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# LINKAGES: CONSIDERATIONS IN MAINTAINING MARKETS FOR LARGE AND SMALL POULTRY OPERATIONS

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# 1 Overview

## 1.1 Problem statement

The current approach taken by many countries to address Avian Influenza (AI) is neither the most efficient nor effective method of dealing with the disease. It tends to be reactive in nature and does not use available market systems to motivate desired behaviour on the part of farmers, who in fact are the first responders to a disease.

## 1.2 Problem context

This issue is of relevance to all regions of the world as an outbreak of Avian Influenza (AI) results in a serious disruption of the operating reality in any poultry production system. The nature, magnitude, and distribution of impacts vary, and are directly related to a number of factors:

- ➔ the structure of the poultry production system prior to the outbreak
- ➔ control measures implemented
- ➔ the ultimate pathogenicity of the virus

There is no doubt that all poultry producers (and other direct stakeholders) benefit from disease control. However, disease control activities also provide a significant benefit to the general public at large both in terms of the provision of food, the general state of the economy and the potential relation to public health concerns. Many of these benefits are at the expense of those producers who sacrifice uninfected flocks in the stamping out process.

Public good associated with the control of AI control is not limited to a specific geographic region. In fact, there is a strong argument to be made that support of prevention and response infrastructure in smallholder/backyard (typically identified as Group 4 producers by the FAO) flocks in developing nations may provide significant marginal returns to developed countries due to the extent of migratory flyways and the involvement of wild birds as a potential vector.

These factors emphasize the need for all public and private stakeholders in the poultry industry to focus on a more strategic approach to disease prevention, response and recovery. This approach obviously needs to be macro in nature, reflecting the scope of the benefits, it must be micro in its application to be of use to those directly affected.

The purpose of this paper is to:

1. Set the context in which AI policy and program development is typically formed
2. Outline the main considerations for the design and implementation of a structured risk management approach (SRMA) to AI
3. Outline how aspects of this approach have been used in Canada
4. Indicate how a SRMA could be used in to meet the needs of developing countries.

## 2 Approach

### 2.1 Current context of AI policy development

The elements typically considered in foreign animal disease program management involve the development of policies and protocols for:

#### *Planning and Prevention*

- Surveillance
- Biosecurity

#### *Response*

- Pre-emptive culling
- Emergency management/response (including stamping out)

#### *Recovery*

- Compensation

While this is not an exhaustive list, there is little argument that each of these areas requires significant consideration in AI policy development. Each area also requires different expertise in the design and implementation of the relevant policies and protocols. The division of expertise typically results in a separation in how and when the programs for each of the areas are delivered.

The ultimate impact is that this focus on individual components de-links them. As a result, compensation becomes associated with recovery rather than considered as a part of the whole management system. This has the unfortunate result of reducing the effectiveness of the overall disease prevention, response and recovery system as effective implementation of protocols is directly related to the commitment of the primary producer and their supply chain. Without this commitment, it is hard to administer an effective disease program. Ultimately the question becomes how to motivate appropriate actions on the part of the producer when these actions have costs to them and benefits that spread beyond them.

### 2.2 Main considerations for SRMA design and delivery

The basic premise of the SRMA approach is to motivate desired behaviour in the areas of surveillance compliance, biosecurity, and emergency response by considering compensation more than just a part of disease recovery.

This can be accomplished by focusing on three main goals:

- Fully engage all stakeholders in the identification of the most effective prevention, control and recovery policies and protocols that are realistic for a specific geographic region given the operating reality faced by the industry
- Clearly outline how the benefits and resulting costs need to be, and in fact can be divided between public agencies (domestic), private companies/individuals, and the international community at large
- Ensure that the program has both implicit and explicit forms of cross compliance between indemnification and desired behaviour

Engaging producers involves clearly understanding the operating reality they function in. It does not matter if the farmer is producing poultry for personal consumption, sale in a wet market, or as part of a larger collective. They are in effect making a market decision and disease activities that disrupt this system come at a cost.

A second critical success factor in implementing a SRMA in poultry is to recognize that solutions will vary significantly across different production areas even within a single country. This has tended to be an issue for public agencies that typically like to develop a program and implement it on a broad scale which works for the "average producer". Unfortunately the average producer rarely exists.

In order to address this, emphasis should be placed on the process used to develop and implement the solution rather than the solution itself. This approach is consistent with the concept of a separation between business and financing decisions. More specifically:

*Business Decision*

- Let's figure out what we need/want

*Financing Decision*

- Figure out who should/would/can pay (involves consideration of public vs. private good)

If approached in this fashion, markets can evolve to address the concerns of the specific system in question. The distinction in the roles of public and private stakeholders can also be dealt with in a systematic fashion.

### 2.2.1 Design process – coverage requirements, cross compliance and evolving roles

One of the first things to be accomplished in implementing a SRMA is to identify the needs of, and gaps in current risk management coverage. This responds to the question of what does the market have to consider in its evolution? Of course this makes the assumption that there is some type of coverage at all. If not, the process does not change regarding the identification of needs, but little emphasis has to be placed on the current gaps.

One approach is to use a typical insurance policy development process (Figure 1). The main focus of the exercise is to identify the specific perils and outline actions that could mitigate their impacts. Once these are clearly understood, in the context of the specific geographic area in question, there is a need to quantify the risk that is being addressed. The key element is the development of the business case for an intervention.

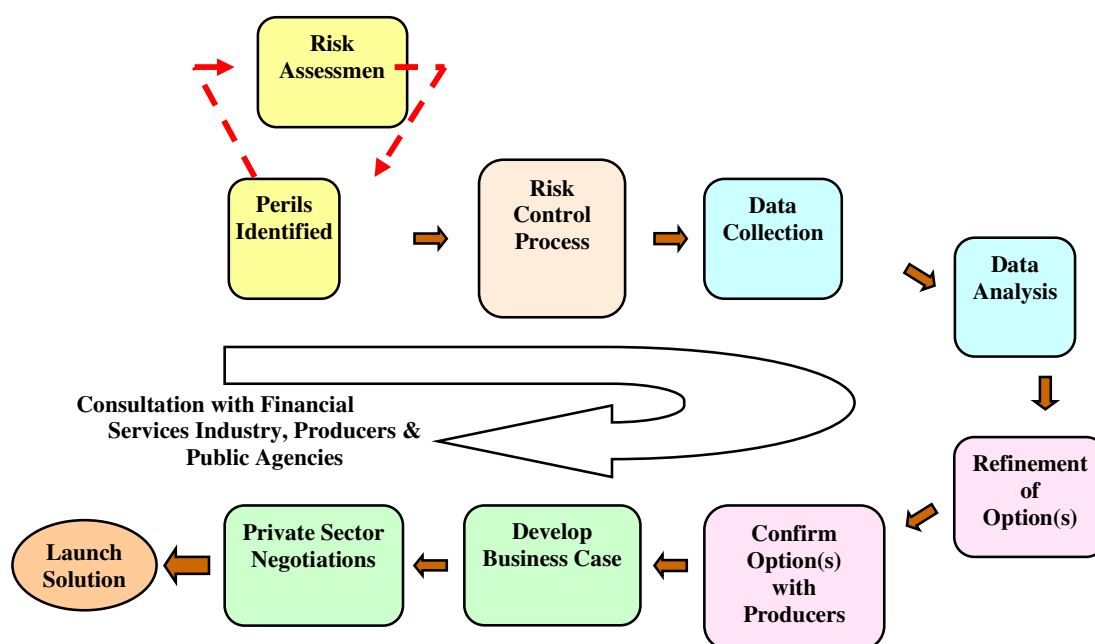
The ultimate solution itself can take a number of forms ranging from pure compensation plans operated by a dedicated agency to that of a pure insurance option delivered by a party external to the poultry system in question. A simplified spectrum of options could potentially include:

- ➔ Compensation Plan: an agreement between parties where one provides support to the other under specifically defined situations
- ➔ Reciprocal: A contractual agreement through which subscribers share risks among themselves. Cannot insure outside the producers themselves and have certain authorities/powers/licences
- ➔ Insurance: A more restrictive formal structure providing financial coverage to address specified losses sustained by stakeholders resulting from stated perils
- ➔ Reinsurance: A contractual agreement in which one party agrees to indemnify another for some or all of the second party's liability under contracts of insurance

Regardless of the form chosen, the ultimate goal is to ensure that at the macro level the risk management portfolio is in balance. This occurs when participants have policies covering similar events (AI in this case), the occurrence of which are independent. All agencies attempt to avoid catastrophic exposures. These exposures occur when risks posed by individual perils are not independent because all those protected are affected at the same time. This risk effectively becomes uninsurable.

The reality for the poultry sector is that AI protection actually becomes a catastrophic exposure within a given control area. This validates the need to encourage cooperation and consistency in approaches across regions. The extent of this issue relates directly to the disease management process, at least part of which is targeted at the public good.

**Figure 1: Defining Feasible Options**



### 2.2.2 Design considerations – financing options and evolving roles

The SRMA as outlined in Figure 1, results in a number of important benefits:

- ➔ It forces the stakeholders to clearly state their perils and what specific components they want to be covered – *the natural evolution of the market*
- ➔ It results in an assessment of the probable maximum loss resulting from an outbreak<sup>1</sup> – *helping to allocate costs to the main beneficiaries*
- ➔ It helps to provide the incentive to motivate the control measures that would be implemented – *adjusting market structure in a desired way*

A SRMA has the advantage of providing the information necessary in order to enable loss coverage to be dividing among a number of agencies/stakeholders. It also allows the role to evolve as the market matures. Flexibility can be seen in the way that:

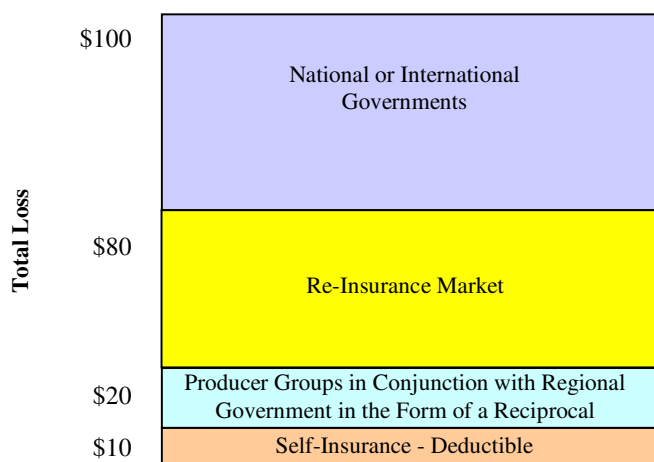
- ➔ Different agencies can select specific perils and provide full coverage
- ➔ Costs can be shared within a specific peril
- ➔ Exhaustion points (where one level of coverage runs out and another must kick in) can be identified for each level of coverage and/or each peril

<sup>1</sup> It is important to note that while the actual loss in developing countries may not be directly describable in a monetary fashion (genetic stock, protein source etc.), the mitigation of the loss certainly can be.

Ultimately, a mix of options can be designed for each layer of coverage by individual peril. These typically involve both involvement of individual producers, producer organizations, regional public agencies, national agencies and the re-insurance market. It can also be extended to involve participation by international public agencies.

As a specific example, if the risk assessment has identified the need for a \$100 pool of funds for a given pool category, responsibility can be allocated in a number of ways.

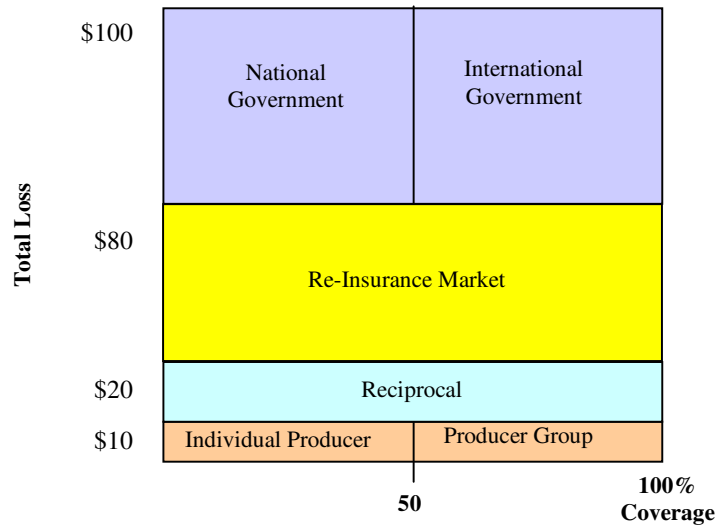
**Figure 2: Layered Approach**



In this case the involvement of national or international governments would only occur if the outbreak cost exceeded \$80. The first \$10 would be self-insured by the producers. The second \$10 loss would be covered by a reciprocal developed between the regional/local level of government and the individual producers themselves.

Coverage under this reciprocal would be contingent on meeting specific biosecurity and/or good production practices. This pool and the imposed self-discipline can then be used to attract the re-insurance market.

**Figure 3: Segmented Approach**



In this case, the individual would cover the first 50% of the first \$10 loss, while the remainder would be covered by the producer group/corporation. This would be in the form of a deductible or program payment.

The second \$10 in coverage would be managed by a formal reciprocal. This \$20 in coverage would then be used to access an additional \$60 from the re-insurance market. Any losses above this would be considered catastrophic and would be covered by the national government 50% and the international community.

The roles of the stakeholders evolve as the reciprocal fund is built. The initial years would require public agencies to finance the fund with producers contributing marginal dollars per unit sold. Producer dollars eventually replace the up-front public involvement to a pre-agreed level. If the fund has to be used, specific arrangements for re-financing the fund can be developed.

### 2.3 Canadian experience

Experience in Canada has made the industry acutely aware of the relevance of taking a SRMA. The National Feather Agencies<sup>2</sup> have been working hard in an attempt to approach the issue in a more structured and strategic manner. A specific example of this is the pre-emptive culling protocol where the objective is to promote rapid action by all groups in order to limit an AI outbreak to a single index farm.

In early 2005, Canadian Food Inspection Agency and the National Poultry Group agreed to a pre-emptive cull protocol as the cornerstone of early intervention to avoid an AI outbreak that gets out of control (Risk Control Process). This protocol is based on the scientific knowledge that time is of the essence in preventing the spread of avian influenza. Rather than waiting a week or more to confirm if an AI finding is highly pathogenic, as was the procedure prior to 2005. The industry is now committed to cull a flock upon confirmation of H5 or H7 through a PCR test or upon clinical signs and a positive Influenza A test, both of which can be available within 24 hours using labs within the Avian Influenza laboratory network.

<sup>2</sup> This coalition of private sector poultry stakeholders includes: the Chicken Farmers of Canada (CFC), the Canadian Broiler Hatching Egg Marketing Agency (CBHEMA), the Canadian Egg Marketing Agency (CEMA), the Canadian Turkey Marketing Agency (CTMA), and the Canadian Poultry and Egg Processors Council (CPEPC).

Using the 2004 outbreak in the Fraser Valley of British Columbia (BC) as an example, if the outbreak had been limited to the index farm and the four farms in close proximity it would have cost \$1.9 million. As it turned out, a total of 42 farms were compensated with \$65 million. Even this large number, however, pales in comparison to the overall costs borne by industry, government and local businesses. The total costs to the industry and the local economy of the 2004 outbreak in the Fraser Valley are estimated at more than \$380 million (\$170 million in direct costs). This does not include the response and recovery costs borne by municipal, provincial and federal governments.

In comparison, during the 2005 Yarrow BC incident, where the pre-emptive cull protocol was employed, the spread of AI was contained to the index and sister farm. Health of Animals Act compensation was approximately \$168,000 (maximum \$35/duck \* 4800 ducks).

The pre-emptive culling program is an example of a risk control process designed to address a specific peril. This is not to say that we have solved the problem in Canada. The poultry industry and the CFIA continue to struggle with what is considered to be appropriate compensation in order to ensure the effective application of the protocol. To this point, the process has been enforced rather than motivated.

However, both sides agree that the lynch pin of the pre-emptive cull protocol is on-going surveillance and early reporting of suspected flocks by farmers. In this regard, it is critical that farmers not hesitate in reporting, if they do the benefit of the pre-emptive cull protocol is completely negated. As a result, the poultry industry is committed to ensuring that compensation be considered as part of a SRMA where it is used as a tool in planning and prevention and not just response and recovery.

Canadian poultry producers have identified a number of additional coverage gaps in programs and services offered by both public and private sectors. Various levels of government understand these gaps and have recognized that the financial services market plays an important role in developing and delivering risk management products and services. The market is now adjusting to account for this fact.

Agriculture and Agri-food Canada developed the Private Sector Risk Management Partnerships Program (PSRMP) to work in partnership with the industry. The program supports (financial and technical assistance) producers and producer groups in the design and implementation of market based solutions. The ultimate goal is to have a fully private sector insurance solution, recognizing the reality that the larger the exposure the higher the likelihood of public involvement.

One of the most successful examples is the Salmonella enteritidis (S.e.) coverage program developed by the Ontario Broiler Hatching Egg and Chick Commission (OBHECC). Using the PSRMP, this group of primary producers designed and implemented financial protection for broiler breeder producers who were in full compliance with biosecurity requirements (as designed and monitored by the producers themselves). This involved the development of an administration structure, the Poultry Insurance Exchange (PIE), and funding of a reciprocal. The development of the reciprocal with its associated self discipline resulted in the attraction of the reinsurance market. Poultry producers control the Board of the PIE and can thus adjust the policy based on their needs.

This PSRMP process is now being replicated by the commercial laying sector (pre-lay) for S.e., and provides evidence of how the links in a SRMA work:

1. The best way to control S.e. within a flock is to prevent infection from ever entering the premises. Application of HACCP based food safety and biosecurity programs are essential control measures.

2. Once a flock or its environment has been confirmed positive for S.e., early slaughter is often the best control option.
3. Understandably, farmers are reluctant to allow the testing of their facilities in the absence of a program to compensate for the loss of income due to early flock disposal.
4. However, in order to obtain adequate reinsurance cover for the reciprocal insurance plan (compensation) it will be necessary to demonstrate that the industry has an effective on farm food safety / biosecurity program.
5. The pullet grower, through their HACCP based On Farm Food Safety program, will likely demand that the chicks provided by the hatchery to produce pullets, are from a source certified as S.e. free. Eventually this demand would work its way back to the primary breeder who would be required to supply the breeder grower with chicks certified to be S.e. free.
6. Because of this likely chain reaction, a coordinated system of best management practices and insurance, from the breeder grower, hatching egg producer through to the hatchery and pullet grower, would be a worthwhile goal to place at the heart of a multi-year plan to reduce the potential for S.e. in the leghorn industry.
7. Any program to formulate best management practices and insurance coverage across the target industry must have the full cooperation and assistance of the hatcheries, CEMA and the provincial / territorial egg producer boards with regard to the gathering of statistics, formulation of best management practices, design of any insurance or compensation package and last but not least, the implementation and verification of the resulting systems.
8. Because of all of these links, a successful project will require good communications, consultation and confirmation of agreement from industry leaders at each step in its development.

The Canadian poultry sector is committed to the SRMA in the development of risk management options. The ultimate division of financial responsibility will vary for each peril selected based on public and private benefits.

## **2.4 Application in developing world**

We believe that this approach is applicable in the developing world as well. This belief is based on two principles that are relevant to any farm production system:

- Principle 1: Public and Private Capacity Limitations
- Principle 2: Farm Decision Processes and Market Involvement

### 2.4.1 Public and private capacity limitations

There are not enough veterinarians and labs to have full flock cycle surveillance in any country in the World. This is not to deny the importance of a statistically valid surveillance sampling system, and in fact a strong system of veterinary health professionals is a critical piece in AI prevention.

On the other hand, there are simply not enough resources to provide the necessary public infrastructure to cover the world's poultry production systems. While this is true in developed situations, it is especially true for developed nations as well. This reality places increased importance on the need to motivate desired behaviour, since the ability to enforce it externally is limited.

The issue of building capacity in veterinary science must not be ignored. However, given the limitations outlined above, it is obvious that it must be done in a strategic way and ensures the mobilization of the best resource that the public agencies have at their disposal – the cooperation of poultry producer and other direct stakeholders.

If this can be accomplished, you effectively increase surveillance exponentially by ensuring that birds are closely observed daily and any potential problems identified immediately.

#### 2.4.2 Farm decision processes and market involvement

Farm production decisions assess the cost of inputs against the production output created by them. Farmers in the developed world typically value output based on the prices defined by open markets. Valuation in the developing world tends to rely on less formal markets for both inputs and outputs. However, the negotiation and decision process itself is similar.

One of the main differences is that farmers in less developed countries tend to have to accept a higher risk level in the production process. Limited resources, both public and private, reduce the ability for the development of an infrastructure to mitigate risk. As a result, the SRMA will obviously have to involve increased levels of public involvement in order to be successful.

Despite the need for an increase in public involvement, it does not mean that these contributions cannot be made in a fashion that provides motivation and some of the necessary infrastructure for public/private sector linkages. If we consider the situation outlined in Figures 2&3, the necessary level of total coverage will decline, and there may be a need to significantly increase the public involvement in the development of the reciprocal.

The key is that regardless of the initial level of producer input, the process re-enforces the need for industry supported actions that prevent disease and mitigates the cost if one occurs. Self discipline replaces the need for regulation, and a significant portion of the self discipline is motivated by market forces.

### 3 Summary and Conclusions

Poultry markets continue to evolve and AI prevention, response and recovery activities must be seen as part of this evolution. This motivation for change is directly related to the producers need to protect their assets, but there is also a significant public benefit creating difficulty in determining how to deal with the issue and who should pay for it.

We strongly recommend a SRMA that extends the traditional role of compensation from its role in recovery to the areas of disease prevention, response and recovery process. This allows for a more natural evolution of market solutions and a more systematic way of identifying roles and responsibilities. It also allows markets to evolve in a way that increases stakeholder responsibility, while still ensuring that public benefits are paid for by the public.

The first step in designing any coverage option, regardless of who is paying for the ultimate program, is work closely with stakeholders to determine what the perils are and how they can be mitigated. Once this is done, there is a significant diversity of options available to address the problem.

A SRMA provides public and private stakeholders a way of leveraging market tools to enable other forms of producer/stakeholder indemnification including but not limited to:

- ➔ Farmer levy funding
- ➔ Bank guarantee funding
- ➔ Retrospective payment
- ➔ Reciprocal insurance
- ➔ Re-insurance options

The extent of public involvement in designing and implementing a SRMA in developing countries would have to be higher than that provided for producers in the developed world. Fortunately, this in no way limits the use of available insurance and re-insurance markets once the policy and protocols are designed. Cost sharing can be arranged based on need and social objectives. This does not limit the ability for the process to initiate market evolution to a desired end.

In addition to helping ensure the survival of affected producers, the process has the added benefit of developing a means of cross compliance to desired actions that help to reduce the potential of an outbreak in the first place.

Finally, while the options selected/used and the funding necessary may vary, the SRMA provides a consistent approach of developing the options and the resulting business cases. If the business case development can become more consistent, it will ultimately facilitate funding decisions which will have to be made on them.