repeated outbreaks is a complex operation involving credit, extension, institutional changes, other measures to promote biosecurity, and a host of other items beyond the scope of rapid-response compensation schemes.

Background and Rationale for Assessing Good Practices

Following the logic above, compensation is a vital tool to reduce risks to animal and human health through increasing the width, depth, and speed of producer compliance with reporting and culling orders. It also helps reduce both the direct economic costs (such as falls in exports) and the typically much larger indirect costs (such as lost economic activity and the decline of tourism) of disease outbreaks.²

A further complication in developing countries is that livestock death and disease are considered to be some of the main factors contributing to poverty (World Bank and DFID 1999). How compensation is managed will greatly affect whether the poor will benefit on an equal basis with large-scale producers. The institutional framework for compensation will

also help determine whether small-scale producers remain in the industry; if they cannot remain in smallholder poultry because of stricter biosecurity measures needed to control the disease, the format of compensation (cash versus targeted credits, for example) can help promote the move to alternative livelihoods.

The Global Program for Avian Influenza (GPAI) allows for the use of up to US\$500 million in International Bank for Reconstruction and Development (IBRD) loans or International Development Association (IDA) credits or grants for new projects, or for restructuring existing projects, to undertake immediate actions to control avian influenza. A share of the funds is expected to be allocated to compensate for economic losses as a result of culling measures to contain HPAI. In addition, client country governments and World Bank operational staff have requested guidance on these issues. More than 25 countries are expected to receive financing under the GPAI by December 2006, and the presentation of a satisfactory compensation scheme is included as a condition of disbursement in the GPAI funding for several countries.

Guidelines for good practices are needed for predicting funding needs for compensation during emergency culling, both to eliminate unnecessary costs from overestimating needs and to avoid loss of credibility from not having sufficient resources at hand for adequate or timely payments. Presently, the numerous schemes being followed for HPAI compensation exhibit significant variation across and even within countries, along with highly variable outcomes in terms of disease containment.

Approaches should be developed to allocate funding by geographic zones within countries based on forecasted needs using transparent criteria. Sources of funding need to be identified, and any differentiation between uses of funds from different sources explored (such as differences in use of multicountry regional, national host government, local, private sector, and donor partner funds). Management arrangements, accounting procedures, and disbursement arrangements need to be decided.

The Senior Officials Meeting on Avian and Human Influenza held in Vienna, June 6–7, 2006, identified the need for guidelines based on best practices for compensation of producers of culled birds under developing country conditions as a top priority in the fight against avian influenza. The World Bank offered to take the lead in preparing a report on good practice to be useful to its own staff, client countries, and partner agencies with regard to the design of compensation schemes.

Context in Which Compensation Occurs

Animal Production Systems and Degree of Development

Compensation has been given in some developed countries since the 19th century for culling in the context of a variety of contagious animal diseases, and also in the context of disaster relief in a variety of developing countries. While this report will draw on these experiences, the focus here is solely on compensation for culling of birds associated with avian influenza control programs, with particular reference to developing countries.

Using the FAO system of classification of production systems (FAO/OIE 2005), poultry farms in developing countries fall into one of four sectors. Sector 1 is an industrial and integrated system that produces commercial breeds of poultry using technologies similar to those found in Organisation for Economic Co-operation and Development (OECD) countries, with adaptations where necessary for differences in temperature and humidity, and with relatively high levels of biosecurity.³ Sector 2 is an industrial but not integrated system that produces commercial breeds of poultry at levels of scale comparable to production units found within sector 1, but typically at lower (but still significant) levels of biosecurity.

Sector 3 is neither integrated nor industrial, typically with low levels of biosecurity in developing countries, producing commercial breeds of poultry, at relatively small scales compared to most well-established commercial poultry operations.⁴ Sector 4 is small scale or backyard, produces native breeds of poultry and has little or nothing in the way of biosecurity measures. Sector 4 still accounts for a large share of poultry production in most developing countries, but most countries have all four sectors represented simultaneously. Appendix 2 provides a detailed description of the sectors. Countries that have a large proportion of sector 1 and 2 farmers are more likely to be those involved in export trade.

The Legislative Environment

Culling involves the destruction of private property for the public good, a process that should never be arbitrary. Compensation schemes implicitly recognize the obligation of the public entity to make good on the loss to the private entity affected, even if the motive is to provide an incentive for rapid and

peaceful compliance. The need for appropriate legislation for the control of animal diseases is key to the success of culling and compensation strategies. The legislation needs to include the specification of the right and conditions for governments to seize private property, including the obligation of governments to compensate when they take property. It is critical that such legislation is in place before an outbreak. This need is not limited to HPAI control, yet clear legislation on this is often lacking in developing countries.

The World Animal Health Organization (OIE) recommends that destruction of diseased animals and products and adequate disposal and disinfection should be clearly spelled out in legislation as a responsibility of the central government. This remains the case even when the actual tasks are carried out by others. Furthermore, implementation of the legislation is crucial: the articles should clearly specify who decides on culling, who pays, when, and how payments are made. There needs to be a clear chain of command, especially as many different kinds of actors (public and private) are involved and speed and coordination are imperative.

Variation in the Strength of Public Administration, Animal Health, and Rural Financial Systems

Institutional environments for animal disease control and compensation payments also vary significantly across countries, including across developing countries. Key elements are the technical and institutional strength of public administration, animal health services, and rural financial systems and their capacity to enforce other control measures, in particular movement control when the disease emerges. These range from the well established (Australia, European Union [EU], and Hong Kong, for example), to the emerging countries (Thailand and Vietnam, for example), to still weak institutional environments (most other developing countries).

Approach to Ascertaining Good Practice

The report is the product of a multidisciplinary, multiagency activity based on review of existing literature and interviews with selected developing country stakeholders, staff, or consultants from international agencies that have been involved with the implementation of compensation schemes for the control of HPAI and with conditional cash trans-

fers to large numbers of poor people. Interviews of experts from OECD countries who have experience with compensation for other diseases, such as Newcastle Disease, FMD, and CSF were also used. Explicit attention was paid to necessary preconditions for the success of developed country strategies, such as strong veterinary services, availability of diagnostic labs, and so forth. Field visits in support of the present paper were made to Indonesia, Egypt, and Vietnam. Finally, the study team fed into the terms-of-reference of an FAO-managed “E-consultation” of 200 experts around the world on avian influenza compensation, which fed directly into the present report.

Judgements about “good practice” are often subjective. The team adopted the following working indicators of success and lack of success in compensation practices.

Indicators of Success

- The spread of the disease is reduced compared to what happened in countries and regions where compensation was not used, or used late or inconsistently.
- Those who are entitled to be paid under announced rules are in fact paid.
- Compliance with reporting and culling is increased relative to estimated numbers of diseased and suspected (that is, still healthy animals within the immediate neighborhood).
- Livelihoods’ distress directly related to the disease control process is significantly reduced.
- Measures for reporting, culling, and compensating are linked, enshrined in law, and preferably agreed on by key stakeholders.
- There is clear and accurate communication about entitlement.

Indicators of Lack of Success

- The disease spreads.
- Persons who were entitled to compensation were not paid.
- The compensation process added to inequities.
- There was a high level of noncompliance.
- The operating procedures for reporting, culling, and compensating were delinked and poorly described or poorly understood.
- There was inconsistency in regulations or enforcement across small geographical or administrative areas and between different size producers.

Conclusions and Recommendations from Chapter I

The primary objective for establishing a compensation scheme is to promote effective disease control. To achieve this objective, a scheme must operate efficiently and quickly and be well understood by those on whom its successful operation depends. It must also fit into the context of the whole disease control plan.

A second objective may be to reimburse losses of private citizens who have complied with a disease control process for the public good. This is compatible with the first objective.

Compensation schemes associated with mandatory culling have a long history in animal disease control, but are relatively new in the case of poultry, and particularly H5N1 HPAI. The potential danger to global public health from HPAI clearly make its control a priority global public good. Many of the lessons learned from compensation schemes involving HPAI control will be of great use in future outbreaks of other diseases.

Successful compensation practices need to fit the production systems, animal health service and laboratory availability, administrative constraints, and the enforcement capabilities and rural financial systems context of the countries in which they operate. The most critical need is to enact clear legislation, prior to any outbreak, spelling out the rights and responsibilities of government, service agents such as private veterinarians and market agents, and farmers in the event of an outbreak or to prevent the threat of an outbreak. A clear chain of command is necessary for successful disease control, including the implementation of compensation.

Compensation schemes cannot cover all livelihoods’ losses caused by livestock disease control and they cannot replace all social safety nets, or administration becomes impossible. The limits to compensation must be identified so that additional private and public measures can be put into place to reduce loss of livelihoods.

While the objective of disease control drives compensation schemes, the reality of the severe impact of culling on very poor people cannot be ignored in developing countries. If smallholders are not effectively brought into compensation schemes, it is likely that they will be reluctant to report outbreaks, with negative consequences for all sectors. Nor is it realistic to believe that small backyard operations will disappear in response to prohibitions; experience shows that it is more likely that they will go underground and escape any effective veterinary control. It will be difficult to delink compensation practices from the issue of equitable systems change as the disease becomes endemic in specific developing countries, and thus compensation practices will likely need to change over time, as will disease control strategies.

Deciding Who to Compensate: The Beneficiaries

This chapter examines the potential beneficiaries of compensation in support of disease containment poultry sectors that vary greatly across and within countries. Where the poultry sector is very diverse, different approaches may be needed for different production systems within a country. An attempt will be made throughout to differentiate approaches between smallholder and backyard producers, on the one hand, and large-scale integrated and commercial producers on the other, despite the fact that the literature is much larger on compensation of the latter than of the former.

Who Has Been Compensated in Control of Animal Diseases Other Than HPAI?

Drawing on the pre-H5N1 precedents, primarily in developed countries, the beneficiaries in compensation schemes have been the owners of the animals, who have been paid for the direct loss of their livestock through culling and in some cases for various direct additional costs that were incurred during stamping out. There are many other kinds of losses associated with animal disease outbreaks, and these are discussed in Chapter 3.

Who Is Involved in Poultry Production?

Types of Production Systems

As discussed in Chapter 1, developing countries often produce poultry in a variety of distinct production systems with different levels of biosecurity and institutional support, as described in Appendix 2. Each type of sector presents particular challenges in designing compensation programs.

Sectors 1 and 2 can be grouped together in designing compensation processes. Production units in these systems tend to be large scale, with well-organized biosecurity systems and quality control processes. A well-run sector 1 or 2 farm in theory has a good chance of seeing suspect cases early. However it is recognized that even when there are sentinel cases, the general awareness of the disease may still be low, resulting in delay in identifying susceptible cases.

Culling operations are on a large scale and the farm staff can be trained to take part in destruction of carcasses and disinfection of premises, so that some of the direct costs of culling may initially be borne by the farmer. Large-scale commercial farms usually keep good records on numbers of birds, cost of production, and sales. These usually can be verified after the fact, if necessary, with input suppliers. It is fairly straightforward under these conditions to calculate compensation numbers and rates based on culling. Export trade usually takes place from sector 1.

Difficulties arise when contract growers are part of the system, since they may not technically be the owners of birds yet they may have made investments in production and may also suffer income loss from culling or during downtime. In Brazil and Thailand, for example, 70 to 80 percent of birds are found in sectors 1 and 2 (Delgado, Narrod, and Tiongco 2003; Narrod and Pray 2001). Many (most, in export zones) are contract farmers following biosecure practices and are well monitored by veterinarians employed by the integrator company. Broiler production in particular tends to be highly integrated, while layer production is somewhat less integrated. Sectors 3 and 4 also exist in these countries, but tend to account for relatively small and shrinking shares of production.

Sector 3 farms are commercially oriented, but tend to be less biosecure. They often do not have consistent records on birds kept, production costs, or sales. Since the genetics and feeds used have more in common with sectors 1 and 2 than with sector 4, the birds being compensated have more in common with the commercial product than in the case of the backyard sector.⁵

Further, sector 3 farmers in developing countries may sell into more than one market, with differences in prices, and may change their pattern of sales by season, in a way that is predictable but not documented. They may also sell through middlemen. The close contact nature of humans to birds in these systems that are integrated with family households carries the higher possibility of farm families being exposed to the virus. It is also very easy for birds from a small-scale flocks to be sold, moved, or eaten in advance of a culling operation and be very difficult to trace.

The last point is even more applicable to sector 4. Sector 4 flocks are kept with minimal inputs. In most places, birds roam freely around the farmstead or village, in others they are kept in family courtyards enclosed by walls, but in either situation they eat household scraps and what they can find in the

environment. Birds and eggs are primarily for consumption in the households that produce them or sale to neighbours or in local markets so the owner can easily be identified. The owner is likely to be a woman, while the head of household may not be a woman, and compensation processes need to be designed with the actual owner in mind.

Record keeping if any is minimal in sector 4. Birds may be of indigenous breeds with a different market value to those in sector 3, and there are likely to be limited records of holdings. Sector 4 farms are the most likely among farm types to be excluded (or at any rate absent from) from official culling schemes. Small-scale urban poultry keepers are included in this sector and may be the hardest of all to locate. A field assessment of Egypt carried out as part of the present work suggested that more than one poultry producer in ten falls into this group. Because of concerns about human health, urban smallholder flocks are highly likely to be targeted in a restructuring plan and a number of countries have banned this type of operation. Such bans often result in backyard poultry production going underground.

In emerging countries that have experienced HPAI, such as Indonesia and Vietnam, sector 4 may still account for approximately one-third of all birds, but sector 3—which previously was expanding and increasingly prevalent—has shrunk dramatically.⁶

Poultry Systems as a Continuum

More than any other livestock system, poultry systems lend themselves to scaling up, and when they do, they may also change geographical location to be closer to final markets in large towns (Delgado, Narrod, and Tiongco 2003; Costales et al. 2003; Poapongsakorn et al. 2003). Industrialization may be encouraged by governments as a means of satisfying growing domestic demand, developing an export market, or developing a sector structure that lends itself more easily to disease control. There continue to be large numbers of producers keeping birds on a small scale during the transition phase. Where domestic demand is growing quickly, sectors 1 and 2 often cannot grow fast enough to satisfy it, and supply from sector 3, which responds very quickly to market changes, may be preferred to importing.

Countries can be placed on a continuum according to the state of their poultry market, from those that are concentrating the sectors very quickly to those where change is very slow or hardly happening at all. As suggested in Figure 2.1, the developed countries are at one end of the spectrum, with Bra-

zil, Malaysia, and Thailand steadily converging on them in terms of productivity, and Cambodia, Bolivia, and Burkina Faso are at the other end. Indonesia, Egypt, Nigeria, and Vietnam are among those that fell in between, and may in fact face the greatest challenge in designing compensation schemes, because they require equal but different efforts to be made for the large commercial systems and the smallholder systems.

Contract Farming

A problem in who to compensate arises in the case of contract farming, which accounts for the lion's share of poultry production in many developed countries, such as the United States, and is increasingly important in many developing countries. In this vertically coordinated system, management of the poultry is separated from ownership, and both parties have sunk costs in the poultry flock; the integrators provide capital and the contractors provide labor, land, and farm facilities. In countries with tested legal systems for enforcing contracts and large sector 1 and 2 producers, such as the United States, the prevalent practice is to pay the owners of the birds—the integrator—and to encourage them to compensate the contract growers (Ott and Bergmeier 2005). In developing countries, there is a greater risk that contracting farmers will never see any part of the payment, particularly if the government is relying on the integrator to disburse some of the payments to growers. A suggested practice here is to split compensation paid to the two parties, with the contractor share being based on days of labor input and the sum of compensation per bird between integrator and contractor being the same as for independent farmers.

Other Agents with Incomes Directly at Risk from Culling

In the industrialized countries, with production coming mainly from sectors 1 and 2, market chains tend to be fairly simple and integrated. Distinct chains can be found for different types of birds or products. The contractual relationships between units are strong, with units owned by the same parent company or bound by legal supply contracts. In rare cases where production comes from sector 4, most marketing occurs within very short chains, often from the farmer directly to the consumer.

In developing countries, other than for sector 1, relationships along supply chains are rarely based on written contracts, although in some cases they

may involve long-term verbal agreements reinforced by family or ethnic ties. As cities have grown, supply chains have lengthened and widened and have become more complex and more anonymous compared to village-level marketing (Delgado, Narrod, and Tiongco 2003). Accordingly, the number of critical points for movement and disease control within supply chains have multiplied, as have the number of agents who stand to lose if poultry is culled anywhere along the chain.

The complexity of supply chains in sector 4 of developing countries and the relative ease with which producers in this sector can sell diseased animals into these chains illustrates the importance of disease control containing adequate compensation schemes for sector 4 farmers to control disease at the source, despite the greater difficulty in implementing such schemes in sector 4 compared to the other sectors.

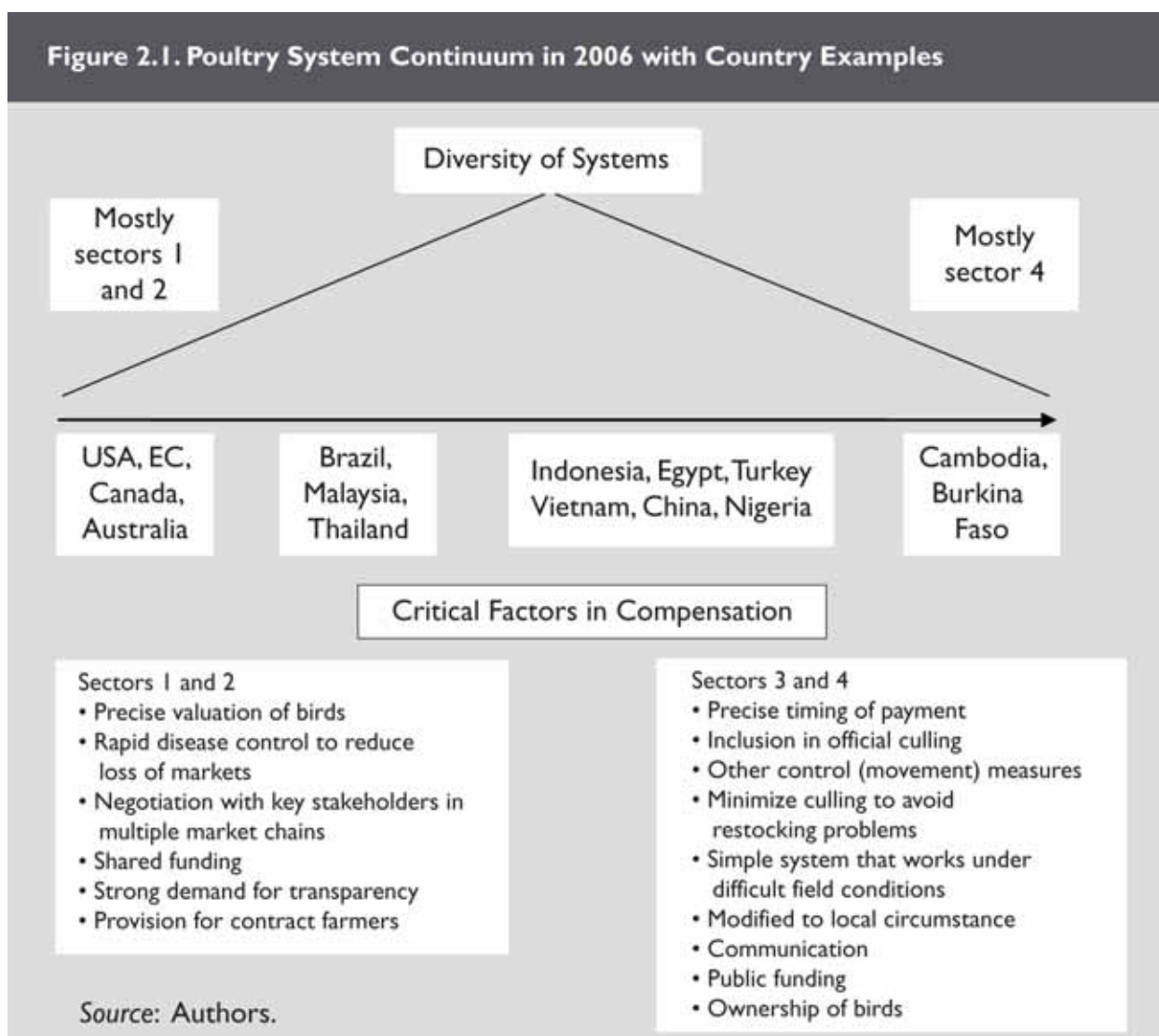
As to supply chain agents other than primary producers, it is typically not feasible to include these agents in compensation schemes, even if their losses are directly related to state-mandated seizure of livestock products. Literature searches reveal no cases of compensation paid to any market chain participants other than poultry owners, with the exception of one isolated case of live markets in Hong Kong. In that case, the government developed a compensation and financial package to aid all employees of live market trades that were affected by the mass cull and temporary suspension of business in May 2001 (Legislative Council Secretariat 2002). The Hong Kong approach is a solution applicable only in the rare case where the number of persons involved is small and easily located in one place, and the resources involved are minor compared to the overall resources of the government involved.

However if market chains are clearly the source of infection or spreading the disease, compensation in some form might lessen the risk of them continuing to be a source of infection/spreading the disease and perhaps this should be looked at more closely in a more in-depth study than this one.

Ensuring That Eligible People Are Included

Deciding Who Is Eligible

Unless HPAI compensation schemes depart radically from those for other livestock diseases and from HPAI schemes to date, or some other very unusual



considerations hold (as in Hong Kong, above), those eligible for compensation should be confined to the persons making the management and sales decisions for the birds or eggs involved in the stamping-out processes. In most cases, these are the owners of the birds, with a few exceptions discussed below.

Who decides eligibility for compensation depends primarily on the structure of the sector. Where sectors 1 and 2 are strong and there is previous experience in designing compensation schemes, the voice of industry tends to be strong. This is particularly the case where the large-scale private sector (sectors 1 and 2) contribute to the funding of animal health services, as discussed further in Chapter 5. Small-scale producers are seldom consulted to any great degree unless they are contracted farmers with a strong union. If the scheme is being designed in an emergency, the process is likely to be more top down for lack of feasible alternatives. Over time, there is value in developing a consultative process around disease control methods, including compensation,

because a scheme that is designed to take account of the priorities of different actors is more likely to encourage compliance with disease control.

- In countries with highly developed poultry sectors, the main challenge may be to bring together the actors in market chains that may normally be quite separate, to discuss openly with those who may be competitors how to organize and fund compensation. Both public and private actors are likely to be part of the decision making.
- Where systems are dominated by sectors 3 and 4, the challenge is to find organizations that really represent the scattered and highly diverse producers. Otherwise, smallholders are unlikely to be represented in the decision-making process.

Identifying and Locating Eligible People

As well as determining who will be eligible for compensation, it is important to be able to locate them and to communicate with them their rights and responsibilities.

Sector 1 and 2 producers are likely to be part of official records as registered companies. Where no database exists on these producers, it is a priority to construct one. Sector 3 producers may not be registered, although countries whose poultry sectors are becoming more concentrated are likely to introduce registration of flocks above a certain size. Sector 4 producers are rarely if ever registered and it is unrealistic to assume that they can be. There are reports from at least two low-income countries that the very process of sending field agents from village to village to register producers during an outbreak helped spread the disease.

If compensation is linked to culling, then registration of those eligible can be linked to the culling process. When a culling team goes to a farm, details of the farm, the bird owners, and the type and number of birds can be recorded, as well as any other information about costs that may be compensated. Chapters 3 and 5 explore the process in more detail.

On sector 1 and 2 farms, as well as physical inspection, farm records will be accessed and an official evaluator assigned. On sector 3 and 4 farms, where there may be no records, a physical count of the birds culled is necessary. Since successful culling and compensation rely on trust, the registration process needs to be robust and appropriate to the local situation. Common practice is to involve three persons representing three authorities—veterinary, financial, and civil—in registration.

The relationship between public and private veterinary service provision in the context of HPAI can change for the commercial sectors in the event of a serious disease outbreak such as HPAI. While the large-scale commercial sector may continue to rely on its own veterinary staff, the public sector veterinarians retain a fundamental oversight role of all sectors for disease control purposes, and under most legislation their judgement prevails in the event of disagreement.

Important issues in identifying people eligible for compensation processes are:

- Ensuring that people take part in culling schemes and are registered when they do.
- Determining who owns the bird in the cases of: contract farmers, a bird culled at market, or where the head of household is not the same person as the bird owner (husband paid for wife's poultry, and so forth).

- Identifying those who have knowingly contributed to disease spread and should not be eligible for compensation.

Poultry owners who are typically excluded from compensation despite suffering direct losses during stamping out are:

- Those who are not covered by official culling schemes. Reports from several countries have provided information about small flocks being killed before official culling, birds being sold rather than culled because of lack of trust in the compensation processes, or birds dying of disease before culling teams arrived.
- Those who lose business through movement control although their birds are not culled.⁷ This may arise if ring vaccination is used together with limited culling, so that birds stay alive but cannot be sold at the normal time because of restricted movement.
- Producers who are outside of official disease control areas but suffer from falling demand, falling prices, or difficulties in securing inputs.

Encouraging Farmers to Report Early

Usually farmers are reluctant to report the first case of HPAI, either because they do not understand the issues or for fear of social and economic implications. In at least one case, paying a bonus above the set compensation rate has been suggested as an incentive to get farmers to report as soon as they suspect a case in a non-disease area.⁸ The most critical incentive to get sectors 3 and 4 to report is to provide them compensation within a 24–48 hour period from culling. This however is not always possible as discussed further in Chapter 4.

Mechanisms of Solidarity among Livestock Owners

In many countries, livestock owners, organizations, cooperatives, *groupements sanitaires*, and so forth, have been found to be effective ways to mobilize everyone in a locality, including small-scale producers, to work together to contain disease outbreaks. Such collective action at the producer level greatly simplifies the public sector tasks and typically improves governance. It seems likely that they will work well where this is an option to assist in the implementation of compensation schemes.

Conclusions and Recommendations from Chapter 2

In compensation schemes for animal diseases, beneficiaries are normally livestock owners who have directly been affected by culling schemes. Well-designed schemes try to reward for compliance with culling and encourage early reporting of suspect cases while exerting penalties for behavior that will lead to disease spread.

Others in the livestock market chains, such as input suppliers, are not normally compensated, and neither are sectors other than the livestock sector that suffer consequential losses from animal diseases.

Potential beneficiaries of compensation schemes for HPAI include owners of poultry and eggs in four sectors, defined as 1 (industrial), 2 (commercial with good biosecurity), 3 (commercial within limited biosecurity, often small scale), and 4 (backyard scavenging). Different procedures and funding sources are likely to be appropriate for sectors 1 and 2 and sectors 3 and 4.

Often producers are fearful of being the first farms to be found infected with HPAI, thus there is reluctance to bring birds in for diagnosis; schemes should consider providing a bonus to producers providing evidence of the sentinel case in a region.

In countries where good practices can be identified, producers tend to be primarily sector 1 and sector 2, working closely with government and often focused on international trade.

Under conditions of contract farming, the beneficiary is the owner of the birds. If the integrator legally owns the bird, he/she will receive the compensation, although often arrangements are made to pay the contractor for lost income based on days worked and these payments are subtracted from payments to integrators.

A well-designed scheme requires clarity in advance as to whom the intended beneficiaries are, and this is dictated by the needs for effective disease control. Where sectors 3 and 4 are large, this requires ways to identify beneficiaries, including those not officially registered as poultry keepers.

Compliance is most widespread where there is a consultation process to ensure that the needs of all types of beneficiaries are considered when planning the process, including a grievance mechanism for those whose voices are not being heard.

This chapter examines the literature on compensation to assess which types of losses have been incurred as a result of animal diseases and what subset of these are typically included in existing compensation schemes. It also examines how losses are determined and recorded. Following Meuwissen et al. (1999), losses associated with disease outbreaks may be classified into direct losses and consequential losses (van Asseldonk et al. 2003 and 2006; Meuwissen et al. 1999). To these categories we add “indirect” losses outside the farm sector.

Direct, Consequential, and Indirect Losses

Direct losses comprise the value to farmers of the animals culled under depopulation and welfare control measures, and the disposal and disinfection costs to farmers associated with the outbreak. The direct cost to the public sector of organizing culling is not counted as an item to compensate farmers for, and thus is not included in this discussion.

Consequential Losses

Consequential losses arise at the farm level as a result of culling but are additional to direct losses. They fall into one or more of the following categories.

- **Business interruption:** Occurs because farm buildings become wholly or partly unused due to stamping-out and welfare slaughter or breeding prohibition, and stay empty until restriction zones are lifted. These costs are sometime referred to as “down time.”
- **Losses related to established restriction zones:** Farms in restriction zones face long periods in which animals and manure cannot be transported off the farm. These periods are characterized by animal welfare problems, extra feeding costs, and emergency measures for housing of pigs and storage of manure. Such losses will widely vary across farms and are difficult to assess.
- **Additional animal repopulation costs:** These losses include extra farm level costs of restocking beyond the cost of the stock itself.
- **Losses from emergency vaccination:** Where countries are engaged in poultry trade, meat from vaccinated animals may be ineligible

for export to high price destinations and become redirected to lower priced domestic or regional markets.

- Price effects: Livestock epidemics can have a severe impact on meat prices. The impact depends on aspects such as the size of the epidemic (duration, size of restricted area), reactions of other countries (closure of borders, increased production) and whether vaccination is applied (which generally leads to long periods of export limitations).

Indirect Losses

These losses are incurred outside the on-farm sector, as in the case of lost feed sales, lost tourism, and lower economic activity in rural areas. Research shows that such losses are typically significant multiples of direct plus consequential on-farm losses (Thompson et al. 2002; World Bank 2006d). In 1999–2000, an outbreak of H7N1 HPAI in Italy resulted in US\$122 million in compensation for destroyed birds, it was estimated that indirect costs exceed US\$400 million for a total cost of over US\$512 million (Halvorson et al. 2003).

Types of Losses That Compensation Schemes Typically Take into Account

Direct farm-level losses are typically partly compensated by governments (whether these are local, national, or regional agencies, such as the European Commission (EC), is discussed in Chapter 6). The types of losses that have always been compensated are for the animals that have been culled (including breeding stock, eggs, and semen). Schemes rarely cover the full value of rare or precious animals such as grandparent stock or fighting cocks. Some countries in their compensation scheme include direct farm level costs associated with culling such as cleaning, disinfection, and disposal, but most developing countries do not. Consequential losses are almost always completely borne by the farmers themselves if not insured privately. Indirect losses are never compensated directly as part of an animal health program, but may be covered in part by insurance in countries with developed insurance markets.

Direct Losses Compensated in the EC

In Europe, compensation of direct losses is partly based on EC directives for OIE List A diseases.⁹ Direct losses in these cases include the value of the animal destroyed, welfare control measures, and—in this case from the developed world—cer-

tain organizational aspects such as farm-level costs associated with monitoring of farms in restriction zones. Compensation of direct losses is either based on a predetermined animal value or actual market value at the time of culling. Generally, 100 percent of direct losses such as animal value of producers are compensated. Other eligible direct costs may be (i) refunded from national budgets, (ii) cofinanced through public-private financing schemes where farmers pay a compulsory levy, or (iii) incurred by the producer (Riviere-Cinnamond 2004, 2006).

Animals culled by the authorities can be directly recorded on a list made at the time of culling by the culling team or by an accompanying recording team. The number, type, age, and so forth, of animals are recorded according to predetermined criteria. The categories need to be agreed on in advance, the records signed by more than one reputable signatory (including from the government veterinary team), as well as the animal owner, and copies of records kept in more than one place.

The list may also be on the basis of records from premises culled and existing animals records, however this is likely to apply only to large sector 1 and 2 operations that are more likely to be registered and have reliable records on animal numbers, types, ages, and possibly weights, as well as on other animal products such as eggs. The income appraisal approach used in the outbreak of low pathogenic avian influenza (LPAI) in Virginia implicitly took into account the cost of inputs. The approach involved calculating the profit of meat bird production and then adding total meat cost of production (Ott 2006). Alternatively, losses can be based on the record of the total weight of animals when culled. However, in Laos this only applied to very small flocks.

In Scotland, the level of compensation for animals slaughtered is to some extent dependent on the nature of the disease and the disease status of the animals. Under some compensation schemes (for example for brucellosis and BSE for some suspects and beef animals), the level of compensation may be less than the animals' actual market value, while under other schemes, such as bovine tuberculosis (TB), reliance on valuations of individual animals before slaughter has sometimes resulted in compensation payments that significantly exceed the market value of the animals. The current system, requiring on-site valuation of cattle also affects the efficiency of disease control measures. Delays in removing infected animals may be caused by the need to arrange and agree upon individual valuations. Increased efficiency and the speed of settling compensation will help to reduce the spread of the disease. It will also

reduce the risk of animals dying before a valuation can be carried out, in which case farmers receive no compensation (Executive Environment and Rural Affairs Department 2004). However, on-site valuation is mainly applied for large livestock, *not* for small animals such as poultry.

Lessons from Vietnam's Experience

There were differences across provinces in records used for culling during the 2003/04 outbreak in Vietnam. Ha Tay province had a census of all animals in the province, and could cross-check the number of animals each farmer claims to have culled. The process was made public so that neighboring farmers could corroborate these numbers. In An Giang province, where poultry production concentrates mainly on duck production, there were problems in determining the number of animals actually culled. Often data provided by farmers did not match the data collected by the authorities. Authorities claimed that farmers mis-stated numbers and categories so as to obtain higher levels of compensation.

As a result, recommendations arose to change the approach to supervision of culling, to include the following members: head of the village, the veterinarian covering the village, a representative of the women's union (and other existing unions), and farmers whose animals were being culled. It was suggested that the data gathered at village level should then be sent to the district, and consequently to the province authorities (Riviere-Cinnamond 2005).

Losses due to unproductive herds and flocks tend not to be compensated; however they are sometimes compensated under the process of "welfare culling." This is not an infrequent problem. When a movement ban has been imposed for a long time and farmers are unable to continue feeding animals, they may be officially culled and compensation paid. This in fact was observed in parts of Vietnam.

Disposal and Disinfection Costs

The costs associated with the disposal of culled infected flocks and farm disinfection can be large. In some countries, such as the United States, the government does the culling and disposal of the animals to ensure it is done and done right (Ott 2006). Thus these costs are not borne by the farmer. In Gaza, the Palestinian Authorities contracted out to the farmers the culling of their own animals. How this was monitored is not clear.

Some compensation schemes in richer countries, where the government does not do these tasks di-

rectly, cover farmers' expenses for the cleansing and disinfection of buildings and disposal of carcasses. In Canada, owners of animals ordered destroyed are awarded compensation for disposal costs including transportation, slaughter, cleaning and disinfection, labor, and equipment.¹⁰ Interestingly, the central government of Vietnam has allocated some US\$0.84 million to state-owned enterprises to cover veterinary services (77 percent) and disinfection (23 percent), but individual farmers are not compensated (Riviere-Cinnamond 2005).

There is some question as to whether compensation for disinfection cost should be part of the compensation scheme, particularly in countries where there are limited funds. Government does not necessarily want to get in the habit of compensating for normal biosecurity measures. Cleaning is part of the normal biosecurity poultry management process and deep cleaning of the litter tends to also take place after one or more cycles, depending on the local practices. In any event, compensation for disposal and disinfection should not be at the cost of reducing the rate paid to owners of the birds

Sick and Dead Animals

In developing countries, animals are killed fairly fast when they are sick in sectors 3 and 4, and either eaten or sent to the market. In developed countries, it is generally considered good practice to compensate sick birds less than healthy birds on the grounds that sick birds are worth less in the market and that a lower payment also provides an incentive for early culling. This is more difficult under sector 3 and 4 conditions in developing countries. Once birds begin to exhibit symptoms of HPAI, they are dead within 72 hours, and official response teams may not visit remote farms within that time frame.

Most schemes globally do not cover losses from animals dead by the disease before official culling. This is justified sometimes on the belief that dead birds have no market value. It is also designed to create a strong incentive for early reporting and discourage transportation of infected carcasses among zones. This is especially necessary in the absence of good record keeping in sectors 3 and 4, since there is little documentary proof that diseased animals actually originated on the farm in question. Furthermore, poultry losses from other diseases such as Newcastle's Disease are as high as 30 percent in sectors 3 and 4 of many developing countries, and it is costly to ascertain the cause of death after the fact.

The assumption that dead birds have no market value does not stand up in sector 4 of many develop-

ing countries, where dead and dying animals are often sold. Furthermore, there is a credible likelihood that some birds will be dead by the time that official culling teams arrive at the farm, even if the disease was reported at first appearance of symptoms.

Because disease control is the overarching objective, it is better when dealing with sectors 3 and 4 in developing countries to compensate partially for dead animals, but less than for healthy ones and sick ones.

Losses Covered by Private Insurance or Public-Private Partnership in Developed Countries

As mentioned above, compensation schemes rarely if ever cover consequential losses. However, farmers in richer countries have typically mitigated their consequential livestock disease risks through a variety of public and private mechanisms that may eventually be useful for sector 1 and 2 operations in developing countries. Options used in Europe, for example, are: (i) private insurance schemes, (ii) free public disaster assistance, (iii) and public-private partnerships (Riviere-Cinnamond 2004).

Private Insurance

Private insurance schemes in Europe exist for certain types of consequential losses from livestock disease, as in the United Kingdom, the Netherlands, and Germany. In Italy, private insurance schemes are exclusively for dairy production and sheep, and participation is very limited (less than 5 percent). In the Netherlands, farmer participation is less than 10 percent, and in Germany, participation levels vary depending on the type of animal (for dairy cows less than 50 percent, cattle 30 percent, sows 42 percent, and hogs 23 percent). All private insurance policies

exclude direct losses, which are separately covered by the government with partial EC support. Losses due to business interruption and in restriction zones are in some cases covered. These are compensated through set daily rates for the duration of the period of restrictions. Losses as a result of movement prohibition are covered by private insurance schemes in Germany, but not in the Netherlands.

Public Disaster Assistance

Free public disaster assistance exists in Finland and France. Although funds are public, the scheme is administered by private insurers on a no-risk commission basis. There is therefore no risk transfer to private insurers. In France, consequential losses due to FMD are covered in a declared outbreak, but the funds for compensation are taken from a fund accumulated in prior years from farmers' contributions (€0.33 per livestock unit per year), with an underlying guarantee by the central government.

Public-Private Partnerships

Finally, public-private partnerships for the compensation of consequential losses exist in Denmark, Finland (to some extent), and Spain (through a structure named *Agroseguro* cofinanced by the government). Under this type of partnership, the government may act as an insurer or reinsurer. Under these schemes, the risk of losing financial resources is transferred to the private insurers. For example, in Denmark, the government pays 20 percent above the value of the animals culled to cover consequential losses. In Spain, the government covers consequential losses up to a maximum of 41 percent of the value of culled animals in the case of cattle and 32 percent in the case of sheep and goats.

Conclusions and Recommendations from Chapter 3

Losses stemming from outbreaks of animal disease fall into three categories: direct (birds, eggs, sometimes the cost of disposal and disinfection), consequential (other on-farm costs or lost farm income due to the outbreak), and indirect (all other losses, off farm).

Compensation typically has been limited to direct losses, although private and public-private schemes exist to defray farm risk of consequential losses in the developed countries.

The types of direct losses that have always been compensated are for the animals that have been culled (including breeding stock, eggs, and semen).

Some countries also include the direct cost associated with culling such as cleaning, disinfection, and disposal, though strictly this is not a cost eligible for compensation. Care should be taken that such costs are not mixed in with normal biosecurity practices. There is occasional compensation associated with welfare killings, but the amount tends to be at different levels. In addition, if there are cases where production is well recorded as in sectors 1 and 2, there may be a good case to compensate for dead birds associated with a disease.

If covered at all, consequential losses tend to be covered under animal insurance schemes. Compensation for consequential losses can ideally be based on actual losses incurred or a flat rate based on the estimated loss over the period of business interruption. The options are (i) private insurance schemes, (ii) free public disaster assistance, (iii) and public-private partnerships.

Indirect losses occur outside the livestock sector as a result of disease outbreak. They include diverse items such as backward linkages to input suppliers, lost tourism, and lower demand for local products in income-depressed zones. Generally these losses are several times greater than direct and consequential losses combined, but they are never compensated as part of disease control strategies.

Though it is not the scope of this paper, more work is needed on understanding these alternative mechanisms for sharing risk from consequential and indirect losses from animal diseases that are not normally covered by compensation schemes.

4

Setting the Level and Timeliness of Compensation

Introduction

This chapter deals with determining compensation rates and when it should be paid. Setting the right price and paying it at the right time are of critical importance. Prices need to be high enough to encourage farmers to engage in early and complete reporting of the disease. On the other hand, they need to be low enough to avoid encouraging farmers from still disease-free areas to present their animals to be culled, or others to move potentially sick birds across zones in hopes of receiving compensation in excess of prevailing market prices. Both of the latter behaviors have been observed in the field.

Compensation prices are derived from applying a mandated percentage rate to a price series denominated in currency units per item compensated; the latter series may be collected from actual markets, adjusted down to the farm gate, and averaged over preset periods, to provide flexibility. Getting compensation prices right is tricky in an environment where normal market prices typically vary greatly across space and season, as they do in the best of times in most developing countries. The key issue is to provide an incentive for timely reporting in one's own zone. Unfortunately, there is little existing work confirming empirically that high compensation prices are positively associated with high reporting, even if this is what we would predict. There is even less rigorous empirical evidence linking high compensation prices to effective disease control, although there is now a body of case studies suggesting that paying too little is linked to disease spread.

Approaches for Setting Compensation Rates

There are three main ways in practice in which countries have set compensation prices.

The Ad Hoc Approach Based on Resource Availability

Several of the developing countries afflicted with outbreaks of HPAI investigated for this report appear to have based compensation per bird on an estimate of total funds available for compensation—typically limited due to budgetary constraints—divided by an estimate

of the total number of birds to be culled. Sometimes this led to very low percentages of the market value of birds being compensated.

The Cost-of-Production Approach

The cost-of-production approach has been applied in some countries, and determines the price of a product by summing the unit costs of the resources that went into making it. The cost can be composed of the cost of any of the factors of production including labor, capital, feed, breeding stock, or technology.

Countries deciding to base the compensation price on the costs of production decide so because either they do not have a market price for the animal (that is, there is only layer production hence the animal is not traded at the end of its productive life; this is the case of Kosovo) or the countries are not infected and have the time to establish those rates and categories during “peace time” (this is the case of Mauritania and Senegal, for example). It is recommended, however, that this practice should be limited to those rare cases where no market prices are available.

The compensation rate obtained from the cost-of-production approach at times can be higher than the market price. The method is subject to measurement errors, possibly some of them deliberate. More importantly, by its nature, it rewards inefficient producers or categories of producers. Finally, it tends to reward record keeping, which introduces a bias toward large commercial operations that is inconsistent with the principal of providing an incentive for disease control in sectors 3 and 4.

The Market Value Approach

In principle, the market value approach sets the compensation price at the level the good in question will fetch in the market place, adjusted back to the point at which the decision to sell is made (in this case, the “farm gate”).¹¹ Usually rates are set based on an average set of prices received during the last several proceeding months, and thus prior to the dip in prices usually observed during an outbreak. The present report advocates a market-based approach. Moreover, considerable difficulties exist in matching prices to goods, regions, and time periods, as will be discussed below.

Who Defines the “Market” Price?

When the compensation is paid by the public sector, government institutions normally define the com-

penensation levels. Private industry in countries with large sectors 1 and 2 are invariably active in lobbying in this regard, both in terms of direct interest and—often just as important—to promote disease control essential to regaining export certification. National poultry associations often are involved, as in the case in Gaza and Mauritania. In Australia, Canada, and the United Kingdom, rates are often set on the basis of technical considerations supplied by independent certified evaluators, using government guidelines. In developing countries, public sector institutions generally define the rate of compensation. Two issues that are especially important are discussed in the following sections.

The Level of Decision Making

Simplicity is a key requirement for a compensation system, as it reduces transaction costs and the possibility of rent-seeking behavior of farmers. The establishment of uniform procedures to determine the level of the rate is generally recommended.

Uniform levels of compensation for the entire country are also often recommended for the same reason. However, if there are major differences between different regions in poultry market prices, some geographical differentiation might be needed to avoid transport of healthy birds from lower-priced regions into the disease area where compensation is paid. Indonesia for instance has proposed introduction of a variable rate to take account of geographical price differences in view of concerns over the possible movement of birds. The regional differentiation concern is even more true when regions in one country border on another country with little effective border control, as often happens in remote areas of developing countries. A border province in one country may have market prices that are much closer to the border region in the adjacent country than to other regions of its own country. Imposing a uniform national price would then encourage cross-border smuggling of both healthy and disease stock for culling.

The Degree of Involvement in the Stakeholders

Public awareness and broad-based ownership are important aspects of a successful compensation scheme. These can be achieved through an involvement of all stakeholders in the setting of the price, as is the case in Australia, for example. Where the compensation is funded by the private sector (levies), such as in the Netherlands, companies also have a

major say in deciding the level, although the government has introduced caps. There are few examples of strong private-sector stakeholder involvement in setting the price in developing countries, although attempts have been made, such as in an East Asian country.

The independence of the evaluators is critical, in particular in the absence of good marketing information. The assessed values of animals rose threefold after the outbreak of the FMD in the early 2000s in the United Kingdom (NAO 2002). With no functioning animal markets, the government lacked a clear frame of reference to assess or influence the valuations against which compensation was paid, evaluators were appointed in collaboration with parties whose stock was being culled, and there is at least anecdotal evidence that valuations were significantly too high. However, local poultry associations should still be consulted to ensure effectiveness and transparency in the price-setting process.

Importance of Remaining Flexible to Changing Market Situations

Setting prices without paying attention to what is happening to market prices may lead to the movement of poultry from one area to another to reap the benefits of higher compensation practices. Market conditions can also change radically over time. To prevent perverse incentives (either inappropriate presentations for culling when the rate is too high or not reporting when it is too low) it is important to blend consistency with flexibility when setting rates.

One way to do this is to set rates in terms of a percentage of an easily verifiable market price that is adjusted periodically (like an index interest rate in the adjustable mortgage market of developed countries). Where such a series does not exist (most countries in the world have a retail poultry price series for the capital city), it will be necessary to set up a mechanism for keeping such a series as soon as possible (discussed further below). The principle then should be to derive an appropriate adjustment fact downward from the urban retail price series (if that is the one kept) to the farm-gate level in each province or major region.

Choice of Price Baseline to Establish Compensation Rates

The Animal Epidemic Act of Thailand provides farmers a compensation of 75 percent of the farm-

gate value of animals that are destroyed. A 100 percent compensation was provided during the early epidemic (January–May 2004) because the epidemic was widespread and devastating to Thai farmers. In the second wave (July–Dec 2004), compensation was reduced to 75 percent. At this time, compensation per bird was (in U.S. dollars) US\$0.38–US\$0.65, depending on the type of poultry (US\$0.38 for quail; US\$1.13 for broiler; US\$2.00 for meat duck; US\$2.25 for backyard chicken; US\$3.50 for layer chicken, layer duck, or goose; US\$7.25 for turkey; and US\$65.00 for ostrich) (Tiensin et al. 2004). Generally, compensation rates are set for the class of animals that has the largest representation at market, that is, full-grown broilers and layers.

Price Information by Sector and Seasonality

Developed or middle-income countries tend to have well-established monitoring systems of the fluctuations of prices over time, and products are fairly uniform. However, products vary more in developing countries across production sectors, and there is much less price information for the poorer sectors. For instance in Indonesia, sectors 1 and 2 have solid price information records for commercial broilers and layers, but these do not exist for the products of sectors 3 and 4. This is especially relevant when trying to implement a compensation rate during the onset of an outbreak (for example, the case in Côte d'Ivoire). The timing does not allow for thorough research of price fluctuations given that decisions need to be taken swiftly. Moreover there are significant seasonal effects on poultry prices, depending on annual holidays and other festivities, that compensation schemes need to take into account, especially since disease outbreaks in regions such as Southeast Asia also tend to be correlated with certain seasons. As a practical matter, it may be necessary to re-compute and update the base average market price every 4 to 6 months to handle seasonal and other market changes.

Price Behavior during an Outbreak

Price reactions on the onset of HPAI also vary. In some instances, because of consumer concerns regarding the safety of the product, and dumping of diseased birds, the price drops as the disease emerges. Such drops are typically temporary and prices are sometimes greater than the preoutbreak level once they have recovered due to decreases in domestic supply. For Cambodia, the price of broilers was highly affected, from a price of US\$1.04 to

US\$0.39 during the outbreak to US\$1.30 after the outbreak (Rushton et al. 2005). In Maharashtra, India, the price for broilers dropped to US\$0.31¹² per kg liveweight (lwt) (from US\$0.71/kg lwt) right after the HPAI outbreak in February 2006, and slowly went up again in April–May to US\$0.51 per kg lwt. Figure 4.1 demonstrates a similar effect of the disease outbreak on the unit price of broilers in Egypt, with a major dip in November 2005, when the disease emerged, but a rebound later.

The price rebound may be faster in Muslim countries affected by outbreaks. The scarcity of the poultry products due to widespread death, culling, and movement restrictions experienced by all countries affected by HPAI is compounded by a strong consumer preference for locally certified Halal meat, the high price of beef and goat meat, and the nonsuitability of pork as a substitute. This appears to have been the case in Egypt, West Bank and Gaza, and Indonesia. This same occurrence is reported in other countries, though the evidence is anecdotal in nature and it seems there are quite significant regional differences that make it hard to generalize such effects.

It appears that some substitution away from poultry takes place as time goes on. In most non-Muslim East Asian countries, the consumption of fish and pork has gone up after an outbreak, which helped mitigate upward pressures on poultry prices.

The timing of price setting is crucial. It clearly has to be divorced from the panic surrounding any out-

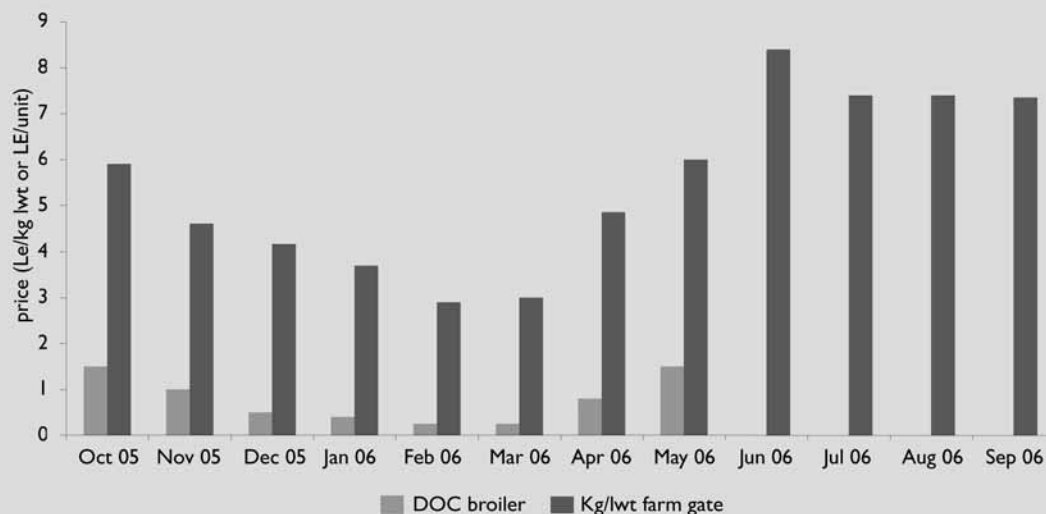
break, but occur before disease onset. The approach of several projects funded from the Global Program for Avian Influenza (GPAI) has been to base the compensation on the farm-gate price of two to three months before the outbreak.

Product Differentiation Issues in Setting Prices

Using market prices adjusted to the farm-gate as a base, compensation rates for different age categories within the broiler and layer group can then be derived for the smaller animals. There is however a trade-off between simplicity and fine-tuning the incentives, as introducing one rate will discourage the presentation for culling of the more valuable animals, and encourage the inflow of young or less valuable animals (day old chicks, spent hens). In general, there seems to be a shift from uniform rates to more differentiated rates, in particular in areas where movement control is more difficult to impose. Basing the price on a unit weight basis, weighing all birds together, as has been done in an East Asian country, might be a worthwhile approach in areas where control and payment infrastructure is weak, although it makes for more difficult and costly monitoring.

In Canada, compensation rates take into consideration factors such as genetic background, age, and

Figure 4.1. Farm-Gate Prices for Finished Broiler Chickens and Day-Old Chicks (DOC) from October 2005 to September 2006 in Egypt



Source: Courtesy of Dakahlia Poultry Company.

production records. The assessment is made by a team of experts that includes a government veterinary inspector and two evaluators—one chosen by the owner and the other by the government. Evaluators are knowledgeable with respect to the market value of the class and breed of the animal ordered destroyed, and the veterinary inspector, with the written consent of the owner, may establish the value based on knowledge of the local market. Each animal is evaluated and its market value determined; however, the compensation awarded is subject to maximum levels set out in the regulations on “Compensation for Destroyed Animals” (Canadian Food Inspection Agency 2000).

Specialty Birds or Niche Poultry Items

Special prices might be needed for niche poultry products, such as *kampong* chickens in Indonesia, which carry a special price, and special classes of poultry, such as fighting cocks, and rare breeds. These products are especially important in the developing countries of Asia. In the Philippines, there are more native birds than commercial (see Figure 4.2), and these chickens command a higher price than commercial (see Figure 4.3). In such cases, consultation with the local poultry producers is needed. In Thailand, for example, compensation for village chickens was about double that of commercial broilers. Pet song birds are a particular concern in Vietnam. Finally, in countries where ducks are important, similar procedures as for chickens

are needed, however it should be recognized that the monitoring around such approaches is difficult and costly.

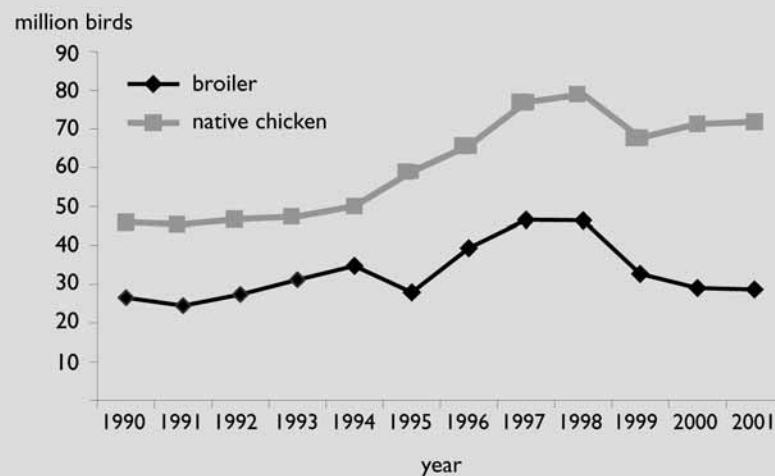
Establishing the Compensation Rate

Healthy, Sick, and Dead Birds

As mentioned in Chapter 3, a declining scale of compensation for healthy, sick, and dead animals is sometimes advocated for avoiding negligence of biosecurity. It has been suggested that those who are actively part of a surveillance program should get a 100 percent compensation for potentially infected animals, while others should get something less (Ott personal communication 2006). From the point of containment, what needs to be avoided is the reverse situation. For example, one North African country compensated a 60 percent higher price for birds that died, compared to suspect animals that were culled in neighboring areas. In general, payment for dead animals, while defensible from both a livelihood perspective for sector 4 and because of the realities of slow culling response in developing countries, should be markedly less than for other categories of bird to encourage early reporting, and in view of the likely involvement of birds dead from other causes.

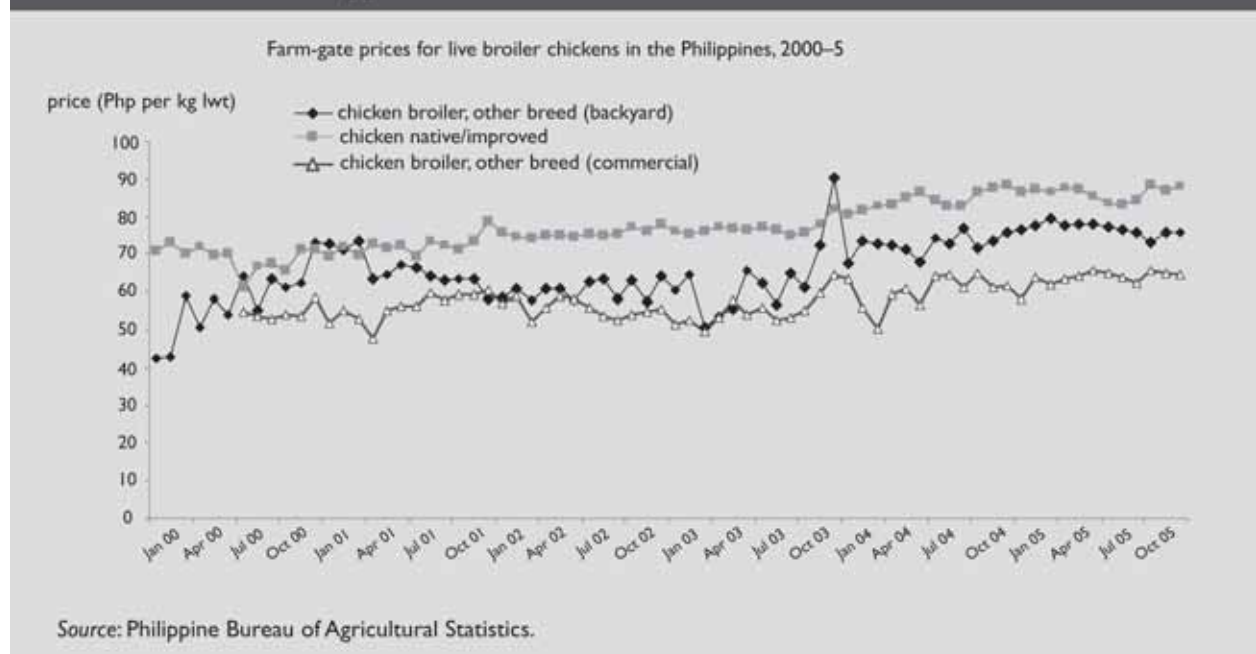
In developing countries, it may be necessary to seek some credible way of certifying the birds for

Figure 4.2. Differences between Number of Commercial and Native Chickens in the Philippines



Source: Costales et al. (2003).

Figure 4.3. Differences in Prices between Commercial and Native Chickens in the Philippines



compensation as alive at the time of reporting, rather than requiring them to be alive at the time the culling team arrives. For instance, in Nigeria compensation is being made possible for farmers and households who have lost their birds as a result of HPAI, provided that the concerned farmers can provide evidence of reporting the disease to a local authority while the birds were alive, and has a stamping-out record signed by a designated authority or a certification by the traditional ruler or civil authority of the village.

Compensation Rates Used around the World

In developed countries, compensation rates in the range of 75–100 percent of the value of the animal are typical with supplements for the direct farm costs related to culling and disinfection. In developing countries, compensation rates typically vary from 15 percent to about 100 percent of market value of birds culled. In one Southeast Asian country using 15 percent rates, farmers brought only their young and poor conditioned animals for culling, but sold their best conditioned and most expensive animals, although diseased, in the market.

Specific rates are presented in Appendix 1. Some notable examples of compensation rates are:

- The United States (Animal and Plant Health Inspection Service) proposes to amend its regulations to allow the payment of 100 percent of purchase, destruction, disposition, and cleaning and disinfection costs associated with a FMD outbreak.¹³

- The EU just introduced changes, which are currently due to come into force on January 1, 2007, that would limit compensation payments for animals slaughtered to 75 percent of the market value—80 percent in less favored areas (LFAs) and restrict it to only small- and medium-sized enterprises. Income losses due to quarantine obligations and difficulties in restocking are also included in the compensation.
- In Thailand, the Animal Epidemic Act (Tiensin et al. 2004) provides farmers compensation of 75 percent of the value of animals that are destroyed. However, 100 percent compensation was provided during the early epidemic (January–May 2004) because the epidemic was widespread and devastating to Thai farmers; compensation was reduced to 75 percent during the second wave (July–December 2004).
- In Indonesia, compensation rates were initially set around about US\$1 per bird, although the rate varied from region to region. The Department of Agriculture recommended 50 percent of the market value (at the time of the outbreak in 2004) (Riviere-Cinnamond 2005). However, even less was promised in some cases, and the rates were apparently always well under the market price of US\$2 (Parker 2004). This reportedly was still associated with a reasonable culling level, especially where combined with a strong control, and well-enforced movement restrictions.
- In most GPAI-funded projects, compensation levels are between 75 and 100 percent of the estimated market value (see Appendix 3).
- In Vietnam, poultry producers' compensation

initially was given as per the initial rates set by the central government at 5,000 VND/head (US\$0.32). Provinces were encouraged to top up the central government price, but a quarter of the poorest provinces did not have the funds for this.

Additional Special Considerations in Setting Rates

Incentives may be necessary to encourage farmers to report the first case, the sentinel case, so critical to disease control targeting. Many smallholders or larger farms may be reluctant to report this first case for fear of being stigmatized, in addition to suffering losses from the sanitary measures. To encourage the reporting of such cases, additional financial reward may need to be attached to the compensation package for the initial case, perhaps in the form of a prepublicized set of bonus payments (Ott personal communication 2006). Generally, a higher percentage rate may be indicated for the first outbreak in a country, before the disease becomes endemic. Thus Thailand compensated at 100 percent of the farm-gate market price in the 2004 outbreak, but at 75 percent in subsequent years.

Differential rates are also sometimes used for different farm sizes. In one Southeast Asian country, the maximum farm limit for which compensation is paid is 5,000 birds. In another country of the region, state-owned enterprises had a higher rate than the private sector. Finally, one North African country decided after initially compensating all farms to compensate only large farms. The effects of these changes were clear. After an initial peak in reports from the smallholder sector, reports from that sector dried up completely after the suspension of the payment, and the main source of the virus remained unchecked.

In general, compensation schemes for HPAI in developing countries have been beset with frequent changes in the overall rates, and changes in compensation categories and the farm types to be covered. This has led to loss of credibility of the schemes, confusion in their implementation, and, generally to impaired effectiveness, and should be avoided. Frequent changes, particularly under conditions of

poor movement control, might cause more harm than good.

The payment of a fixed rate applied to an adjustable farm-gate market price is recommended. The price series in question and any adjustment necessary to the farm gate should be specified in advance, in addition to the frequency and timing of updating the market reference price used.

Timeliness of the Payment

Experience in the field shows that timeliness of payment is the most important factor in ensuring that a high share of birds will be presented for culling. Timely payment of others convinces smallholders, in particular, that they too will be paid, and also promptly replaces the loss of an important livelihood support. Experience in one Southeast Asian country reportedly showed a significant increase in culling percentages when compensation was paid within 24 hours after the culling, compared to the normal payment period in that country of six weeks or more.

The importance of timing varies depending on sectors. In the case of Indonesia, timing mattered more than price for sectors 3 and 4 than for sectors 1 and 2. Presumably sectors 1 and 2 feel more certain about being paid, and have better ability to secure bridge financing while they wait, if necessary. In most developed countries, this is not an issue; for example, the EU allows a maximum period of four years for compensation payment.

It is difficult however to compensate within 24 hours for sectors 3 and 4 in most of the developing world largely due to logistical problems and the nonavailability of funds. This is discussed in more detail in Chapter 6. The general message is that a high degree of preparedness is necessary before disease onset to have any chance of being effective at making prompt and appropriate payments after onset. Public awareness strategy is another key element of successful compensation schemes that also requires considerable advance preparation, and is discussed next.

Conclusions and Recommendations from Chapter 4

Adequate compensation rates and timely payment are critical to success of culling strategies in disease control. Compensation rates should be set before the disease emerges, as part of an overall preparedness plan, and should remain stable.

Market prices, using preoutbreak prices adjusted down to the farm-gate level, are the most efficient basis for setting compensation rates; the rate should be a fixed percentage of a periodic average of a specified reference price series that is collected regularly. Periods for re-averaging the base reference market price should be in the vicinity of every 4 to 6 months to allow flexibility in dealing with changing market conditions.

If market rates are not available, such as often is the case for special category birds (rare breeds, indigenous poultry, fighting cocks, other bird types), consultation with the stakeholders is required to set realistic standards.

Setting compensation rates based on production costs promotes inefficiencies, and should be avoided. However it needs to be recognized that setting the rate by market price is difficult in some countries and setting the price by production costs may be the only option. This option should be limited to those rare cases where market prices are not available.

Uniformity of standards across the country and different classes of birds improves the implementation efficiency of the program, and should be pursued in situations with good control. In situations of poor movement control, differentiation by type of bird (layer, broiler) and age/weight of the group is essential. An intermediate solution might be to pay per kilogram on the basis of the total weight in kilograms of the flock culled.

Compensation rates should be no less than 50 percent of reference farm-gate market value of healthy birds before the outbreak, and no more than 100 percent. The recommended range is between 75 percent and 90 percent of the reference price. The lower level of 75 percent applies when movement control is poor and/or there have been multiple outbreaks over time. The upper level (90 percent) applies when movement control is firm. The rate could go as high as 100 percent if it is an initial outbreak and it is especially important that the response be rapid to prevent the disease from becoming endemic.

In most developing countries, compensation should be paid for dead birds, but at substantially lower rates than for diseased or healthy birds. Under those conditions, it is better to err on the side of paying too much or for birds dead of other causes than risk that birds infected with HPAI are not presented for culling. Careful attention should still be paid to what is happening to bird movements during culling to ensure that the administration of compensation is not resulting in movement of uninfected birds into infected areas.

Compensation should ideally be paid within 24 hours of the culling. It is recognized that in many developing countries this is difficult, but the best practice advice would be to pay it immediately; as any delay is likely to have a significant affect on reporting.

Promoting Awareness, Communications, and Capacity Building

Background

Risk communication generally seeks to provide information and education, promote behavior change and protective action, convey disaster warnings and emergency information, and foster joint problem solving and conflict resolution. This chapter describes the role of communications in supporting the compensation component of an HPAI program. It analyzes audiences to be reached, the messages that need to be conveyed to achieve the tasks mentioned above, and the channels that should be used. It seeks to clarify the organization and costs of campaigns to raise awareness for HPAI, and in particular for compensation schemes, and the training needed for the agents involved in HPAI communications. Communication about compensation should be one part of the whole communication package in HPAI control, and as such it needs to be seen in the context of the rest of the package. This chapter seeks to establish broad principles; good practice in specific situations requires location-specific solutions and specialized skills beyond what is possible in the present report.

Target Audiences

Identification of target audiences depends on the status the disease has in a given country. In a country that is not (yet) experiencing an outbreak, the primary audience might be national government officials, human and animal health workers, and farmer associations; immediate goals are to encourage the establishment of systems, increase awareness and preparedness, and promote the establishment of protocols to deal with a potential problem. A very specific goal is to get poultry producers on a high level of awareness about the need to increase biosecurity measures to protect against the introduction of the disease. Finally, there is a need to set and describe emergency measures that will be put in place in the case of an outbreak. Training and simulation exercises are useful to achieving preparedness.

In a country experiencing an outbreak, crisis management communications and communication on coping with the outbreak come into play; target audiences will include the general public, community leaders, and the media. The desirable posture is to remain calm, promote the adoption of safety practices, and reassure consumers and producers by informing them of safe handling and cooking procedures and of detailed culling and compensation measures in place.

Components of Effective Communications

Effective communication for livestock disease control is based on timely and effective responses combining a sense of urgency with sensitivity. It has three components:

- Consults with the different stakeholders in a two-way negotiation, with talking and listening on both sides on the details of the compensation plan.
- Informs people and seeks to induce behavior change (including through peer pressure), although it takes time to have impact (see below). With regards to compensation, it would focus on the need for culling and procedures of the payment system.
- Advocates a package of control measures to politicians and industry leaders, with clear information about the possible costs; in a second phase, provides information to decision makers about transiting disease control strategies as the disease become endemic, with a changing role for compensation (discussed further in Chapter 7).

Experience to Date

Avian influenza communication to date has emphasized delivery of messages, but has been less convincing on negotiation, particularly at the local level in decentralized systems. It has included quite successful advocacy to international funding agencies, but response among national governments has been quite variable, depending on perceptions of risk. Most governments now have a task force on avian influenza, yet many still do not have a clear operational plan, much less a documented compensation strategy.

Up until now, the emphasis in communication on avian influenza matters has been on human safety. Raising awareness about HPAI, including compensation, without creating unnecessary panic is complex, and involves trade-offs. On the one hand, a communication campaign on HPAI has to inform the general public about the serious public health risk that the disease presents. On the other hand, it

has to ensure consumers that it is safe to consume poultry products, provided that simple precautions are taken, to avoid a collapse of the market and unnecessary economic losses to producers in noninfected areas. The awareness campaigns, in their efforts to err on the safe side, have to date tended to unnecessarily damage the livelihoods of millions of poultry farmers.

Messages have also been developed and disseminated using various media on ways to improve biosecurity in poultry flocks. Those applicable to sectors 1 and 2 have tended to come from the industry following general guidelines from the public sector, while those for smallholder systems have been produced by veterinary services with assistance from the international community and distributed through veterinary, human health, and extension services, including those supported by NGOs. Communication about responsibilities and entitlements in culling procedures has been somewhat patchy. In spite of its general acknowledged importance for the success of culling strategies, experience in several countries in Asia and Sub-Saharan Africa shows that basic information on compensation levels and procedures was often lacking at the community and district level.

While general campaigns can successfully inform the public on the disease, this does not necessarily introduce behavioral change, particularly among poultry producers and traders, who may be at greater risk than consumers and are certainly more likely to spread disease in animals. For example, in Thailand,¹⁴ the Ministry of Public Health has conducted an aggressive public education campaign regarding HPAI, which led to 88 percent of the people surveyed knowing the name of the disease, and of those, all knew that infections can be deadly, and 97 percent knew that interacting with and slaughtering infected birds are the most risky activities. However, only 6 percent named bird flu as their primary concern, and of those in the rural areas with backyard chickens, only 6 percent were aware of the symptoms of HPAI in poultry.

Most villagers knew that minimizing contact with birds could reduce their risk for infection; however, they were not sure how they could minimize contact. The study concludes that general knowledge about HPAI does not result in behavior change without more specific recommendations on what to do. A campaign addressed to the general public is probably of limited use if it is not accompanied by synchronized supporting activities addressed to key stakeholders, such as government officials, poultry producers, the media, and so forth.

Preparing the Communication Plan

Culling animals is typically resisted by poultry owners, especially of healthy stock within the culling zone. The message to be developed should explain to affected farmers the need for mandatory culling in cases of suspicion of HPAI as a necessary measure to protect the health of the entire population. Experience in Southeast Asia, for example, clearly shows an increase in the number of animals presented for culling where there is a nearby human case. Linking the culling and compensation to public health risks and mobilizing peer pressure at the community level is therefore recommended.

A clear, transparent, and consistent presentation on the procedures for compensation should be prepared. This has to be done well before an outbreak occurs in the country as part of an overall preparedness plan. The exact level of detail to include is still a matter of discussion. Farmers should clearly know that a reasonable level of payment and prompt payment are to be expected, if and when the disease strikes. In some countries there is a reluctance to make announcements about compensation entitlements in advance of culling, perhaps from a fear that they may be misinterpreted and lead to counterproductive behavior (such as moving healthy birds into disease zones, or vice versa), or perhaps because of fears that the funding available will not meet expectations.

In fact, experience from one West African country¹⁵ seems to indicate that communication of the exact amounts of the compensation far ahead of the culling led to fraud. Public communication of the compensation levels in that country was therefore recommended to take place only two days before the actual culling. The judgment of the present report is that in general this is too short a period to establish general awareness of and trust in the scheme. Therefore the present report recommends a combination of widespread communication before any outbreak of the principles, procedures, and grid of compensation levels in percentage terms with respect to a reference market price. This should be followed by precise information on the exact amounts to be paid 48 hours before culling. By contrast, in OECD countries, information about compensation processes and levels is available (promptly, in the case of levels) on government Web sites.

Preparing the Messages

Communication is a profession, and communication to convince often small, rural households to

have their poultry culled requires a professional approach by persons knowledgeable about the cultures concerned. Given the complexity of message acceptance, communication specialists familiar with the local culture should therefore work directly with technical specialists—for example, in animal health, public health, environment, and home affairs—to develop messages that will resonate with the selected audience. Messages should also benefit from focus group meetings with farmers to factor in their perceptions and attitudes.

The input of communications specialists should not be to determine the message to be broadcast, but to decide on the best manner, means, and media for conveying those messages, according to target population, to avoid errors of communication (unsuitable messages or potential misinterpretation). Animal disease and compensation specialists also need to defer to communications specialists on the latter issues. Conversely, the technical content of all messages needs to be reviewed by competent professionals in the field involved, including in the case of communications about compensating strategies.

One task could be to develop a stakeholder/communication matrix that could look like the one below (or more/less detailed).

Mechanisms and Channels of Communication on Compensation

Countries would start planning for the avian influenza crisis by being prepared. When the first cases of avian influenza are suspected, and subsequent government response begins, a communication crisis center should be established under a previously designated national interministerial committee to coordinate information flow between government departments, the mass media, farmers, and the general public. Experience has shown that establishing such crisis centers (having the names of people involved who have the authority and responsibility to contribute, their phone numbers, availability, and so forth) before the crisis happens results in tremendous time gains when the crisis actually hits. Most crises gain in momentum when there is a long period of lack of clarity, information vacuum, no designated speaker, contradicting statements, and so forth.

The experience that emerges from the few campaigns¹⁶ that have been organized and reported on is that effective communication includes a mixture of:

	Theme 1: Strategy diffusion	Theme 2: Targeting beneficiaries	Theme 3: Implementing procedures	Theme 4:
Stakeholder 1: Government officials			Training courses Checklists	
Stakeholder 2: Farmers associa- tion		Workshops		
Stakeholder 3: Media	Press conference		Media briefings	
Stakeholder n :				

- Mass media messages on general features of the program, with the appropriate balance and emphasis between human and animal health risks, adapted to the local context, culture, and economy.
- Interpersonal communication at local level, through networks of traditional leaders, religious leaders, teachers, and so forth, enabling people to discuss the messages and the best way for communities to act on them. This will be the most important channel to create social peer pressure on early reporting.
- Mass media programs that focus on dialogue between small-scale farmers, local leaders, and extension workers—providing a model for dialogue that should occur at scale across a wide range of communities, and encouraging the integration of local solutions into the national response.
- Special material and training for staff involved in the compensation. This is normally composed of representatives of the veterinary services, the paying agency, and the community, which require easily understandable instructions on the exact details of levels of compensation and procedures.

A Participatory Surveillance System is presently being developed and tested in a large Southeast Asian country with significant outbreaks by a team composed of FAO, Tufts University, and the government, with USAID funding. This combines disease control with communication. Working at the village level, it is based on disease intelligence and an active surveillance system, combined with good communication on culling and compensation procedures. Communication and technical capacities are built through a training the trainer approach. While there are still major questions on transaction costs and the practicality of scaling the approach up, this is probably one of the best models combining communication and control actions.

Consistency of Message and Policy

To maintain credibility, it is essential that the policy on compensation and the message remain consistent with each other and over time. For example, the level of compensation was agreed at the moment of the outbreak in one North African country, but changed over time as the outbreak proceeded. First, everyone was to be compensated, afterwards it was only licensed farms that would be compensated, then only larger farms, and finally the compensation was stopped altogether.

Costs of the Awareness Campaign

Some indicative costs of communication packages for general awareness of HPAI are provided in Appendix 3. No data are available on the cost of raising awareness on specific compensation issues, a rough estimate would be about 10 to 20 % of the total package at the start of the campaign, probably less later.

Use of Nonpublic Sector Human Resources

Up until now, communications and the management of surveillance, control, and subsequent compensation has been in the domain of the public sector. Still, many developing countries have over time established networks of independent or NGO-linked para-veterinarians that can play a key role in the early detection, culling, and management of compensation, and communications if adequately organized, trained, supervised, and provided with

the required incentives. Often they are closer to the local communities, and form a much larger network than the public veterinary service. Experience in

Asia and Sub-Saharan Africa has shown, however, that the incentive framework, normally on the basis of a small retainer fee, is essential.

Main Conclusions and Recommendations from Chapter 5

Communication on compensation is part of a general communication strategy, which is part of a general AI control strategy. The challenge is to balance messages and preserve public health while not causing a crash in the poultry market due to misperceptions of the danger presented by HPAI. An appropriate communication campaign focuses on information and education, behavior change and protective action, disaster warnings and emergency information, joint problem solving, and conflict resolution. The communications campaign:

- Targets multiple stakeholder audiences on a broad range of behaviors and through multiple channels of communication;
- Induces behavior change, without causing panic reactions;
- Has multidirectional (vertical and horizontal) flow of information;
- Should be part of the general preparedness planning, although exact details of the level might have to be withheld until just before the culling to avoid high expectations and fraud;
- Is prepared by technicians and communication specialists working together, but with communications control going to the latter and approval of the technical content of the final messages being overseen by the former;
- Is tailored to local conditions and cultural norms;
- Should provide consistent messages over time, as frequent changes reduce credibility and lead to confusion;
- May cost 10 to 20 percent of the total control package; and
- May need to mobilize nonpublic sector agents such as NGOs, paravets, and telecom companies.

Organizing Payment and Accountability

This chapter seeks to provide guidance on how compensation is budgeted and paid in an efficient manner. It also highlights the internal control mechanisms and audit and accountability measures that would promote transparent use of financial resources and mitigate the fiduciary reputational risks associated with compensation payments.

Introduction

There are 10 elements needed to ensure efficient and transparent management of a compensation fund, including:

- Provision of the legal basis for establishing responsibilities for compensation fund administration;
- Conducting a financial needs assessment (how much will compensation cost);
- Identification of sources of funds and likely amounts from each source, and mobilizing needed financing;
- Identification of the payment agencies needed to get the funds to the beneficiaries;
- Deciding on the payment instruments (cash, bank transfers, vouchers, and so forth);
- Designing the basis on which payment will be made, that is, certification;
- Communication of the time frame for payment;
- Monitoring disbursements;
- Operational and financial audits; and
- Social accountability mechanisms.

To promote early notification of suspected outbreaks, compensation for culled birds must be paid promptly following the birds' destruction and at a level that approaches the birds' market value. The implementation of immediate compensation at the time of culling (or at least within 24 hours) is necessary to build trust and enhance image and transparency. The challenge is to achieve balance between good financial control and accountability, mainly through ex ante controls and the need for a simple system that works under difficult field conditions, often in areas where institutional capacity and governance are weak.

For purposes of efficient financial control, the overarching objective is to ensure that compensation funds are budgeted for and rapidly mobilized; that there is adequate segregation of roles

and responsibilities of those involved in the process; that the correct amount is paid to the right people, as quickly as possible; and that there are financial and social accountability and grievance mechanisms.

Insights from Country Case Studies

- There is a negative correlation between HPAI risks (and a need for rapid response) and the capacity to respond; countries with a high risk for being affected by the disease typically have poor capacity to respond.
- Satisfaction levels for farmers interviewed regarding central government compensation strategies are very low.
- Farmers' behavior (that is, incentives or disincentives for culling) strongly depend on the way the flow of funds was organized.
- It is difficult to estimate compensation requirements at the district level and to provide funds in advance.
- Districts are reluctant to prefinance compensation, since they may experience problems being reimbursed.
- Fiduciary ex ante controls cause delays and physical evidence suitable for ex post audits is destroyed when the birds are disposed. This makes it easier for farmer-culling team collusion in the over-reporting of culls, since the figures cannot be easily checked once animals have been destroyed.
- In most cases there is no transition strategy to facilitate the integration of local disease control centers and emergency response team into the routine activities of the local/provincial agricultural service. The emergency phase is therefore prolonged unnecessarily.

Critical Success Factors

The principal enabling factors for good financial control and sustainability include:

- The institutional climate in which the compensation scheme is being applied and the overall climate for public financial management arrangements, governance, and anticorruption;
- Strong leadership and coordination of the compensation program at the national level;
- Comprehensive public information campaign involving the key ministries;
- Effective coordination from the national level to the village level;
- An efficient and reliable underlying system for disease surveillance, reporting, and response; and

- An adequate grievance system.

The extent to which each of these factors is actually operating on the ground will determine the overall efficiency of payments.

Who Pays?

Countries where governments fund compensation for direct losses from their national budgets include Sweden, Finland, Denmark, and the United Kingdom (UK). The main welfare control measure for the UK FMD outbreak in 2001 was to slaughter animals thought to be suffering as a result of movement controls. Producers were compensated for their market value, which is considered the full value of the animal immediately before the slaughter (DEFRA 2005a).

Those countries that opted for public-private partnerships are Austria, Belgium, the Netherlands, Greece, and Germany. In these cases, the arrangement generally includes a compulsory or voluntary levy, paid by farmers to a separate fund. In Belgium, for example, types of levies are differentiated in relation to the animal species and farm size.

In addition, levies for pig production vary depending upon whether the production system is open or closed. These levies are collected in a fund managed by the Ministry of Agriculture. Services delivered through these funds include some animal health and quality improvement measures.

However, the collection method varies between countries. Hence, Greece, which has a compulsory insurance program under the Greek Agricultural Insurance Organisation (ELGA), defines the compulsory fee as 0.5 percent of the value of the stock production sold. In Germany, levy rates are fixed annually according to need, set by an Animal Disease Fund (TSK). There are also some countries such as Spain and Italy where farmers do not receive any compensation from their respective governments other than for destroyed animals. There is no voluntary or compulsory levy (Riviere-Cinamond 2004).

Arrangements in developing countries have been even more varied. In Vietnam for example, where public expenditure on agriculture is to a large extent managed at the provincial level, both central government and provincial government contingency funds contributed to initial compensation efforts, with poorer provinces less able to compensate compared to richer ones.

Some developing countries use budgetary lines within Ministries of Finance, but others now have specific animal health funds, typically under the veterinary service. In Brazil, producer associations

of larger farms funded some compensation to small-scale producers to assist in controlling FMD in the sector that was affecting their export potential (Carmargo Barros et al. 2003).

Flow of Funds

There should be a clear understanding of how funds will flow from the compensation fund (the government's own resources plus donor concessional funds) to the central implementing agency, to the local level, and to final beneficiaries. A central contingency compensation fund should be envisaged at the national level, funded by the government's own resources where possible and if necessary with the assistance of development partners. Notwithstanding the trend in fiscal decentralization and increase in budgetary autonomy at provincial levels, centrally held funds that are quickly accessible to the provinces may be more efficient than a proliferation of compensation funds at the provincial level.

In most countries there is a national coordination committee for avian influenza, which would be responsible for the decision to initiate payments under the compensation fund. Based on this committee's instructions, compensation funds are released by the ministry of finance, if the compensation fund is centralized. If the veterinary service is the budget holder (for example, in the case of Serbia), funds for compensation are released upon the decision of the department of veterinary services. The choice will depend on the current structure of the public finances, but due regard should be given to roles and responsibilities, which should be defined in advance.

Risk-Sharing

The level of risk sharing between central governments and province authorities often determines each actor's behavior and consequently the effectiveness in containing disease spread. In cases where the risk is mainly borne by the central government, there is less pressure for provincial authorities to control the outbreak, to educate and reach beneficiaries, and consequently to compensate them. Where possible, compensation schemes should also involve the private sector producers (and farmer associations, unions, NGOs, and so forth) so as not to leave the burden to the public authorities alone. However, such types of associations tend to be very rare in sectors 3 and 4 in certain developing countries.

To mobilize funds rapidly from central compensation funds to affected households, it is important to:

- Clarify responsibilities in advance;
- Initiate provincial level, cross-agency coordination arrangements; and
- Establish local contingency funding.

Assessing Financial Needs

Compensation funds are being funded through several sources including: governments' own resources from the National Treasury, poultry farmers' contributions, taxes on livestock and livestock market facilities, and contributions from stakeholders and international donors. Some of the practices observed are:

- Earmarking a percentage of taxation revenues (typically 3–5 percent of the gross domestic product [GDP]) for the establishment of general compensation or emergency funds;
- Levying specific taxes associated with imports of poultry, earmarking same for the compensation fund;
- Raising funds at the local level; and
- Establishing livestock emergency funds with funding from both public and private sector.

It is advisable to assess total compensation needs well before any outbreak, so that this sum can be allocated in the national budget or requested from development partners, with documented justification. Ideally, there should be some basic system to build a database at the local level. This data can then be aggregated at the national level. In practice, for example in the case of Serbia and Montenegro such a database is being built jointly by the Ministry of Finance and the Ministry of Agriculture. Write access is restricted to the Department of Veterinary services and the budget department of the Ministry of Finance. Generally, access to the list is not given to the public.

In the case of medium- and large-scale farmers, a beneficiary database or a simple list of eligible farmers should be produced as a basis for a reasonable estimate of resource needs. This can be done before any evidence of the disease in the country. This database or list would have an additional control function for being the basic source against which payments to beneficiaries are subsequently reconciled, during the ex post audits and monitoring phases. In the case of backyard poultry, an aggregate assessment based on a census of the human population in the area and the estimated number of poultry per household will give a reasonable estimate.¹⁷

Given the overriding need for a rapid response, the process of building eligibility databases and emergency payment procedures are likely to go on

in parallel. Notwithstanding, these processes and resulting databases would need to be reviewed as part of the ex post accountability arrangements. In addition, where compensation payments are being handled by local governments, there should be an oversight committee involved in the process of identification and payment of beneficiaries, which should include the civil authorities and representatives of the community.

A further problem with establishing compensation funds is that keeping a large sum idle for contingencies that may never arise is not without cost, and thus governments and their partners are reluctant to do it. In the early stages of the HPAI outbreak in Southeast Asia, Vietnam was able to fund compensation mostly because of the availability of general contingency funds in the national budget. The World Bank was able to help relatively quickly because of the procedures already developed for rapid response to earthquake emergencies. Now that risks are better known, at least for some regions, there is a need to explicitly plan for funding compensation in advance, at both the national and international levels.

The share of compensation payments in total animal disease control expenditures under outbreaks ranged from 0 to 45 percent in the cases studied, with a central tendency of about 35 percent. For compensation planning purposes, the upper range of foreseen culling during a severe outbreak should be capped at 10 percent of the national flock (eligible database total). Many outbreaks are controlled with culling of less than 1 percent of the national flock.

Once the share of infected and closely associated birds exceeds 5 percent of the total national flock, vaccination typically starts substituting for culling and compensation (see Chapter 7). Countries that are important poultry exporters and wish to avoid vaccination (such as Thailand under its 2004 outbreak) should plan at the 10 percent (high) limit, countries with little in the way of poultry exports and a large percentage of smallholder poultry producers should plan at 5 percent of the database total, and countries with little trade concern, a high degree of biosecurity, and a creditworthy public finance system should plan at 1 percent.

The applicable percentage, multiplied by the size of the national flock, and again by 75 percent of the average farm-gate poultry price, provides a rough estimate of the amount of funds that need to be accessible for compensation payments per se on short notice.

Payment Mechanisms and Timeliness

In practice payments are being effected through (i) bank transfers directly to beneficiary accounts, (ii) checks, (iii) cash, (iv) payment vouchers, and (v) transfers to village bank accounts for further payment in cash to villagers. The time frame for reimbursement varies widely. In the case of 13 World Bank-funded projects reviewed during the exercise, the shortest projected lag was 7–15 days, but could span as many as 60 days. Seven projects had not specified the time frame at the time of approval.

In the case of large- and medium-sized farmers, the issues, risks, and procedures are not inherently different from regular investment operations. For commercial poultry farmers payments should be made directly through the banking system to bank accounts, either through direct transfers or alternatively by checks. Compensation by check will depend on the local banking system (microcredit network) or public payments office.

For small farmers, ideally compensation should be in cash at the time of culling or within 24 hours. For this to be possible, culling teams should be accompanied by payment officers or payment officers should follow shortly after. Where cash is not readily available at the time of culling the use of deferred options is recommended; an example would be payment vouchers in lieu of cash, with payment being made promptly within one week of culling. Whereas the use of payment vouchers has reduced the risks of fraud and corruption as well as the risks to personal safety occasioned by banditry, in some cases this system is fraught with problems and in some cases farmers' satisfaction was in fact reduced.

Although there would appear to be less risk of fraud with deferred payments in the form of vouchers, the study conducted in Niger suggested that there are major disadvantages to the use of vouchers. In fact the risks may be much higher since villagers might not understand or be reluctant to accept vouchers, or they may find it difficult to cash them due to distance, bureaucracy, or corruption. In general, payments at a counter may increase villager reluctance to participate because of unfamiliar territory or inexperience in dealing with the administration.

Deferred options such as the use of vouchers would only be recommended in cases where the person holds a bank account (most likely commercial farmers) or in the case of small-holders living in areas where there are local banking or post office facilities that they already use.

Certification

Culling and compensation certificates¹⁸ should serve the dual purpose of certification of culling and evidence of receipt of cash, or in cases where payment is deferred, the certificate should serve as the payment voucher. Certification should reflect ownership, date, location, category, number of birds culled, unit compensation, and total compensation. Witnesses should sign the certificate: at a minimum the certifying officer (as a member of the culling team), the owner, and a representative of the local authority.

Of the 13 projects approved by the World Bank under GPAI as of September 8, 2006, only 4 projects specifically referred to the use of culling certificates (Albania, Armenia, Kyrgyz, and West Bank and Gaza). No specific requirements were outlined for nine of the projects. Of nine functioning national compensation schemes reviewed by FAO, three issued culling certificates, with one carbon copy used as the payment voucher for producers. Forms have also been prepared in two West African countries that have yet to experience an HPAI outbreak.

In the case of Egypt, payments were only made to large-scale farms. A committee consisting of a local official, a veterinary officer, an official from the Principal Bank for Development and Agricultural Credit, and the farmer concerned made a count of the birds that would be compensated. A letter with the numbers culled was generated and signed by all parties. This was then submitted to a local branch of the bank for payment. There was no process that allowed the number paid to be tallied with the number that died or were culled; the kill team was different from the assessment team. Some of the large-scale farmers were in dispute with the government over the value of payments.

In Lao People's Democratic Republic, all birds in the locality are culled and payment is made at the time of culling using a flat rate by weight, irrespective of the type of bird. In the case of Indonesia, veterinary officers are primarily responsible for making payments, in cash at the time of culling. Reportedly, it is working effectively, providing bird owners with an incentive to report HPAI cases and a guarantee of on-the-spot payment. Subsequent requests for reimbursement are made on the basis of a form (which combines a certification of culling and compensation in one single process), detailing the amount of compensation paid per bird, and the total amount of compensation paid by bird owner. The report is signed by the team of

veterinary officers, the head of the village in which the culling has taken place, and by each individual owner of the culled birds.

Use of Local Governments and Social Accountability

The use of local governments should certainly speed up the flow of cash to the poor, but will increase the risk of diversion of funds (theirs or donors). The social accountability mechanisms for avian flu should be mainstreamed into local government arrangements, as far as possible, to reduce resistance to scrutiny. In this case the four basic pillars of good financial control (segregated duties within the local government, efficient flow of funds, timely reporting, and independent scrutiny through the use of financial and social audits) are still relevant.

However in addition to these four, it is also essential to develop a strategy to engage farmers, including smallholders, in scrutiny of the official accountability processes. The participation of community-based organizations, NGOs, and citizens in general has proven to be one of the most critical factors for ensuring successful accountability arrangements and in mitigating the risk of funds being diverted. Community involvement should be in four critical areas: (i) decision making or determining payment eligibility; (ii) payment; (iii) scrutiny of accounts and reconciliations; and (iv) grievance committees. Often the vigilance groups are themselves subject to "political capture," therefore vigilance committees or village assemblies should be formed, but should not include people who are direct beneficiaries themselves (a conflict of interest). Instead, they should represent groups of citizens, as in the case of community leaders.

There should be negotiation between the local government and the representative community organization to secure a commitment from the local government to regularly publish the list of payees, basis of payments, and the amounts in a way that can be scrutinized by the affected communities. This should be supported by a simple, practical mechanism for public review of the local compensation payments and the financial accounts of the compensation funds.

At the central level there should be an independent ex post reconciliation of actual payments against approved lists created during the estimation phase. In the case of Nigeria, for example, where there is a decentralized structure, community thematic associations (CTAs) comprising community members play a key role in identifying, preparing, and signing off on compensation

proposals (assisted by community development officers). These proposals are forwarded to technical committees (comprised of members of CTAs, civil society, and local government authorities). The local government technical committee makes the final decision to pay, at which time resources are transferred directly to the CTA's bank account. Payments to farmers are then made once culling is completed.

Few compensation funds however propose or actually make provisions for grievance handling and dispute resolution. At the local level there should be a mechanism to handle complaints related to denial of access, nonpayment, incorrect payments, or lack of timeliness. Communication campaigns should make farmers aware of: (i) who should receive the complaint ("hotline," local committee); (ii) who will investigate; and (iii) the time frame for receiving a response. In the case of Tajikistan, for example, a dispute resolution mechanism has been established to cover disputes concerning the amount of grant, eligibility criteria, procedures, or any other concerns. Households (farm families) have the right to appeal to the implementing unit, which should make a final decision within seven

calendar days from the date of appeal, and convey the further step adopted for the resolution of the dispute. Efforts should be made to explain these rights to farmers when culling takes place.

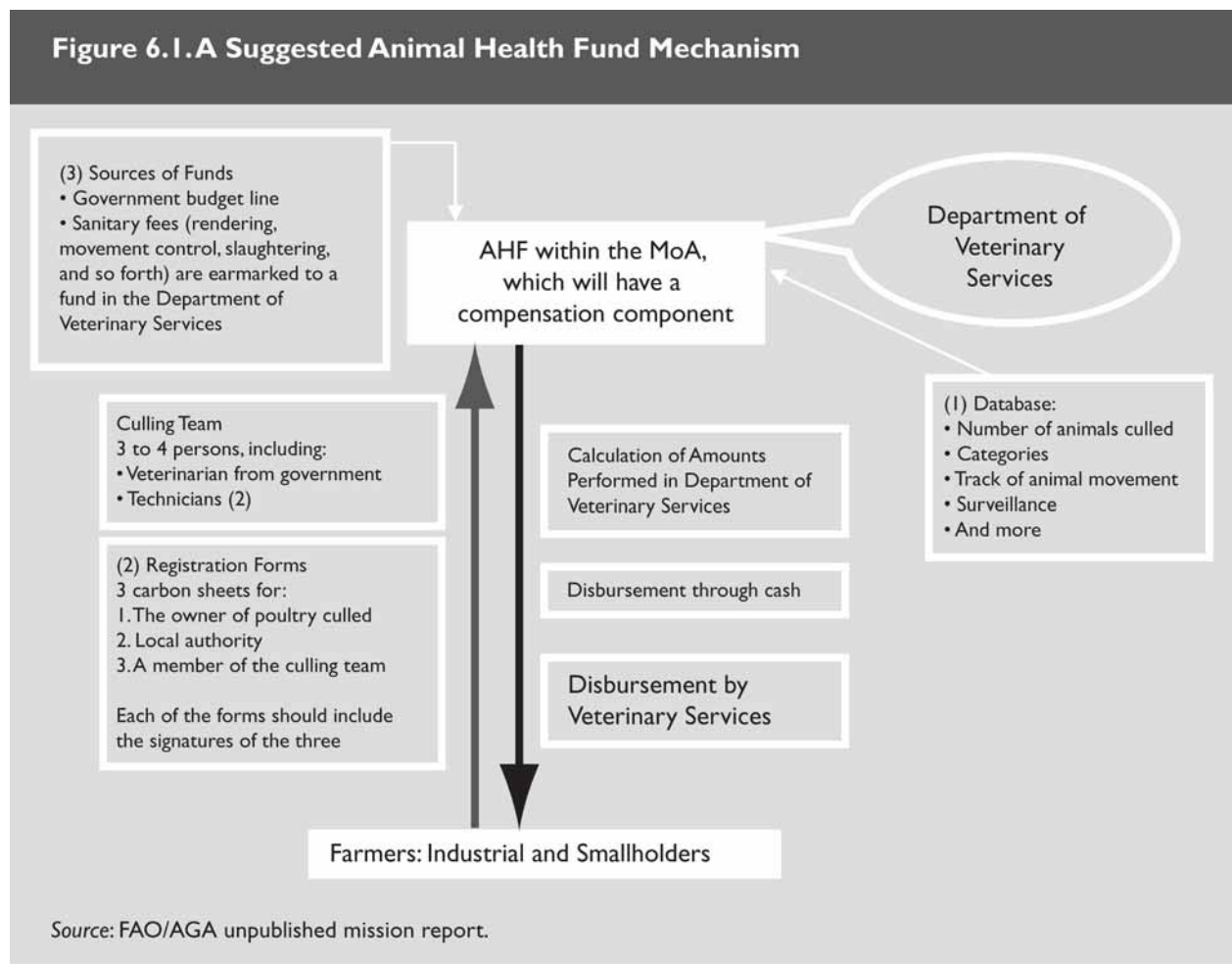
Core Components of Compensation

To bring together the core components, Figure 6.1 depicts a suggested animal health fund (AHF) appropriate for a smaller country with limited infrastructure and public veterinary services.

Good Practice Recommendations for Rapid Disbursements

These include:

- Assessment of financial resource needs and inclusion in national budgets.
- A central contingency compensation fund should be envisaged at the national level, funded by the government's own resources where possible, and if necessary with the assistance of development partners.



- The availability of provincial contingency funds improves the timeliness of response. These funds can be subsequently reimbursed from compensation funds, held either at the provincial level or centrally.
- When designing the flow of funds, greater use should be made of local banking entities, producer's organizations and NGOs who could have ready cash flow at local levels and who can be subsequently reimbursed from central compensation funds.
- Multidisciplinary teams reduce the risk of conspiracy and collusion (livestock for culling, MOF for payment, security).
- Surveillance teams should be followed very closely by culling teams (ideally together).
- Multicopy paper forms for recording culling and entitlement to payment create trust for farmers.
- Next-day presentation of culling records to micro-finance entity for payment.
- Payment vouchers also maybe appropriate where there is a need for coverage of large areas and it is impractical to mobilize payment officers.
- Local networks of paymaster offices should be used to release the amounts needed with the support of private banks, producers associations, and NGOs for cash availability.
- A local payments officer needs to be used together with a security guard for paying smallholder poultry farmers.

Continuous Monitoring and Oversight

Experience suggests that compensation schemes are particularly susceptible to fraud, error and abuse. The social accountability mechanism designed to enhance transparency have been described earlier in Section 6.8. In addition, to provide fiduciary assurance that eligible poultry owners, and only eligible owners, are paid in full, and to reduce the risks of fraud and abuse, compensations funds should be subject to monitoring and oversight through periodic operational reviews and independent external audits.

Additional measures include:

- Ex ante internal controls in the poultry culling and certification phases, described in section 6.7.
- Annual operational reviews: The terms of reference for the operational audits should focus on confirming validity and legitimacy of compensation payments made for a randomly selected sample of villages. Verification should include checking against the databases maintained by the ministry of agriculture, collecting and verifying information available and obtained at the village level, checking with individual poultry owners, and checking forms and reports, and so forth.
- Independent external audits: External independent auditors will need to provide an opinion on the reasonableness of the accounting, reporting, and internal controls in respect to the operation of the compensation funds.

Conclusions and Recommendations from Chapter 6

Compensation funds are being funded through several sources including: governments' own resources from the national treasury, poultry farmers' contributions, taxes on livestock and livestock market facilities, contributions from stakeholders, and international donors.

The system used to manage, account for, and control payments should be simple enough to be used in difficult field situations and should make use of existing institutions (for example, line ministries, veterinary services, financial institutions) to avoid high administrative overheads and additional costs of transferring money. The efficiency and accountability and governance arrangements of these institutions should be evaluated prior to engaging them. If the disease emerges, and no assessment has yet been done, the focus will need to shift to a greater reliance on ex post independent scrutiny to avoid inordinate delays in paying compensation.

The availability of provincial prevention funds improves the timeliness of response. These funds can be subsequently reimbursed from centrally held compensation funds.

Where donor funds are being used to fund compensation payments, project design should outline alternative procedures that would apply in the event that there is an outbreak prior to satisfaction of conditions of effectiveness or disbursement. An example would be retroactive financing to cover the period between the outbreak and satisfactory completion of the conditions of disbursement.

(continued)

Conclusions and Recommendations from Chapter 6 (continued)

There is a need to maintain a balance between the necessary front-loaded ex ante controls and the overarching need to mobilize payments rapidly. Many operations as designed have onerous conditions of effectiveness and disbursement including detailed compensation manuals, which by nature take time to be developed, and result in a significant delay between approval of proposals and actual draw down of compensation funds. These conditions of effectiveness and disbursement are more appropriate if the country is in the emergency preparedness phase (or where the disease is endemic) but are not appropriate in countries where there are actual outbreaks.

Given the overriding need for a rapid response, the process of building eligibility databases and emergency payment procedures are likely to be undertaken in parallel. For countries where actual outbreaks have not taken place, it is recommended that eligibility databases be built as part of the emergency preparedness plans. The manner in which people have to register should be decided upon in advance and the time frame for compensation clearly communicated to farmers to solicit compliance with culling requirements.

To mobilize funds rapidly from central compensation funds to affected households, it would be important to (i) clarify responsibilities in advance; (ii) make provincial level, cross-agency coordination arrangements; (iii) and establish local contingency funding.

Multidisciplinary teams reduce the risk of conspiracy and collusion (livestock for assessing the need and reliability for culling, MOF for payment, civil authorities for security, and community leadership for transparency). Surveillance teams should be followed very closely by culling teams and payment teams (ideally together).

The participation of community-based organizations, NGOs, and citizens in general has proven to be one of the most critical factors for ensuring successful accountability arrangements and the handling of grievances, and their involvement is likely reduce the risk of diversion of funds.

History has shown that compensation schemes are susceptible to fraud, error, and abuse. In addition to the social accountability mechanism described above, to provide fiduciary assurance that eligible poultry owners and only those eligible owners, are paid in full, and to reduce the risks of fraud and abuse, compensations funds should be subject to monitoring and oversight through periodic operational reviews and independent external audits.

Where Are We and Where Do We Go from Here?

This concluding chapter starts by considering why and when compensation is a public good. It then takes stock of the characteristics of successful compensation programs in terms of effectively supporting culling for the purposes of disease control. From there, it looks at longer term issues that countries may wish to address to prepare ahead of time for implementing a compensation program and for transiting to other forms of disease control. The latter in its full sense is beyond the scope of the present exercise, but specific issues related to compensation schemes will be addressed.

Compensation as an International Public Good

As argued in Chapter 1, the primary rationale for treating compensation as an international public good is the possibility of catastrophic international spillovers affecting human health, arising from the mutation (or more specifically reassortment) of the virus into a human-to-human transmissible form. If other options for protecting human health become available (perhaps involving inexpensive and effective human vaccines from the major public-private partnerships currently seeking to develop them), it is less obvious that compensation for culling as part of a stamping-out strategy would be supported with international finance provided on concessional terms. Most current international development funding, including the IDA funding of GPAL, is nonincremental in the sense that these resources would have been available to development activities in any case. Thus expenditure on compensation from these sources comes at the cost of foregone public investment in other areas.

However, spillovers from the diseased herds or flocks in one country to healthy ones in another may still justify the international public good argument for animal disease control. Nonetheless, it is important in the pure animal disease case to examine carefully who gains and thus who should help pay. It is clear that the livestock industry from the developed world (and thus consumers in the OECD) stand to gain from earlier containment of contagious diseases in the developing world. For example, the 2001 outbreak of FMD in the UK, which originated in the South Asian subcontinent, caused an estimated US\$5.6¹⁹ billion in direct and consequential losses to UK agriculture and about the same amount in other

UK sectors (tourism, and so forth) (Thompson et al. 2005). Investment from a mix of public and private sources in the OECD countries in surveillance and reporting systems in developing countries would have significantly reduced the probability of this situation arising in the first place.

The concern that sector 1 and 2 producers in livestock product-exporting developing countries have shown in promoting disease control in sectors 3 and 4 (or sometimes even the removal of these operations from export zones) is also clear (Delgado, Narrod, and Tiongco 2003). The mutual interest of sector 1 and 2 producers in both developed and developing countries in better disease control in sectors 3 and 4 in developing countries is likely to become even stronger over time, as the share of livestock produced in developing countries (currently well over half) continues to increase steadily. This increase is likely to continue for the foreseeable future (Delgado et al. 1999).

In any event, protecting livestock income and the assets of the poor in developing countries will remain critical poverty issues for years to come. However, once the danger to human health is taken away, the objectives of animal disease control and protecting the assets of the poor are likely to involve different constituencies with imperfect overlap. Animal disease control per se would then be primarily an issue for national and local governments, the private sector, and producer groups. All of the above, plus domestic NGOs and development partners, would be concerned about protecting the assets of the poor, but it is not clear if promoting smallholder poultry production under sector 4 conditions would remain the chosen vector. Rehabilitation of the devastated sector 3 poultry producers of countries affected by HPAI remains a critical issue, but one separate from compensation for disease control.

For the time being at least, strategies for dealing with HPAI disease reservoirs in all four poultry sectors will remain necessary, and compensation for animal culling will remain part of the basic toolkit for reducing risks to human as well as animal health at both national and international levels.

A longer term view requires recognition that control of an emerging animal disease usually goes through stages of "progressive disease control." Initially, there is normally heavy reliance on stamping out and the increase of biosecurity and movement controls in pursuit of rapid containment, aimed at immediate eradication. If outbreaks are widespread within a zone or difficult to control, authorities may move to a modified stamping out using targeted vaccination and limited culling. If the disease be-

comes very widespread, authorities may introduce preventive animal vaccination in high-risk areas or as a blanket approach. As disease recedes, vaccination may be withdrawn and active surveillance initiated, with stamping out to remove the last few cases. With HPAI, countries are at different stages and therefore the role and extent of culling are different.

When avian influenza first struck, speed was of the essence to stop the spread of the disease in poultry and therewith to decrease the risks for human health; conditionality on the payment of compensation was not appropriate. The discussion throughout this report suggests that compensation procedures are more effective in assisting disease control if certain institutions or procedures are in place *prior* to the onset of a full-scale emergency. This illustrates the importance of early lesson learning and knowledge transfer from countries with similar resource endowments and services where compensation programs have been in operation. It also clearly indicates the urgency of proactive investment in requisite instruments for compensation adapted to the local circumstances. Finally, it raises questions about the appropriate stance for development assistance in relation to governments and industries that have not embarked on the requisite measures after experiencing repeated outbreaks over time.

Characteristics of Good Practice in Compensation Schemes Designed to Help Control Disease Spread in an Emergency

Good practice examples draw heavily on experience with sectors 1 and 2 in countries with established institutions. Yet many of the toughest problems lie in countries where sectors 3 and 4 remain important or even predominate. Experience with compensation schemes in sectors 3 and 4 have arguably been greatest in Thailand, Indonesia, Niger, and Vietnam, and the positive and negative lessons from these countries have been especially useful for present purposes. As the disease spreads to Africa and other parts of the developing world that are structurally quite different from Southeast Asia, it will be important to continue to learn lessons from experience in these areas and apply them in schemes more adapted to the local areas concerned. The analysis in the report suggests that success in compensation schemes is more likely where the following conditions are met.

Timeliness and Timeline

OIE recommends that no more than 48 hours elapse between reporting and culling as good practice in control of HPAI through the animal vector. Although this may be difficult to implement in many countries, the effectiveness of the culling will decrease rapidly if not performed within that time frame, considering potential spread of the disease. While disease control strategies per se are outside the remit of the present report, the urgent need for rapid response underlines the need for pre-existing capacity to target culling and compensation resources immediately to the suspect farm and those immediately next door, perhaps with on the spot compensation.²⁰

Where there have not yet been outbreaks, it is recommended that culling be based on polymerase chain reaction (PCR) positive results. Movement restrictions should be implemented from the onset of suspicion, although in practice this will require the cooperation of the police, and will be in any event difficult to enforce. In locations where several outbreaks have taken place or the disease is endemic, culling should be based on clinical signs and preferably on influenza type A kit positives.

Because timeliness and the comprehensiveness of culling within target zones are critical, the timeliness and reliability of compensation delivery are key ingredients to the degree of trust between farmers and culling officials. Thus an effective compensation scheme in terms of inducing widespread response gets the money rapidly to the people who are entitled with the minimum administrative cost and leakage. To do this, the scheme needs to have a clear sense of purpose, good communication to stakeholders, up-to-date database of poultry farms, and effective epidemiological targeting. Where trust needs reinforcing, as is often the case in developing countries, compensation payments preferably should be paid within 24 hours after culling, and paid in cash. When cash payments are not immediately possible, it is possible that some sort of voucher system may work, but understanding the feasibility of this needs to be explored further.

The repeated need for rapid response clearly establishes that a great deal needs to be and can be done *before* outbreaks occur. First and foremost, there needs to be clear legislation that spells out the rights and responsibilities of government, livestock value chain agents, from private vets to traders and processors, and livestock producers with respect to emergency and normal disease reporting and control. The overall responsibility of the central govern-

ment needs to be spelled out, and a clear chain of command needs to be implemented based on this legislation.

Before outbreaks occur, there is also a need to establish a database of potential beneficiaries (poultry farms and holdings—see Chapters 2 and 6), decide on how simple or complex to make the categories of animals compensated (see Chapter 3), and initiate procedures for monitoring reference market prices and the keeping of price records (Chapter 4). At the same time, communications strategy and packages need to be prepared for both disease control and compensation specifically (see Chapter 5). Congruently, the mechanisms for organizing payment need to be set up and tested (see Chapter 6). Institutions may need to be strengthened to accomplish all these tasks, and personnel trained to implement them.

Once an outbreak has occurred, the communications, culling, and compensation strategies need to be rapidly implemented and monitored. After the outbreak there will be a need for audits, evaluation, and lesson learning. It seems likely that much of what is developed for HPAI will have other similar but distinct uses in disease control.

Breadth of Coverage and Targeting

Compensation-based incentives for compliance with reporting and culling are likely to fail in their objectives if payments do not reach the very large majority of those who have had their birds culled and also cover all major groups of producers in a relatively fair manner. In particular, leaving a significant group out (or failing to recognize the much greater value of their birds relative to the general population of poultry) is likely to be associated with noncompliance and further disease transmission. This turned out to be an issue with domesticated song birds in Vietnam, kampong chicken in Indonesia, and fighting cocks in Thailand. This is particularly important if the enforcement of movement restrictions is weak.

Before the disease is endemic, culling and measures to support it will presumably be targeted wherever necessary to eliminate all vestiges of the disease. Once HPAI becomes endemic, however, the emphasis may need to be more selective. It seems logical that the density of poultry holdings close to people and other farm animals is positively associated with the danger of virus reassortment occurring. If so, the number of birds that must be culled and thus the need for breadth of coverage in compensation strategies is also likely to be higher in such areas. This suggests that culling and thus com-

pensation will be targeted primarily to high density and peri-urban areas.

When flocks are more spread out, as in sector 4 holdings in remote areas, the need for both culling and compensation may be relatively less urgent once the disease is endemic. The initial urgency to prevent the disease from becoming endemic no longer applies. The virus load is likely to be more spread out and probably less overall with lower animal and human density. The latter tends to be associated with fewer interactions among animals and with people, and less trade in potentially infected birds, meat, and eggs.

Reliable and Adequate Incentives for Compliance

The literature examined and field visits clearly show that compensation rates of less than 50 percent of market prices do not elicit sufficient compliance to avoid significant leakages, and that rates of the order of 75 to 100 percent of preoutbreak local market prices, where feasible, elicit high compliance.

People also have to be aware of the compensation scheme, how it works, and believe in its integrity. Chapter 5 discussed some of the key communications issues.

Effectively Mobilizes Institutional Assets of the Country in Question

The literature and field visits reveal that even countries within the same region have very different levels of institutional development for dealing with culling and compensation issues. Successful compensation delivery requires mobilizing local structures such as producer associations, municipal/county government, and traditional leadership structures. Local technical expertise is also required, especially for certification. The existence of functioning animal health services is critical, where possible based on public-private partnerships and laboratory and field diagnostic capacity. Over time, countries that are likely to need to continue to deal with HPAI outbreaks, whether through culling and compensation or other means, will need to invest in this area if funds invested in compensation are to have any lasting return. Chapter 6 discusses the issues in organizing payment.

Effectively Mobilizes Financial Resources

The need for rapid response and hence for prearranged responses also means that there is a need to

have a rapidly available source of funding. Countries faced with the prospect of an HPAI outbreak need to have preagreed pathways for the tapping of government contingency funds to be able to act quickly. Large commercial operations will need to find private sector options for hedging their disease risks under HPAI as these become better known (discussed below). There may also be the need for development partners to explore ways to pool contingency reserves across regions or internationally to lower the opportunity cost of individual countries each having to hold adequate funds.

Flexible, Simple, and Consistent and Useful for Other Purposes

The literature surveyed and key correspondents stressed the need for simplicity and consistency in the schemes implemented and also that the operational details need to be thought out very carefully since what is simple in one system may not be in another. In particular, it should not be assumed that poor rural people know anything about HPAI or its risks before an outbreak occurs. Thus communications play an educational role in addition to diffusing information of rates and procedures. Trust is an essential ingredient, and it will be necessary for dealing with both the present emergency and the next major animal or human health scare.

Changes in the Structural Context under Which Compensation Is Occurring

Following on the arguments of the previous section, it will be vital to develop criteria for assessment of when widespread compensation associated with stamping out will lose effectiveness as a disease control mechanism, as the disease becomes endemic in parts of Southeast Asia and parts of Africa. This will help identify when to shift disease control resources from compensation schemes per se to longer-term disease control efforts such as vaccination and surveillance (although when this should occur and the design issues of these longer-term strategies are beyond the scope of the present paper).

Longer term, there is clearly the need to strike the most effective balance in financial and human resource use between short-run compensation schemes for eliciting more accurate reporting of an immediate outbreak and compliance with culling initiatives versus improvement in longer-run solutions, such as incentive systems for surveillance

and early alerts. As the disease becomes endemic in parts of Southeast Asia and Africa, longer-term institutional solutions will be necessary.

While much of this is outside the scope of the present exercise, enhancing the long-run institutional framework and incentives for community animal and human health workers and private veterinary and human health agents to better communicate disease risks and compliance incentives to producers, and for reporting suspicious events back to animal health authorities, will be critically linked both to the immediate needs for implementation of compensation strategies and to any longer run strategies that may be contemplated. It might therefore be appropriate to expect countries to establish appropriate procedures and institutions as soon as possible, and eventually to make this a precondition for further support in international funding of compensation.

OIE and FAO are in the process of developing a revised strategy for dealing with transiting to vaccination for the control of HPAI in endemic countries, sometimes referred to as including a “vaccination exit strategy.” When to decide the use of vaccination and stamping out is a very complex debate. In poor countries, in the majority of cases, the best solution to control HPAI where it is endemic is a mix of culling the diseased animals and vaccination. There is greater emphasis on vaccination as the disease spreads more widely. In the case of epizootics, all infected animals have to be culled. Infected animals should not be vaccinated. Vaccination was a key component in the control of the disease in Vietnam. With vaccination in any situation, there is a need for an exit strategy when the number of outbreaks decline, so that remaining disease manifests itself and stamping out can then work to eradicate the disease pool.

The Future of Compensation in the Context of the Future of the Poultry Sector

The Urgency of Improved Biosecurity versus the Viability of Small-Scale Production

A compelling need for improved biosecurity of poultry production units and markets is increasingly clear in the context of “progressive disease control,” the name given by veterinarians to the cycle of culling, vaccination, and stamping out typically

used to control serious animal disease epidemics. Biosecurity requires communal and not just individual compliance; hence changes here require systemic change.

From the standpoint of public policy, the division of labor between the provision of national public goods and private goods in animal health services is the key issue, closely followed by the sharing of costs in proportion to benefits. Where sectors 1 and 2 are predominant, the contribution of the private sector to these costs is likely to be higher. This is less realistic where sector 3 and especially sector 4 account for a large share of production. In either case, it is clearly necessary to revitalize the animal health funding and delivery system, in particular private-public partnerships in most developing countries affected by HPAI.

Over time, expectations of assistance from international funding agencies should be viewed in part in light of what countries are doing in this regard. The performance, vision, and strategy (PVS) systems audit tool for veterinary services being developed by the OIE provides a means to diagnose needs and measure progress in this regard. Compliance with the main standards of PVS can be expected to form the basis for continued international financial support for compensation.

Over Time, What Should the Public Role Be in Compensation for Sectors 3 and 4?

A key longer-run issue—and one whose subtleties extend beyond the boundaries of this report—lies in the issue of what to do about sectors 3 and 4. Anecdotal but widespread reports in Southeast Asia suggest that sector 3 has shrunk in those countries experiencing significant problems with HPAI. On the other hand, sector 4 appears to be surviving, but largely out of the control of public authorities. Stricter controls, and the introduction of biosecurity measures in sector 4 such as caging, will not only increase their costs, but may also cause them to lose preferential prices in special niche markets they often now supply to the extent that taste and other factors associated with birds produced the old fashioned way are lost. In developing countries, voluntary insurance or other private insurance systems need to be taken into account although they will need some time to develop.

Decisions about how and what to compensate may affect the flexibility of shaping the future in poultry systems. Cash compensation allows people to decide whether they use the money to move out

of poultry or not. Restocking forces them back in; and compensation combined with quality control or good behavior requirements would help some people to upgrade.

Longer run, it will be difficult to dissociate the design of compensation schemes from other, more structural activities and investments designed to reinforce the biosecurity of the industry. As noted above, associating compensation payments directly with directed rehabilitation efforts to move producers into different agricultural livelihoods technically could be construed as a violation of the World Trade Organization (WTO) Agreement on Agriculture (AoA), although it is hard to imagine that this interpretation would ever be adopted.²¹

Before seeking to fundamentally redesign or relocate smallholder farming systems in rural areas of the poorer developing countries for disease control purposes, there is a need to train livestock owners and private veterinarians/paravets in disease control issues in remote areas. Incentives for vets and paravets to go to those areas and participate in HPAI control are also needed. All investments of this type regarding HPAI control in developing countries would also be beneficial for controlling other animal diseases of zoonotic or economic importance.

Over Time, What Should Be the Public Sector Role toward Compensation in Sectors 1 and 2?

Current policies for compensation to sectors 1 and 2 vary. For example from the countries covered by the field studies, Indonesia does not compensate sector 1 and 2 producers, whereas Egypt only compensates large farms. The new EU regulations would also compensate only small and medium enterpris-

es (SMEs), and this is the most common approach in other OECD countries. Once the emergency human health issue is removed, and risks can be better assessed, private insurance and risk-pooling schemes clearly need to share the costs of culling and compensating producers in these commercial sectors, as already happens in the OECD countries. Compensation however will remain necessary for many years to address the early eradication of outbreaks and to avoid the spread of transmissible animal diseases. This activity will remain as a public good, including in sectors 1 and 2, even if more private sector intervention is expected in these sectors.

A Role for an International Funding Facility?

However, in poor countries budget constraints and the predominance of sectors 3 and 4 raise the issue of whether an international support mechanism for national compensation schemes should be part of the global institutional infrastructure in the fight against HPAI and other emerging zoonoses.²² Such a facility would provide fast disbursing supplementary funding to governments for compensation to livestock farmers in the event of an outbreak. While resources for compensation will continue to be included for some time as part of—or in association with—country programs funded by the World Bank under the GPAI, outbreaks are likely to continue to occur over a multiyear period. Consequently, it might be appropriate to develop a facility that could provide support over the 10-year period envisaged under the global strategy for HPAI eradication. The implementation issues involved in this concept go beyond the scope of the present paper, but are being discussed elsewhere.

Conclusions and Recommendations from Chapter 7

While over time the international public good argument regarding the risk of human-to-human transmission of HPAI might diminish, transmission between animal populations of different countries will continue to be a main reason for international funding of disease control in developing countries. Moreover, in the likely event of the disease becoming endemic within certain countries, this will have major effect on the poor, and interventions under those conditions therefore deserve international support from an equity perspective. Stricter disease control requirements will have a major effect on the structure of the industry, with particular implications still to be clearly identified for the future viability of the sectors 3 and 4. Nonetheless, compensation will remain necessary for many years to address the early eradication of outbreaks and avoid spread of transmissible animal diseases. Under such conditions, compensation will:

- Become part of modified stamping-out strategies, with probably a lower priority to culling. Clear principles of how stamping-out strategies should evolve, and how compensation fits into such evolving strategies are needed.
- Have to become more dependent on the countries proven political will to improve the key institutions for animal health, in particular for early alerts and independent disease reporting. The OIE tool PVS is a useful instrument for assessing government capabilities.
- Be restricted to sectors 3 and 4, and be funded from a mixture of national and international public funds, the latter in particular for the poorer countries.
- Be funded for the large commercial sectors through private initiatives, probably as a mix between mandatory levies and voluntary insurance; in many cases the public sector needs to work with the private sector to find equitable ways to develop these systems.

Appendix 1.
Examples of
Compensation
Schemes for
Culling under
Animal Disease
Outbreaks in
Selected Countries

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
Germany	Multiple species potentially infected with OIE List A diseases	To be decided by the federal state, but mostly List A diseases	Animal Disease Fund (TSK) (Horst et al. 1999)	Full market value for losses due to culling, disposal of rendering carcasses, mass vaccination and laboratory expenses, but no compensation for private vet, cleansing, or disinfection costs.	50% government and 50% from compulsory insurance fund.	
Australia	Pigs; cattle/buffaloes; poultry; sheep and goats; domestic and wild animals	Cat 1: Nonendemic (rabies) Cat 2: Variant diseases (BSE, FMD) Cat 3: Unknown diseases (AI, CSF) Cat 4: Known epidemics (sheep scab)	VetAID	Disease-free farm-gate price, reflecting the value of comparable animals at the most recent livestock market.	Cat 1: Fully by government Cat 2: 80 % government, 20% industry Cat 3: 50% government, 50% industry Cat 4: 20% government, and 80% industry Financing of (or contributions made to) TSKs come from three different sources: 1) annual membership fee; 2) state grants; 3) revenue coming from financial investments and assets held.	State-appointed valuers and government officials (veterinarians), if below certain value.
Netherlands, the	Multiple species infected with OIE List A and List B diseases	OIE List A and List B (Whiting 2002)	Animal Health Fund	Costs of measures imposed by government, including culling resulting from movement restrictions. Full compensation (100% of the market value) for healthy animals, 50% of the market value for diseased animals, and nothing for dead animals.	Wholly funded by the industry, with government funding of last resort.	Produce boards Compensation is established either by an "official appraiser" who values the animals to be slaughtered or by the weight of the animal.

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
France	Pigs	FMD	Minagric with animal health peer groups	Culling only, FMD also includes consequential losses.	Government fully for FMD, 55 percent by government for other diseases, others by farmer animal health groups. Disaster fund.	Farmer animal health groups.
Belgium	Poultry/birds	AI	EU/Ministry of Agriculture	90% of estimated slaughter value, fixed amounts per unit per day (broiler, layer, breeding egg) for loss of income, and 3 percent interest subsidy for restocking.		
United States	Poultry/birds	HPAI	USDA and then states	50%, and up to 75% of the appraised value for HPAI. Under emergency up to 100 percent for culling, and disinfection. Not for lost income. Compensation limited to 50 percent of market value for the vertically integrated firm. The contract growers receive compensation equal to what they would have earned if their poultry house had not been depopulated (Ott and Bergmeier 2005).	USDA 50 percent, rest from the states; cost sharing with private industry also exists.	

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (*continued*)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
Nigeria	Poultry/birds	HPAI (2006)	Mixed committee of federal and state	Compensation set at 250 naira (US \$1.90) (Avian Influenza Technical Task Force 2006) per bird culled, irrespective of class or age. Owners of large commercial farms are reportedly receiving compensation, but small-scale poultry owners are reportedly not being compensated, and there is no compensation for birds that die naturally of H5N1.		Based on preoutbreak market value
China	Poultry/birds	HPAI	Government	Central government pays 80% payment; provincial level is different, depends on the provincial regulations set by governors. (FAO/OIE/WHO 2006).		Market value of culled birds due to stamping out of infected birds and due to control measures
Ethiopia	Poultry/birds	HPAI (2006)		Owner compensation is 80% of the outbreak per culled bird (Bush 2006).		Market value of culled birds due to stamping out of infected birds and due to control measures
Vietnam	Poultry/birds	HPAI (2004) (H5N1 virus)	Government	Two compensation policies: (1) for poultry producers (that is, households, farmers, cooperatives, and so forth); and (2) for state-owned enterprises (SOEs) (Riviere-Cinmond 2005).	The central government budgeted 268 billion VND (\$17.2 million); a considerable amount was allocated to restocking (10 billion VND) and veterinary activities, disinfection, costs of	Value of culled birds due to stamping out of infected birds and due to control measures

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
<i>Vietnam (continued)</i>				<p>Poultry producers' losses were calculated at the local level in relation to the number of animals culled as per the rates; calculation and disbursement of the compensation funds for The support during the 2004 outbreak was only 10 to 15% of the market value (the market value of a layer is considered to be 100,000 VND). Central government budgetary constraints do not allow paying for the full market value, but can support 50%. SOE was performed at the end of the outbreak.</p> <p>For poultry producers, the guiding compensation are [[Q: missing words]]: the national government aim is to contribute 50% of the costs for controlling AI. The rest should be provided by the provinces; Ha Noi and Ho Chi Minh cities will not receive any contribution from the central government, budget will come from their local contingency budgets; In cities and provinces where the contribution toward AI control exceeds 50% of</p>	<p>labor and equipment, and so forth (13 billion VND) Central government subsidy levels toward poultry sector recovery are: Direct subsidy of 5000 VND/head (\$0.32) of poultry culled. Provinces are able to increase the subsidy level through their local contingency funds; restocking subsidy of 2000 VND/head (\$0.13) to recover poultry production. The amount released will be directly related to the number of animals culled; indirect expenditure at a rate of 3000 VND/head (\$0.19) culled for the control of AI during and after the outbreak (that is, equipment, facilities, disinfectants, protective clothing, staff in quarantine stations, and so forth) should be provided from the central government budget.</p>	

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (*continued*)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
Vietnam (<i>continued</i>)				the local contingency budget, the central government will support the difference from the National Budget Contingency fund. Compensation payment includes a restocking element. Recently a payment was introduced for welfare culling which is about 2/3 of the rate used when culling to stamp out an outbreak (McLeod, Riviere-Cinamond, and Hinrichs 2006).		
Thailand	Poultry/birds	HPAI (2004) (H5N1 virus)	Government	Farmers whose farms are depopulated are compensated by the government in two phases. The initial compensation, right after their farms are stamped out, is 40 baht (\$1) per layer and 20 baht (\$0.50) per broiler as well as payment for eggs that had been destroyed. The initial compensation is meant to support farmers when they lose income. The second compensation is arranged when farmers are ready to restock their farms.		

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
Thailand (continued)				They can choose between cash or poultry to start the flock. If they prefer cash, the government will pay 100 baht (\$2.5) per layer and 20 baht (\$0.50) per broiler. The total of 140 baht (\$3.5) per layer is equal to or slightly more than average market price, equal to 100 percent compensation. ^a	75% compensation by the Laws of Animal Epidemics (Animal Epidemic Act).	Market value of culled birds due to stamping out of infected birds and due to control measures.
Albania	Poultry/birds	HPAI (2006)	The scheme sets compensation payments of 400–700 leks (US\$4–7) for each chicken (depending on size) 1,500 leks (US\$15) for the goose and 2,500 (US\$25) for the turkey. (1 US\$ = 100 leks) (Ahmed 2006).			
Canada	Poultry/birds	HPAI (2004)	Provided by the national legislation under the Health of Animals Act (1990) ^b	The Canadian poultry industry is not as highly integrated as the United States, rarely have contract growers and producers raised their birds independently from the processors and hatcheries. Compensation value included future loss of income from the depopulation of birds due to life cycle interruption.		

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
Mauritania	Poultry/birds	AI	Ministere agriculture	50% of market price (\$2.8 ^c) and 70% of market price (\$3.9); still tentative since they have not had any outbreak.	MoF Direction of Budget (national treasury) in close collaboration with the MoA Direction of Livestock (technical).	Based on market prices.
Senegal	Poultry/birds	AI	Ministry of Livestock	80% of market price.	MoF National Treasury in collaboration of MoLivestock	Based on production costs and market prices for smallholders.
Côte d'Ivoire	Poultry/birds	AI, but same system used as ASF	Ministry of Animal Production and Fisheries	75% of market price, decided on the spot of the declaration of the outbreak. Government and producers included in talks. Compensation set for each category are as follows: parent = \$12.7 ^d ; broiler and turkey chicks are= \$2.7; layer = \$4.6; traditional chicken= \$2.7; chick less than 15 days = \$0.91; traditional chick = \$0.36; duck = \$13.6; guinea fowl = \$3.6; turkey=\$27.3; pigeon and "caille"=\$0.91; peacock and goose=\$45.5; ostrich=\$363.6.	Funds will be held at MoF. Technical advice from the Comité National de Lutte contre la Grippe Aviaire (CN-LGA, National Inter-ministerial Committee on Highly Pathogenic Avian Influenza) for fund disbursement.	Market prices.
Nigeria	Poultry/birds	AI (but unsuccessful experiences with CBPP ASF and Rinderpest compensation)	Department of Livestock Planning and Monitoring Services	Compensation set for each category are as follows: chicken = \$1.95 ^e ; duck and goose = \$7.8; turkey = \$19.5; emu= \$77.9; ostrich= \$155.8.	National Treasury, MoF.	

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
West Bank and Gaza Strip	Poultry/birds	AI	MoA Palestinian Authority	<p>Compensation set for each category by age: For broilers: 1 wk = \$1.04; 2 wks = \$1.27; 3 wks = \$1.5; 4 wks = \$1.85; 5 wks = \$2.31; 6 or more wks = \$2.54. For parent stock: 1–2 mos. = \$5.77; 2–3 mos. = \$6.93; 3–6 mos. = \$9.24; 6–12 mos. = \$13.86; 13 or more mos. = \$2.31. For chicken, doves and ducks = \$2.31. For turkeys: 1 wk = \$2.54; 2 wks = \$3.46; 3 wks = \$4.62; 4 wks = \$5.77; 5 wks = \$6.93; 6 wks = \$8.08; 7 wks = \$9.45; 8 wks = \$10.85; 9 wks = \$12.01; 10 wks = \$13.39; 11 or more wks = \$14.55.</p>	External donor (Russia).	Poultry production costs.
Kosovo	Poultry/birds	AI	Kosovo Veterinary and Food Service Agency in the Ministry of Agriculture, Forestry and Rural Development	<p>Compensation set for the following categories: Day old chicks; laying hens up to 18 weeks; end-of-production laying hen; pigeons; and turkeys.</p>	MoF budget line and earmarked taxes associated to animal health.	Production costs.
Serbia	Poultry/birds	AI, but may be used for other diseases	Department of Veterinary Services	<p>Generally the prices that were given to farmers were 10 euros (\$7.9) per chicken, 20 euros (\$15.9) per pigeon, and 0.7 euros (\$0.56) per egg. Regarding the latter it was mentioned that the price per egg was over estimated by a 15%.</p>	Department of Veterinary Services Animal Health Fund.	Ad hoc negotiations with farmers.

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
Bosnia and Herzegovina	Poultry/birds	AI	Entities Veterinary Department	\$5 ^s per chicken.	Entities Ministries of Finance.	Ad hoc negotiation with farmers.
Egypt	Poultry/birds	AI	Supreme Committee headed by the Ministry of Health	Large commercial units were compensated due to losses from culling of animals by authorities at a rate of \$0.87 ^h per chicken over 30 days old; same rate for ducks and geese over 50 days old; No compensation for small scale and backyard farms; \$0.5 for birds in surrounding areas that may or may not be culled (for loss of market access).		Available funds and an estimate number of birds to be culled.
Sweden	Pigs, cattle/buffaloes	Salmonella, paratuberculosis, FMD, CSF, and BSE	Government	The compensation that a farmer receives is calculated as the difference between the actual profit and the expected profit if the farm was still engaged in production. Compensation is 50% in case of salmonella and paratuberculosis. For diseases such as FMD, CSF, and BSE, the compensation for consequential losses is 100% (DEFRA 2005b).		
United Kingdom	Pigs	FMD (2001)	Government	Payment of compensation for direct losses at 100% of the market value of the pigs destroyed on welfare grounds arising as a result of movement controls (Meredith 2003).		

Appendix I. Examples of Compensation Schemes for Culling under Animal Disease Outbreaks in Selected Countries (continued)

Country	Animals	Diseases	Decision maker	Level	Funding	Pricing
United Kingdom	Cattle/buffaloes	Brucellosis bovine TB (1996)		Payment for compensation of slaughtered animals was 75% of the market value up to a maximum depending on average market returns. Full compensation was payable for any animal destroyed due to exposure to the infection, but even if it had not developed the disease.		
United Kingdom	Pigs	Atrophic Rhinitis (1954) Controls on the disease were revoked on November 27, 1962		Compensation was paid for infected animals at half the market value; in all other cases it was the full market value.	Ministry of Agriculture, Fisheries and Food	Market value of the animal immediately before slaughter.
EU Member States	Pigs, poultry/birds	Newcastle Disease, CSF, FMD, HPAI	EU legislation under the Animal Health Act 1981, amended in 2002; to allow animals to be slaughtered wherever there is a need to prevent the spread of these diseases	Compensation is payable under the Animal Health Act 1981 at 100% of the market value for birds that are not affected with disease at the time of slaughter. Compensation is payable at 100% of the market value for birds that are not affected with disease at the time of slaughter. Compensation is not payable for diseased or dead birds (DEFRA 2005a).		
Spain	Cattle/buffaloes	Disease outbreaks affecting bovine species	Private insurance sector	Compensation for animal slaughter at the time of an outbreak is paid for by the government at a fixed rate per head of livestock.	Private insurance sector subsidized by the government (by 37–43%)	The fixed rate is determined using a range of market information sources including value of the animal, age, breed, and other factors (DEFRA 2005b).

Table Notes

- a. <http://www.nap.edu/catalog/11150.html>. "The Threat of Pandemic Influenza: Are We Ready? Workshop Summary."
- b. <http://laws.justice.gc.ca/en/H-3.3/text.html>.
- c. 1 USD=271.30 UM (Ouguiya).
- d. 1 USD = 550 FCFA.
- e. 1 USD = 128.35 Naira.
- f. 1USD = 4.33 NIS.
- g. 1 USD=2 KM (Konvertible Mark).
- h. 1 USD = 5.74 Egyptian pounds (October 2006).

Appendix 2. Four Main Types of Poultry Production Systems

Characteristics	Industrial and integrated	Commercial		Village or back yard
		High biosecurity	Low biosecurity	
	Sector 1	Sector 2	Sector 3	Sector 4
Biosecurity	High	Mod-high	Mostly Low	Low
Market outputs	Export and urban	Urban/rural	Live urban/rural	Rural/urban
Use of purchased inputs	High	High	High	Low
Dependence on good roads	High	High	High	Low
Location	Near capital and major cities	Near capital and major cities	Smaller towns and rural areas	Everywhere; dominates in remote areas
Birds kept	Indoors	Indoors	Indoors/Part-time outdoors	Outdoors most of the day
Shed	Closed	Closed	Closed/open	Open
Contact with other chicken	None	None	Yes	Yes
Contact with ducks	None	None	Yes	Yes
Contact with other domestic birds	None	None	Yes	Yes
Contact with wildlife	None	None	Yes	Yes
Veterinary service other than in epizootic disease control	Own veterinarian	Pays for veterinary service	Pays for veterinary service	Irregular, depends on government services
Source of medicine and vaccine	Company or market	Market	Market	Government and market
Source of technical information	Company and associated	Sellers of inputs	Sellers of inputs	Government and extension
Source of finance	Banks and own	Banks and own	Banks and private ¹	Private and banks
Breed of poultry	Commercial	Commercial	Commercial	Native
Food security of owner	High	Ok	Ok	From ok to bad

Source: Adapted from Dolbert, GuerneBleich, and McLeod (2005).

Appendix 3. Avian Influenza Projects Approved under the GPAI¹

Countries listed had approved GPAI funding as of Sept. 8, 2006, based on World Bank Project Approval Documents and technical annexes of the respective projects. Azerbaijan was excluded because of the use of a different funding instrument with noncomparable information (Technical Assistance Loan).

Projects included in first half of table: Albania, Armenia, Georgia, Kyrgyz Republic, Lao PDR, Moldova, and Nigeria.

Projects included in second half of table: Romania, Tajikistan, Turkey, Vietnam (Phase I), and West Bank and Gaza.

Appendix 3. Avian Influenza Projects Approved under the GPAI

Country	Albania	Armenia	Georgia	Kyrgyz Republic	Lao PDR	Moldova	Nigeria
Value of the compensation fund	US\$2 million (only from the Bank; no information about other internal stakeholder contribution)	US\$0.75 (from the Bank)	US\$1.4 million (from the Bank)	US\$0.35 (\$0.23, Bank; \$0.12, AHIF)	US\$1 million (Bank); US\$0.5 million (government)	US\$9.62 million (from the Bank exclusively earmarked for HPAI outbreaks); in addition a scheme for cost sharing by livestock farmers is planned.	US\$9.62 million (from the Bank exclusively earmarked for HPAI outbreaks); in addition a scheme for cost sharing by livestock farmers is planned.
Status	Active	Active	Active	Active	Active	Active	Active
Effective date	10/16/2006	09/05/2006	08/08/2006	07/10/2006	Not yet effective	09/12/2006	06/22/2006
Effectiveness conditions	(a) The Annual Work Program for the first year of the implementation of the Project, satisfactory to the Association, has been prepared and adopted by the recipient; (b) the Project Operational Manual, satisfactory to the Association, has been adopted by the recipient; (c) the Environmental Management Plan, acceptable to the Association, has been adopted by the recipient; and (d) the cofinancing grant agreement has been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to make withdrawals under it have been fulfilled.	(a) The recipient has appointed the head of the Secretariat of the Inter-Ministerial Committee for Avian Influenza; (b) the recipient has appointed Project Component Coordinators with terms of reference and experience satisfactory to the Bank; (c) a Project Operational Manual, satisfactory to the Bank, has been adopted by the recipient.	None	(i) The Project Operations Manual, satisfactory to the Association, has been prepared and adopted by the recipient and (ii) the work program for the first year of the Project, satisfactory to IDA, has been adopted by the recipient.	(i) The annual work program for the first year of the Project has been approved by IDA; (ii) the selection and contracting of key consultants needed for strengthening the fiduciary and M&E functions in NAHICO and DLFNAF (specifically for procurement and financial management), to be financed from World Bank funding, and in accordance with the Consultant Guidelines; (iii) the adoption of an Operational Manual (or Project Implementation Plan [PIP], including Financial Management and Procurement Manuals, acceptable to IDA; (iv) the establishment of a financial management system satisfactory to IDA; and (v) the cofinancing agreements between the recipient and the PHRD as well as the AH1 Facility are signed and meet all conditions for effectiveness, other than the effectiveness of the IDA grant.	Preparation and adoption of a Project Operations Manual acceptable to IDA.	Standard requirements covering organization and staffing of program units, management arrangements, provisions for procurement and financial management would be sufficient.

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Albania	Armenia	Georgia	Kyrgyz Republic	Lao PDR	Moldova	Nigeria
Disbursement conditions	No withdrawal shall be made for expenditures for Eligible Emergency Imports included in the positive list in Section V.C of Schedule 2 to the Financing Agreement, unless: (i) a national emergency on Avian Influenza has been declared by the recipient and a well-defined emergency recovery program, satisfactory to the Association, has been adopted by the recipient; (ii) for goods supplied under a contract which any national or international financing institution or agency other than the Association shall have financed or agreed to finance or which the Association has financed or agreed to finance under another grant or credit; and (iii) in excess of an aggregate amount equivalent to 50% of the amount of the financing for any category of eligible imports specified in the above-referenced positive list without prior approval by the Association.	a) A disbursement condition for the Animal Health component is the adoption by the recipient of an Environmental Management Plan satisfactory to the Bank; b) Disbursement conditions for the Compensation Fund sub-component are that: (i) the Compensation Fund has been established in a manner satisfactory to the Bank; (ii) the compensation Procedures Manual, satisfactory to the Bank, has been adopted by the recipient; and (iii) the Compensation Fund payments are being made in accordance with criteria and procedures set forth in the Compensation Procedures Manual; c) A disbursement condition for the poultry restructuring cofinancing grants is that the Poultry Restructuring Subprojects are being selected and implemented in accordance with criteria and procedures set forth in the Project Operational Manual; d) a disbursement condition for the Critical Imports component is that the recipient has declared a national emergency on AI and adopted a well-defined emergency recovery program satisfactory to the Bank.	Conditions of disbursements under the project would be: (i) the MoLHSA and the MAF have appointed project coordinators and established a financial management system and procurement arrangements satisfactory to the Bank; and (ii) project Operations Manuals have been adopted by MAF and MoLHSA. A disbursement condition on funding for culling is the adoption of a compensation funding manual satisfactory to IDA that describes compensation systems and procedures, including appropriate internal control mechanisms and documented arrangements for the flow of funds and documents.	(i) For expenditures under Category (5)—Compensation Fund—the Compensation Fund Manual, satisfactory to the Association, has been adopted by the recipient; (ii) for expenditures under Category (2)—Civil Works—the Environmental Management Plan, satisfactory to the Association, has been adopted by the recipient; and (iii) expenditures under Category (6)—Eligible Imported Goods and Commodities—a national emergency on avian influenza has been declared by the recipient and a well-defined preparedness and response program has been prepared.	Preparation of a procedures manual for the Compensation Fund, and a manual for procedures to access the Research and Pilot Fund, acceptable to the IDA, will be a condition of disbursement.	1. For Component 1—Animal Health, preparation of an Environmental Management Plan satisfactory to IDA; 2. For Component 1C, establishment of a Compensation Fund in accordance with criteria and procedures set forth in the Operations Manual and the recipient’s legislation.	None
Disbursements to date (total in millions)	None	\$0.30	None	\$0.30	None	None	\$10

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Albania	Armenia	Georgia	Kyrgyz Republic	Lao PDR	Moldova	Nigeria
Ditto, compensation fund only	None	NA	None	NA	None	None	NA
Decision maker	MoA; Regional Agriculture Directorates; Commission comprising of rep from local govt., veterinarian, rep from regional veterinary directorate to determine the value of culled animals.	MoA Livestock Department will determine the compensation to be paid based on the culling record.	MoA—Veterinary official of the ministry will be responsible for the animal health component—no specific reference about the decision maker for compensation	MoA (Agricultural Projects Implementation Unit)—no specific reference about the decision maker for compensation	TBD	MoA (w/assistance from the Agricultural PMU) manage the fund; an Extraordinary Anti-Epidemic Commission (reps from local govt. and civil society) under the State Veterinary Inspectorate determine loss of culled birds.	Local government desk (LGD) and a multistakeholder committee will screen and approve compensation proposals submitted by the community thematic associations. The LGD has 3 officers, including an animal health officer, human health officer, and a community M&E officer.
Institutional arrangement and compensation level	Compensation Fund to be established; farmers—100% of the market value; commercial producers—reasonable replacement cost; all poultry compensation prices based on the price reported by the agriculture statistical directorate during the third month preceding the month in which culling took place.	National Compensation Fund to be established; smallholders—75% of the market price of laying hens in the respective marz center; medium and large poultry owners—reasonable compensation cost; all poultry compensation prices will be based on the market price of poultry for the third month preceding the month in which the culling occurred.	TBD during the first months of project implementation.	Establish national compensation fund; smallholders—75% of the market price of laying hens in the respective oblast; medium and large poultry owners—reasonable compensation cost; all poultry compensation prices will be based on the market price of poultry for the third month preceding the month in which culling occurred.	TBD during implementation; broad guiding principles developed (Appendix 11 of PAD) which propose: (i) picking reference market price; (ii) setting different prices for different types of birds; (iii) speed in registration and payments, and so forth.	Compensation fund to be established; govt. to apply retail price of each type of whole chicken as a basis for compensation provided; sources of prices for poultry meat are the CPI published by the National Statistical Bureau and daily data collected by CAMIB—a private company; reference prices applied for about 2 months before culling; compensation fund to reimburse 75% of the assessed market value.	National compensation policy and compensation fund to be established and levels yet to be determined; activities to support economically vulnerable groups (smallholder poultry farmers with little or no access to animal health services) are planned including advisory services for new investments, restocking activities or seed money to undertake alternative livelihood.
Time frame for reimbursement	Within 7–15 days from the date of culling.	Within four weeks from the date of culling.	Within one month.	Within four weeks from the date of culling.	TBD	TBD	TBD

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Albania	Armenia	Georgia	Kyrgyz Republic	Lao PDR	Moldova	Nigeria
Requirements and mode of payment	Culling certificates; farmers—cash transfers to communes/municipality; commercial farmers—bank transfers.	Culling certificates; all compensation payments to be made by bank transfers.	No specific requirements for compensation determined (except that records need to be kept); cash payments or transfers (check, pension payments).	Culling certificates; payments be made by cash, bank transfers, or postal transmission at the village levels; special attention given to ensure payments to be made to women poultry owners.	Compensation payments to be made in cash.	TBD	TBD
Relevant legal framework	2004 Law on Veterinary Services and Inspectorate confirms the right of farmers for compensations and determines the procedures for culling and compensation—existing framework and procedures (but with introduction of additional measures).	2005 Veterinary Law in place; project plans to provide technical assistance to develop the implementation arrangement for compensation fund administration through promulgation of an order from MoA	2004 amended Veterinary Law provides for an establishment of compensation mechanisms, but does not include detailed implementation arrangements (financing, fiduciary, level of compensation, payment arrangements, and so forth).	The new veterinary law (2005) adopted earlier this year provides for the establishment of a compensation fund. But no steps have been taken as yet to develop the required implementation arrangements—including financing, fiduciary aspects, eligibility criteria, payment arrangements, flow of funds, and so forth.	2000 Regulation on Management of Livestock Productivity; Decree of the PM regarding animal control in Lao PDR (May 2005); order of the PM regarding AI Control (January 2004).	Law on Insurance of Republic of Moldova (2003) based on National Contingency Plan; all necessary operational and financial details for the compensation fund to be developed during project implementation.	The existing Animal Disease Act (1988) provides for an establishment of a compensation fund, but no other steps are available in terms of developing the implementation arrangements—project will provide technical assistance to develop the implementation arrangement for compensation fund.

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Albania	Armenia	Georgia	Kyrgyz Republic	Lao PDR	Moldova	Nigeria
Communication strategy	Risk communication plan planned for the first year; strong linkage with media for public awareness; preparation of IEC materials for target groups (\$0.46 million)—nothing specific related to compensation.	Communication strategy planned to educate the vulnerable groups on preparedness plans and mitigation measures across prepandemic and pandemic phases (US\$0.31 million)—nothing specific related to compensation.	Ex ante communication activities to raise awareness, knowledge, and understanding about the risks to all stakeholders; behavior change interventions for farmers from becoming infected; creation of proactive citizenry with community mobilization to monitor and mitigate impact on the poor (\$0.9 million)—nothing specific related to compensation.	Communication activities (“marketing of handwashing via mass media), fact sheets, counseling will be provided to all stakeholders (govt., private sector, civil society, farmers); training in communications for extension, veterinary and health staff at community levels (\$0.36 million)—nothing specific related to compensation.	Communication strategy and action plan to be developed; national campaign to provide information and educate farmers and the general public about the risks of avian influenza; multiple media tools to be used and relevant campaign material will be translated into key ethnic minority languages (US\$1.87 million)—nothing specific related to compensation.	Three planned stages of communication response: (i) preoutbreak campaign to promote safe and responsible behavior to reduce risks to children, families, HHS, and communities, and to promote media reporting; (ii) an intensive communication campaign during an epidemic alert; (iii) post epidemic communication to promote recovery and help (\$1.3 million)—information on compensation may be included preoutbreak.	Communication preparedness, including development and distribution of basic communication materials (fact sheet, influenza vaccines), preventive measures and training in the event of a pandemic or emerging disease outbreak; various communication channels (mass media, counseling, schools) to be used and social mobilization to take place at local community levels among church, community leaders, and civil society (\$4.08 million)—nothing specific related to compensation.

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Albania	Armenia	Georgia	Kyrgyz Republic	Lao PDR	Moldova	Nigeria
Poultry structure	Total number of poultry over 6 million (over 85% owned by smallholders); small poultry farming scattered across the country; average price of mature bird (weighing approximately 2.5 kg) US\$7 in the market in early 2006.	Backyard poultry accounts for about 30 percent of production for Armenia.	Total number of poultry 10.6 million in 2005 (major sources of income for rural HHS with more than 90% of production conducted in small and backyard farms); high growth sector; share of commercial enterprises increasing but only about 10% of the total production; estimated annual output of the sector 156 million GEL in 2004.	Total number of poultry about 5.2 million in 2003 (vast majority of poultry kept by smallholders in their backyards and managed by women with the help of children); about 80% of all Kyrgyz households have some poultry.	Sector comprises mainly smallholders raising free-range local chicken for meat and eggs; for consumption or for local sale; 80% of poultry stock kept by smallholders; about 20% of all poultry production produced on the commercial farms.	The poultry sector in Moldova represents 80% of the livestock and poultry population, at roughly 18 million heads (as of September 2005). Fourteen million birds are owned by HHs and small commercial farmers. The number of backyard poultry is highly variable, with peak season (summer and early fall) population reaching approximately 20 million. The country's commercial industry is characterized by the predominance of 5 large producers. Since independence, commercial poultry has suffered a severe drop in output, but has been on a strong rebound since 2002, with an average output (mean and eggs) growth of 10%.	Poultry production is one of the key means of income generating activities and livelihood strategy. More than 80% of national poultry inventory (estimated to be 143 million) are found in free-ranging backyard poultry. Nearly all rural HHs hold 3–5 backyard poultry and the bulk is consumed within HH and presently an important component of the diet.

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)					
Country	Romania	Tajikistan	Turkey	Vietnam (Phase I)	West Bank and Gaza
Value of the compensation fund	Government to finance from its own resources; budgetary allocations for compensation (avian influenza, swine fever, FMD) by MoA. Eur 2 million (2005)	US\$0.8 million (\$0.5 Bank; \$0.3 AHIF exclusively earmarked for HPAI outbreaks).	Initial US\$5 million reserve fund (from the Bank); further the govt. will work out a mechanism whereby commercial poultry producers pay into the reserve fund in the form of "insurance premia."	Not specified in the document for the proposed project; instead it refers to the compensation reimbursements of the outbreak in 2004, which only compensated 9 seriously affected provinces; remaining 55 provinces had to use their provincial disaster relief funds, which were not adequate.	US\$4.8 million (from the Bank); other financing expected from the private sector.
Status	Active	Active	Active	Active	Active
Effective date	Not yet effective	10/18/2006	09/11/2006	11/09/2004	Not yet effective

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Romania	Tajikistan	Turkey	Vietnam (Phase I)	West Bank and Gaza
Effectiveness conditions	<p>(1) Establishment of the Steering committee in a manner satisfactory to the Bank; (2) adoption of the Project Implementation Manual satisfactory to the Bank. The PIM will specify, among others: (i) procedures governing administrative, procurement, accounting, financial management, including adequate measures for procurement and forensic audits, and M&E arrangements; (ii) the Procurement Plan, detailed cost tables, and the EMP; and (iii) sample formats for Project Reports and interim unaudited financial reports. (3) Establishment of the ANSVSA PMU in a manner satisfactory to the Bank and with sufficient and suitable human resources.</p>	<p>(a) National Steering Committee with composition and TOR satisfactory to the Association has been established by the recipient; (b) project implementation coordinators have been designated in the MoH, Veterinary Department of the MoA, Foot and Mouth Disease Institute, and Institute of Zoology and Parasitology of the recipient; (c) a communication specialist, a M&E specialist, an assistant to the chief accountant, an assistant to the procurement specialist, and the compensation fund administrator, all acceptable to the Association, have been employed by the Project Management Unit (PMU); (d) the Project Operational Manual, satisfactory to the Association, has been adopted by the recipient; and (e) the EMP, satisfactory to the Association, has been adopted by the recipient.</p>	<p>The condition of effectiveness for the loan would be that the MARA and MoH have appointed their respective project coordinators.</p>	<p>(a) Adoption of a Project Implementation Manual satisfactory to IDA; (b) finalization of the detailed procurement plan for 2004–2005; (c) appointment of qualified staff seconded from DAH, DA, and NAEC to the PCU and engagement of additional staff for financial management and procurement at the PCU; (d) establishment of provincial project implementation units with adequate staffing, in at least three project provinces; and (e) training in financial management for accounting staff at the PCU and provincial project implementation units.</p>	<p>(a) The Project Operational Manual, satisfactory to the Association, has been approved by the recipient; (b) the annual work program for the first year of the project, satisfactory to the association, has been approved by the recipient; and (c) the subsidiary agreement has been executed on behalf of the recipient and the Palestinian Authority.</p>

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)					
Country	Romania	Tajikistan	Turkey	Vietnam (Phase I)	West Bank and Gaza
Disbursement conditions	Payments made between May 11, 2006, and the date of the loan signing in an amount not to exceed EUR 7.0 million. Eligibility of items to be financed retroactively has been established. EMP, satisfactory to the Bank, has been adopted by the borrower, through ANSVSA and MPH.	1. Disbursements from the compensation fund will occur only when compensation fund implementation arrangements satisfactory to IDA have been put in place, including adoption of a satisfactory compensation fund operational manual; 2. disbursement for emergency imports will only be permitted when a national emergency on avian influenza has been declared by the govt. and a well-defined emergency recovery program, satisfactory to the Association, has been adopted by the govt.	A disbursement condition for the animal health component is the adoption by the borrower of an environmental management plan satisfactory to the Bank. It is also required that the payments under the compensation fund and the selection and implementation of poultry restructuring subprojects are made in accordance with criteria and procedures set forth in the Project Operation Manual.	(a) Biosecurity plans for each GP breeding farm reviewed and endorsed by an international expert before new GP poultry stock is imported; and (b) a technical audit for the NIVR prior to procuring laboratory equipment for the Virus Reference Laboratory.	(i) For expenditures under compensation fund; (a) the compensation fund has been established in a manner satisfactory to the Association; and (b) the compensation procedures manual, satisfactory to the Association, has been adopted by the recipient; and (ii) for expenditures under Goods, Works, and Consultants' services, the EMP, satisfactory to the Association, has been adopted by the recipient.
Disbursements to date (total in millions)	None	None	None	\$2.30	None
Ditto, compensation fund only	None	None	None	NA	None
Decision maker	National Sanitary, Veterinary, and Food Safety Authority—no specific reference about the decision maker for compensation.	State veterinary department (details yet to be determined).	TBD	National Steering Committee for Avian Influenza Control, chaired by the Minister of Agriculture and Rural Development, will provide general policies and guidelines to project implementation—no specific reference about the decision maker for compensation.	Compensation committee within MoA—no other details provided.

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Romania	Tajikistan	Turkey	Vietnam (Phase I)	West Bank and Gaza
Institutional arrangement and compensation level	Compensation paid at locally determined market price.	National compensation policy and compensation fund to be established; smallholder (owning up to 200 birds)—75% of the market price of laying hens as reported by the competent rayon authority during the preceding month in which culling took place or 75% of the average price during the previous year, adjusted to inflation; medium and large holders (owning more than 200 birds)—reasonable replacement cost.	Compensation fund to be established; farmers and commercial poultry producers will be compensated at the full current value of their culled poultry.	A compensation policy study is planned that would provide a framework for an equitable national compensation policy; current practices: smallholders, direct per-bird compensation of 5,000 VND (US\$0.32) per mature bird, 2,000 VND (US\$0.13) per bird for other poultry; in some cases several provinces have elected to top up this amount by another VND 10,000 (US\$0.64); govt. breeding centers, reimbursement of the entire feed cost for 4 months (Dec–March) and the entire cost of diagnosing the virus on state and private farms; further the project would support the rehabilitation of the poultry sector through breed stock supply.	A national compensation fund is established—implementation arrangements yet to be developed; a guideline for compensation prepared (p. 59), which suggests uniform prices at national level; compensation prices to be based on production costs as market prices are distorted in West Bank and Gaza.
Time frame for reimbursement	One week–60 days	Within 7 calendar days upon notification by the PMU	TBD	Not specified	Not specified
Requirements and mode of payment	Not specified	Tajik Amanathbank will function as an agent bank for the PMU and disburse funds through savings accounts in the rayon branches closest to the recipient families.	Payment through bank transfers; periodic visits will be made by CEU to the community/village level to review claims for compensation payments.	Not specified	Culling certificates; farmers—checks in the beneficiary name at the village level; medium to large poultry producers (with more than 3,000 birds), bank transfers.

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)					
Country	Romania	Tajikistan	Turkey	Vietnam (Phase I)	West Bank and Gaza
Relevant legal framework	Government ordinance no. 42/2004 approved by law no. 215/2004 with provisions in regards to animal health. Compensation payments subject to provisions of the national "Compensation for Animal Diseases" allocation under the Ministry of Agriculture budget; framework and procedures already exist.	No veterinary laws exist that prescribe arrangements for compensation—the project will establish a fund through provision of technical assistance to identify implementation arrangements.	Brief reference is made to a draft National Action Plan for Influenza prepared by the Ministry of Health; the document indicates that the plan provides the legal basis for an effective response.	National Action Plan has been prepared and promulgated by the Department of Animal Health in March 2004. This is the framework on which the AI control strategy is based.	MoA has prepared the National Avian Influenza Control and Eradication Plan—no other information provided.
Communication strategy	Communication activities during pre-pandemic and pandemic phases; awareness raising and behavior change interventions among population at risk; information campaigns to educate key target groups (farmers, people living in villages, local authorities, and so forth) through media, community mobilization (\$1.49 million)—nothing specific related to compensation.	Three subcomponents of communication response: (i) pre-outbreak campaign to promote safe and responsible behavior to reduce risks to children, families, HHs, and communities, and to promote media reporting; (ii) an intensive communication campaign during an epidemic alert; (iii) post-epidemic communication to promote recovery and help. Communication response includes mass media campaigns, social mobilization, preparation of information materials (brochures, newsletters) (\$1.2 million).	Communication activities include: production of educational materials to support the ag/health staff, vulnerable population; media programs; investment in existing infrastructures (call-in centers) (\$2.78 million)—nothing specific related to compensation.	Public information campaign at the local level to increase the basic knowledge of farmers, poultry holders and other stakeholders about animal health information: clinical signs, disease recognition, prevention, and so forth; inform concerned stakeholders about regulations, compensation mechanisms, and restocking process; specific communication activities (TV, radio, e-media) at the national and provincial level (\$0.90 million).	Information campaign to target rural population, in particular poultry producers through public meetings, field and house-to-house visits, creation of hot line (US\$0.52 million).

Appendix 3. Avian Influenza Projects Approved under the GPAI (continued)

Country	Romania	Tajikistan	Turkey	Vietnam (Phase I)	West Bank and Gaza
Poultry structure	<p>Poultry production is widespread across the country, with the backyard holdings accounting for 70% of Romania's total poultry production. The particular structural challenge lies in the low biosecurity standards of smallholder poultry operations inherent in their fragmented structure and traditional poultry and livestock management practices. As regards the commercial poultry production, this appears to be highly concentrated. There are 15 large producers of poultry meat who hold about 60% of the total domestic production. They rely on integrated establishments that produce broiler chickens and poultry feed, and have their own slaughterhouses. There are also 20 middle and 43 small producers, yielding 30% and 10% respectively, of the domestic commercial poultry output.</p>	<p>Seventy percent of poultry are owned by HHs, majority consist of smallholders in poor rural areas; estimated value-added by the poultry sector in 2004 was around TJS 19 million (US\$58,824) or 0.8% of the agricultural GDP; domestic production was estimated at around 2,000 tons of meat and 77.7 million eggs; poultry imports were valued at around \$15 million in 2004 (5.8 tons of meat and 63.3 million eggs).</p>	<p>Prior to the outbreak, GDP of the poultry and egg sector in Turkey ranged from US\$1.2–1.5 billion annually; backyard poultry amounts to 15% of production in Turkey; under the project, restructuring of the poultry sector is planned to reduce the practice of backyard poultry raising; introduction of restructuring modalities will be piloted under the project with matching grants to be provided under a competitive proposal submission and award process (with at least 50% cofinancing by private beneficiaries).</p>	<p>The poultry sector in Vietnam mainly comprises the state sector and the commercial sector; Department of Agriculture controls half of the market share in the national poultry production, with the other half coming from the commercial farms (large companies, other breeder farms); individual small commercial farms also exist, with 23,000 private production farms registered that produce 2,000 broilers per batch and 3–4 batches annually.</p>	<p>Poultry production is at around US\$125 million, one-third of the total animal production; the poultry sector's value-added, after input deductions, is estimated at around US\$22 million; poultry rearing plays a key role in HH livelihood and female incomes in Gaza (approximately half of Palestinian women have long-term involvement in poultry rearing).</p>

Appendix 4. Poultry Culling Record: Owner's Certificate

Poultry Culling Record—Owner's Certificate

Compensation Payment Received:
Date:
Amount:
Signature:

Community	Location	Date
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Name of Poultry Owner:					
Address:					
Birth Date:		Identification Number:			
No.	Type of poultry (chickens, ducks, geese, turkeys, etc.)	Number of poultry	Compensation Value per Bird (local cur- rency)	Total Com- pensation Value (local currency)	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
—	Totals		—		

Culling Verified by the Community Culling Supervision Committee:

Local Government Representative
(Name) _____ Signature _____

Veterinary Service Representative
(Name) _____ Signature _____

Community Representative
(Name) _____ Signature _____

Poultry Owner
(Name) _____ Signature _____

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Endnotes

1. Also see <http://www.defra.gov.uk/Animalh/diseases/control/archive.htm>.
2. The World Bank recently estimated that the potential overall economic losses from HPAI if it mutated to a human-to-human transmissible form could reach nearly one trillion U.S. dollars. Almost all of this is from “indirect” losses (World Bank 2006 Global Development Finance). Indirect losses in the UK from the 2001 FMD outbreak were estimated to be on the order of 9 times higher than direct losses (Thompson et al. 2005).
3. Vertically coordinated (integrated) poultry systems share management decision making and asset ownership across distinct functions of the supply chain, as in feed millers owning or contracting breeding and broiler farms.
4. Consumer demand for organic free-range poultry in Europe has led to the re-emergence of sector 3 type operations in that continent, but typically at much higher degrees of biosecurity than in developing countries.
5. The growing organic/free range poultry subsector in much of Europe has some characteristics similar to sector 3 in developing countries, including the potential for increased interactions of farmed poultry with wild birds. However, in terms of overall good biosecurity and record keeping, they seems to be best thought of more as sector 2.
6. This is based on anecdotal but widespread evidence observed in both countries during recent field visits. Checking the present status of sector 3 should be a priority for future work targeted at facilitating the evolution of poultry systems to more sustainable practices.
7. Poultry are a short cycle species, broilers and meat ducks have a life of only a few weeks. Markets may be closed for several weeks while and outbreak is brought under control.
8. To our knowledge, there are no good examples of this to draw upon, although there is anecdotal evidence suggesting that compensation does increase the number of animals presented for culling.
9. Council directive 90/424/EEC <http://www.warmwell.com/90424eec.html>.
10. <http://www.inspection.gc.ca/english/anima/heasan/disemala/compense.shtml>.
11. Farm gate prices are calculated by subtracting estimated marketing margins from the farm to the market in question (typically using an average per kilometer figure) from observed local market prices that have been recorded as a price series for the market in question.
12. 1 US\$= Rp 45.
13. See : http://www.aphis.usda.gov/vs/pdf_files/spr_may_june_02.pdf#search=%22Animal%20disease%20compensation%22.
14. <http://www.cdc.gov/ncidod/EID/vol12no07/06-0277.htm>.
15. http://www.dgroups.org/groups/fao/hpai-compensation/docs/cas_Niger_English.pdf?ois=no.
16. <http://www.reliefweb.int/rw/RWB.NSF/db900SID/LSGZ-6NAJ5A?OpenDocument>.
17. There should not be a poultry census before culling because of the obvious sanitary risks and limited reliability of such an exercise.
18. See Appendix 4 for forms for culling and compensation.
19. 1 US\$ = 0.54 UK pound.
20. Further work may be necessary on how to involve collectivities of farmers in this rapid response and to act as necessary if the official response is delayed.
21. The issue of possible implications of the WTO Agreement on Agriculture (WTO-AoA) for compensation practices to be marked as agricultural support was discussed at a meeting at OIE on October 18, 2006, to review a draft of the present manuscript. It was agreed that compensation for culling for disease control would clearly fall under Annex II (“Domestic Support: The Basis for Exemption from the Reduction Commitments”), Article 8 (“Pay-

ments made....for relief from natural disasters”), item c. This holds that: “Payments shall compensate for not more than the total cost of replacing such losses and shall not require or specify the type or quantity of future production.” It was agreed that this item of the WTO-AoA would not conflict with any recommendations made in the report, which is confined to payments for disease control,

although it could at a stretch be an issue for “restructuring” programs seeking to tie compensation to moving to other agricultural activities.

22. Leaving open the issue of whether it would be better to have separate facilities for separate diseases.



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