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Pandemic preparedness and multi-sectoral zoonosis risk management

**A case study of Avian and Human Influenza prevention and control
policy development across the sectors of animal health, public health
and trade in Zambia**

Thesis submitted to the University of London

For the Degree of Doctor of Philosophy

By

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May 2011

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DECLARATION

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Date: 9th May, 2011

ABSTRACT

Emerging zoonoses have unique consequences for the animal health, public health and trade sectors. This study examined the links between policy, zoonoses, and risk in Zambia and assessed the feasibility of a World Organisation for Animal Health (OIE) risk analysis in informing risk management in this context.

The research was a qualitative case study drawing on: in-depth interviews with key informants; informal interviews; documentary review and observation. Snowball sampling was used to select informants directly involved in avian (H5N1) and human influenza policy development and/or livestock trade policy implementation at national level. A chronology of avian and human influenza policy development in Zambia over the period 2005-2009 was constructed. Policy process and interpretivist policy analysis theories guided analysis.

In this resource-constrained setting, external international agendas were found to have considerable influence on policy. National stakeholders initially framed H5N1 as an imminent threat and largely animal health problem. This prioritized the involvement of health and agricultural actors in the policy process and excluded those from trade and other key sectors. H5N1 was a plausible threat to agriculture, and a potential threat to human health, but *perceptions* of risk presented real economic repercussions for the poultry industry. Despite challenges in coordinating the policy response, the policy process had tangible benefits for Zambia in terms of pandemic preparedness and for raising the profile of the previously under-recognised poultry industry.

This study suggests the weighing of *both* local policy and ecological configurations in assessment of risk and the design of zoonotic disease mitigation policies. While feasible, the merits of an OIE risk analysis in informing policy development in this context would be enhanced by a careful consideration and inclusion of policy processes. An objective and discursive approach to analysis of risk, appropriately communicated to stakeholders, would improve collaboration in disease management across sectors.

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LIST OF ABBREVIATIONS

5thNDP	Fifth National Development Plan
AGOA	African Growth and Opportunity Act
AIDS	Acquired Immune Deficiency Syndrome
ASIP	Agricultural Sector Investment Programme
ASYCUDA	Automated System for Customs Data
AU-IBAR	African Union Inter-African Bureau for Animal Resources
BSE	Bovine Spongiform Encephalopathy
CBPP	Contagious Bovine Pleuro Pneumonia
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
COMESA	Common Market for Eastern and Southern Africa
CSO	Central Statistics Office
DFID	Department for International Development
DMMU	Disaster Management and Mitigation Unit
DRC	Democratic Republic of the Congo
DVLD	Department of Veterinary and Livestock Development
EEC	European Economic Community
EU-ACP	European Union-African Caribbean and Pacific
EU	European Union
FAO	Food and Agricultural Organisation
FMD	Foot and Mouth Disease
GATS	General Agreement on Trade and Services
GATT	General Agreement on Tariffs and Trade
GRZ	Government Republic of Zambia
HIPC	Heavily Indebted Poor Countries
HIV	Human Immunodeficiency Virus
IBD	Infectious Bursal Disease
IDSR	Integrated Disease Surveillance and Response

IHR	International Health Regulations
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
KAP	Knowledge Attitudes and Practices
LDC	Least Developed Country
MACO	Ministry of Agriculture and Cooperatives
MCTI	Ministry of Commerce Trade and Industry
MMD	Movement for Multiparty Democracy
MoH	Ministry of Health
NAIS	National Agricultural Information Service
NAI	Notifiable Avian Influenza
NGO	Nongovernmental Organization
NRP	National Response Plan
OIE	World Organisation for Animal Health
PRSP	Poverty Reduction Strategy Paper
PSD	Private Sector Development
SADC	Southern African Development Community
SAP	Structural Adjustment Programme
SARS	Severe Acute Respiratory Syndrome
SPINAP	Support Programme for Integrated National Action Plans
SPS	Sanitary and Phytosanitary
STOP AI	Stamping out Pandemic and Avian Influenza
TNDP	Third National Development Plan
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UNIP	United National Independence Party
UNSIC	United Nations System Influenza Coordinator
UNZA	University of Zambia
USAID	United States Agency for International Development

UTH	University Teaching Hospital
WHO-AFRO	World Health Organisation African Regional Office
WHO	World Health Organisation
WTO	World Trade Organisation

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*For my nieces,
Fube Katongo and Mapalo Janice Mumba*

CHAPTER ONE

1. Introduction

This thesis examines national level pandemic preparedness and multi-sectoral risk management policy development across the sectors of animal health, public health and trade in Zambia. The thesis explores how highly pathogenic avian influenza came to be prioritized on Zambia's national agenda and how policy developed. It then examines the potential of risk analysis to contribute to multi-sectoral policy making in this resource-constrained country in the context of globalisation. The study covered public health, animal health and trade because highly pathogenic avian influenza straddles the concerns of these and other sectors at both national and international levels. Internationally, H5N1 highly pathogenic avian influenza has been on the global public health radar since 2003, mainly because of concerns over its pandemic potential. It has also been a demonstrated threat to global poultry, has impacted on the livelihoods of poultry keeping communities in outbreak areas, and has threatened international trade through concerns over trade-related risks of further spread. At national level, highly pathogenic avian influenza has similar potential multi-sectoral effects.

This thesis explores how the risk of avian and human influenza was *perceived* by decision-makers and policy relevant stakeholders in Zambia, and how this was addressed in the process of developing avian influenza risk management and pandemic preparedness policy. It is from this viewpoint, i.e. how risk was *perceived* and subsequent policy defined, that the thesis explores how the application of animal health risk analysis can best accommodate the policy processes of risk management to better inform integrated disease mitigation across the trade-animal health-public health policy interface of developing countries such as Zambia. The study's contribution to knowledge is to provide a deeper understanding of how policy on the management of multi-sectoral impacting zoonoses such as highly pathogenic avian influenza, a global concern, is actually developed in resource-constrained countries and identify how

understanding of the policy process may be relevant to the application of risk analysis in such contexts.

1.1. Rationale and approach to the study

Zambia is a landlocked and largely agrarian nation in Sub-Saharan Africa. The country has a total area of 752,614 sq km, and a human population estimated at 12.2 million people as of 2007, most of who live along the major transport routes in the country. Administratively, the country has nine provinces and 72 Districts (CSO 2003). Livestock production in Zambia is described as dualistic, with commercial and traditional sectors. The country has a growing poultry industry and a development agenda focusing on export led growth. In addition, Zambia is signatory to a plethora of multilateral trade agreements. Chapter 3 of this thesis describes this local context, outlining the key features of agriculture, trade agreements and health policy priorities that form the backdrop to Zambia's response to highly pathogenic avian influenza.

This thesis is a policy analysis examining the agenda setting and policy formulation processes of multi-sectoral disease risk management at national level in this Southern African state. The study identified the actors¹ for whom, and interests for which, avian and human influenza prevention and control policy was important at national and international levels. It utilised multiple methods of data collection, including perspectives of participating decision-makers across the sectors of public health, animal health and livestock trade, obtained from semi-structured formal and informal interviews, attendance of planning meetings, observation and review of policy documents, official reports, media articles, and peer reviewed literature. In analysing the development of avian and human influenza prevention and control policy in Zambia, the study also explored this policy's 'interaction' with livestock trade policy implementation. Many authors have argued that global trade has been one of the means through which highly pathogenic avian influenza has spread. For instance, Feare (2005) argues that Russian and Kazakh outbreaks of highly pathogenic avian influenza in 2005 occurred along

¹ As individuals, groups or institutions.

trade routes between China and Russia, suggesting trade had played an important role in disease spread in these countries. Kilpatrick *et al.* (2006) in their model for predicting the global spread of avian influenza state that further spread on the African continent would likely be partly through trade and partly through infected migratory wild bird movement. These studies demonstrate the importance of considering the role that trade policy implementation played in avian and human influenza prevention and control policy development in Zambia.

In its examination of policy development across animal health, public health and trade, this thesis links multi-sectoral risk management policy processes to the analysis of risk. The study rationale was that how risk analyses are applied to determine the dangers associated with diseases such as highly pathogenic avian influenza has implications for, and affects, the policies of the trade, animal health and public health sectors. The limitations of purely scientific approaches to risk analysis have been well argued by many authors, including Horlick-Jones (1998) on the contextualisation of meaning in the assessment of risk; Scott *et al.* (1999) in the need for more precautionary approaches to the assessment of risk within the dealings of the World Trade Organisation (WTO) and Stirling and Mayer (2000) in their examination of approaches to risk in genetic modification in UK. The purpose of this thesis is not to advocate for a purely scientific basis for policy making. Focusing on the particular economic context of Zambia, this thesis instead analyses how incorporating an understanding of *policy processes* in the approach to risk analysis could improve its usefulness in informing multi-sectoral risk management policy development, since conditions such as highly pathogenic avian influenza touch on, and are rarefied by, the interests of animal health, public health, trade and more widely. The study examined the potential of one approach to the analysis of risk, the World Organisation for Animal Health's (OIE²) risk analysis framework, to inform multi-sectoral risk management policy development in Zambia.

² The World Organisation for Animal Health is an intergovernmental organization that was established in 1924 (Bruckner 2009). OIE is the French acronym for the organisation's original name; Office International des Epizooties.

The OIE risk analysis framework has been developed as an ‘objective’ tool for providing decision-makers with assessment of the risks posed by a particular course of action (Wooldridge 2000; McDiarmid and Pharo 2003). While the OIE takes a largely animal health perspective on the prevention and control of disease, highly pathogenic avian influenza, as a human pandemic candidate, has wider impacts beyond animal health. Shortridge, Peiris and Guan (2003) state pointedly in their paper on pandemic influenza that, “Pandemic influenza is a zoonosis” (p. 70S). In contemporary times, the words ‘pandemic’ and ‘zoonoses’ speak to the interests of myriad actors. In the case of highly pathogenic avian influenza, as the literature review of this thesis will demonstrate; these actors have included the animal health, public health, poultry industry, wildlife conservationist, global commerce and international pharmaceutical communities. It has even touched on issues of national security in some contexts. This implies a need for a radical shift in the way we think about infectious diseases and the threats they represent. While, according to Hueston (2003), purely ‘scientific’ viewpoints perceive biological processes such as disease transmission, and the assessment of risk thereof, as independent of politics and policy, policy-maker decisions across trade, animal health and public health are driven by very different interests, priorities and influences. These, in turn, affect how these communities perceive and address ‘risk’. These contemporary concerns also require a shift in how infectious disease risks are assessed, which, in as far as it is possible, may require taking into consideration the multiple perspectives and concerns of policy relevant-stakeholders in *each* context. In the context of developing countries, this may include the trade community. Key is how policy-makers come to identify problems and perceive risk in relation to public health, animal health or trade.

Furthermore, although policy-maker decisions are driven by specific interests, priorities and influences, their decisions are by no means isolated and both either affect, or are affected by other policy areas, as exemplified by the literature on the health-trade relationship. For instance, Lee, Fustukian, and Buse (2002) explore how health policy has had to ‘play catch up’ with commerce-focused decisions in the globalization phenomenon. Kimball (2006) also examines

how commerce-based decisions have led to an increasing incidence of infectious disease spread. Others like Stiglitz (2009), and MacDonald and Horton (2009), have suggested that policy decisions to liberalize trade have actually led to increasing inequalities in many countries, with developing countries suffering the most (see also Blouin, Chopra and van der Hoeven 2009). In global infectious disease management, the regimens put in place to prevent and control transboundary disease spread in the multilateral trading system have also been argued to disadvantage developing countries (see Thomson *et al.* 2004).

Given these ‘knock on’ effects of policy decisions in the global context, it is important to determine how the interests of the trade, public health and animal health sectors ‘interact’ in the process of multi-sectoral risk management policy development at national level. Some understanding of policy and interest interaction across different sectors may also be important for the feasibility of conducting risk analyses for, or mitigation of multi-sector impacting diseases such as highly pathogenic avian influenza in developing countries. Therefore issues of policy and risk analysis may benefit from being considered holistically.

1.2. Relevance of the study

In the 21st century, an era in which globalisation, world commerce and rising concerns over the emergence and re-emergence of infectious disease threats are the highly contested topics of the times, pandemic preparedness presents unique challenges, particularly for developing countries. Empirically, however, there have been limited research efforts directed at understanding the context in which resource-constrained countries attempt to negotiate these global imperatives across public health, animal health and trade. International trade, access to which is now facilitated by trade agreements under the World Trade Organisation (WTO) system (WTO 2007), is viewed by many developing countries as important. With the promise of access to global markets, many developing countries have joined the WTO. For developing countries, global commerce and pandemic preparedness present challenges for how to trade in livestock and livestock products in order to generate revenue to stoke challenged economies, how to

identify, prioritize and manage infectious disease risks across usually overburdened animal health and public health systems and how to develop context-appropriate pandemic preparedness responses. A serious problem for developing countries is how they are perceived in the global setting. In the context of highly pathogenic avian influenza in particular, developing countries are viewed as a source of infectious disease risks (Southeast Asia), and most in need of protection from them (e.g. Sub-Saharan Africa) both for humans and animals.

In developing countries in Sub-Saharan Africa, veterinary infrastructure may be weak, and health sectors already overburdened by such problems as malaria, tuberculosis and HIV/AIDS. To contextualise the HIV/AIDS problem, Fauci (2001) for example, argues that in 2000, 70% of HIV positive people lived in southern Africa, with India and Southeast Asia set to be the next epicentres of the pandemic. In addition, it can be argued that novel infectious diseases such as Severe Acute Respiratory Syndrome (SARS) and highly pathogenic avian influenza could be seen as possible compounding forces, with the potential to exponentially increase the risk of morbidity and mortality in these contexts. Highly pathogenic avian influenza, in particular, has been presented as a trade-related risk. For the world's poorest countries, the confluence of interests surrounding global health and global trade therefore presents unique challenges. It remains to be seen what implications these intersecting interests have for the development of disease risk management policies and pandemic preparedness. This thesis therefore examines how global issues such as highly pathogenic avian influenza and pandemic preparedness are addressed on the national agenda, and in the context of international trade. It goes on to determine how risk analyses in such contexts can be better informed to develop 'appropriate' policy responses to similar challenges.

1.3. Structure of the thesis

This thesis has ten chapters and is divided into four sections. The first section (Chapter 1-3) presents the introduction, background, and conceptual framework of the thesis. The second section (Chapters 4-7) presents the results of the policy analysis. The third section (Chapter 8)

draws on key themes identified in the policy analysis to examine the role that understanding of the policy process could play in conducting a multi-sectoral zoonotic risk analysis in the Zambian context. Finally, the fourth section (Chapter 9) is the discussion and conclusion of this thesis. The general content and themes explored in each the chapters are as follows:

This opening chapter has introduced what this thesis is about, the rationale for the study, and the relevance of the research. Chapter 2 examines the literature on public health, animal health and trade as it relates to the risk of zoonotic disease emergence and risk management. It describes how policy, disease, and risk are linked both at international and national levels. In this chapter, globalisation, zoonoses and the human-animal interface are defined. It discusses how zoonoses relate to the human-animal interface, and identifies where zoonoses fall in the spectrum of human infectious disease epidemiology. This is then followed by a discussion on influenza and pandemic preparedness, and the role that H5N1 highly pathogenic avian influenza has played in the emergence of global interactions in disease control. It also outlines the key epidemiological debates around its trade related risk of spread. This chapter then takes a policy and resource-constrained country perspective on the examination of the global context of animal health, public health and trade. It examines the key arguments around the policy nexus of animal health-public health and trade and the implications this has for developing countries. The chapter then examines the key arguments surrounding avian and pandemic influenza in the policy domains of both resource-enabled and resource-constrained economies. It also examines the role that trade agreements play in the development agenda of many developing countries. Chapter 2 is an overview of the various elements relevant to this study such as how trade is linked to disease spread, the animal health-public health relationship, and the trade-health relationship. It identifies gaps in existing knowledge and raises several important questions that the thesis examines either explicitly or implicitly.

Chapter 3 presents the conceptual framework and methodology of the thesis, outlining the aims and objectives of the study and the methodological approach adopted. This chapter contains the study objectives and key research questions. It describes the links between policy processes and

analysis of risk, outlines the research orientation and explains how the research questions evolved. It also describes the processes of data collection and analysis. In addition, this chapter discusses the challenges faced in conducting this research and concludes by presenting the study's ethical considerations.

Chapter 4 is a contextual overview of Zambia as it relates to health, trade and agriculture. It describes the Zambian political context over the period 1964-2004. It briefly explains how an economic downturn in the 70s and 80s impacted on the Zambian economy, and explains the role that agriculture is meant to play in meeting the country's development agenda. This chapter provides overviews of the animal health, public health and trade sectors. It describes the Zambian agricultural sector, particularly the livestock subsector, and the poultry production system in existence. It then describes health in terms of Zambia's development agenda and the country's position on multilateral trade. The chapter concludes by explaining the implications this contextual description has for this study.

Chapter 5 is an analysis of avian and human influenza prevention and control policy agenda setting in Zambia. The analysis is a chronological presentation of policy development from the period 2005-2006. It first analyses the evolution of H5N1 highly pathogenic avian influenza from Southeast Asia over the period 1996-2005. It then analyses how Zambia's Fifth National Development Plan, with its platform for development, relates to the objectives of country's poultry industry. The chapter then goes on to describe how avian and human influenza policy agenda was set. This includes how the National Task Force on Avian and Human influenza was established, the role that international agencies and national stakeholders played in agenda setting, and how other stakeholders came to be involved in the policy process. The chapter concludes by presenting the way the avian and human influenza problem was defined across the sectors of animal health, public health and trade in Zambia.

Chapter 6 is an analysis of policy formulation. This chapter identifies tensions, challenges and deficiencies in avian and human influenza prevention and control policy formulation in Zambia

for the period 2005-2007. It examines the role of the National Working Group on Avian and Human Influenza in Zambia in policy development and how, based on the ways in which the highly pathogenic avian influenza problem was framed during the agenda setting process, the response shifted from an emergency understanding to that of preparedness and capacity building. It also examines the relevance of the 2006 poultry and poultry product import ban to disease control and its implications for multi-sectoral interaction. Furthermore, the chapter evaluates the various preparedness activities that were adopted in Zambia, including the communication strategy, the surveillance strategy and the creation of Rapid Response Teams.

Chapter 7 identifies the challenges and opportunities in the policy process as adopted in Zambia, including leadership contentions over avian and human influenza preparedness planning. The chapter analyses the international influences on the policy process, and the reasons for declining interest in avian and human influenza activities among local stakeholders in the period after 2007. In addition it examines the prioritization of avian and human influenza prevention and control in Zambia, in light of the multiple problems that the animal health and public health sectors have to deal with. The chapter concludes by identifying what was gained by the policy process. These are presented both as preparedness milestones the country achieved and unanticipated benefits gained from policy development, such as the integration of the avian influenza response into wider disease control objectives.

Chapter 8 analyses the ways in which understanding policy processes and context could inform risk analysis in such a way as to foster better policy coordination in the case of highly pathogenic avian influenza prevention and control, livestock trade and the wider issues of multi-sectoral disease risk management and pandemic preparedness in Zambia. The chapter identifies what would aid the process of risk analysis and what might be lost by conducting a risk analysis in this way. Drawing on themes identified in the policy analysis and the risk literature, this chapter systematically examines the potential role for risk analysis to inform multi-sectoral disease risk management policy development in Zambia. The chapter is a conceptual

exploration of the feasibility of conducting an OIE type risk analysis in Zambia and develops a risk model appropriate to the Zambian context.

Chapter 9 is the discussion and conclusion of the thesis. It reviews what has been learnt about multi-sectoral disease risk management and pandemic preparedness from the Zambian perspective, including how it is important to be cognisant of the local context in assessing pandemic preparedness and assessing risk. It also examines the challenges to coordinating multi-sectoral management of infectious disease risk. The chapter revisits the issue of the trade-health relationship and provides some reflections on the application of risk analysis. It concludes with some general recommendations for pandemic preparedness and some recommendations to decision-makers across trade, public health and animal health on how to improve multi-sectoral risk management policy development.

There is nothing small about globalization. It represents a sweeping transformation of all spheres of life in a way that cannot be ignored and must be engaged.

Loewenson, 2004 p.1147.

CHAPTER TWO

Pandemic preparedness in the context of globalization and trade

2. Introduction

This chapter describes the contextual factors linking globalisation, zoonoses, commerce and pandemic influenza in resource-constrained countries. The first part of this chapter defines globalisation, zoonoses and the human-animal interface, and explains the historic relationship between commerce and infectious disease spread. Linking this to the multidirectional relationship that exists between animal health, public health and trade, the chapter proceeds to discuss where zoonoses lie on the spectrum of human infectious disease epidemiology. Focusing on zoonotic influenza, the chapter provides an overview of pandemic influenza and a chronology of the H5N1 highly pathogenic avian influenza panzootic, covering the 1996-2004 period and highlights the key concerns around its global trade-related spread. The first part of the chapter concludes by providing an overview of the current status of global pandemic preparedness and the international policy debates surrounding it.

The second part of the chapter takes a resource-constrained country perspective, linking what is known about global public health, animal health and trade policy to zoonosis risk management and pandemic preparedness. Focusing on the policy tensions that exist at the global-national interface, the chapter highlights how perceptions of infectious disease risk and responses to infectious diseases have affected the trade and development agendas of resource-constrained countries. The chapter then summarises the challenges faced by *African* countries with regard to

pandemic preparedness and risk assessment. Throughout this discussion, the chapter identifies some of the questions this study aimed to answer.

2.1. Globalization, modernisation and infectious disease risk

In any one country in the 21st century, animal health, public health and trade concerns are international as well as national. A necessary starting point for the examination of infectious disease risk management across animal health, public health and trade, therefore is globalization. In his 1998 commentary in the American Journal of Public Health, Navarro argues that power and politics are at the centre of globalization and have played a role in shaping the process (Navarro 1998). He sets out the key arguments around the process of globalisation at the time, at the centre of which was, and perhaps still is, the internationalization of commerce, to which, he argues, health policy usually takes a backseat. While this is true for many public health issues, commerce is also affected by public health and animal health policies, sometimes in quite significant ways. Therefore, the issue here is not to present an argument for or against the priority given to commerce in relation to animal health and public health. Zeroing in on the global-national policy interface, what is important is to highlight the confluence of policy interests occurring in this 'global process' at the centre of which are risks, and assessment thereof, of global infectious disease spread within animal and human populations, both of which have potential negative economic impacts.

Globalization as a concept is variably understood. Huynen, Martens and Hilderink (2005), for example, describe globalization as a *perceived* comprehensive, multi-faceted phenomenon that is transforming society rapidly. Lee, Fustukian, and Buse (2002), talk about its spatial, cognitive and temporal dimensions. Thinking about globalization this way provides a useful means of disaggregating the important aspects of policy that relate to the management of risk and vice versa. Buse, Mays and Walt (2005) in their introductory text on health policy making present five distinct ways in which globalization has been described. When viewed from the perspective of Lee *et al.* (2002), these understandings all involve spatial, cognitive and temporal

dimensions. Three of these five are appropriate for the context of this thesis. The first one is internationalisation. This is understood to mean the growth in volume, intensity and extensiveness of the movement of people, commodities, ideas, money, and infectious agents across borders. The second is liberalization. This is understood to mean the removal of barriers to trade, allowing for the increase in the flow of commodities and services across borders. As demonstrated by scholars such as Kimball (2006), this also allows for the movement of infectious agents across borders. The third is super territoriality. This is associated with interconnectedness and incorporation of similar ideals that go beyond territorial boundaries. This would arguably include issues such as global infectious disease governance, or regional free trade areas, for instance. These three understandings of globalisation are therefore germane to the consideration of animal health policy, public health policy and trade policy around disease risk and disease prevention in developing countries. This is because these various understandings easily converge around infectious pathogens and approaches to their control both at international and national levels. The other frames of globalization as presented by Buse and colleagues are 'McDonaldisation', which is the convergence around Western, and in particular, American culture, and universalisation, associated with the current trend of cultural homogenization (Buse, Mays and Walt 2005).

Global and regional trade present the prospect of involving previously excluded nations in world commerce, thus enabling them to supply more prosperous markets and support and strengthen their economies. This prospect appeals to decision-makers in developing countries, following arguments about the positive benefits of trade liberalisation such as economic growth and poverty reduction (Wilkinson and Pickett 2006). It has been argued, however, that a liberalized approach to trade, presents novel challenges to public health protection in general and disease prevention and control in particular. According to the book 'Risky Trade' by Ann-Marie Kimball (2006), which examines trade and its role in human infectious disease emergence and spread, there has been an absence of coherent disease prevention and control strategies in relation to trade across the world. In a paper that overviews emerging animal-human diseases of

public health importance, and speaks both for animal and public health, Brown (2004), highlights the complexity of modern infectious disease spread, stating that part of the reason for the emergence of infectious diseases in recent years, in addition to human population expansion, is because globalisation and trade have increased industry, cultural, and microorganism interconnectedness. Brown goes on to recommend closer collaboration between the animal health and public health communities, as well as an improvement of public and policy maker education to address this situation.

A study by Jones *et al.* (2008) examining the pattern of different categories of recent emerging infectious disease occurrences, found that human population density was a significant predictor of disease emergence. They conclude that their study supports previous hypotheses that disease emergence is primarily the result of anthropogenic and demographic shifts, and “is a hidden ‘cost’ of human economic development.” As an example of this “hidden human economic development cost”, it is clear that the risk of food borne infections has been increased exponentially through the integration and globalization of food treatment chains (Thorns 2000). The perspectives above all share one thing in common, that modern anthropogenic activity, and it’s pursuit of commerce in particular, is among the key factors responsible for disease emergence in contemporary times. This is basically a consequence of economies of scale, around which many of the conceptions of globalization revolve.

Citing a National Academies of Science report, Brown (2004) explains that globalization has played a central role in creating the microbial equivalent of ‘a perfect storm’ and, like Mann (1990), who reflects on the global lesson of HIV/AIDS, goes on to state this microbial perfect storm will not subside, but be a recurring event. It is therefore reasonable to assume that the risk of pandemic scale infectious disease emergence is unlikely to abate, and as a result, the public health and animal health communities have to think of emerging infectious diseases, their control and the assessment of their risk of occurrence in completely novel ways. With the recent examples of global infectious disease spread, such as Severe Acute Respiratory Syndrome (SARS) negatively affecting both public health and economies, there has been a shift to develop

policies to respond to these risks, at national, regional and international levels under a 'preparedness' agenda. But because the dynamics, and therefore the risks, of disease emergence differ from location to location, equally important is the integration, within these policy frameworks, of approaches to assessing both the risk's 'local' likelihood and 'impact' to ensure, to the extent possible, the appropriateness of policy responses. This is a challenge, for both developing and developed countries, given the myriad interests that contribute to this 'perfect microbial storm.'

2.2. Trade, health and disease spread

One of the contributors to the 'perfect microbial storm' is trade. Trade and its effects on public health, through disease spread, is a matter of both historical and contemporary policy significance. Historically, disease has spread through traded products and carriage vehicles such as ships which served as means of introduction into new geographic areas (Cowen and Morales 2002). Lee and Koivusalo (2005) argue that at several points in history, trade has been restricted to protect health, with the primary motivation being to minimize interference in *trade* from health. Bettcher, Yach and Guindon's (2000) review of global trade and health states that the link between international trade and the spread of infectious diseases has been recognised for centuries, citing as an example the 14th century spread of the 'Black Death' along known international trading routes. It was the recognition of the links between disease and trade that resulted in the International Sanitary Conferences, the first of which was held in France in 1851 (Bettcher, Yach and Guindon 2000; Aginam 2002; Hoffman 2010). In recent times, Lang (1999), examining the interactions among diets, health and globalization, argues that economic interests take precedence over health concerns. Similar arguments have been made concerning global health policy (Lee, Fustukian, and Buse 2002), access to medicines (Kerry and Lee 2007), food safety (Rowell 2003) and infectious disease spread (Kimball 2006). A number of studies and critical reviews provide empirical evidence that international trade has created opportunities for the transmission of pathogens (Aginam 2002; Karesh *et al.* 2005; Hodges and Kimball 2005; Kimball, Arima and Hodges 2005; Kimball 2006).

Examples of the international transmission of diseases include the case of Monkeypox in the USA in 2003, related to the trade of prairie dogs that had acquired the infection from the African rodents they had been housed with. This led to 71 human cases in six American states (Morse 2004; Kahn 2006). For SARS, bat trade was proposed to be one way in which contact with susceptible amplifying hosts was made at some point in the wildlife supply chain, leading to subsequent market-related human and animal interaction and infection (Févre *et al.* 2006). Live animal markets in Southeast Asia, in particular, have been implicated in the spread of emerging diseases such as avian influenza, with subsequent human exposure (Cowen and Morales 2002; Morse 2004; Karesh *et al.* 2005). Evidence also exists for countries in Africa. African Swine Fever, an animal health problem of transboundary animal disease significance, spread rapidly along the Atlantic coast in the dynamic coastal trading networks of West Africa during the late 1990s (ALive 2006).

The literature suggests that trade and economic considerations often trump health concerns, making the consideration of the role that trade policy plays in disease spread or control relevant. Lee and Koivusalo (2005) posit that, while tensions between trade promotion and health protection have existed in the past, these tensions are increasing because of globalisation. Key here is the sentiment of public health policy proponents that health concerns most of the time take second priority to the interests of global commerce. Lipson's (2001) review of the WTO's health agenda and the study by Shaffer *et al.* (2005) on ethics in public health research both suggest that trade agreements in particular shape national policies on such issues as food safety and health, restricting the capacity of state agencies to regulate these areas. Within this literature are examples that speak to the increasing interconnectedness of infectious disease spread through trade, an anthropogenic activity. They also highlight the importance of the human-animal disease interface.

2.3. *Zoonoses and the human-animal interface*

Myriad factors are at play when one thinks of globalization and its effects on human-animal infectious disease transmission, disease management and public health. This includes issues of governance, production systems, surveillance capacity, social economic conditions, local contexts and national priorities among many others. Therefore, how does one think about human-animal disease risk management, as it relates to trade, animal health and public health policy considerations in different contexts?

First the basics: an animal-sourced human infection is known as a zoonosis. The term was coined by German physician Rudolf Virchow in 1855 (Kahn, Kaplan and Steele 2007). In the past, zoonosis, as a concept, was divided into zooanthroponosis, an infection humans can acquire from animals, and anthroponosis, a disease of humans transmissible to other animals (Krauss *et al.* 2003). However, the indiscriminate and reverse sense use of these two terms led to an expert committee deciding to abandon them, recommending 'zoonoses' be defined holistically as diseases and infections naturally transmitted between vertebrate animals and man (Hubálek 2003). More recently, zoonoses are thought of as diseases of 'the human-animal interface' (Greger 2007) a term that encompasses a wider socio-economic and biological scope for the examination of human-animal infectious disease management.

A consideration of the human-animal interface is important. It provides for the examination of the public and animal health risks of animal-sourced epidemics, and through policy, their relationship with risk enabling anthropogenic activities. These risk enabling activities include changes in land use, livestock production, chosen routes for economic growth and trade promotion; activities that both foster and enhance zoonosis transmission (Kimball 2006; Greger 2007). Changes in land use, livestock production, chosen routes for economic growth and promotion of commerce, etc are some of the elements that go into what Brown (2004) termed the 'perfect microbial storm'. Under livestock intensification, for example, the larger collections of animals provide more optimal incubating conditions for the expansion of an emerging

zoonotic disease (Brown 2004). With globalization, there now exists a global mechanism available for an emerging zoonotic disease's potential spread (Kimball 2006).

These activities are in part responsible for the significant contribution that animal diseases have made to human emerging and re-emerging infectious diseases in recent years. For centuries, a key source of human infectious diseases has been animals (Diamond 1997; Weiss 2001). In a list of 1415 known human pathogens, 61.6% were found to be of animal origin (Cleaveland *et al.* 2001; Karesh *et al.* 2005). Furthermore, 75% of all emerging diseases that have affected humans over the last three decades have resulted from an animal pathogen moving into a human host from animals or animal products (WHO, FAO and OIE 2004; Stewart *et al.* 2005; Greger 2007). But the phrase human-animal interface has gained increasing prominence in recent public health discourse, particularly in relation to highly pathogenic avian influenza (WHO 2006; Greger 2007). This suggests a revisit to the historic disease-exchange paradigm in a modern context.

The simple definition of zoonoses provided above views human-animal infectious disease as a public health and animal health issue. But in the past, according to one meeting report, the two communities have tended to deal with zoonoses in isolation from one another (WHO/DFID-AHP 2005), one reason being a growing divide between the fields of animal health and public health (Rabinowitz, Odofin and Dein 2008). The paper by Rabinowitz, Odofin and Dein considers the role of animals in informing human health, speaking marginally of the role that animal health specialists could play in informing their medical colleagues of these risks. The joint World Health Organisation (WHO), Food and Agriculture Organisation (FAO), World Organisation for Animal Health (OIE) report on emerging zoonosis (2004), argues that zoonotic diseases are on the increase owing to shortfalls in public health infrastructure and *policy*, a paucity of public health scientific studies to answer questions and build expertise, and a lack of integrated human and animal health surveillance. While this may appear to be evidence of an absence of coherent policies, in reality, it is an attempt to reinvent a wheel that had been dismantled in the early 20th century. Both fields enjoyed a mutually beneficial relationship since

Virchow pioneered the development of the 'One Medicine'³ ideal in the late 19th century (Kahn, Kaplan and Steele 2007). For instance, the identification of typhoid, cholera, tuberculosis, and diphtheria in the period 1880-1890 resulted in increased human and veterinary medicine research across the United States and Europe, and both fields' interest in the public health study of tuberculosis (Baldwin 1943). The development of the BCG vaccine was a human-animal health collaboration between Albert Calmette, a French physician, and Jean-Marie Camille Guérin, a veterinarian (Kahn, Kaplan and Steele 2007). BCG was developed from *Mycobacterium bovis*, a zoonotic mycobacterium from cattle. It was Theodore Smith, another veterinarian, who first identified the biochemical and morphological differences between *Mycobacterium bovis* and *Mycobacterium tuberculosis* in 1895 (Murray 2004) and Ravenel, another veterinarian, was the first to isolate *M. bovis* from a human being (Baldwin 1943). However, according to Cardiff, Ward and Barthold (2008), with the development of the combustion engine, that replaced oxen and horses, and the subsequent closure of many schools of veterinary medicine in the early 1900s, the concept of 'One Medicine' began to wane and the gap between animal health and public health began to grow.

In an attempt to close this 'gap', a number of fora are now advocating for greater cooperation between animal health and public health sectors. The joint WHO and Department for International Development Animal Health Programme of the UK (DFID-AHP) meeting in September 2005 for example, established that there were gains to be made from the integration of animal and human health sector approaches to zoonoses control (WHO/DFID-AHP 2005). The current focus on 'One Medicine' has now taken the form of the 'One World, One Health'⁴ initiative. Beyond the issue of zoonosis risk management, however, is the growing realisation

³ Kahn and colleagues quote Virchow as having stated that 'between animal and human medicine there are no dividing lines – nor should there be. The object is different but the experience obtained constitutes the basis of all medicine' (Kahn, Kaplan and Steele 2007; p6)

⁴ In September 2004, health experts met at The Rockefeller University at a symposium to discuss current and potential transmission of diseases among human, domestic animal, and wildlife populations. Using case studies of ebola and avian influenza, among others, the symposium came up with the "Manhattan Principles" under the "One World, One Health" initiative. The aims of these principles was to establish a "holistic approach to preventing epidemic / epizootic disease and for maintaining ecosystem integrity for the benefit of humans, their domesticated animals, and the foundational biodiversity" that supports life <http://www.oneworldonehealth.org/>

that even *perceptions* of disease risk have consequences beyond these two communities, as exemplified by the SARS outbreak in 2002-2003. SARS did not have the health impact that was anticipated, but had a large economic impact due to both health fears and the control measures that were instituted (Smith 2006; Brug, Aro and Richardus 2009).

Thinking about disease control across the animal-human interface may aid the recognition that much of the host, zoonotic pathogen, and environment interaction, so called disease ecology, occurs outside the 'normal' public health and animal health policy sectors' scope of interest. Quoting McNeil (1975), Weiss, in the introduction of her 2001 Leeuwenhoek lecture, states, 'If there is any conceivable way a germ can travel from one species to another, some microbe will find it' (Weiss 2001; p 957). This is a key assertion when one thinks about disease ecology and zoonosis transmission. This is because a basic tenet of disease ecology is the concept of a niche, i.e. the biological and non-biological environmental conditions that determine a microbial agent's survival. Since microbes do not exist in a vacuum, the niche factors determining microbial survival overlap, to some extent, with the social determinants of human health. The social determinants of human health are the conditions of the *environment* where people live and work (Exworthy 2008). According to the WHO (2010), the state of these conditions is determined by power and financial and resource distribution across global, national and local levels. The WHO further states that the distribution of money, power and resources are influenced by *policy* choices. Therefore, to a large extent, the biological and non-biological determinants of microbial survival are linked to anthropogenic and policy factors. This highlights the possible shortcomings of developing policies for multi-sectoral responses solely on the basis of the interests of one, or two policy sectors without taking into consideration the interests of sectors that could be affected by, or affect, their interventions. In addition, this also underscores the fact that the dynamics of disease transmission and therefore their management, differ from context to context. The application of animal risk analysis frameworks in the context of zoonosis control may also benefit from the understanding of wider policy interaction in its approach to assessing risk.

2.4. Zoonoses in the spectrum of human infectious disease epidemiology

How can zoonoses be conceptualized in a way that provides a 'good fit' for the exploration of policy and risk? A common approach to the classification of zoonoses is to group them into emerging, re-emerging or endemic categories. Emerging zoonosis are diseases that have recently been recognised or have occurred previously, but are increasing in incidence or geographical range (Fauci 2000; Meslin and Formenty 2004). They may also be a known agent, or its close relative, occurring in previously unsusceptible species or exhibiting increased vector range (Morse 1995; Brown 2004; WHO FAO OIE 2004). A re-emerging zoonosis is one which, in the past may have achieved a low-point, but has again increased in incidence, due to such things as changes in the health status or socioeconomic and ecological framework⁵ of a susceptible population (Morse 1995). An endemic zoonosis is one which often occurs frequently and cyclically in a specific geographical locale, an example being highly pathogenic avian influenza in parts of Southeast Asia and Africa. This classification provides a useful means of classifying epidemic trends. It does, however, fall short of providing a disease prevention and control policy relevant lens through which zoonosis can be viewed in their evolution from animal pathogens to human pathogens and, if deemed relevant, vice versa.

A practical method of defining the transmissibility of pathogens from animals to humans, at least from the viewpoint of defining prevention and control alternatives, is derived from an evolutionary biology perspective. From this viewpoint, zoonoses fall into Stages II to IV of a five stage classification proposed by Wolfe *et al.* (2007) and modified by Lloyd-Smith *et al.* (2009). This classification defines pathogens along a continuum, with Stage I defining exclusively animal infectious agents and Stage V defining exclusively human pathogens, while classes II-IV represent 'human-animal interface' pathogens with variable zoonotic potential (Wolfe *et al.* 2007; Lloyd-Smith *et al.* 2009). Specifically, Stage II pathogens are transmitted

⁵ The ecological factors encompass agricultural or economic developments and climate changes while the socioeconomic factors include changes in human demographics and behaviour, travel and commerce, technology and industry possibly all simultaneously acting as macro determinants of microbial adaptation and change (Morse 1995; Morse 2004).

from animals to humans to cause infection in an individual with no further person-person spread. Stage III pathogens, once in human populations, cause limited human-to-human infections that later fade out while stage IV pathogens originate from, and are maintained in animal reservoirs but are capable of sustained human-human transmission (Lloyd-Smith *et al.* 2009)⁶. The Stages classification thus appears to be the most appropriate approach to consider the policy management of diseases at the human-animal interface. Interestingly, this classification compares closely to the WHO pandemic phases (figure 2.1), which designates six different phases of a global influenza pandemic (WHO 2005a).

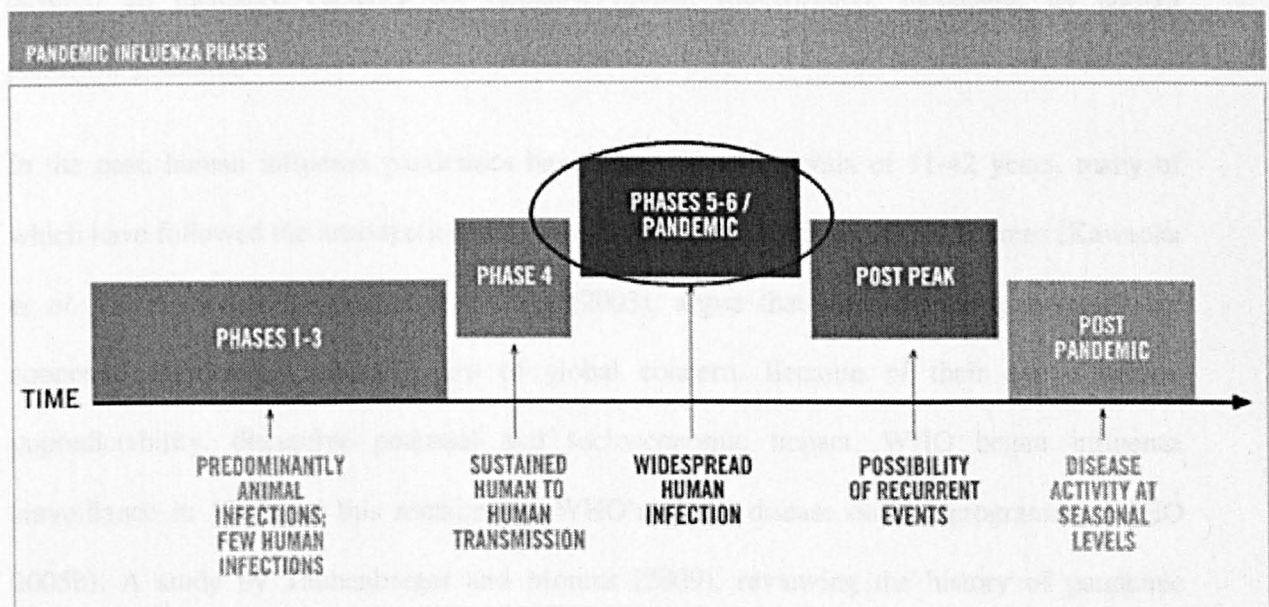


Figure 2-1. WHO pandemic influenza phases.
Source http://www.who.int/csr/disease/avian_influenza/phase/en/index.html

2.5. Overview of Influenza

One zoonosis that has taken centre stage in recent public health and animal health discourse is highly pathogenic avian influenza. The circulation of influenzas in both human (seasonal influenza) and animal populations is commonplace. Influenzas are highly labile, however, and their ability to adapt to new hosts by mechanisms of both antigenic drift and antigenic shift make them excellent human-animal disease interface pathogens. Antigenic drift is a process of

Examples of these stages of pathogens are as follows: Stage II pathogens: West Nile Virus and *Brucella abortus*. Stage III pathogens: Monkeypox and *Leishmania infantum*. Stage IV pathogens: *Yersinia pestis* and pandemic influenza.

incremental and continuous genetic change to the virus particle over time. Antigenic shift, on the other hand, is a sudden and significant change caused by a new combination of viral proteins that results in a novel influenza subtype. Since human and animal influenza viruses are in a constant state of circulation and, possibly, interaction, a key concern is reassortment. Reassortment is a form of antigenic shift that occurs when infection of a single cell with two different influenza viruses results in a new virus particle composed of segments from both infecting viruses. The new virus is called a reassortant. When a reassortant contains viral segments from both animal and human influenza viruses, it has the potential to progressively develop an increased capacity for human-to-human transmission, increasing its human pandemic potential.

In the past, human influenza pandemics have occurred in intervals of 11-42 years, many of which have followed the introduction of a novel influenza strain from animal sources (Kawaoka *et al.* 1989). Shortridge, Peiris and Guan (2003), argue that all influenza pandemics are zoonoses. Pandemics, naturally, are of global concern. Because of their cyclic nature, unpredictability, disruptive potential and socioeconomic impact, WHO began influenza surveillance in 1947 and this remains the WHO's oldest disease control programme (WHO 2005b). A study by Taubenberger and Morens (2009), reviewing the history of pandemic influenza, states that there have been at least 13 influenza pandemics since 1500 AD, and in the last 120 years, pandemics occurred in 1889, 1918, 1957, 1968, and 1977. Of these, three influenza pandemics are of note. The pandemic with the highest health impact was the 'Spanish influenza' of 1918, estimated to have caused anything from 40 to over 100 million deaths worldwide, depending on the authority cited. According to the WHO (2006), it was one of the deadliest disease events in human history. By comparison, the subsequent 'Asian influenza' pandemic in 1957 and 'Hong Kong influenza' pandemic in 1968 had lower public health impacts, with an estimated two million deaths for the former and one million deaths for the latter (WHO 2006). It is thought that the H1N1 pandemic strain that caused 'Spanish influenza' had circulated in animal populations for some years before it became part of a virus that could

efficiently transmit between humans (Weiss 2001; Eurosurveillance 2006). Equally, the available evidence suggests that the human pandemics of 1957 and 1968 each arose from reassortment between human and avian influenza viruses (Kawaoka *et al.* 1989; Claas *et al.* 1998; Bartlett and Hayden 2005). The origins of these pandemic strains have added to the concern over the potential significance of the current H5N1 poultry panzootic, a strain first identified in Scotland in 1956 (Guan *et al.* 2007). This thesis focuses on the recently emerged strain of *zoonotic* H5N1, first identified in China in 1996.

2.5.1. The emergence and spread of H5N1 highly pathogenic avian influenza, 1996-2005

Two detailed molecular epidemiological reviews published by Xu *et al.* (1999) and Webster *et al.* (2002), state that H5N1 highly pathogenic avian influenza was first identified at a goose farm in Guangdong Province, southern China in 1996, where it killed around 40% of the flock. Subsequently, high H5N1-related mortalities were reported on three chicken farms in Hong Kong, just adjacent to Guangdong Province, between March and early May of 1997 (Shortridge *et al.* 1998). In May of the same year, a child died of viral pneumonia; the first reported case of *zoonotic* H5N1 influenza (de Jong *et al.* 1997). Following the identification of 17 more human infections that resulted in five deaths between November and December of 1997 (Shortridge *et al.* 1998), H5N1 became recognised as a zoonosis of possible public health concern. As a result, in December 1997, total and rapid depopulation of all poultry in markets and chickens farms in Hong Kong was carried out to control the outbreak, a move that both policy and virology experts believed had averted a possible human pandemic (Fidler 2004b, WHO 2005b; Webster and Hulse 2005). It has been argued that live poultry markets were important in the transmission of the H5N1 virus to other avian species and humans during these outbreaks (Shortridge *et al.* 1998). The control measures instituted, i.e. the total culling of all farmed chickens and all poultry in markets in Hong Kong, appeared effective, as the responsible genotype of H5N1 (A/goose/Guangdong/1/96) has not been reported since the execution of these controls (Sims *et al.* 2005). However in February 2003, during the SARS epidemic, and after an apparent six year quiescence, three more human H5N1 infections with two fatalities were identified in China, and

according to the WHO, this indicated viral persistence, despite the control measures that had been instituted in 1997 (WHO 2005b). An epidemiological review by Sims *et al.* (2005) states that outbreaks had continued to occur in poultry in Hong Kong from 2001 to early 2002, caused by a different H5N1 lineage. While there is some suggestion that the H5N1 problem had been subdued in 1997 (WHO 2005b), it was in fact, entrenching itself in the poultry systems of Hong Kong, and possibly elsewhere in Southeast Asia, between 1997 and 2003.

Between December 2003 and February 2004, the first wave of an H5N1 panzootic in poultry was reported nearly simultaneously in eight countries in South and Southeast Asia, most of which occurred in commercial poultry establishments. This was followed by a second wave of spread from July 2004 (Alexander 2007; Paul *et al.* 2010). The WHO states that the second wave was associated with more rural settings (WHO 2005b). The countries initially affected were China, Indonesia, Cambodia, Japan, Laos, Korea, Thailand and Vietnam, with a ninth country, Malaysia, joining the list in August 2004 (Sims *et al.* 2005). The pro-poor advocacy NGO, GRAIN, states that the initial outbreaks in Vietnam, Thailand, Cambodia, Laos and Indonesia all occurred in closed, intensive factory farms (GRAIN 2007). During the first wave, millions of poultry either died or were culled in an effort to control the disease (WHO 2004a). Human infections were then reported in Hanoi, Vietnam, in January, 2004, a few days prior to a report of large H5N1-related poultry mortalities in two poultry farms in the south of the country (WHO 2005b). Vietnam had initially experienced an H5N1 outbreak in 2001 (Sims *et al.* 2005; Sims and Narrod 2008). In early 2004, during the first wave of the panzootic, the WHO declared the outbreak an unprecedented catastrophe for agriculture in Asia and a “global threat to human health” (WHO 2004a).

Coinciding with the second wave of the panzootic, the period between August and October 2004 saw eight more human fatalities in Thailand and Vietnam (WHO 2005b). The third wave began in December 2004, involving new poultry outbreaks in Indonesia, Thailand, Vietnam, Cambodia, Malaysia and Laos (WHO 2005c; Sims *et al.* 2005). Fresh human cases were reported in Vietnam, Thailand and Cambodia (WHO 2005c). At this point, after reviewing the

unfolding situation, a writing committee of the WHO consultation on human influenza established that Vietnam led the human death toll (Beigel *et al.* 2005). According to a WHO pandemic threat report (WHO 2005a), by 2005, H5N1 had 'succeeded' in crossing the species barrier three times; in 1997, 2003, and the period between 2004 and early 2005, which recorded the largest occurrence of human H5N1 cases in the period in question. With the report of migratory birds being affected with H5N1 in Mongolia and China, particularly at Lake Qinghai in China in April 2005, concern grew that this posed a potential risk of southward and westward and therefore global spread of the virus in poultry (Chen *et al.* 2005; Webster and Govorkova 2006; Alexander 2007; Cattoli *et al.* 2009). Around 6,345 birds of different species died in the weeks following the Qinghai outbreak (WHO 2005c). This is possibly the single most important event linking H5N1 to migratory bird spread. This outbreak singularly raised the profile of the role of migratory birds in the global spread of H5N1.

H5N1 had spread through the diverse market and poultry production systems of Southeast Asia. There is much debate around the primary causes and drivers of the H5N1 problem, revolving around poultry production and marketing practices. An important factor in the Asian panzootic is that ducks appeared to have played a key role in the maintenance of the virus, primarily as silent carriers of H5N1. While outbreaks in poultry were still possible, this suggests that in areas where duck production was of less significance, the chances of endemicity could be lower. By 2005, H5N1 had become endemic in the duck population of poultry, providing a reservoir of the virus for other poultry species as asymptomatic shedders of H5N1 influenza (Webster and Hulse 2005; Sims *et al.* 2005; Sims and Narrod 2008).

2.5.2. The role of trade in H5N1's emergence and spread

In the context of globalised trade, human agency in commercial poultry and wildlife trade and production has been identified as one means of H5N1 transmission (Normile 2006a; Alexander 2007; Brooks-Moizer *et al.* 2008). Evidence points towards anthropogenic activities such as methods of farming, live poultry commerce in wet markets, poultry supply chains and wild bird

trade as the main means of H5N1 dispersal (Karesh *et al.* 2005; Alexander 2007; Gauthier-Clerc, Lebarbenchon and Thomas 2007; Cattoli *et al.* 2009). For Southeast Asia, considerable variations in poultry production and distribution systems, both between and within countries were noted, however. Southern China, for example, where most of the H5N1 outbreaks were identified, also produced most of the country's ducks and sold chickens largely through live bird markets, while the north had predominantly commercial broiler and layer production and fewer reported outbreaks (Sims *et al.* 2005). In Japan, in support of the duck theory of H5N1 endemicity, there were almost no live bird markets or commercial duck production, which some felt could be one reason for the failure of further disease spread in this country (Sims *et al.* 2005). For Thailand and Vietnam, a risk mapping study identified mixed farming practices involving domestic ducks feeding in intensive rice cropping areas as one possible risk factor for disease recurrence (Gilbert *et al.* 2008). These production systems, rooted in the practices of Southeast Asia, therefore contributed to the maintenance and spread of H5N1 influenza in the region. By controlling trade and reinforcing veterinary surveillance, Taiwan, Japan and South Korea were able to eradicate H5N1 from their environments (Gauthier-Clerc, Lebarbenchon and Thomas 2007). In Thailand, however, trade activities were still responsible for H5N1 spread even after the institution of control measures (Paul *et al.* 2010).

In the period between 2005 and 2006, H5N1 spread first into southern Russia, then the Middle East, Europe, and finally Africa (Sims and Narrod 2008). The Russian and Kazakh H5N1 outbreaks are said to have followed known trade routes between China and Russia, thus implicating trade in disease spread in these countries. H5N1 was identified in Crested Hawk-Eagles (*Spizaetus nipalensis*) illegally imported from Thailand in Belgium (Van Borm *et al.* 2005) and more recently in Saker Falcons (*Falco cherrug*) in the Middle East (Marjuki *et al.* 2009). Interestingly, infected duck meat from German duck-fattening farms are believed to have caused H5N1 cases in three backyard holdings in the Federal State of Brandenburg after chickens were possibly exposed to raw offal⁷ from frozen duck purchased from a supermarket

⁷ According to the article, the possible exposure occurred due to scavenging

chain, thus highlighting a potential food chain related spread (Harder *et al.* 2009). In their conclusions on this particular epidemiological study, Harder *et al.* (2009), state that this finding underscores the limitations of syndrome-based surveillance approaches. It also shows that H5N1 can spread through frozen carcasses and therefore can 'utilize' marketing supply chains for its propagation.

The first identification of H5N1 in Africa was reported in Nigeria in February 2006 with the consensus (supported by genetic sequencing) being that there were at least three separate introductions (ALive 2006; Ducatez *et al.* 2006; Cattoli *et al.* 2009). There is some disagreement as to the method of introduction, however. One school of thought is that the introductions were trade-related (BirdLife International 2006; Gauthier-Clerc, Lebarbenchon and Thomas 2007). The other school of thought posits that it was likely introduced through migratory bird movement, as suggested for example, by the phylogenetic analysis of H5N1 isolates conducted by Cattoli *et al.* (2009). One mathematical model projected that both trade and migratory bird propagation would be significant for H5N1 transmission Africa, with trade being the more prominent route (Kilpatrick *et al.* 2006). Therefore it is possible that there was synergy between the two proposed methods of introduction. After its introduction into Nigeria, H5N1 then spread to Egypt, Niger, Cameroon, Burkina Faso, Sudan, Cote d'Ivoire and Djibouti (ALive 2006). Poultry trade is suspected to have caused the spread of highly pathogenic avian influenza H5N1 to countries adjacent to Nigeria, such as Niger, duck farms in Cameroon, and guinea fowl farms in Burkina Faso (Gauthier-Clerc, Lebarbenchon and Thomas 2007). Commercial poultry practices have also been suggested as possible sources of introduction and spread of H5N1 in Egypt (BirdLife International 2007). As of September 2008, 17 African countries had experienced outbreaks, although there were signs that the H5N1 pandemic could be abating (UNSIC and World Bank 2008). One concern has been that, given the deficiencies in surveillance systems in many African countries, it is possible that the current localisation of highly pathogenic avian influenza may not reflect its actual distribution (WHO 2005c; ALive 2006). Despite the contextual differences highlighted above, for the African continent, the

WHO felt that, while Africa's human populace and poultry densities were lower than those in South and Southeast Asia, there were enough *similarities* in production systems that "would create multiple opportunities for human exposure, should outbreaks occur" (WHO 2005c).

This situation led to the unprecedented collaboration of the WHO, Food and Agricultural Organisation (FAO), and the World Organisation for Animal Health (OIE). Their objective was to control the disease in Southeast Asia and other outbreak areas, minimize the impact on livelihoods as well as reduce the risks to public health (Sims *et al.* 2005). The roles of these agencies was intended to be complementary, with WHO protecting human health, the OIE protecting animal health, and the FAO focusing on animal production and livelihoods, although one position paper (Webster and Hulse 2005) and one policy study (Scoones and Forster 2008a) argue that as far as pandemic planning for influenza was concerned, these agencies are not always in harmony.

2.5.3. H5N1 influenza and global pandemic preparedness debates

As of 11th November 2010, H5N1 highly pathogenic avian influenza has had 508 confirmed cases and 304 human deaths (WHO 2010a), cost the global poultry industry well over 10 billion dollars in losses and continues to persist in poultry populations of parts of Europe, Southeast Asia, Egypt and Nigeria (WHO 2005; GRAIN 2006; Eurosurveillance 2006, Kilpatrick *et al.* 2006; FAO 2010a). The primary public health concern has been H5N1's possible candidacy for the next human influenza pandemic, which many experts believe is overdue (Conly and Johnston 2004; Louie 2005; Kilpatrick *et al.* 2006; Bartlett 2006). Interestingly, it was the rapid spread, public health and economic ramifications of the SARS outbreak in 2003 that appear to have alerted the global health community to the possible need for pandemic preparedness (Scoones and Forster 2008a). In SARS' wake, H5N1 has presented an unprecedented challenge to the animal health, public health and trade policy communities, having been identified as a threat to the poultry industry, a pharmaceutical interest, a trade-related epidemic, public health

threat and a human pandemic concern (WHO 2006; ALive 2006; Karesh *et al.* 2006; Ong *et al.* 2008; Scoones and Forster 2008a).

For avian influenza, Osterholm (2005) explains that public health experts and epidemiologists do not know if an H5N1 highly pathogenic avian influenza pandemic (in humans) is actually imminent, only that it is plausible. Adding to the complexity is determining how exactly to respond to a potential pandemic. Scientifically, in reviewing available surveillance data on past human influenza pandemics, Monto *et al.* (2006), for example, affirm that there was no pattern to the epidemiology of occurrence. Nicoll (2005) concurs, stating that there is no standard to the manifestation of pandemics, including which segments of the population would be affected the most. There is thus no clear precedent that would help definitively predict how the next pandemic will 'behave'.

Despite these uncertainties, a multi-sectoral approach to H5N1 management and pandemic preparedness across policy sectors affected has been advocated at national, regional and international levels, presumably to foster an accordant response to H5N1 (Ong *et al.* 2008; UN 2010). The main thrust of the avian and pandemic influenza response has been the coordination of public health and animal health agencies at national and international levels to develop preparedness interventions for areas not yet affected, or reinforce control measures in locations where the disease has become endemic, based on WHO pandemic preparedness guidelines, OIE recommended control measures and FAO devised surveillance strategies (WHO 2005a; Webster and Hulse 2005). However, H5N1 has presented unique challenges for pandemic planning, involving the weighing of sector-specific risk against wider ecological and socioeconomic interests that challenge the traditional public health and animal health based interventions of the pre-SARS era. Post SARS, global infectious disease governance⁸ has emerged describing, at least in the context of avian and pandemic influenza preparedness, the attempt to balance the interests of pharmaceutical, conservationist, transnational business and commercial poultry as well as bridge the previously growing divide between public and animal health (Fidler 2004a;

⁸ Defined by Fidler (2004b) as society's structuring of responses to challenges faced.

WHO/DFID-AHP 2005; Fidler 2008; Scoones and Forster 2008b; Rabinowitz, Odofin and Dein 2008).

Recently, the Hanoi Declaration (UN 2010) stressed the importance of multi-sectoral collaboration, advocacy and communication to foster better decision-making, in addition to the promotion of appropriate assessments of the risks in animals and humans. Furthermore, the Hanoi Declaration makes mention that highly pathogenic avian influenza control efforts and pandemic preparedness could serve as a means of strengthening and improving the responsiveness of human and veterinary health systems, and the alignment of these “sectoral policies in ways that encourage socio-economic development.”⁹ This suggests a desire for policy cohesion and the application of risk analysis to inform disease control priorities, but does not provide practical guidance as to how the two can be ‘married’ in various contexts.

In the policy domain, many of the concerns over a pandemic begin to sound apocalyptic. The often cited available milestone for comparison is the 1918 ‘Spanish flu’ pandemic which one health policy scholar suggests killed over 50 million people (Osterholm 2005). This particular pandemic was said to have its origins in Kansas military camps and was spread to Europe by US troops during the war in 1918 (Webster 1997; Hollenbeck 2005). With contemporary concerns such as human population growth, increased intensity of production systems and the unprecedented nature of globalisation, which many have argued allows for the faster and further transmission of infectious disease threats (Käferstein, Motarjemi and Bettcher 1997; Hampson 1997; Kimball, Arima and Hodges 2005; Kimball 2006), there is concern that a pandemic in modern times could kill millions. Morens and Fauci (2007) on the other hand, hold the view that a pandemic now is likely to result in considerably lower deaths than the one that occurred in 1918. The WHO (2006) estimated that should a pandemic arise from H5N1 highly pathogenic avian influenza, it could result in two-seven million deaths at the minimum. Other authors are sceptical. Horowitz (2005), for example, dismisses the avian influenza issue, and SARS before

⁹ <http://www.un-influenza.org/node/4040>

it, as elaborate political conspiracies of corporate and pharmaceutical interests disguised as national security threats and pandemic concerns. There is therefore much politics surrounding the issue of avian and pandemic influenza.

Scoones and Forster (2008a) have mapped the recurring themes in the debates on global responses to avian influenza. They suggest four themes characterise the core issues, namely risk and uncertainty, economy and livelihood impacts, effects on health and extent of disease, and effects on food and farming. Drawing from this, there are six linked debates identifiable in the international policy discourse concerning avian and pandemic influenza. The first debate involves the scientific uncertainty of the likelihood of the occurrence of a pandemic caused by H5N1 highly pathogenic avian influenza. As mentioned above, authors such as Osterholm (2005) have stated that public health experts remain uncertain of its likelihood. The concern over a possible pandemic has resulted in calls to focus control on the likely source of this 'risk', in this case, Southeast Asia, where most of the impact of H5N1 has been felt. In fact, some authors have referred to Southeast Asia as an "influenza epicentre" (see Hampston 1997). Of course, a complex interplay of cultural factors and production practices led to the exposure and succumbing of humans in this region to highly pathogenic avian influenza (see Webster 1997; Osterholm 2005). These factors have been identified and reviewed in various context specific network analyses (e.g. Kerkhove *et al.* 2009; Soares Magalhaes *et al.* 2010), highly pathogenic avian influenza risk mapping studies (e.g. Gilbert *et al.* 2008), risk factor studies (Yupiana *et al.* 2010) and risk analysis (e.g. Kasemsuwan *et al.* 2009). Petrelli and Sturloni (2007) in their review of infectious diseases risk management and governance of global risks, argue however that although surveillance has focused on H5N1 highly pathogenic avian influenza, there is still a lot of uncertainty about both its evolution as a zoonosis and its effects on public health.

The second debate involves linkages between poultry production practices, highly pathogenic avian influenza epidemiology and disease spread through trade, poultry and poultry product and migratory bird movement. According to the epidemiological reviews by Capua and Alexander (2004) and Alexander (2007), recent increases in intensive poultry production practices are

responsible for the increasing incidence of highly pathogenic influenza in the world. It has been stated by van den Berg (2009) that all parts of the world are at risk of H5N1 highly pathogenic avian influenza incursions as a result of the globalization of trade. Some authors have taken the view that it is migratory birds that will spread H5N1 across the globe (Normile 2006b; Chen *et al.* 2006), while others have claimed that wild birds are only capable of short range spread (e.g. Weber and Stilianakis 2007).

The third debate concerns the 'One Health' approach response to mitigate the pandemic threat. This has involved calls to strengthen veterinary control systems in addition to human pandemic preparedness, addressing the pandemic risk at-source but involving other sectors to mitigate the risk (FAO 2004; WHO 2005a). A key question here is how do countries incorporate other policy sectors in risk mitigation? Presumably, each sector, and indeed each country, would view the highly pathogenic avian influenza problem differently. In addition, while the international community has recommended 'at-source' controls, the 'standardised' approaches adopted have worked in some areas and failed in others (Scoones and Forstkeer 2008b). Yee, Carpenter and Cardona (2009) for instance, in their examination of the epidemiology of H5N1, state that control measures such as culling, disinfection and stamping out have been successful in controlling H5N1 outbreaks in Europe, but have not been as effective in Southeast Asia.

The fourth debate involves the potential effects of a human pandemic on the global economy. This has resulted in highly pathogenic avian influenza risk mitigation responses perceived to largely affect only the livelihoods of those in outbreak areas (Scoones and Forster 2008a). The brunt of these control efforts has largely been felt by poor farmers. Stirling and Scoones (2009; also Scoones and Forster 2008b), for example, estimate that over 2 billion birds were slaughtered with the greatest losses suffered by the poor. Nicoll (2005) also argues that the effect of H5N1 was mostly felt in the social sphere, particularly in Southeast Asia, where several countries (e.g. Thailand) had their poultry exports prejudiced and rural livelihoods affected by control interventions. This has links to contentions between business and livelihood

interests and controversies over the role of intensive vs. backyard farming in disease spread (GRAIN 2006a; GRAIN 2007).

The fifth debate involves pharmaceutical interests, covering influenza virus sharing and concerns that genetic sequence information collected from outbreak areas would be used to create vaccines for market that would not be distributed equitably in case of a pandemic (Garrett and Fidler 2007; Fidler 2008). The policy response has been Western countries scrambling to stockpile antiviral drugs and vaccines for 'high level pandemic preparedness efforts', the vaccines of whose production has depended on H5N1 virus strains recovered from 'developing countries' (Elbe 2010). In an attempt to globalise this policy response, there have been calls for affected countries to either develop pharmaceutical capacity or consider non-pharmaceutical interventions.

Linked to this is the sixth debate, involving the 'securitization' framing of the avian and pandemic influenza issue, which, Elbe (2010) argues, contributed to, and has caused difficulty in resolving, the controversy over influenza virus sharing¹⁰. In implementing this 'securitization' approach, Western countries have spent massively on pandemic preparedness. Burgos and Otte (2008) citing Jonas (2008) state that the US and European countries had spent approximately US\$2.8 billion 'at home' versus US\$950 million 'abroad' for disease control 'at-source' by the end of 2008. This forms the background against which resource-constrained countries generated their avian and pandemic influenza intervention policies guided by the WHO global pandemic preparedness plan (WHO 2005a; ALive 2006).

The African response was being coordinated by the WHO African Regional Office (AFRO), the African Union Inter-African Bureau for Animal Resources (AU-IBAR) and some regional trading blocs including Southern African Development Community (SADC), with funding from

¹⁰ Indonesia decided to cease sharing its H5N1 isolates in December 2006. According to Fidler (2008), this was in response to an Australian company developing an avian influenza vaccine based on an H5N1 viral strain that Indonesia had availed to the WHO. WHO acknowledged that patents on modified H5N1 viruses had been sought without the consent of the countries that had supplied the original virus samples through the Global Influenza Surveillance Network. Elbe (2010) argues that avian influenza had been presented as "pressing global security threat" which resulted in governments taking defensive measures such as pharmaceutical intervention.

the African Union and the World Bank (WHO-AFRO 2005; ALive 2006; UNSIC and World Bank 2008). This was under the global coordination of United Nations System Influenza Coordinator (UNSIC), with the main participants being WHO, OIE and FAO (UNSIC 2006a; Scoones and Foster 2008a). These global and regional actors set out a framework to guide the development of national avian and human influenza prevention and control responses. Among these guidelines was a recommendation for multi-sectoral integration (WHO-AFRO 2005; UNSIC 2006b; ALive 2006). By 2007, response plans on the African continent were at different stages of development with most aimed at containment of avian influenza in poultry to the neglect of pandemic preparedness (Ortu, Mounier-Jack and Coker 2007; Ortu, Mounier-Jack and Coker 2008). These assessments of the extent of preparedness in Africa, however, only reviewed policy content, which, arguably, are merely statements of intent.

2.6. Globalized perspectives on infectious disease management and their implications for disease control in resource-constrained countries

The second part of this chapter examines the policy implications of the main debates around public health, animal health and trade, focusing on the converging policy boundaries of the multilateral institutions governing these areas of policy. This section examines the extent to which these 'global' areas of policy interface each other, and potentially influence infectious disease control and commerce in resource-constrained countries.

With the entry of internationally important infectious diseases such as SARS and highly pathogenic avian influenza into the world policy arena, it has been noted by authors such as Fidler (2004b; see also Lee and Fidler 2007) that a radical shift in approaches to infectious disease control has occurred, moving from nation-focused to global-focused control mechanisms. In this shift is an assumed universal acceptance of what infectious diseases should be prioritized on both global and national agendas, the 'risk' they present and how they should be controlled. It is important to understand how resource-constrained countries go about responding to these 'global' imperatives, given their unique circumstances. The importance of

such research is made especially relevant with the issue of zoonotic risk management and pandemic preparedness.

As established thus far, the dominant perspective is that economic considerations, in various forms, often trump health concerns. Aginam (2002) however argues that it is not a simple case of one set of concerns taking pre-eminence over another. The global health governance boundaries, Aginam contends, are being reshaped through the “legally binding” and “soft-law” provisos negotiated and adopted within the respective mandates of multilateral institutions such as the WHO, the World Trade Organisation (WTO), FAO and OIE. These include international health guidelines, trade agreements and approaches to disease control, all grounded in ‘international standards’.

In an attempt to clarify the trade-health relationship and foster greater coherence between the international health and trade communities, a joint WHO/WTO study examining the links between trade and health was published in 2002 (WHO/WTO 2002). This effort did very little to alleviate the concerns of public health proponents and has been described as disappointing by some analysts (Howse 2004). With the advent of the WTO in 1995 and the completion of the revised International Health Regulations (IHR)¹¹ ten years later, the global health and global trade communities find themselves at a cross-roads in as far as infectious disease control, pandemic preparedness and global trade are concerned. With the revision of the IHRs in 2005, an important milestone for global public health was reached, enabling the global public health community address the more contemporary problems presented by infectious disease threats. Health proponents argue, however, that health compromises continue to be made. Meirianos and Peires (2005), for example, maintain that the revised IHRs made trade-offs between national sovereignty and global health by attempting to guard against global disease spread with minimum interference to trade and travel.

¹¹ Lee and Koivusalo (2005) state that the IHRs are based on a series of International Sanitary Conferences among leading trading nations, that led to the adoption of International Sanitary Conventions. The IHRs were first established in 1969, focused only on Yellow Fever, Cholera and Plague and depended on official notification to the WHO from nations experiencing epidemics (WHO 1983; Meirianos and Peires 2005). One limitation of the 1969 IHRs was a lack of a coordinated mechanism for controlling the international spread of disease.

In the debate between trade and health, animal health is wedged between the two. Meirianos and Peires (2005) have suggested that OIE regulations, what they consider to be the animal health counterpart to the IHRs, perhaps require a revisit similar to that undertaken with the IHRs to better align them with the present-day threats presented by transboundary diseases. While no attempt has been made to revise OIE regulations along lines similar to the IHRs, the international animal health community appears to be moving closer to health by adopting a global perspective on the control of zoonoses (see Blancou *et al.* 2005). Simultaneously, the international animal health community also appears to take an active pro-trade stance in their address of issues surrounding trade and health protection. The OIE has been setting international animal health standards for purposes of facilitating safe trade in livestock and livestock products of trade under the Sanitary and Phytosanitary (SPS) Agreement¹² of the WTO in its Terrestrial Animal Health Code (Bruckner 2009; OIE 2010). Animal health authors like Thiermann (2005) posit that countries that are involved in livestock and livestock product trade are expected to comply with the SPS Agreement in order to reap the full benefits of international trade. Pushing a free trade agenda, Zepeda *et al.* (2005), like Thiermann, uphold the SPS regulation that public health measures to ensure food safety and to control plant or animal diseases should be based, as far as is appropriate, on international standards, which presumably frees them from having to justify their policies through analysis of risk. The SPS Agreement espouses the view that measures to protect public health, animal health and plant health should only interfere with trade minimally. It is this view, similarly adopted under the revised IHRs, that has been found to be problematic at national level by Meirianos and Peires (2005). Alternatively, this also demonstrates both the increasing interaction of different areas of international policy and a fostering of commercial interests within international health and agriculture.

¹² The Sanitary and Phytosanitary Agreement provides guidelines to trading countries on acceptable measures to be applied in food safety and animal and plant health standards in as far as international trade is concerned (WTO/WHO 2002). For trade in livestock and livestock products, the accepted international standards are enshrined in the Terrestrial and Aquatic Animal Health Codes of the OIE (OIE 2010).

This international policy scenario has significant effects on resource-constraint countries. Thomson *et al.* (2004) argue that transboundary animal diseases and their unlikely eradication in the foreseeable future pose a significant problem for 'developing countries' by excluding them from involvement in global trade under WTO regulations. They further postulate, and rightfully so, that even with international guidelines and standards provided to facilitate trade, many 'developing countries' have to deal with a range of animal diseases simultaneously, making regulation and technical considerations extremely difficult (see also Upton and Otte 2004). Furthermore, it has been suggested that international standards have been used to restrict the direction of trade, on health grounds, from resource-enabled to resource-constrained countries. For instance, Rweyemamu and Astudillo (2002), state that the global distribution of Foot and Mouth Disease (FMD), mirrors the world's economic structure with industrialised countries generally being free of the disease while 'developing countries' were endemic, which pushes trade in a North-South direction. Of the OIE's fifteen 'List A Diseases'¹³ considered to be transboundary in nature and prioritized as threats to global animal health when it comes to trade in livestock products, 12 are endemic to sub-Saharan Africa (Thomson *et al.* 2004). Other authors, such as Stärk *et al.* (2006) and Zepeda *et al.* (2005) add to the complexity by explaining that 'developing countries' have serious problems in their surveillance systems and veterinary infrastructure. With these problems, Africa's trading partners automatically assume that products exported from the continent are 'infected' and risky (Tambi and Bessin 2006). Hall, Ehui and Delgado (2004), taking a development focus, have suggested that WTO SPS measures potentially marginalize the world's poor producers the most and could contribute to global poverty and disease. Furthermore, Tambi and Bessin (2006), reviewing WTO agreements and their effect on livestock production and trade in Africa, assert that there is a lack of transparency and equality among negotiating countries that has excluded many resource-constrained countries, with sub-Saharan Africa giving out more concessions on tariff reduction than what it received from its trading partners (see also MacDonald and Horton 2009). Stiglitz (2009) also argues that globalization under the current multilateral trading system has created vast

¹³ The OIE no longer maintains "List A" and "List B" diseases and has since combined the list.

inequalities between the world's richest and poorest nations, while Chang (2003), in a review of the history of free trade, has argued that under globalisation, current approaches to global trade deny poorer countries the opportunity to implement policies that fostered the development of the world's wealthy countries. These arguments suggest that resource-constrained countries are not only purposefully restricted from participating in global trade in reciprocal ways, their development opportunities are also *restricted* by these multilateral systems.

Invariably, the dominant position is that 'developing countries' pose the greatest risk as sources of infectious diseases, as suggested by authors like Hampson (1997); Domenech *et al.* (2006), and Kruk (2008). Domenech *et al.* (2006) go on to state that the FAO's philosophy is to control these diseases at *this* source. This view that resource-constrained countries pose as the greatest sources of infectious disease risks for the rest of the globe also implies that disease control efforts would focus on the 'global impacting' disease problems. As demonstrated in the discussion on the debates around avian and pandemic influenza, it also implies a fostering of particular methods of control that may not be appropriate for different contexts, which could then harm local livelihoods or worse, encourage further disease spread (see Scoones 2009).

Obscured by these global narratives is the fact that for 'developing countries', there is a mix of cultural, disease management and stigmatization challenges to embracing these global perspectives on trade and infectious disease control. Zinsstag *et al.* (2007) explain that, compared to more industrialised countries where there are mechanisms for farmer compensation following livestock culling, this is not usually possible in resource-limited countries because of a dependency on livestock for rural livelihoods and difficulties in obtaining replacement stock. In addition, it is possible that the diseases and 'risks' prioritized in the global 'West' are not necessarily the ones of most significance in these contexts. This is only part of the issue. Livestock in many 'developing countries' are not just kept as articles of commerce, but have cultural significance as well, what Smith, Sumner and Rosson (2001) term *multifunctionality*; where they serve such functions as assuring domestic food security, provide access to nutrition for the less privileged and play key roles in the maintenance of distinctive rural cultures and

ways of life. While not necessarily integrated, it must be understood that both 'traditional' and 'commercial' production practices co-exist in many of these contexts. Part of the problem with this 'global' aversion to infectious disease 'risk' therefore, is there is little effort made to understand the context in which resource-constrained countries attempt to negotiate global imperatives, be they public health, animal health or trade concerns. In the context of globalisation in particular, not much has been done to investigate context-relevant ways of addressing these problems.

A possible consequence of this, as argued by Lo Yuk-ping and Thomas (2010) in their analysis of the politics of the securitization of health, is that policy actors in different contexts may be pressured to verbalise an infectious disease threat as a priority, but may not treat it as such. While this may provide some, albeit minimal, support of the view that supranational influences can still be regulated by the nation state by reorienting governmental structures to keep abreast with extraneous demands (Rhodes 1997; Hudson and Lowe 2004), international approaches to disease control have significant and wide reaching influence on what nations can, or cannot do. Global infectious disease control policies have a significant influence on development opportunities, particularly in 'developing countries'. Of note is how trade policy such as the SPS Agreements¹⁴ are viewed to exclude 'developing countries' from participating in global trade. More importantly, in these debates, resource-constrained countries are cast as simultaneously needing the most protection and posing the greatest risk. For the world's poorest countries, the confluence of interests surrounding global health and global trade therefore presents unique challenges. In such contexts, the relationship between public health, animal health and trade is complex and is possibly made more so when issues such as zoonotic risk management and pandemic preparedness are brought into the picture. It remains to be seen what implications these multiple perspectives have for disease risk management policy development and pandemic preparedness.

¹⁴ There are wider debates concerning the SPS Agreement, for example, Silvergrade (2000) states that the SPS Agreement actually leads to a lowering of food safety standards in order to facilitate trade, thus actually increasing the risks of global trade.

2.7. Trade and the development agenda in resource-constrained countries

Continuing this literature review on the public health-animal health-trade relationship as it concerns the development of infectious risk management policy and pandemic preparedness in resource-constrained country contexts, this section highlights some of the key debates around livestock trade in resource-constrained country contexts and the role that trade policy is meant to play in the development agenda. The argument being made here is that by being denied access to the 'world trade table', 'developing countries' have begun to direct their energies towards active involvement in regional trade arrangements. This has contextual implications for the development of infectious disease risk management policies in resource-constrained countries. This includes the creation of regions that are possibly commercially separate from the known avian influenza 'hotspots' for instance, which has implicit implications for disease control. The question raised here is; given this complex background, how, precisely, should issues of infectious disease risk management be approached in resource-constrained country contexts?

Many authors agree that agriculture, of which livestock production is a part, holds the key to trade and development for many 'developing countries' (see Upton 2002; Kimberley 2006), but prior to the existence of the WTO, trade in agricultural goods was excluded from multilateral trading rules. The latest round of WTO negotiations started in Doha, Qatar in November 2001. The objective of The Doha Development Round was to set conditions under which trade between nations of varying economic status could be facilitated. Labonte and Sanger (2006) argue that the economic interests of major developed countries set and guided the actual Doha work programme. In the summer of 2006, the Doha discussions were suspended. Morrison and Sarris (2007), in their review of the WTO rules compatible with development, state that the suspension of the Doha Round was largely due to the contentious issues surrounding agriculture.

Shaffer *et al.* (2005) have explained that, although WTO membership is voluntary, most 'developing countries' have joined the WTO out of concern that they will miss out on trade opportunities. The literature suggests that by participating in the WTO, less developed countries have been disadvantaged. For instance, Lee, Sridhar and Patel (2009) in their examination of global governance in trade and health, state that low and middle-income countries are disproportionately underrepresented in WTO negotiations, with low-income country delegations averaging two staff, while the EU has over 140 staff representing its interests.

The issue is not only about access to WTO negotiations, it also about whether or not it is actually cost effective for resource-constrained countries to attempt to meet 'international standards' be it in trade, or disease control. While Rweyemamu and Astidullo (2002), for example, have attempted to propose ways in which resource-constrained countries in which FMD is endemic could benefit from global trade in livestock and livestock products, other authors, such as Cumming (2010a), citing Jansen *et al.* (1992) explain how the Zimbabwean Government investment in the scaling up of veterinary services and abattoirs to meet European Economic Community (EEC)¹⁵ import standards in the 90s resulted in a net loss to the country because the cost of these renovations exceeded revenues from beef exports.

To counter the disadvantage that resource-constrained countries have faced under the current multilateral trading system, Labonte and Sanger (2006) argue that resource-constrained countries have formed alliances of smaller and resource-constrained countries and civil organisations that are increasingly demanding that their interests be better represented at the WTO. These alliances also constitute regional and economic trading blocs, which Roningen and DeRosa (2003) contend, put member countries on the path to free trade and its associated benefits, and, politically, are thought to be easier to negotiate since they do not require consensus in the WTO. In Africa, a plethora of regional and sub-regional committees has emerged, forming a complex network of sometimes overlapping trading blocs (figure 2.2).

¹⁵ This is the forerunner of the current European Union.

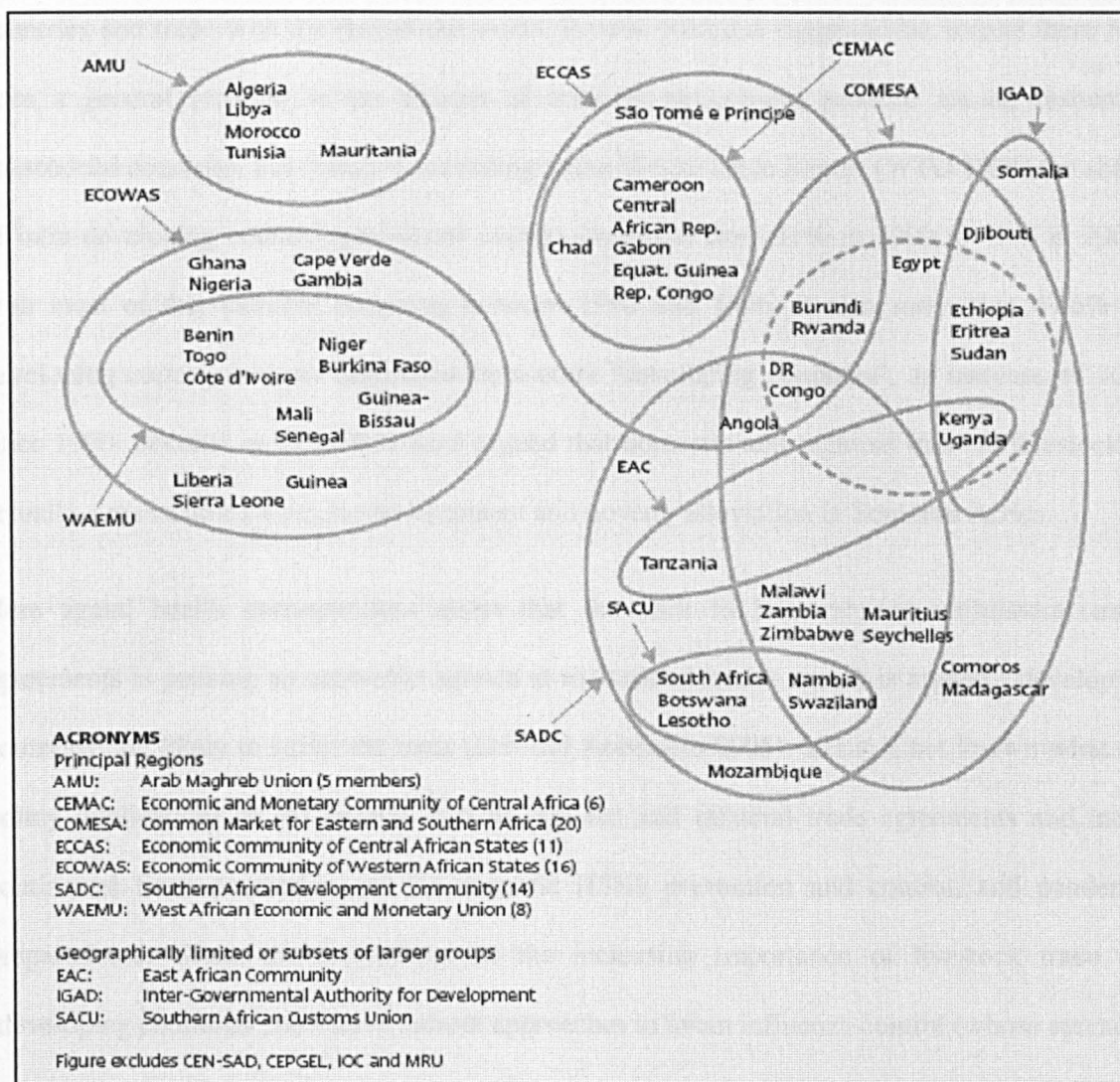


Figure 2-2. African regional and sub-regional committees.
Adapted from The Commission for Africa Report (2005).

Within this shift to multilateral and regional trade is a growing interest in livestock trade among resource-constrained countries. Delgado *et al.*'s (1999) joint study by the International Livestock Research Institute (ILRI) and the FAO project that by 2015, 60% of meat and 52% of the world's milk will be produced in 'developing countries' compared to 51% and 36% respectively in 1999. This study describes a "Livestock Revolution" driven by increasing demands for livestock and livestock products in low-income countries as a result of, among other factors, expanding urban populations. These investigators argue that by 2020, livestock product trade, particularly trade in meat, milk and eggs, will likely be of increasing importance for resource-constrained countries, both in terms of trade between resource-constrained

countries and trade with the rest of the world. Recent evidence suggests that indeed there has been a general increase in the amount of trade in agricultural produce among resource-constrained countries. For instance, according to the World Trade Report (WTO 2004) the share of intra-developing country agricultural exports increased from 31% in 1990 to 43% in 2002, with most of this increase occurring between 1990 and 1996. It also states that 47.6% of developing country imports originated from other 'developing countries', an increase of 10% since 1990. Scoones *et al.* (2010) have argued that domestic and regional trade in livestock is actually a reasonable means for development and poverty alleviation in Southern Africa.

Here again, health commentators assert that the shift to bilateral and multilateral trade agreements is pushing an economic agenda at the cost of health and, it is argued, 'developing countries' are likely to suffer the most (Lee and Koivusalo 2005). Yet it is not known what the policy implications of the current shift to regional and bilateral trade agreements and intra-continental trade promotion are for zoonotic H5N1 prevention and control, and pandemic preparedness. Given the projections on the increasing importance of livestock trade for 'developing countries', how have current approaches to avian influenza control (whose spread is also trade-related) and pandemic preparedness in resource-constrained countries incorporated trade? This is an important question to ask as agricultural trade among groups of countries in Africa in particular gains greater prominence.

2.8. The challenges for pandemic preparedness and risk analysis in Africa

Since it is now apparent that one of H5N1 highly pathogenic avian influenza's main means of spread is through trade, for 'developing countries' in Africa, particularly those as yet unaffected by H5N1 outbreaks, this potentially introduces a complex mix of health, trade and development dimensions to the avian and human influenza issue. Given the interplay of different priorities that may exist around pandemic preparedness and trade in Africa, perceptions of risk regarding a 'pending' pandemic if not properly contextualised across the global-national policy interface, will inevitably be driven by how risk is 'politically' communicated between the various policy

actors for whom this 'risk' is perceived to be important. Given the complex background against which resource-constrained countries generated their pandemic responses, one major question remains; how did individual nations like Zambia develop their responses to avian and pandemic influenza?

As demonstrated throughout this chapter, there are many challenges for avian and pandemic influenza preparedness in Africa created by the globalisation of commerce and the internationalization of approaches to infectious disease control. First, there is the view that resource-constrained countries are both a potential source of risk and in need of the most protection from potential infectious disease threats. Second, it is argued that health may be compromised by an unbalanced focus on trade. An emerging question is, whose health is being compromised and what are the trade-offs made by not engaging in trade? Third, resource-constrained countries have restricted participation in world trade, but require commerce to stoke their economies. If indeed, agricultural trade is as important to this agenda as the literature suggests, how have resource-constrained countries approached infectious disease risk management in the context of pandemic preparedness?

The central question in this thesis therefore is how *national* trade, animal health and public health concerns are addressed in the policy processes of multi-sectoral risk management and pandemic preparedness in the context of a resource-constrained country in Africa. Indeed, it is how to *approach* the international management of infectious diseases and commerce, influenced by the converging policy boundaries of multilateral institutions of animal health, public health and trade that may present the greatest challenge to developing risk management and pandemic preparedness policies in resource-constrained countries, particularly in Africa.

Given that the dynamics and risks of disease emergence are different from location to location, an examination of the risk's 'local' likelihood and 'impact' are important in identifying the appropriate policy responses. Risk analysis is a potential method for highlighting the trade-offs between various sectors in the management trade-related infectious disease spread. Risk

analysis is meant to aid decision makers prioritize particular risks and responses in a rational way, but, for many health policy makers on the African continent, risk analysis is still a novel concept, and thus may be difficult to apply if the risk analysis frameworks do not reflect the wider social political interests and influences at play. This makes it necessary to explore the feasibility of conducting a risk analysis such as the one recommended by the OIE risk analysis framework to inform risk management policy in a 'developing country' context. Given the various perspectives driving the pandemic response, without properly contextualising the 'risk' response, the danger is that conflicting information could be communicated among and between stakeholders, and could undermine precautionary action (Brug, Aro and Richardus 2009). The importance of exploring the feasibility of conducting a risk analysis in this context therefore is to determine how the policy requirements of public health, animal health and trade can best be co-opted into avian and human influenza prevention and control policy development in low income countries such as Zambia which have identified agricultural trade as a possible driver for economic development (Ndulo 2006; GRZ 2006a).

2.9. Chapter summary

In the context of globalization, there is some suggestion in the literature that global policy actors assume infectious disease risk is universally understood, and use this as a platform to drive collaboration in policy responses across sectors at international and national levels. Much of the available literature, understandably, does not fully examine the role that public health, animal health and trade play in multi-sectoral risk management and pandemic preparedness at national level, particularly in resource-constrained settings. While broad themes can be drawn from current knowledge, the discourse on global infectious disease governance and its relationship with global trade is still unfolding. This chapter highlighted the tensions that resource-constrained countries face in the nexus of animal health-public health and trade, including the perception that resource-constrained countries are both source and victims of potential infectious disease threats. It argued that that this view has created a situation where resource-

constrained countries have turned to each other for commerce in order to develop their economies. Given this scenario, it remains to be seen how resource-constrained countries such as Zambia approached infectious disease risk management as it relates to avian and pandemic influenza. The next chapter presents the study's conceptual framework, key research questions and methods.

CHAPTER THREE

Researching risk and policy: Conceptual framework and methodology

3. *Introduction*

The previous chapter highlighted the several key aspects of global infectious disease risk management that form the background against which resource-constrained countries have had to develop their pandemic preparedness plans. For developing countries, this background calls for, amongst other things, negotiating the co-evolving and interfacing policy boundaries of the bodies charged with the international governance of trade, public health and animal health. In the process of globalization particular risk framings have been given pre-eminence, as exemplified in the narratives surrounding highly pathogenic avian influenza and the global pandemic preparedness response reviewed in the previous chapter. These, in turn, have influenced the policy decisions taken on risk management and pandemic preparedness in various contexts. Given this global-national policy interface, it is important to determine how responses to 'global' zoonotic risks and potential risks are constructed in the risk management policy processes of resource-constrained countries, and determine the potential for assessments of risk to inform the development of context-appropriate policy responses to such concerns.

The previous chapter raised several questions, of which the following is the most pertinent: Given its complex international policy background, how did individual nations like Zambia develop their responses to avian and pandemic influenza? For purposes of discussing the theoretical basis of this study's approach to policy analysis, these questions are best addressed by doing the following: First, identifying how the highly pathogenic avian influenza and pandemic influenza problem got onto the government agenda in Zambia. Second, exploring how the highly pathogenic avian influenza and pandemic influenza problem was defined across the animal health, public health and trade sectors in Zambia. Third, exploring how the highly

pathogenic avian influenza and pandemic influenza problem was addressed across the animal health, public health and trade sectors in Zambia. Fourth, assessing what was achieved by the policy process as adopted in Zambia. Fifth, through an understanding of the risk management policy processes of a resource-constrained country (Zambia), determining how risk analysis could help address the concerns of animal health, public health and trade concerns in the development of multi-sectoral risk management policy. In order to answer these questions, this chapter presents the theoretical underpinnings of this research, linking understandings of risk to policy processes. The first part of this chapter provides the theoretical background and the second part of this chapter presents this thesis' conceptual framework and methods.

3.1 Linking policy processes to risk assessment: Some theoretical insights from the sociology of risk literature

To now link policy processes and zoonosis risk assessment, the insights offered by the sociology of risk literature possibly best explain how risk is socially constructed, assessed and managed in contemporary times, and what this may mean both for risk management policy processes and the applicability of risk assessments to inform context-appropriate multi-sectoral zoonotic risk management in resource-constrained countries.

Beck (1992) in his seminal book "Risk Society", introduces the theory of reflexive modernisation in which the processes of modernization in industrialised societies are posited to be the cause of the emergence of unprecedented and indeterminate risks and hazards, including those presented by infectious diseases. Here, risk creation, construction and response are intrinsically linked to modernisation, and knowledge and science¹⁶ are argued to play a constitutive and sometimes unexamined role in these processes. Beck's views share commonalities with those of Giddens (1998). In Giddens' (see also Lupton 1999) conception of reflexive modernization, the increasing dependence on society's 'experts' to determine what is and how to respond to 'risk' in societies, has brought with it an increasing concern with

¹⁶ Reflexive modernisation has its roots in the sociology and critique of science and scientific knowledge.

uncertainty arising from an inability to precisely calculate risk since all that can be done is create scenarios of risk which are based on contingent scientific knowledge and is therefore subject to change. This has led to concerns over the validity of purely scientific responses to risk, especially in their treatment (or lack thereof) of uncertainty (see Stirling and Mayer 2000; Millstone 2007; Stirling and Scoones 2009). Both Beck and Giddens therefore propose a more *reflexive* approach to risk in which the underpinnings of scientific assertions are drawn out, their situational implications assessed and alternative knowledge bases co-opted, thus taking the risk assessment process out of the 'problematized' purely scientific sphere into a more discursive treatment of 'risk'.

Acknowledgement of the need for such a shift lies in the important assertion by risk sociologists such as Douglas and Wildavsky (1982), Slovic (1998) and others, that although the dangers are real, risk is 'politicized' through several social processes, giving risk a status which is separate from the actual dangers presented by various hazards. Slovic (1998) further states that this politicization process makes risk assessment a subjective blend "of science and judgment with important psychological, social, cultural, and political factors" (see also Horlick-Jones 1998; Pidgeon 1999; Slavic 1999). The implications of this is that given the particular risk framings surrounding avian and pandemic influenza, before a context-relevant and reflexive approach to risk analysis can be proposed, it is important to understand what the framing assumptions were, how they came about and how they influenced the policy process in each context.

This brief overview provides this study's theoretical underpinnings, and leads into how this thesis intends to marry scientific risk assessment and policy processes. Millstone (2007) in his analysis of the science and politics of food-safety, proposes a co-evolutionary, more democratic model that adopts both a scientific and a policy development approach to issues of risk assessment and risk management (dealt with more closely in Chapter 8). This model takes into account framing assumptions, uncertainties and social choices, bringing science and policy-making closer to the more reflexive treatment of risk proposed by Beck (1992) and Giddens (1998). Within this grounding is the importance of risk communication between policy relevant

communities. To bring this into sharper focus, this thesis draws on Van Zwanenberg and Millstone (2006) for important insights on the importance of dialogue in the definition, analysis and the evaluation of risk issues in risk management policy processes. It is from this theoretical basis that this study took a predominantly scientific framework for risk analysis and suggested ways of 'opening it up' to both risk management challenges and risk management policy processes of resource-constrained countries like Zambia. The next section outlines the theoretical underpinnings for the examination of policy processes.

3.2 Examining the policy processes: The policy analysis theoretical framework

Primarily, the issue of concern for this thesis is the importance of global pandemic preparedness, but within this is a complex international trade-health-agriculture debate that raises a key question: how pandemic preparedness is actually pursued, achieved and evaluated in the context of resource-constrained countries. This section is an overview of the theories adopted in the examination of policy processes in this study. The issues examined in this thesis involve aspects of risk. This study sought to understand how 'risk' was understood and addressed on the national agendas of resource-constrained countries such as Zambia and the role that understanding policy processes could play in enhancing the risk analysis process, thereby making it appropriate for informing risk management policy development in resource-constrained countries, given the unique challenges they face in the era of globalisation.

The study draws on a range of policy theories appropriate to this policy context. The primary grounding of the thesis is in social policy, very broadly drawing on meso-level theories concerning institutions, policy networks and policy transfer at the global-national interface (see Hudson and Lowe 2004). Several approaches to policy analysis have been described within the policy literature. In developing the theoretical approach to this study, several theories and approaches were reviewed including concepts from agenda setting (Baumgartner and Jones 2009), implementation research (Hjern and Hull 1982), Advocacy Coalition Frameworks (Sabatier 1997; Sabatier 1999; Sabatier and Jenkins-Smith 1999) Policy Network Analysis

(Rhodes 1997; Smith 1997), Kingdon's Multiple Streams Model (Kingdon 2003), and the policy triangle (Walt and Gilson 1994). How these concepts were applied is explained under the section presenting this thesis' conceptual framework and methods.

The conceptual separation of the policy process into stages has traditionally been used to permit analysis (John 2000; Tantivess and Walt 2008). In such accounts, the policy process begins with agenda setting and problem recognition; goes on to policy formulation, legislation and policy introduction; and finally implementation. This 'stages heuristic' implies a natural sequence of steps through which public policies proceed, amalgamating into the 'policy process'. While John (2000) and other authors have argued that the 'stages heuristic' rarely reflects the reality of policymaking, the adoption of this heuristic in this study allowed for the examination of avian and human influenza prevention and control policy development in a structured manner. This study specifically examined the early parts of the policy processes of agenda setting and policy formulation. The definitions used for agenda setting and policy formulation were drawn from the literature. Lester and Stewart (2000) define agenda setting as the process by which problems and solutions gain or lose government attention and can extend into policy formulation, where objectives and the means of achieving them are decided (John 2000; Tantivess and Walt 2008).

Because the issues being examined in this thesis pertain to the global-national policy interface, this study was a national level policy analysis. It adopted the view that the national political system is the framework in which actors interact and participate in policy (see Elmore 1997; Smith 1997) and sought to understand how decision-makers interacted at this level in the development of avian and human influenza prevention and control policy development and livestock trade policy implementation in Zambia. The study focused primarily on decision-makers in animal health, public health and trade to examine the policy processes of avian and human influenza policy development. I remained cognisant of the role that business, bureaucracy and political elite interests play in shaping the policy process, as demonstrated by Barker (1996) in health care policy processes. The theoretical grounding used to understand and

explain the policy process complications introduced by external relationships with advisors, experts, aid-donors and financial institutions drew on Walt and Gilson's (1994) examination of health policy in resource-constrained country contexts and Overseas Development Institute's (ODI 2006) examination of the impact of research on the policy processes of resource-constrained country contexts. Walt and Gilson (1994) also argue that policy actors in resource-constrained countries usually have large power gaps between them in the policy process. Understanding this helped define the nature of relationships among policy actors in animal health, public health and trade in the avian and human influenza prevention and control policy process and livestock trade policy implementation. For resource-constrained countries in particular, Walt and Gilson (1994; see also Walt 1994) also state that actors are influenced by contextual factors at both the macro-governmental and micro-institutional level in their roles in the policy process. In addition, ODI's (2006) argument that international actors have an amplified influence on the policy processes of resource-constrained contexts was useful in understanding the role played by international agencies in policy development. The study therefore examined the relationships decision-makers in public health, animal health and trade had with international bodies such as the Food and Agricultural Organisation (FAO), the World Health Organisation (WHO), the poultry industry and other stakeholders and also the relationships among the animal health, public health and trade sectors in both avian and human influenza prevention and control policy development and livestock trade policy implementation.

Drawing on the insights derived from the sociology of risk literature on how risk is politicised through social processes (Douglas and Wildavsky 1982; Slovic 1998), it was important to understand how 'the avian and human influenza problem' actually got onto the government agenda in Zambia. In determining this, the study examined how the avian and human influenza prevention and control policy problem was defined, and the risk of avian influenza was perceived, across the public health, animal health and trade sectors in Zambia. Birkland (2001) and Kingdon (2003) have argued that the definition of a problem determines whose interests it affects. The study sought to understand how the problem definition, and its origins, determined

the roles each of the three sectors (animal health, public health and trade) played in avian and human influenza prevention and control policy development. It also examined how 'problem framing' (see Yanow 2000) restricted access to decision-making in the policy process. In this regard, Porter and Hicks (1995; Ho 2002; Toedorovic 2008) state that policy problems can be either widely or narrowly defined. Their argument is that 'wide problem definitions' are inclusive and have the ability to draw a larger group of stakeholders into the policy process, while 'narrow problem definitions' limit participation to only the stakeholders whose interest this problem definition speaks to. The study also examined what drove decision-makers' perceptions on avian and human influenza 'risk' and what influenced avian and human influenza prevention and control policy development in this particular context. This included an analysis of the media, the actions of policy proponents¹⁷ and what evidence was used to define why, how and for whom avian and human influenza prevention and control was important.

The examination of context was fundamental in this research. The policy analysis literature defines context as the international and national systemic factors that affect policy, including politics and socioeconomic conditions (Buse *et al.* 2005; ODI 2006). Leichter's (1979) classification of context as situational, structural, cultural and international was applied in this research. The study mainly focused on the situational, structural and international contexts. The situational context was the emergence of highly pathogenic avian influenza on the African continent and the perceived risk it presented for Zambia's animal health, public health and trade sectors. The international context was the global spread of H5N1 avian influenza and its links to a possible human influenza pandemic. The structural and cultural context, were conceptualized to be the pre-existing structures for networking, and consensus building across government institutions, established under Zambia's development platform. Finally, the study used the insights gained from the policy analysis and an epistemological position derived from the sociology of risk literature, to determine the feasibility of conducting an OIE type risk analysis appropriate for this context, and developed a risk model based on the study findings.

¹⁷ Defined as individuals or groups who invest their time and resources to push policies onto the agenda (Kingdon 2003)

3.3. Overview of the research

This study had two aims. The first aim was to document and analyse how the avian and human influenza prevention and control policy agenda was established in Zambia. It also analysed how the avian and human influenza prevention and control policy was formulated across the public health, animal health and trade sectors at national level in Zambia. The analysis was based on a review of the perceptions of national level decision-makers across these sectors. These perceptions were identified from in-depth face-to-face interviews, informal discussions, policy documents and observation of several planning meetings as well as a field simulation exercise. Based on these policy analysis findings, the second aim was to examine the feasibility of conducting a risk analysis to inform multi-sectoral zoonoses risk management in this context, based on a review of the World Organisation for Animal Health (OIE) risk analysis framework.

The approach adopted was first to carry out a policy analysis and then examine the policy and risk management interactions within the framework of an established, structured and holistic approach to the analysis of infectious disease risk. The OIE risk analysis framework was one possible candidate. This framework has been conceptualised to be a 'gold standard' tool to aid decision-makers evaluate and compare various policy actions regarding the management of disease risk. The framework itself is based on the model developed by Covello and Merklehor (1993), which in turn was based on a review of a multi-disciplinary range of risk assessment frameworks.

North (1995), in his paper on the limitations and principles of risk analysis, contends that risk analysis should be directed at assisting decision-making as much as possible, be consistent with scientific principles and fall within legal guidelines and "public values" (p.913). Pushing this argument further, it is Hueston's (2003) view that risk analysis in particular holds promise as a tool to better inform policy-making around the multi-sectoral management of infectious diseases, given the inherent complexity of today's animal and public health issues. The common ground between North and Hueston's viewpoints is that risk analysis is intended to be a tool to

aid the process of decision-making concerning the management of risk. To aid decision-making, an OIE risk analysis integrates risk assessment, risk management and risk communication in one framework. It is the argument of this thesis that risk assessment, risk management and risk communication are policy processes that may have characteristics particular to the contexts in which they are implemented. This concept is not new. It is the position of Horlick-Jones (1998) for example, that the framing of risk assessments involves the interaction of both contextual and social influences (see also Douglas and Wildavsky 1982; Scott *et al.* 1999; Slovic 1998; Pidgeon 1999).

While potentially useful as a tool to aid disease risk management policy, for many policy makers in resource poor settings on the African continent, OIE risk analysis is still a novelty. In addition, though not unique to this context, there are a range of international and national interests driving the policy processes in resource-constrained settings. The management of risk in such contexts involves balancing sometimes conflicting international and national priorities in defining and communicating risks and developing risk management options. The multi-sectoral application of this particular framework may be difficult if the wider social political interests and influences at play are not taken into account. To explore the possible links between policy, disease management and risk, this study examined the feasibility and utility of conducting a risk analysis from the OIE in the Zambian context. This was based on the policy analysis findings.

3.4. Conceptual framework

The study examined the implications of avian and human influenza prevention and control policy development at national level in Zambia. Given the global significance of the current H5N1 panzootic and this pathogen's potential candidacy for a human influenza pandemic, this focus was used to investigate how global concerns were addressed, or not addressed, on the institutional agendas of the animal health, public health and trade sectors in Zambia. Linked to this was the identification of the broader governance issues regarding interests and power

among the relevant international agencies and institutions involved in human health, animal health and trade. Finally, it allowed for the exploration of the possible links between policy, disease management and risk, which provided a basis for proposing a policy and context-relevant approach to risk analysis to inform multi-sectoral zoonoses risk management in Zambia.

It is Barker's (1996) position that a policy analysis should provide a means of determining how decision makers set priorities and take action. This research was a policy analysis aimed at developing an understanding of how decision-makers across the public health, animal health and trade policy sectors set objectives, priorities and took action in relation to H5N1 risk management and pandemic preparedness. From a health policy perspective, it is well accepted that part of the process of developing such an understanding of policy decision making requires taking into account the social, political and cultural dimensions of context because these influence the policy process and policy outcomes (Leichter 1979; Walt and Gilson 1994; Buse, Mays and Walt 2005). From a macro-epidemiological viewpoint, as stated by Shy (1997), the politics, economics and culture of a particular context are important determinants of infectious disease epidemiology. From an animal disease control perspective as well, Brown (2004) has argued that these contextual factors are important determinants of the risk of emerging zoonotic diseases. Examples include the emergence of Ebola haemorrhagic fever in humans associated with great apes hunted for food in the Congo (Leroy *et al.* 2004), SARS associated with the trade of wildlife in Southeast Asia (Bell, Robertson and Hunter 2004; Karesh *et al.* 2004) and the emergence of H5N1 highly pathogenic avian influenza as a result of, among others, the poultry production practices in Southeast Asia (Slingenbergh *et al.* 2004). These examples demonstrate the anthropogenic nature of emerging zoonoses. They also imply that the management of these risks should be context specific. Policy, disease ecology, and risk management systems are complex, interacting and often peculiar to each context. To determine the feasibility of, and assess the policy implications for, conducting an OIE type risk analysis appropriate for

informing multi-sectoral zoonosis risk management in Zambia, a consideration of the cultural, political and context specific elements of disease risk was necessary.

Generally a policy analysis can fall under one of two broad categories. It can be an analysis *of* policy, where the analytical process is largely focused on presenting a descriptive assessment of policy; or it can be an analysis *for* policy, of which the purpose is more prescriptive (Buse, Mays and Walt 2005). The nature of this study was such that it covered both. It was an analysis *of* policy because it sought to understand, describe and explain how avian and human influenza prevention and control policy was developed across animal health, public health and trade in Zambia. It was also an analysis *for* policy, seeking to assess the feasibility and usefulness of conducting an OIE type risk analysis in a manner appropriate for multi-sectoral zoonosis risk management in this context. The overall study can be defined as applied policy research, which subdivides analysis of and analysis for policy into contextual and diagnostic categories for the former, and evaluative and strategic categories for the latter (Ritchie and Spencer 1994). This research examined the contextual factors influencing avian and human influenza prevention and control policy development in Zambia. It also evaluated the feasibility of, and assessed the policy implications for, conducting a risk analysis appropriate for this particular political-economic context.

While Dye (2001) defines 'policy' as what governments do or don't do, the perspective on policy adopted in this research is that policy is not limited to government action in any context. This research therefore took a broader view of policy to locate policy-relevant actors inside and outside of government, adopting the view that, rather than government, it is the national political system that provides the framework in which actors interact and participate in policy (Elmore 1997; Smith 1997). The policy-relevant actors included international agencies, nongovernmental organisations, research institutions and policy consultants. In this research, 'policy' was considered to be the programmes, projects, activities and documents developed for avian and human influenza prevention and control. Decision maker perspectives and descriptions of the policy process were used to identify the multiple decisions that led to various

courses of action over time (Buse *et al.* 2005). It has been argued that policy results from the interaction of interests, institutions and ideas (Walt *et al.* 2008; Dickinson and Buse 2008). Understanding participating *decision-maker* perspectives and motivations in each sector was critical to understanding how interests, institutions and ideas interacted in the development of avian and human influenza prevention and control policy in Zambia. The identification of the *external influences* on the policy process as perceived by decision-makers was also important, since in many resource poor settings, policy actors are forced to balance the external desires of funding agencies and international bodies as well as contend with internal power struggles (Walt and Gilson 1994; Walt 1994; ODI 2006).

3.4.1. Evolution of the research question

This study started out with the objective of very broadly examining the relationship between zoonotic ‘risk’ and risk management policy development across animal health, public health and trade sectors, based on perspectives provided by national level policymakers. The study intended to assess the *extent* to which the trade, public health and animal health policies concerning livestock trade and avian and human influenza prevention and control were coherent in Zambia, based on ‘measures’ for policy coherence developed through a review of policy coherence literature (Hoebink 2001; OECD 2003; Ashoff 2005; Suppan 2005, Fukasaku *et al.* 2005; Blouin 2007). From this, the study intended to conceptually explore how the existing level of policy coherence potentially influenced the *trade-related* risk H5N1 introduction and spread in Zambia.

Policy coherence, however, primarily emphasizes the achievement of congruence in policy *objectives* (see Musken and Heres 2007; Blouin 2007). By looking mainly at coherence of policy objectives across sectors regarding avian and human influenza prevention and control, the study risked not examining closely enough the multiple perspectives, influences and motivations that are important determinants of policy processes. These multiple perspectives, influences and motivations could be important for risk management in general, but would

probably not have been examined in any great detail in this research, simply because they did not properly fit the policy coherence paradigm. Furthermore, by basing the analysis of the trade-related risk of a zoonotic incursion of H5N1 solely on the *extent* of policy coherence, the wider policy considerations and influences important for *risk* and its management would also not be examined in any great detail. Therefore, while the examination of policy coherence provided a useful conceptual starting point, the processes of initial data collection and analysis revealed the focus on policy coherence to be too narrow.

Another limitation of the original study design was that, by choosing to examine decision-maker *perspectives*, the ‘measures’ of policy coherence adopted became more convincingly argued as policy actors’ cognisance or incognisance of differences in understanding (Yanow 2000), or differences in institutional approaches to policy formulation (Ashoff 2005), which needed to be contextualised and explained, rather than ‘just’ classified into categories of policy coherence or incoherence. It was the identification, analysis and presentation of these multiple perspectives and processes, at the centre of which were perceptions of risk that seemed more useful to explain the challenges in multi-sectoral risk management in a resource poor context.

It was on this premise that the study took a step back. By refocusing the study to more broadly examine agenda setting and policy formulation of avian and human influenza prevention and control policy across trade, animal health and public health in Zambia, and incorporating insights derived from the sociology of risk literature, the study was better able to describe and explain the links between risk, disease management, and policy. This wider policy analysis approach made it possible to assess the feasibility and utility of applying one policy appraisal tool, the OIE risk analysis framework, and identify the parameters that would make it more appropriate for informing multi-sectoral risk management in this context. This approach allowed me to examine multi-sectoral zoonosis risk management from both a policy analysis perspective and a risk analysis perspective.

3.4.2. Study objectives and key research questions

The shift from a focus on policy coherence to a wider analysis of avian and human influenza prevention and control policy development resulted in the following objectives and key research questions:

Objectives

The objectives of the study were to:

- i. Examine avian and human influenza prevention and control agenda setting and policy formulation across three sectors – human health, animal health and trade;
- ii. Identify the strengths and weaknesses of the policy response as adopted in Zambia;
- iii. Identify the challenges and benefits of doing an OIE type risk analysis to inform zoonotic risk management across these three sectors and more widely;
- iv. Propose a policy relevant model for risk analysis and explore its implications for supporting multi-sectoral emerging zoonotic risk management in a resource-constrained country.

Key research questions

For each of these objectives, I developed a series of key research questions that this study addressed. These were as follows:

- i. **KEY RESEARCH QUESTION ONE:** How was the national policy on the control and prevention of H5N1 highly pathogenic avian influenza set and developed across the sectors of animal health, public health and trade in Zambia?
 - a) Who were the key stakeholders in setting the national agenda and policy development in each of three sectors – human health, animal health and trade?

- b) How was the policy developed?
 - c) In each sector, what were the perceptions of risk of H5N1 highly pathogenic avian influenza and human pandemic influenza, and how did they influence the development of the national policy on avian and human influenza prevention and control?
 - d) In each sector, other than risk perceptions, what other contextual and institutional factors influenced agenda setting and policy formulation?
- ii. **KEY RESEARCH QUESTION TWO: What were the strengths and weaknesses of the policy response as adopted in Zambia?**
 - a) What was the evidence-base for the development of the avian and human influenza policy in Zambia?
 - b) What were the impediments to, and opportunities for, collaboration across three sectors for developing a multi-sectoral policy response to the potential (or real) risk posed by H5N1 highly pathogenic avian influenza?
- iii. **KEY RESEARCH QUESTION THREE: How feasible is it to conduct an OIE risk analysis to inform the development of risk management policies across these three sectors in a context of a resource-constrained country like Zambia?**
 - a) What are the policy considerations relevant to the feasibility of conducting an OIE risk analysis in Zambia?
 - b) How do these policy considerations compare to the way the OIE risk analysis framework is currently conceptualised?
- iv. **KEY RESEARCH QUESTION FOUR: What would a policy relevant model for risk analysis appropriate for this low income country setting look like?**
 - a) What is the capacity, as perceived by key stakeholders and documents, in each sector to inform risk analysis and multi-sectoral zoonosis risk management in Zambia?

- b) How would the OIE risk analysis framework need to be modified to better inform multi-sectoral risk management policy in this context?
- c) What are the policy implications of this approach to risk analysis?

The next section overviews the methodological approach adopted to answer these research questions.

3.5. Overview of the methodology

The research was a case study¹⁸ of pandemic preparedness and multi-sectoral risk management policy development in Zambia. It focused on avian and human influenza prevention and control policy development across animal health, public health and trade. This approach was taken to develop a detailed contextual analysis of avian and human influenza prevention and control policy development across three sectors. The research explored multi-sectoral risk management policy development in a resource-constrained context and its implications for the feasibility of conducting an OIE type risk analysis in ways appropriate to this context. Social research methods informed data collection and analysis. A variety of data sources were used. These included in-depth face-to-face interviews, informal discussions, review of policy documents and news articles pertinent to the time, and observation.

3.5.1. Approach to the research questions

The policy study focused on the policy activities of agenda-setting and policy formulation. The study primarily examined key decision-makers' perceptions of policy processes across the government institutions of public health, animal health and trade in Zambia. It examined the relationships, institutional structures and policy and legal provisos decision-makers considered relevant to avian and human influenza prevention and control policy development. An important premise of the research was to determine how the policy problem was defined and addressed by decision-makers in the context. This is an approach that has been advocated in implementation

¹⁸ A case study approach that focuses on a single case using a variety of methods of investigation (Yin 2000)

research (Hjern and Hull 1982), and was found appropriate for meeting the objectives set out for this policy study. In this research, perceptions of risk were conceptualised to be important for defining policy objectives, defining interventions and determining the nature of stakeholder involvement.

To identify the national and international stakeholders influencing the avian and human influenza prevention and control policy process across the human health, animal health and trade sectors in Zambia, techniques for conducting a stakeholder analysis were applied, based on guidelines provided by Varvasovszky and Brugha (2000). As recommended by these authors, the purpose, context, resources and focus of the research were determined beforehand. The research focused on policy processes at national level, looking at actors who fall between the international (or global or macro-level analysis) and the local (or micro-level analysis). This focus is elaborated in the social policy review provided by Hudson and Lowe (2004). The use of these techniques provided an entrée for identifying the decision-makers most likely to provide study-relevant information on how avian and human influenza prevention and control policy was developed in Zambia. The approach has been documented in other policy research (Varvasovszky and Brugha 2000; Brugha and Varvoasovsky 2000; Roberts *et al.* 2004; Buse *et al.* 2005; ODI 2006). To enable the initial identification of relevant stakeholders, using snowball sampling, I subdivided avian and human influenza prevention and control policy into what I understood to be the possible components that were relevant to this research (Varvasovszky and Brugha 2000). These components were as follows:

- poultry production and marketing
- food safety
- avian influenza surveillance and control
- human influenza surveillance and control
- pandemic influenza prevention and preparedness
- trade agreements affecting poultry and poultry product trade

By delineating the policy arena into these components, a starting point was provided to consider, *a priori*, how stakeholders were affected by, or affected, the policy issue in question (Varvasovszky and Brugha 2000). Based on this subdivision, I made a list of relevant organisations with an interest in these policy components. The list included the following:

- The Poultry Association of Zambia
- The Ministry of Agriculture and Cooperatives
- The Ministry of Health
- The Ministry of Commerce, Trade and Industry
- Common Market for Eastern and Southern Africa (COMESA)
- Southern African Development Community (SADC)
- The World Health Organisation (WHO)
- The Food and Agricultural Organisation (FAO)
- The World Organisation for Animal Health (OIE)

In-depth interviews with decision-makers determined the comprehensiveness of this list, as well as the *actual* relevance of each of these stakeholders to policy development as perceived by decision-makers. This stakeholder analysis thus helped to explore each agency and policy sector's relevance to the avian and human influenza prevention and control issue and assess their interrelations and political resources. In order to properly explain policy actor interrelations and political resources, the research drew on the work by Rhodes on policy networks (Rhodes 1997; Smith 1997; Hudson and Lowe 2004; Tantivess and Walt 2008). The interview process also allowed for the identification of other policy relevant stakeholders. The results of the case study are presented across the three policy analysis empirical chapters (Chapter 5, Chapter 6 and Chapter 7).

Research question one

The research first examined agenda setting (Chapter 5). In addition to exploring how the avian and human influenza prevention and control policy agenda was set, the multi-sectoral nature of

this issue being examined required that I ask how decision-makers across animal health, public health and trade sectors defined the highly pathogenic avian and human influenza problem. It has been argued by Birkland (2001) and Kingdon (2003) that how a problem is defined determines whose interests it affects, how resources are allocated and how power will be used in the policy process. It was from these definitions (i.e. a wide or narrow definition as defined by Porter and Hicks [1995]) that the understanding of the avian and human influenza prevention and control problem was apportioned across the three sectors to identify the existing tensions in decision-making.

To determine the perceptions of risk, their drivers, influences and resultant response in formulating Zambia's policy on control and prevention of avian and human influenza required an identification of what I broadly conceptualized as policy influences. These included 'problem framings' or problem definitions, as conceptualised in the policy analysis literature (Yanow 2000; Birkland 2001); international and national policy proponents (or policy entrepreneurs as defined by Kingdon 2003); resource allocations; and forms of evidence (ODI 2006). It was from the confluence of these various policy influences that a trajectory tracing the development of perceptions of avian and human influenza risk through the policy process across the animal health, public health and trade policy sectors was constructed.

The research also examined policy formulation (Chapter 6). How avian and human influenza risk was perceived across these sectors was important to understand how decision-makers defined policy objectives, interventions and the determined who would be involved in the policy process. Risk was conceptualised to be the likelihood of an undesired outcome and uncertainty over the time and magnitude of its occurrence (Covello and Merkhofer 1993). The conceptualisation of this understanding of risk was related to the different ways each sector *understood* and responded to the problem. How risk was perceived was examined according to sector. Risk *perception* was envisioned to be the *significance*, including the initial level of priority, assigned to avian and pandemic human influenza by stakeholders (Chapter 7).

Research question two

The policy analysis (Chapter 5, Chapter 6 and Chapter 7) examined the different understandings of the avian and human influenza prevention and control policy problem across animal health, public health and trade. It explored how various actors came to be involved in, or excluded from, policy development; based on how the avian influenza and pandemic influenza issue was framed. It also examined the evidence used to construct Zambia's policy response. The policy analysis also examined the tensions, challenges and strengths of the policy approach as adopted in Zambia (Chapter 7).

Research question three

Based on the policy analysis findings, the research examined the feasibility of conducting a risk analysis based on the OIE risk analysis framework in a manner appropriate for informing multi-sectoral risk management policy in Zambia (Chapter 8). This analysis took into consideration the various elements that were important for avian and human influenza prevention and control policy development in Zambia. The research examined the OIE risk analysis framework through a policy analysis lens, i.e. the analysis was based on the results of the policy study. Drawing on the policy study, and the co-evolutionary approach proposed by Millstone (2007), I critiqued and closely examined the various stages of the OIE risk analysis framework; hazard identification, risk assessment, risk management and risk communication and made recommendations for its improvement. It was thus an analysis of the policy process and incorporating its context-specific elements *in* the risk analysis process to better manage avian and human influenza risk across sectors in resource-constrained countries.

Research question four

Finally, based on the policy study, the study developed and proposed a model of the OIE framework and reviewed its policy implications for this context. In aggregate, the research explored the interactions between local context, risk assessment and risk management policy.

3.6. Identification of study participants

The stakeholder analysis provided a means of identifying initial participants (Roberts *et al.* 2004). Decision-makers interviewed in this study were identified using purposive sampling (Mays and Pope 1995). Specifically, informants were selected to recruit only those in a position to provide accounts that will be the basis for exploration of policy processes. The selection criterion for informants was direct involvement in either avian and human influenza prevention and control policy development or livestock¹⁹ trade policy implementation across the government institutions of trade, public health and animal health at national level. Most of the interview data was collected over a period of six months, from June to December, 2009. Using the snowball sampling technique, several other potential informants outside government were identified. Through this approach, several formal, in-depth face-to-face and informal interviews were conducted with 22 decision-makers in the institutions of public health, animal health and trade in Zambia with an additional 15 informants interviewed to corroborate statements and pursue emergent issues. 'Formal interviews' here means consented and recorded interviews in which respondents agreed to be cited and responses used in the analysis. 'Informal interviews' here means interviews where respondents did not agree to be quoted or recorded and only notes were taken. The information derived from informal interviews still helped frame the analysis by providing additional information.

The dates of these interviews are included in Appendix II. A number of these interviewees were, in Patton's (2002) terms, 'key informants' who were interviewed several times over the course of the study. These key informants are marked with an asterix in the list of interviews in Appendix II. Several discussions were carried out with these key informants over the data collection period. Several more discussions were held with some key informants during data analysis. As far as I could gather, no decision-makers from the Trade Ministry were directly involved in avian and human influenza prevention and control policy development. Therefore, a

¹⁹ Livestock trade policy implementation was decided upon in order to focus on the component of trade policy that is most directly related to zoonotic risk. The previous chapter showed that the trade and health relationship has much wider implications than just infectious disease governance.

separate purposive sample was taken for the trade sector to discuss livestock trade policy implementation in relation to avian and human influenza prevention and control policy development and disease control in general. It must be mentioned at this point that many of the animal health respondents also played a role in trade policy implementation with regard to livestock trade. This is why many of the respondents came from the animal health sector.

3.7. Data collection and fieldwork

All data collection was conducted by me. Informants were contacted directly or were recruited after discussions with the Permanent Secretaries in the respective government ministries. In the case of the Ministry of Health, formal consent had to be obtained from the Permanent Secretary before interviews could be conducted (see Appendix VI). In the case of the Ministry of Agriculture and Commerce, an informal discussion was carried out with the Permanent Secretary who then directed me to the personnel in the Ministry working on avian and human influenza prevention and control policy development. In the case of the Ministry of Trade, potential informants were recommended to me by an acquaintance. Fieldwork involved continuous interaction with key decision-makers, and sometimes I spent a few days visiting potential respondents and chatting informally before scheduling formal interviews. Some interviews were conducted after making telephone appointments or personal visits to the Ministry of Trade and Commerce, Ministry of Agriculture and Cooperatives, and the Ministry of Health. As much as possible, interviews were conducted at the interviewee's workplace, or after working hours, depending on what was comfortable and feasible for the interviewee. Where face-to-face interviews were not possible, a telephone interview was arranged as an alternative. Where a telephone interview was carried out, verbal consent was sought. Two interviews were conducted over the telephone. On several occasions, I was unable to get in touch with certain respondents. Alternative respondents were identified and interviewed in their place. The aims of the study were explained to interviewees, who were then given an information sheet to review and asked to sign a consent form prior to commencing the interview. Copies of information sheets and consent forms are included in Appendices IV and

V. Depending on the consent provided, interviews were either electronically recorded or I took comprehensive notes.

Interviews were based on a pre-designed topic guide developed from the research questions (table 3.1). These covered three overlapping *a priori* issues, which roughly correspond to, first, avian and human influenza prevention and control policy agenda setting, second, policy formulation, and third, multi-sectoral engagement in policy development. The first category was each sector's role in, and position on (including prioritization), avian and human influenza prevention and control policy development which covered jurisdiction based actions/positions on livestock disease control as a general theme. The second category was the identification of processes that demonstrated an effort towards building multi-sectoral engagement in avian and human influenza prevention and control policy and livestock trade policy, including leadership and coordination structures, evidence of active stakeholder engagement and forums for informal and formal communication between the animal health, public health and trade sectors. These categories formed the topic guide, which was revised as data collection progressed.

Position and participation in avian and human influenza prevention and control policy development (agenda setting and policy formulation)
<ul style="list-style-type: none"> • Avian and human influenza prevention and control policy proponents/influential actors • Definition of the avian and human influenza problem • Is avian and human influenza prevention and control a concern in this sector • How does/is each sector affect/affected by avian and human influenza prevention and control policy • Is there support for avian and human influenza prevention and control policy • Perception of AI risk • Level of priority accorded to avian and human influenza prevention and control and level of priority accorded to agricultural trade • Role of the sector in animal and human disease control
Leadership, coordination and active stakeholder engagement Interactions
<ul style="list-style-type: none"> • Oversight and responsibility allocation • Formal and informal discussions around avian and human influenza prevention and control • Consensus building, arbitration and linking actors/fora • Resources at hand and resource dependency • Activities carried out so far on avian and human influenza prevention and control • Engagement of stakeholders (poultry industry, national and supranational actors)

Table 3.1 Topic guide used for interviews

Respondents were encouraged to talk at length about the origins of avian and human influenza prevention and control policy development in Zambia, avian and human influenza problem definitions, perceptions of avian influenza risk and perceptions on the level of priority accorded to the avian and human influenza problem. They were asked to identify stakeholders, policy proponents, sources of funding and collaborations among the three institutions and more widely, and the activities that had been undertaken in relation to avian and human influenza prevention and control. As the data collection was undertaken towards the beginning of the H1N1 pandemic, key informants were also asked about how this pandemic had affected the structures set up for avian influenza related planning. Respondents were *not* asked about policy coherence directly; although at the time of data collection, it was explained to them policy coherence was being explored. Additional data sources included field notes (mostly on informal discussions, and my perceptions on formal interviews and review of policy documents), and attendance of planning meetings²⁰, policy documents (Appendix III), correspondence, legal provisos and media reports.

3.8. Organisation of the data

The 'framework' approach (Ritchie and Spencer 1994) was used for data organisation. From the textual data derived from interviews and review of policy documents and field notes, I systematically identified the *a priori* and emergent themes using both deductive and inductive approaches of qualitative data analysis drawing on techniques from policy research and qualitative data analysis methods (Majchrzak 1984; Green 2005; Ritchie and Spencer 1994; Gaskell and Bauer 2006). Data was mainly textual, in the form of interview transcripts, field notes and policy documents. Taped interviews were first transcribed verbatim to get a feel for respondent understanding and how the accounts were framed among stakeholders and within policy sectors (Yanow 2000; Ziebland and McPherson 2006). Transcription was done using Microsoft Word®. Review of policy documents and field notes detailing my inferences, ideas of

²⁰ Although I was permitted to sit in on planning meetings, due to issues of confidentiality surrounding government documents, no planning meeting minutes could be availed to me for purposes of analysis.

emerging themes and possible indexes (numeric identifiers of key themes in the data), were used to corroborate each interview transcript.

The data was sorted using inductive and deductive approaches as outlined in the 'framework' approach (Ritchie and Spencer 1994). This approach was used because of its appropriateness for applied policy research and its usefulness for organizing textual data fairly quickly to allow for analysis. 'Framework' consists of five interconnected stages that allow for the systematic sorting of data according to key issues and themes. The stages followed were familiarisation, identifying a thematic framework, indexing, charting and mapping and interpretation. In using this approach, I listened to taped interviews repeatedly and read and re-read interview transcripts and field notes to gain familiarity of the data, corresponding to the familiarisation stage of the 'framework' (Ritchie and Spencer 1994; Ziebland and McPherson 2006).

The first themes I developed were rooted in each sector's role in, and position on, avian and human influenza prevention and control development and processes that demonstrate leadership, coordination and active stakeholder engagement. During the familiarisation process of data analysis, I identified additional themes and sub-themes (table 3.2). From these themes, an initial list of numeric indexes was created. Subsequent indexes were based on emergent themes. Using Microsoft Word®, I created a 'Summary Matrix' of all my interview data. This matrix was constructed to capture the main themes in avian and human influenza agenda setting and policy formulation in Zambia. The data was categorised according to agenda setting and policy formulation. This was my first overview of the breadth of responses provided to me by respondents during interviews.

After the development of the summary matrix, transcripts and policy documents were revisited and additional indexes generated and applied to the data. In the charting phase of 'framework', I gathered all the indexed data in tabular form, and presented it as summaries in a series of Microsoft Word® files. This was to help compare more closely respondent responses within and between sectors under each index. Extracts from interviews were used to support the choice of

indexes. These matrix documents were then amalgamated into one large matrix. The result was the development of a 'Master Framework Matrix.' An example of the initial themes, subthemes and numeric indexes developed from this 'Master Framework Matrix' and applied to textual data is presented in table 3.2 below. Within this 'Master Framework Matrix' I cut and pasted responses used under each index heading (themes and subthemes) in the separate matrix files, across all respondents. Indexes were refined as data analysis progressed. The respondents were listed according to sector. The 'Master Framework Matrix' provided an overview of the range of responses provided under each theme and subtheme, and allowed for comparison of responses across respondents and across sectors (Ritchie and Spencer 1994).

Descriptive themes and sub-themes sought in the textual data (for within and between sector comparison)

Nature of international influences: financial, guidance (agenda setting/policy formulation), material, oversight

1. Definitions of the avian and human influenza problem and definitions of risk: distant vs. eminent threat to; animal health, human health, economy, world.
2. Changes in avian and human influenza prioritization over time: priority competition, interest divergence, achievement of preparedness milestones(?)
3. Perceptions of stakeholders relevance and involvement in the planning process: own, others
4. Forms of collaboration: surveillance, resources (technical, institutional and informational), other activities
5. Barriers to collaboration: coordinative, jurisdictional, incentives, priorities, institutional norms and protocols
6. How trade is affected/affects disease control
 - 6.1. Affected/not affected, considered/not considered
 - 6.2. Definitions of trade in disease control: Local, international imports vs exports (cross border and otherwise)
 - 6.3. Perceptions of risk in informing policy development: in trade/to trade/from trade, in animal health/to animal health and in public/to public health

'Master framework matrix' loosely based on these possible themes, and research questions (bold faced) using mostly descriptive headings and cut and pasted responses from respondents that fit under each of the following:

1. **Perceptions of risk**
 - 1.1. Cross border trade
 - 1.1.1. Legal cross border trade
 - 1.1.2. Illegal cross border trade
 - 1.2. Production systems
 - 1.2.1. Commercial sector
 - 1.2.2. Emergent/backyard sector
 - 1.2.3. Backyard sector
 - 1.3. Internal trade
 - 1.4. Migratory birds
 - 1.5. Risk to human health
 - 1.6. Risk to the economy
2. **Problem definition**
 - 2.1. Animal health problem
 - 2.2. Human health problem

- 2.3. Zoonosis
- 2.4. Imminent disease threat
- 2.5. Distant disease
- 2.6. Pandemic threat
- 2.7. Trade threat
- 3. Perceptions of donor support**
 - 3.1. Funding
 - 3.2. National response plan assessment
 - 3.3. Capacity building
 - 3.4. National response plan development
 - 3.5. Stakeholder inclusion
- 4. Perceptions of stakeholder involvement**
 - 4.1. Interest
 - 4.2. Roles
 - 4.3. Participation
 - 4.4. Involvement
- 5. Forms of collaboration/resource dependencies**
 - 5.1. Forums for collaboration Existing/suggested
 - 5.2. Perceptions of barriers to effective collaboration
- 6. Perceptions of trade and avian and human influenza prevention and control policy-development**
- 7. Perceptions of priority**
- 8. Policy activities in avian and human influenza prevention and control**

Table 3.2. List of key themes and sub-themes explored in the data.

3.9. Data analysis

Data analysis began during data collection. The process of data analysis involved examining the data in the context of the research questions. This involved moving away from the 'framework' approach in order to be more inductive in the analytical process. Through an iterative comparison of the data and the research questions, the data analysis process also helped to refine the research aims and objectives. The approach to the research questions has been outlined elsewhere in this chapter. I drew on the constant comparison techniques of grounded theory (Green and Thorogood 2009; Gaskell and Bauer 2006) to identify and develop more inductive indexes to apply to the textual data.

The various policy actors' perspectives on avian and human influenza prevention and control policy development were the basis of analysis. Data was 'read' from an interpretivist point of view (Yanow 2000; Hatch and Cunliffe 2006). Therefore, rather than just consider contrasting views of the policy problem as a form of conflict (Majchrzak 1984) they were also interpreted as different viewpoints of the same problem (Yanow 2000) to better explain the inherent conflicts, tensions and challenges in policy processes. This approach to analysing the data was taken to determine both the explicit and implicit motivations for decision-maker actions, and not just the official position (Fischer 2003). The official positions were still relevant and were inferred from a review of policy documents.

The policy analysis findings were the basis for the analysis of the feasibility of conducting a risk analysis according to the OIE risk analysis framework. The policy study provided the data for this analysis, forming a policy analysis 'lens' through which I examined and critiqued the OIE risk analysis framework. I drew on the relevant policy themes identified in the policy analysis to determine the feasibility and usefulness of conducting an OIE type risk analysis appropriate for this context. Each of the stages of the OIE risk analysis framework, as defined by the OIE, was examined. These stages were; hazard identification, risk assessment, risk management and risk communication. The analysis was grounded in the context-specific elements of managing avian

and human influenza risk across sectors identified by the policy study. Drawing on the sociology of risk literature and Millstone's (2007) co-evolutionary risk model, the study developed and proposed a model of the framework and discussed its policy implications for this context.

3.10. *Data presentation*

Preceding the presentation of the results of the policy analysis, Chapter 4 is a contextual overview of the Zambian economy as it relates to health, trade and agriculture. It describes the Zambian politico-economic context over the period 1964-2004. This chapter provides overviews of the animal health, public health and trade sectors. Data presentation was done in the form of a chronological description of avian and human influenza prevention and control policy development in Zambia. This chronology of avian and human influenza prevention and control policy development in Zambia covered the period 2005-2009. Chapter 5 examines avian and human influenza prevention and control policy agenda setting over the period 2005-2006. Chapter 6 examines policy formulation over the period 2006-2007. Chapter 7 examines the period 2007-2009 and also highlights some of the challenges and strengths of the policy process as adopted in Zambia. Chapter 8 presents the analysis of the feasibility of conducting an OIE risk analysis in a way that is appropriate for informing multi-sectoral risk management in this context.

3.11. *Challenges in policy research*

One important challenge in this research was that interviews were held with policy elites, i.e. my respondents were holders of strategic positions in the development of avian and human influenza prevention and control policy. Other than the difficulty of accessing these actors, was the likelihood of only obtaining public accounts of the phenomena under investigation. This was overcome by talking to respondents on several occasions throughout the data collection period, thus developing a rapport. The elite status of the respondents meant that it was difficult to conduct formal interviews with some of them. Informal discussions had to be conducted

wherever possible. Another limitation of this study was its use of retrospective accounts of the policy process, which is likely to result in recall bias. Confidence in findings was increased by the use of multiple methods of data collection and analysis. Statements were verified when there was agreement between at least two respondents, and further corroboration was provided by reviewing policy documents, news articles²¹ and in some cases observation. A third limitation was that this was a very dynamic area to study, involving the analysis of a policy process that was still ongoing and a risk scenario that was changing because of, among other things, interventions elsewhere on the continent. By focusing on avian and human influenza prevention and control policy development across three sectors, each possessing other agenda priorities to deal with, and making comparisons with international policy documents and a very specific local risk, all of which may change with time, the study was only able to provide a snapshot of factors, processes and relationships within and across sectors that inform multi-sectoral risk management. This may limit the generalizability of results. The observations made, however, highlight some of the key elements required to make recommendations to decision-makers on how multi-sectoral zoonoses risk management in Zambia may be improved, which may ultimately improve feasibility.

To strengthen the validity of findings, interview responses were triangulated with the document analysis (Mays and Pope 1995; Buse *et al.* 2005; Pope, Ziebland and Mays 1999). I kept detailed field notes for the data collection and analysis process to provide an account of my own perspectives as the research developed. This provided a basis for discussing reflexivity in the presentation of results (Mays and Pope 1999; Finlay and Gough 2003). Part of the discussion on reflexivity has been covered at various stages in this chapter. The validity of conclusions were tested in consultation with my supervisor and some key informants, which provided me with feedback on unjustified assumptions and other areas for analysis (Mays and Pope 1995; Varvasovszky and Brugha 2000). Initial results were also discussed with respondents to

²¹ Appropriate articles were identified by key word searches using a search engine, and focused on avian influenza news articles pertaining to the period under examination. Primarily, articles from Zambian tabloids were used to support analysis.

improve the validity of findings and reduce error (Mays and Pope 1995; Mays and Pope 1999). The use of a 'framework' approach allowed for a clear audit trail of the process of analysis to allow for replication (Ritchie and Spencer 1994).

The divergent subjective perspectives that would inform a risk assessment suggest that it is impossible to have a single authoritative and objective evaluation of risk (Bonner 1986; Bezembinder 1989; cited by Stirling and Mayer 2000). My risk model was therefore not intended to provide a determination of the risk of avian influenza introduction or emergence in Zambia, but highlight the possible policy considerations relevant to conducting a national level focused OIE type risk analysis appropriate for this context. This was based on a description of Zambia's poultry trading structure, and avian and human influenza prevention and control and trade policy interactions. The feasibility study highlighted possible areas where each sector's policy actions on avian and human influenza could affect particular aspects the trade-related risk management, thereby illuminating possible policy and data gaps.

3.12. *Ethical considerations*

Because this was a study of public policy, it had the potential to be politically sensitive in certain respects. I was interviewing policy stakeholders who may be identified by the offices they hold or may have had concerns for their jobs or possible sensitivity around access and provision of privileged information. All prospective informants were therefore asked for consent to be quoted, interviewed, and taped and have their data used in the study results. All formal participants were apprised of the progress and results of the study, making certain to respect anonymity, if so required. In addition, I was the only person with access to interview transcripts. Ethical clearance from the Research Ethics committee was sought and obtained from the London School of Hygiene and Tropical Medicine and the Research Ethics Committee in Zambia.

CHAPTER FOUR

The Agriculture, Health and Trade context of Zambia

4. Introduction

This chapter provides a contextual overview of Zambia as it relates to health, trade and agriculture. This description is necessary to illuminate the background in which the sectors of animal health, public health and trade interact in avian and human influenza prevention and control policy development, general disease risk management and trade policy implementation. The chapter begins by providing a general description of the country. It then discusses the Zambian political context over the period 1964-2004, explaining how the economic downturn the country experienced in the 80s affected its economy, and the role that agriculture is meant to play in meeting the country's development objectives.

The chapter also describes the Zambian agricultural sector, particularly the livestock subsector and the poultry production system in existence. It then describes health in terms of Zambia's development agenda, which is followed by a description of the country's position on multilateral trade. The chapter concludes by bringing together the various elements of the Zambia's political economy that are relevant to this research, explaining the implications this contextual description has for this study. This chapter is based on reviews of national documents, studies and reports and provides a contextual outline of the animal health, public health and trade sectors in Zambia.

4.1. A general overview of Zambia

The Republic of Zambia is located in Southern Africa and spans a total area of 752,614 sq km. It is among the most modernised countries in the southern African region. It is landlocked, with

eight neighbouring states marking its territorial boundaries. These states are Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola, and the Democratic Republic of the Congo (DRC), providing a total boundary length of 5,664 km (see figure 4.1). Taylor (2006), in his history of the culture and customs of Zambia, rightly states that there is no geographic or ethnographic rationale for Zambia's border. These borders are a result of the European demarcation of Africa at the Berlin Conference (the so called 'scramble for Africa') in 1884-1885 (Taylor 2006). These artificial boundaries have implications for transboundary disease risk management in the country.

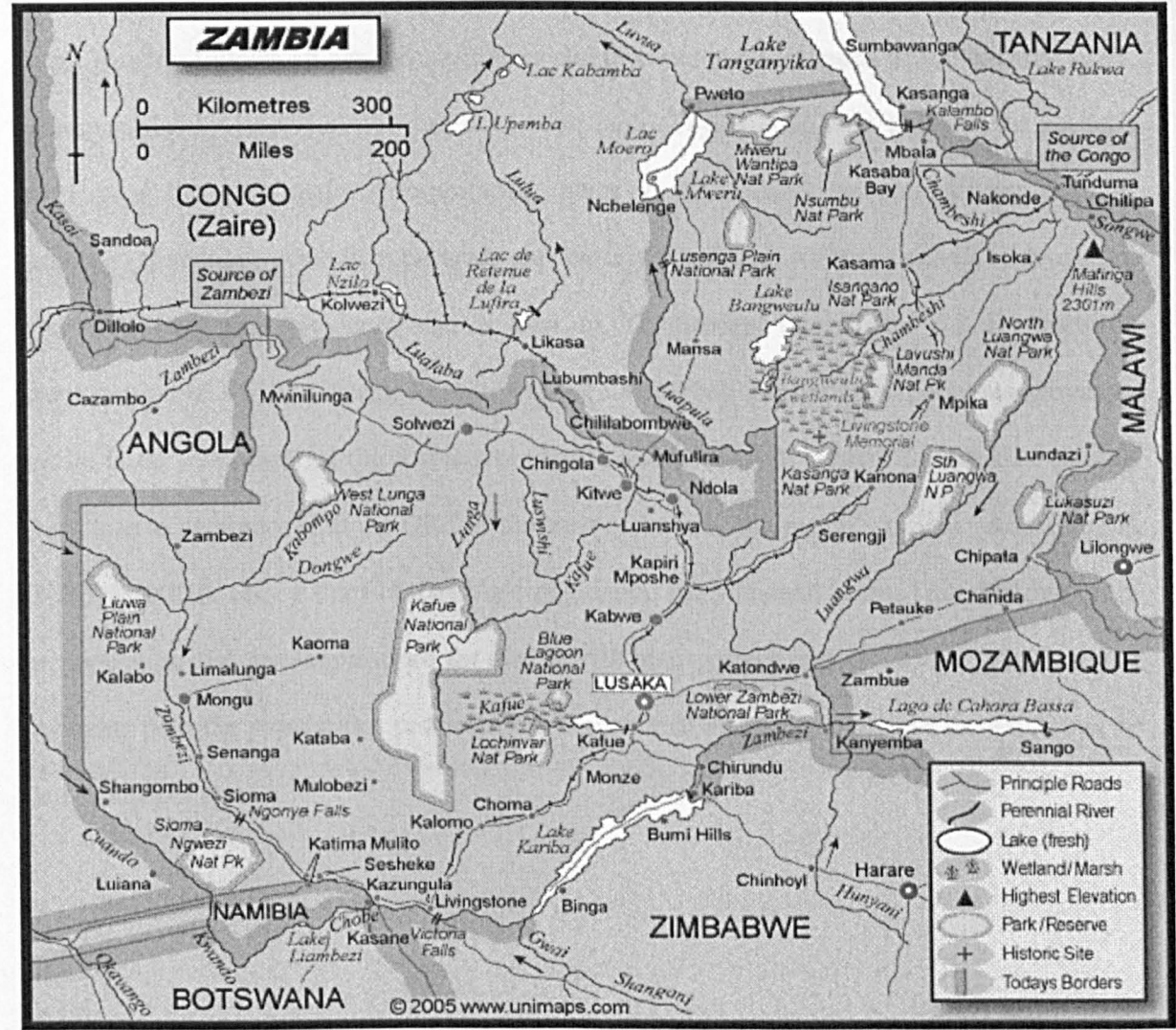


Figure 4-1. Map of Zambia showing territorial boundaries and principle roads.

Source: www.unimaps.com

According to the country's Central Statistics Office's Atlas on Social Economic Variables in Zambia, the last population census was carried out in 2000, with the next census scheduled for 2010 (CSO 2003). Recent estimates of the population size can be found elsewhere. The Ministry of Health's multi-sectoral AIDS Response Monitoring and Evaluation Biennial Report (2006-2007) for instance, states that in 2007 the country's population was estimated at 12.2 million, based on a 2.9% annual growth since 2000 (MoH 2007). Recent UNDP statistics on Zambia estimate the average life expectancy at 44.5 years (UNDP 2009). Compared to its landmass, the human population in Zambia is not that large. Zambia is among the least populous nations in Africa and has a very low population density (Taylor 2006). The distribution of people roughly follows an agriculture/mining corridor along which much of the country's rail, telecommunication and road network have been built (Taylor 2006). As a result, the nation's urban areas lie along major transportation routes in the country, accommodating most of Zambia's population, while its rural areas are sparsely populated. Administratively, the country is divided into nine provinces and a total of 72 districts (see figure 4.2 for pictorial representation of the provinces). Lusaka and the Copperbelt are the most populous provinces and lie in the catchment of the Kafue river basin, a large area of central Zambia that extends from close to its border with the DRC to the west of Lusaka, the nation's capital. According to UNAIDS (2010), only a third of Zambia's population lives in rural areas. This distribution of the population also has implications for disease risk management in the country. Specifically, it highlights both the populations potentially at highest risk in case of a disease incursion and its likely routes of spread.

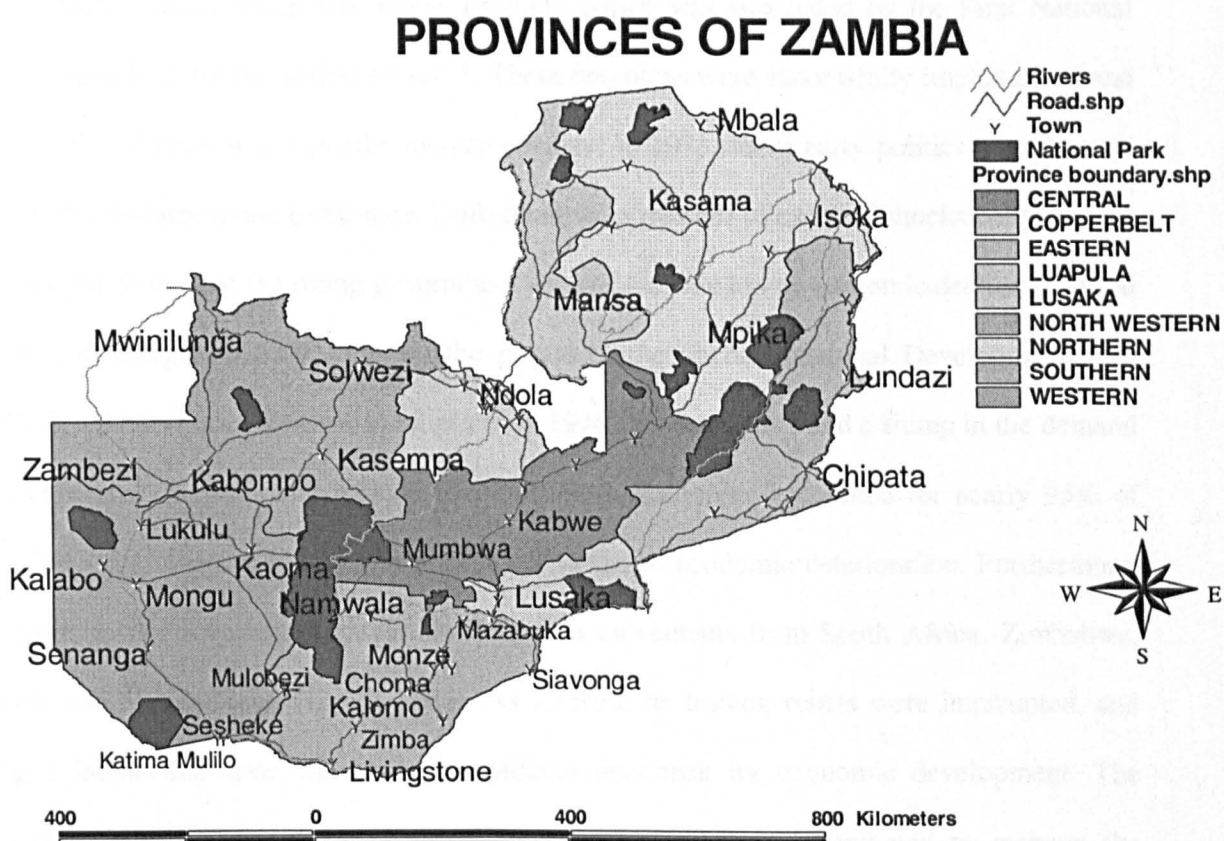


Figure 4-2. Map of Zambia showing the demarcation of provincial boundaries.

Source: National Livestock Epidemiology and information Centre – Ministry of Agriculture and Co-operatives

4.2. Overview of the Zambian political economy 1964-2004

The following section provides an overview of the Zambian political economy. This information is important in understanding why economic development is so important for the country and what implications this has for disease risk management policy and pandemic preparedness. Of note, based on Zambia's history, is how the current drive to diversify the economy has turned to focus on agriculture as a primary vehicle for economic growth through trade. Since independence from British colonial rule in 1964, the Zambian economy has primarily been copper-dependent. After independence, in addition to a nationalisation process, the Zambian government instituted a programme of long term national development planning, based largely on a socialist model (Crehan 1997). This programme began with the Transitional

Development Plan covering the period 1964-66, which was succeeded by the First National Development Plan for the period 1966-71. These two plans were successfully implemented and before 1973, Zambia was a middle income country. In 1973, multi-party politics were banned and Zambia became a one party state. Unfortunately, a number of external shocks coupled with the political choices of the ruling government are said to have led to economic decline (Bigsten and Kayizzi-Mugerwa 2000). During the period of the Second National Development Plan (1972-76), there was an increase in oil prices in 1974 (Walters 2010) and a slump in the demand of copper in 1975. This was a huge economic blow as copper accounted for nearly 95% of Zambia's GDP (Freund 1986; Crehan 1997). This led to economic deterioration. Furthermore, the country hosted various high profile liberation movements from South Africa, Zimbabwe, Angola and Mozambique (Taylor 2006). As a result, its trading routes were interrupted, and being a landlocked state, this was a significant drawback for economic development. The subsequent Third National Development Plan (1978-1983) was abandoned to manage the economic crisis that had ensued after 1975. By the 1980s, Zambia had become one of the most indebted countries in the world. According to Zambia's Central Statistics Office, between 1980 and 1990, Zambia's economic growth was among the poorest in the Southern African region, ranking second to Mozambique (CSO 2003). To mediate the economic crisis, the Government turned to the International Monetary Fund (IMF) for support in the mid-80s (Bigsten and Kayizzi-Mugerwa 2000). The IMF insisted that the Government introduce economic stabilization programmes, the Structural Adjustment Programmes (SAPs) and reduce its dependency on copper (Simatele 2006). After instituting IMF reforms, there was internal opposition to their implementation, particularly from the mining sector, and further economic hardship for the Zambian people ensued (Bigsten and Kayizzi-Mugerwa 2000). The incumbent president decided to abandon IMF reforms and launched the Fourth National Development Plan in 1989 but this was deserted in 1991 after a change of government that put an end to one party rule (GRZ 2006a).

The new regime took office on a platform of change and embarked on economic reforms based on an open market system (CSO 2003). In the 1990s, among the sale of many parastatal organisations was the sale of the copper mines, which had registered a declining output and profitability since 1973. The OECD (2006) report on Zambia states that the sale of government-owned copper mines possibly provided room for the copper industry to return to profitability. Copper output in Zambia has increased steadily since 2004; a phenomenon attributed to both higher copper prices and increased foreign investment (OECD 2006).

In 1994, the Zambian government introduced SAP reforms aimed at improving public administration and expenditure management to meet aid conditions set by the IMF and the World Bank. These reforms qualified Zambia to participate in the IMF and World Bank Heavily Indebted Poor Countries (HIPC) Initiative launched in 1996, a debt reduction initiative whose objective was to ensure that poor countries only had debts they could manage (GRZ 2006a). The reforms introduced by the Zambian government in 1994 contributed to the achievement of the HIPC Initiative completion point in April 2005, leading to the cancellation of a \$3.6 billion debt (OECD 2006). This freed resources that would have otherwise gone to debt servicing, and have since been redirected towards national development and poverty alleviation initiatives. Although poverty continues to be significant problem, after this debt cancellation, the country's economy began to register positive growth, with single-digit inflation, a stable currency, decreasing interest rates, and increasing levels of trade (OECD 2006). An Economy Watch report on Zambia states that in 2004, the country's GDP was \$ 5,371 million, GDP per capita was \$ 474 and the annual GDP growth rate in the period 1995-2004 was 3%. According to this country report, in 2004, the Zambian economy registered significant economic growth, translating into an annual real GDP growth of 5% (Economy Watch 2004).

The Zambian Living Conditions and Monitory Survey for 2004, compiled by the country's Central Statistics Office, states that 68% of Zambians are classified as poor and living below the poverty line (CSO 2004; GRZ 2006a). According to the United Nations, unemployment and underemployment continue to be serious problems even though Zambia is also one of Sub-

Saharan Africa's most highly urbanized countries. The country's UNDP Human Development Index²² rank in 2007 was 164 out of 184 states (UN 2009). The country's GDP structure in 2008 was as follows: Agriculture 16%, industry 26.6%, and services 57.4%. On the other hand, the labour force distribution in 2004 was as follows: agriculture: 85%, industry: 6% and services: 9% (GRZ 2006a). This shows that, while it contributes the least to GDP, the agricultural sector is the largest employer in the country.

4.3. Donor dependency in Zambia

Despite the positive economic indicators highlighted in the preceding section, the African Economic Outlook report for 2006, compiled by OECD (2006), states that Zambia is highly donor-dependent, with 30% of the Government's budget supported by external aid. A meeting report on a UNDP-funded tripartite consultation on harmonization, alignment and aid management held in February 2006 in Kigali, Rwanda, states that Zambia's principle instrument for determining government priorities is its national development plan. However, it was found that donors were not as willing to align assistance to its last transitional national development plan (2002-2005) than to its poverty reduction strategy paper, because the national development plan was less donor-driven (Government of Rwanda 2006). This is suggestive of an environment where aid donors support development objects that are aligned to their interests, rather than national priorities. This is, perhaps, a direct consequence of the economic situation created by the downturn the country experienced in the 70s and 80s. Speaking generally about developing country contexts and aid effectiveness, Thompson (2004) states that where countries have been compelled to rely on aid to sustain their ailing economies, around 50-80 cents of every dollar they earn has gone to debt repayment. While the debt burden now appears to have been eased with the attainment of the HIPC completion point, a national budget that is 30% reliant on aid implies that there are strict guidelines on the use and purpose of these external funds. It follows, therefore, that Zambia's economic downturn resulted in a cycle of aid dependency, which the country has attempted to break with minimal success. The implication

²² Zambia currently ranks 150 (UNDP 2010).

this has for avian and pandemic influenza preparedness is that this aid context perhaps makes it difficult to pursue national interests in the face of global concerns.

4.4. Globalization and Zambia: the potential role of agriculture in economic development

Globalisation and agricultural trade are tied very closely to economic development for many low-income countries. Many authors argue that agriculture is a key focus because this is an area where least developing countries are viewed to hold a comparative advantage (see Upton 2002; Oyejide 2004). One study examining the role of commercial agriculture in poverty alleviation in Zambia concluded that agriculture was the only area of the Zambian economy with the necessary scope to make up for the decline in mining output (Pinder and Wood 2003). The Zambian Government is also in agreement, and holds the agriculture sector as having the greatest potential for enhancing economic growth and reducing poverty (GRZ 2004; GRZ 2006a). This assertion is not without precedent. Agriculture's potential to contribute to economic development was demonstrated by Denmark and other countries, where agriculture on its own was an important route to economic development and industrialisation (Lissner 1973). The Zambian Central Statistics Office's social economic atlas however, states that there was a lot of fluctuation in the performance of Zambia's agricultural sector prior to 2000, owing to poor investment and a failure to position the sector in a way that takes full advantage of its comparative advantage (CSO 2003). After 2001, it has been the Zambian government's objective to harness the potential of the agricultural sector's contribution to economic growth under a broader theme of export led development (GRZ 2006a).

A report on Zambia and the multilateral trading system argues that the advent of multilateral trade agreements has presented opportunities for continued growth of trade within Africa and between Africa and other developing countries (Ndulo 2005). Ndulo further states that multilateral trade agreements are providing expanding markets and increasing the scope for further expansion, with agriculture positioned to play a key role in bringing Africa in general, and Zambia in particular, to the world trade table. There is thus evidence that both Zambia's

immediate neighbours and those further afield are the primary targets for the country's exports. For Zambia, the objective of government is to realise this potential by actively participating in regional and multilateral trade agreements such as the Common Market for Eastern and Southern Africa (COMESA) accord and the Southern African Development Community (SADC) protocol (GRZ 2006a). However, in the global context, expansion of agricultural trade in particular has been proffered as the system that adds to health risks (Kimball 2006), among them zoonoses that lay at the interface of human and animal health. These issues deserve consideration, because they potentially affect agriculture, health and trade. Kimball, Arima and Hodges (2005) for example, review how Bovine Spongiform Encephalopathy (BSE) and its human counterpart, variant Creutzfeldt Jacob Disease was spread to many countries in the Northern Hemisphere as a result of increased productivity of the beef and animal feed industry and promotion of global beef trade. The decision to focus on export led growth in Zambia focused on agriculture could lead to increased trade-related risks as has been witnessed in other areas. Therefore, the possible risks posed by Zambia's agricultural production policy requires further scrutiny, particularly as it relates to risk management and pandemic preparedness.

4.5. The Zambian agricultural sector

The livelihood of the majority of Zambians depends on agriculture and related activities, as exemplified by the fact that over 85% of Zambia's population is dependent on agriculture. This section describes the efforts that have been made by the Zambian Government to develop the agricultural sector. Sinyangwe and Clinch's (2003) examination of the sustainability of Zambia's livestock sub-sector describe the country's general agricultural production system as dualistic, with 85% depending on traditional communal lands and 15% attributed to the commercial sector. These two systems have implications for risk management in Zambia, as each presents its own unique challenges. In Zambia it is the traditional production sector that carries the highest animal infectious disease burden, and also presents a risk of direct exposure of humans to zoonoses and potential zoonoses, particularly those in rural areas. The commercial

production sector is less prone to animal disease outbreaks, but is possibly prone to trade-related risks similar to those presented by Kimball (2006).

Prior to the 1990s, Zambia's economic policies were considered to constrain and restrict agriculture development. The policies were characterised by government control and intervention that curtailed private sector participation. According to the Government's National Agricultural Policy (GRZ 2004), the sector was heavily subsidised, criticised for having too many official price controls, public sector dominance in agribusiness, centralised delivery of support services, and frequent policy and institutional changes. The Government states that a lack of inputs, high energy and transport costs, and disease and pest attacks in both crops and livestock negatively affected the productivity of the sector, especially among female headed households (GRZ 2006a).

With changes in political landscape in the 1990s and the encouragement of major multilateral and bilateral donors, the agricultural sector was also subjected to the policies of the free market economy (Sinyangwe and Clinch 2003). After 1991, several attempts were made at introducing reform to the agricultural sector. Among them was a World Bank funded project embarked upon by the Zambian government in 1996, called the Agricultural Sector Investment Programme (ASIP) (Coche 1998). Its purpose was to co-ordinate agriculture investment and improve both institutional and policy frameworks for agricultural reform. The programme was meant to contribute to the overall policy of market liberalisation and improve the delivery of agricultural services to the farmers. However, two and a half years later, stakeholders and the donor community had lost confidence in ASIP due to poor implementation²³ (Xinhua News Agency 1998). The project finally ended in 2001.

After 2002, new sector-wide policies were developed and adopted under a broad agenda of economic development (GRZ 2006a). The resultant agricultural policy was therefore also focused on broad based economic growth through sector-specific socio-economic and political

²³ Xinhua News Agency news article, June 25, 1998 <http://www.encyclopedia.com/doc/1P2-18171445.html>

restructuring (Simatele 2006). The socio-economic activities identified by government as significant to the agricultural sector included privatisation of the economy to allow for efficiency and effectiveness, greater stakeholder participation, involvement in international activities (through SADC, COMESA, WTO) to benefit from globalisation, improvement of people's living standards, and the sustainable use of natural resources (GRZ 2004). One implication of this policy shift was a level of autonomy of commercial livestock establishments from Government scrutiny. The evidence of this is enshrined in the National Agricultural Policy 2004-2015 (GRZ 2004), where the Zambian Government committed to fostering private-sector development in agriculture, disengaging from direct intervention and limiting itself to the provision of public goods such as rural infrastructure, basic research, disease control and market information (OECD 2006).

4.4.1 The livestock subsector

The livestock sub-sector accounts for about 35% of total agricultural production in Zambia and is also viewed as economically important (GRZ 2006a). It has been suggested, however, that economically, the sector is an underutilised resource, even though the country has abundant marginal land unsuitable for crop production and potentially lucrative access to the same international markets enjoyed by neighbours such as Botswana (Sinyangwe and Clinch 2003). Despite this, the Food and Agricultural Organisation's (FAO) livestock brief on Zambia reported that in 2005, the sector contributed about \$243 million to Zambia's GDP, which is significant (FAO 2005).

Like the rest of the economy, the livestock subsector experienced serious social economic and policy setbacks, particularly in disease control, especially after 1991. Attempts to develop the livestock sector in the 1990s primarily focused on donor-led liberalisation of internal marketing structures, reform of institutions delivering livestock services (a withdrawal of government services in preference for private service delivery) to livestock keepers and promotion of private sector capacity. While Sinyangwe and Clinch (2003) attempt to cast a positive light on these

liberalisation reforms, it can be argued that the neglect of animal health as a public good and the subsequent withdrawal of Government from direct disease control to make room for private sector animal health delivery contributed to the breakdown in disease control systems in the country. In cattle for instance, Foot and Mouth Disease, Contagious Bovine Pleuro Pneumonia, Trypanosomosis, Theileriosis and other tick borne diseases have decimated much of the country's livestock population for close to two decades. Among the zoonoses affecting the Zambian livestock sector are bovine tuberculosis (Cook *et al.* 1996; Pandey *et al.* 1995; Mweene and Hangombe 2006) and brucellosis (Muma *et al.* 2006). While unrelated to sector reforms but speaking of the wider socioeconomic context, HIV and AIDS have also had a negative impact on the labour supply in the agricultural sector (GRZ 2006a).

Only after 2002 were new policies developed and implemented across the various sectors of Government under an overarching agenda of economic and social development (GRZ 2006a). This policy shift resulted in renewed Government interest and investment in the livestock sector. In this shift, the Zambian National Agricultural Policy (2004-2015) has as explicit aims, the improvement livestock productive efficiency and the provision of support for the marketing of both livestock and livestock products for purposes of contributing to food security and individual income (GRZ 2004). To remedy the problems that have plagued the livestock subsector, within this policy framework the animal health sector has several core objectives: the control of diseases of national economic importance; the facilitation of sustainable community intervention/participation in disease and vector control; the strengthening of capacity to deal with emerging and current public health issues; ensuring food safety and the promotion of private sector participation in disease and vector control programmes (GRZ 2004).

While these objectives are commendable, Government veterinary service delivery in Zambia is running at around 50% capacity, mainly due to inadequate staffing levels. According to one official government document (NRP 2008), out of a possible establishment of 115 veterinarians, only 59 were in Government service as of 2008. Similarly, there were 97 livestock officers out of a possible 187; 21 laboratory technicians out of a possible 51; and 19 assistant laboratory

technicians out of a possible 31. The only area of specialization that was adequately staffed was veterinary assistants, who numbered 395 out of a possible 400. Given this scenario, veterinary service delivery remains a major challenge in Zambia.

Despite these practical resource challenges, the policy change instituted in 2002 appears to have yielded some positive results. According to the African Economic Outlook report on Zambia (OECD 2006), better animal disease control and processing earned Zambian beef an A grade in 2005, which made it suitable for export, while a heavy injection of foreign investment to expand the production and processing of the dairy sector facilitated the increase in the consumption of dairy products. Neven *et al.* (2006) explain that the dairy sector's transformation has largely been due to more focused market liberalization policies, foreign direct investment and the integration of Zambia's traditional smallholder livestock sector into a growing formal dairy sector through out-grower schemes. This demonstrates the prioritization of the beef and dairy industries in Zambia, both for issues of disease control and economic advancement. It is argued that for Zambia one drawback is a lack of compliance with Sanitary and Phytosanitary (SPS) barriers that limits the country's expanding agricultural industry from piercing the apparently more lucrative EU and US markets (OECD 2006). De facto, this leaves Zambia's neighbours and other developing countries as its primary export targets.

On the other hand, the poultry sector in Zambia is not a major priority for the Zambian Government, although poultry production is widespread in the country (see figure 4.3). While less trumpeted, but more pertinent for this research, similar production increases, *except* the integration of traditional and commercial poultry sectors, have been occurring in the poultry industry.

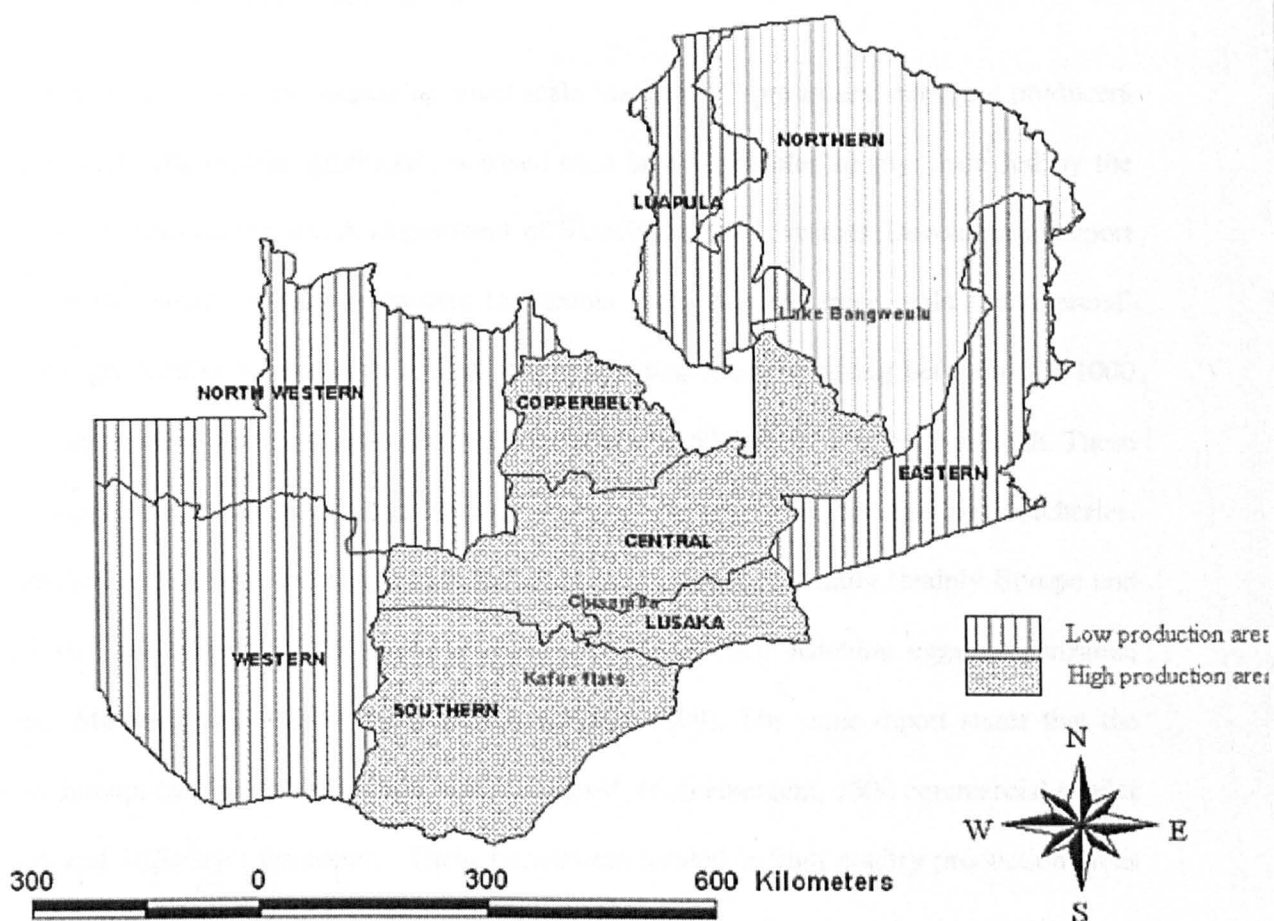


Figure 4-3. Poultry distribution in the commercial, emerging and backyard sector in Zambia.

Source: National Livestock Epidemiology and Information Centre, Ministry of Agriculture and Co-operatives 2006.

4.4.2 *The poultry production sector in Zambia*

According to the Central Statistics Office's Living Conditions and Monitoring Report for 2004, an estimated 64% of 1,372,760 households in the country own poultry. A country report by Songolo and Katongo (2001) on Zambia's poultry production sector and Newcastle Disease states that, like the rest of Zambia's agricultural sector, the poultry industry is dualistic, having both traditional and commercial systems. The traditional or village poultry production system is characterised by mainly scavenging chickens that take an average 20–22 weeks to mature. Individual families keep an average of 10–15 birds, which are largely indigenous poultry

species. It is important to note that the traditional poultry sector in Zambia is what is equivalent to free range or backyard producers under the Food and Agricultural Organisation's (FAO) poultry classification system (FAO 2004).

The 'commercial' sector, encompassing small scale 'backyard'²⁴ producers, emergent producers and large scale commercial producers, is based on a layer or broiler supply chain fed by the country's six main hatcheries. A Department of Veterinary and Livestock Development report (2009) on the poultry production system in Zambia states that the large scale 'commercial' sector has production capacities that range from individual families raising between 500-1000 broilers per batch to emergent producers who rear between 5000-8000 broilers per batch. These are all supplied with stock from the large commercial rearing farms, breeders and hatcheries. The hatcheries obtain their entire broiler and layer parent stock externally (mainly Europe and America). The hatcheries also export an estimated 5% of their hatching eggs to Tanzania, Malawi, Mozambique, Angola and the DRC (DVLD 2009). The same report states that the country has approximately 7834 small scale backyard, 4666 emergent, 2500 commercial broiler farmers and 1020 layer producers. These farmers are located in high poultry production areas along the major transport routes (figure 4.3). In this system, broilers are raised in an all-in-all-out production system over a six week period. Both layers and broilers are reared on locally procured commercial feed, require regular veterinary pharmaceutical input and are usually raised in some kind of dedicated structure. Because this is how the production system is viewed in Zambia, in this thesis, the 'commercial' sector encompasses all production systems, including 'backyard' farmers, supplying, or supplied by imported poultry breeds. The 'traditional' sector, on the other hand, refers only to indigenous poultry production.

Trade liberalisation has had a positive effect on the development of the large scale commercial poultry sector in Zambia. Unlike the cattle production sector, the poultry production sector has shown substantial growth since 1995. A DFID (2002) assessment of agricultural trends in

²⁴ Backyard producers are in reality medium income families around the country seeking to supplement household income through the sale of chickens and eggs. These are largely raised in closed structures with some level of restricted access (LSUAC 2008).

Zambia estimated that commercial poultry production increased almost 300% while traditional poultry production increased by 50% between 1995 and 2000. Simatele (2006) suggests that the introduction of trade liberalization has increased chicken yields significantly compared to pre-trade liberalisation trends. In 2003, poultry production in Zambia averaged about 16 million broilers annually and around 4 million commercial layers for egg production in the commercial sector (Sinyangwe and Clinch 2003). These figures have since increased with official estimates at around 30 million broiler birds per year (DVLD 2007). More recent reports indicate that, in general the commercial and small-scale poultry production sector in Zambia is growing exponentially. It is however not known how these recent trends in productivity have influenced avian influenza risk management and pandemic preparedness in Zambia.

4.5 Development and health in Zambia

This section reviews the development agenda as it relates to health in Zambia. The key argument here is that the Government in Zambia views development as the primary means through which health can be improved and has taken the perspective that the health system should aim at keeping the population healthy for the purposes of development. Of immediate concern is how the existing health system in Zambia contributes to the management of perceived infectious disease risks particularly those that relate to trade and development.

In an article examining the decline of healthcare in Zambia during its economic downturn, Freund (1986) argues that the economic crisis faced by Zambia in the late 70s, particularly after the decline in copper earnings, had considerable effects on the health sector including health worker emigration, collapse of health facilities, an increased disease burden, and reduced expenditure on health. This provides another example in which declining economic conditions directly impact on health. The Zambian Government appears cognisant of the interrelationship between development and health, with expectations that economic development would improve general population health, but at the same time, they appreciate the contribution of good health to economic development through increased worker productivity and life expectancy (GRZ

2006a). This position is supported in empirical literature. Fidler (2007), in examining the prospect of exploiting globalization for the betterment of health, argues that for many countries in general, rising costs in health-care are becoming major macroeconomic factors that can affect a country's global competitiveness and fiscal policy options. In agreement, the WHO Commission on Macroeconomics and Health 2001 report states that societies that have heavy disease burdens experience a multiplicity of severe impediments to economic progress (WHO 2001). These impediments have been felt in Zambia, with high incidences of mortality and morbidity because of HIV and AIDS, tuberculosis, malaria and a rise in maternal mortality in recent years, all affecting economic development (DFID 2008). UNGASS (2010) reports that in 2007, the HIV prevalence was estimated at 15.2 % in adults aged 15-49 years old. The WHO (2010) reports that in 2009 the estimated TB incidence in Zambia was 433 per 100 000 population, while mortality (excluding HIV) was 27 deaths per 100 000. In addition, health care delivery continues to be constrained by lack of human, material and financial resources, with declining allocations to the sector (OECD 2006). According to UNDP (2010), current expenditure on health in Zambia is 3.6% of GDP.

The health indicators in Zambia have been consistently reported as extremely poor with marked declines in indicators of health and quality of care between 1992 and 2002 (DFID 2000; GRZ 2006a). Similar to the animal health sector, a government assessment of the health workforce revealed a 50% labour deficit that required urgent attention to improve the working environment (GRZ 2006a). This decline has been attributed to the HIV and AIDS pandemic; brain drain; high poverty levels; inadequate drugs and medical supplies; and the poor state of health facilities. Major health inequalities as they relate to access to health care exist. In terms of infrastructure, the provinces closer to the major transport routes have better access to health services, with 99% of households in urban areas situated within 5 km of a health facility while only 50% of rural households are within 5 km of a health centre (GRZ 2006a). It is the intention of government to reform the health system with the overall vision "to provide Zambians with

equity access to cost effective, quality health care as close to the family as possible.” It can be argued that social and economic development are important in meeting this objective.

At the conclusion of the World Trade Organisation (WTO) Uruguay Round negotiations, Zambia opted to make commitments in a few service sectors that included health (Ndulo 2005). Other than highlighting the various health related trade agreements that Zambia is party to, the impact of trade on health, and vice versa, in Zambia has not been substantively explored. According to a report by Mudenda (2005), Zambia has been proud of being in the forefront of signing agreements or protocols, but has not made much effort to determine the impact that these may have on the economy. Although this may be the case, it has been argued that Zambia may have problems in complying with requirements set out in many of the multilateral trade agreements to which it is party. Mabika and London (2007) for example, found that there were many areas in the Zambian health services sector that were not consistent with the General Agreement on Trade in Services (GATS). The study by Mabika and London also argues that the introduction of user fees for health service access under the IMF SAPs commercialized health provision, making health service provision a commercial enterprise as opposed to a basic human entitlement (Mabika and London 2007). With an economy largely dependent on donor aid and direct foreign investment, some of these policy tensions are created by concessions made by Government under aid conditionalities. It is possible that in pursuit of the global agenda for pandemic preparedness, the Zambian Government could make similar concessions with long term effects.

4.6 Zambia and the international trading system

This section provides an overview of Zambia and the multilateral trading system. This information is important in understanding how Zambia has positioned itself in the multilateral trade arena to support its export led development agenda. Some of the trade agreements mentioned here have possible implications for both public and animal health; especially in as far as multi-sectoral risk management and pandemic preparedness are concerned. Zambia joined

The General Agreement on Tariffs and Trade (GATT) in 1982 and has been a member of the World Trade Organisation (WTO) since 1st January, 1995 (Ndulo 2005). The WTO Agreements provide the framework of multilateral disciplines, rules and obligations within which Zambia can participate in international trade, thus providing opportunities for market access and integration of the Zambian economy into the international trading system (Ndulo 2005). The power to negotiate and sign international agreements is vested in the President and the adoption of an international treaty requires national legislation with an Act of Parliament passed to bring Zambian law into conformity with an international treaty. Zambia has attempted to adapt some of its national legislation to conform to its WTO obligations. For instance, under the Private Sector development Programme (PSD), the Government of Zambia has aimed to improve Sanitary and Phytosanitary (SPS) services in the Ministry of Agriculture and Cooperatives, alongside the strengthening of standardization, certification and inspection units of the Zambia Bureau of Standards to ensure "...conformity with international and regional standards and technical requirements." (GRZ 2006a p.38). While it has been suggested that WTO agreements actually supersede member countries' internal laws and regulations, including those that govern public health (Shaffer *et al.* 2005), in theory, Zambian laws take precedence over international treaties which include WTO and any regional trade agreements (Ndulo 2005).

As a member of the European Union-African Caribbean and Pacific (EU-ACP) group Zambia is a signatory to the Cotonou Agreement. This dates back to 1975 when the Lomé convention was first signed as a non-reciprocal trade arrangement that culminated in June 2000 as the EU-ACP Economic Partnership Agreement between 77 ACP countries and the EU in Cotonou, Benin (MCTI 2003). Zambia is also a signatory to the African Growth and Opportunity Act (AGOA) Agreement between the USA and several African countries. Since the WTO is a multilateral institution, the bilateral and regional agreements are expected to be coherent with the WTO multilateral regulations and disciplines and Zambia is obliged to bring its national legislation in conformity and compliance with the WTO Agreements (Ndulo 2005). Zambia is also a founding member of two African regional trade agreements, the Common Market for Eastern

and Southern Africa (COMESA) and the Southern African Development Community (SADC) (Roninggen and DeRosa 2003) and is a signatory to the COMESA Agreement and the SADC Trade Protocol (Ndulo 2005). This duo membership has created a challenge for government in complying with, and effective implementation of, the different agreements.

In 2005, Zambia was elected to chair the meetings of the 50 Least Developed Country (LDC) members of the WTO in 2005 in the Hong Kong ministerial meeting (Bridges Weekly 2005). Since then, trade has been a key policy area with the Government expecting to receive substantial co-ordinated support to strengthen its capacity to deal with regional and multilateral trade issues and develop an export strategy (OECD 2006). A condition of membership of the WTO is that market forces operate more widely after accession, with WTO trade policy review mechanism monitoring privatization and structural reform in member states (Pollock and Price 2003). But while there has been an apparent drive to promote cross border trade with large strides made in the private sector since the 1990s, Abbink, Jayne and Moller (2009) argue that Zambia's current market still bears similarities to its state in the 1980s, with donors still urging government to open up its borders to regional trade. The aim of the Zambian government has been to pursue an export-led trade strategy based on open markets and international competition to create opportunities for the country to beneficially integrate into the world economy (Ndulo 2005; GRZ 2006a). Zambia's major export markets are SADC, EU and COMESA countries. These were responsible for 87.7% of the country's total exports in 2004 (Ndulo 2005). Amongst the non-tariff barriers that Zambian exports have faced include SPS requirements, technical barriers, quotas, and market standards, restrictive rules of origin and complex tariff structures and import requirements (Ndulo 2005). In this regard, while an increased access to lucrative international markets such as the EU would be attractive for the country, a report by Mudenda (2005) states that EU and US SPS standards are 'dynamic' and have resulted in the rejection of Zambian goods at port of entry. However, regional trade is gaining increasing prominence for Zambia with preferential markets providing important destinations for the country's exports (Ndulo 2005; OECD 2006). With the task of implementing the preferential provisions contained

in different agreements, the trade regime in Zambia has been described as complex (Ndulo 2005). It is not known how this complex interplay of agendas; Zambia's duo membership of COMESA and SADC and its reluctance to open its borders to regional trade; influences Zambia's position on multi-sectoral risk management and pandemic preparedness.

Zambia, like most developing countries, views trade as an important tool for economic growth and poverty reduction. As stated earlier in this chapter, the Zambian government is of the view that increased agricultural output, with produce aimed at regional markets, can assist in national poverty reduction efforts (Pinder and Wood 2003; GRZ 2006a). Since the mid-1990s, the Government has pursued various trade liberalisation reforms. The key players responsible for the design and implementation of trade policy in Zambia are the Ministry of Commerce Trade and Industry, the Ministry of Agriculture and Cooperatives and the Ministry of Finance and National Planning (Ndulo 2005).

In a largely agrarian nation like Zambia, public health is linked very closely to animal health. A key point is that the economic reform embarked on by the Zambian government has put human and animal health on a development platform. As far as avian influenza risk management and pandemic preparedness are concerned, important questions arise. What role does trade policy play in influencing disease risk management policy in an area such as animal health, for example, which falls under the Ministry of Agriculture and Cooperatives, but is still meant to be harnessed for its potential contributions to trade exports and economic development? What role does the trade sector have in informing health policy, even though it is the health system's role to ensure that the productive segments of the Zambian society remain healthy to contribute to fostering economic development including participation in trade? While there are internal and external limitations to the extent that sectors influence policy *making* in other policy spheres, the *policies* within these sectors, coupled with extraneous influences such as donor aid and trade agreements, still interact in ways that affect each other. When one thinks about zoonoses and their management in the confluence of trade policy, animal health policy and public health policy, these influences possibly affect risk and disease management in the wider society.

Therefore, it was important to determine how these issues were addressed in multi-sectoral risk management in Zambia as it concerned avian and human influenza prevention and control policy development and pandemic preparedness.

4.7 Implications for this study

Drager and Fidler (2007), speaking particularly about global health governance, suggest that fragmented policy competencies in national governance systems may require more cohesion to align them with the diplomatic, epidemiological and ethical realities of globalization. Zambia is positioning itself to increase its participation in and derive maximum benefit from the globalization process. For Zambia, the diplomatic, epidemiological and ethical realities may come to bear on its chosen route for economic reform. This position may have implications for avian and pandemic influenza prevention and control policy development across the policy domains of public health, animal health and trade in this resource-constrained economy. The interaction of health, trade and agriculture policy in Zambia is a unique challenge for a policy analysis, due to the fact that these are, generally, separate policy sectors with different perceptions of areas of priority. With agricultural trade viewed as a primary vehicle for national development, health focused primarily on the more pressing areas of HIV/AIDS, malaria and infant and maternal mortality and zoonoses a constant looming problem in much of the country's livestock populations, a study of the interactions between trade, public health and animal health is therefore pertinent. These multiple policy perspectives may also influence the feasibility of conducting a risk analysis in this social-economic context. The next chapter is the first empirical chapter. It provides an analysis of agenda setting for avian and human influenza prevention and control policy in Zambia.

CHAPTER FIVE

Agenda setting for Avian and Human Influenza policy in Zambia

5. Introduction

This first empirical chapter provides a chronological analysis of the avian and human influenza prevention and control policy agenda setting process in Zambia. I begin with the call for pandemic preparedness in 2004, and then provide a description of the framework for multi-sectoral coordination in Zambia that was developed in the period 2002-2006. The process of agenda setting, covering the period 2005-2006, is then discussed in three parts; the call for pandemic preparedness and agenda setting in Zambia, the setting up of the Task Force on Avian and Human Influenza prevention and control, and finally a description of some of the factors that facilitated the entrée of additional stakeholders, such as the poultry industry, in the avian and human influenza prevention and control agenda setting process in Zambia.

This chapter sets out to analyse how the national policy on the control and prevention of H5N1 highly pathogenic avian influenza was set and developed across the sectors of animal health, public health and trade in Zambia, suggesting the relative weight that international, as opposed to national, considerations played in determining the agenda. As a result of the confluence of these national and international influences, the chapter suggests that a number of different policy ‘framings’ emerged that are evidenced in the ways in which highly pathogenic avian influenza was conceptualised across the trade, public health and animal health sectors. By this, I mean how the highly pathogenic avian influenza problem was understood by the various actors involved in the policy process.

This discussion is based on accounts provided by individuals directly involved in avian and human influenza prevention and control policy development and livestock trade policy implementation from the government institutions of animal health (Ministry of Agriculture and

Cooperatives), public health (Ministry of Health) and trade (Ministry of Agriculture and Cooperatives and Ministry of Commerce Trade and Industry), and the Poultry Association of Zambia. The description is supported by a documentary review of relevant policy documents, literature and newspaper articles pertinent to the period in question. The chapter concludes with a reflection on the ways in which the avian and human influenza problem has been framed in Zambia.

5.1. International call for pandemic preparedness

On January 27, 2004 the World Health Organisation (WHO), Food and Agricultural Organization (FAO), and the World Organization for Animal Health (OIE) appealed for international collaboration and funding to control the Asian H5N1 panzootic, calling “for a SARS-like response” to the problem (WHO 2004, Fidler 2004b). Amidst concerns of a possible evolving pandemic (Heymann 2006) WHO also made a global appeal for member states to develop preparedness plans to respond to this, and other pandemic threats, modelled on WHO pandemic preparedness guidelines (WHO 2005a). In addition, the global response to avian influenza was to be coordinated by the UN System Influenza Coordinator (UNSIC), with the primary financial backing of the World Bank (Scoones and Forster 2008). At nation-state level, the response was to be a multi-sectoral endeavour, driven by close collaboration between the animal health and public health institutions of WHO member states.

The WHO, FAO, and the OIE collaborated in controlling the disease in Southeast Asia, and minimizing the impact on livelihoods as well as reducing the risks to public health (Sims *et al.* 2005). The roles of these agencies was intended to be complementary, with WHO protecting human health, the OIE protecting animal health, and the FAO focusing on animal production and livelihoods, although one position paper (Webster and Hulse 2005) and one policy study (Scoones and Forster 2008) argue that as far as pandemic planning for influenza was concerned, these agencies are not always in harmony.

5.1.2. Zambia's Fifth National Development Plan and the poultry industry

At the time the H5N1 situation in Asia was unfolding, a significant policy shift was occurring in Zambia. The ruling Movement for Multiparty Democracy (MMD), which had been in power since 1991, fielded a new presidential candidate, who was elected to office in 2001. The government then espoused the view that the open market system model that the country had adopted in 1991²⁵, while providing a platform for economic reform, had resulted in policies that tended to be sectional and focused only on the short-term, and thus curtailed broader social economic development. The Zambian government therefore re-introduced a system of long term national development planning in 2002²⁶ (GRZ 2006a). The process began with the development of a Poverty Reduction Strategy Paper (PRSP) for the period 2002-2004, which, under instruction of the president, was followed by a Transitional National Development Plan (TNPD), developed by the Ministry of Finance and National Planning for the period 2002-2005 and finally the Fifth National Development Plan 2006-2010 (GRZ 2006a).

The Fifth National Development Plan (5th NDP) provided the overall policy framework for multi-sectoral coordination in Zambia, and utilized implementation and monitoring structures that had been developed with the PRSP and TNPD, such as the Sector Advisory Groups. In consideration of the policy responses to highly pathogenic avian influenza, one crucial element was that the government viewed agriculture as the single most important vehicle for economic growth (GRZ 2006a; Ndulo 2006). Accordingly, under the livestock subsector, the primary objectives were the control of livestock diseases of epidemic, national economic and *trans-boundary significance* (citing cattle diseases such as Foot and Mouth disease and Contagious Bovine Pleuro-pneumonia as examples), and the scaling-up of overall productivity and

²⁵ Zambia became a one-party state in 1972, when all political parties were banned except for the ruling party, the United National Independent Party (UNIP). In 1990, there was opposition to UNIP's monopoly and the Movement for Multiparty Democracy (MMD) was formed. The incumbent President, Kenneth Kaunda conceded by signing a constitutional amendment making Zambia a multi-party state and the country's first multi-party elections were held in 1991. The MMD won in a landslide. In addition to winning the presidency, the party also took 125 of the 150 elected seats.

²⁶ Zambia had implemented three national development plans since its independence in 1964. The last national development plan, the Fourth National Development Plan, was commissioned in 1989, but abandoned in 1991 for an open market system after a change of government (GRZ 2006a).

management of marketable livestock and livestock products, with emphasis on the traditional sector. The government was predominantly focusing on cattle. Poultry production was of interest only because it was viewed as a means to support women and female headed household empowerment under a wider gender equality national agenda. This is understandable, as over 45% of the small-scale chicken producers in the country are women (Sayila 2008). However, the policy position of the livestock sector seemed to grossly underestimate the significance of the poultry industry's potential for growth and economic contribution in the 5th NDP period. According to one respondent:

Realistically speaking, this industry (the poultry industry) has actually grown over 100%. But it gets very little support from the government.we can't compare ourselves to the Malawian government support, which they are rendering to the local industry there, the Mozambican support that is being rendered to the local industry there. Botswana is in its infancy but if you look at the way the industry is coming up, because government commitment is serious, it may surpass Zambia. So we feel compliance on the part of the government is what is threatening this industry.

Poultry Association of Zambia Executive Director (16)

In terms of the poultry industry's contribution to economic development, this perceived growth of the poultry industry was noteworthy, despite what was regarded as minimal support from the Ministry of Agriculture. The concern over 'compliance on the part of government' that was 'threatening this industry' was the Ministry of Agriculture's facilitation of poultry and poultry product imports, which in the view of the respondent, did not foster the development of local industry and thus undermined local industry's contribution to economic growth. When this is considered in relation to the government's position as stated in the 5th NDP, it is clear that industry felt that it had been undervalued by its representative ministry.

The health sector's contribution to economic growth in the context of the 5th NDP was framed as the maintenance of a healthy and productive population. Of interest is that in the health

sector's list of the 27 programmes, objectives and strategies set out for the 5th NDP implementation period, was its integrated disease surveillance programme, aimed at improving public health surveillance and epidemics control utilizing, among others, an Integrated Disease Surveillance and Response (IDSR)²⁷ platform, and the health education and promotion programme which aimed to facilitate "effective and efficient health education and promotion programmes" through strategies involving the coordination and establishment of collaborative systems with various stakeholders and cooperating partners (GRZ 2006a, p.170). On IDSR, one respondent said the following:

When you look at IDSR, IDSR is like a platform on which all these other things, new, emerging, old what have you, will sit on. That's why even at WHO level they say it, avian and human influenza will sit on IDSR, H1N1 will sit on the IDSR because IDSR is a vehicle. People need to know what they should do when the disease is there, how to respond and things like that. So the bottom line is IDSR. ...And when you are investigating a disease outbreak there is nothing like, "no, you now have a new way of investigation." ... what will differ will be maybe the mode of infection of that disease, the severity, the pathogenicity and things like that...

National Surveillance Officer, Ministry of Health (11)

The IDSR platform was fundamental to the public health response to major disease problems, and to avian and human influenza in Zambia. It was as a vehicle providing the health sector with a broad framework for surveillance that could be adapted to almost any priority disease, including zoonosis such as H5N1 highly pathogenic avian influenza. In the health sector policy framework, IDSR and the health education and promotion programme were important as potential facilitators of wider avian and human influenza surveillance and broad based

²⁷ IDSR uses an assessment protocol developed by WHO Regional Office for Africa, WHO Headquarters and CDC, examining the current surveillance, laboratory confirmation, and epidemic preparedness and response activities at all levels of a country's health system. These assessment results are then used by Ministries of Health to guide the development of an action plan for the creation of a functional IDSR system, through the implementation of health system changes at central, provincial, district, and health facility levels. <http://www.cdc.gov/idsr/implementation.htm>

information dissemination. Furthermore, in the 5th NDP, the health sector plan listed several coordinative and implementation structures the Ministry of Health had at its disposal. Although not listed, the National Epidemics Preparedness, Planning and Management Committee in the Ministry of Health was suggested by respondents as one such coordinative structure that played a central role in avian and human influenza prevention and control policy development.

For purposes of trade promotion, the 5th NDP outlined a framework for the strengthening of sanitary and phytosanitary service delivery in the Ministry of Agriculture and improve the efficiency of local and export trade service provision. The trade sector was meant to complement these efforts by promoting export driven growth and improve local competitiveness, a position that was embraced by the local poultry industry:

The Ministry of Commerce Trade and Industry I think we have a very cordial relationship. We are actually using some of their extensions like Zambia Bureau of Standards and also the trade sector especially, they are the ones that are being sponsored by the European Union, I think we have had a very healthy relationship with them and, you know, we have engaged in serious discussions with regards to trade. I think that is where we are getting hope as an industry because they seem to understand us better than our own ministry, you see? And I don't know maybe it could be because of the Ministry of Commerce and Trade has taken it upon itself to try and promote the exports of the Zambian products and one among such products are the poultry and poultry products.

Poultry Association of Zambia Executive Director (16)

The trade sector strategy involved a sustained commitment to multilateral trade negotiations within a private sector development framework, including the strengthening of standards infrastructure within the Zambia Bureau of Standards. This is all relevant because at the time the H5N1 panzootic was spreading out from Southeast Asia, Zambia was gearing itself for export led growth, of which, as evidenced above, the poultry industry was a beneficiary. The livestock sector was on alert for diseases of national economic importance but mainly in cattle, while the

health sector had an established framework for collaboration and disease surveillance that was flexible and responsive, allowing for a more focused allocation of resources.

Meanwhile, the poultry industry was experiencing exponential growth in Zambia, partly attributed to a veterinary ban of poultry product imports from neighbouring countries South Africa and Zimbabwe (Xinhua News Agency Article date: April 15, 2004; Sinkondyobwe 2005), and the growth in the number of poultry producers in both rural and urban areas of the country (Sayila 2008). The executive from Zambia's poultry producer association discussed this growth as an explicit aim of the industry:

Five years ago (2004), I think the poultry industry was at 13 million for broilers and about 800 thousand for layers. Our aim as an association was to double the size of the industry by 2008, which we did by 2007 with a year to spare. So currently we have a... country capacity of about 42 million, but we are producing about 33 million broilers. So you can see we are way above 100% (growth) and we ...are (currently producing) 2.1 million layers. So as an industry in the last five years we have grown by that much and I think if you quantify that, you find that we are maybe around 130% from what we were five years ago. So to us, that is a very phenomenal growth and our contribution to GDP has substantially increased...

Poultry Association of Zambia Executive Director (16)

The genesis of the imperative to expand the poultry industry was traced to 2004, the year the Poultry Association of Zambia set out to double industry output, which resulted in tremendous growth in both broiler and layer production, thus increasing the sector's contribution to GDP. The explanation for this industry policy shift is that in 2004, there had been a void created in the export market by the collapse of the poultry industry in Zimbabwe (Sayila 2007), in addition to the fact that the sector had been benefitting from the promotion of export-led growth, since 2002 (Mulemba 2009). It appears that the growth of the poultry industry had been in progress since 1995, particularly in the small scale sector, which was registering an annual growth rate of almost 4.5%, compared to 2.3% for the commercial sector as a whole (Sayila 2008). Regarding

the veterinary ban of poultry product imports from South Africa and Zimbabwe, according to one respondent²⁸, this was instituted following concerns over reports of Newcastle disease²⁹ outbreaks in the two countries. This ban clearly had an effect on Zambia’s exports relative to imports of poultry as shown in figure 5.1.

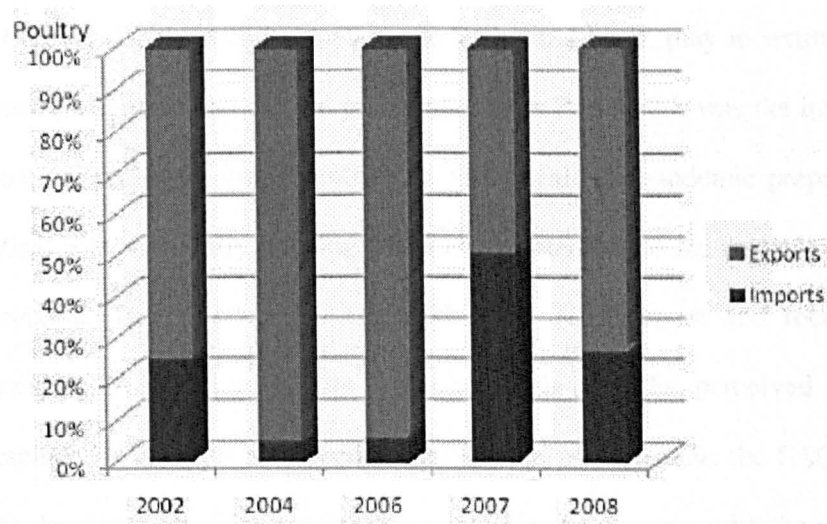


Figure 5-1. Imports and exports of poultry in Zambia, 2002–08
(source: Mulemba 2009)

Due to a shift to chicken production, which was more lucrative, duck production in Zambia had registered a decline, with only 15% of poultry producers involved in one form of duck production or another, mainly at individual or small scale levels (Sayila 2008). Ducks are a significant component of poultry production in Southeast Asia, and played an important role as silent shedders of the H5N1 virus (Chapter 2). In contrast, in the Zambian production system, ducks are far less important. According to Sayila (2008), only five out of every 100 consumers

²⁸ Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)
²⁹ This is an acute viral disease of domestic and other poultry species. It occurs worldwide, and is responsible for variable mortality in poultry flocks. Under the OIE, the virulent form of the disease is reportable and once identified in a country, can attract trade sanctions. The virus’ zoonotic potential is minor; resulting in a transitory conjunctivitis in humans, restricted mainly to laboratory workers and those carrying out vaccinations. Thus the zoonotic risk is largely occupational. Prior to the practice of poultry vaccination, conjunctivitis used to occur in persons working eviscerating poultry in processing plants. There has not been a report of disease in poultry producers or poultry product consumers (Kahn, Line and Aiello 2008).

in Zambia eat duck and duck products. There is thus a limited market for duck products in Zambia. He also states consumers in Zambia perceive duck production occurs under insanitary conditions, a view that has contributed to people's lack of interest in these products and subsequently, their production.

5.2. Agenda setting: The role of international agencies in Zambia

What role did international agencies, such as the WHO and FAO, play in setting the avian and human influenza prevention and control policy agenda in Zambia? It was the influence of these two international agencies, in implementing the global call for pandemic preparedness, which played a cardinal role in initially drawing government attention to the potential significance of the H5N1 problem. The WHO and FAO guided the development and focus of Zambia's response, based on lessons learnt from Southeast Asia and the perceived risk of disease incursion presented by H5N1's continued global spread. In particular, the FAO was central in facilitating the development of the pandemic response in the country, with the understanding of the decision-makers spoken to, mostly those from animal health, that the WHO was a prominent partner. Their role in setting the agenda for avian and human influenza in Zambia began in 2005. To demonstrate the significance of FAO's involvement, a few quotes from three prominent Task Force members suggest it was remembered as the key driver of action:

I think we started in 2005 and when the initial uh, outbreaks globally were quite prominent and FAO was in the forefront in helping us to try and come up with the preparedness plan, so to speak. And I remember the first meetings were being held actually at FAO and this included mostly personnel from Ministry of Agriculture. And Ministry of Health was also present there, WHO was also present for those meetings. It's from those initial meetings that the need to form a Task Force was felt and then it was agreed that we should form a Task Force with Ministry of Agriculture and Ministry of Health being the key line ministries.

SPINAP Coordinator and National Task Force member, Ministry of Agriculture and Cooperatives (1)

[A]ctivities here started way back in 2000...October to December 2005, yeah under facilitation of FAO. That's when I think the Task Force was set up.

Task Force Member and Animal Health Focal person, Ministry of Agriculture (2)

WHO was the driver while FAO facilitated, but there was a general call for governments to formulate response plans...

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

These accounts point to the nature of FAO's initial role in setting the agenda for the avian and human influenza prevention and control response in Zambia which was described as threefold; it hosted the initial preparedness meetings; it facilitated the formation of the Task Force and it was in the forefront of developing Zambia's preparedness plan. By hosting the initial preparedness meetings, the FAO also played a role in identifying and bringing together what it perceived were the initial stakeholders, namely personnel representing the Ministry of Agriculture, specifically the Department of Veterinary and Livestock Development, and the Ministry of Health.

It is significant that the first meetings were held at FAO offices in Lusaka, and this was verified by both a review of key policy documents such as the National Task Force operational guidelines, and narratives provided by all respondents initially involved in avian and human influenza policy development. This venue underlined FAO's role in the stakeholder selection process, and agenda setting, as the policy process, in effect, began with these initial meetings. The reason for bringing these two ministries together was because H5N1 was viewed as poultry sector problem, requiring a primarily veterinary response. But it had also demonstrated itself to be a public health concern in areas where outbreaks had been experienced, as outlined in the chronology of avian and human influenza provided in Chapter 2. Therefore, the Ministry of Health and the Ministry of Agriculture, through its veterinary department, were perceived to be the key government stakeholders in developing a response for Zambia. The WHO was present as well, on the understanding that it was the central international agency behind the global

influenza pandemic response, although respondents did not discuss the WHO's initial role at length.

The initial framing of the avian influenza problem as a poultry or, more generally, an animal health problem, was clear. This was the perception of all respondents from the Department of Veterinary and Livestock Development and the Ministry of Health, as these examples of typical responses suggest:

[T]he avian influenza basically was viewed as a more of an animal disease which then moves into human beings, more interventions were done in the animal side and to a larger extent, the chair from the animal side was the one who was more pronounced... the human side was seen more (as) supplementarybecause it was seen as one of the offshoots from failure to control the disease in the animals.

Senior Epidemio-surveillance Officer, Ministry of Agriculture and
Cooperatives (3)

[I]n health we thought that...in terms of the gravity of the issue it had not yet reached us, so we agreed that let them give us about 30% of the resource and then the friends from the vet they got the 70%...

Deputy Director, Public Health and Research, Ministry of Health (9)

In addition to expressing the animal health framing of the avian influenza issue, these extracts also demonstrate that this framing resulted in preparedness activities focusing primarily on the development of animal health interventions. Consequently, the animal health sector and the FAO were more prominent in developing Zambia's avian and human influenza prevention and control policy. It is important to note that in Zambia, as elsewhere, the FAO is traditionally associated with the Ministry of Agriculture, while the WHO is associated with the Ministry of Health and the two agencies are consistent advisors for the two ministries as exemplified in the quote below:

FAO is normally associated with agriculture and WHO is normally associated with health so what we do ourselves, is in order to sort of not cross over, as we move in all meetings, whether its epidemics, whether it's what we are talking about (avian and human influenza), all of us come with the two partners.

Deputy Director, Public Health and Research, Ministry of Health (9)

The FAO was the main agency leading the agenda setting process in Zambia. It facilitated the formation of the National Task Force on avian influenza, and assisted in the process of developing a preparedness plan for the country. Given the level of agreement in the framing of the problem by the initial stakeholders, it is clear that both the FAO and the WHO, through their respective representatives, nurtured the framing of the problem and the beginnings of avian and human influenza prevention and control policy development in Zambia. The understanding was that avian influenza was both an animal health and a human health problem, although in this case, it was framed as largely an animal health issue, giving the FAO centre stage in fostering the generation of the policy response. After the initial FAO hosted meetings, where it was decided to form a National Task Force on avian and human influenza, subsequent meetings were held at the Ministry of Health under the National Epidemics Preparedness, Planning and Management Committee, where other stakeholders were identified and engaged. The final international agency involved in the agenda setting process was USAID. This international agency played a supportive role in policy development. Following the process of agenda setting, USAID sponsored border awareness meetings, supported the development of the communication strategy and conducted a biosecurity awareness campaign among traditional farmers and traders through Louisiana State University and a local NGO, Africare. Chapter 7 will assess the implications of the role of these international agencies in agenda setting in Zambia.

5.2.1. Setting up the National Task Force on Avian and Human Influenza

This section discusses the national stakeholders in avian and human influenza prevention and control policy development and their role in setting the agenda for avian and human influenza

prevention and control policy in Zambia. Leading up to the formation of the National Task Force on Avian and Human Influenza in Zambia, the incumbent Minister of Health played a critical role in drawing government attention to the avian influenza issue. She wrote an Advocacy Cabinet Memorandum to Cabinet during the time that Zambia was experiencing a cholera outbreak, making an appeal to government for resources to support the Ministry of Health's efforts to control the cholera epidemic that was occurring at the time and also inform government of the avian influenza problem "that was coming". She thus presented the two items as problems on the Ministry of Health's agenda that required government attention. In the words of one respondent:

I remember a Cabinet Memo being written and by that time the Minister of Health was Sylvia Masebo. So a Cabinet Memo was written...first of all to inform government of the magnitude of the cholera (problem at that time) and also of the threat of the avian and human influenza which was coming and hence the request was to inform government and also to request for resources so that the two items could be sorted out at the same time.

National Surveillance Officer, Ministry of Health (11)

Three issues are of note. First, this Advocacy Cabinet Memorandum alerted government of the 'threat' of avian influenza. Second, avian influenza was placed on the same advocacy platform as the cholera epidemic that the country was facing at the time. Third by using this platform, H5N1 avian influenza had been presented as an imminent threat. To put this in perspective, although cholera is endemic in Zambia, the outbreak the country experienced that year (2005) was considered by Médecins Sans Frontières as possibly the largest outbreak in Zambia's history³⁰. For avian influenza to occupy the same advocacy platform as a concurrent and serious cholera outbreak illustrates that avian influenza was perceived at that time to be a high priority. The significance of the Cabinet Memo and the minister's role in raising the profile of avian

³⁰ See http://www.msf.org/msfinternational/invoke.cfm?objectid=B3D89276-B274-19E2-8EB0D65C2E5D76C2&component=toolkit.article&method=full_html

influenza was expressed by a National Surveillance Officer in the Ministry of Health who stated the following:

You know the fact that a Cabinet Memo at ministerial level was done and that it (avian influenza) continues to be part and parcel of the discussions at the National Epidemic meetings, which the national epidemic meeting...I think it should be a subset or a committee within the Disaster Management (and Mitigation Unit). So Disaster Management and Mitigation Unit under the Vice President's Office, we say that is the first step, then the National Epidemic, I think because of the health related component becomes a figure into this, so it's up to you to think whether it's a small thing or it's a big thing if it (avian and human influenza) can sit at that level.

National Surveillance Officer, Ministry of Health (11)

The respondent above intended to emphasize to me that avian and human influenza was a high priority agenda item for the health minister and a high priority for the Health Ministry. It was a priority first, because it had received ministerial attention and response, which led to the government being aware of the avian influenza issue. Secondly, it remained a consistent agenda item in National Epidemic and Preparedness, Prevention, Control and Management Committee meetings (and this was verified by all Ministry of Health respondents and all senior ranking respondents from the Ministry of Agriculture). Third, because this was a subcommittee under the Disaster Management and Mitigation Unit in the Office of the Vice President, it was a body of significant influence in its own right.

Therefore the Cabinet Memorandum served to secure government consent and support for avian and human influenza policy development, and by framing the avian influenza problem as an imminent threat, created a sense of urgency for government to develop a response to avian influenza. Interestingly, the National Task Force on avian influenza operational guidelines (GRZ 2006b), state that the Advocacy Cabinet Memorandum was a joint initiative by the Ministers of Health and Agriculture. According to Task Force documents, Cabinet responded positively to the communication and earmarked resources for avian influenza interventions.

The health minister also gave numerous statements in the press concerning the potential threat that H5N1 presented to Zambia and the need for the nation and the government to be alert. Recognizing that the disease had not yet been reported in Africa, she stated that the Zambian Government had decided to take measures to detect and contain any possible spread of the avian influenza virus that had affected Asia and Europe (Ngande 2005; Xinhua News Agency Article date: October 27, 2005). The minister stated that the government had established a multi-sectoral Task Force led by Ministry of Health and Ministry of Agriculture and supported by international organizations, thus unveiling the visible stakeholders in avian influenza prevention and control policy development in Zambia. According to the minister's statement, the multi-sectoral Task Force was going to follow a strategic course of action aimed at avian influenza prevention and control.

On 31st October 2005, a 20-person meeting of the multi-sectoral National Task Force on avian influenza was convened in Zambia under the facilitation of the FAO of the United Nations (GRZ 2006b). The Task Force was established to develop a national response to the rapid spread of avian influenza from Asia. According to its official operational guidelines, the Task Force "was to be the eyes and ears of what is happening concerning AI around the world as well as a forum for discussion and advising government on issues relating to AI" (GRZ 2006b, p.2). The Task Force, in addition to a policy formulation function, thus played a monitoring and gate-keeping role for the government. It became recognised as a sub-committee of the National Epidemic and Preparedness, Prevention, Control and Management Committee under the Ministry of Health, thus gaining legitimacy, and was to be co-chaired by the Ministry of Agriculture and Cooperatives and the Ministry of Health, with the Ministry of Agriculture taking the lead, based on the understanding that avian influenza was an animal health problem that presented a "threat to human health" (GRZ 2006b, p.2). The Agriculture and Health Ministries were also designated the Task Force secretariat. This was unanimously confirmed by all respondents directly involved in the inception of the Task Force. Discussions concerning the development of a National Response Plan for Avian and Human Influenza had now shifted from

FAO offices to the National Epidemic and Preparedness, Prevention, Control and Management Committee. The issue framing, choice of leadership and the venue for discussion in relation to the policy process are all captured in the statement provided by one Task Force Member from the Ministry of Agriculture:

[M]ost of the meetings at that time were being held under the National Epidemics and Preparedness Committee under Ministry of Health. It was said that that committee would be chaired by the Director of Veterinary Services considering that was an animal health problem and not yet a human health problem. But given the concerns that it was zoonotic, then we decided that we were going to co-chair the Task Force.

SPINAP Coordinator and National Task Force member, Ministry of Agriculture and Cooperatives (1)

Despite the issue framing, by being designated a subcommittee of the National Epidemic and Preparedness, Prevention, Control and Management Committee, the Task Force in essence now fell under the purview of the Ministry of Health. This committee has considerable influence as an agenda setting, coordination and advocacy structure:

I would assure you that in the Ministry of Health, the National Epidemic Preparedness, Prevention, Control and Management Committee is a highly appreciated committee. In as many times as we may not get the full representation of all the stakeholders who would have been here, many times we have stakeholders who are consistent. When we are talking about WHO, UNICEF, this time around, Ministry of Housing and...what is it? This Housing and what have you where city councils fall? Local government and housing. These will always be there. When you talk of the University of Zambia, UTH (University Teaching Hospital), well maybe that is more of Ministry of Health, University of Zambia through school of Vet....is always there. So in one way or the other, the drivers are there. ... I have seen occasions when through the National Epidemic Committee meetings if a threat is so obvious the response, you would even wonder how things work out to your advantage. So for me I have no doubt, even if people might say "no, the coordination is not there,

what, what, what, what," let there be a threat, seen tangible threat, you will wonder how the various arms of government, which this time around they seem to be sleeping will come to work..

National Surveillance Officer, Ministry of Health (11)

The National Epidemic and Preparedness, Prevention, Control and Management Committee was heralded as a forum for advocacy and coordination for the Ministry of Health, bringing together government and international agencies in the development of responses to 'tangible' threats. It is also important to note that this committee was a significant forum for multi-sectoral interaction, and had been successfully utilized before as a coordination body, bringing together myriad stakeholders and advocating support, even from the donor community, for various health related issues. It was poised to play a similar role in response to a potential outbreak of avian and human influenza in the country. In providing further insight into the purview and purpose of this committee, the Deputy Director of Public Health and Research in the Ministry of Health stated the following:

[A]s a ministry responsible for outbreaks, (we decided to) put (in place) what we call the National Epidemics, Preparedness Control (and) Management Committee. ... that multi-sectoral committee deals with, specifically diseases...when we have a special one, like the avian influenza, like the swine (flu), the pandemic that we are now dealing with, like the rabies, like the plague, we normally say, let us now have an ad hoc committee of the main committee so we call that one now, a special Task Force...we get membership ...from the subcommittees...like (for) ...avian (influenza), it is now hinging between ministries of livestock and also health. So this is a zoonotic thing, so we need animal health and we need human health.

Deputy Director, Public Health and Research, Ministry of Health (9)

Avian influenza was considered an animal problem with zoonotic potential, requiring a significant input of the Ministry of Agriculture, through the Department of Veterinary and

Livestock Development. With the FAO and the WHO global strategy emphasizing the collaboration of animal health and public health agencies in dealing with H5N1, the National Epidemic and Preparedness, Prevention, Control and Management Committee thus provided a ready platform to facilitate this collaboration. The National Epidemic and Preparedness, Prevention, Control and Management Committee was thus an advocacy platform for disease prevention and control. Through its framing as a zoonosis, avian influenza fell under its purview. However, this committee plays more than a coordinative and advocacy function, as the Deputy Director of Public Health and Research in the Ministry of Health suggests in the following account of how the committee has to deal with stakeholders from a broad range of government departments:

For example, today we had a cholera meeting and in the meeting...although it was being chaired by the minister, three quarters of the agenda items is not our issue...if you talk about poor infrastructure in terms of housing, you are talking about the ministry of housing...if you are talking about communication and advocacy and sensitization, its normally broadcasting. We as a Ministry of Health are a trigger ministry. Because we know that, whatever happens, it's our hospitals that are going to be full. Whatever is going to happen, it is us in health. And that's why for us in health, we make sure that although other people might take a lion's share, we want to control something, you know and that's why you find when you look, the way you have come, you automatically think the ministry is too powerful. It's just because we are very very mindful that if we don't become "powerful" in inverted commas, it is us again who will be having problems. Having problems in terms of drugs, having problems in training of CTCs³¹, the treatment centres themselves, the manpower itself, by then it's no longer pre-pandemic, it's no longer...it's now a pandemic.

Deputy Director, Public Health and Research, Ministry of Health (9)

From the above it becomes apparent that the National Epidemics and Preparedness, Prevention, Control and Management Committee also functions as a means of providing the Ministry of

³¹ Cholera Treatment Centre

Health with oversight of some of the pre-determinants of health in the country as they relate to other policy sectors. Therefore, while officially the coordination of the Task Force was to be facilitated by the FAO and the WHO, the Ministry of Health had established oversight over avian and human influenza prevention and control policy development through its hosting of the National Epidemic and Preparedness, Prevention, Control and Management Committee. It is also important to note that by being brought under the auspices of this particular committee, the avian influenza issue had achieved priority status on the Ministry of Health's agenda.

According to the Task Force's official operational guidelines (GRZ 2006b), two working groups were to be established under the Ministry of Agriculture and Cooperatives and the Ministry of Health, to provide information directly to the FAO and the WHO respectively, for purposes of supporting and strengthening both global and regional early warning systems. The working groups were also intended to feed information to the Task Force. According to key informants and policy documents, one working group resulted, the National Avian Influenza Working Group, made up of a core assemblage of designated personnel from the Health and Agricultural Ministries.

The 20 original Task Force members were drawn from the Ministry of Local Government and Housing, the Zambia Revenue Authority, the Ministry of Home Affairs, the Office of the Vice President (Disaster Management and Mitigation Unit), the Ministry of Tourism and Environment, the Ministry of Finance and National Planning, the District Health Management Team (under the Ministry of Health), FAO, WHO and USAID. The members consisted mainly of human resource personnel from these ministries. Other than the three international agencies, the stakeholders included were perceived as immediately relevant to the preparedness planning process. Their inclusion can be justified when one keeps in mind that the prevailing mindset at the time was that an H5N1 outbreak was just around the corner. Migratory birds had been implicated in H5N1 avian influenza spread; it was perceived that it was just a matter of time before Zambia was engulfed in the pandemic.

The presence of the Disaster Management and Mitigation Unit signified the perception that the avian influenza problem had the potential to achieve national disaster status, while the Ministry of Finance and National Planning was included to facilitate the financial arrangements of the Task Force. Personnel from the District Health Management Team were included to facilitate countrywide dissemination of preparedness activities through the national health system, while the Ministry of Tourism and Environment was included specifically because of the risk of disease incursion presented by the movement of migratory birds, which implied wildlife and thus fell under the purview of the Tourism and Environment Ministry.

The Task Force was mandated to prepare a National Response Plan for avian influenza, aimed at developing pre-pandemic and outbreak responses for avian influenza and initiate an avian influenza preparedness campaign. In the pre-pandemic phase, the main activities were to seek and manage funding for preparedness activities, gather migratory bird and poultry baseline data, and improve risk communication (primarily targeting the poultry industry and consumers). There was also the aim of strengthening early warning systems through active and passive surveillance activities, shoring up laboratory capacity and staff training, and development of extension programmes promoting good farming practices and implementation of recommended biosecurity measures. For the health system response, the key aim was the identification and equipping of patient treatment facilities. The outbreak response was to focus on containment or delaying further spread of avian influenza in poultry populations; reduce morbidity, mortality and social disruption by curtailing zoonotic spread and conducting research to guide response measures. In verbatim:

The overall goal of the response to Avian Influenza is to detect, control and eradicate the agent as quickly as possible, to return individual farms to production and the country to disease free status and hence prevent the disease spreading to humans.

GRZ National Task Force on Avian Influenza Operational Guidelines, 2006

5.2.2. *The framing of the highly pathogenic avian influenza threat*

The avian and human influenza prevention and control policy agenda in Zambia had been set. The specific areas of note are that; first, the Minister of Health played an important role in drawing wider government attention to the avian influenza issue. Second, the avian influenza problem took an animal health framing, and had now linked to concerns over biosecurity and poultry production and marketing practices. Third, while an assembly of multi-sectoral actors had been put together, as far as official documents were concerned, the roles of the other stakeholders were, at this stage, not very well defined beyond a gatekeeper function because H5N1 was not in the country. Finally, while coordination was officially left to the facilitation of FAO, WHO and USAID, the Ministry of Health had established oversight over avian and human influenza policy development. Therefore, the National Epidemics, Preparedness Planning and Management Committee gave the avian and human influenza issue legitimacy as an agenda item, and facilitated wider stakeholder involvement.

What is striking, however, is that, while the overall purpose of the WHO's international call was for pandemic preparedness, avian influenza had initially taken on an imminent threat framing in Zambia. Several key events in the agenda setting narrative thus far point to this. Firstly, there is the almost 'crisis management' nature of FAO's facilitation of initial Task Force meetings. Secondly, the Advocacy Cabinet Memo by the Minister of Health, drawing government attention to the avian influenza 'threat', had done so on a platform advocating for support for a very serious cholera epidemic:

*So a cabinet memo was written...first of all to inform government of the magnitude of the cholera (problem at that time) and also of **the threat of the avian and human influenza which was coming...***³²(Emphasis added)

Thirdly, the coming into play of the National Epidemics, Preparedness Planning and Management Committee, a powerful advocacy and coordinative multi-sectoral body of the

³² National Surveillance Officer, Ministry of Health (11)

Ministry of Health under which the National Task Force on Avian influenza was established, the framework for the avian influenza campaign was set up and the objective of detecting and eradicating avian influenza as soon as possible, “to return individual farms to production and the country to disease free status and hence prevent the disease spreading to humans” was developed. Related to this, the National Task Force had been set up under the perception that avian influenza was a threat to Zambia, as exemplified in the interview excerpt below:

*Actually the development of the plan was a directive from the National Task Force which was formed when the threat of the Avian Influenza came to Zambia*³³ (emphasis added)

Fourth, with the arrival of avian influenza on the African continent, many respondents described how they perceived the proximity of the avian influenza problem at the time, and invariably hinted at avian influenza being an imminent threat:

*[T]he Zambian government realised that this disease is no longer like in Europe or somewhere in the temperate regions, but the disease had already come...*³⁴ (emphasis added)

*[T]he argument has been if we did the blanket ban in 2006 when the disease itself was far away from us, what about now when it is nearer to the Zambian border, after the few outbreaks in West Africa and North Africa?*³⁵ (emphasis added)

The interview excerpts above all point to a view that H5N1 avian influenza was on its way. That this framing of the avian influenza issue as an ‘imminent threat’ was widely accepted, is evidenced by how the initial response plans were titled. The first draft was called the Emergency Response Plan for Avian Influenza (2005). This means the focus, literally, was to

³³ Communication Focal Person, Health Education Officer, Ministry of Health (10)

³⁴ Technical consultant, National Task Force on Avian and human influenza (8)

³⁵ Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)

control a disease that was definitely coming and was expected to have a high impact. The next iteration was called Avian Influenza and Pandemic Influenza Threat: National Response Plan (2005-06). A later version was known as the National Response Plan for Avian and Human Influenza (2007-08), which, like its predecessor, incorporated the public health concerns of the potential for the disease to cross the species barrier. At the end of data collection, the working draft was called an Integrated National Action Plan for Avian and Human Influenza (2008-present). However, while there was wider multi-sectoral involvement in the beginning when the document was first called the Emergency Response Plan for Avian Influenza, by the time it was called the Integrated National Action Plan for Avian and Human Influenza, only the Ministry of Health and the Ministry of Agriculture were active. Chapter 7 explores the waning of interest after the pandemic was no longer perceived as imminent. The key issue here is that in 2005-06 there was wide acceptance of the internationally set framing of H5N1 as a potential emergency.

5.2.3. Avian influenza as an issue for Zambia

As the government developed its response to highly pathogenic avian influenza, the condition was becoming an issue for Zambia in general, specifically with regard to perceptions of the proximity of disease risk. In particular, the introduction of H5N1 on the African continent in Egypt and Nigeria in early 2006 was a significant event. Almost all respondents from the animal health sector took this event as their main justification for emergency preparedness activities, as exemplified in the statement below:

I think at that time the threat was very real because then Africa got, you know, affected and we had countries up north being affected and the disease was spreading and it was a matter of time.

SPINAP Coordinator and National Task Force member, Ministry of Agriculture and Cooperatives (1)

The avian influenza issue had gained real significance for the country with its incursion in North Africa, as there were now tangible examples of disease spread on the continent. The incursion

of H5N1 on the African continent had made avian influenza an African problem, providing further reason for the development of a policy response. The disease was now perceived as 'real'. By stating that "it was a matter of time" this further drives the point that the threat of disease occurrence was also perceived as imminent. This perception, of course had been building up from before, in the way that the Minister of Health had presented the avian influenza issue to Zambia, and in the way that the National Surveillance Officer in the Ministry of Health had perceived the significance of the Advocacy Cabinet Memorandum.

Other stakeholders, who became involved much later in the policy process, also shed light on the significance of avian influenza's incursion on the African continent:

You know, we all know that influenza is a very ancient disease but all along countries like in Africa have been thinking that influenza itself has not been a big deal.... Way until you know, 1997 and also until 2003 when... the advent of H5 started making headlines, that was the time that WHO requested all countries around the world to actually prepare for eventual outbreaks because they saw a situation where the disease was going to spread ...from chicken to chicken as well as from chickens to humans and also posing as a candidate for a pandemic kind of outbreak. So it was at that time that we in Zambia we saw situations where... we actually saw the disease spreading from one country to another, and eventually it actually reached Africa. Countries like Nigeria, Cameroon, Egypt actually had these outbreaks and at that time you know our government, the Zambian government realised that this disease is no longer like in Europe or somewhere in the temperate regions, but the disease had already come...

Technical consultant, National Task Force on Avian and human influenza (8)

Awareness of events relating to the evolving highly pathogenic avian influenza issue and its relationship with pandemic concerns had begun to grow. The respondent above was of the view that for many countries in Africa, avian influenza had not been considered a priority, since it seemed to only be a problem for countries in Asia and Europe. Clearly, the avian influenza outbreaks in North Africa from February 2006 brought the global reality of the avian influenza

problem to Africa. It had become a problem for African countries and by extension, a problem for Zambia. Given the different species of poultry affected by H5N1 highly pathogenic avian influenza, it is interesting that, other than migratory birds, the only forms of poultry thought to be of any significance for the Zambian situation was the transfer of H5N1 from chicken to chicken.

5.2.4. Buying in: The media, perception of risk and its economic impact

Other than its emergence on the African continent, avian influenza had also established itself as an issue for Zambia in other ways. One way was in public perception of H5N1 risk. Deserving special consideration, the media in particular, played a role in establishing the issue and in facilitating stakeholder 'buy in.' In early 2006, reports in the local media began to surface of possible incursions of avian influenza into the country, spurred, of course, by wider global reports of the continued spread of the poultry pandemic in Asia, Europe and Africa. These reports resulted in a real economic impact for the poultry industry in Zambia, facilitated the inclusion of new actors in the policy process and the addition of a communication strategy to the avian and human influenza response.

Up to the point the National Task Force on Avian and Human Influenza had been set up, there had not been any involvement of the Ministry of Commerce Trade and Industry in particular, or the trade sector in general. However, that changed when media reports of possible 'Bird-flu' outbreaks in the country began to surface, which began to shape public perceptions of H5N1 risk which had a negative impact on the poultry industry:

[W]e realised that it (avian influenza) gained a lot of prominence in the press and the prominence was full of fake things and people were just downloading the Turkey situation or the China situation and making it appear as if it was a Zambian situation. ...In the three months of the AI prominence in the... (Media) ...we as an industry lost to a tune of 30 billion kwacha³⁶ in three months. So we woke up from slumber and took a leading role in the sensitization of our

³⁶ This amounts to approximately £3.9 million

members and also the general public. Because what that entailed was that farmers became scared, they stopped placing, they scaled down on their production, including large scale farmers. That had a telling effect on the breeders, it had a telling effect on the milling companies, it had a telling effect on the veterinary service providers and finally we had a blow when the consumer also realised that they cannot eat chicken because they have got some health risks.

Poultry Association of Zambia Executive Director (16)

While I had expected to find the poultry industry to have been an initial stakeholder in developing a response to avian influenza, from the above, it is clear that initially the industry had been unaffected and ambivalent to the global avian influenza situation. However, its position changed drastically as a cascade of effects from the media reports began to take hold. Fuelled by international reports, any significant mortality in chicken flocks was assumed to be the start of the poultry panzootic in Zambia by the local media. A review of some of the news articles pertinent to the time revealed that these reports were also in the media towards the end of 2005, around the period that the National Task Force was formed. According to the Poultry Association of Zambia's Executive Director, the reports of 'Bird-flu' outbreaks in Zambia sparked a panic among consumers and producers alike. The result was a significant loss to the poultry sector that spanned breeders, producers, the feed industry, the veterinary pharmaceuticals industry and finally consumers. The poultry industry was thus spurred to counter the negative reports and restore the industry's productivity. This was confirmed by several government officials who admitted that the first information brochures sent out to farmers were actually produced by the Poultry Association of Zambia. The poultry association then became the official mobilizers for the National Task Force on Avian Influenza, acting as liaison between its membership countrywide and the Task Force secretariat. Interestingly, these very media reports resulted in the Democratic Republic of Congo, Zambia's largest poultry export market, banning the import of Zambian poultry and poultry products.

It also emerged that the Ministry of Agriculture was formulating a response for an industry they didn't really understand. An example of this is exemplified by the excerpt below, suggesting the important gaps in information perceived by the Ministry of Agriculture:

[W]hat is very clear for Zambia is that we do not have,...apart from what you can get from the commercial sector, we don't have reliable statisticsso there is this survey which has been to collect more data on the poultry you know, so that when it comes to measuring...the risk, you are measuring it from reliable information... data of what is prevailing on the ground. So again in Zambia we are attempting now to collect that census data, the poultry census for the country, so that we can have something comprehensive...

Senior Epidemio-surveillance Officer, Ministry of Agriculture and
Cooperatives (3)

Very little was known about the traditional poultry sector in Zambia, given its low priority status on the government agenda. This made it difficult for decision-makers to discern the risks presented by traditional poultry production systems. Critical information gaps existed, and it was perceived prudent to conduct a country wide poultry census. The intention to gather poultry census data suggested a financially motivated, rather than a risk motivated, action. Such information was easily obtainable from Zambia's Central Statistics Office, which collected information of living conditions across Zambia and included information on domestic poultry keeping households, down to location and species, across the country (CSO 2004). More importantly, neither the policy documents reviewed nor the government decision-makers interviewed mentioned, extensively, the links between employment, feed production and veterinary pharmaceutical delivery to the commercial poultry industry. The position that the government was formulating a response for an industry it didn't understand was voiced very clearly by the poultry association Executive Director:

I think the understanding of the livestock sector, in Zambia, by the public service is somehow narrow. And that is another area which creates a lot of concern. You may wish to know that, if you look at public pronouncements, they

are in a fashion that depicts ignorance. It is like you have a Ministry which doesn't understand its own stakeholders. And that kind of gap is so enormous that we don't see any tangible results from the government planning for the sector. Because there has been this distance created where the public service officers have distanced themselves from the industry and they have very little understanding on the status of the industry in this country. Hence we have got cases where they are just ratifying protocols without due regard for what status the industry is in...

Poultry Association of Zambia Executive Director (16)

The public sector, specifically the Ministry of Agriculture, was unaware that the poultry industry was both a sensitive industry and a significant contributor to GDP. The respondent above also stated that while the livestock sector contributed 16% to GDP, nearly 47% of this was the poultry industry's contribution, while the rest was shared among cattle, sheep and goats and fish. With regard to the poultry industry's response to the avian influenza media scares, the Poultry Association of Zambia responded by providing statements in the media refuting the reported incursion of 'bird-flu' into Zambia (Zambia Daily Mail, April 3, 2006) and reassuring the nation of the safety of chicken consumption. Subsequently, the communication strategy developed included sensitization workshops with journalists on responsible reporting.

The media reports also facilitated an entrée for other stakeholders in the avian and human influenza prevention and control policy process, among them, the Ministry of Information and Broadcasting, the National Agricultural Information Service (NAIS) unit under the Ministry of Agriculture, and the Health Education Unit under the Ministry of Health. The World Bank also became involved, partly because the media reports had raised concern, and because it had identified a gap in Zambia's National Response Plan with regards to communication. Personnel from NAIS trace their introduction to the avian and human influenza prevention and control policy process to reports of alleged avian influenza outbreaks in Livingstone, in the southern part of Zambia, and a high density, low income residential area of Lusaka known as Bauleni.

The origin of the whole thing is that when we had first report from Livingstone that birds were falling there.... it was reported, in fact by ZNBC³⁷, and the way it was reported it was "Bird-flu comes to Zambia".... So us at NAIS we did not have that information, meanwhile our friends the vet people, they picked up the issue. Before they (the vet 'people') could go very far, there was a consultant, a World Bank consultant that had come. I remember we had the first meeting at World Bank, by that time they were at Anglo American building there. So her main concern was how Zambia had handled the first alarm, those alarms that were there. That it was mishandled and she wanted to find out the systems that are there. During all that period, the people that were giving responses ... updating the communities about the whole disease were mainly the health people.

Senior Information Officer, National Agricultural Information Service, MACO (12)

This report, which appears to have been covered by both electronic and print media, later turned out to be a case of poisoning (Xinhua News Agency, June, 27, 2006). At this stage, it was still mainly the Ministry of Health updating the nation on avian influenza. This is corroborated by a review of several news articles on the avian influenza situation in Zambia between the period October to December 2005, in which statements on avian influenza were given by the Minister of Health (Xinhua News Agency Article date: October 27, 2005), the Deputy Minister of Health (BBC Monitoring International Reports, November 18, 2005), and the Director of Public Health and Research, who was also Task Force co-chair (Xinhua News Agency Article date: December 10, 2005).

As described by a Senior Information Officer from NAIS, the World Bank became concerned with the way that the initial media reports had been handled. The World Bank, through its representative, wanted to know what communication structures were in place. During this process of inquiry, the World Bank also made an assessment of Zambia's National Response Plan.

³⁷ Zambia National Broadcasting Corporation. This is the national broadcasting service.

[A]fter we did the National Response Plan the World Bank came along and that was presented to them. Comments were made on the National Response Plan and one of the ...critiques of the document was that it didn't have a communication component. So we were then told to bring on board Ministry of Information and Broadcasting, and they would lead the communication component. But you must appreciate that Ministry of Agriculture has a communication component called NAIS, the National Agriculture and Information Centre, so they were also co-opted into that committee and so was the Ministry of Health.

SPINAP Coordinator and National Task Force member, Ministry of Agriculture and Cooperatives (1)

The involvement of the World Bank of course is not surprising, because in the context of the global pandemic response, it was one of the key international bodies funding the avian influenza control initiative. Indeed, the World Bank was the largest financial contributor to the development of the avian influenza framework in Zambia. The World Bank made its release of close to one million dollars for preparedness activities in Zambia conditional on the Task Force including the Ministry of Information and Broadcasting as leader of the communication strategy, as evidenced by one respondent, "All projects have come with a condition that we involve the Ministry of information and Broadcasting, but we have NAIS and Health Education wings under MACO and MoH respectively."³⁸ By identifying the need for the National Response Plan to have a communication strategy, an entrée was provided for personnel from NAIS and the Health Education Unit under the Ministry of Health to be co-opted into the policy process.

H5N1 was not in the country during the period of data collection, but was still a problem for countries in the parts of the world that had actually experienced outbreaks. By virtue of its continued spread, it represented a *possible* problem for animal health and a *potential* threat to

³⁸ Senior veterinary research Officer (4)

human health. However, perceptions of avian influenza risk appeared to have resulted in a *real* economic impact. This impact, while apparently not providing further impetus for avian and influenza prevention and control policy formulation, facilitated the active involvement of stakeholders such as the Poultry Association of Zambia. The substantive effect of perceptions of avian influenza risk as generated by the media also resulted in; firstly, development of a communication strategy that required the involvement of the Ministry of Information and Broadcasting, and later NAIS and the Health Education Unit under the Ministry of Health. Secondly, the generation of reports by the Poultry Association of Zambia to assure the public of the safety of chicken, and thirdly, sensitizing the media on responsible reporting.

5.3. Issue framing: Problem definitions for avian and human influenza in Zambia

The issue of avian or human influenza should never ever ever be narrowed to a health or livestock issue, it goes far beyond that. In a situation of a major outbreak, assuming the virus goes under some mutation and it becomes lethal to human beings, certain level of infection will require the government banning gatherings, the government instituting curfews, the government asking the military to play certain specific roles and a particular ministry, it will require the cordoning of airports, cordoning off any other strategic institutions. Now if you look at all that, which immediately comes into play, should we get to that level, God forbid, it is not at the level of a ministry that such decisions can be made, it will always be at a level above a ministry.

National Coordinator, Disaster Management and Mitigation Unit (20)

The respondent above summarises quite nicely that avian and human influenza cannot be viewed as merely a human health or livestock issue. The discussion up to this point has demonstrated that the agenda setting process in Zambia had various dimensions which illuminated some of the key stakeholders of the policy process, as described to me by my respondents. This reveals the different framings that were created in understanding the avian influenza problem. To bring this all together, this section presents, specifically, the various ways in which the avian influenza problem was framed by respondents:

- An exotic emerging disease

[W]e don't have avian influenza as you know. It is an exotic disease to us, but it is a possible emerging disease...

Task Force Member and Animal Health Focal person, Ministry of Agriculture
(2)

- A zoonotic disease of limited zoonotic potential:

- *[A]vian influenza is a disease (that) mainly starts in animals then it passes to humans³⁹*
- *[A]vian influenza basically was viewed as a more of an animal disease which then moves into human beings...⁴⁰*

- A problem most likely to emerge from peasant farmers with poor biosecurity and low awareness.

[A]s we talk about avian influenza we believe that avian influenza may come from a poor farmer who doesn't believe in biosecurity...

...we see most of these guys as lack of ... knowledge. They don't really understand some of these issues so we think that it is from there, lack of information and knowledge that the disease can come...

Non-Governmental Organization Poultry Consultant on Avian Influenza (6)

- A disease whose treatment in humans is known to be highly technical and resource intensive.

[W]e have learnt from our colleagues that have had the outbreak the case fatality rate is very high. Also the nature of management of a patient with avian influenza is highly technical and we are not in a position to manage to treat a lot of patients if we had...because a lot of them would need to be managed possibly under intensive care kind of management.

Health Education Officer, Ministry of Health (10)

³⁹Task Force Member and Animal Health Focal person, Ministry of Agriculture (2)

⁴⁰Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)

- A bird disease that represents a pandemic threat.

[T]here is an understanding that this disease of birds can now infect human beings. To what extent it affects human beings; ...you go back to the (WHO) avian and human influenza pandemic phases...

National Surveillance Officer, Ministry of Health (11)

- A disease that could affect Zambia's trading status.

[I]t poses a danger to our own exports because once the poultry products ...from Zambia for example are found to be infected with that avian influenza then we cannot export it.

Acting Director, Domestic Trade, Ministry of Commerce and Industry (18)

[Y]ou may wish to know that in the region, it's only this country that has not recorded any major disease outbreak and hence we are considered the cleanest environment in the whole region. And we would want to remain as such.⁴¹

Poultry Association of Zambia Executive Director (16)

The problem definitions above express both the current state of avian and human influenza in Zambia and the perceived risk it represented for the various stakeholders, and more specifically the animal health, public health and trade sectors. Therefore these problem definitions represent the three ways in which the risk of avian and human influenza is perceived in Zambia. First, the reality, as understood by decision-makers is that avian influenza is an 'exotic' condition, i.e. not in the country, but it is a trade threat. Secondly, there is the understanding of its zoonotic *potential* and where some of the risks lay, i.e. a condition of poultry whose risk of spread is related to poor 'biosecurity'⁴², and thirdly the implications for Zambia should an H5N1 incursion occur and become fully zoonotic. The above also suggests a process of developing *ownership* of an agenda that some respondents perceived to be externally driven as exemplified in the abstract below:

⁴¹ In this case, the reference was made in light of other diseases and not just highly pathogenic avian influenza

⁴² Interestingly in the context of avian influenza prevention and control awareness, three conceptual understandings of biosecurity were identified, biosecurity was viewed as a process i.e. the steps needed to exclude disease, a state; the extent to which measures to exclude disease existed and an act; the extent to which measures to exclude disease were utilized.

[P]robably this thing is being looked at more from the developed World point of view... they probably looked at the threat of avian influenza and then they spearheaded this whole thing of us forming a Task Force, us coming up with a preparedness plan and all that...

Research Scientist, Ministry of Agriculture and Cooperatives (5)

This last excerpt summarises very neatly the sentiment of many of the animal health respondents; that the avian influenza response is largely an externally driven agenda. The three ways in which the risk of avian and human influenza is perceived in Zambia also have implications for the policy formulation process, which will be discussed in the following empirical chapters. The implications include shifts in priorities over time, changes in stakeholder involvement, and the potential risks created, or missed in the process.

CHAPTER SIX

Policy formulation: Defining roles, coordination and interrelationships

6 *Introduction*

The previous chapter described avian and human influenza prevention and control policy agenda setting in Zambia. It introduced and described the roles of six key policy stakeholders; the FAO, the WHO, the World Bank, the Ministry of Health, the Ministry of Agriculture and the Poultry Association of Zambia, in the agenda setting process. The key issues identified were that highly pathogenic avian influenza took on a largely animal health framing; and was also viewed as an emergency. It was its status as an imminent zoonotic threat that raised H5N1's profile on the Zambian Government agenda, resulting in considerable political support for policy formulation. The chapter argued that the economic impact of perceptions of H5N1 risk was a strong motivation for the participation of the Poultry Association of Zambia in policy development. Also identified were the three ways in which the avian and human influenza problem was understood by policy-makers in Zambia. That highly pathogenic avian influenza had been framed first as an impending emergency second as a largely animal health problem and third as a potential zoonotic threat is important to understanding the specifics of policy formulation.

Continuing this analysis of how the national policy on the control and prevention of H5N1 was set and developed across the sectors of animal health, public health and trade in Zambia, this second empirical chapter is an analysis of the avian and human influenza prevention and control policy formulation process. It also highlights some of the tensions, challenges and deficiencies in avian and human influenza policy formulation in Zambia for the period 2005-2007. The chapter introduces the key policy formulating body for avian and human influenza prevention and control. It then describes the formulation process of five areas of policy decision identified

as significant by respondents; the trade ban, the surveillance strategy, the communication strategy, the declaration of avian influenza as a notifiable disease and the formation of Rapid Response Teams. The discussion of each includes an analysis of respondents' perceptions of what transpired in relation to policy formulation and the effect the initial framing of the avian and human influenza problem had in defining the policy process. In particular, the chapter identifies the 'imminent threat' framing as a problem for policy development as Zambia moved from an emergency focus to preparedness and capacity building, because it limited the legitimate involvement of important stakeholders. It also restricted Zambia's ability to use highly pathogenic avian influenza as a platform for developing sustainable risk management approaches.

6.1. The Zambia National Working Group on Avian and Human Influenza

As identified in the previous chapter, after the formation of the National Task Force on Avian and Human Influenza in Zambia, a National Working Group was constituted to carry out the technical activities related to the emergency response. The initial animal health/imminent threat framing of the H5N1 highly pathogenic avian influenza problem in Zambia resulted in a mainly animal health response to H5N1. Its status as a zoonosis and a potential candidate for a human influenza pandemic served to generate considerable momentum for policy development. Support for avian and human influenza prevention and control policy development was considerable. As part of the development of Zambia's avian influenza response, the Zambia National Working Group on Avian and Human Influenza was formed under the auspices of the National Task Force on Avian and Human Influenza in 2005. According to the National Task Force operational guidelines⁴³, the Working Group was to be its technical arm, responsible for generating the response to the perceived threat of an H5N1 incursion into Zambian poultry. The Working Group was mandated to develop Zambia's National Response Plan for Avian and Human Influenza prevention and control, and spearhead all preparedness related activities. The personnel constituting the National Working Group on Avian and Human Influenza were drawn

⁴³ GRZ National Task Force on Avian Influenza Operational Guidelines, 2006

mainly from the Department of Veterinary and Livestock Development under the Ministry of Agriculture, and the Ministry of Health:

[H]ere in Zambia the Ministry of Agriculture was chosen as the leading Government ministry with the Ministry of Health. And under the Ministry of Agriculture, the Department of Veterinary and Livestock Development was the key... I would actually call it secretariat. So from the inception it was mostly Ministry of Health and Ministry of Agriculture. There is a National Task Force; I think somebody has explained that it's a lot of ministries. (Then) there is actually the secretariat which is the Working Group. Those are the people that do most of the issues, drafting of policies and presenting them.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

The two Ministries constituted the core of the National Working Group on Avian and Human Influenza that formulated avian and human influenza prevention and control policy. As key stakeholders in the policy formulation process, the Ministry of Agriculture and the Ministry of Health assumed the role of generating, presenting and circulating the avian and human influenza prevention and control policy in Zambia. This policy took the form of the National Response Plan on Avian and Human Influenza, which was still in its draft form by the end of fieldwork in December 2009. With the process of drafting the response plan underway, funding and material support began to pour in. According to respondents, the main funders were the World Bank, contributing close to one million dollars, and the EU, through the FAO, contributing about €175,000.

Seventy percent of the World Bank funding went to the Ministry of Agriculture, while the remaining 30% went to the Ministry of Health. Most of the World Bank funding was utilized to set up the preparedness framework, including the purchase of motor vehicles and motorcycles for surveillance activities, and renovation laboratory facilities under the Ministry of Health and the Ministry of Agriculture. With this initial capital investment, the emergency response was underway. A series of planning meetings were held to chart Zambia's course of action.

According to the National Task Force Operational Guidelines (2006) and key respondents, the plan of action was to prevent an H5N1 incursion into poultry flocks. If an incursion were to take place, the next course of action would be to detect outbreaks promptly, curtail H5N1 spread to humans, limit its pandemic potential and institute measures that would restore the country to 'peace-time' pre-pandemic status:

When Avian Influenza became a major scare, there was a demand that every government should form Task Force...(an) approach that will deal with Avian Influenza looking at three factors prevention, control and restoration back to production.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

The overall goal of the response to Avian Influenza is to detect, control and eradicate the agent as quickly as possible, to return individual farms to production and the country to disease free status and hence prevent the disease spreading to humans.

GRZ National Task Force on Avian Influenza Operational Guidelines, 2006

As the 'first line of defence', the animal health response focused on prevention and control in the poultry population to complement disease prevention and control in the human populace. Envisioned to work synergistically with the animal health response, the human health response was focused on a wider pandemic preparedness agenda:

There are three phases of the epidemic, the pre-pandemic, the first phase we have discussed is the pre pandemic, the pre-pandemic where we collaborate with other stakeholders, that's why we had that committee. The idea in the pre-pandemic is to reduce risk (through) communication to communities, that is why I was talking about the meetings we have been having...Then the second phase is the emergence of the pandemic virus, the purpose of this phase is to contain the virus or delay the spread at the source; and the last one is the pandemic one which I wanted to discuss with you. Now naturally the pandemic phase was to reduce the bird to bird and zoonotic transmission, reduce morbidity, to reduce mortality and social disruption.

Deputy Director, Public Health and Research, Ministry of Health (9)

6.2. From an emergency response to preparedness and capacity building

This section provides an overview of the National Response Plan activities in the period covering 2005-2007. A number of preparedness related activities were undertaken by the National Task Force on Avian and Human Influenza, through its Working Group during this period. It was the role of the Working Group to formulate Zambia's response to highly pathogenic avian influenza. The draft National Response Plan developed by the National Avian Influenza Working Group had a three component plan of action; an animal health strategy, a human health strategy and communication strategy. Training sessions were conducted at both national and international levels for staff from the Ministry of Agriculture and the Ministry of Health on animal health, human health and communication. This included regional training exercises, particularly within the Southern African Development Community (SADC). Laboratories at the Central Veterinary Research Institute under the Veterinary Department and the University Teaching Hospital⁴⁴ were stocked with avian influenza diagnostic reagents. An additional stakeholder, the University of Zambia's School of Veterinary Medicine, provided further diagnostic support. The School of Veterinary Medicine possessed the only P3 laboratory⁴⁵ in the country and, other than the Onderstepoort Veterinary Institute in South Africa, was the only laboratory competent to handle live influenza viruses in the Southern African region. The laboratory at the Central Veterinary Institute was to concentrate on influenza surveillance in domestic poultry, the University Teaching Hospital would conduct surveillance in humans, and the School of Veterinary Medicine would carry out surveillance in wild birds. While this was meant to be the case, there was considerable overlap in the Central Veterinary Institute's and the School of Veterinary Medicine's surveillance focuses. In addition, awareness campaigns were conducted in many parts of the country.

⁴⁴ This is the largest hospital in Zambia, located in the capital city Lusaka.

⁴⁵ This is a laboratory biosafety/containment classification. The designation signifies a facility capable of the safe handling of indigenous or exotic agents with the potential to cause lethal disease through inhalation or contact. The P3 laboratory at the School of Veterinary Medicine was set up and equipped with support from Hokkaido University in Japan, under a wider zoonosis project, but dedicated most of its time to influenza diagnoses.

As part of the control strategy, a partial import trade ban on poultry and poultry products was effected in early 2006. A number of media workshops were also held, aimed at sensitizing the media on responsible reporting and co-opting the media into the communication strategy. Under the National Response Plan, this was to be the main method through which the public would be sensitized on avian and human influenza. The media sensitization exercise was also the Task Force's response to the media scares that had been generated from late 2005 to mid-2006, conducted to lessen the negative consequences of sensational reporting.

Central to the preparedness strategy was the formation of Rapid Response Teams in all the nine provinces of Zambia, composed of personnel from the Ministry of Health, the Veterinary Department, and the media. These were envisioned to be the first to arrive on the scene of an avian influenza outbreak. Zambia had taken an emergency stance to respond to the perceived threat of H5N1 avian influenza.

6.3. The trade ban on poultry and poultry products in 2006

For Zambia, a significant event preceding its partial ban on poultry and poultry product trade was the outbreak of non-zoonotic H5N2 highly pathogenic avian influenza in neighbouring Zimbabwe in December 2005. According to the International Society for Infectious Diseases (ISID 2005), on 8th December 2005, Zimbabwe reported the H5N2 outbreak on two ostrich farms in its Matebeleland North Province, an area geographically delineated from Zambia's Southern Province by the Zambezi River. Following this report, the spokesperson for Zambia's National Task Force, a senior ranking Ministry of Health official, issued a statement in the press announcing that all personnel at Zambia's border entry points had been instructed to halt poultry and poultry product movement into and out of the country, particularly along its shared border with Zimbabwe (Xinhua News Agency Article date: December 10, 2005). It is important to note that a separate poultry and poultry product trade ban for Newcastle disease had been in force against Zimbabwe since 2004. The ban of poultry and poultry products from Zimbabwe was therefore nothing new. Following the identification of the H5N2 problem, Zimbabwe's

avian influenza Task Force instituted its own control measures, temporarily banning the export of all ostrich and other poultry products from Zimbabwe (Fin24.com news article. Article date: 8th December, 2005). It was claimed by a few participants at a field simulation exercise held in Zambia in 2009 that the outbreak in Zimbabwe had been a result of its link to a poultry enterprise in South Africa⁴⁶.

Following the H5N1 outbreaks in Nigeria and other countries in West and North Africa in early 2006, on 20th March 2006, the Zambian Government announced a partial ban on import of poultry and poultry products into Zambia. This measure was intended to be preventive, aimed at reducing Zambia's risk of an avian influenza outbreak. Although the Department of Veterinary and Livestock Development had instigated the ban, the official announcement of this decision was made by the Minister of Health, Sylvia Masebo (Fin24.com News Article, Article Date: 20th March, 2006). This particular news article further states that, "Masebo said though Zambia had not reported any cases of the H5N1 virus in poultry or human beings, the country was on full alert because threat of the feared Bird-flu was no longer far way, but on the country's 'doorsteps'."

While driven by an emergency/imminent threat framing, with health personnel taking centre stage, the Zambian response with regard to the trade ban was not unique. With the arrival of the Asian-lineage H5N1 on the African continent, bans on poultry and poultry product imports were widespread. For example, one respondent, an FAO consultant⁴⁷ assisting Zambia with the evaluation its National Response Plan, spoke of the ban that had been imposed in his West African country, based on the understanding that trade had played an important role in the spread of H5N1 in the West African region. With the imposition of the ban, his country directed its efforts and resources to mitigating the risk of H5N1 incursion presented by migratory bird activity. Another respondent, a COMESA Sanitary and Phytosanitary (SPS) expert also spoke

⁴⁶ Field work diary, avian influenza outbreak simulation exercise held in Chisamba, Zambia, 29 to 30 September 2009.

⁴⁷ FAO international consultant (7)

of how poultry and poultry product trade had been threatened through bans that had been imposed in some COMESA member states at the height of the H5N1 panzootic:

[O]f course it threatened trade, it became a real trade issue because a lot of countries began to impose bans on importation of poultry and poultry products, so the movement of birds was curtailed and that affected a number of countries. There is a country within the COMESA region that completely banned any importation of poultry and poultry products and yet that country has no commercial poultry production. And so if you went...at that time if you went to that country and you were looking to eat chicken or something like that, you should be content with village chicken, because you will not find commercial chicken anywhere.

COMESA SPS Expert (22)

As a result of the perceived risk to and from trade, the poultry industry saw itself as the sector of society that stood to lose the most from an H5N1 incursion in the country. Given this backdrop, it was the view of the Zambian poultry industry that trade was the primary risk for avian influenza and the regulation of trade by government was the only feasible course of action to reduce this risk:

[W]e have actually made it very clear to our Government that trade is the cause of all these risks and as long as they are not able to regulate poultry trade, within their means and ranks, then we are a very high risk country.

Poultry Association of Zambia Executive Director (16)

The Department of Veterinary and Livestock Development responded to the threat of highly pathogenic avian influenza by restricting poultry imports to grandparent and parent stock, and hatching eggs. According to several senior respondents in the Veterinary Department and one respondent from the Poultry Association of Zambia, imports were restricted to these classes of poultry to ensure industry's continued productivity, as the supply of breeding stock was the

lifeline of the poultry industry. Motivated by an economic imperative, this policy decision was actively supported by the Poultry Association of Zambia:

[W]e engaged Government (and) we agreed that we should actually go the route of banning poultry and poultry products into the country and that has been the practice up to now. We do not allow the import of poultry and poultry products into the country. But....we are importing breeding stockwe cannot do without breeding stock, we need to continue production and breeding stock is very critical in that area. So we agreed with Government that they should allow hatching eggs and pure lines: grandparent and parent stock. So importation has been limited to those classes of breeding stock I have just mentioned.

Poultry Association of Zambia Executive Director (16)

The Ministry of Health and the Veterinary Department in Zambia had pursued the trade ban because of its perceived capacity to reduce the trade-related risk of an H5N1 incursion. The partial ban on poultry and poultry product imports was instituted because the Working Group had identified trade as a pertinent risk for an H5N1 disease incursion in the country. This import ban aligned with the economic interests of the Poultry Association of Zambia. The trade ban, as announced by the Minister of Health, was thus instituted to aid in the prevention of a possible disease incursion:

[W]e decided as Government to say fine, we cut down on importation of these birds, wild birds and these day old chicks...and we concentrate on importation of breeding stock and hatching eggs, yeah, to help us with the controls.

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

For many government animal health respondents, the fact that Zambia has eight neighbours and vast borders was cardinal among the reasons to justify the continued existence of the trade ban beyond 2006. Respondents felt quite strongly that Zambia's long borders, consistently described

as 'porous' even by one human health respondent⁴⁸, was a high risk for disease incursion, a position that appeared to have had the backing of the FAO:

According to Food and Agriculture Organisation (FAO), although Zambia is currently free of the virus, the country is at high risk because of many neighbouring countries, which has led to increase in human traffic and trade in poultry and poultry products. Of even greater concern, is the fact that the virus – if conditions allowed – can change into a form that is easily transmissible from human to human for instance the Spanish human influenza pandemic of 1918/1919 that led to over 40 million deaths.

Zambia's National Response Plan on Avian and Human Influenza, 2008 version, p.6

It was the ease with which people and goods, specifically poultry and poultry products, could move across Zambia's 'porous' borders that was perceived to represent a potential risk for H5N1's incursion into the country. Understanding that H5N1 was mostly in West and North Africa, there was no real evidence to support this perceived *high* risk of H5N1 from Zambia's *immediate* neighbours. The FAO's endorsement and ranking of this risk is telling of the *international* perspective motivating the trade ban, a perspective that found resonance among some local stakeholders, even in the face of the multitude of trade agreements to which Zambia is party:

[P]robably the greatest risk of an incursion of avian influenza into any country is through trade of poultry and poultry products, so you will notice that Zambia actually has got borders with about eight countries and all these borders are very very porous. And not only being porous but there is massive trade from south to north and vice versa and also from east to west and obviously increasing the potential, you know, for the incursion of this virus into the country.

Technical Consultant, National Task Force on Avian and Human Influenza (8)

⁴⁸ Health Education Officer, Ministry of Health (10)

We are supposed to allow trade freely as a country, but we've looked at the high risk of us opening up trade as a country, ok? We feel we are at higher risk, one of the biggest problems being our porous borders. So we haven't hidden, we have come openly and said, for us, trade will be restricted to this.

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

To demonstrate what respondents meant by 'porous', during one surveillance visit to a border post in Zambia by one of my respondents and his colleagues, day old chicks from Tanzania had been found on the Zambian side with a local trader. The trader had at first claimed he had bought the day old chicks on the Zambian side, but admitted upon further interrogation, the source of the poultry was from Tanzania. The veterinary officer in charge of that border town was surprised that such a thing had happened. Interestingly, during the same surveillance exercise, the personnel from the Department of Veterinary and Livestock Development camped at a lodge on the Tanzanian side of the border that they had *driven* to without going through a border checkpoint!

The ban was not an unreasonable precaution as there were clear precedents elsewhere on the continent. In Zambia, like other countries on the continent, the perceived imminence of the H5N1 threat had necessitated the instigation of this emergency control measure, starting with a trade restriction following the outbreak of H5N2 in Zimbabwe in December 2005, and the declaration of a more substantive partial import ban in late March 2006. These trade restrictions had been imposed on health grounds. The Ministry of Health had taken the lead in making public pronouncements, evidence, at least from the public's viewpoint, of the primacy of health protection over trade. The trade ban was perceived to be a major control measure, despite the porous nature of Zambia's borders. The Poultry Association of Zambia had engaged government to institute the ban, and the Department of Veterinary and Livestock Development obliged, providing for the industry's continued productivity, while keeping potential competition out.

6.3.1. The relevance of the trade ban on poultry and poultry products

The WHO call for pandemic preparedness had been a multi-country initiative. The trade ban in Zambia had been instituted in a context where many of the countries in Southern African region were simultaneously developing response plans and shoring up their emergency response capacity. It must be noted that it is possible that, while countries were at different levels of preparedness, the aggregate effect of multiple regional responses may have had a positive effect in controlling H5N1's spread. At the time Zambia was establishing its National Task Force and Working Group, all of Zambia's neighbours; Angola, Namibia, Botswana, the Democratic Republic of Congo, Malawi, Mozambique, Tanzania and Zimbabwe, were doing the same.

Furthermore, each of these countries possessed different levels of potential for the commercial export of poultry and poultry products, their poultry enterprises being at various stages of development. Of these countries, according to a USAID Stamping Out Pandemic and Avian Influenza (STOP AI)⁴⁹ report (2008), only Zimbabwe, Zambia, Malawi and Mozambique had export orientated production systems, while Botswana, also an exporter, had a highly integrated and biosecure commercial poultry industry and therefore had a more controlled poultry production system that posed little risk. A country report on Newcastle disease submitted to the Australian International Centre for Agricultural Research (Bamhare 2001) in 2000, states that countries like Namibia did not export any poultry and poultry products, its arid landscape imposing limitations on poultry production that made it difficult for local industry to meet even the consumption demands of its human population of fewer than two million. This trend had not changed at the height of the H5N1 panzootic in 2005. At an avian influenza conference held in Pretoria, South Africa in 2006, a veterinary department representative claimed that Namibia had no poultry exports at all⁵⁰. According to key informants, the Democratic Republic of Congo was

⁴⁹ This is a United States Agency for International Development's (USAID) global project on avian and pandemic influenza. STOP AI stands for Stamping out Pandemic and Avian Influenza. Its objective was to increase global capacity to contain H5N1 avian influenza in animals, therefore minimizing its spread from animals to humans and the opportunity for it to develop into a pandemic strain.

⁵⁰ See Regional Workshop on Notifiable Avian Influenza (NAI) in SADC Pretoria, South Africa, 7th – 9th March 2006 <http://www.nda.agric.za/docs/GenPub/workshopAvian.htm>

Zambia's largest poultry export market. Zimbabwe faced a double ban on poultry and poultry products, the first being the ban imposed in 2004 because of Newcastle Disease, the second was the temporary ban imposed after the H5N2 outbreak. Tanzania and Angola's poultry industries were primarily domestic. Many of these countries had instituted trade bans against H5N1 hotspot countries such as Nigeria and Egypt, primarily on health grounds. This provides further evidence that the perceived risk of an H5N1 incursion from Zambia's immediate neighbours was probably not as high as it was made out to be. In the case of Zambia, the Poultry Association was of the view that fostering the development of the local industry should have been the primary reason for maintaining the ban:

All the countries in the region have taken measures to ensure that avian flu does not break out in their countries and one of them is banning trade. We have a situation where our officers will be making reference to OIE and all sorts of things, but OIE is not only meant for Zambia, it's for every country, but economic decisions are made purely based on what you think your industry will take in and protect it and that is what is lacking in this country.

Poultry Association of Zambia Executive Director (16)

Interestingly, it was claimed by several animal health respondents that the imperative for the Veterinary Department instituting the partial ban was its limited number of *veterinary* personnel to adequately monitor trans-boundary poultry and poultry product trade:

[K]eep in mind that some of our borders are quite porous and we don't have personnel at all border posts so that might be the most likely entry point.

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

You see the ban, I think even under WTO, that SPS agreement, I think it provides for, what they call, something that I will call a conservative approach,

a precautionary approach because normally we don't have resources for disease control and our borders are quite porous and quite vast.

Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)

This view was shared by the Poultry Association of Zambia:

We have a very fragile veterinary system such that even if we had an outbreak today, they would not even contain it.

Poultry Association of Zambia Executive Director (16)

Strengthening of the veterinary response was a core objective of the National Response Plan, but the Poultry Association of Zambia claimed that the limited capacity of the Veterinary Department to respond to a disease outbreak remained a potential issue. On the other hand, for government respondents, over time, perceptions on H5N1 risk from trade, and therefore the reason for the institution of trade ban, had become less about response *capacity* and more about veterinary personnel *availability*. Animal health respondents demonstrated a detailed knowledge of the Zambian border posts that had the most flows of poultry traffic, and the poultry industry had worked with other producer associations in the SADC region to reduce imports from countries like Malawi and Mozambique:

We have worked very well with Malawi and you may wish to recall that Malawi, we had a lot of cross border trade between Chipata and Muchinji in Malawi and then Sindamusale and the Malawian side, and we used to have a lot of day old chicks coming in from Malawi. We used to have a lot of feed coming from Mozambique and Malawi into Chipata and Petauke areas, (and) Katete. And we did a joint committee on anti-smuggling and also sensitization on the economic implications of avian flu and that actually worked wonders because as I speak to you today, Eastern province is no longer smuggling in chicks, they are no longer smuggling in feed, because we have sensitized our farmers and we have shown them how bad the disease is.

Poultry Association of Zambia Executive Director (16)

With so much avian influenza prevention-related activity going on in the region and more importantly in all the countries surrounding Zambia, the trade ban was largely symbolic. First, the Department of Veterinary and Livestock Development did not have the practical resources to monitor the country's vast and porous borders. On this basis, the trade ban was largely unenforceable. Second, Zambia's neighbours such as Namibia, Zimbabwe, the Democratic Republic of Congo and Angola did not export poultry or poultry products into Zambia. Trade bans imposed against these countries, except Zimbabwe, were irrelevant. Third, avian and human influenza prevention and control was a multi-country initiative with activities occurring in all the eight countries that were Zambia's neighbours. This presumably provided opportunities for information exchange on the avian influenza situation and extent of preparedness in member states. In some cases, as exemplified above, producer associations within these countries also undertook risk sensitization and mitigation roles. Fourth, Zambia was primarily inclined to poultry exports.

The trade ban, although instituted by the Department of Veterinary and Livestock Development, had been announced by the Minister of Health. Based on this, the expectation was that other Working Group members would remain cognisant of this ban. Had the Ministry of Health remained aware, or involved in the maintenance of this trade ban? The response from the National Surveillance Officer suggests not:

I do not think it would be possible for Ministry of Health using Public Health Act, or Ministry of Agriculture using the Public Health Act just declare, we have banned importation of this, they will not. They will look at the law; they will look at other stakeholders and consult each other. So at the end of the day, when they put up a statement, it will be a statement that everyone else agrees to. That's my view.

National Surveillance Officer, Ministry of Health (11)

The Ministry of Health respondent above was clearly unaware of the existence of a ban on the import of poultry and poultry products, or how the Department of Veterinary and Livestock Development had gone about instituting it. Interestingly, the Public Health Act is mentioned as a possible legal proviso to ban trade, but it was this respondent's view that stakeholder consultation was necessary before such a decision could be implemented. Other Ministry of Health respondents also had no knowledge of the existing trade ban on poultry and poultry products. Specifically, it was not a policy decided on by the Task Force on Avian and Human Influenza:

[I]t was not a policy. It was not a policy of Government to stop trade, no.

Deputy Director, Public Health and Research, Ministry of Health (9)

At least in the opinion of some Ministry of Health officials, the decision to ban trade had not been made under the auspices of the National Task Force on Avian and Human Influenza, although the announcement of the trade ban by the Minister of Health in 2006 suggests otherwise. One reason for this, according to one respondent in the Ministry of Agriculture, was that the decision to ban trade was never followed up by the generation of a statutory instrument that would have made this law. The decision to *maintain* the import ban on poultry and poultry products, albeit supported by the Poultry Association of Zambia, was a non-legally binding, 'in-house' veterinary department decision. In this regard, the animal health sector's unilateral decision to maintain the trade ban could arguably be interpreted as; firstly, symbolic at best; secondly potentially ineffectual and third protecting the economic interests of the poultry industry.

6.3.2. *The trade ban and the potential role of the trade sector*

While the Veterinary Department lamented its limited capacity to *monitor* trans-boundary poultry and poultry product imports, the Zambia Revenue Authority under the Ministry of Commerce Trade and Industry had personnel at many border posts in Zambia, regulating the movement of goods across borders and capturing trade statistics for the Ministry of Commerce

through the Automated System for Customs Data (ASYCUDA⁵¹) programme. Commissioned under the banner of the country's export-led agenda, ASYCUDA was a potential source of vital trade flow information that could have been utilized by the animal health sector to inform a risk assessment for the introduction of H5N1 into Zambia. In addition, according to one animal health respondent⁵², breeding stock imports in Zambia were all air-freighted into the country; but no veterinary personnel were stationed at any of the nation's airports. Customs officials, working under the auspices of the Ministry of Commerce Trade and Industry, on the other hand, are stationed at all the key airports of Zambia. Therefore, in theory, the Ministry of Commerce could have played a potentially important role in surveillance activities. The ministry could have also provided important data for the estimation of risk, but was not part of the National Task Force on Avian and Human Influenza:

[M]inistry of Commerce was not really part of our Task Force. Maybe we didn't see it at the time as really a need for them to be on board, but in terms of controlling trade with regard to animal health issues, we are involved with Ministry of Commerce, the three line ministries in importing agricultural commodities is the Department of Vet, ZARI: Zambia Agricultural Research Institute and the Ministry of Commerce. So with regard to trade, we do work with Ministry of Commerce, but with regard to avian influenza, we really didn't have them in the Task Force.

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

In Zambia, the Ministry of Commerce Trade and Industry played a role in the control of trade with regard animal health issues, but surprisingly, it was this respondent's view that its participation in avian and human influenza prevention and control had not been deemed necessary. Given the emphasis placed on the perceived risk from trade, the exclusion of the Ministry of Commerce Trade and Industry was significant. There was consensus among

⁵¹ This is a computerized customs management system, developed by UNCTAD for foreign trade. It is used in the generation of trade data for statistical economic analysis. <http://www.asycuda.org/aboutas.asp>

⁵² Research Scientist, Ministry of Agriculture and Cooperatives (5)

respondents in both the animal health and trade sectors that legally, under the Stock Diseases Act Cap 252 of the Laws of Zambia, the Department of Veterinary and Livestock Development possessed the mandate to ban trade for purposes of disease control. However, while this was generally accepted as the norm, there was an understanding by Trade Ministry respondents that they would be informed if such a decision had been passed.

An interesting puzzle was beginning to surface concerning the non-involvement of the Ministry of Commerce Trade and Industry and the implementation of the trade ban. As the authority responsible for the implementation of Zambia's trade policy and the enforcement of trade agreements, was the Trade Ministry concerned about the avian influenza issue? As an issue that potentially affected trade, it was necessary to find out if the Trade Ministry was concerned about the avian and human influenza prevention and control. One representative said:

[W]hat I would like to say here is that we are concerned, although we are not (the ones) to handle this. Basically this is an issue of medicine and the veterinary services. In terms of the control and what have you, the people with a lot of say here is the Ministry of Agriculture. But of course when it comes to trade, we cannot override them, we have to adhere by what they give us as experts in the field because when a disease enters the country, you have no choice but just to ensure that quarantine measures are put in place to control its movement otherwise you'll find at the end of the day you may remain with nothing. Either people or animals may perish.

Director Domestic Trade, Ministry of Commerce Trade and Industry (18)

This suggests the avian and human influenza problem was clearly a concern for the Ministry of Commerce, but it was the view of this trade official that it was mainly an animal health and human health concern, with the Ministry of Agriculture having the final word on issues of animal disease control. An important policy tension highlighted here is the understanding that decisions made on the basis of health, be it human or animal health, could not be over-ruled by the Trade Ministry.

Another trade official's perspective revealed that the Trade Ministry was not fully informed of the avian and human influenza prevention and control policy in Zambia. Having been omitted from the Task Force on Avian and Human Influenza, the Ministry of Commerce neither had a problem definition for, nor knowledge of, the avian influenza issue:

[W]e have not defined what avian flu is. We don't even know. But I know Ministry of Health does have knowledge of what avian flu is, its effects and where the outbreak has been noted we have been hearing it from the media, and how it is transferred. Now I think, I am not an expert, but so far what I have gathered is that it is transferred through human beings, right?

Director Foreign Trade, Ministry of Commerce Trade and Industry (17)

The Trade Ministry was also unaware of the trade ban that had been imposed by the Ministry of Agriculture and Cooperatives in 2006.

Having a frame of reference, in the form of a "problem definition" to guide ministerial action was clearly important. The Director of Foreign Trade at the Ministry of Commerce Trade and Industry identified the Ministry of Health as the experts most likely to know what avian influenza was, based on the understanding that it was the role of the Ministry of Health to oversee issues related to disease prevention and control. It became apparent later in this interview that the respondent understood 'avian influenza' to mean the influenza A/H1N1 ('swine flu') pandemic that was occurring during the time of data collection. After explaining that avian influenza was actually 'Bird-flu' the respondent had the same understanding as other respondents on the existing linkages between the Ministry of Agriculture, the Ministry of Trade and animal disease control:

[O]n that one, we have a committee. Initially it used to sit in the Ministry of Commerce. It is a committee of multidisciplinary officers, in the sense of the angle of trade. So we have representation from the Department of Trade, then we have the Ministry of Agriculture, Veterinary Department and then the marketing side. Also the Farmers Union are chief stakeholders. That team is

called the SPS⁵³ committee. So that team, essentially what it does is, it meets and it looks at permits, you know, for you to bring in products. Whether they are agriculture products, whether they are plant or animal products, they need certification. Now that certification, amongst other (things), certifies that it is coming from a disease free zone. For us to make that decision, most of the information comes from Ministry of Agriculture. For the animal like poultry and piggery and whatever, it is the vet department that initiates that process and the committee sits only...they receive the applications, they look at them and then endorse them.

Director Foreign Trade, Ministry of Commerce Trade and Industry (17)

The SPS committee implemented disease control policy in relation to trade and provided the link between the Ministry of Commerce Trade and Industry and the Ministry of Agriculture. It was not allowed to serve this function in regard to avian and human influenza policy formulation in Zambia. The final say in the certification process, at least as far as livestock and livestock product imports were concerned, remained the purview of the Ministry of Agriculture. However, the respondent went on to suggest that should the Ministry of Agriculture decide to impose a ban on the importation of certain classes of livestock or their products, through the SPS committee, the Ministry of Commerce Trade and Industry would be informed:

(The Ministry of Agriculture) execute(s) the process of banning that product from coming in. When it goes through that (SPS) committee, they agree and then initiate an SI, a statutory instrument, which then effects that ban. And normally when there is an outbreak like that, the ban is with immediate effect and that information is sent to all the borders around Zambia so that the customs officials, those that inspect the goods that are coming in, they already know that these products have been banned for this reason and normally with that, they don't compromise.

Director Foreign Trade, Ministry of Commerce Trade and Industry (17)

⁵³ Sanitary and phytosanitary

The Department of Veterinary and Livestock Development possessed the mandate to initiate a trade ban. It was understood, however, that the *implementation* of this decision would ordinarily proceed through the generation of a statutory instrument by the SPS committee. According to one animal health respondent⁵⁴, the generation of a statutory instrument had not been done. In addition, it was the responsibility of customs officials at ports of entry to implement trade bans. But the response the Working Group had generated for H5N1 prevention and control had not taken this 'protocol' into account. It thus became clear why the animal health respondents were concerned that *they* possessed limited capacity to monitor the various ports of entry. The animal health framing of H5N1 problem had positioned the animal health sector as a 'core' stakeholder in the disease prevention response to the exclusion of the potentially useful trade stakeholders. Trade officials had played a role in disease prevention and control particularly with regard to traded products in the past:

I have heard of cases (where people have brought) consignments, maybe chicken from South Africa where there has been a Newcastle disease breakout and they bring them, they come to the border, our officers have been mandated to confiscate and destroy that consignment.

Director Foreign Trade, Ministry of Commerce Trade and Industry (17)

It is interesting that the trade respondent above used Newcastle disease in South Africa to explain how customs officials go about the control of the movement of products from outbreak areas. A potential resource dependency existed between the Veterinary Department and the Ministry of Commerce with regards to both the formulation and implementation of H5N1 disease control policy. The Trade Ministry was in a position to capture some of the vital data necessary to identify directions of trade (imports and exports) useful in the identification of potential risks. This information would have been useful in decision making concerning the allocation of resources for purposes of risk mitigation. The Trade Ministry also possessed the personnel that could be used to enforce trade sanctions at relevant ports of entry.

⁵⁴ Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)

It is important to understand that the two trade officials cited here were largely of the view that the Ministry of Agriculture's authority to control trade was in the event of an actual outbreak in a source country:

[W]henver there is an outbreak of either Bird-flu or avian influenza anywhere in the world; they (the Ministry of Agriculture) receive that information. They even know which countries have been affected, which areas have been affected and immediately they execute the process of banning that actual product from coming in (from that country). The moment that a disease threatens the life, health and security of animals, plants, or human beings, they quickly inform the enquiry points or information centres. And once these information centres have it, they have the full knowledge that they need to make such a decision.

Director Foreign Trade, Ministry of Commerce Trade and Industry (17)

While clearly concerned, both Trade Ministry respondents agreed that it was not the mandate of the Trade Ministry to override decisions made by Ministry of Health or the Ministry of Agriculture concerning disease *control* in relation to trade policy, the main concerns being the loss of either human or animal life, should a trade-related disease incursion occur. But it was understood that they would be informed if such a decision had been made, so that they could be able to support this decision in dispute resolution, or apply for an exemption from participating in the trade of certain products:

What I would like to inform you is that although we are signatories to those (trade agreements), under certain conditions, we can apply for what we call a derogation where basically either you don't participate in one aspect of trade or we impose what we call a safeguard measure against the importation of one product which is defective.

Director Domestic Trade, Ministry of Commerce Trade and Industry (18)

Therefore, there were many potential merits to be derived from the inclusion of the Trade Ministry in the policy process, including the authentication and support of the trade ban with Zambia's multilateral agreements and enforcement of the trade ban at Zambia's various entry points. The emergency/imminent threat framing, however, had excluded the Trade Ministry in

the beginning, and possibly continued to do so as the emphasis shifted from an emergency response to capacity development under the preparedness objective:

I don't know whether it was an oversight on our part or really, given that maybe the disease was not here and this is just preparedness and since the control of imports can be... is done from our offices, maybe then they could be updated...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

6.4. Surveillance and the risk of avian influenza 2005-2007

The 2008 version of the *Zambian National Response Plan on Avian and Human Influenza* stated that the risk an H5N1 incursion in Zambia was likely to occur through one of five potential introduction routes; live bird imports; poultry product imports; illegal poultry and poultry product trade; returning travellers previously in direct or indirect contact with infected poultry or poultry premises overseas; and the movement of aquatic migratory birds (NRP 2008 version). According to respondents, it was from these potential entry points that several high risk areas were identified and targeted for surveillance in the country; namely border districts, areas proximal to water-bodies that hosted aquatic migratory birds in particular, and Zambia's international airports. After instigation of the trade ban under the emergency framing of the highly pathogenic avian influenza problem, avian influenza surveillance and awareness became the mainstay of preparedness activity in Zambia. Resources were limited, and there was a paucity of information on the likely H5N1 risks inherent in the country's poultry production systems. The next section discusses resource limitations and risk uncertainty as they affected surveillance activities in Zambia.

6.4.1. Wild bird surveillance and the risk of avian influenza

Zambia's avian influenza surveillance activities had initially started off in wild birds, largely understood in the beginning to be Zambia's primary risk of disease incursion. With concurrent

H5N1 outbreaks in domestic and wild poultry in Asia, Europe, and Africa accompanying disease spread of in 2005–2006, concerns were raised over the potential role that migratory birds played in disease epidemiology (Gaidet *et al.* 2008). In late 2005 through to 2006, as was the dominant paradigm at the time, Zambia had also adopted the view that migratory birds were to blame for the spread of highly pathogenic avian influenza, a perception that had persisted during the time of data collection:

Zambia itself is a vulnerable country because this is a fly route for some of those birds from the North Pole.

Deputy Director, Public Health and Research, Ministry of Health (9)

I think the greatest risk would be from these migratory birds. We have got one major fly way that connects us here to Central Asia and the Far East and that intersects with major flyways so migratory birds coming from there where we know the disease had a very high impact. So...the most danger would be from migratory birds. That would be the single most important source of the infection.

District Veterinary Officer, Member, Rapid Response Team (14)

[W]e realized that this could be a big problem for Zambia given that we would also have migratory routes for birds...

Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)

According to Zambia's National Response Plan (2008), the flyways of primary concern were the Black Sea/Mediterranean and east Africa west Asia flyways. The perception of the highly pathogenic avian influenza risk was not just based on the migratory flyways that transacted Zambia, but the 52 different species of migratory birds that Zambia receives from the Palaearctic region. These migratory birds congregated around several of Zambia's large water bodies and swamps every year:

In Zambia we have large water bodies like in the Southern Province, Kafue National Park, Lochinvar National Park and also in the north we have Bangweulu plains, we also have Lake Tanganyika there, where every year, large numbers of migratory birds actually congregate. So you find that like in

Lochinvar National Park at any given time, you will be amazed to find that you have more than 400 different types of species of these birds, some migratory others just local birds. But we have a lot of ducks as well, and geese which are actually implicated as the reservoirs of these viruses and our preliminary results have shown that actually there is virus activity, influenza virus activity in these areas.

Technical Consultant, National Task Force on Avian and Human Influenza (8)

From this researcher's perspective, it was interesting that general avian influenza viral activity had been detected in these areas. While this served a research imperative, the viruses identified were all low pathogenic strains of avian influenza, a predictable finding. In addition, this research imperative was not primarily focused on the immediate policy relevant H5 and H7 subtypes of highly pathogenic avian influenza that were of zoonotic and potential pandemic concern:

So we actually have set up research activities where we actually look for this virus, either in domestic chickens or in the wild water birds. So we get this information and we actually feed the government we give them the status of this disease, not necessarily the avian influenza the H5 or the H7, but we are actually looking for any of the influenza subtypes from the H1 to H16 we are out there looking for these viruses.

Technical Consultant, National Task Force on Avian and Human Influenza (8)

This data was arguably useful for establishing a baseline for avian influenza activity. However, for the government, the priority was to identify the presence of highly pathogenic avian influenza subtypes. According to one government animal health respondent, government surveillance of wild birds had been conducted through the support of the FAO and the French organisation Agricultural Research for Development (CIRAD⁵⁵). The government had also drawn on findings from the University of Zambia, but no highly pathogenic avian influenza strains were found:

⁵⁵ Centre de coopération internationale en recherche agronomique pour le développement

So farUNZA⁵⁶ have done extensive work in the water bodies, collecting fecal samples and having them analysed at Hokkaido University and I think...and they have not come up with any avian influenza viruses. We have also done a little bit of work with CIRAD, although that was just a one off thing, and even then we didn't find anything.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

On the basis of this, the government shifted its emphasis from continuous surveillance in wild birds, to targeted surveillance of wild bird mortalities and focused its attention on other risk areas:

The human population potentially at high risk is in Southern, Central, Western, Luapula and Lusaka provinces. Targeted surveillance should be initiated in these habitat areas to identify unusual wild or domestic bird mortalities.

Zambian National Response Plan on Avian and Human Influenza, 2008
version, p17.

That time we were talking of probably avian influenza being carried by these migratory birds so it was a priority for us. When this thing came up with avian influenza, there was that notion that they were the cause, they carried the disease. So we were at great risk because we have some migratory birds that come into the district. However, later on, emphasis was reduced to the Kafue Flats, you know. So we don't have that activity.

District Veterinary Officer, Member Rapid Response Team (15)

6.4.2. Surveillance in the traditional poultry sector

For preparedness purposes, the traditional poultry production sector was defined as scavenging and free-range flocks in rural areas, owned by households keeping an average of 10-15 chickens⁵⁷. The sector's importance lay in its role as an affordable source of subsistence poultry meat, eggs and income for the rural population. In terms of housing, poultry in the traditional production system is of variable standard; with some flocks spending nights in family huts,

⁵⁶ UNZA is the official acronym for the University of Zambia

⁵⁷ Zambian National Response Plan on Avian and Human Influenza, 2008 version

straw runs, or trees. The traditional sector in Zambia is scattered throughout the country. While Zambia's National Response Plan for Avian and Human Influenza identified trade as a pertinent risk, the Veterinary Department felt confident that the trade ban had largely assisted in 'plugging' the flow of 'risky' cross border imports. With imports restricted to breeding stock and hatching eggs, surveillance activities focused on the traditional sector of production. This is because the recipients of the legal imports, the commercial breeders and producers, were assumed to be 'high biosecurity' enterprises with independent surveillance systems in place:

[T]he big commercial farms and breeders, they do keep in regular touch with us and they do have their own surveillance system going on. Well, they have pumped in a lot of money in that so they are quite active when it comes to surveillance. Our backyard colleagues, quite a number do follow us and they do carry out vaccinations. But the problem we have is mainly with the free range. The free range normally just leave their birds to run around. Under FAO, that's the area we are targeting closely for surveillance.

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

The National Response Plan for Avian and Human Influenza also claimed that the low levels of biosecurity 'inherent' in the country's traditional and backyard production systems placed the country at high risk of contracting highly pathogenic avian influenza⁵⁸. Interestingly, the commercial breeders and producers, Zambia's primary link with global poultry, and lifeline of the local industry, were left to conduct and report on their own surveillance. The rationale for leaving commercial poultry to its own devices was that these 'big players' had invested considerably in their businesses, which translated into high levels of biosecurity, strict surveillance systems and a 'negligible' risk of an H5N1 incursion. On the opposite end of this 'risk' paradigm was the free range, or traditional, poultry production system. It was assumed that this sector's minimal investment, low levels of 'biosecurity' and scavenging nature of flocks placed it at high risk of acquiring avian influenza, and was thus targeted for surveillance.

⁵⁸ Zambian National Response Plan on Avian and Human Influenza, 2008 version

It is also interesting that the assumptions of this surveillance approach seemed to be endorsed by the FAO:

[I]t is widely accepted that these sectors (sector one and sector two: breeders and commercial producers respectively), because of their biosecurity levels, chances of them actually getting avian influenza are pretty minor. That's why FAO doesn't want to deal with them because their biosecurity levels are high. So we are dealing with (sector) three and four, these are the emerging and the traditional farmers.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

The FAO's support for surveillance activities focused on emerging and traditional farmers and not commercial breeder or producer establishments in Zambia spoke to the widely held view that the traditional production sector was inherently risky. While this was true for endemic conditions, the exotic nature of H5N1 made this view suspicious. The NGO GRAIN (2007) had argued that much of the avian influenza problem was as a result of commercial poultry activities, rather than backyard poultry flocks. Given that many of the initial H5N1 outbreaks in Southeast Asia, Europe, and even in North and West Africa had occurred in large commercial poultry establishments, the only rational explanation for this perception of the relative safety of commercial enterprises over backyard flocks is that the highly contested view that H5N1 risk lay largely in backyard production systems had been transferred to the Zambian context.

6.4.3. Human influenza surveillance

For human health, after training health staff on avian and human influenza, the surveillance strategy involved the monitoring of seasonal influenza trends at the major health centres and the establishment of health desks at ports of entry, including the Lusaka international airport. For the Health Ministry, the rationale was that, having established a baseline, any changes in disease trends would indicate a problem and alert the health system to a potential outbreak:

H5N1 like for UTH⁵⁹, what we did was to do a sero-surveillance where you provide a baseline of what is the circulating...for you to determine what are the circulating influenza viruses that you have, from which you will now be able to say how is the pattern, the trend. If there is any deviation from the normal trend that you have been looking at, then you should be able to start suspecting that this must be something else and then you decide to look at it further.

National Surveillance Officer, Ministry of Health (11)

While the primary occupation was keeping H5N1 out of the country, having established a baseline for seasonal influenza in humans, any changes would be monitored and regular reports submitted to the National Epidemics Preparedness Management and Control Committee under the Ministry of Health:

We have a national epidemics report that will highlight whatever epidemics are coming up and usually all epidemics are issues that are handled critically and seriously. We actually reach a situation where in case we need more funding, emergency requests can be made to Cabinet when we have such a situation. So the same can be done for avian influenza in case we have an outbreak. But at the moment what we are focusing on is to try and prevent the outbreak from coming in.

Health Education Officer, Ministry of Health (10)

The National Epidemics Preparedness Management and Control Committee under the Ministry of Health was identified as the forum upon which the Ministry of Health was to monitor the influenza burden in the country. Even the respondents from the animal health sector mentioned that they reported to the National Epidemics Preparedness Planning Management and Control Committee every fortnight on the avian influenza situation in the country. Through the Integrated Disease Surveillance and Response (IDSR) platform, the health sector's main

⁵⁹ The University Teaching Hospital

surveillance strategy, the health sector was poised to monitor any possible occurrence of human cases of avian influenza. Among the training activities carried out by the health sector in relation to H5N1 and pandemic preparedness was the training of district staff on general influenzas within the IDSR framework:

[T]he activities that we did were, first of all, trainings, trainings of the provincial staff, all the provinces just letting them know what avian and human influenza is all about. And then I remember we included the avian influenza component in our technical guidelines, integrated disease surveillance technical guidelines so thatwhen we teach about IDSR, avian influenza should be part and become a reportable disease...

National Surveillance Officer, Ministry of Health (11)

From the above, it is evident that the IDSR framework was central to the Ministry of Health's preparedness strategy. As mentioned by the National Surveillance Officer above, the health sector had included avian influenza in the technical guidelines for IDSR and had made human avian influenza reportable within this framework. In comparison, the animal health surveillance strategy appeared to be more ad hoc, based on the perceptions that commercial enterprises were safe, wild birds were an indeterminate hazard, and traditional production systems represented the highest risk of a disease incursion. These risks had to be mitigated and communicated to the public through the communication strategy.

6.5. Preparedness and the communication strategy

The key to preparedness in Zambia was the communication strategy. Throughout the period 2005-2007, the communication strategy was running. For purposes of preparedness, the communication strategy consisted of the production and distribution of education information and communication materials, such as posters and radio and TV adverts. These were targeted at high risk groups such as poultry producers and traders in high risk areas of the country, including poultry markets. According to several respondents, the Poultry Association of Zambia

was instrumental in this regard, producing the first education materials that went out to the public in 2005:

Poultry Association has been a big partner also in providing information about the association and also informing the association. The first brochure actually we did, or they did, Poultry Association did with input from the Ministry was the first information going out on avian influenza at the time. I think that was 2005.

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

Later, the Veterinary Department produced additional extension materials for farmers that had to be withdrawn because a Knowledge Attitudes and Practices (KAP) study facilitated by UNICEF revealed that they were misinterpreted by target groups:

[I]n the initial stage, our friends from vet somehow decided to do it (the communication strategy) on their own. They came up with some information and education materials which they distributed. Later on people condemned them because they were misinterpreted by the farmers. I think they just got a photo...one of the materials they had used, they just photographed a chicken and then made it into a poster, distributed that poster, later on when they went to do some evaluation, they realised that farmers had misinterpreted, they thought the chicken wanted to fart...

Senior Information Officer, National Agricultural Information Service, MACO (12)

These materials were redesigned, with the Health Education Unit under the Ministry of Health and the National Agricultural Information Service (NAIS) under the Ministry of Agriculture playing a more active role in the production and pretesting of education materials. Another part of the communication strategy involved active engagement of the media. The intention of this was to foster a partnership for public awareness and educative extension, with a few workshops targeted at sensitizing the media on responsible journalism. The initial engagement of the media

was in a series of media workshops, some emphasizing that reporting in Zambia needed to focus on the wider development agenda:

A lot of media workshops were held between Ministry of Health, Ministry of Agriculture and the information sector... with the journalists. I remember one being on responsible reporting for journalists and so on and editors, I think there was even, uh, what was it called? A media breakfast and so on.

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

It is said that responsible reporting could arise from many considerations or situations and in developing countries like Zambia, handling issues like the Avian Influenza required skills of responsible journalists with the desire to forestall the threat that epidemic poses and the need to alert the citizenry. While the media in the Western countries can afford to report in a certain manner, journalists in developing countries like Zambia have a duty to support the development agenda...

Zambia Daily Mail, 2007 <http://www.daily-mail.co.zm/media/news/viewnews.cgi?category=23&id=1215505391>

The initial media workshops, conducted in 2006 and 2007, were a collaborative venture between the Ministry of Health and the Ministry of Agriculture. It is important to mention this because, while the World Bank funding came with the condition that the two Ministries incorporate the Ministry of Information and Broadcasting Services to lead the communication component, the development of the communication strategy still largely fell to the two ministries. According to respondents, the Information Ministry had been involved initially, but as the avian influenza problem lost its emergency edge, the Information Ministry later began to lose interest, forcing Health and Agriculture to seek in-house alternatives:

[T]he Ministry of Information and Broadcasting Services initially were also a part of this but it has been very difficult to bring them on board because I think their approach to information is more on news than on

educative extension. So currently we are working more with NAIS, which is a branch of the Ministry (of Agriculture) and the health education unit under Ministry of Health.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

The Information Ministry's involvement in the communication strategy had largely been short-lived, mainly because in their understanding, information had to be 'news worthy' rather than educative. As a result, NAIS and the Health Education Unit took the place of the Information Ministry, because, unlike the 'sensational' approach to information the Ministry of Information and Broadcasting was perceived to have, NAIS and the Health Education Unit's expertise provided the kind of extension that was more appropriate for preparedness activities. The Information Ministry, like other initial stakeholders, had been co-opted into the Task Force and the National Avian Influenza Working Group under the imminent threat/emergency framing, rather than a preparedness framing, therefore, the non-arrival of avian influenza in the country also contributed to their subsequent loss of interest in H5N1. Understandably, an 'outbreak' would meet their criteria for what counted as 'news-worthy', but, as implied by the respondent above 'preparedness' did not.

A respondent from NAIS agreed that the Ministry of Information and Broadcasting Services was initially active in leading the communication strategy and added more insight into the perceived reason for the Broadcasting Ministry's 'exit':

At first there was a lot of interest from our friends, the Ministry of Information and Broadcasting. Those were supposed to oversee the communication component, but after seeing the incentives that were there, that's what I suspect, it appeared almost everybody pulled out, so it only remained with now with NAIS organizing everything. Each time we invited our friends from Information usually they could not support. I think they, according to them, have got more serious assignments to attend to; following the president and the ministers outside Zambia, its more attractive than the avian influenza.

Senior Information Officer, National Agricultural Information Service, MACO (12)

This respondent was also of the view that the Information Ministry had a more journalistic, rather than educative, approach to avian influenza. This is evidenced in the comparison of the sensational and possibly more financially rewarding, value of reporting presidential and ministerial travels rather than the activities around avian influenza preparedness.

6.6. The declaration of H5N1 highly pathogenic avian influenza as a notifiable disease

As argued in Chapter 5, in Zambia, perceptions of H5N1 risk had a real *economic* impact in 2006. Following the media scares of mid-2006, it was the assessment of the Poultry Association of Zambia that the poultry industry lost close to 30 billion kwacha, which is equivalent to about £3.6 million. This loss was distributed across poultry breeders, producers, feed suppliers and veterinary pharmaceutical providers. The poultry industry, through the Poultry Association of Zambia therefore advocated that Government declare H5N1 a disease of national economic importance, a decision remembered by respondents as having been made towards the end of 2007. The Veterinary Department declared H5N1 highly pathogenic avian influenza a notifiable disease, another policy decision made as part of preparedness activities. The rationale for making H5N1 notifiable was to ensure a permanent disease vigil. Again, the process of prioritizing H5N1 in this regard had in part been championed by the poultry industry:

[I]t is only now that the Government is considering avian flu to be among the notifiable diseases, meaning that before then, it was not even given any kind of place among the notifiable diseases in this country. Not even the DNEIs⁶⁰ as they call them. So we fought hard to make sure that avian flu is recognised and given the place it deserves because we believe that avian flu can actually lead to the demise of the entire poultry industry in Zambia.

Poultry Association of Zambia Executive Director (16)

Once identified or even suspected, by law, H5N1 outbreaks were reportable to the relevant Government authority. Therefore, this, like the trade ban, was an important policy decision. However, there was a significant discrepancy. This notification was not gazetted. Fundamentally, this meant that no statutory instrument had been generated to support this

⁶⁰ Diseases of National Economic Importance

declaration. The decision had not been released into the public domain and, more importantly, had not come into force. For purposes of preparedness and disease control, the fact that H5N1 influenza was not gazetted also created another problem; limited Government support. This is exemplified in the quote below:

[W]e have declared avian influenza nationally as a notifiable disease, but it's not gazetted. It is a disease of national economic importance and it's a notifiable disease, but it's not yet gazetted. And that in itself has brought in a few challenges because there is no specific allocation on part of Government. There is no specific funds allocated to avian influenza and most of the support we have gotten has been through donor support. So that's one of the hitches because though we recognise it as something big, the commitment on part of Government hasn't reflected that especially in the funding and resource allocation.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

The decision to finally declare avian influenza a notifiable disease had clearly assuaged the poultry industry, but like the trade ban, it had done very little to support the preparedness agenda legally. The fact that this declaration had not been gazetted meant that this was another symbolic 'in-house' policy decision by the Department of Veterinary and Livestock Development. In addition, while it was argued that H5N1 was an important disease, its lack of legal recognition entailed that it had not been allocated any specific funding. Essentially, the preparedness response was solely dependent on external support.

6.7. Preparedness and the role of Rapid Response Teams

Finally, the most visible and possibly contentious preparedness activity undertaken by the National Avian Influenza Working Group was the constitution of Rapid Response Teams. These were formed in all the nine provinces of Zambia, consisting primarily of veterinary, medical and media personnel, corresponding with the animal health, human health and communication

components of the National Response Plan. The rationale for the Rapid Response Teams was that they would be the first to respond to an outbreak of highly pathogenic avian influenza. The key trigger for responding would be high poultry mortalities:

(For) the highly pathogenic avian influenza, the school of thought is that if it's there, definitely birds should be dying. The fact that no birds are dying en mass means we don't have it. So that's why we only go looking for it when you have high mortalities, ok? If we have an actual outbreak then definitely we will move in there. Now that's when we have the Rapid Response Teams come in and all that.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

The logic was straightforward, no massive poultry deaths, no highly pathogenic avian influenza. There was still active surveillance going on in humans and in traditional poultry flocks, as demonstrated earlier. The Rapid Response Teams were viewed as pivotal for Zambia's national emergency preparedness plan. A USAID funded/FAO facilitated desk top simulation exercise conducted on H5N1 preparedness in early 2008 (FAO/USAID 2008), however, revealed the lack of integration of the Rapid Response Teams as a 'shortcoming' in Zambia's National Response Plan:

[W]hat that simulation exercise revealed was that there was very little coordination ... One of the most significant things that we noted was that the Vet worked independently of human health, and the vet went about doing what they would do, overlooking the aspect of the involvement of the human health...

...initially we had trained what are called Rapid Response Teams, and these were supposed to be trained as one unit, but there was an oversight I think in the implementation phase that we trained them separately, the vets trained their staff and the health trained its staff. They were trained alright, but they worked as parallel lines. So we have actually revisited to combine these teams so that should there be an outbreak of Avian Influenza the Rapid Response Teams are the first people to react. And these Rapid Response Teams currently are in the provinces and we want to extend them to the districts.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

The separate training of the Rapid Response Teams was to be expected. Even for purposes of training, Government agencies can only develop a response within the limits of their defined mandate. Given that each Government agency has its own norms and practices, in cross sectoral collaboration, even in the various policy decisions reviewed in this chapter, there was usually very little opportunity for joint action, which creates difficulties in defining how such training would be conducted. It is interesting that there were plans to extend these Rapid Response Teams to Zambia's districts, which number 72! First, this indicates how poorly the resource implications of extending the Rapid Response Teams to district level were thought through. The team's sole purpose would be to respond to a specific disease event, an H5N1 outbreak. Second, it suggests a conflation of the avian influenza response, a primarily poultry problem, with a pandemic influenza response, a global human health concern. Albeit having a high case fatality rate in humans, human to human transmission of H5N1 remained poor in outbreak areas. For Zambia, H5N1's likelihood of occurrence, potential magnitude and possible consequences were still not known. The event could just as likely be the isolated mortalities in a small poultry flock as the 'catastrophic' event that the National Task Force was preparing for, which would require the involvement of stakeholders other than those currently constituting the Rapid Response Teams. In regard to this, one respondent described other shortcomings the February 2008 desk top simulation exercise revealed:

I liked that thing because it really showed the shortcomings of our response plan. It really brought those things out. The shortcomings were, it became apparent that we need Ministry of Defence, for example. I mean in an outbreak situation, you need armed forces to enforce whatever laws or whatever rules, or whatever plans you are going to come up with. Road blocks, who is going to manage the road blocks? If it's the vet personnel, how effective are they going to be? They won't be in an outbreak situation. You need the army, that's one. And then you talk about, let's say disposal, ok? Who controls, let's say the caterpillars, the excavators and things like that? Its local Government. They were not there. So how are you going to carry out a proper disposal without those guys? And again the issues of quarantine, you need the police force, Home Affairs comes into play, where were they? They were not there! In what

capacity are you going to say we need the cops to do ABC when they haven't been involved all along? They won't understand. And you see the thing is when people don't understand what you are planning to do, they will not cooperate with you. So you see, the simulation exercise brought those problems into sharp focus. Yeah, the need to get a whole more...an encompassing kind of action plan which would bring other stakeholders into play. I think it's very important that we had that, actually.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

It is clear that the emergency framing of the H5N1 problem was still driving policy formulation. The above statement also provides evidence that the roles of stakeholders who constituted the Task Force on Avian and Human Influenza had not been clearly defined and their involvement in policy formulation had been minimal, at best. The 'worst case scenario' described by the respondent above also reveals a perception that an outbreak of H5N1 in Zambia had the potential to be an explosive, high impact event requiring massive poultry culls, the institution of quarantine measures and the implementation of a possibly military type response. Furthermore, it also provides evidence of the barrier the initial animal health framing had created for wider stakeholder involvement. It was not an outbreak in *poultry* that the country was preparing for, it was a pandemic. However, in light of the preparedness focus, some respondents still felt that the Rapid Response Teams were the 'crown jewel' of the response plan, in addition to the awareness campaigns:

[T]he country has prepared itself to a level where we have actually embarked on public awareness so that as many people as possible know about this disease and also we have formed Rapid Response Teams in various parts of the country. Noticeable to say is the animal health teams are working closely with the human health teams. As you know this is a disease that actually cross-cuts between humans and animals so we are working very very closely across. So we are approaching this disease control strategy from what we can say 'One Medicine' kind of approach. So the veterinary side as well as the human side

are working together because of the nature the disease actually spreads. It cuts across the livestock as well as the humans.

Technical Consultant, National Task Force on Avian and Human Influenza (8)

While it is plausible that a highly pathogenic avian influenza outbreak would be accompanied by simultaneous human cases, from trends witnessed in other areas that had experienced H5N1 outbreaks, human cases occurred within a few days to many months after initial outbreaks in poultry. Taking a few cases from Africa, for example, according to a WHO H5N1 timeline of major events (WHO, 2010), the first reported human case in Egypt was in March, 2006, a month after the disease was confirmed in poultry. Djibouti had its first human case in May 2006, also a month after the official report of H5N1 in poultry. Nigeria had experienced its first human case in January 2007, a *year* after H5N1 was identified in poultry and ornamental birds. Clearly, this information was not used to inform the utility of Rapid Response Teams in Zambia.

6.8. Chapter summary

The chapter has explored the tensions and challenges that the initial problem framing created for policy formulation. In essence, what had occurred was a shift in the approach to policy formulation, from an emergency response to a preparedness/capacity building response, informing many of the policy formulation activities and resulting challenges reviewed and analysed in this chapter. The Poultry Association of Zambia played an important role in many aspects of policy formulation, while much of the veterinary response was symbolic rather than substantive and was not premised on a strong evidence base. The economic imperative of the Poultry Association was in implicit conflict with the symbolic actions of the Department of Veterinary and Livestock Development particularly with regard to the trade ban and declaration of avian influenza as a notifiable disease, both of which had no legal basis. The Trade Ministry was both uninformed and excluded from the decision-making process, based on the understanding of the primacy of health over trade. This highlighted a potential policy tension in the relationship between public health, animal health and trade. In this context, however, input

from the Trade Ministry would have been of potential benefit. The preparedness response activities, particularly the initial H5N2 trade ban against Zimbabwe and the rationale behind the formation of Rapid Response Teams poorly distinguished avian influenzas and pandemic influenza. Critical questions arise as to the effectiveness and the sustainability of the Zambia's approach to risk management, particularly as it relates to trade restriction, disease notification, poultry surveillance and Rapid Response Team coordination. The next chapter examines these questions in the development of avian and human influenza prevention and control policy after 2007, and explores the strengths and weaknesses of Zambia's preparedness activities.

CHAPTER SEVEN

Avian and human influenza activities in Zambia 2007-2009:

Challenges and Opportunities.

7. Introduction

The previous chapter examined five areas of policy decision and highlighted the tensions and challenges in the avian and human influenza policy formulation process over the period 2005-2007. Building on the chronological analysis provided in the two preceding chapters, this chapter examines H5N1 policy activities covering the period 2007-2009, and pulls together the analysis of avian and human influenza policy development in Zambia by assessing the challenges, strengths and gains of policy development. This chapter assesses the impact of international agencies on Zambia's response to highly pathogenic avian influenza. It argues that although international agencies may have shaped the highly pathogenic avian influenza response in ways that were not, objectively, in the interests of disease preparedness, there were a number of benefits for animal health, human health and trade.

The chapter is divided into two sections. The first section begins by reviewing key aspects of international support in avian and human influenza policy development in Zambia. It describes and then analyses the factors influencing waning interest in policy development in the post 2007 period. This is followed by an analysis of issue prioritization as it pertains to avian and human influenza prevention and control. The first section then concludes with an outline of the debates around which Government agencies should coordinate avian and human influenza prevention and control, and similar policy development in Zambia.

The second section presents some of the positive outcomes of the avian and human influenza policy process as adopted in Zambia. These are described in terms of four possible milestones for preparedness were identified from interview data. This is followed by a highlight of some significant sector-specific benefits of the avian and human influenza policy in Zambia, including the integration of the avian and human influenza response into institutional frameworks. This analysis is based on interviews with respondents from the Ministry of Agriculture, the Ministry of Health, the Ministry of Commerce Trade and Industry, the Poultry Association of Zambia, the COMESA secretariat, Africare and the Disaster Management and Mitigation Unit under the Office of the Vice President.

7.1. International influences in the policy process

Chapter 5 outlined the role of the FAO, WHO and USAID in setting the agenda for avian and human influenza prevention and control policy in Zambia. International agencies played a cardinal role in driving avian and human influenza prevention and control policy development in Zambia. These roles were multifaceted and in aggregate, they shaped the direction policy. This section will examine the roles that the World Bank, FAO and USAID played in influencing avian and human influenza prevention and control policy development in Zambia. A brief consideration of the international policy response is warranted to properly contextualize the nature of international influence in Zambia. Scoones and Forster's (2010) work argues that the international reaction to highly pathogenic avian influenza was primary driven by three important, profession-specific 'outbreak narratives' that framed the avian and pandemic influenza problem; agricultural centred veterinary and livelihood concerns (OIE, FAO), public health concerns over human-to-human transmission (WHO, UNICEF), and humanitarian and economic disaster focused pandemic preparedness (heads of government, the business community and UN system humanitarian agencies). The thrust of the international response to avian and pandemic influenza was the creation of global preparedness mechanisms for both avian influenza and the threat of a human influenza pandemic (Scoones 2010). Scoones and Forster (2010) identified the WHO, FAO, OIE, World Bank and UNICEF as some of the

bridging actors in the international response. They also state that World Organisation for Animal Health (OIE) guidelines were the basis of the international animal health response. The OIE provided prescriptions for key focus areas for preparedness, particularly in developing country contexts. The organisation's focus was to bring up to speed the veterinary services of developing countries. It was then the role of the FAO and the World Bank to coordinate investments to meet this end.

This case study supports Scoones and Forster's arguments. In Zambia, the international community, primarily the WHO, FAO, the World Bank and USAID were central to avian and human influenza prevention and control policy development. While the international community's intention had been to provide guidelines to nurture the development of Zambia's National Response Plans⁶¹, it is argued here that its role, for the most part, was prescriptive. Because H5N1 was nowhere near Zambia's borders, a situation that remained unchanged after 2007, the country was dealing with an issue that was largely viewed as externally driven. One respondent, for example, was of the view that the whole preparedness process was responding primarily to a developed world agenda:

[P]robably this thing is being looked at more from the developed World point of view... they probably looked at the threat of avian influenza and then they spearheaded this whole thing of us forming a Task Force, us coming up with a preparedness plan and all that...

Research Scientist, Ministry of Agriculture and Cooperatives (5)

In this research, eight areas of support were identified in the examination of respondents' perceptions of the role played by the international community in avian and human influenza prevention and control policy development in Zambia. The areas of support identified from interview data could be summarised as follows:

- i. Preparedness plan development (mainly the FAO and WHO)

⁶¹ For example, the WHO's pandemic preparedness guidelines

- ii. Response plan assessment (World Bank, FAO)
- iii. Financial assistance with start-up costs (World Bank, EU, FAO)
- iv. Stakeholder inclusion (World Bank, USAID)
- v. Capacity building (FAO, EU)
- vi. Material support (FAO, USAID)
- vii. Preparedness plan component strengthening (UNICEF)
- viii. Risk communication development (USAID through AI.COMM)
- ix. Integration of Zambia into the regional early warning system (FAO).

Much of the funding for avian and human influenza policy development in Zambia was provided by the World Bank. Financing and support for avian influenza policies came with restrictions on the nature of activities that could be pursued in the emergency response to the perceived threat of avian influenza. Priority areas were predefined; there were no debate among respondents on how these funds were to be disbursed. Most of these funds were channelled towards activities in the animal health sector. Through several rapid assessments by the World Bank and other members of the donor community, Zambia's National Response Plan had to be authored to a standard and focus that met international agency approval before funding could be disbursed:

International influence is strong in AI programmes. Most of the funding comes already committed to certain activities perceived as important by the international community, so countries have to design policies which can be supported by these activities.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

[A]fter we did the National Response Plan, the World Bank came along and that was presented to them. Comments were made on the National Response Plan and one of the critiques of the document was that it didn't have a communication component...

[A]fter the World Bank assessment we had quite a number of assessments, (and after) one of the initial rapid assessments, a total budget of \$1 million was approved...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

There is certainly evidence from this study that the international agenda for avian influenza control was not necessarily closely aligned to Zambia's national interests. An area where the limitation of international prescriptions for preparedness was pronounced concerned the communication strategy. One important condition set forth by the World Bank concerned which stakeholders to include:

[W]e were then told (by the World Bank) to bring on board Ministry of Information and Broadcasting, and they would lead the communication component. But you must appreciate that Ministry of Agriculture has a communication component called NAIS, the National Agriculture and Information Centre (Service), so they were also co-opted into that committee and so was the Ministry of Health. Apparently they also have their own communication segment...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

Conditionalities such as who to include in the policy process is evidence of an attempt by the World Bank to control the direction of policy development. A communication strategy was important, therefore decision-makers in Health and Agriculture identified structures within their institutional frameworks that could contribute to the communication component. To help translate the communication strategy into a workable plan of action, the National Agriculture Information Service (NAIS) and the Health Education Unit under the Ministry of Health were co-opted into the National Working Group. These units later substituted a 'disinterested' Ministry of Information and Broadcasting Services in leading the communication strategy:

At first there was a lot of interest from our friends, Ministry of Information and Broadcasting. Those were supposed to oversee the communication component. But after seeing the incentives that were there, that's what I suspect, it appeared almost everybody pulled out, so it only remained with now with NAIS organizing everything...

Senior Information Officer, National Agricultural Information Service, MACO (12)

While possibly well intentioned, this conditionality was unappreciative of local capacity. As discussed in Chapter 5, a World Bank consultant had in fact come in to assess what communication structures were present in the country. However, even with this assessment, the World Bank had insisted on the Ministry of Information and Broadcasting Services' inclusion. The importance, capacity and relevance of communication structures in Health and Agriculture had been overlooked:

We were not really involved in the initial stage, but I think over a period of time, the project on avian influenza has come to appreciate that NAIS is better placed in terms of interpreting either animal or crop diseases because most of the journalists who are there at least have an agricultural background so interpreting that becomes much easier. So in terms of avian influenza, I think NAIS is better placed to have a better interpretation of communication flow to the audience or the readers.

Information Officer, National Agricultural Information Service, MACO (13)

The way NAIS is set up, we have got the broadcasting section, where we are using television and radio,...and our programmes are so famous, they are known. Then we also have the publication where we are using the print media, books, magazines, then we also have what we call a quarterly magazine....and then from that we also have the press component where we have to collect the so called hard news, package them come out on television and on radios and also we have got a column in the Daily Mail every Thursday...where we have to produce a feature there, there is always a feature for NAIS. So through such type of arrangement, I don't see why we can fail to communicate about such issues to other ministries.

Senior Information Officer, National Agricultural Information Service, MACO (12)

There was certainly adequate capacity among Health and Agriculture, and even the Poultry Association of Zambia, to successfully implement the communication strategy, but this was not aligned with World Bank prescriptions. With the withdrawal of the Ministry of Information and Broadcasting Services, and viable alternatives in place, for some respondents, the relevance of this World Bank inclusion was hard to justify:

[A]ll projects have come with a condition that we involve the Ministry of Information and Broadcasting, but we have NAIS and Health Education wings under MACO and MoH respectively.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

It was the view of many respondents that NAIS and the Health Education Unit under the Ministry of Health had proven themselves to be assets in the communication strategy of the avian and human influenza prevention and control policy in Zambia. However, a World Bank quarterly report appraising this project states, rather vaguely, that only slight progress had been made on the public awareness and communication components in Zambia (World Bank 2008). There was thus a mismatch between the World Bank and internal stakeholders' assessment of what had been achieved in the communication strategy.

It would be misleading to claim that all international agencies involved in Zambia's response to the perceived threat of avian influenza did so in ways that ran counter to the country's interests. For instance, there was evidence that USAID played a more supportive, rather than controlling, role in policy development. From border awareness meetings, communication strengthening through its AI.COMM project and even a biosecurity awareness project with traditional farmers through Louisiana State University and a local NGO, Africare, USAID's presence was everywhere. USAID had also funded a risk mapping exercise which was the first attempt at doing a risk assessment for the Southern African Region⁶². This risk mapping exercise was independent from avian and human influenza prevention and control policy development in

⁶²Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)

Zambia. It looked at countries in the southern African region, specifically South Africa, Zimbabwe, Botswana, Zambia, Malawi and Mozambique (Mullins, Bisschop and Ross 2008). This analysis, the final report of which was completed in August 2008, did not inform policy development in Zambia.

USAID also donated personal protective equipment to the Veterinary Department. Through USAID's AI.COMM communication project, other stakeholders, such as immigration officials, customs officials, and teachers, had been brought on board:

We've worked with AI.COMM which was dealing with communication for avian influenza. It was a USAID project that was based in South Africa, but I am told it has now wound up. But what they did, last year and early this year, was to help us train border health workers. That border training, it was cross cutting. We had health workers, we had veterinary officers, we even had some teachers, we had people from the immigrations or customs and the other stakeholders around...

Health Education Officer, Ministry of Health (10)

By providing Africare with funding, USAID facilitated the participation of this NGO in the National Task Force:

We have also worked with Africare, with regard to avian influenza. They also were given some money, I'm not too sure whether this is under USAID, but it's with Louisiana State University, if I am not mistaken. They have been working with Poultry Association and ourselves...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

International agencies were also partly responsible for reinforcing the animal health framing of the avian and human influenza problem in Zambia. One international agency with such influence was the FAO. It supported agenda setting, policy formulation and implementation on multiple fronts. In Zambia's National Response Plan (2008 version), it was the FAO that was cited as stating that Zambia remained at high risk of an avian influenza incursion because of its

vast borders. In addition to coordinating investments from the EU, and organisations such as USAID, the FAO was also involved in communication component strengthening, provision of diagnostic support, staff training, National Response Plan development and assessment, and communication material production, all primarily focused on animal health:

Some communication materials were... produced; this was with help from FAO. And again FAO had a small project to help us with the initial preparatory work, it was funded by EU, they did quite a lot in terms of diagnostic support to the labs and training of members of staff and also production of the initial awareness materials that we were to give out to the public as well as to our farmers and to members of staff. I must mention... that initial project by FAO that was funded by EU was mostly for animal health and it did not include human health...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

FAO sent a technical team of experts looking at.... the communication strategy So when they came they did an assessment of what had been implemented so far under the World Bank and what Zambia needed to do moving forward ... They have identified a number of areas of interventions which need to be addressed for us to address the challenges of...avian influenza for the future...

Senior Epidemio-surveillance Officer, Ministry of Agriculture, and Cooperatives (3)

Despite the activities that had been carried out by the Zambian government, an FAO international consultant was sceptical about how much had really been achieved in Zambia:

I think that in the beginning it (avian influenza related activity) was very strong but after that it has been very difficult. In the document I have seen that this National Task Force have very little meetings. It can be said that Zambia has very insufficient support, financial support. The Government maybe has not given money. But Zambia has only support from the World Bank firstly and

secondly now, it is from SPINAP AI⁶³. So when they gather themselves just in chattering and no any concrete activities to be implemented. So they focus in other priorities.

FAO international consultant (7)

The issue of insufficient funding is significant, because most of the support for policy development came from the international community. This section has only been able to provide a brief snapshot of the areas of international support and influence in policy development. This overview has demonstrated that the support provided by the international community was considerable. Despite what local stakeholders perceived to be gains, the World Bank report (2008) and the FAO consultant, cited above, remained sceptical of what had been achieved in policy development. Interestingly, it was these organisations that played a prescriptive role in policy development, while, according the respondents, USAID's role had been more supportive. Despite the support provided by the donor community, local stakeholder interest in policy development after 2007 began to wane. The process became less about capacity building and more about meeting donor-defined preparedness milestones.

7.2. Waning interest in avian and human influenza activities after 2007

The shift from an emergency to a preparedness and capacity building focus over the 2005-2007 period had several consequences that, in aggregate, led to respondents' perception of a waning of interest in avian and human influenza prevention and control policy development. After 2007, stakeholder interest in H5N1 related activity in Zambia outside of Health and Agriculture began to dissipate. Under the 'imminent threat' framing, Zambia had initially oriented its response to tackle a disease of poultry that was perceived to be on the nation's doorsteps. Accordingly, through the National Task Force, stakeholders became actively involved in participating in emergency response activities. After two years of preparation, interest began to fall away, resulting in poor local stakeholder participation. Issue attention waned because the 'imminent threat' of H5N1 had not materialised. In fact, it was this continued 'delay' that de

⁶³ Support Programme for Integrated National Action Plans for Avian Influenza

facto turned the emergency response to a preparedness activity. This resulted in an increasing difficulty for Health and Agriculture to bring stakeholders together for meetings:

In the initial stages... 2005 to 2007, I must say the Task Force was very active, people were more aware and into the activities and programmes that were laid out. I think at that time the threat was very real because then Africa got ... affected and we had countries up north being affected and the disease was spreading and it was a matter of time. But then things stalled I think from 2007 to date and of course, like with many other things, human beings being what they are, if something that you are expecting for a long time is not coming along, the interest just falls out...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

[O]ne of the things we have been trying to, you know to struggle (with) is the stakeholder meetings. You know there is a tendency sometimes, when a thing "delays" in inverted commas. You know we don't want it. But when nothing is coming...people relax a bit...

Deputy Director, Public Health and Research, Ministry of Health (9)

Over time, the difficulties in maintaining stakeholder involvement in the policy development process arose as a concern. One respondent even claimed that the reason for this was that local stakeholders were probably questioning the validity of the National Task Force on Avian and Human Influenza:

[F]rankly speaking, in the beginning people used to come but somewhere along the line they started questioning their own relevance or whatever. Maybe the validity of the Task Force was also questionable, I don't know. I mean I am just guessing. I don't know why... I mean initially you get these people coming just at the inception when the Task Force was formed, then they stopped coming for meetings. I mean something must have happened. Why did they stop? Because in the end it was just about Ministry of Agriculture, Ministry of Health and Information. Tourism, Trade, Home Affairs, DMMU, Local Government, they were nowhere to be seen.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

The Task Force, however, had been legitimized by its designation as an *ad hoc* subcommittee of the National Epidemics Preparedness Planning and Management Committee under the Ministry of Health. The Task Force had been constituted in response to an emergency framing of the avian and human influenza problem; therefore its *ad hoc* committee status did not lend itself to the coordination of 'peace-time' preparedness and capacity building activities. It was not a structure oriented for the coordination of ordinary day-to-day disease prevention and control activity involving sectors whose usual mandate was not disease control. The imminent threat framing had lost its capacity to drive stakeholder engagement. Stakeholders who had originally been active in policy development and preparedness activity implementation had gradually lost interest in the process. H5N1 had simply taken too long to arrive:

I think that excitement which used to be there among stakeholders has died out because, nowadays you call for a Task Force meeting, very few turn up, you know? Some are even asking "is there an outbreak now?" that kind of thing...

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

It was also the perception of some respondents that the roles of stakeholders in the process had not been clarified from the onset. Their roles also remained undefined in the shift from emergency response to preparedness. Through the imminent threat/animal health framing, local perceptions of H5N1 risk had been tapered by a narrow and time-dependent definition of the policy problem. But even at the level of the Task Force, it was the animal health component that was more active in coordination. It is unlikely that local stakeholders would be active from the onset, because they lacked understanding of the risk of H5N1 highly pathogenic avian influenza as it affected them:

I think for the local stakeholders there is more of inertia than fatigue because they have never truly been active. The inertia is more from a lack of perception of the reality of the risk of HPAI.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

In the absence of an outbreak, it was the donor community and the Working Group, with its personnel from animal health and human health who remained active in the policy formulation and implementation process. By default, the role of coordination fell to the Veterinary Department, which hosted and led the Working Group, the technical arm of the Task Force:

What is very active, I must say is the Working Group because out of the Task Force, they had a secretariat and this secretariat was supposed to spearhead most of the technical work being undertaken by the Task Force. That component is still active and in there that is where the University of Zambia came into play, Poultry Association, now ZAWA⁶⁴ was also co-opted and so on and so forth. But the... major body, the Task Force, you have Tourism not attending anymore because they don't feel....it's only the line ministries which maybe feel the need, but the others are a bit...you know, because it has taken so long...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

The Working Group, in turn, could only concentrate on carrying out the technical activities related to preparedness planning under the donor funding that had been received, as was its actual mandate:

Actually most of our stakeholders have been called to a few meetings here and there. But when it comes to active participation, I think it hasn't yet been there, so I can't say we have involved them very actively.... I think it is also us; maybe we haven't yet sold the programme widely. I think we have concentrated so

⁶⁴ Zambia Wildlife Authority

much on the technical issues and carrying out activities under the donor funds that we have been given...

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

In summary, the National Task Force had been launched with considerable momentum and international support. Much of this momentum had been lost with the non-arrival of avian influenza in the country. While there had been local interest in avian and human influenza policy development in the beginning, heightened by the arrival of H5N1 on the African continent, the non-arrival and continued lack of evidence of H5N1's presence in the country contributed to diminished interest in Task Force activities.

7.3. The prioritization of avian and human influenza prevention and control in Zambia

The international community had funded the policy process of avian and human influenza policy development and therefore it was mainly international considerations that shaped the policy process. Given this background, what was the level of priority accorded to avian and human influenza prevention and control by local policy stakeholders in Zambia? The evidence points to the amount of support provided for policy development, albeit limited, as one of the major reasons for participating among respondents. In 2008, the Government received an additional \$500,000 USD under the Support Programme for Integrated National Action Plans (SPINAP) for Avian and Human Influenza from the European Union⁶⁵ through the African Union Inter-African Bureau for Animal Resources (AU-IBAR):

[T]he African Union asked Zambia to prepare a proposal because they were getting some funding for a project for preparedness for avian influenza and we finally signed this contract in 2008 in September and the funds were given to us in November. This project is called SPINAP that is the one that is currently

⁶⁵ As explained by Senior Veterinary Research Officer, National Avian Influenza Working Group, respondent 4

running now, helping out with preparedness for avian influenza. Again it follows the similar pattern with the programme for the World Bank, it has the three components, communication, human health and animal health. But the budget for this is very limited, \$500,000, and the bulk of it again is coming to the Ministry (of Agriculture)...it's really activity based and the goodness with it is that it is building on to what the World Bank left off.

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

The following sections examine how the H5N1 issue was prioritized by animal health and human health stakeholders.

7.3.1. Animal health: H5N1 highly pathogenic avian influenza support in the face of other disease priorities

In terms of the framings introduced at the end of Chapter 5, the animal health community largely perceived H5N1 highly pathogenic avian influenza to be an 'exotic' zoonosis. For this reason, in objective terms, it was low on the list of animal health priorities for the country. However, international funding was attached to H5N1 and not the other priority diseases in the country. This provided local animal health stakeholders with a clear financial incentive for involvement. The prioritization of avian and human influenza prevention and control was then linked to the amount of external funding that H5N1 related activities had received. This external funding was explicitly cited as the reason for the active involvement of Government manpower in the establishment and coordination of preparedness activities:

I would give it a pretty high priority, given the amount of funds which have been provided. The government has basically provided, let's say manpower. I mean with regard to funds, the government has not provided any funds. Not much, anyway. Beyond the usual, maybe let's say you are going out in the field to collect samples, so they would provide funds for that like your stipend, for you to be able to get your accommodation and meals while you are out there in

the field, that is as far as the government support can go. But as far as maybe buying equipment or buying vehicles and stuff like that, no they haven't.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

External funding and support were cardinal for avian and human influenza policy development in Zambia. It was H5N1's status as an *emerging zoonosis* of global pandemic concern that had attracted international support for avian influenza programmes in Zambia, mainly in the form of funding and materials for avian and human influenza policy development and related preparedness activities:

We don't have avian influenza as you know. It is an exotic disease to us, but it is a possible emerging disease. But I think in terms of its importance, because of its zoonotic nature, we do rate it quite highly, that's why I think we are receiving so much support...

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

Because of this support, there was some confusion among some respondents' perceptions, as exemplified in the two excerpts above, on the level of priority accorded to avian and human influenza policy development by Government. Was it a donor related priority, or government driven priority? The level of priority accorded to avian and human influenza among animal health respondents had one unanimous theme, however; avian influenza was a priority because it had received funding:

In my view, for the Government it is not a priority because most of the activities that we are doing is because there is some funds from outside... all avian influenza related activities are funded entirely by external funding. ...At the moment it is only our department, but even then, I don't want to give credit that we are doing it because there is no Government funding allocated to that, so it could be because we have a project and somebody has to coordinate that...

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

In direct response to the animal health framing of the H5N1 problem, the responsibility of concentrating on avian and human influenza activities had fallen to staff in the Department of Veterinary and Livestock Development. Government support for avian and human influenza activities did not go beyond availing its staff to work on avian and human influenza activities. Other animal diseases in the country required veterinary intervention and resources. It was inconceivable that the national Government would allocate its own financial resources to H5N1, an exotic condition, when they had limited resources for other diseases. The Government could only supply field allowance provisions, a normal aspect of day-to-day animal disease control. However, on the ground, there were 'more important diseases' that the Veterinary Department had to deal with than an absent highly pathogenic avian influenza:

[D]efinitely the Government has availed staff to concentrate on activities on avian influenza. Generally I think it is quite important. Of course there are more important livestock diseases we are dealing with in terms of funding and all. I know right now that Government can't come out and allocate a big sum of funds to avian influenza when other diseases don't have funds.

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

I mean you have to remember that they (other animal diseases) already exist in Zambia. We have FMD⁶⁶, its spreading like fire, ok? So definitely the Government provides funds for FMD, because it's there. The Government will definitely provide funds for CBPP⁶⁷ because it's there on the ground, right now. I mean I wouldn't be surprised if animals are dying somewhere of CBPP. Ok?

Research Scientist, Ministry of Agriculture and Cooperatives (5)

It is noteworthy here that the examples of existing diseases provided here were all of cattle. H5N1 was not viewed as a priority just on the basis of its absence, but importantly that it was a condition of poultry. The poultry sector was simply not viewed as important. In the view of

⁶⁶ Foot and Mouth Disease

⁶⁷ Contagious Bovine Pleuro pneumonia.

Government, incorrectly, as suggested in Chapter 6, poultry were not associated with major economic losses. The poultry sector was never a priority area for the animal health sector to begin with:

When you look at our focus, we are more oriented towards cattle. So most of the diseases that affect cattle are given priority.... You go to poultry, you have Newcastle Disease, which is classified as a Disease of National Economic importance, which should imply that Government should take a front role in the control of this disease, but in the past, there has never been a case where Government has procured vaccines for Newcastle. And probably you will look at it and what you get is that birds or bird diseases are not so significant or are not so associated with major economic losses. And, I think, it's not just because it is avian influenza and it is not there, it's because its poultry and it's not so significant. It's not written but it is implied in the way we do things.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

For the Government, other livestock diseases took priority over H5N1 highly pathogenic avian influenza. The competing priorities within the animal health sector were making it increasingly difficult for the Department of Veterinary and Livestock Development to maintain active involvement in avian influenza prevention and control. Human resources in the animal health sector were drawn to H5N1 policy formulation because H5N1 had the financial backing to trump what were considered within the country to be the 'real' concerns of Zambia's animal health sector:

[A] lot of resources have gone to avian influenza but if you look at the Zambian scenario, it's not a priority, if you look at the opportunity cost ...on the part of Government, there is a lot of manpower which has been directed to avian influenza ...and not on the other important diseases for the country. So you find that in a way the Government or the Zambian people have lost out, because ...the manpower is limited and most of them are employed to control the major diseases for the country. ...A lot of them, when this disease came, they sort of diverted their attention to the avian influenza, neglecting the other diseases which have suffered at the expense of avian influenza ... at the time this was

being done it was not a priority because animals were dying from other diseases and losses were being experienced by our people.... Yes you can argue, you know, for emergency preparedness but I think over and above, a lot of resources have gone into this which should have been focused on the more important diseases for the country and this is what has been the argument by other people where they say, I remember the Permanent Secretary was even arguing to say "We have other pressing issues than avian influenza, why should we focus our attention or our resources more on this?" (Emphasis added)

Senior Epidemio-surveillance Officer, Ministry of Agriculture, and Cooperatives (3)

To emphasize the point, the respondent above quotes the permanent secretary as asking why the Ministry of Agriculture needed to concentrate on H5N1 when there were more pressing issues in the country. The Government, through the Department of Veterinary and Livestock Development was not concentrating on these diseases because attention had been directed to avian influenza. H5N1 prioritization in the animal health sector had begun to fall mainly because of competing resource priorities and highly pathogenic avian influenza's continued absence from the country.

7.3.2. Human health: Integrated Disease Surveillance and Response and the national epidemics preparedness and management committee

In line with original 'imminent threat' framing of H5N1 highly pathogenic avian influenza, the fact that H5N1 avian influenza had not arrived in the country was viewed by the animal health sector as reason not to prioritize it. It was necessary to explore if a similar downward shift in prioritization had occurred among policy makers in health. In contrast, even though the disease was not in the country, perceptions of H5N1 priority remained high for the health sector. It was regarded as having the same level of priority as any other infectious disease:

The level (of priority) basically is almost at the same level as any other infectious disease. We have this epidemic preparedness and control committee that meets to really look at what is happening in the country. We get reports from everywhere. Because we have a national epidemics report that will

highlight whatever epidemics are coming up and usually all epidemics are issues that are handled critically and seriously. We actually reach a situation where in case we need more funding, emergency requests can be made to cabinet when we have such a situation. So the same can be done for avian influenza in case we have an outbreak.

Health Education Officer, Ministry of Health (10)

The National Epidemics Preparedness Management and Control Committee under the Ministry of Health was the forum upon which the Ministry of Health monitored the infectious disease burden in the country. During the course of data collection, several respondents from the animal health sector mentioned that they reported to the National Epidemics Preparedness Planning Management and Control Committee every fortnight on the avian influenza situation in the country:

[T]he National Epidemics and Preparedness Committee where we also sit, we do present avian influenza updates there...

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

It was through the Integrated Disease Surveillance and Response (IDSR) platform that the health sector would monitor any possible occurrence of human cases of highly pathogenic avian influenza. The main priority of the health sector was to keep the disease out of the country:

At the moment what we are focusing on is to try and prevent the outbreak from coming in.

Health Education Officer, Ministry of Health (10)

Among the training activities carried out by the health sector in relation to avian influenza and pandemic preparedness was the training of district staff on general influenzas within the IDSR framework. Data derived from this framework was collated in the national epidemics report. With the IDSR framework feeding into the National Epidemic and Preparedness, Prevention,

Control and Management Committee, the public health sector was sufficiently on alert to any potential human outbreak of highly pathogenic avian influenza. The health sector had included avian influenza in the technical guidelines for IDSR to make human avian influenza reportable within this framework. It was thus the IDSR framework that was central to the Ministry of Health's avian and human influenza prioritization strategy:

[T]he activities that we did were, first of all, trainings, trainings of the provincial staff, all the provinces just letting them know what avian and human influenza is all about. And then I remember we included the avian influenza component in our technical guidelines, Integrated Disease Surveillance technical guidelines so that when we teach about IDSR, avian influenza should be part and become a reportable disease...

National Surveillance Officer, Ministry of Health (11)

The health sector's framework for disease surveillance was an integrated approach, allowing the sector to be alerted by any potential reports of human avian influenza cases, while still being able to focus on other infectious diseases, including existing priority epidemics such as tuberculosis, HIV/AIDS and malaria. With seasonal influenzas being monitored in the major health centres, and health workers trained on the reporting of avian influenza, the public health sector stood on alert to any potential human outbreak of highly pathogenic avian influenza. Even the presence of H1N1 in the country, while important, had not distracted the Ministry of Health from the H5N1 influenza issue:

[T]here is no activity which affects the other like in terms of disease preparedness, disease control preparedness. If anything, they enhance each other. When you look at IDSR, IDSR is like a platform on which all these other things, new, emerging, old what have you, will sit on. That's why even at WHO level they say it, avian and human influenza will sit on IDSR, H1N1 will sit on the IDSR because IDSR is a vehicle. People need to know what they should do

when the disease is there, how to respond and things like that. So the bottom line is IDSR. All these, new, emerging, they will just come and sit.

National Surveillance Officer, Ministry of Health (11)

The IDSR platform was a broad framework for infectious disease surveillance, allowing the health sector to focus on priority diseases as and when they emerged. In conjunction with the National Epidemic and Preparedness, Prevention, Control and Management Committee, to which the national avian influenza Working Group reported bi-monthly on the H5N1 situation in the country, the health sector was efficiently “on alert.” The IDSR strategy was developed to strengthen national surveillance on infectious diseases of public health importance, and highly pathogenic avian influenza fit comfortably in the IDSR agenda. It is interesting that the animal health sector did not have as coherent a strategy for H5N1 surveillance as the health sector, given that the aim had been to develop an integrated response.

7.4. Who should coordinate? Contentions over the leadership of avian and human influenza preparedness planning in Zambia

There were, then, clear differences in prioritization of the avian and human influenza problem across Health and Agriculture. The co-chairing of the Task Force by the Ministry of Health and the Ministry of Agriculture was meant to provide a means of ensuring equitable involvement in the development of the emergency response. In order for the response to be mutually beneficial, it was necessary to have a clear understanding of what the problems were and how each would deal with them. This included a prioritization of the issue across the sectors to a degree relevant to the situation.

There were other institutional differences identified during data analysis. For example, health sector respondents made reference to both international regulations and provisions and national statutory instruments, including the International Health Regulations (2005), the WHO

pandemic preparedness guidelines (2005), the IDSR framework and the Public Health Act, Cap 295 of the Laws of Zambia in discussing avian and human influenza policy development. The sector's priority was to keep highly pathogenic avian influenza out and thus the health sector remained alert. In comparison, while most of my respondents were from the animal health sector⁶⁸, only one respondent in the animal health sector made reference to OIE guidelines, one to the SPS agreement and one to the national agricultural policy. The animal health sector seemed preoccupied with the 'practical' aspects of disease control with little regard, beyond the National Response Plan, for the wider policy and legal frameworks that could guide them. The priority of the animal health sector was to focus on the actual diseases that existed, primarily in cattle, in the country. The Trade Ministry, whose focus was to foster the development of the local poultry industry, was preoccupied with provisos in trade agreements and the national agriculture policy as they related to disease control. The Trade Ministry did not have a firm understanding of what was occurring on the ground. The Trade Ministry, however, felt bound by decisions made by either the Health or Agricultural Ministry on issues of disease control.

These differences in institutional norms, procedures and priorities affected the coordination of the avian and human influenza issue in Zambia. Fragmentation and the absence of a strong institutional framework for coordinating preparedness activities had resulted in a certain degree of opacity in the avian influenza issue. It also affected how each sector perceived the other's role in H5N1 policy formulation and preparedness activity implementation:

The Ministry of Health, they haven't been very active. We have gotten a few officers who are actually quite junior to be part of the team...so you get to get the picture that... it is not a priority to them, and for every activity that we do, you really have to push them, you have to go see them, you have to call them...

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

⁶⁸ Avian and human influenza policy development was largely skewed towards animal health and so policy development had a disproportionate animal health presence. This was also reflected in process of data collection.

[G]iven that maybe the disease was not here and this is just preparedness and since the control of imports is done from our offices, maybe then they (trade) could be updated. As opposed to when the disease is in the country then maybe they would be co-opted...

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

There were concerns that, as a coordination body, the National Task Force lacked the power to properly coordinate the preparedness response. There was also sentiment expressed that the Ministry of Agriculture was not suited to lead the coordination of Zambia's avian and human influenza response. With Agriculture taking the lead, there was no real capacity of the animal health sector to coordinate multi-sectoral disease control activities:

[T]his is just a Task Force, so for those people I don't think there is any kind of obligation for them to attend these meetings. I mean, we would write to the P.Ss⁶⁹ and the P.Ss are supposed to tell their people, but even that communication from P.S. to the relevant authority within the line ministry concerned wouldn't probably take place. I think for the purpose for coordination may be we kind of missed it there. Probably we should not have used Agriculture...

Research Scientist, Ministry of Agriculture and Cooperatives (5)

The coordination problems had been attributed to the Task Force being chaired by the Director of Veterinary Services, resulting in poor stakeholder attendance or delegation of attendance to junior staff. The Task Force lacked the authority to call stakeholders together:

[W]hat happens now is if you call for a meeting, the Director of Veterinary Services, who is the chairman, and co-chaired by the Director of Public Health from Ministry of Health, when they call a meeting, most of the senior officers

⁶⁹ Permanent Secretaries

will delegate and that actually undermines the authority of the National Task Force.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

This was the situation at provincial level as well:

[S]ome more needs to be done because we have noticed that, from some of the meetings some members would send their deputies to deputise them, so that would make it very risky if there was an outbreak...

District Veterinary Officer, Member, Rapid Response Team (14)

Because of these concerns, several respondents were of the view that it would benefit the country's preparedness response if the coordinative capacity of the Vice President's office was utilized. This is because the Disaster Management and Mitigation Unit under the Office of the Vice President was better placed to bring together the relevant stakeholders to respond to particular 'disasters':

We have the Disaster Management and Mitigation Unit, this falls under the Office of the Vice President. And ideally every situation that is classified as a disaster is run by them; they take over, irrespective of which ministry it falls under. Now with the issue of avian influenza, we were supposed to involve them from the beginning, but the question was, that they are not really involved in normal disease control, normal preparedness activities, unless we have an outbreak and that outbreak overwhelms the ministry and its classified as a disaster. But what we are looking at is to see whether we can shift the National Task Force to be under the Disaster Management and Mitigation Unit. Yeah and we hope, because that is a higher office, it will have more authority to mobilize resources or even invite people.

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

For Zambia, however, highly pathogenic avian influenza was nowhere near attaining disaster status. It was thus unclear to respondents what role the Disaster Management and Mitigation Unit would play in coordinating 'normal' avian and human influenza disease control and preparedness activities. Since the Disaster Management and Mitigation Unit was among the initial members of the Task Force on avian influenza, I explored why this unit had not been charged with coordinating the Task Force from the beginning:

DMMU⁷⁰ is just a member like any other and there has been a tug of war in terms of where the chairmanship should sit. We have, on a number of occasions raised concern, not just ourselves, but other partners as well in terms of DMMU's role in coordinating the AI or even the swine flu which we have now. Basically (we are) sitting on that committee just as a general member of that Task Force without the Task Force really organising the role that DMMU should play. Because by our mandate, we are better placed to coordinate multi-sectoral issues which we have done before through our work.

Head of Research and Planning, Disaster Management and Mitigation Unit (21)

Like other stakeholders outside of Health and Agriculture, the role that the Disaster Management and Mitigation Unit should play in the preparedness process had not been defined. The avian and human influenza problem had been narrowed to a human health-animal health problem; a disease control issue, with a largely animal health framing. This obscured the politics behind the policy. While the technical aspects of disease control fell within the mandate of the ministries of Health and Agriculture, the overall result was difficulties by the two ministries to secure the sustained involvement of other sectors:

[I]t is very difficult for the two ministries to coordinate other ministries therefore you need an institution that is above the ministerial portfolio position

⁷⁰ Disaster Management and Mitigation Unit

to be able to coordinate such kind of issues. But we are saying, in terms of the implementation, it should remain with the experts, because we are not experts.

Head of Research and Planning, Disaster Management and Mitigation Unit (21)

The task of coordinating avian and human influenza policy development across multiple sectors of policy required the active involvement of an institution above ministerial portfolio. However, the Disaster Management and Mitigation Unit, which fit the coordinating criteria, was viewed by other Government agencies as a last resort. The perception was that it would only come into play when an actual emergency or disaster had occurred and overwhelmed the line ministry; i.e. “a fire-fighter.” Their initial inclusion in the National Task Force on avian influenza was because there had been the expectation that an H5N1 outbreak would be an emergency for Zambia:

It would be “un-protocol” for a ministry to give another ministry an instruction, because ministers are generally assumed to be at the same level. Now zeroing into our own case, I think the problem has arisen from the perception that the general public has on the role of DMMU. The general perception is that DMMU is a fire-fighter. We should only come onto the scene when hell has broken loose. And then we should start cleaning up the mess.

National Coordinator, Disaster Management and Mitigation Unit (20)

However, the Disaster Management and Mitigation Unit could have played an important role in coordinating the avian and human influenza prevention and control policy process. Apparently unknown to other stakeholders, beyond its ability to coordinate inter-ministerial, and therefore multi-sectoral disaster-related issues, the Disaster Management and Mitigation Unit mandate included prevention and preparedness:

When you start talking about DMMU coordinating issues relating to prevention, issues relating to mitigation, they find it very strange and they start trying to fulfil its mandate in the area of prevention, mitigation and

preparedness, the concerns are, "But there is no disaster here, how does DMMU come into play?" So it comes from a narrow view, if I may be allowed to put it that way, from the narrow view that people have about the terms of reference of the Disaster Management and Mitigation Unit. But it also comes from the background itself. Naturally all emergency agencies are borne out of a crisis, and the tendency is to liken them to emergency situations. But that will not be a big issue because of the general paradigm shift. Currently there is a paradigm shift worldwide. The movement from disaster management to disaster risk reduction, so that puts things in perspective. It is always cheaper to prevent disasters from happening than dealing with the disasters themselves...

National Coordinator, Disaster Management and Mitigation Unit (20)

Another contention was the possibility of duplication. Like the Disaster Management and Mitigation Unit, the National Epidemics Preparedness Planning and Management Committee under the Ministry of Health had also been created as a multi-sectoral coordinative body. Its focus was to respond to *disease epidemic* disasters specifically, under the Ministry of Health's mandate as the portfolio ministry tasked with human infectious disease control:

Remember that (the) Disaster Management (and Mitigation Unit) came in after all our ministries were already there. In other words, we had outbreaks before, in other words, we had these problems before. Now, like the Ministry of Health, when we had outbreaks, we said, "Now let's imagine there is no DMMU," so no DMMU that time. So let's imagine there is an outbreak," and there have been too many outbreaks. Choleras, the typhoid and what have you. We said we can't sit idle. As a ministry responsible for outbreaks, let us put what we call as National Epidemics, Preparedness Control Management Committee. It's a multi-sectoral committee. So that multi-sectoral committee deals with, specifically diseases...

Deputy Director, Public Health and Research, Ministry of Health (9)

The National Epidemics Preparedness Planning and Management Committee had also positioned itself as an *unofficial* subcommittee of the Disaster Management and Mitigation Unit:

[N]ow after DMMU came into force, we agree that the DMMU under the Office of the Vice President has the overall (mandate) for disasters, so in our own understanding disasters become an epidemic, we think that any disease will become a disaster. Alright. So what we have done is, we have said, alright, we are now going to become a small subcommittee, not official, a small subcommittee of the national disaster management unit...

Deputy Director, Public Health and Research, Ministry of Health (9)

To reinforce its position as an unofficial subcommittee of the Disaster Management and Mitigation Unit, the Ministry of Health had a National Epidemics Preparedness Planning and Management Committee representative on the Disaster Management and Mitigation Unit forum, on standby to bring to the attention problems that had overwhelmed the Ministry of Health to the Office of the Vice President. This in essence, suggests a claim to the Disaster Management and Mitigation Unit's 'fire-fighting' capacity:

[W]hat we have done, we have picked a member of the epidemics to sit at the DMMU, so the Director of Public Health and Research who is alternated by some of us, sits there. So whatever we do in the epidemics, we also take it to their forum. There has been actually of late, a lot of support. For example, under this swine flu, DMMU has actually given us resources. Under the cholera, DMMU has actually released resources. So in other words, things we can't solve, we take it to the Office of the Vice President.

Deputy Director, Public Health and Research, Ministry of Health (9)

It was interesting to discover, however, that the National Epidemics Preparedness Planning and Management Committee had been established to support IDSR, and was not an 'official'

committee of Government. The Task Force on Avian and Human Influenza also appeared to have a low position of authority within the government framework:

Maybe what you should realise is that, maybe at the National Epidemics Committee meeting and the Task Force, the avian influenza Task Force, I don't think it receives the same mandate as the Disaster Management and Mitigation Unit. I remember at one time, I was driving a point where I said I would have loved that members of the National Epidemic committee be appointed through Cabinet Office and even the Task Force on avian influenza. If those members were appointed through Cabinet Office it means that it will have a certain strength in real activities. I think the national epidemic preparedness committee this was....first of all, this was a committee which came about in the Ministry of Health through WHO linking it to IDSR. Though we have used it as a platform for advocating for things, I don't think it is one committee which is known at Cabinet Office...

National Surveillance Officer, Ministry of Health (11)

The National Epidemics Preparedness Planning and Management Committee drew its power from its association with the Ministry of Health and had been established under a WHO imperative. This 'unofficial' body had been the forum for the establishment of the National Task Force on Avian and Human Influenza in Zambia. The committee did not, however, serve a strong coordinative function in avian and human influenza related activities. This role had been left to the Ministry of Agriculture, because of the animal health leaning, and financing, of the avian and human influenza problem. Under the strength of the imminent threat framing of the highly pathogenic avian influenza problem, this institutional arrangement worked, up to a point. With the perceived waning of interest in avian influenza related activities, it was the coordination of the preparedness effort that became a concern. The Disaster Management and Mitigation Unit felt better placed to deal with this:

[W]e are very sure that there are more positives, there are more gains in changing the fulcrum of coordination, because those concerns have not just been raised verbally, but they have been raised even in writing, because for

example the UN resident coordinator office indicated that there was money available to get into this but the office was wondering whether this money should go to the Office of the Vice President or to the Ministry of Health, you know, those kinds of issues. Meaning that as long as we do not take a common position, as per the expectation of other cooperating partners, we are likely to losing on financial aspects, we are likely to be losing on time....

.....when an issue enters the national integrated disaster management structure, it assumes certain status, the tempo completely changes...

National Coordinator, Disaster Management and Mitigation Unit (20)

The interest of the Disaster Management and Mitigation Unit in this role however, was not an internally driven initiative. There was a clear financial imperative for participation. In addition, other than the questions raised by the UN resident coordinator, as described by the respondent above, their interest in coordination was a reflection of what was going on in the region:

Every fora that we have attended at the regional level and sub-regional levels, the emphasis and all resolutions have been that the role of coordination should rest in the agency or authority responsible for emergency activities. And the reason has been that almost all emergency agencies in the region and sub-region are located in the ministries which are higher than ordinary portfolio ministries.

National Coordinator, Disaster Management and Mitigation Unit (20)

I attended another simulation exercise in South Africa. And there were other countries, I think, attending the same thing. What came to light for me was that in other countries, the DMMU equivalent, the disaster management unit in the other countries, play a central role in both preparation, before an outbreak, and execution, during an outbreak. And even post outbreak, or whatever you

are dealing with. So again, I am going to say that I think we should give DMMU the chance to be the coordinator, to bring everybody into the fold.

Research Scientist, Ministry of Agriculture and Cooperatives (5)

For Zambia, the focus had been on preparing for an outbreak. Developing an 'aggregate' or multi-sectoral risk reduction policy was important; but the lack of a coherent preparedness framework for multi-sectoral disease control was a key issue. This was especially difficult with competing priorities within and across sectors, 'different' problem framings and different perceptions of risk. This was compounded by the fact that the highly pathogenic avian influenza response was largely an externally imposed agenda in Zambia. Without an actual outbreak, 'preparedness' or risk reduction in the face of a global concern such as highly pathogenic avian influenza lacked a locally defined framework for multi-sectoral coordination, including leadership, role allocation and focus.

7.5. How Zambia fared: Indicators of emergency preparedness

Up to this point, the chapter has examined some of the challenges faced in avian and human influenza policy development. This section of the chapter now presents some of the gains of the avian and human influenza policy process in Zambia. When Zambia began developing its emergency response in 2005, the world was at WHO pandemic alert phase 3. H5N1 highly pathogenic avian influenza was causing disease in small human clusters, particularly in its Southeast Asian epicentre, its rapid multi country spread as a poultry panzootic giving it global significance. In retrospect, Zambia, and the entire Southern Africa region, had been in a 'prolonged' pre-pandemic mode. With the advent of H1N1 (swine flu), other nations were "dusting off" contingency plans developed for avian influenza to respond to the new pandemic concern (Scoones 2010). Zambia remained uncertain as to when and how highly pathogenic avian influenza would affect the country.

The period 2005 to 2009 witnessed a number of emergency response related activities instituted by the National Task Force and its Working Group. While it would be difficult to ‘objectively’ evaluate the responsiveness of Zambia’s national response plan in the absence of an actual disease incursion, or determine the benefits of the policy development in Zambia, I argue that the following four preparedness milestones, or measures of achievement provide possible “proxies” for preparedness.

7.5.1. Proxy for preparedness 1: Veterinary Services strengthening

The first proxy for the achievement of preparedness milestones was veterinary services strengthening. Veterinary personnel had continued to receive, and immediately investigate, reports of possible outbreaks of H5N1. The largely animal health/imminent threat framing of the avian and human influenza issue in Zambia had positioned the animal health sector, through the Ministry of Agriculture’s Department of Veterinary and Livestock Development as the ‘first line of defence,’ and range of policy activity had been activated in this sector.

All district staff under the Department of Veterinary and Livestock Development were made aware of the importance of reporting suspicious poultry deaths. According to some respondents in the animal health sector, these district staff remained vigilant, reporting any potential cases of highly pathogenic avian influenza:

We have made our district staff aware and they do report any suspicious deaths of birds and all that.

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

Staff from the national to district level had been trained in sampling, general influenza diagnosis, outbreak response and networking:

There have been a number of trainings which have happened. I think about 7 at least in various aspects of controlling an outbreak, from sampling to just networking in general, and also technical trainings that have gone on. A number of meetings also to increase the cooperation and networking among them...

District Veterinary Officer, Member, Rapid Response Team (14)

In addition, a case definition for highly pathogenic avian influenza had been formulated and was the basis of the veterinary response. While the surveillance strategy that had been put in place had not found any evidence of H5N1 in the country, it had remained responsive to potential threats:

[T]he school of thought is that if it's there, definitely birds should be dying, because it's highly pathogenic avian influenza. The fact that no birds are dying en mass means we don't have it. So that's why we only go looking for it when you have high mortalities...

Research Scientist, Ministry of Agriculture and Cooperatives (5)

Through a series of false alarms, while frustrating, the Veterinary System had proven itself capable to respond to public concerns of potential problems quickly:

[W]e have had a number of false alarms. Any birds dying people would inform us, "we suspect this," and the Vet Department would be informed and we have collected samples and most of them have been negative...

Senior Epidemio-surveillance Officer, Ministry of Agriculture, and Cooperatives (3)

The animal health sector thus appeared poised to respond to potential outbreaks of highly pathogenic avian influenza.

7.5.2. Proxy for preparedness 2: Health services strengthening

As a result of the avian and human influenza activity, the WHO accredited influenza laboratory at University Teaching Hospital and the laboratory at the University of Zambia were recognised for their diagnostic capacity, and integrated into the surveillance and preparedness infrastructure. Health personnel were trained by the WHO on general influenzas and charged with training other health workers:

WHO came ...I think it was early this year (2009) to train on general influenzas, how to contain them, and then we trained what we call trainer of trainers...there are two laboratories, as you know, we have a very good laboratory at the University of Zambia, at the Vet section there, they call it a phase three (laboratory). There is another laboratory here which is WHO accredited at UTH. So those two laboratories for us, they have been doing what they do; the normal influenza studies and I think...we have been very comfortable.

Deputy Director, Public Health and Research, Ministry of Health (9)

[N]ow the lab in Zambia is made of the Government lab and then the University lab which is now a P3 lab, indicating that even for Zambia to have a problem right now, when it comes to avian and human influenza surveillance identification, we heavily depend on the lab at the University for that.

Senior Epidemio-surveillance Officer, Ministry of Agriculture, and
Cooperatives (3)

Therefore diagnostic capacity for avian and human influenza was in place. In fact, the first cases of H1N1 in Zambia were promptly diagnosed by the laboratory at the University of Zambia, all made possible by the framework established under the preparedness agenda for avian and human influenza.

7.5.3. Proxy for preparedness 3: Public awareness

The third proxy for preparedness, I argue, was the amount of public awareness generated on the avian influenza problem. Through continuous effort, it was respondents' view that the communication strategy had reaped dividends. Farmers, traders and the general public had been made aware of the avian influenza problem. Primarily a poultry problem, many poultry farmers had been sensitized about highly pathogenic avian influenza to the point where they were not asking what highly pathogenic avian influenza was, but asking instead, when this condition was likely to come to Zambia:

[A]ctually, you find farmers asking you that, "We have heard so much about this avian influenza, when is it coming to Zambia?"

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

For Government, particularly those in the animal health sector, such questions from their target group was indicative of how much had been done in terms of sensitizing the community about highly pathogenic avian influenza. It also demonstrated to Government how effective the implementation of the pre-outbreak communication strategy had been:

The public right now has been waiting for this news to come, and one of the big things which is still coming back right now is that people have been asking that when is the disease coming to this country that is from the general public and it's been an issue right now, so that in itself has given us a litmus...

Senior Epidemio-surveillance Officer, Ministry of Agriculture, and Cooperatives (3)

Health workers had not been excluded from the pool of communication target groups, not just in their role as health service providers, but also as potential small scale chicken producers, an important source of income for many medium income households in Zambia. The channels for disease reporting had been established:

Because basically even as health workers, we can be able to start identifying that there is a problem. Like...if you are a health worker you are keeping chickens then you see that there is that high mortality, then you know there is a problem and be able to communicate to the relevant levels.

Health Education Officer, Ministry of Health (10)

7.5.4. Proxy for preparedness 4: Multi-sectoral collaboration

At national level, the Working Group had also facilitated the involvement of other stakeholders such as the University of Zambia, to provide diagnostic support and technical advice, the Poultry Association of Zambia, to bring together its membership for the farmer awareness campaigns and the Zambia Wildlife Authority, to support H5N1 surveillance in wild birds. In addition, Rapid Response Teams had been formed in all of the provinces.

While important stakeholders had been omitted from the Task Force, implementing the communication strategy also facilitated the involvement of other stakeholders in the policy process at district and provincial levels. This included stakeholders such as immigration personnel and the Zambia Revenue Authority. This was especially important in the ‘high risk’ and ‘porous’ border districts:

We were working together with Ministry of Health and the various stakeholders in the districts. The ... police, immigration, ZRA and the community as well. Initially we had to sensitize the community on the signs; what is avian influenza, what are the signs, the symptoms. How does it come about in the community? What does it affect? Does it affect humans and all that?

District Veterinary Officer, Member Rapid Response Team (15)

One respondent felt that, at national level at least, the Government now had the capacity to respond in a coordinated manner:

[F]or me I have no doubt, even if people might say no the coordination is not there, what, what, what, what, let there be a threat, seen tangible threat, you

will wonder how the various arms of government, which this time around they seem to be sleeping will come to work.

National Surveillance Officer, Ministry of Health (11)

7.6. Unanticipated benefits: Integrating the avian influenza response into wider disease control objectives

One, perhaps unexpected, gain was the higher priority given to the poultry sector post avian and human prevention and control policy development. With no real precedent for the prioritization of the poultry sector by Government, it was the international avian and pandemic influenza response that had ignited interest in the country's poultry industry. The effort put into avian and human influenza preparedness by Government and the Poultry Association of Zambia had provided an opportunity for the animal health sector to focus on some of the pressing problems that had beset poultry production in the country, particularly the traditional sector. The high contact rate between government officials and farmers provided an entrée for increasing awareness and extension in other aspects of poultry disease control. In the absence of highly pathogenic avian influenza, it was Newcastle disease that was the main killer of flocks in the traditional poultry production sector in Zambia and in the Southern African region. An FAO regional Avian Influenza Working Group of the Laboratory Diagnosis Sub-Committee meeting in early 2008 endorsed nation-wide Newcastle disease vaccination campaigns within the SADC region for the purposes of accessing poultry producers for avian influenza surveillance and sensitization. It was claimed that this approach, in the event of a suspected outbreak, would exclude Newcastle disease as a potential suspect. Zambia therefore adopted this stance, to the benefit of the traditional poultry sector:

We even bought some Newcastle disease vaccines. Because these diseases are quite similar so we thought that we should encourage vaccination against

Newcastle mainly for the free range poultry...this is a sector where they don't really bother vaccinating.

Task Force Member and Animal Health Focal Person, Ministry of Agriculture (2)

A Non-Governmental Organisation, Africare, under a project funded by USAID through Louisiana State University, had embarked on a separate project focusing on biosecurity risk management in traditional flocks. Africare had also become a member of the National Task Force on Avian and Human Influenza in Zambia, as a partner in the preparedness process. Although the Africare project was meant to fall under the avian influenza control agenda, its scope had been broadened to include other poultry related conditions as well:

[W]e ask them (farmers) questions, "Do you buy vaccines? Do you vaccinate your chickens, like against Newcastle? Do you disinfect the poultry areas? Do you do A, B, C, D? Those are the areas that we are looking at. Do they have the vaccines that are needed, and how clean is the water that the birds are getting? Do they have restricted entry to the poultry houses, and if so, how? If they don't have those things, we teach them that in veterinary science when we talk about the biosecurity in poultry production, say (with) chickens, only maybe one or two people should have access to this house. When time for the right vaccine comes, if its gumboro⁷¹ you give at this time, and you give the booster at this stage, this vaccine has to be carried this way...so those are the issues that we try and teach them...

Non-Governmental Organization Poultry Consultant on Avian Influenza (6)

The early involvement of the Poultry Association of Zambia in the avian and human influenza response process had positioned the association as a hub for information dissemination to poultry producers and farmers. The framework the Poultry Association of Zambia had established for the avian influenza response also proved useful in providing the association's

⁷¹Gumboro Disease or Infectious Bursal Disease (IBD) is a viral disease of young chickens. It affects the development of the chicken immune system. Mortality can be in excess of 40%, and it also causes secondary infections that negatively impact production efficiency. <http://www.gumboro.com/disease/>

membership with vital information concerning the control of other diseases of economic and production importance:

[W]hat we have actually belaboured to do is to try and give them as much information as possible on how they can prevent it and this has actually helped matters and in addition to that we have not only touched avian flu, we have also touched other notifiable diseases like Newcastle and many other poultry diseases. We are using the same format to try and build the capacities of our farmers to try and prevent such outbreaks which have a bearing on the economic status.

Poultry Association of Zambia Executive Director (16)

For government, the farmer awareness meetings that had been carried out under avian influenza preparedness had also provided opportunities for veterinarians in government employ to teach farmers about other poultry diseases. With the advent of influenza A/H1N1, a fresh window of opportunity had been opened to discuss other disease problems with farmers, thus raising the profile for poultry diseases in general:

[W]e are having farmer awareness meetings and at it is interesting that in these farmer awareness meetings one of the things that comes up is the swine flu so it is an opportunity to also educate people on generally poultry diseases and other animal health uh, constraints.

SPINAP Coordinator and National Task Force Member, Ministry of Agriculture and Cooperatives (1)

In no area was the benefit of the established structures for avian and human influenza prevention and control more pronounced than in the health sector. The preparations against avian influenza had clearly aided the Government's preparations against pandemic A/H1N1 influenza:

[F]or the H1N1.... a smaller sub Task Force was formed from the main committee of the National Task Force to address that.Usually that is the procedure when there is an outbreak of any infectious disease.That smaller Task Force is comprised of literally the same people that work in the avian influenza committee. So I would say it has not really affected avian influenza, instead it has like enhanced the preparations because now we see that here we have a situation. It has helped us to see how best we can further prepare for an outbreak of avian influenza, in case it comes. And from this subcommittee we have been able to actually send people to go to all the border areas including the airports.

Health Education Officer, Ministry of Health (10)

There were thus significant sector-specific gains of the avian and human influenza policy in Zambia. There was increased interest in both the traditional and commercial sectors of Zambia's poultry industry and more attention paid to poultry conditions than had been the case in the past. The human health sector had also prepared itself to a point where it was in a better position to respond to the H1N1 influenza outbreak when it came.

7.7. Chapter summary

This chapter examined some of the perceptions around waning interest in avian and human influenza policy development. The combination of an imminent threat framing, non-arrival of H5N1 in the country and coordination failures was partly responsible for interest lag in avian and human influenza policy development after 2007. The chapter also examined tensions around priority competition and funding in the animal health sector and identified tensions in institutional norms and procedures that resulted in a lack of clarity around the avian and human influenza response across animal health and public health. Although this was the case, the chapter highlighted the positive attributes of the imminent threat framing, including the achievement of several potentially beneficial milestones which I presented as 'proxies for preparedness'. While many preparedness milestones, particularly with regard to training and sensitization, had been achieved, the absence of an authoritative coordinative body was a factor,

leading to tensions around who should coordinate. The three empirical chapters so far have chronologically identified the tensions concerning leadership, priorities, problem framings, resource dependencies and perceptions of risk in avian and human policy development. It began by outlining the role of international agencies in shaping the development of avian and human influenza policy in Zambia and went on to explore why local stakeholder interest in policy development began to wane post 2007. Given this policy analysis, the next chapter will explore the feasibility and utility of risk analysis in informing multi sectoral coordination, role allocation and focus in avian and human influenza risk management in Zambia.

CHAPTER EIGHT

The OIE Risk analysis framework: A tool to inform better multi-sectoral zoonosis risk management?

8. Introduction

The previous chapter examined the challenges to, and strengths of, the avian and human influenza prevention and control policy as adopted in Zambia. Focusing the analysis on particular aspects of the policy process, it argued that the construction of the policy framework for zoonotic avian influenza risk management and pandemic preparedness in Zambia was largely driven by the actions of, and financial aid provided by, international agencies. Through financing, the World Bank, FAO and USAID shaped the direction avian and human influenza prevention and control policy took. They also reinforced the animal health framing of the H5N1 avian influenza problem through four processes. First, they defined the H5N1 problem and its possible sources. These sources included Zambia's multiple neighbours, interfaced by porous borders, and its 'high avian influenza risk' traditional poultry production sector. Second, they decided on which 'key' stakeholders to include in policy development and third, they influenced the nature of intervention programmes. Fourth, the bulk of financing was skewed towards animal health, which, by default, placed the veterinary department at the helm of policy development. With the agricultural ministry controlling most of the resources, the flow of finances affected the understanding of risk and the politics of the policy process, sustaining the emergency framing from the period between 2005 and 2009 and sending both government veterinary and research institutions alike searching for the elusive H5N1 influenza virus in traditional poultry and wild birds.

This approach was, however, not completely aligned with the national Government's economic development imperative. As a result, many useful local links, implementing structures and coordinative mechanisms established under the development agenda were ignored. Despite this, the previous chapter posited that there were gains made in the policy process. Under the avian influenza *preparedness* banner, national decision-makers pursued several activities, namely, capacity building in both veterinary and health services, communication strengthening and improvement of laboratory capacity. Although framed under pandemic preparedness, the explicit impetus for policy development, the threat of an incursion of zoonotic avian influenza, did not materialise. The response was clearly substantial, with what respondents considered to be a major 'manpower' and 'man hour' cost for Government, when H5N1 avian influenza itself could not be found! Interestingly, as the risk of an incursion seemed to abate, the pressure from the international community for more decisive action continued.

The three preceding policy analysis chapters together overviewed the processes for avian and human influenza prevention and control policy development in Zambia and its links to the international experience of H5N1. They demonstrated the political nature of zoonosis risk management in a resource-constrained country, and how this cannot be separated from the technical task of assessing the risk being addressed. The politics concerned problem framings, perceptions of risk, the nature of stakeholder involvement, and the policy problems created by the use of external evidence and finance to construct the policy response.

In 2008, USAID commissioned an avian influenza risk mapping exercise for the Southern African region. This was not used to inform policy development in Zambia. The reasons given were that the risk mapping exercise was not specific to Zambia, had been conducted rapidly and had been dismissed for lacking methodological soundness:

[T]hey just interviewed a lot of people. It wasn't comprehensive, there were no questionnaires and things like that, so a lot of people questioned how they arrived at assessing the risk in the manner that they did...

Senior Epidemio-surveillance Officer, Ministry of Agriculture and
Cooperatives (3)

Decision-makers in Zambia certainly saw the need for a thorough risk assessment specific to the Zambian context. To facilitate this, among the several activities undertaken, was a poultry census exercise:

[W]e picked some activities out of that to help us with our preparedness and one of them is the census that we are carrying out, poultry census, to help us map our farms and know exactly where they are which will help us in terms of risk assessment and so on.

SPINAP Coordinator and National Task Force member, Ministry of Agriculture and
Cooperatives (1)

Furthermore, the policy analysis itself highlighted several gaps that suggested the need for a risk assessment in this context. For instance, there was the view that many of the local stakeholders did not understand how the risk of H5N1 avian influenza affected them. The evidence base to support the trade ban was weak. A risk assessment would have provided a basis for the establishment, and determining the effectiveness, of the surveillance strategy. Rather than Zambia's porous borders, it was the more plausible H5N1 incursion risk presented by the country's poultry production systems and its links to migratory birds, traditional birds and to human health that needed to be more explicitly defined. Furthermore, role and resource allocation in risk management were poorly considered.

In retrospect, the likelihood of avian influenza overwhelming Zambia and causing a human pandemic was remote, even at the height of the pandemic scare in Southeast Asia. With regard to risk management, several issues can be highlighted. The response developed by Zambia was

disproportionate to the problem at hand and it is clear that politics played a major role in defining the dynamics of the policy process. Implicitly, several animal health respondents understood that the avian influenza response outside of Nigeria and Egypt was a waste, but remained complicit because project funding was made available which 'somebody' had to manage. The lack of an authoritative coordinative body for multi-sectoral risk management was another critical issue. These various aspects of policy development all have implications for the feasibility and utility of conducting a risk analysis, particularly in informing multi-sectoral coordination, role and resource allocation and focus in the management of avian and human influenza risk in Zambia.

Drawing on theory and the policy analysis findings, this chapter analyses the ways in which understanding policy processes and context could inform risk analysis in such a way as to foster better policy coordination in the case of avian influenza prevention and control, livestock trade and the wider issues of human pandemic preparedness in Zambia. Specifically, this chapter sets out to answer the last two research questions; (1) How feasible is it to conduct an OIE type risk analysis in a manner that informs the development of risk management policies across trade, public health and animal health and more widely in a context of a resource-constrained country like Zambia? (2) What would a policy relevant model for risk analysis appropriate for this resource-constrained country setting look like?

The policy analysis presented the actors, their interests and the way this affected policy outcomes. Given the study findings thus far, i.e. how Zambia constructed risk management policy in response to the 'global' H5N1 risk, it is important to determine the potential for assessments of risk to inform the development of context-appropriate policy responses. There are numerous risk analysis frameworks available (see for example Covello and Merkhofer 1993), but because of H5N1's animal health nature and zoonotic potential, this thesis focuses only on the World Organisation for Animal Health (OIE) risk analysis framework, conceptualized by its proponents as the 'gold standard' for the assessment of animal infectious disease risks. The chapter begins by highlighting some of the policy limitations of the current

OIE approach to risk analysis, determines what would aid the risk analysis process and what might be lost by conducting a risk analysis in this way. Following this critique, a national level model for an OIE risk analysis within this context is proposed and its context-specific policy implications are assessed. It discusses the stakeholders likely to influence or be influenced by a risk analysis in this context. This chapter fundamentally argues that the key to the feasibility of the analysis of the risk of multi-sectoral affecting emerging infectious diseases such as zoonotic avian influenza is flexibility in how risk is framed across the public health, animal health and trade systems. By this, I mean risk must be presented in ways that speak to each sector's interests.

8.1. Risk analysis and the policy context: A critique of the OIE risk analysis framework

One area of consensus in the large risk literature is that, separate from the actual dangers presented by various hazards, 'risk' is socially constructed (Douglas and Wildavsky 1982; Horlick-Jones 1998; Slovic 1998). This has been apparent in this study. Chapter 5 demonstrated how different policy actors both understood and responded to the externally defined threat of a zoonotic avian influenza incursion into Zambia. Perceptions of avian influenza risk were framed differently both within and across various sectors, including the poultry and allied industries, the media, health, agriculture and trade. The implication of this is that, while the health of food animals such as poultry is important, given their linkages to food safety, livelihoods, public health and the economy, risk perceptions associated with food animals influence policy processes in different but significant ways. It can be argued that risk analysis can also be influenced by, and more importantly, benefit from these social processes. It is here that insights from Beck (1992) and Giddens (1998) aid in highlighting the importance of having a more discursive treatment of 'risk' in the process of science-based analyses of risk.

Focusing on the OIE risk analysis framework (Murray *et al.* 2004), which is a science-based method for the assessment of risk rooted on the system developed by Covello and Merkhofer (1993), this section critiques the strengths and weaknesses of this approach to risk analysis in relation to policy processes. The OIE risk analysis framework (figure 8.1) is based on a heuristic

conceptualized to involve four interacting and iterative stages; hazard identification, risk assessment, risk management and risk communication (Vose *et al.* 2001; WHO/FAO 2006; OIE 2010). This structure makes the OIE risk analysis framework amenable to a structured discussion on the policy considerations relevant to its application in different contexts. However, according to Millstone (2007) who makes a more general argument on the scientific approaches to risk analysis and their interactions with policy processes, the separation of risk assessment from risk management and risk communication is misleading. It detaches political processes from scientific expertise, entities that are intimately entangled.

For the OIE framework, which fits what Millstone (2007) terms a 'Red Book' model⁷² of decision-making, the risk assessment is the most technical component of the process. It can be a qualitative, semi-quantitative or quantitative assessment of risk on the basis of expert knowledge and/or empirical data (Vose *et al.* 2001; Murray *et al.* 2004). Together with the other stages; hazard identification, risk management and risk communication, the framework is subject to the policy processes of the particular context that the risk assessment is conducted. This is the starting point for assessing the feasibility of the OIE risk analysis framework to inform multi-sectoral risk management in Zambia. As demonstrated by the policy analysis, the framing of risk, and therefore its assessment, involves the interplay of both contextual and social influences. This sentiment is echoed by Millstone (2007), who traces the historic development of thinking around science's interactions with politics, and prominent risk sociologists such as Beck (1992); Giddens (1998) and Slovic (1998).

One weakness of the framework is that it primarily relies on the engagement of expert knowledge, and *their* presentation of the underlying assumptions and the steps followed in the determination of risk (Vose 2000; Pfeiffer 2007). By relying primarily on the knowledge of scientific experts, I argue that this approach leaves the framework blind to social influences,

⁷² According to Millstone (2007), the term comes from the red cover of a seminal report produced in 1983 by the National Research Council in the US. This report presented a version of inverted decisionism or technocratic model that is very similar to the OIE risk analysis framework pictorially represented in figure 8.1.

and, in the case of risk management policy development in resource-constrained countries, partial to the narratives on risk voiced by the international agencies holding the purse strings. The last point is an important potential flaw, because, as noted with similar technocratic models (van Zwanenburg and Millstone 2005; Millstone 2007), international agencies could select only experts whose viewpoints chime with their policy agendas, making their assessments of risk as highly contestable as the avian and human influenza policy process in Zambia. Another concern is a lack of robustness in this approach's dealing with the ambiguities of scientific uncertainty and surprise (Stirling and Mayer 2000; Stirling and Scoones 2009) and, a failure to fully engage political processes and social choices in addressing risk (Millstone 2007). A solution, as argued by Cumming (2010b), is that risk assessment for infectious disease needs "to develop a more holistic perspective" of risk "that includes explicit consideration of the roles of policy, disease management, and feedbacks between ecosystems and societies."

Clearly, the OIE risk analysis framework as currently conceptualised, does not take these factors into account. There are novel approaches that suggest ways of better combining science and policy making such as Millstone's (2007) 'co-evolutionary model'. However, the OIE risk analysis framework already has acceptance as the current 'gold standard' for the assessment of animal health, and by association, zoonotic disease risks. Its importance to policy is highlighted in the fact that, since the inception of the WTO in 1995, the OIE framework in general has achieved recognition within the WTO SPS agreement as the standard for facilitating trade in animal and animal products (Thiermann 2005; OIE 2010). The framework has been, and continues to be, applied to assess animal disease risks for scenarios other than those that are trade-related (McDiarmid and Pharo 2003) and has been successfully adapted to a human health setting (e.g. Clements *et al.* 2010). The framework is intended to provide a structured approach to risk assessment and is considered by scholars and practitioners in the animal health profession to be an iterative and transparent standard for quantifying risk and informing policy (WHO/FAO 2006; Murray *et al.* 2004). Therefore, rather than reject it as not feasible on the basis of the preceding critique, it is important to suggest *how* it can be made more amenable to

social processes. Part of its appeal, as argued by Hueston (2003)⁷³, is that the framework holds promise for the consideration of policy processes in the assessment of risk. Hueston, however, offers no concrete example of how this may be achieved, therefore this chapter examines one way in which this can be possible. Another key strength of the OIE risk analysis framework is assists decision-makers thinking around particular aspects of risk, which in turn helps better inform resource allocation in risk mitigation (McDiarmid and Pharo 2003). To determine how the OIE risk analysis framework can be improved to inform multi-sectoral zoonotic risk management policy in the context of avian and human influenza prevention and control policy Zambia, all four components will now be scrutinized through a policy lens. The following discussion draws on insights developed by Millstone (2007) in his co-evolutionary model of science and politics in policy making.

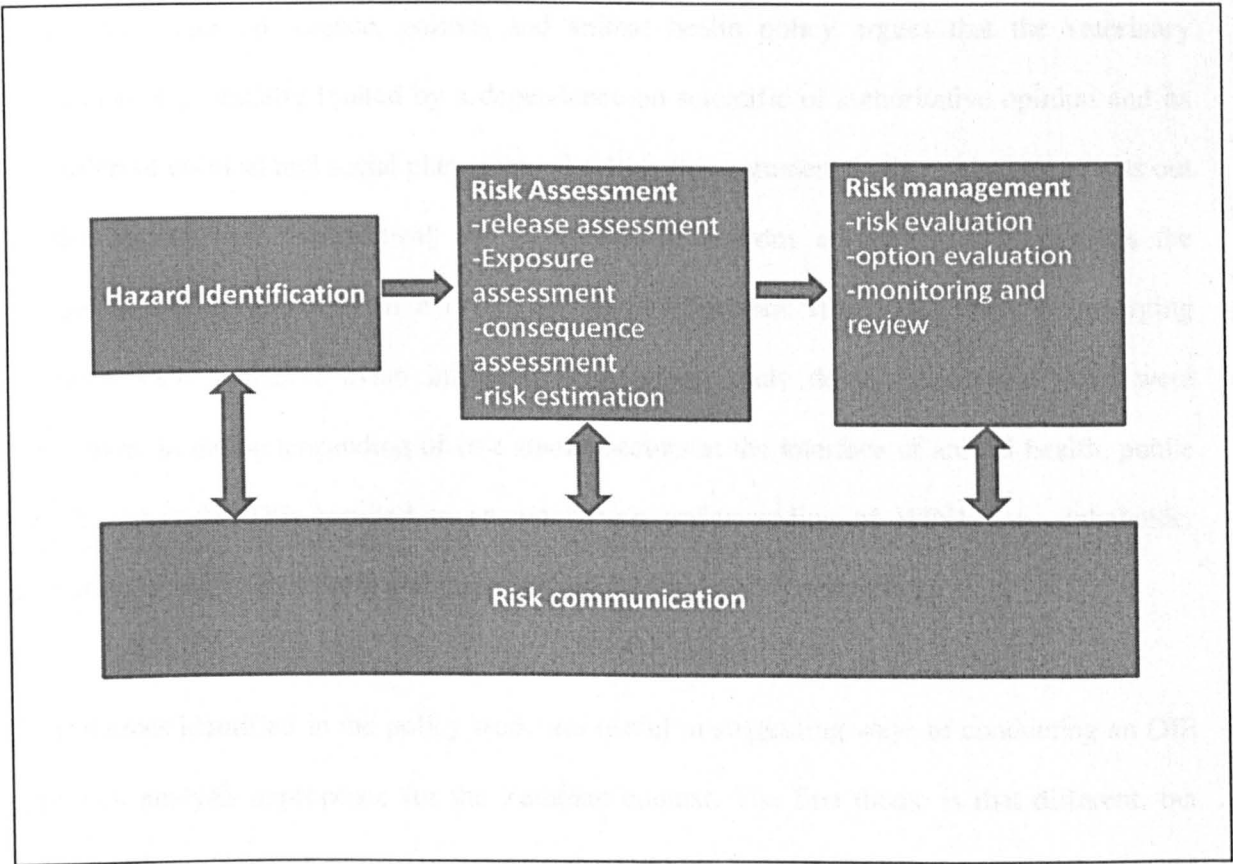


Figure 8-1. The structure of the OIE risk analysis process.
Adapted from Murray *et al.* (2004).

⁷³ Hueston’s discussion speaks of the OIE risk analysis framework in very general ways.

8.2. Pertinent themes for the feasibility of a risk analysis in Zambia

There are important policy themes that must be taken into consideration when undertaking a risk analysis in a resource-poor setting such as Zambia. This section highlights the importance of being cognisant of the policy implications of carrying out risk analyses in such contexts. Noteworthy is that the evolution of the emergency response in Zambia was a highly political process, a state that cannot be detached from any risk analysis. In addition, the OIE risk analysis framework places the OIE squarely in the centre of the highly political arena of international animal trade and the equally political avian and human pandemic influenza policy problem. It is interesting, however, that as part of the OIE framework, the OIE's veterinary services evaluation process sets as a benchmark independence from political influence (e.g. Vallet and Pastoret 2009). This aim of separating science from politics is impossible. Hueston's (2003) conceptual paper on science, politics and animal health policy argues that the veterinary profession is potentially limited by a dependence on scientific or authoritative opinion and its exclusion of political and social phenomena. Pushing this argument further, this chapter sets out to demonstrate that the political and contextual dimensions are just as important as the biological considerations when it comes to the multi-sectoral risk management of emerging zoonosis such as H5N1 avian influenza. The policy study demonstrated that there were differences in the understanding of risk among sectors at the interface of animal health, public health and trade. This resulted in an amorphous understanding of H5N1 risk, stakeholder exclusion in risk management and some inefficient resource considerations.

Four themes identified in the policy study are useful in suggesting ways of conducting an OIE type risk analysis appropriate for the Zambian context. The first theme is that different, but contiguous, framings of avian and human influenza risk drove the policy response. The second theme was a lack of understanding by local stakeholders of how H5N1 avian influenza affected them. The third theme was a lack of clarity over roles and resource considerations in the intervention strategies developed. The fourth theme draws on the differences in norms,

procedures and priorities across various sectors. It is from here that I argue that it is critical to identify the relevant institutions where a risk analysis to inform multi-sectoral zoonosis risk management policy would have the most effect, including the aspect of role allocation.

The following analysis for conducting an OIE risk analysis will specifically examine the ‘what’ ‘how’ ‘when’ and ‘who’ interactions of risk as they relate to policy. It is structured according to the components of OIE risk analysis framework, and draws on the four themes listed above. The themes are used to analyse the OIE risk analysis framework’s presentation of hazard identification, risk assessment, risk communication and finally risk management.

8.2.1. Policy considerations for hazard identification

Definitions are provided to guide the risk analyst through each stage of the risk analysis process. These definitions will also be used to guide this analysis. An OIE framework risk analysis begins by identifying ‘what’ the hazard, or source of risk, is. In OIE risk analysis parlance, it is the hazard identification stage of the risk analysis process that identifies ‘what’ the hazard of concern is. The OIE Terrestrial Animal Health Code (the Code) defines hazard identification as “the process of identifying the pathogenic agents which could potentially be introduced in the commodity considered for importation” (OIE 2010, p.xvii). This definition explicitly mentions commodities intended for importation because the Code’s purpose is to guide the facilitation of free and safe trade. In the handbook on import risk analysis for animals and animal products (Murray *et al.* 2004), a hazard is defined as “any pathogenic agent that could produce adverse consequences on the importation of a commodity” (p.v).

There is a policy dimension to hazard identification. In the sense of policy, a ‘hazard’ is a condition that at some point became seen as a ‘problem’ (or ‘risk’) requiring a policy solution. This is the agenda setting process of policy development. Before H5N1 avian influenza was considered a hazard in Zambia, it had to achieve policy relevance. Hazard identification, in terms of policy, is therefore the framing of the problem. This may ‘simply’ refer to how the

agent, in this case H5N1 avian influenza, is conceptualised as a problem (see Murray *et al.*'s definition above). But as a political process, how the risk of H5N1 was *perceived*, i.e. its social construction, is a little more complex. Perceptions of H5N1 avian influenza risk were constructed by divergent internal national, and external international, policy agendas and evidence in Zambia. Cognisance of these sometimes conflicting interactions in perceptions of risk and hence in developing risk management policy, if taken into account, could potentially enhance the applicability of the OIE risk analysis framework in the context of a country such as Zambia. Tensions such as H5N1's status as a global health concern due to its pandemic potential, a poultry industry or trade concern, or its "exotic" status in the Zambian context, need to be acknowledged before context-specific consensus of this policy problem can be achieved. It is consensus that would then allow policy makers from different policy sectors to focus on an 'objective' view of risk.

The H5N1 problem was expressed in the three ways conveying how the H5N1 avian influenza 'hazard' was understood by policy makers across animal health, trade and public health. First, the reality, as presented by respondents, was that H5N1 avian influenza, as a hazard, was an "exotic" condition that threatened trade. Secondly, there was the understanding that it was a *potential* zoonosis whose risk of incursion lay in traditional poultry flocks with poor "biosecurity", and thirdly H5N1 carried *plausible* implications for public health if an incursion occurred and in the process H5N1 became fully zoonotic. These multiple perspectives are what should explicitly form what Millstone (2007) terms the 'framing assumptions' of a risk analyst called upon to provide advice in policy making. This is because, as argued at the end of Chapter 5, these framings also represented the different aspects of H5N1 risk that were important for policy makers across animal health, public health and trade, and created the internal policy framework of the H5N1 problem in Zambia. These different animal health, trade and economy, and public health framings of the H5N1 problem formed the internal policy response, bringing specific actors to the policy process. The resulting policy framework then addressed four contiguous disease and disease management issues. First, there was the root consideration of

H5N1 avian influenza (or H5N1 *emergency* preparedness) second, there was the consideration of general avian influenzas, third, there was the aspect of human seasonal influenzas and fourth, there was the core policy issue of human influenza pandemic *preparedness* and capacity building.

An important question for a risk analyst to ask, other than *what* the hazard is, is for *whom* (and *how*) H5N1 avian influenza presents a 'hazard'. To be feasible as a tool to inform policy in a setting such as Zambia, the process of hazard identification should first unpack and properly categorize different policy perceptions into risk statements germane to each policy-relevant stakeholder. This essentially entails that a hazard identification be performed in such a way that it 'maps' how the H5N1 avian influenza 'hazard' relates to general avian influenzas, human influenza and pandemic preparedness *across* sectors. This is important. This is because the policy analysis demonstrated that, as a standalone problem, different levels of priority were accorded to H5N1 avian influenza. It remained high in the public health sector and low in the animal health sector but just the *perception* of H5N1 risk resulted in real consequences in the poultry industry. Other local stakeholders did not know how H5N1 affected them. The outputs of a risk analysis dealing with a potential zoonosis such as H5N1 avian influenza would theoretically have a broad audience with divergent conceptions of risk and priorities. Since the objective in Zambia was to develop a coordinated, multi-sectoral risk management framework, fostering this theoretically entails bringing on board different framings of risk and thinking about information gathering for hazard identification in adaptive and stakeholder inclusive ways. In Millstone's (2007) conception, this requires bringing scientific and non-scientific considerations more explicitly in policy processes, thus allowing the appropriate actors participate in the risk analysis process (Slovic 1998). The process of information gathering may therefore benefit from a stakeholder analysis, beyond international agency considerations, to identify important stakeholders, their viewpoints and information contributions. This is necessary to comprehensively define the hazard and capture information about how the hazard affects, and, more importantly, maybe *affected* by different policy relevant stakeholders. This

data gathering process is also important for the risk assessment stage, which is discussed in the next section.

8.2.2. Policy considerations for risk assessment

The Code defines risk assessment as “the evaluation of the likelihood and the biological and economic consequences of entry, establishment and spread of a hazard within the territory of an importing country” (OIE 2010. p. xxii). The OIE manual on qualitative risk analysis (Murray *et al.* 2004) states that risk assessment involves four stages, a release assessment, exposure assessment, consequence assessment and finally, risk estimation. It is the position of the OIE that the processes of release and exposure assessments require the skills of a veterinary epidemiologist, while the consequence assessment may require an economist’s input (McDiarmid and Pharo 2003). Authors such as Vose *et al.* (2001) contend that it is ideal for risk managers to understand the policy process to inform risk assessors. In Millstone’s co-evolutionary model, the risk assessment stage is mostly about scientific considerations (Millstone 2007). However, for scenarios where risk management is intended to be multi-sectoral, I argue that, in addition to being equipped with the framing assumptions of the various interested parties, a risk analyst would be at an added advantage if they had some working knowledge of policy processes beyond a purely ‘scientific’ viewpoint.

The process of risk assessment begins with a risk question, which defines what can go wrong and how. Specifically, after hazard identification, the relevant stakeholders then formulate the risk questions they intend the risk assessor to help answer, which defines the boundaries of the risk assessment. The OIE risk analysis process conceptualizes data gathering within an ‘expert knowledge’ framework. To help answer these questions, Pharo (2003) states that this requires gathering and collating evidence that describes the risk-relevant epidemiology of the hazard such as host range, vehicles of carriage and transmission, and survival under different environmental conditions. In the paper on risk analysis by McDiarmid and Pharo (2003), the

sources of information considered reliable included libraries, the internet and specialists. The framework is accommodating of grey literature (Wooldridge 2000), but it is the 'expert' sources that are considered important in meeting the information requirements to explain the virology of H5N1. Beyond this, however, the question of what can go wrong and how, still needs to focus on determining for *whom* and *how* is each negative outcome important. The stakeholder analysis at the hazard identification stage and the engagement of these stakeholders at the risk assessment stage could provide important data for an inclusive assessment of risk. Especially in resource-constrained settings where data are scarce, this multi-sectoral data collection process provides a viable data source.

8.2.2.1. Risk framing in Zambia and its implications for risk assessment

The policy analysis demonstrated that the H5N1 issue in Zambia started off as a public health concern (Chapter 5). It was the policy process, influenced by international agencies that brought the issue into the animal health domain. The common denominator for both public health and animal health in the beginning had been, and remained, H5N1's potential effect on human health. The risk question therefore revolved around H5N1's zoonotic risk, although the policy study found that the problem had wider consequences. It had economic (poultry and allied industry) effects (Chapter 5), concerns over potential health system effects, particularly in the handling of possible outbreaks (Chapter 6), possible tourism industry effects as well as concerns over its effects on the poultry industry in general.

How did decision-makers go about addressing these concerns? A particular policy framing and disease mitigation approach underscored the country's avian and human influenza prevention and control response. It focused primarily on the prevention of an external incursion of H5N1 avian influenza and less on the local and regional contextual factors that could potentially influence its transmission, establishment and spread. As argued by Leach, Scoones and Stirling (2010), typical approaches to disease control usually emphasize the prevention of 'contamination' rather than a critical consideration of 'configuration' or context. This was the case in Zambia. The policy study demonstrated that decision-makers in Zambia were influenced to focus primarily on mitigating the risk of disease contamination. This was exemplified by the

imposed partial poultry and poultry product import ban even from countries unaffected by H5N1 and concerns that H5N1 avian influenza was on the country's 'doorsteps'. It was also a valid concern, which should be taken on board in the risk assessment process, given the importance of disease freedom for the purposes of trade.

In Zambia's National Response Plan, five potential introduction routes for H5N1 avian influenza in the country were listed; live bird imports; poultry product imports; illegal poultry and poultry product trade; returning travellers previously in direct or indirect contact with infected poultry or poultry premises overseas; and aquatic migratory birds (Chapter 6). For a risk analyst, these are the modes of 'release' considered pertinent by policy makers in Zambia. While this demonstrates some consideration of the potential routes through which H5N1 avian influenza might enter the country, and thus demonstrate policy-maker contemplation of the 'how' of H5N1 risk, stakeholders were focusing more on the 'when'. In the waning interest in policy development, the primary reason for loss of interest was the continued 'delay' in the arrival of H5N1 avian influenza:

[A]ctually, you find farmers asking you that, "We have heard so much about this avian influenza, when is it coming to Zambia?"

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

For local decision-makers, there were tensions between the preoccupation with the temporal concern of H5N1 risk, and externally defined evidence on the spatial concerns of risk: "According to Food and Agriculture Organisation (FAO), although Zambia is currently free of the virus, the country is at high risk because of many neighbouring countries, which has led to increase in human traffic and trade in poultry and poultry products"⁷⁴. Beyond the five modes of release listed in the country's National Response Plan, however, there was no clear mapping ('configuration') of how an H5N1 avian influenza incursion and outbreak might occur in the

⁷⁴ Zambia's National Response Plan on avian influenza, 2008 version, p.6

Zambian context. A risk assessment, guided by stakeholder-relevant risk questions, would be pertinent in assisting policy-makers and stakeholders focus more deeply on 'how' an H5N1 avian influenza incursion and outbreak might occur in Zambia. This would help to better define resource allocation in risk management.

The policy study also revealed that commercial breeders were perceived to have high biosecurity, based on the strength of their investment. However, it has been argued by independent NGO's such as GRAIN (2007) that many of the H5N1 avian influenza outbreaks in Southeast Asia were in large commercial institutions with poor biosecurity. For Zambia, other than illegal cross border trade, human travellers and migratory birds, breeders were the link with the global poultry industry and, potentially, at risk of acquiring H5N1 avian influenza. Another important risk consideration is that the poultry industry in Zambia had orientated itself towards poultry exports. This implies that should Zambia have an outbreak, it could be a potential source of H5N1 avian influenza for its trading partners. In terms of risk assessment, it is thus very important to consider the 'configuration' of the risk system to better inform disease management.

From the policy analysis, three interlinked risk systems would have to be considered in the weighing of H5N1 risk release in this context. These three risk systems are the biological risk, the ecological risk and the policy risk. These are essentially the map that a risk assessor could develop to determine the risk of release, exposure and consequence(s) of an H5N1 avian influenza incursion. The biological risk system would draw on virology and epidemiology, as this; in many respects, is a technical exercise. The ecological and policy risk systems, as they relate to risk assessment, require some unpacking. The ecological risk system, as conceptualised in this discussion, is the poultry production system at play in the Zambian context. This encompasses production characteristics and the nature and extent of interaction among production systems, processing systems and market distribution systems. In the case of Zambia, the production systems include the traditional backyard production systems, semi-commercial housed production systems, emergent production systems, commercial production systems and

commercial breeding systems. Together, the biological and ecological risk systems determine the likely points at which first, the production systems interface each other (and hence the means through which H5N1 avian influenza could spread from system to system), and second, the human exposure to H5N1 avian influenza may occur. The policy system includes, but is not limited to; the identification of the institutions, resources, stakeholders and policies available for risk management. These are important in identifying the type and feasibility of interventions that already exist to mitigate this risk.

A release assessment would begin by determining the current disease status of countries with which Zambia has trade dealings. The information on Zambia's trading partners and trade flows is available from the Ministry of Commerce Trade and Industry, the Ministry of Agriculture, Zambia's Central Statistics Office and the Poultry Association of Zambia. The disease status of Zambia's trading partners (sources of breeding stock) can be found on the OIE website. The next step may involve verifying the claim that Zambia's poultry breeders, of which only six hatcheries supplying the entire commercial poultry industry (including emergent and small scale production systems)⁷⁵, actually have the levels of biosecurity and surveillance systems in place to support the claim that they are at low risk of an H5N1 incursion. Much of the production information in the commercial sector can be obtained from the Poultry Association of Zambia. Information on the nature of production in the traditional sector can be obtained from the Central Statistics Office which publishes information of house-hold poultry production systems, as well as NGO's such as Africare that work with small scale producers. This information can also be supported by data from the Department of Veterinary and Livestock Development.

8.2.2.2 Conceptual scenario diagram for the assessment of multi-sectorial zoonotic risk in Zambia

⁷⁵ According to Zambia's National Response Plan for Avian and Human Influenza (2008), the country has four poultry production systems. These are commercial sector, emerging sector, small scale (also called backyard production) sector and the Village/free range sector.

From the policy analysis, I now propose a scenario diagram to represent the routes for introducing (contamination) zoonotic H5N1 avian influenza into the population of interest and potential routes of spread (configuration) (figure 8.2). In determining the risk of H5N1 release, one could consider the product to be a diseased poultry or their products, the possibility of biological carriage via human travel or via aquatic migratory birds. For poultry and poultry products, a risk analyst could trace the movement of these commodities through the entire production system, by conceptualizing physical pathways through the supply chain from hatcheries, producers, small scale producers, finally to markets (formal and informal), overlaid by a biological pathway defining host-pathogen interaction and an examination of biosecurity measures throughout the supply chain. A second set of pathways could be developed for biological carriage via human travel and the third would be through aquatic migratory birds.

The scenario diagram represents many of the key issues around risk identified in the policy analysis. It is a conceptual example of how a risk assessment might present the zoonotic H5N1 avian influenza problem to incorporate trade, public health and animal health. These sectors provide possible policy mitigation points, trade “surveillance” (through border and import controls, including poultry and poultry products in transit), veterinary surveillance (domestic commercial and traditional poultry, food safety, poultry markets and wild poultry) and human surveillance (port health, hospital and health centre surveillance and food safety). This is a possible ‘policy pathway’, or more accurately, a ‘risk management policy pathway’, since the movement of poultry and poultry products is defined by complex socio-economic and policy interactions. The physical pathways in figure 8.2 could consider trade agreements and SPS protocols, poultry production and marketing, avian influenza surveillance in humans and poultry and food safety. It must be mentioned that, as a configuration omission, the issue of food safety was not specifically addressed in avian and human influenza prevention and control policy development in Zambia:

[W]ithin our department, there are some people that are dealing specifically with food safety. In relation to Avian Influenza, all we have tried to do is,

probably in our extension, is to inform people how they should handle certain suspected cases....and... I wouldn't say we have done much. We...we have restricted importation from certain countries that are affected. But we haven't really developed a defined approach. Yes, in relation to public health...

Senior Veterinary Research Officer, National Avian Influenza Working Group (4)

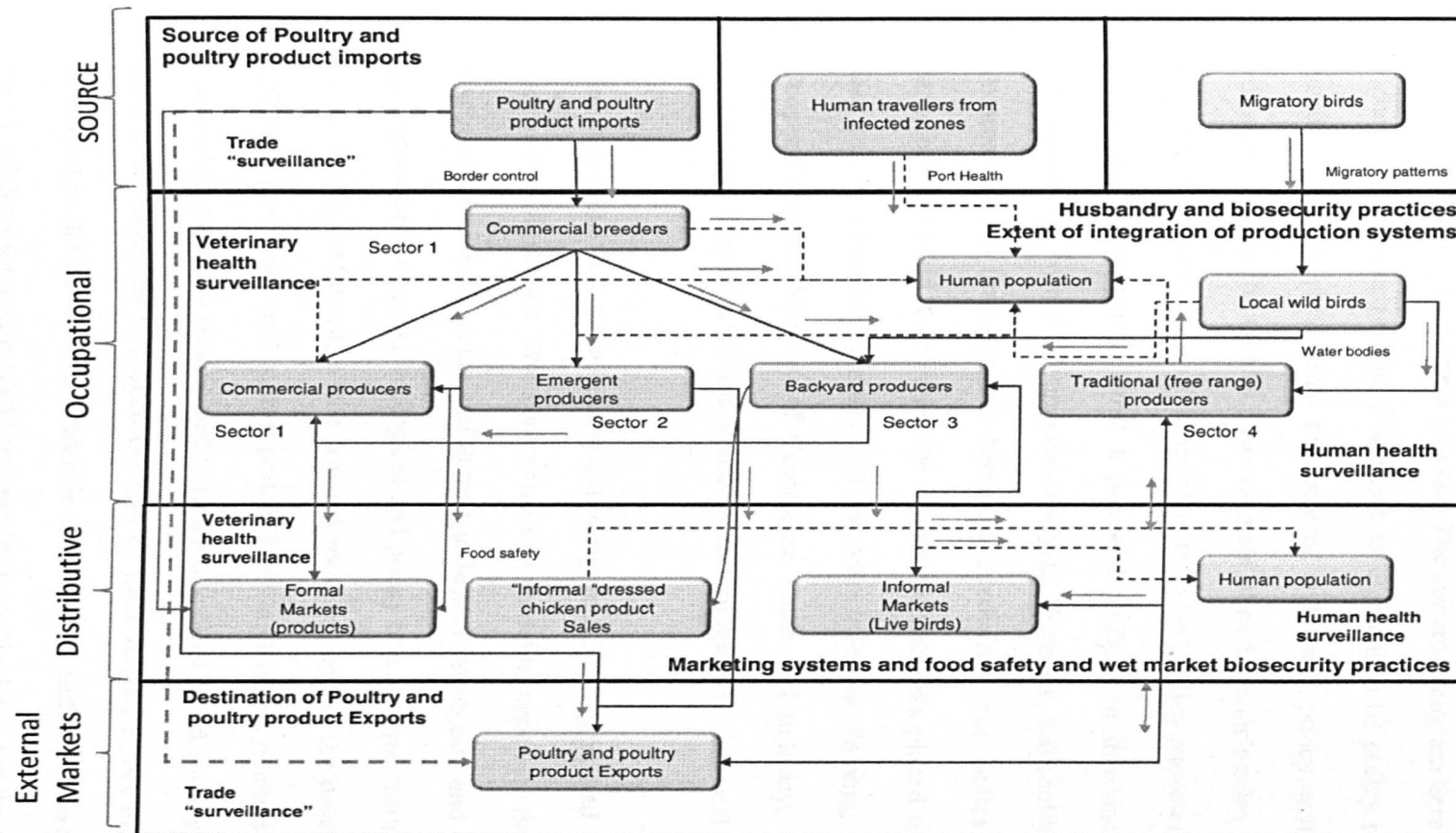


Figure 8-2. Conceptual scenario diagram for the movement of poultry and poultry products and H5N1 following import.

The physical pathways are represented by the blue and red arrows. The biological pathways (H5N1 transmission routes) are represented by the green arrows. Blue arrows represent poultry products and red arrows represent live poultry. The grey dotted line represents poultry and poultry products in transit, while purple arrows represent pathways for human contact with each risk system.

While it is important to conceptualize risk pathways in sensible, realistic and manageable ways, it is the position of Horlick-Jones (1998) that the resource and managerial aspects of risk should not be separated from the assessment process. The scenario diagram here attempts to include these critical aspects of risk management. For a risk assessment to be policy relevant, it must relate avian and human influenza prevention and control and trade policy activities to zoonotic H5N1 avian influenza risk which includes an assessment of each sector's roles and actions in each risk pathway, including some consideration of existing legal and policy frameworks, mandates and provisos. The policy study demonstrated that a potential plethora of information sources outside Health and Agriculture that would inform a risk analysis. However, stakeholders, such as the Ministry of Trade Commerce and Industry had been excluded from the policy process while their data and participation would have eased the resource constraints placed on the animal health sector. Such data can be obtained from the Poultry Association of Zambia, the Ministry of Agriculture and Cooperatives, the Ministry of Commerce Trade and Industry, the Zambia Revenue Authority, Zambia's immigration service, Zambia Ornithological Society and the Ministry of Health.

The conceptual risk model presented in figure 8.3 is aggregated from the physical and biological pathways in figure 8.2. This conceptual risk model incorporates the 'practical' data inputs for a risk assessment to inform avian and human influenza prevention and control policy in Zambia. It also aggregates the biological, ecological and policy risk systems, with the primary focus being on how public health is affected, which was the root concern for the development of the avian and human influenza prevention and control policy. The Greek letters represent the parameters of the risk areas that could potentially be assessed in relation to H5N1 epidemiology, ecology and policy that would need to be instituted to reduce the risk of trade-related H5N1 introduction. These parameters are explained in the summary provided in table 8.1. In addition to expert opinion and the literature on H5N1 epidemiology, this could potentially form the basis for the analytical framework for the risk release, exposure and consequence.

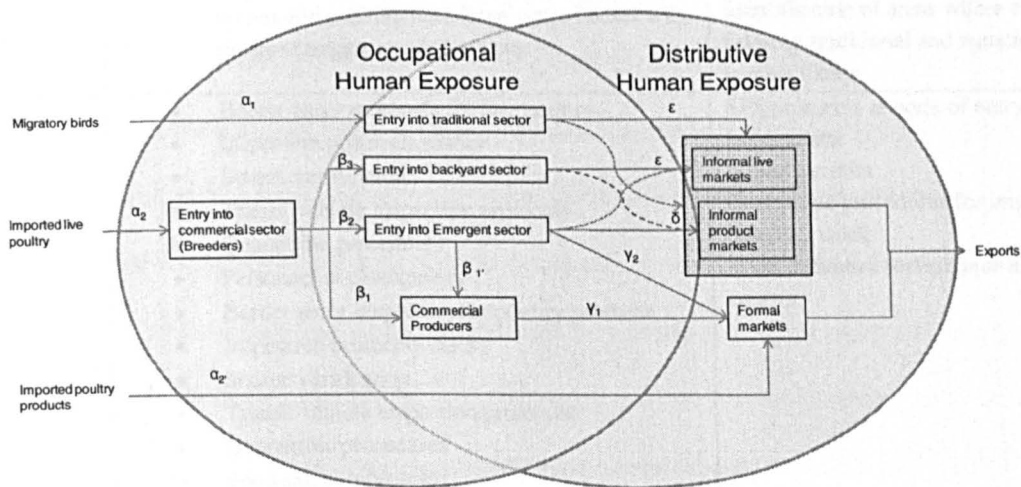


Figure 8-3. A conceptual risk model for the assessment of the risk of H5N1 introduction in Zambia.

Such a model would examine (1) Release assessment; involving a consideration of the trade-related, human travel related and aquatic migratory bird related pathways through which viable H5N1 could be introduced into Zambia from affected trading partners and regions including border inspection and SPS protocols; (2) Exposure assessment; involving a consideration of the pathways through which Zambian poultry and poultry products and high risk humans (occupational exposure) and consumers (distributive exposure) could be exposed to H5N1 following trade-related, human travel-related and aquatic migratory bird-related introduction. This would examine biosecurity, husbandry, wild bird and domestic bird contact rates and food safety protocols (3) Consequence assessment; involving a consideration the ways in which an H5N1 outbreak(s) would affect public health, the economy, or be spread further to Zambia's export markets. This would examine losses to the poultry and related industries, health system effects and the wider economic consequences (4) Risk estimation; involving a summary of the previous estimates.

Risk Pathway parameter	Interpretation	Data input
α_1	<ul style="list-style-type: none"> Seasonal migration of wild aquatic birds Contact rates with local aquatic ducks Contact rates with traditional poultry from communities living near large water bodies with the most migratory bird activity 	<p>Ornithological data for Zambia</p> <p>Husbandry practices in traditional flocks</p> <p>Identification of areas where contact between traditional and aquatic birds is most likely</p>
α_2	<ul style="list-style-type: none"> Border entry protocols for live poultry Inspection protocols (SPS) Source verification Transit vehicle inspection protocols Quarantine procedures Personnel at checkpoints 	<p>SPS protocols at ports of entry</p> <p>Import data</p> <p>Import permits</p> <p>Quarantine procedures for imported breeding stock</p> <p>avian influenza surveillance and control</p>
α_2'	<ul style="list-style-type: none"> Border entry inspection for poultry products Inspection protocols (SPS) Source verification Transit vehicle inspection protocols Quarantine procedures Food safety protocols 	
β_1	<ul style="list-style-type: none"> Monitoring of biosecurity measures and husbandry in the commercial producer sector 	<p>Poultry sector description data</p> <p>Sectoral activities around</p> <ul style="list-style-type: none"> avian influenza surveillance and control Human influenza surveillance Food safety
β_1'	<ul style="list-style-type: none"> Monitoring of biosecurity for poultry from the emerging sector coming into the producer sector 	
β_2	<ul style="list-style-type: none"> Monitoring of biosecurity and husbandry in the emerging sector 	
β_3	<ul style="list-style-type: none"> Monitoring of biosecurity and husbandry in the small scale sector 	
γ_1	<ul style="list-style-type: none"> Monitoring of poultry product food safety for the commercial sector prior to marketing 	
γ_2	<ul style="list-style-type: none"> Monitoring of poultry product food safety protocols for the emerging sector prior to marketing 	
Δ	<p>Informal product markets</p> <ul style="list-style-type: none"> Surveillance of poultry products from the formal (emerging) sector Surveillance of poultry products from the informal (small scale) sector 	
E	<p>Informal live animal markets</p> <ul style="list-style-type: none"> Monitoring of poultry health in informal markets Monitoring of health and mixing in informal markets 	

Table 8. 1. Conceptual parameters explaining symbols used in the conceptual risk model shown in figure 8.3

Conceptualized like this, such a risk model would examine zoonotic H5N1 avian influenza entry into poultry production systems, release *into* these poultry production systems, possible routes of exposure of other poultry flocks and the risk of human beings contacting potentially infected poultry and poultry products. The aspect of exposure of human beings to zoonotic H5N1 is fundamental, since in Zambia, for policy-makers at least, the zoonotic risk was more important than the effect on poultry industry productivity. Broadly speaking, the human populations at most risk would probably be those working very closely with poultry (occupational exposure) and those working in poultry trade (distributive exposure). An important aspect for the risk assessment to address is actually 'when' human exposure is likely to occur following detection of outbreaks in poultry. The literature shows that in other contexts, human cases occurred between a month (Egypt) to a year (Nigeria) after poultry outbreaks were detected (WHO 2010). This provides the possible timeframe in which the health system would have to respond in order to reduce the risk of further spread. For decision-makers in Zambia, there was also a need to answer the question when H5N1 avian influenza would come to Zambia. A qualitative risk assessment would assist policy makers decide if the risk is acceptable or not. If further insights are required, a more data intensive quantitative risk assessment would give indications of time frame probabilities.

8.2.3. Roles in multi-sectorial risk management in Zambia

The Code defines risk management as "the process of identifying, selecting and implementing measures that can be applied to reduce the level of risk" (OIE 2010, p. xxii). The stages of risk management, according to the OIE, are risk evaluation, option evaluation, implementation and monitoring and review (Murray *et al.* 2004). Risk evaluation involves determining whether or not the risk calculated by a risk assessor requires intervention. Option evaluation seeks to define the nature of this intervention and identify the various approaches available to manage risk.

There is, however, an important policy question that requires contextualizing to apply a modified version of the OIE risk analysis framework, and that is ‘who’ manages risk? Vose *et al.* (2001) state, rather definitively, that risk management, as a process, is undertaken by *risk managers* knowledgeable in policy and in possession of the appropriate level of technical know-how to communicate efficiently with persons assessing risk. In the preamble of their paper on risk analysis, MacDiarmid and Pharo (2003) state that the process of risk analysis is intended to assist *decision-makers* weigh the risks posed by particular courses of action. While it is appreciated that both papers are technical overviews of the OIE risk analysis framework, they do not attempt to unpack the terms ‘decision-maker’ or ‘risk-manager’. These two terms could refer to different sets of policy actors or the same set of people. It should be borne in mind that in the development of multi-sectoral zoonosis risk management policy, the term ‘risk manager’ is actually fluid, applicable to a multitude of stakeholders. In this policy analysis, for example, we identified a 20-person Task Force on Avian and Human Influenza, the Department of Veterinary and Livestock Development, the Ministry of Health, the FAO, the WHO, USAID, the National Agricultural Information Service (NAIS) and the Ministry of Health’s Health Education Unit, all working to ‘manage’ the same risk. In addition, there were stakeholders such as the Poultry Association of Zambia, who acted to manage media-generated *perceptions* of risk:

[W]e realised that it (avian influenza) gained a lot of prominence in the press and the prominence was full of fake things and people were just downloading the Turkey situation or the China situation and making it appear as if it was a Zambian situation. ...In the three months of the AI prominence in the... (Media) ...we as an industry lost to a tune of 30 billion kwacha⁷⁶ in three months. So we woke up from slumber and took a leading role in the sensitization of our members and also the general public...

Poultry Association of Zambia Executive Director (16)

⁷⁶ This amounts to approximately £3.9 million

In multi-sectoral risk management settings, therefore, it is more useful for the *risk analyst* to understand policy *processes* and be able to *explain* the technical aspect of risk assessment in accessible ways to different stakeholders rather than expect 'risk managers' to be conversant with the technicalities of a risk assessment. The policy study revealed that there were various technical and non-technical strands to the preparedness effort as it related to the management of zoonotic H5N1 avian influenza risk. There was the public health response, based on the Integrated Disease Surveillance and Response (IDSR) framework. There was the animal health response, based on the developed National Response Plan framework. There was also the omitted, but potentially important, trade response, based on their capacity to translate, support or implement trade agreement provisos for the purpose of animal health, plant health or human health protection. It would be unrealistic to expect that these different policy communities would have 'risk managers' with "the appropriate level of technical background to communicate effectively with risk assessors."⁷⁷ The policy analysis also revealed that at ministerial level, 'risk managers' in one ministry were unable to effectively issue risk management instructions to 'risk managers' in other ministries, nor were they expected to:

It would be "un-protocol" for a ministry to give another ministry an instruction, because ministers are generally assumed to be at the same level.

National Coordinator, Disaster Management and Mitigation Unit (20)

For the OIE risk analysis framework to be useful in the Zambian context, the framework should aim to assist effective risk management by highlighting response system vulnerabilities *across* sectors in the process of characterising the dynamics of zoonotic risk. There is also a need to direct the explanation of the response system vulnerabilities to the appropriate audience or set of decision-makers. The role of risk analysis to inform decision making would therefore be enhanced if risk is

⁷⁷ Vose *et al.* (2001) p.814

considered across the entire policy spectrum and not just from one viewpoint. This may also include taking inventory of the resources available across the entire policy spectrum to manage said risk. It is of interest for a risk analyst, for example, that perceptions of risk in the animal health sector were actually about veterinary capacity to *manage* the policy response, rather than manage the risk. While there was acknowledgement of the limited capacity to manage the policy response, the policy study also revealed that the resource implications for the management of risk were poorly considered, such as the proposal to formulate Rapid Response Teams in Zambia's 72 districts. Resource management is therefore cardinal to risk mitigation.

The policy study demonstrated that coordinating the preparedness response was a challenge for Health and Agriculture. While the two Ministries were technical experts in human and animal disease management, respectively, they lacked the authority to bring other stakeholders into the fold. Comparatively, the Ministry of Health was institutionally more powerful than Agriculture, because it hosted the multi-sectoral National Epidemics Preparedness, Planning and Management Committee. However, the effectiveness of coordination was limited by decision-maker incognisance of differences and possible complementarities in priorities, norms and policy frameworks.

Differences in priorities, norms and policy frameworks affected the development of the H5N1 avian and human pandemic influenza preparedness risk management policy. There were thus challenges in properly linking the policy response to livestock trade policy in Zambia (in the sense of the public health, trade and animal health policy positions and actions) and holistically addressing the various conceived modes of H5N1 avian influenza introduction and routes for human exposure. Overall, there was an inherent difficulty in bringing the different stakeholders to view the risk management issue in mutually beneficial ways. To address this, the policy management identified under the policy considerations for risk assessment, could actually help to identify context-appropriate risk management options that draws both on multiple framings of risk and the resources

of a wide pool of policy relevant stakeholders, thus aiding the process of assigning roles and resources more appropriately across sectors.

8.2.4. Policy considerations for risk communication

The process for risk communication is not straightforward. In Chapter 6, the policy study demonstrated that the communication strategy developed in Zambia for the pre-pandemic phase concentrated on primarily sensitizing poultry producers on H5N1 Avian influenza. It took a very top-down, animal health approach to communication of risk. The communication strategy was developed at sectoral level; entailing that primarily poultry farmers, veterinarians and medical personnel were made aware of the highly pathogenic avian influenza problem, but important arms of government, such as the Ministry of Commerce Trade and Industry, that could have played a role in policy development were excluded. While a number of stakeholders had been included in the Task Force, many of them did not really understand how H5N1 avian influenza affected them. Clearly, as long as a policy issue is on the agenda, risk communication is not just about a unidirectional communication to stakeholders about risk, but an evolving process of continuous dialogue across sometimes different epistemic communities.

The Code defines risk communication as “the interactive transmission and exchange of information and opinions throughout the risk analysis process concerning risk, risk-related factors and risk perceptions among risk assessors, risk managers, risk communicators, the general public and other interested parties” (OIE 2010, p. xxii). For the OIE risk analysis to be useful, there has to be a consideration of who the policy relevant *risk communicators* are for a given risk problem in a given context. There is need to also think about how risk is communicated to, and by, different policy stakeholders, including the public, the media, farmers, medics, veterinarians, decision-makers across different sectors and even the donor community. Equally important is that in the process of risk communication, a context appropriate *forum* is used, allowing for as much dialogue and

feedback in the risk analysis process as possible. Such a risk analysis process would derive most benefit if presented both on a forum capable of reaching the largest number of policy relevant stakeholders and in ways that engages the interests of each policy relevant stakeholder. This entails structuring risk in flexible and stakeholder inclusive ways across public health, animal health, trade and more widely. Such a forum and approach would provide an audit of the multi-sectoral zoonosis risk management policy, including the identification of the institutions, resources and policies available for risk management. More importantly, it would be able to mobilize the necessary resources and institutions to enforce and evaluate the risk management response.

8.3. Summary

This chapter laid out the OIE risk analysis framework in the context of the risk literature set out in Chapter 3. It began by providing a critique of the framework, highlighting its technical, expert led, nature and how it artificially separates risk assessment from management and communication. However, given the OIE risk analysis framework's entrenched status as a 'gold standard', and the need to help decision-makers in Zambia develop better multi-sectoral zoonotic risk management policies in a structured manner, rather than reject it, the chapter sought to suggest ways of making the OIE risk analysis framework more open and deliberative, and to take explicit notice of multiple risk framings, diverse stakeholders and policy processes, to better negotiate risk analysis and risk management among multiple stakeholders. The chapter drew on the thesis findings, and insights derived from Millstone's (2007) co-evolutionary model (whose central premise is that of framing assumptions), to suggest conceptual additions to the OIE framework that would make it more applicable to the Zambian context.

Based on the understanding that risk is socially constructed, this chapter argued that in the process of hazard identification, it is the recognition of the various framing assumptions that construct the risk in each context that will foster wider stakeholder inclusion. This, in turn, will take into account

the multiple perspectives that exist in resource-constrained countries. As Millstone (2007) states, framing assumptions influence the questions posed, the type of evidence used or excluded, and even how this evidence is interpreted. He further argues that framing assumptions have significant, but sometimes unacknowledged influence on the policy process. In essence, this chapter argued that, by basing the hazard identification on framing assumptions, the OIE risk analysis framework can be made amenable to more open and inclusive evidence gathering and interpretation, thus treating 'risk' and its assessment in a more discursive manner. For instance, rather than seeking to answer one, externally influenced, risk question as the current conception of the OIE risk analysis framework would probably do (see McDiarmid and Pharo 2003), this new approach uses framing assumptions to develop *multiple* risk questions that speak to the interests of multiple policy relevant stakeholders. Furthermore, by acknowledging these framing assumptions throughout the various stages of the risk analysis process, a better map of the local risk management context can be developed, thus facilitating better resource allocation, risk management and risk communication, through a close examination and consideration of both the scientific aspects of local configuration and the politics of policy processes.

Adopting this approach would help reshape the face of the current multi-sectorial risk management response in Zambia, which the policy analysis demonstrated to be uncoordinated, driven by narrow and fragmented framings, and overly influenced by international agency funding, evidence and advice. Zambia would benefit from such an approach to risk analysis, especially if the process of dialogue could assist stakeholders focus on the context-specific elements of managing avian and human influenza risk. The risk analysis would need to be applied in such a way that it assists stakeholders align resource and institutional priorities to the prevention and management of an H5N1 incursion. Therefore, while the OIE framework is widely applied in animal health settings, on the basis of the findings of this multi-sectoral policy case study, it may require a careful consideration of its utility in the Zambian politico-economic context. Also important, by analysing

the feasibility of the applicability of the OIE risk analysis framework through a policy lens, this study has demonstrated that given the interactions between local context, risk assessment and risk management policy, the relationship between policy and risk cannot be viewed as linear. Therefore, in the context of multi-sectoral risk management, risk assessors should consider taking into account political and social phenomena in the process of risk assessment. To help foster consensus across stakeholders with divergent interests, priorities, mandates and focuses, flexibility in risk structuring is essential.

In preparing for battle, I have always found that plans are useless, but planning is indispensable.

Dwight D. Eisenhower – quoted by Low and McGeer (2010)

CHAPTER NINE

Discussion and Conclusion

This final chapter summarises the contributions this study makes to existing knowledge about the policy processes for multi-sectoral zoonosis risk management in resource-constrained countries like Zambia. Specifically, the chapter discusses this thesis' findings in the context of the literature examining pandemic preparedness, disease risk mitigation and management, and risk analysis. It makes recommendations to the Zambian government of ways to improve multi-sectoral risk management, and provides some recommendations for pandemic preparedness in general.

The chapter is divided into four sections. The first section begins with a discussion of the global pandemic preparedness process and approaches to policy evaluation employed in the literature. It outlines how this study contributes to the body of knowledge on pandemic preparedness. This is followed by a general review of study findings on pandemic preparedness process in the context of Zambia. The chapter then discusses the trade and health relationship in the context of this study's findings. This first section covers the policy analysis component of this study. The second section of the discussion looks at risk, risk framing and the policy implications of using risk analysis to inform risk management priorities in resource-constrained settings. Drawing on the avian and pandemic influenza and risk literature, this section reiterates some of the policy implications of conducting risk analyses in resource poor settings. It concludes with reflections on future applications of risk analyses in such contexts and makes recommendations to decision-makers across trade, public health and animal health sectors in Zambia on ways to improve the development of risk management policies. The third section of this chapter provides

recommendations to policy makers in Zambia on how to improve multi-sectoral risk management policy development. The fourth and final section provides some thoughts on future areas of research and reiterates the study's limitations and caveats.

9.1. Discussion

9.1.1. An overview of pandemic preparedness

The recent global focus on preparedness traces its origins to the Severe Acute Respiratory Syndrome (SARS) outbreak of 2003. According to Heymann (2006), the response to SARS adopted new norms and approaches to international public health, which blurred the concept of state sovereignty, particularly in relation to disease reporting, information sharing and approaches to disease control. Similarly, Fidler (2004) argues that the post SARS era introduced new concepts and approaches to emerging infectious disease governance. It is important to note that while SARS was a global concern, other than a few news articles, it is difficult to find examples of actual discourse on SARS in the Zambian context. An article by Ricchiardi (2003) in the *American Journalism Review* for instance, states how a Zambian tabloid, the *Times of Zambia*, merely examined the dangers of travelling in the era of SARS. Zambia did not experience SARS and therefore could not draw on, or easily be compared to, the Southeast Asian experience.

Still, by modelling the global avian and pandemic influenza response on the SARS model, many of the lessons learnt from SARS became part of the global avian and pandemic influenza response. I have argued that very specific understandings and evidence constituted the response to H5N1 avian influenza in Zambia. Respondents felt that the issue of avian and human influenza was largely an externally driven agenda. Drawing on the wider literature, Stirling and Scoones (2009) for instance, argue that the ramifications associated with avian and pandemic influenza actually emphasized low probability Western concerns (mainly Europe and North America) over the costs of control for less developed economies and the livelihoods of Asian subsistence poultry producers whose flocks were targeted for control. Indeed, there was a cost for Zambia, the neglect of prevailing animal disease

problems as resources and manpower were focused on an exotic risk. The concerns of the West included the national security framing of a possible pandemic in post 9/11 America (Scoones 2010; Elbe 2010), which perhaps explains the extensive aid offered for pandemic preparedness by USAID in Zambia. The biosecurity and pandemic threat to America, in particular, was one of the key international drivers of the 'at source' and at risk containment agenda, a concern that has been defended by Kruk (2008) in her paper on fostering emergency preparedness in the health systems of developing countries. For the threat of H5N1 avian influenza, Scoones and Forster (2008b) traced the evidence justifying this 'at source' containment and control response to two epidemiological models (Ferguson *et al.* 2005, Longini *et al.* 2005). The main concern addressed by these models was the global effects of a pandemic over the in-context costs of control (Stirling and Scoones 2009).

For developing countries, it has been argued, the consequences of a global pandemic would be dire. Kruk (2008), for example, cites three studies that postulated South Asia and Sub-Saharan Africa would suffer the highest mortalities should a global influenza pandemic reach the magnitude of the one that occurred in 1918. Although H5N1 avian influenza had its epicentre in Southeast Asia, Africa was soon on the global public health radar as the next potential reservoir of the H5N1 virus. Pushing the 'at source' containment agenda in Africa, a WHO Regional Office for Africa risk assessment (WHO AFRO 2005) made very bold sweeping comparisons between Asian and African poultry production systems to justify similarities in risk and provide recommendations for prevention and control. The problem was, however, that the poultry production systems in Africa and Asia are in reality, very different. This alone demands a contextualised approach to assessment of risk, the development of strategies for prevention and control, and the evaluation of risk management policies.

9.1.2. Pandemic preparedness from the Zambian perspective

Without examining the underlying motivations of the response as adopted in Zambia, it would be difficult to assess what had really been achieved by the process if one relied solely on externally generated criteria. This study adds to the understanding of zoonotic risk management and the pandemic preparedness policy process as it occurred in Zambia. It closely examined how avian and human influenza prevention and control policy was developed and what influenced the policy process across animal health, public health and trade sectors. It also identified the institutional and contextual challenges to infectious disease risk management across sectors. The approach adopted was to examine risk management policy development from the perspectives of animal health, public health and trade policy makers. These perspectives were obtained through interviews with decision-makers and stakeholders within the study context. In addition, the study used observation and a documentary review. Among the key policy documents reviewed was Zambia's National Response Plan to avian and human influenza.

The study found that national decision-makers in Zambia attempted to define and address the risk of an H5N1 avian influenza incursion and pandemic preparedness in a context specific way. The avian influenza problem in Zambia came to be understood in three main ways; a possible impending exotic zoonosis, a plausible pandemic concern and a real economic threat to the poultry and allied industries. These framings demonstrated an attempt by national decision-makers to align internal national priorities with externally driven and financially lucrative international priorities. The key argument of this study has been that for Zambia, pandemic preparedness and H5N1 risk management was driven by an international agenda and finance, even if, locally, attempts were made to pursue these objectives within a development framework.

Given that the primary motivation for policy development was *pandemic* preparedness, one problem was that the issue took on a largely animal health and imminent threat framing. The second problem, the thesis has argued, was that the international agenda for pandemic preparedness, through financial arrangements and prescriptive approaches to preparedness, was separate from Zambia's development agenda, and went on to establish a parallel coordination structure that operated, perhaps unsustainably, outside the pre-existing and potentially useful coordination framework. This restricted participation in the policy process to particular actors while excluding others.

Politically, the imperative for H5N1 risk management in Zambia was driven by an international agenda, which, in turn, was fuelled by concerns of an imminent human pandemic of potentially catastrophic proportions. Under various framings, including those linking Western securitization to the need for at-source containment, billions of dollars were made available for preparedness activities, as highlighted in Chapter 2. Like many other countries, the need for these activities was imposed on Zambia, through the international call for pandemic preparedness (Chapter 5). The focus was H5N1 avian influenza risk mitigation, and given that poultry in Zambia was never a priority to begin with, there was some questioning of the contextual appropriateness of the effort (Chapter 7). But in responding to the international call, the agriculture and health sectors were only too eager to comply, as the drive offered opportunities to improve laboratory facilities, came with project vehicles and motorcycles and the promise of remuneration for those directly involved in simulation, sample collection, training, research and educative extension exercises.

Other stakeholders also joined the bandwagon, including NGOs such as Africare, which, capitalizing on the aid dollars provided by USAID, focused its 'biosecurity risk management' efforts on traditional poultry producers and poultry traders as likely sources of H5N1 and other poultry diseases risks. The media industry was co-opted in the process, reminded of the importance of responsible reporting to support Zambia's development agenda (Chapter 6). Another interesting

player was the Poultry Association of Zambia. Because perceptions of H5N1 risk had caused serious economic losses (the equivalent of £3.9 million over three months), this gave leave to the association to wear the hat of the biggest victim. The association later benefitted from monies made available for the risk mitigation effort, sub-contracted by the agricultural ministry to develop the initial risk communication materials, expertise which Africare also utilised for the production of their communication materials (data not shown). The Poultry Association of Zambia was mainly seeking to protect its local and international trade interests through the H5N1 risk mitigation process. They bemoaned the complacency of the agriculture ministry towards the sector's needs and advocated poultry import restrictions, even if the partial import ban that was instituted was largely symbolic. This is because the ban lacked legal backing, Zambia's borders were too porous for it to be effective, veterinary personnel were too few to impose it and the trade ministry had been excluded from the decision-making process.

With much of the funding directed towards animal health, the leadership of the avian and human influenza response shifted from the Ministry of Health to the Ministry of Agriculture's Department of Veterinary and Livestock Development. Even with 70% of the preparedness planning purse being managed by the Ministry of Agriculture, this shift in the fulcrum of coordination introduced both new challenges in maintaining stakeholder participation and created priority tensions in Agriculture (Chapter 7). As it was beginning to dawn that an H5N1 incursion was becoming less and less likely, there was an inevitable shift from an emergency response to that of preparedness and capacity building, but a continued neglect of priority diseases in the animal health sector. Funding and advice from institutions such as the World Bank and FAO had a disproportionate influence on the decision making process, from highlighting the shortcomings of the communication strategy and handpicking some policy participants to defining the risk areas for a possible H5N1 avian influenza incursion into Zambia (Chapter 7). In addition, local capacity in some areas of pandemic preparedness was generally overlooked and the roles important

stakeholders were to play in the preparedness process were ill defined. The Zambian government still went on to institute measures such as the formation of Rapid Response Teams, overlooking the poor resource consideration of extending these to district level. The perceived H5N1 threat never materialised, but funding continued to be provided. Poultry producers and the general public, primed by continuous extension exercises wondered when, if at all, an incursion would happen.

The important effect that financial arrangements had on the policy process was again implicitly highlighted in the struggle to coordinate the pandemic response involving the Health Ministry, Ministry of Agriculture and the Disaster Management and Mitigation Unit (DMMU) under the Office of the Vice President. Specifically, the query by the UN System Coordinator in Zambia in which clarification was sought as to where funding for avian and pandemic influenza planning funding should be directed was used as one justification for DMMU intervention. This was all happening at a point where the threat of an H5N1 incursion appeared to be dwindling. The study has thus demonstrated the processes through which a global agenda such as pandemic preparedness is actually translated into national policy and the tradeoffs that are made, thus adding to the understanding of the policy implications of the global pandemic preparedness policy processes in various contexts.

Other than studies examining the epidemiology of avian influenza in Africa (e.g. Monne *et al.* 2008), there are limited studies that have substantively examined avian and human preparedness policy development in a single African country context. One study examined pandemic preparedness in Africa through a review of pandemic preparedness plans (Ortu, Mounier-Jack and Coker 2007; Ortu, Mounier-Jack and Coker 2008), and a few have made recommendations for pandemic preparedness in developing countries (e.g. Kruk 2008; Azziz-Baumgartner *et al.* 2009). This study contributes to this work by providing an analysis of *how* the pandemic response was developed in Zambia.

9.1.3. Assessing the extent of pandemic preparedness: The importance of local context

This study adds to existing knowledge on understanding the policy processes surrounding pandemic preparedness and the evaluation of preparedness responses in the context of resource-constrained countries free from pandemic concern infectious disease threats. In this section, two types of studies are reviewed; those that have endeavoured to examine and evaluate policy processes within context, and those that have adopted external criteria in the evaluation process. The studies reviewed here illuminate the different faces the pandemic response has taken in different locations, drawing attention to the implications of generic approaches to avian and human influenza prevention and control in different contexts, in particular, those that have experienced highly pathogenic avian influenza outbreaks, and those that have not. In aggregate, these studies highlight the challenges to integrated infectious disease governance from both national and global perspectives.

Among the literature providing contextual analyses of infectious disease governance, the study by Scoones (2010) is perhaps the most comprehensive multi-country overview of avian influenza policy processes, examining the international narratives surrounding the avian and pandemic influenza problem in the context of Southeast Asia. It provides a comparative analysis of the politics and science implications of the global response. It builds on previous work on avian influenza policy processes (Scoones and Forster 2008a; Scoones and Forster 2008b). The three core narratives identified were the animal health, public health and pandemic preparedness understanding of the avian influenza problem and its ramifications for science, policy and politics in both local and global spheres. It examined the limitations of a centralised, one-cap-fits all response, and the need to take seriously local contexts, particularly its impacts on livelihoods and the context-dependent effectiveness of controls. While our study was not a cross country comparative analysis of policy processes, it examined closely policy development from the perspectives of different sectors in Zambia, a country free from H5N1, and drew attention to some of the challenges to multi-sectoral risk management given global concerns and national priorities.

A different kind of contextual analysis, this time focused on preparedness evaluation, was the study by Hanvoravongchai *et al.* (2010). They conducted rapid assessment of pandemic preparedness and the challenges to health systems in six Asian countries. The study however was limited to a health systems focus. They highlight the fact that in these countries national pandemic preparedness plans and avian and human influenza response plans were treated as separate entities. Our study had mainly an animal health focus, because this was the area with the most funding, and hence the most activity. We found that the avian and human influenza response, even though viewed differently by the various sectors involved, was *synonymous* with, and not separate from, the pandemic response. The importance of this finding is that our study, although focused only on one country, made explicit the policy processes around the avian and human influenza problem in a country both free of H5N1 avian influenza and without the experience of responding to world profile infectious disease concerns such as SARS.

As opposed to an in-context analysis of preparedness policy processes, several studies have opted to evaluate pandemic preparedness using externally defined criteria. Krumpkamp *et al.* (2010) briefly reviewed some of the common approaches for the evaluation of pandemic preparedness, among them the WHO pandemic preparedness guidelines and its accompanying checklist, and the European Centre for Disease Prevention and Control (ECDC) tool, before providing a conceptual framework for evaluating pandemic preparedness based on the Hazard Analysis Critical Control Point (HACCP) model. The call for pandemic preparedness came with WHO generated guidelines for preparedness (WHO 2005). These were accompanied by a checklist for nations to gauge their level of preparedness in accordance with the requirements for responding to each of the six pandemic phases (WHO 2005). The 'checklist' approach has been adopted to examine preparedness plans in Asia-pacific region (Coker and Mounier-Jack 2006a), Europe (Mounier-Jack and Coker 2006) the African continent (Ortu, Mounier-Jack, and Coker 2008) and Latin America (Mensua, Mounier-Jack, and Coker 2009). These studies provided insightful comparative evaluations of

policy *content*, but they all utilised externally defined criteria to determine levels of pandemic preparedness. As noted by Coker and Mounier-Jack (2006b), in reflecting on their review of pandemic preparedness plans in Europe, the reading of country plans is not a true reflection of a nation's state of preparedness. In this thesis, I have argued it would difficult to assess what had really been achieved in terms of preparedness if one relied solely on externally generated criteria, without uncovering the underlying motivations and drivers of the response as adopted in Zambia. This study adds to this body of work by reviewing Zambia's National Response Plan, national policy process and the resultant policy activities. While these other studies have reviewed the levels of preparedness based on the letter of policies, this study contributes to understanding the importance of determining 'practical' preparedness based on a proper account of the policy context.

Using a detailed qualitative analysis of one case, this study helps unpack some of findings made in other studies. Ortu, Mounier-Jack, and Coker (2008) in their analysis of 35 preparedness plans in African countries, for instance, found that preparedness plans focused primarily on H5N1 prevention and control rather than pandemic preparedness, and that the human health systems were ill-prepared. For the Zambian context, the focus had indeed been on H5N1, because the initial framing of the avian and human influenza problem was animal health weighted, with over 70% of the funding directed towards this sector. Furthermore, the study revealed that much of the pandemic preparedness activity occurring in Zambia was not reflected in Zambia's National Response Plan.

Other than the study examining pandemic preparedness in Africa and Latin America, all the studies reviewed in this section were conducted in locations that had either experienced SARS or H5N1 in poultry or humans, or both. It is reiterated here that Zambia had no experience in dealing with SARS or H5N1 avian influenza. Zambia was in effect 'naïve' to these pandemics. This 'naivety' does not necessarily represent a handicap. The country was led to focus primarily on preventing highly pathogenic avian influenza contamination while concurrently developing more substantive pandemic preparedness capacity. It was clear that the concern among decision-makers in

government was the zoonotic potential of H5N1. There was also the reinforcing of public health objectives as a result of the A/H1N1 pandemic, helping to renew interest in avian influenza preparedness in light of the broader pandemic preparedness agenda. Although the A/H1N1 epidemic was milder than anticipated, having its highest impact in South America, Zambia's health system was able to respond to this pandemic from the foundations established by the avian and human influenza prevention and control policy response.

The avian and human influenza response in Zambia was decidedly non-pharmaceutical in its interventions. Indeed, WHO position papers such as the WHO risk assessment for Africa by the WHO-African regional Office (2006) emphasized behavioural change as the mainstay of non-pharmaceutical intervention. The research found that the creation of awareness about highly pathogenic avian influenza among the public, through extension and the media, was the main approach adopted in Zambia's prevention strategy. In the Zambian case, the only time pharmaceutical intervention was mentioned was with the advent of the A/H1N1 pandemic, with Zambia making contingencies to draw on WHO regional stockpiles of tamiflu® as and when the need arose, with the Ministry of Health's National Epidemics Preparedness Planning and Management Committee defining the priority groups for treatment (data not shown).

While a top-down approach to global infectious disease governance has been embraced by many parts of the world, this research has demonstrated that the actual responses in different contexts are driven by the challenges faced (Chapter 7). This study therefore contributes to the understanding of how preparedness may be assessed in different contexts. Murphy (2006), in a review of the response to SARS in affected countries, spoke of the absence of fundamental infection control 'cornerstones' in resource-poor countries. In particular, Murphy states that "...fundamental infection control cornerstones are often absent in developing countries. As a result, infection control practice in developing countries can be haphazard, with ineffective efforts to minimise disease transmission." Murphy's argument, however, structures responses according to an externally

defined standard that can be difficult to achieve, given the resource constraints and priority differences that define resource-poor settings. Murphy goes on to review the approaches to disease control that were adopted in various contexts in Southeast Asia during SARS that, albeit not standardised, perhaps still aided in its control. Through highlighting what was gained by the pandemic response as adopted in Zambia (Chapter 7), this thesis has argued that such 'outsider' perspectives can sometimes fail to recognise the merits of context specific responses. These local approaches may also not necessarily be compatible with externally imposed response measures, and the tensions created between them could, in the long run, undermine local pandemic response capacity. Importantly, if context specific challenges and motivations are not made explicit, they remain inaccessible to evaluation, and their ramifications remain unexplored.

9.1.4. Challenges to the coordination of pandemic preparedness

Another contribution this study makes is to the understanding of the difficulties in coordinating pandemic preparedness efforts across sectors. As stated by Kingdon (2003) fragmentation is the norm in modern day policy making. What is meant by fragmentation is that the different sectors of government work as 'silos', pursuing individual sector interests and mandates. The findings of this research demonstrate that part of the challenge in coordination lay in the fact that the external influences guiding the pandemic response in Zambia assumed that structures for handling preparedness activities in the absence of an actual emergency were non-existent. The study by Mensua, Mounier-Jack, and Coker (2009) for Latin America drew attention to the need for external funding in low-resource settings to ensure the achievement of sustainable levels of preparedness. We argued that external funding actually influenced the direction of pandemic preparedness and undermined local capacity and requirements. This raises questions of sustainability of such approaches, a question which is beyond this thesis to answer, but does require further research.

As would be expected in a fragmented polity, the trade, public health and animal health sectors operated as silos with different priorities, agendas and mandates (Chapter 7). In tackling policy

problems, sometimes the interests of the different sectors in government can intersect. For Zambia, this intersection fell under the Fifth National Development Plan (5th NDP [Chapter 5]), bringing together *all* arms of government and their respective mandates under the mantle of an overriding economic development agenda. This aligned public health, trade and animal health interests and provided Government ministries in Zambia with input in each other's operations through Sectoral Advisory Groups (GRZ 2006a). In addition, the Ministry of Trade Commerce and Industry and the Ministry of Agriculture also worked together on issues concerning trade and health through the SPS Committee under the Ministry of Agriculture (Chapter 6). The existence of the National Epidemics Preparedness Management and Control Committee under the Ministry of Health provided a useful, albeit informal, platform for coordinating multi-sectoral disease control issues (Chapter 7), but in responding to the global pandemic preparedness agenda, the role of coordinating the emergency response fell to the National Task Force on Avian and Human Influenza. This perhaps nullified very useful, pre-existing links between the various arms of government.

In the end, the coordination of Zambia's response was implemented by the responsible ministries, in this case Agriculture and Health, with some consideration of shifting the fulcrum of coordination to fall under the existing national disaster mitigation and management structure. Hanvoravongchai *et al.* (2010), in their study, found that coordination of responses to avian and pandemic influenza in the six Asian countries they examined, fell under the Prime Minister or President's offices. Similarly, Scoones and Forster (2010) found that in many Southeast Asian countries, the leadership of the pandemic preparedness response was mainly in either the President's or Prime Minister's office. Other than the methodological approach adopted and objectives pursued, the main difference between our study and that of Hanvoravongchai *et al.* is that the latter was conducted in settings that had experienced a highly pathogenic avian influenza outbreak in either poultry or humans (or both) and all the six countries had experienced SARS outbreaks. There was thus a pre-existing framework and frames of reference for the response developed in these settings. This study argues that it is

important to identify and utilize what already exists in each nation in order to improve effectiveness of preparedness activities, and more importantly, help ensure their sustainability.

Many of the pre-existing structures identified and reinforced during the course of avian and human influenza prevention and control policy development in Zambia proved useful in the A/H1N1 response. For instance, the Integrated Disease Surveillance and Response (IDSR) platform was useful in the A/H1N1 pandemic response, in conjunction with the diagnostic capacity developed at the University of Zambia's School of Veterinary Medicine. The first cases of A/H1N1 were diagnosed using local laboratory capacity developed during avian and human influenza prevention and control policy development (Chapter 7). While the focus had been to contain avian influenza at its source, when push came to shove, the response was not limited to this 'animal focus'. The disease management system in Zambia thus appeared to be highly adaptable. It is noteworthy that the Rapid Response Teams constituted for the avian and human influenza prevention and control policy, while still in existence, did not feature in the A/H1N1 response, but the IDSR platform did. The Disaster Mitigation and Management Unit under the office of the Vice President was also useful in A/H1N1 response, while their role had not been defined in avian and human influenza policy development (Chapter 7). The disease management system fell back on pre-existing coordination structures and relationships. These structures are designed to respond as problems arise. However, the question remains, would the disease management system be able to cope with a highly infectious and fatal pandemic?

9.1.5. Revisiting the trade health relationship

This study contributes to the understanding of the trade-health relationship. In reviewing perspectives on the relationship between avian and human influenza prevention and control policy and livestock trade policy among the Ministries of Health, Agriculture and Commerce Trade and Industry, the primacy of health protection appeared well accepted (Chapter 6). In relation to the H5N1 avian influenza response in particular, concern was raised by the Poultry Association of

Zambia that the Ministry of Agriculture did not understand the sensitivity of the poultry industry in Zambia and was doing very little to foster the industry's development *and* protection from disease threats. Of course, many of the controls instituted to prevent an incursion of H5N1 highly pathogenic avian influenza were merely symbolic (Chapter 6).

The fact that Zambia chose to ban poultry and poultry product imports while maintaining its exports demonstrated Zambia's development focus, but the main concern is that in the context of the pandemic response, the trade bans that had been instituted across the African continent potentially led to as yet undetermined economic losses. The assessment of the economic implications of poultry and poultry product trade bans across the continent requires further research. Indeed, for a country like Zambia in which over 80% of the population is dependent on agriculture, and has an agenda of working towards economic advancement (CSO 2004) to curtail trade on the basis of an unexamined risk of an H5N1 avian influenza incursion is counterproductive.

The importance of trade in economic development in the context of Zambia cannot be overstated. It is reiterated here that developing countries have traditionally been excluded from the world trade table. With many people in resource-poor countries in Sub-Saharan Africa dependent on agriculture, including livestock keeping, for their livelihood, it is trade in animal and animal products that is expected to aid development. Delgado *et al.* (1999) in an FAO discussion paper have argued that the world is currently undergoing a "Livestock Revolution" in which it is expected that trade globalisation and market forces would create increasing pressure for exports of livestock products from developing countries. Diao and Hazell (2004) report in a conference brief on food security in Africa that traditional commodity exports from sub-Saharan Africa were estimated at \$8.6 billion and newer 'non-traditional' exports at \$6.1 billion, while DFID (2005) stated that the domestic sub-Saharan African market, including rapidly growing urban markets for higher-value horticultural and livestock products, was estimated to be more than three times greater than these combined. Given this economic background, it is reiterated that the assessment of the economic

implications of poultry and poultry product trade bans across the African continent warrants further research.

It is the argument of authors such as Lee and Koivusalo (2005), Kimball (2006) and Kimball *et al.* (2008) that the trade and economic communities are reluctant to support the internationalisation of public health. In the context of the H5N1 influenza issue in Zambia, a very different picture is presented. While trade has been found to trump health in other contexts, this study found health to trump trade concerns. In this case, health had been used as a clear trump card to impose trade restrictions on Zimbabwe and South Africa for outbreaks of H5N2. In this specific context, there was a reluctance to involve the trade ministry in the management of what was viewed as a public health and animal health issue. Interestingly, despite their lack of involvement in avian and human influenza policy development, respondents in the Ministry of Commerce Trade and Industry remained fully supportive of the actions of the Ministries of Health and Agriculture. The study showed that disease freedom was of paramount importance for the Poultry Industry and the Ministry of Commerce Trade and Industry.

9.2. Reflections on the application of risk analysis

The argument of this section of the discussion is that setting an avian and human influenza prevention and control policy agenda for countries in Africa based on extrapolations that do not consider the possible role that regional and national culture plays in disease epidemiology raises concerns of the appropriateness of such risk analyses and the resultant disease risk management policies. For example, fighting cocks, ornamental bird trade and duck farming on rice paddies are possibly mostly Asian country practices, all of which played roles in H5N1 maintenance and spread (Chapter 2). While parallels for disease emergence and spread exist, as seen in the outbreaks of H5N1 highly pathogenic avian influenza in North and West Africa, this study argues that there were large science and policy knowledge gaps. Leach, Scoones and Stirling (2010) recommend the consideration of the context's configuration in the development of disease management policies.

They suggest not just avoidance of incursions, i.e. keeping disease *out*, but understanding the local *arrangement* that may aid or curtail disease development, establishment and spread.

Global pandemic preparedness remains important, and this thesis does not dispute the validity of the pandemic concern. When it comes to risk, however, the underlying argument of this thesis is that in the multi-sectoral mitigation and management of risk, particularly in resource-constrained settings, responses must be constructed and addressed in context-specific, deliberative and stakeholder inclusive ways. Focusing on the analysis of risk, the thesis has argued that it is important to generate locally relevant evidence, as opposed to a complete reliance on externally generated evidence to inform preparedness policy development and resource allocation. Because of the contextual nature of risk, accepting that risk is socially constructed would make the process of evidence gathering more deliberative and context appropriate.

The OIE risk analysis framework, currently conceptualised as a technocratic framework, does not take these factors into account. However, given its entrenched status as a 'gold standard', rather than reject it as not feasible, the study has made suggestions of how it can be made more amenable to social processes, thus offering incremental and practical suggestions that highlight the importance of deliberation in risk analysis and resource allocation. An important ingredient is structuring risk in flexible and stakeholder inclusive ways and adopting an approach to risk assessment, risk communication and risk management that is responsive to the aggregated local ecological, biological and policy configuration. By this, I mean constructing, assessing, communicating and managing infectious disease risk *across* sectors in policy relevant ways.

In justifying the need to conduct a risk analysis in Zambia, the study first argued that resource considerations were poor in the plans to extend the Rapid Response Teams to the districts or even their usefulness in a highly pathogenic avian influenza outbreak. There were also poorly thought out considerations in the effectiveness of the trade ban to mitigate the risk of an H5N1 incursion, the

safety of the commercial poultry industry and the exclusion of the Ministry of Commerce Trade and Industry, among others, in policy development (Chapter 6). Although this study posited that a risk analysis may aid in defining resource priorities better, Barkenbus (1998) has argued that the careful identification of risks does not automatically result in the transfer of resources and attention from low-risk concerns to high-risk concerns. Such resource transfers would be especially difficult to effect in situations like that of Zambia where resource priorities are externally defined. Therefore, the study did not attempt to conduct a risk analysis, but conceptually illuminate the policy implications of conducting a risk analysis in this context.

As highlighted in Chapter 8, there are limitations to the objective assessment of risk based on frameworks such as that recommended by the OIE, especially as they relate to informing policy. Stirling and Scoones (2009) contend that scientific assessments of risk often attempt to aggregate very complex social and biological phenomena into a set of probabilities and outcomes which are often structured to become policy, rather than inform it. They recommend more inclusive and open approaches to the assessment of risks. This sentiment is echoed by Stirling and Mayer (2000), who posit that even experts “don’t know what they don’t know” and recommend wider stakeholder consultation in the risk evaluation process. Hueston (2003) is of the view that the veterinary profession, in particular, limits itself by shunning political and social phenomena in its evaluation of risk. Risk, as previously stated, is socially constructed and the proposed framework in this research took this into consideration. Within the sociology of risk literature, Douglas and Wildavsky (1982) argue that risk is ‘politicized’ through several social processes, giving risk a status which is separate from the actual dangers presented by various hazards. With this background, Horlick-Jones (1998) posits that risk identification and assessment are therefore both human and social activities based on generating meaning and “a shared understanding of reality” (p.80). Indeed, this study provided evidence that the risk and implications of an H5N1 incursion attained a high politics status in

Zambia (Chapter 5), but the multi-sectoral and externally financed nature of the policy process made it difficult to develop a shared understanding of the avian and human influenza problem.

The risk of H5N1 avian influenza was framed differently across the animal health, public health and trade sectors in Zambia, which was separate from the actual H5N1 avian influenza situation in the country. It was demonstrated that in Zambia, there was a lack of understanding of many of the local stakeholders on how highly pathogenic avian and human influenza affected them. The avian and human influenza issue in Zambia was not transparent, as a result of the intersecting multi-sectoral perspectives constructing the preparedness response. I argued that the influence of international agendas, organisational norms and procedures framed how the H5N1 avian influenza problem was understood across these organisational divides. Risk perception was thus both socially constructed and fragmented by contextualized framings.

Ashoff (2005), speaking specifically about policy coherence, but whose principles are applicable to the concept of multi-sectoral zoonosis risk management, provides four reasons for difficulties in bringing different policy communities to focus on the same policy objective. These reasons have some bearing on how feasible it is to improve and apply the OIE risk analysis framework in multi-sectoral risk management. The first is the area of societal and political norms based on competing values, diversity, competition, representation and access to decision-making which normally do not support consensus building or give consensus building primacy. The second is the area of political decision-making based on interest divergence. This includes the general policy process, politics, interests and power at macro-governmental and micro-institutional levels. The third is policy formulation and coordination. This covers problem framing, consensus, the presence or absence of structures that support stakeholder interaction, arbitration and conflict management, role allocation and information sharing. The fourth is the area of how to effect, and determine the impact, of coordination. In summary, in the case of Zambia, achieving objective clarity in multi-sectoral avian

and human influenza risk management policy was a challenge because of the very nature of the political system.

Given this background, this study proposed an integration of the socio-political structures of risk management into a conceptual framework for risk analysis that is largely grounded in the natural sciences, thus proposing an extension of this framework to increase its usefulness. To carry out such risk analyses, the study highlighted the importance of problem framing, identifying the different types of 'risk managers' and cognisance of the differences in risk management capacity across sectors (information that can feed back into a risk assessment), differences in institutional norms and priorities in developing a consensus view of risk, and an understanding of the policy process, especially in the aspects of coordination capacity and institutional power. Several themes from the policy analysis were used to argue for the feasibility and utility of conducting a risk analysis in this context. Fundamentally, what is required is flexibility in structuring risk in ways that are stakeholder inclusive. Risk communication and risk management should be responsive, and include local ecological, biological and policy considerations. The key lies in an approach to risk communication that both feeds into and draws from the risk analysis process.

How effective this proposed approach to conducting risk analysis is requires empirical testing. While this could be challenging, there is a wide body of literature that can be drawn upon to support the development of such an approach to risk analysis. The role of stakeholder analysis in resource management has been posited by Chevalier (2001), and can be extended to infectious risk management. For example, the risk assessment on avian influenza conducted by Pfeiffer (2007) for the European Food Standards Agency (EFSA) adopted an approach that involved wide consultation with stakeholders. Stirling and Scoones (2009) propose wide stakeholder consultation in the assessment of risk and many of their recommendations would help increase the robustness of this proposed extension of the OIE risk analysis framework. More importantly, Millstone's co-evolutionary model (2007), forms much of the basis for the improvement of the OIE risk analysis

framework, because it takes into account both scientific and social phenomena in the risk analysis process.

The Bovine Spongiform Encephalopathy (BSE) crisis presents very interesting parallels to the understanding of risk communication and risk management (See Dora 2006). Dowler *et al.* (2006) in reviewing the issues and methods of assessing public perceptions in the context of the BSE/Creutzfeldt-Jakob Disease crisis in Europe spoke of lay epidemiology in the understanding of risk problems that mirrors expert knowledge. Such a conceptualization can be extended to generate data for the 'policy pathways' proposed in this study's risk model (Chapter 8). The National Academy of Science publication, science and decisions, a publication advancing risk assessment in decision making from a North American perspective, found that risk communication needed to be improved (NRC 2009). Van Zwanenberg and Millstone's (2006) conceptual paper on risk communication strategies in public policy making reviews the merits of a deliberative approach to risk communication that emphasizes dialogue, including the definition, analysis and the evaluation of the risk issues. In proposing the risk model presented in Chapter 8, a deliberative approach was the mainstay of the argument that was advanced. What this research proposed was the adoption of a deliberative approach in the OIE risk analysis framework to improve its applicability. This requires quite radical shifts in thinking about a predefined approach to the assessment of risk.

More generally, several avian influenza risk assessments and conceptual models have been developed for Europe, Southeast Asia and Africa (Defra 2006; Pfeiffer 2007; Goutard *et al.* 2007; Peterson and Williams 2008) which could provide insights and additional data on how to best apply such a risk model in the Zambia. The conceptual framework for risk analysis in Africa by Goutard *et al.* (2007), highlighted the ecological considerations in conducting risk analyses in such contexts. This study adds to this body of work by making explicit the policy implications of conducting risk analysis in such contexts. It is necessary that in applying the OIE risk analysis framework in this multi-sectoral context, the existing policy framework for risk management is recognised from the

onset to avoid overly sectoral or ‘silo’ responses to risk that then require the development of additional policy interventions to negotiate.

9.3. Recommendations

Through the process of examining the policy processes for multi-sectoral risk management in resource-constrained countries like Zambia, the study can now make specific policy relevant recommendations to policy makers and for pandemic preparedness in general, on how to improve multi-sectoral risk management. The key findings in this study have been that national priorities often struggle with the prescriptive requirements of pandemic preparedness, particularly in the post-SARS era. These tensions can result in the development of symbolic responses that could ultimately impair the effectiveness of the pandemic response in some contexts. International agencies have a responsibility to recognise these competing priorities, particularly in resource-poor settings, whose health and veterinary systems are already struggling to address real disease threats.

While having an overarching agenda is important, it is also important to consider how this can best be translated into national policy. The key to sustainable pandemic preparedness lies not in developing new structures and approaches to preparedness, but improving existing mechanisms. The main recommendations made here are that in assessing the progress of pandemic response plan development, contextual evaluations are not only important, but are critical. There is need to critically review the evidence used to develop pandemic responses in different contexts. Evidence generated in different contexts is of limited utility for the success of global pandemic preparedness because while the successes and failures of other contexts provide useful learning experiences, they are not always transferrable.

In as far as developing a pandemic response is concerned, it is also important to foster the development of synergistic relationships across different policy sectors, particularly in contexts where resources are scarce, so that the burden of policy development is distributed across sectors,

allowing them to focus some of their scarce resources on their day-to-day peace-time mandates. This would also serve to better involve various stakeholders in policy development. A sustained emergency response is impossible. It will lead to stakeholder fatigue and ultimately undermine response capacity.

The following section briefly lists recommendations specific to decision-makers across trade, public health and animal health on improving infectious disease risk management policy development in the future.

- i. The coordination of the pandemic preparedness response needs to be deferred to a higher office above ministerial portfolio. The requirements for pandemic preparedness are such that a multi-sectoral approach should be advocated. The development of technical responses should remain with the relevant government agencies, but the aspect of coordination requires the intervention of an authoritative body whose mandate it is to coordinate inter-ministerial activities. While the Disaster Management and Mitigation Unit in Zambia meets this criteria, it must, with the aid of the Ministry of Agriculture and the Ministry of Health, clearly define its role in general disease risk management. The legitimization of the National Epidemics Preparedness Planning and Management Committee in the Ministry of Health as a subcommittee of the Disaster Management and Mitigation Unit could assist in more clearly defining the role this unit can play in disease risk management. This would also more regularly involve the Vice President's office in day to day aspects of disease control.
- ii. There is need to involve the Ministry of Commerce Trade and Industry in the development of future infectious disease management policy, particularly for zoonotic diseases that are trade related, in order to legitimize policy decisions that affect trade.
- iii. The Ministry of Agriculture needs to better manage infectious disease surveillance activities so as to be more efficient in their use of resources. The development of a

surveillance strategy that works similar to the Ministry of Health's Integrated Disease Surveillance and Response framework is called for.

- iv. Food safety needs to be better incorporated into Zambia's avian and human influenza prevention and control policy.
- v. The three ministries, Health, Trade and Agriculture, should consider drawing more on each other's resources in establishing surveillance activities for emerging infectious diseases.
- vi. A risk analysis should be conducted to help define resource priorities across the three sectors and more widely with regard to risk management and should involve consultation of all the relevant stakeholders.
- vii. Resource considerations for the various planned activities for preparedness need to be considered within the boundaries of what is feasible within this context.
- viii. Existing structures for coordination should be utilized as much as possible to disseminate information among the three ministries on the progress of developing Zambia's pandemic response.

9.4. Conclusion

The national level focus and policy analysis nature of this study made it very challenging, especially given the complex nature of developing a pandemic response and an analysis that focused primarily on the perspectives of national-level decision-makers from three out of the many sectors that were initially involved in setting the avian and human influenza agenda in Zambia. It was also a challenge to think about risk analysis in terms of policy. The key conclusions of this thesis are that the multi-sectoral H5N1 and pandemic influenza risk management policy pursued in Zambia was largely driven by international donor concerns which were not always aligned with national priorities, but that this process did bring some gains for Zambia in terms of improved laboratory capacity, a heightened awareness of avian influenza and a renewed interest in the poultry industry.

The policy analysis also underlined critiques that have been made of technocratic exercises such as the OIE risk analysis framework. However, such assessments will continue to be used, and therefore a pragmatic approach to improving the assessment of risk in resource-constrained settings is to consider drawing on what Millstone calls a 'co-evolutionary' approach. By bringing policy processes more explicitly into this technocratic exercise and allowing for multiple framings of risk, the model proposed in this thesis will have wider applications, but, as stated in this chapter, it requires empirical testing. Other areas recommended for further research include conducting policy analyses in other countries of Southern Africa to determine how their risk management and pandemic preparedness policies were developed and the trade-offs and compare them to what happened in Zambia. Economic evaluations are also recommended as an area for further research, given the wide-spread institution of trade bans across the African continent.

The study was limited to an examination of only three sectors in a single country. Broader insights would have been gained if the perspectives of poultry farmers had been obtained, particularly those in the traditional sector. This would have been useful to gauge how much awareness had actually been created by the preparedness process as adopted in Zambia. It would have also been interesting to obtain the perspectives of those members of the Task Force reported to have been complacent in policy development. The research however was limited to the analysis of trade, public health and animal health perspectives of multi-sectoral risk management policy development. Therefore, while the analysis itself provides new insights into pandemic preparedness policy development, revealing some of the pitfalls of the avian influenza response in an African country, it is still a limited snapshot of a complex and evolving policy and disease situation.

Many of the concerns over confidence in this study's findings have been addressed in the methodology chapter. To reiterate these included our use of retrospective accounts of the policy process. Multiple methods of data collection and analysis were used to address this concern including triangulation of policy documents, news articles and observation. There was also

extensive discussion of the study findings with my supervisor and key respondents. Therefore the recommendations made to decision-makers on how multi-sectoral zoonotic risk management and pandemic preparedness in Zambia may be improved, have been based on a reflexive and rigorous analysis of available data.

This policy analysis of national level pandemic preparedness and multi-sectoral risk management policy development across the sectors of animal health, public health and trade in Zambia provides new insights on how policies are developed in resource-constrained countries in the context of globalization. By reviewing the feasibility of conducting an OIE type risk analysis in such a way that includes policy processes and context, this study highlights the need to adopt integrative approaches to multi-sectoral infectious disease risk management and pandemic preparedness. In an ever-evolving globalised world, achieving this is an important goal.

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APPENDICES

Appendix I: Trade Agreements Affecting Health

WTO agreements with major health implications	
Agreement	Health impact
GATT 1994	Reduced tariffs in many developing countries led to job losses in “uncompetitive” sectors, with subsequent impacts on poverty, and declines in net public revenue, decreasing the funds available for health, education, water/sanitation, and other key health determinants.
Agreement on Agriculture	Continuing export and producer subsidies by the USA, EU, Japan and Canada depress world prices and cost developing countries hundreds of millions of dollars in lost revenue that could be used to fund health, education, and other health promoting services. Subsidised food imports from wealthy countries undermine domestic growers’ livelihoods. Market barriers to food products from developing countries persist and deny poorer countries trade related earnings.
Agreement on Sanitary and Phytosanitary Measures	Requires scientific risk assessments even when foreign goods are treated no differently than domestic goods (that is, there is no discrimination). Such assessments may be costly and imperfect.
Technical Barriers to Trade Agreement	Requires that any regulatory barrier to the free flow of goods be “least trade restrictive as possible.” Many trade disputes over domestic health and safety regulations have invoked this agreement.
General Agreement on Trade in Services	Locks in privatisation levels in committed service sectors, several of which (health care, education, environmental services) are important to promoting public health, and frequently prone to market failure (that is, private provision often excludes access to the poor). Once a service sector is committed, there is no cost-free way to extend public provision of that service in the future.
Agreement on Trade Related Intellectual Property Rights	Extended patent protection can limit access to essential medicines. Higher resulting cost of drugs can consume public funding otherwise useful for primary health care or investing in other health determinants
Agreement on Trade Related Investment Measures	Prohibits government’s abilities to place domestic purchase requirements on foreign investment; such requirements can increase domestic employment, which can be important to improving population health.
Agreement on Government Procurement	Limits government’s abilities to use its contracts or purchases for domestic economic development, regional equity, employment equity or other social goals with strong links to better population health. While currently a plurilateral (voluntary) agreement, there is negotiating pressure to make it a binding multilateral agreement.

Adapted from Labonte and Sanger (2006)

Appendix II: Summary of Interviews

Sector represented	ID (in order of appearance)	Interview type	Initial interview dates
1. Animal health and trade	SPINAP Coordinator and National Task Force member, Ministry of Agriculture and Cooperatives (1)	Formal	02/07/09
2. Animal health and trade	Task Force Member and Animal Health Focal person, Ministry of Agriculture (2)	Formal and informal	30/07/09
3. Animal health and trade	Senior Epidemio-surveillance Officer, Ministry of Agriculture and Cooperatives (3)*	Formal and informal	01/07/09
4. Animal Health	Senior Veterinary Research Officer, National Avian Influenza Working Group (4)*	Formal and informal	24/07/10
5. Animal health	Research Scientist, Ministry of Agriculture and Cooperatives (5)	Formal and informal	07/07/09
6. Animal Health	Non-Governmental Organization Poultry Consultant on Avian Influenza (6)	Formal and informal	27/07/09
7. Animal Health/FAO	FAO international consultant (7)	Formal and informal	01/09/09
8. Animal Health	Technical consultant, National Task Force on Avian and human influenza (8)	Formal	13/07/09
9. Public Health	Deputy Director, Public Health and Research, Ministry of Health (9)	Formal and informal	08/10/09
10. Public Health - Communication	Communication Focal Person, Health Education Officer, Ministry of Health (10)	Formal and informal	02/09/09
11. Public Health	National Surveillance Officer, Ministry of Health (11)	Formal and informal	17/07/09
12. Agriculture - Communication	Senior Information Officer, National Agricultural Information Service, MACO (12)	Formal and informal	10/09/09
13. Communication	Information Officer, National Agricultural Information Service, MACO (13)	Formal and informal	10/09/09

14. Animal health and trade	District Veterinary Officer, Member, Rapid Response Team (14)	Informal , Formal	28/09/09
15. Animal health and trade	District Veterinary Officer, Member Rapid Response Team (15)	Formal and informal	22/12/09
16. Poultry production and trade	Poultry Association of Zambia Executive Director (16)	Formal	01/10/09
17. Trade	Director Foreign Trade, Ministry of Commerce Trade and Industry (17)	Formal	03/11/09
18. Trade	Director Domestic Trade, Ministry of Commerce Trade and Industry (18)	Formal	03/11/09
19. Trade	Secretary Zambia Trade Mission to WTO Geneva (19)	Formal and informal	12/08/09
20. Coordination	National Coordinator, Disaster Management and Mitigation Unit (20)	Formal	25/09/09
21. Coordination	Head of Research and Planning, Disaster Management and Mitigation Unit (21)	Formal	25/09/09
22. Trade	COMESA SPS Expert (22)	Formal and informal	12/10/09
23. World bank	World Bank consultant (London)	Informal	27/06/09
24. Animal Health	Provincial Veterinary Officer #1	Informal	29/09/09
25. Public Health	Provincial Veterinary Officer #2	Informal	
26. Trade	Economist, Zambia Trade Policy consultant	Informal	27/06/09
27. Trade/standards	Standards Officer, Zambia Bureau of Standards	Informal	11/11/09
28. Agriculture	Permanent Secretary Ministry of Agriculture	Informal	30/06/09
29. Public Health	Director – Public Health and Research MOH	Informal	14/08/09
30. Public Health	Deputy Director – Public Health and Research #2 - MOH	Informal	2/10/09
31. Animal Health	Deputy Director Department of Animal Health and Livestock Development -	Informal	1/08/09

	Malawi		
32. Animal Health	District Veterinary Officer #1	Informal	28/09/09
33. Animal Health and trade	District Veterinary Officer #2	Informal	29/09/09
34. Animal Health	USAID Consultant Louisiana State University	Informal	12/08/09
35. Animal Health and Trade	RATES officer – COMESA Lusaka	Informal	15/08/09
36. Facilitator	USAID Consultant Field Simulation Exercise	Informal	28/09/09
37. Trade	COMESA trade expert	Informal	22/01/10

Appendix III: List of Documents for documentary review/corroboration

Document	Source
Country Level Rapid Assessment Avian and Human Influenza	Ministry of health
National avian influenza Budget for provincial tours 2006	Ministry of Health
Zambia's Fifth National development Plan 2006-2010	Internet Search
Zambia's Living conditions and Monitoring survey 2004	Central Statistics Office
The National Response Plan for Avian and Human Influenza	3 versions – MOH and Department of Veterinary and Livestock Development <ol style="list-style-type: none"> 1. Emergency Response Plan for Avian Influenza (2005) 2. Avian Influenza and Pandemic Influenza Threat: National Response Plan (2005-06) 3. National Response Plan for Avian and Human Influenza (2008)
Inter-African Bureau for Animal Resources introductory letter for SPINAP	Department of Veterinary and Livestock Development
Zambia: SPS Management Recommendations of a Joint World Bank/USAID Assessment Team	Internet Search
Report: National Integrated Desktop Simulation Exercise for the Control of Highly Pathogenic Avian Influenza in Animal and Human Populations. 4 - 5 September, 2008 - Suwilanji Gardens, Lusaka – Zambia	Department of Veterinary and Livestock Development
Report: Field Simulation Exercise for control of outbreaks of Highly Pathogenic Avian Influenza 29 – 30 September 2009	Department of Veterinary and Livestock Development
The Public Health Act, Cap 295 of the Laws of Zambia	MOH - Internet search
The Stock diseases Act, Cap 252 of the Laws of Zambia	MACO – Internet search
The Control of Goods Act, Cap 421 of the Laws of Zambia	Ministry of Commerce Trade and industry – Internet search
Zambia's Agricultural Policy 2004-2015	Ministry of Commerce Trade and Industry
Zambia's Trade Policy	Ministry of Commerce trade and Industry

Zambia's draft legislation revised stock diseases act	Department of Veterinary and Livestock Development
Zambia's trade policy review (WTO) 9 documents	Ministry of Commerce Trade and Industry (also available using internet search)
Integrated Disease Surveillance and Response protocol WHO-AFRO	Ministry of Health
International Health Regulations 2005	Ministry of Health
WHO pandemic preparedness guidelines	Ministry of Health
Zambia Poultry Sector Study Risk Mapping Activity – ILRI EDRS-AIA Project Early detection, reporting and surveillance – Avian Influenza in Africa Consultation report	Department of Veterinary and Livestock Development 2009
Fund request to support prevention and control of avian and human influenza in Zambia	Department of Veterinary and Livestock Development
COMESA trade protocol	Internet search

Appendix IV: Information sheet



London School of Hygiene & Tropical Medicine

Kennedy Mwacalimba
Department of Public Health and Policy
Health Policy Unit
Keppel Street
London WC1E 7HT

Interview Consent Form

Project Title: Trade, Animal Health and Public Health policy coherence: Developing coherent trade and avian and human influenza prevention and control policies in Zambia

I agree to be interviewed for the purposes of the research study named above.

The purpose and nature of the interview has been explained to me.

I agree/do not agree that the interview may be electronically recorded (choose one).

Any questions that I asked about the purpose and nature of the interview and research have been answered to my satisfaction.

Choose a), b) or c):

I agree that my name may be used for the purposes of the research only and not for publication.

OR

I understand that the student may wish to pursue publication at a later date and my name may be used. OR

I do not wish my name to be used or cited, or my identity otherwise disclosed, in the research.

Name of interviewee _____

Signature of interviewee _____

Date _____

I have explained the project and the implications of being interviewed to the interviewee and I believe that the consent is informed and that he/she understands the implications of participation.

Name of interviewer _____

Signature of interviewer _____

Date _____

Appendix V: Information Sheet



Participant Information Sheet

Project Title: Trade, Animal Health and Public Health policy coherence: Developing coherent trade and avian and human influenza prevention and control policies in Zambia

Researcher

Kennedy Mwacalimba, Research Degree Student

The London School of Hygiene and Tropical Medicine
Department of Public Health and Policy
Health Policy Unit
Keppel Street
London WC1E 7HT

This is a PhD study. The aim of this research to assess the extent to which the trade, public health and animal health policies concerning avian and human influenza (AHI) prevention and control and agricultural trade are coherent in Zambia and determine whether or not the existing level of policy coherence influences the risk of trade-related H5N1 introduction in the country. Policy coherence is the level of consistency/cooperation in policy positions, statements and actions on trade and avian and human influenza policies by the sectors under study. The purpose of the study is to develop policy-relevant conclusions on the possible importance of policy coherence in the management of trade-related disease risk. Your cooperation in meeting this objective is vital.

Participation

You have been chosen because you are in a position to provide the information necessary to meet the objective of this work. Participation is entirely voluntary. You are free to withdraw at any time with no obligation to give reasons for withdrawal. The information collection period will be approximately 6 months and will involve between 1 and 3 interviews lasting no more than an hour and a half each. Interviews will be conducted at your earliest convenience.

Risk

There will be minimal risk involved as the study only aims to obtain the perspectives of the trade, health and agriculture institutions to determine the extent of agreement or disagreement in policy development and if this has any bearing on the risk of avian influenza introduction. Interview transcripts will be anonymized to protect identities of informants.

Data collection

The research will involve an in depth interview to discuss either avian and human influenza policy development or agricultural trade policy and how stakeholders are linked in the policy formulation process. The interview will be based on open-ended questions on the understanding of the avian influenza problem, its level of importance in each sector, perceptions of risk, resource dependencies, institutional resources for disease control and actions related to the two policies. If you are able to provide documents to substantiate the information provided after the interview, this will be appreciated, as this would help shed more light on this issue. Interview transcripts will be given to you to confirm that this was in fact what was said before any statements are used for analysis. Follow up interviews may be requested to clarify statements or provide additional information, if this is deemed necessary. Again, you are under no obligation to accept a follow up interview.

Although unlikely, there might be minimal discomfort during these interviews as some questions may be considered politically sensitive. You have the option of deciding how the information you provide should be used, i.e. if you wish to speak anonymously, agree or disagree to be quoted, agree or disagree for the information you have provided to be used for analysis and agree or disagree for the information to be used in academic publications. No quotes or other results arising from your participation in this study will be included in any reports, even anonymously, without your agreement. If you are harmed by taking part in this study, there are no special compensation arrangements. If you are harmed due to negligence, then you may have grounds for a legal action but may have to pay for it.

Possible benefits of participation

It is hoped that the process of information collection and exchange will aid in improving policy coherence and also provide some understanding of how the risks of avian influenza and other animal-human diseases may be mitigated through greater cooperation. Results of the study will be provided to all participants. You will also be given copies of any publications made from this study or where publications can be found if individual copies cannot be provided.

Ethics approval

The study has been approved by the London School of Hygiene and Tropical Medicine and is seeking approval from Zambia Research Ethics Committee. Participants will be given a copy of the information sheet and a signed consent form to keep.

Appendix VI: Ethics Approval

LONDON SCHOOL OF HYGIENE
& TROPICAL MEDICINE

ETHICS COMMITTEE



APPROVAL FORM

Application number: 5465

Name of Principal Investigator Kennedy Mwacalimba
Department Public Health and Policy
Head of Department Professor Anne Mills

Title: Trade, Animal Health and Public Health policy coherence:
Developing coherent trade and avian and human influenza
prevention and control policies in Zambia

This application is approved by the Committee.

Chair of the Ethics Committee

Date 27 May 2009

Approval is dependent on local ethical approval having been received.

Any subsequent changes to the application must be submitted to the Committee
via an E2 amendment form.

All Correspondence should be addressed to the
Permanent Secretary
Telephone: +260 211 253040/5
Fax: +260 211 253344



REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

In reply please quote

No.

NDEKE HOUSE
P. O. BOX 30205
LUSAKA

11th August, 2009

Dr Kennedy Mwacalimba
University of Zambia
School of Veterinary Sciences
LUSAKA

RE: REQUEST TO COLLECT DATA FOR RESEARCH PURPOSES

Reference is made to the above subject matter in your letter dated 7th August 2009.

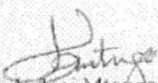
The Ministry of Health (MOH) is committed to supporting public health research aimed at identifying gaps in existing policies and programmes. The MOH also welcomes research findings that offer recommendations of interventions on how to improve the health status of the Zambian people.

I therefore, write to grant you authority to collect information from relevant MOH documents, information datasets, and through interviews with relevant health specialists on your research topic. This must however be done in accordance with laid down **ethical guidelines on confidentiality of information and use of research findings**.

I also note that you have not provided my office with **copies of your research protocol and questionnaires**, please make these available to the respective directorate for review before conducting any interviews and data collection in order to facilitate an orderly process.

Please liaise with the respective directorate within the MOH for support during your data collection exercise.

I look forward to receiving a copy of your research findings as soon as they are available.


Dr. Velepi Mtonga
Permanent Secretary
MINISTRY OF HEALTH