AVIAN AND HUMAN INFLUENZA:

FINANCING NEEDS AND GAPS

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ABBREVIATIONS AND ACRONYMS

AI	Avian influenza
AHI	Avian and human influenza
CGIC	Countries with greatest institutional challenges
FAO	Food and Agriculture Organization
GDP	Gross domestic product
GFTADs	Global Framework for the Control of Transboundary Diseases
GLEWS	Global Early Warnings System
HPAI	Highly pathogenic avian influenza
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
OiE	World Organization for Animal Health
PPP	Purchasing power parity
SARS	Severe acute respiratory syndrome
UNSIC	UN System Influenza Coordination
WHO	World Health Organization

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CONTENTS

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I. INTRODUCTION

1. This paper quantifies the possible costs of responding to avian and human influenza (AHI) at the country, regional, and global levels over a three-year period, and estimates the financing gaps developing countries of different income levels could face at different phases of the disease. The approach set out in this paper builds substantially on an indicative framework presented at the Partners Meeting on Avian Influenza and Human Pandemic Influenza held at the headquarters of the World Health Organization (WHO) in Geneva, Switzerland, November 7-9, 2005. A complementary paper proposes an integrated financing framework to meet the resource gaps identified.

2. ***Structure of the Paper.*** Following this introduction, Section II of this paper summarizes the present global status of AHI and the strategies the leading technical agencies have developed to address the threat. Section III explains the methodology for deriving the cost estimates it presents, and Section IV analyzes financing gaps. Section V highlights some key implementation issues. Annexes provide additional information: Annex A provides the templates on which the cost estimates are based; Annex B defines the country categories used in the analysis and lists the countries in each category; Annex C is a technical note on the costing of responding to AHI; and Annex D provides guidelines for appraising AHI control proposals in country programs.

II. STRATEGIC CONTEXT

3. Since the current strain of avian influenza emerged in 2003, most of the reported outbreaks have been in East and Southeast Asia. Recently, there have been further outbreaks in Croatia, Kazakhstan, Mongolia, Romania, Russia, Turkey, and Ukraine. Efforts to control the outbreaks have resulted in the culling or death from disease of over 140 million chickens worldwide, and the economic losses in the Asian poultry sector alone are estimated at around $10 billion. Moreover, of the 139 humans known to have contracted the infection, 71 have died. The continuing spread of the disease raises the prospect of further economic losses that would threaten the livelihoods of millions of poor livestock farmers, jeopardize smallholder entrepreneurship and commercial poultry production, and seriously impede regional and international trade and market opportunities. Rural poor people—who rely for a larger share of their income on poultry—are likely to be hit hardest by the income losses. The geographical spread of AHI and recent increases in the number of known human cases have increased concerns over the potential for a pandemic. Given the potential economic and social costs, the international community must therefore respond urgently as the most effective way to reduce the pandemic risk.

4. ***Coordinated Global Response.*** WHO cautions that the threat of pandemic influenza might persist for months or years; it is impossible to predict reliably when—or whether—an influenza pandemic might occur, or how severe its consequences might be. Given the threat that AHI poses to animal and human populations worldwide, the international community, guided by the leading technical agencies—Food and Agriculture Organization (FAO), World Organization

for Animal Health (OiE), and WHO—has begun to detail the elements of the coordinated global response that would be required. This response is informed and guided by the technical strategies these agencies have already developed:

- ***WHO global strategy.*** WHO's global strategy identifies five critical actions needed to address an influenza pandemic: (a) reduce human exposure; (b) strengthen early warning systems; (c) build capacity to cope with a pandemic; (d) intensify rapid containment operations; and (e) coordinate international research and development efforts to help accelerate the development and expand the production of human influenza vaccine.

- ***FAO/OiE global strategy.*** The strategy originally prepared by FAO and OiE in collaboration with WHO aims to minimize the global threat and risk of influenza in humans and domestic poultry, through progressive control of highly pathogenic avian influenza (HPAI), particularly that caused by the H5N1 virus, in terrestrial domestic poultry in Asia. FAO and OiE have revised the strategy to respond to the spread of the disease outside Asia. It should be implemented over three time frames: immediate to short-term (1-3 years), short- to medium-term (4-6 years), and medium- to long-term (7-10 years). This strategy is expected to be complemented by more detailed country-specific AHI control plans. In addition to the organizations' existing standards and guidelines on the prevention and control of AHI in animals, FAO and OiE have also issued specific recommendations for avian influenza.

5. ***Features of the AHI Response.*** The emerging international consensus is that the coordinated global response should be based on a common vision for addressing three areas of activity: (a) prevent a human influenza pandemic by controlling the highly pathogenic H5N1 virus in fowl and preparing for the next pandemic with vastly improved surveillance; (b) contain a human influenza pandemic by rapid detection and care of human cases and preventing human-to-human transmission of the pathogen; (c) respond in the event of a pandemic to keep vital services and societies going and mitigate the impact of the pandemic on human health, society, economic systems, and systems for governance. It is widely agreed that a coordinated global health strategy should recognize the following key issues:

- ***A multisectoral approach is needed.*** An integrated response that effectively balances both animal and human health interventions must involve actors from a range of disciplines, including human health, agriculture, economics, finance, and planning.

- ***Individual countries are central to a coordinated response.*** While the threat of AHI is global, the coordinated response must be initiated and led at the country level—that is, it must be based on country strategies developed and owned by the governments facing the threat of AHI. Country commitment to an integrated program is critical, as is coordinated donor support for such programs. Whereas the international community can provide critical advice and support, it is the countries that will implement the response.

- ***A balance must be struck between short- and long-term actions.*** Immediate action is needed to prevent the further spread of AHI, both in infected and newly infected

countries. In the longer term, the strategy will need to address such issues as restructuring the poultry industry, developing the capacity of veterinarian services, preparing the health sector (including through health sector reform) to deal effectively with future pandemics, enhancing public health surveillance capacity, and addressing the global market failure in influenza vaccine and production.

- ***Evaluation of key interventions and actions will be critical.*** Comprehensive evaluation systems that are capable of providing timely guidance on what actions are and are not effective should be an integral feature of program design.

III. ESTIMATED COSTS TO ADDRESS AHI

6. In developing estimates of the costs of responding to AHI, the World Bank has relied heavily on advice and technical guidance from FAO, OiE, and WHO. Wherever possible, the costing and financing gap estimates have been informed by data provided by the technical agencies or from country programs already under way. Thus the figures presented are informed estimates of the likely cost of the AHI response; but they should not be viewed as replacing extensive appraisal processes at the country, regional, and global levels. Any AHI operation proposed must be subjected to a thorough and detailed appraisal of its financial, technical, and economic soundness before it is adopted.

A. Templates

7. Annex A presents three templates that have been developed to define key components of the response at the country, regional, and global levels. All rely on the global strategies and were prepared jointly in consultation with FAO, OiE, WHO, and the UN System Influenza Coordinator (UNSIC).

8. ***Country Template.*** Annex A presents a template for an integrated country model that can guide country teams as they prepare country plans that are appropriate to specific country conditions. Key components of the template are as follows:

- ***Integrated country plans.*** All countries, regardless of their level of risk, need to prepare integrated country plans for human and animal health as well as for other sectors engaged in the response to avian and human influenza. Country plans should identify clear and common objectives across sectors, with associated results, outcomes, and costs, to which all sectors can contribute. They may also need to provide for the development of policy, legislation, and related strategy work to support the interventions identified.

- ***Communications and coordination.*** The most immediate economic impacts of a pandemic may arise not from death or sickness but from private individuals'

uncoordinated efforts to avoid becoming infected.[1] A key policy question for governments will be how to win the trust and confidence of their populations, minimize panic and disruption, and mobilize the public as a key partner in beating the disease. Here an honest, transparent public information policy is likely to be critical.

- ***Surveillance and early warning systems.*** On the animal health side, systems for surveillance and early warning involve the enhancement of laboratory and diagnostic capacity; operational support to active and passive surveillance, including routine serological survey, and related information system support; training; and technical assistance and support to research. On the human health side this also involves some upgrading of laboratory networks and diagnostic capacity, operational support and active surveillance, technical assistance and training, and some studies to support the surveillance work. It is recommended that even countries that are at low risk make efforts to prepare a surveillance system to be ready to conduct basic services for animal and human health.

- ***Rapid outbreak containment plans and operations.*** Animal health measures to contain and control the disease at the source would include animal vaccination, culling, compensation, disposal, and post-culling disinfection. On the human side, rapid response measures include field investigations of human disease cases and clusters, implementing public health countermeasures, and enhancement of surge capacity.

- ***Strengthened health system.*** Measures to strengthen the health system's capacity to deal with AHI include developing appropriate stockpiles; training health care workers to detect, diagnose, and manage cases; deploying risk communication protocols; implementing selective measures to deal with diagnosed cases; and equipping and protecting health workers.

- ***Medium-term strategy.*** Although this paper focuses on short-term issues and a three-year time horizon, it is important that efforts lay the groundwork for four medium- to longer-term objectives: (a) strengthening the capacity of the veterinary system to deal with animal health outbreaks, especially zoonotic diseases; (b) strengthening the health system to deal with infectious disease outbreaks, especially influenza; (c) strengthening the public health surveillance system; and (d) restructuring the poultry industry. Such plans should be ready around the second or third year of the proposed program to ensure appropriate follow-up on these important issues.

It should be noted that in all these activities there are roles for both the public and private sectors, and these should be given careful consideration when interventions are designed and implemented. The note on a financing framework highlights the importance of planning for

[1] There is evidence that during the severe acute respiratory syndrome (SARS) outbreak, the costs arising from panic and disruption (an estimated 2 percent of East Asian regional GDP in the second quarter of 2003) were magnified by an initial lack of public information.

financial support for these medium- to long-term needs while moving quickly to address the short-term priorities.

9. ***Regional Template.*** AHI interventions have important regional dimensions (see the regional template in Annex A)—that is, there are important cross-country activities that can provide support to countries facing similar sets of challenges. Regional activities should not duplicate country-level activities. Regional activities could include the following:

- ***Support for reference laboratories.*** Given the importance of surveillance activities in the control of AHI, countries need reference laboratories for animal and human surveillance and diagnosis. Laboratories in some countries may also provide services to other countries, thus playing a regional role. Regional support may be needed for equipment, staff costs, operating costs, and training.

- ***Coordination.*** Because disease crosses national boundaries, there is a need for regional organizations to convene meetings on implementation policies, surveillance methods, and control measures, to identify and strengthen coordination efforts across countries.

- ***Capacity building.*** Regional organizations could respond to country demands for capacity building and quality assurance, giving special emphasis to those efforts that are not likely to be retained at the country level.

- ***Support for regional bodies.*** There is a need for direct support to animal and public health organizations, regional organizations, and technical organizations (e.g., Asia-Pacific Economic Cooperation, Association of South East Asian Nations, FAO, OiE, WHO), building, where possible, on existing infrastructure and mechanisms such as the Global Framework for the Control of Transboundary Diseases (GFTADs) developed by FAO/OiE and the Global Early Warnings System (GLEWS) sponsored by FAO/OiE/WHO.

- ***Communications.*** To develop consistent messages and encourage information sharing across countries, regional and technical agencies may need to convene meetings and workshops and exchange data and information about AHI. This, in turn, may entail some operational costs.

- ***Research on regional issues.*** Research on some issues related to AHI may involve multicountry work or analysis that may be better handled at the regional level to take advantage of economies of scale. This line of effort might also involve "South-South" collaborations or information exchanges.

It should be noted that all support for activities that form part of the integrated country program are included in the country-level estimate of costs—even if such activities are provided by outside agencies.

10. ***Global Template.*** Activities at the global level complement those at the country and regional levels, and many are similar in nature to the regional-level activities. The global template (Annex A) includes the following components:

- ***Setting norms, standards, and global strategies.*** The global strategies from FAO, OiE, and WHO.and have played a pivotal role in shaping the response to AHI, but there are still many areas that require additional work and support in terms of strategy development. In addition, as the situation evolves there will be a need to review, adapt, and, as necessary, establish new standards and norms to guide the response at various levels.

- ***Support to laboratory networks.*** Without surveillance and rapid diagnosis, a truly coordinated response would be very difficult; and adequate surveillance will require efficient collaboration among and between laboratory networks at the regional and global levels.

- ***Development of materials and new technologies.*** The spread of AHI has highlighted the world's limited ability to respond effectively to pandemic diseases. Over the long term, the international community will need to address the complex challenges of insufficient global production capacity and market failures affecting vaccine and antiviral development.

- ***Coordination.*** The need for a multisectoral response at the country, regional, and global levels emphasizes the need for effective mechanisms to coordinate the response and avoid duplication and waste.

- ***Monitoring of key results and outcomes.*** Like all other initiatives and programs, AHI programs should have clear results frameworks that are linked to the integrated common goals and objectives and that can be used to monitor outcomes and progress. Monitoring systems should go beyond outputs to look at key intermediate indicators as well as financial needs and utilization patterns.

- ***Communications.*** Communication at the global level is important to provide consistent messages and guidance to the regional and country work. This effort may involve dissemination of regular status updates on the response, risk communication, policy advice and guidance, and advocacy. A strategy to guide such communications is essential.

- ***Stockpiles of consumables.*** WHO is developing an early containment and response strategy covering stockpiles of essential supplies (e.g., antivirals and personal protective equipment). The strategy is expected to provide the roadmap for warehousing, deploying, targeting, and delivering these resources effectively to contain or delay the spread of a pandemic.

- ***International response to pandemic consequences.*** An effective international response would involve cross-country action to prepare for pandemic consequences and anticipate responses to economic, human, and governance consequences.

B. Estimations

11. After the country template was developed, countries were classified into four income categories: countries eligible for funding from the International Development Association (IDA) that face the greatest institutional challenges (CGIC); other countries eligible for funding from IDA; countries eligible for funding from both IDA and the International Bank for Reconstruction and Development (IBRD) (so-called blend countries); and countries eligible for IBRD financing only.[2] Countries were also divided into four categories of AHI risks: infected countries, newly infected countries, high-risk countries, and low- or moderate-risk countries. (Annex B describes the country classifications and groupings in greater detail, and Annex C presents more details about the approach used for estimating country costs.) Construction of the profile for country typologies drew on information from a variety of sources—country programs, UN agencies, and specialized technical agencies.

12. ***Adjustments.*** The country models were then used to extrapolate the global estimates, with the following adjustments:

- Animal health components and culling and compensation were adjusted by poultry count.
- Human health components were adjusted by population size.
- Cross-cutting activities were adjusted by country size (very small, small, average, and large).
- Absorption capacity and price differential for CGIC, IDA, and blend countries were adjusted on a declining scale using the purchasing power parity (PPP) conversion factors described in Annex C.
- Finally, a 20 percent contingency was added to reflect the large degree of uncertainty involved in some of these measures.

13. ***Regional and Global Estimations.*** For this category of activities, the results are mainly based on inputs from FAO, OiE, and WHO. UNSIC has identified additional needs for other UN agencies. Moreover, some other regional organizations outside the UN system may require support, but information on these requirements is expected to be small relative to the country costs.

C. Cost Estimates

14. This section presents the main results of the costing work. As the Geneva meeting recognized, country-level work will constitute the majority of the costs—about 90 percent of the cost structure.

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[2] In addition to capturing relative poverty, categorization by income level also serves as a proxy for other important characteristics such as institutional and absorptive capacity.

1. Country Needs

15. Table 1 presents a summary of the cost estimates by income level. The total cost is about $1.2 billion. The IBRD countries account for about 55 percent of the costs, mainly because of a few large infected or at-risk IBRD countries. Countries infected with avian flu (and neighboring countries) have substantially higher cost structures than countries at lower risk levels (about 45 percent of total costs are in endemic countries). The figures for countries at high risk reflect the large number of countries in that category (see Annex 2 for details).

Table 1. Cost Estimates by Income Level and AHI Risk Status ($000)

Income level	*Infected*	*Newly infected*	*High risk*	*Low/moderate risk*	*Total*
CGIC	28,006		80,479	4,400	112,886
IDA	80,727	3,473	140,425	8,400	233,025
Blend	151,365		44,307	800	196,472
IBRD	305,808	146,994	195,869	11,200	659,871
Total	**565,907**	**150,467**	**461,079**	**24,800**	**1,202,253**
Contingency (20%)					**240,451**
Grand total					**1,442,704**

16. ***Country Costs by Region.*** Table 2 breaks down the costs by region of the world (using the World Bank's groupings; see Annex B). At present, the largest expected costs are in the East Asia and Pacific region, followed by Europe and Central Asia, and Africa. Countries in the Latin America region are in the low- to moderate-risk category, with correspondingly low costs.

Table 2. Cost Estimates by Region, Income Level, and AHI Risk Status ($ 000)

Region	*Infected countries*	*Newly infected countries*	*High-risk countries*	*Low/moderate-risk countries*	*Total*
AFR	0	0	137,907	9,200	147,107
EAP	565,907	3,473	63,813	2,000	635,193
ECA	0	146,994	76,791	800	224,585
LCR	0	0	0	9,200	9,200
MNA	0	0	108,925	1,200	110,125
SAR	0	0	73,643	2,400	76,043
Total	**565,907**	**150,467**	**461,079**	**24,800**	**1,202,253**
Contingency (20%)					**240,451**

Note. AFR: Africa Region; EAP: East Asia and Pacific Region; ECA: East Europe and Central Asia Region; LCR: Latin America and Caribbean Region; MNA: Middle East and North Africa Region; SAR: South Asia Region.

17. ***Cost Distribution.*** Table 3 presents the distribution of costs by the main intervention categories used in the country template. As would be expected for the short-term response, the majority of the costs are for rapid outbreak containment plans and operations.

Table 3. Cost Estimates by Type of Intervention and Risk Status

Intervention	*$000*	*%*
I. Cross-cutting issues	95,420	8
II. Surveillance and early warning (animal and human)	341,035	28
III. Rapid outbreak containment plan and operations (animal and human)	518,497	43
IV. Health system response to deal with avian influenza	144,732	12
V. Preparing a medium-term agenda for animal and human health	102,570	9
Total	**1,202,253**	**100**
Contingency	**240,451**	
Grand Total	**1,442,704**	

2. Regional and Global Needs

18. The regional and global estimates for the specialized agencies have been grouped together. Figures for other UN agencies are not yet included. The UN System Influenza Coordinator estimated that about $33.7 million will be needed for UNSIC and UN agencies other than FAO, OiE, and WHO. As discussed in the Geneva meeting, it is important that funds follow function and that, as regional and global needs are identified, there is no duplication between the two categories, across agencies, or between these activities and country needs.

19. ***Animal Health.*** Table 4 presents the estimated costs for animal health at the global and regional levels. About $75 million will be needed over a three-year period for animal health for FAO, OiE, and regional organizations. Most of those resources will be needed for regional networks and support; a breakdown by type of expenditure is not available.

Table 4. Support to Global and Regional Efforts for Animal Health through FAO, OiE, and Regional Organizations for Three Years ($000)

Type of support	*Global*	*Regional*	*Total*
Support to WFAH (OIE) [1]	1,500	20,000	21,500
Support to SFERA (FAO) [2]	3,000	see /[7]	3,000
Support to OFFLU (OIE-FAO) [3]	730	n/a	730
Support to GLEWS (FAO-OIE w/ WHO) [4]	3,000	n/a	3,000
Epidemiological investigations (FAO) [5]	n/a	5,500	5,500
Support to regional networks (FAO) [6]	n/a	16,500	16,500
Support to GF-TADs (all) [7]	n/a	25,000	25,000
Total	**8,230**	**67,000**	**75,230**

[1] Supporting the Veterinary Services to meet OIE international standards on quality (global and regional) through the OIE World Fund for Animal Health (WFAH).

[2] Supporting the operational coordination role (global and regional) of the Emergency Centre for Transboundary Animal Diseases (ECTAD) through the FAO Special Fund for Emergency and Rehabilitation Response (SFERA).

[3] Supporting the collaboration between reference laboratories specialized in avian influenza in animals (global) through the new worldwide Avian Influenza Network coordinated by OIE and FAO and laboratory networks focusing on human influenza coordinated by WHO (OFFLU).

[4] Supporting collaboration between early warning systems (global) through GLEWS, a joint FAO, OIE and WHO initiative for prediction, prevention and control of animal diseases threats, including zoonoses, through sharing of information, epidemiological analysis, and joint field missions, whenever needed.

[5] Supporting epidemiological investigations on the role of wild birds in the spread of HPAI (regional and countries).

[6] Supporting regional network of national diagnostic laboratories and epidemiological units for coordinated surveillance and monitoring (regional and countries), and of centers of excellence in social, economic, and policy analysis of avian influenza and its control.

[7] Supporting a framework for collaboration at the regional level, through the GF-TADs, a joint FAO-OIE initiative involving the key regional animal health organizations.

20. ***Human Health.*** Table 5 presents WHO's regional and global estimates of the costs of its main strategy items. The total cost is estimated at about $157.6 million, including about $56 million for regional and global stockpiles of antivirals. If the stockpiles are excluded, the global needs are about $35 million and the regional needs about $64.4 million. (These figures are for only a two-year period.)

Table 5. Estimates of WHO's Regional and Global Needs for 2 Years ($000)

Category	*Regional*	*Global*	*Total*
Strategic actions for human pandemic influenza			
Reduce human exposure to H5N1	3,200	3,000	6,200
Strengthen national and global early warning systems	17,000	5,000	22,000
Intensify rapid containment operations	16,100	10,000	26,100
Build capacity to cope with a pandemic	24,000	4,000	28,000
Coordinate national and international science and research, including acceleration of vaccine development and expansion of production capacity	4,100	13,000	17,100
Subtotal	**64,400**	**35,000**	**99,400**
International stockpiles			
Antivirals: 500,000 treatment courses per region		56,000	56,000
Personal protective equipment and other supplies		2,200	2,200
Subtotal		**58,200**	**58,200**
Total			**157,600***

* WHO is also working on funding gaps with regard to pandemic vaccine research and development, which would be as high as $500 million. This gap is not included in the total.

IV. FINANCING GAPS

21. In estimating financing needs and gaps, two options or scenarios are provided. The first one involves higher financing parameters for various country categories (by income level):[3] 100 percent for CGIC countries, 90 percent for other IDA countries, 70 percent for blend countries, and 50 percent for IBRD countries. The second option assumes a financing gap of 90 percent, 70 percent, 50 percent, and 30 percent, respectively, for the country categories. Under this approach, the financing gap is expected to be somewhere between $790 million (66 percent of costs) and $561 million (47 percent of costs) over the next three years (see Table 6). If the 20 percent contingency considered in the cost calculations is added, then the gap would increase to between about $948 million and $673 million.

[3] While the estimates of the financing gap are based on income levels, and thus relative ability to contribute financing, other characteristics are taken into account in the costing of country programs, in particular the level of risk to avian influenza (see paragraph 12). At the country level, in determining the level of external support, other factors, including the potential adverse impact on the regional and global economy, will need to be considered.

22. ***Regional and Global Gaps.*** A key issue in determining regional and global gaps is the cost for medium-term vaccine development. This will derive from the global strategy that WHO is currently preparing, which will be the basis for estimating and appraising those needs.

Table 6. Financing Gap Analysis at the Country Level ($000)

		Financing gap			
		Scenario 1		*Scenario 2*	
Countries	***Costs***	***Level***	***$***	***Level***	***$***
AFR					
CGIC	58,927	100%	58,927	90%	53,035
IDA	84,912	90%	76,421	70%	59,439
Blend	0	70%	-	50%	-
IBRD	3,267	50%	1,634	30%	980
Subtotal (AFR)	147,107		**136,982**		**113,453**
EAP					
CGIC	44,660	100%	44,660	90%	40,194
IDA	91,506	90%	82,355	70%	64,054
Blend	151,365	70%	105,956	50%	75,683
IBRD	347,662	50%	173,831	30%	104,299
Subtotal (EAP)	635,193		**406,802**		**284,229**
ECA					
CGIC	8,499	100%	8,499	90%	7,649
IDA	9,574	90%	8,617	70%	6,702
Blend	8,092	70%	5,664	50%	4,046
IBRD	198,421	50%	99,210	30%	59,526
Subtotal (ECA)	224,585		**121,990**		**77,923**
LCR					
CGIC	400	100%	400	90%	360
IDA	1,600	90%	1,440	70%	1,120
Blend	400	70%	280	50%	200
IBRD	6,800	50%	3,400	30%	2,040
Subtotal (LCR)	9,200		**5,520**		**3,720**
MNA					
CGIC	0	100%	-	90%	-
IDA	6,804	90%	6,124	70%	4,763
Blend	0	70%	-	50%	-
IBRD	103,321	50%	51,661	30%	30,996
Subtotal (MNA)	110,125		**57,784**		**35,759**
SAR					
CGIC	400	100%	400	90%	360
IDA	38,628	90%	34,765	70%	27,040
Blend	36,615	70%	25,631	50%	18,308
IBRD	400	50%	200	30%	120
Subtotal (SAR)	76,043		**60,996**		**45,827**
Subtotal	**1,202,253**		**790,073**		**560,911**
Contingency	**240,451**		**158,015**		**112,182**
Total	**1,442,704**		**948,088**		**673,083**

V. IMPLEMENTATION ISSUES: MOVING FROM FINANCING TO COUNTRY PROGRAM

23. The financing gap analysis is only a starting point for the challenges ahead to prepare, appraise, and implement AHI programs. Annex D provides some guidelines for such a process. The important next step is to work closely with countries on their country-level needs and financing and implementation arrangements.

24. ***Appraisal Process.*** Appraisal will be critical. Ensuring quality integrated country plans and regional and global efforts is key for delivering high-quality responses and implementation impact.

25. ***Medium- and Long-Term Perspective.*** Although focused primarily on the short-term agenda, this paper should help set the stage for addressing the medium- and long-term needs as well. When designing the short-term agenda, all stakeholders should, at a minimum, ensure that it does not run counter to the longer-term efforts that are needed to address AHI and other related diseases.

26. ***Coordinated, Integrated Approach.*** Above all, financing should encourage countries and support them in working on integrated programs. To this end, the financing framework for addressing AHI should provide the incentives at the country, regional, and global levels for coordinated response and clear results on the ground. The paper on the financing framework provides some important insights into this issue.

ANNEX A

TEMPLATES FOR AHI PREPAREDNESS AND RESPONSE

Country Template

	Affected Countries			
	Infected countries	***Newly infected***	***High risk***	***Low/moderate risk***
I. Cross-Cutting Issues				
I. A. National preparedness				
I.A1. Animal preparedness plan (including evaluation of Veterinary Services according to OiE guidelines)	**X**	**X**	**X**	**X**
I.A2. Human preparedness plan (including assessment of health sector capacity to respond to the human infections and possible pandemic)	**X**	**X**	**X**	**X**
I. B. Policy and strategy development (including integration of animal and human preparedness into integrated national AI strategy)	**X**	**X**	**X**	**X**
I.C. Communications	**X**	**X**	**X**	**X**
I.D. Coordination	**X**	**X**	**X**	
I.E. Management, monitoring and evaluation	**X**	**X**	**X**	
II. Surveillance and Early Warning System				
II. A. Strengthen animal disease surveillance and diagnostic capacity				
II. A1. Lab and diagnostic capacity	**X**	**X**	**X**	
II. A2. Operational support/active surveillance (including surveillance of observable events such as poultry outbreaks; technical surveillance including sero-surveys and collection of swabs) and related information systems support	**X**	**X**	**X**	
II. A3. Training and strengthening veterinary services (early detection)	**X**	**X**	**X**	
II. A4. TA and studies	**X**	**X**	**X**	
II. A5. Preparedness (for low/moderate-risk countries)				**X**
II. B. Strengthen human disease surveillance and diagnostic capacity				
II. B1. Upgrading of existing lab networks and diagnostic capacity	**X**	**X**	**X**	
II. B2. Operational support/active surveillance (including surveillance of observable events, such as human deaths, and technical surveillance where needed)	**X**	**X**	**X**	
II. B3. Training	**X**	**X**	**X**	
II. B4. TA and studies	**X**	**X**	**X**	
II. B5. Preparedness (for low-moderate-risk countries)				**X**
III. Rapid Outbreak Containment Plan and Operations				
III. A. Containing and controlling disease at source (animals)				
III. A1. Culling (includes identification of infected and at-risk flocks, culling and disposal and post-culling disinfection and decontamination, following OiE standards on animal welfare)	**X**	**X**	**X**	

	Affected Countries			
	Infected countries	***Newly infected***	***High risk***	***Low/moderate risk***
III. A2. Compensation to farmers/producers	**X**	**X**	**X**	
III. A3. Biosecurity measures and control movement	**X**	**X**	(optional)	
III. A4. Support Vaccination of at-risk flock (including - certification of vaccines to OiE standards, ring and strategic vaccination campaigns, post-vaccination monitoring)	(optional)	(optional)		
III. A5. Human safety - training and equipment	**X**	**X**		
III. A6. Training/strengthening Veterinary Services (Rapid Response)	**X**	**X**		
III. B. Rapid containment operations for human infections				
III. B1. Field investigation of human disease clusters	**X**	**X**		
III. B2. Training	**X**	**X**		
III. B3. Human Safety - (deployment of antivirals from international stock pile)	**X**	**X**		
IV. Health System Response to Deal with Avian Influenza				
IV. A. Stockpiles (other than antivirals - see memo item below for antivirals)	**X**	**X**		
IV. B. Training	**X**	**X**		
IV. C. Deployment of risk communication protocols	**X**	**X**		
IV.D. Selective measures to deal with diagnosed cases within the health system	**X**	**X**		
IV. E. Surge capacity	**X**	**X**		
V. Building toward a Medium-term Response				
V. A. Strengthening veterinary system to deal with animal health outbreaks, including zoonotic diseases	**X**	**X**		
V. B. Restructuring the poultry industry	**X**	(optional)		
V. C. Strengthening the public health system to deal with infectious disease outbreaks, especially influenza	**X**	**X**		
V. D. Strengthening the public health surveillance systems	**X**	**X**		
Total				

Memo item (costs to be for priority items in country programs with support from global stockpiles - considered separately for the funding gap analysis)

Anti-viral emergency stockpile
Anti-viral emergency stockpile - essential personnel

Regional Template		
Category	***Assumptions***	***Funding categories/expenditures***
Reference laboratory support for animal and human surveillance and diagnosis	Assume nominated regional labs would undertake workload beyond normal function, therefore would need funding for surge capacity, including exchange of know-how and virus strains with WHO Reference Laboratories and OIE/FAO OFFLU network	Equipment, staff costs, operating costs, possibly training for new staff
Coordinate animal and human surveillance, and interventions across countries, including evaluation of Veterinary Services in accordance with OiE standards	Regional organizations to convene meetings to focus on implementation policies, surveillance methods, and control interventions, particularly in border areas, and promoting coordinating between national authorities	Operating costs
Respond to demands from countries, especially in terms of capacity building efforts and quality support	Regional organizations need cadre of highly specialized staff (with skills not usually available and not needed full-time at country level) and/or privileged access to such staff through national authorities to respond to country demands for technical assistance and evaluation of programs	Staff, seconded staff, consultants, operating costs
Build on mechanisms for involvement of regional bodies, animal and/or public health organizations, regional organizations, and technical organizations (e.g. ,APEC, ASEAN, FAO, OiE, WHO) and where possible building on existing infrastructure mechanisms like the framework of the FAO/OiE GFTADs Agreement and FAO/OIE/WHO GLEWS mechanism		Operating costs, consultants
Communications and awareness raising including IT Connectivity	Regional and technical organizations to convene meetings, workshops	Operating costs
Research	Some regional research may be needed but that should not duplicate country specific work or global efforts North-South and/or South-South twinnings between laboratories will be encouraged	Operating costs, consultants

Global Template			
Subject	***Category***	***Assumptions***	***Funding categories/ expenditures***
Norms, standards and strategy development	Policies, standards and implementation strategies for international animal and human health (surveillance, health protection and response)	Animal health: Quality assurance and standards taken forward through OIE channels Implementation strategies taken forward by FAO Human health: WHO technical assistance to countries to develop and implement strategic actions	Staff costs, operating costs, training
Laboratory support for diagnosis and surveillance	Support to regional (and where needed country) laboratory diagnostic capacity	Diagnostic capacity of influenza centers (including collaborative centers)	Training, operating costs, equipment
Material development and dissemination	Developing and testing materials, instruments, techniques that can be applied to different aspects of avian influenza control, human pandemic containment, and response to pandemic consequences; disseminating them	Research and development undertaken as well sharing of specimens and information	Staff, seconded staff, consultants, operating costs, field testing and dissemination costs, equipment
Technology development and research (including vaccines)	Establishing specific initiatives to stimulate development, testing and use of new veterinary and biomedical products (including vaccines): diagnostic, surveillance and reporting tools; communication and management technologies	Research and development undertaken; regulatory and licensing issues addressed; expanding vaccine production capacity for influenza	Operating costs, consultants, equipment
Coordination (including coordination of surveillance and interventions across regions)	Coordination of strategies and action through inter-governmental, inter-agency, public/private and NGO partnerships, networks, and consortiums	International organizations to convene meetings to focus on consensus approaches to policy and strategy; surveillance and response across regions; gap identification and agreement on action; dispute resolution; monitoring progress and initiating change; engaging interested parties	Operating costs, meetings
Monitoring	Checking progress against expected results, indicators, reviews	Promoting timely implementation	Operating costs, consultants
Communication of information	Dissemination of up-to-date information, risk communication, information for behavior change, advocacy	Workshops, materials technique developments, etc.	Operating costs
Stockpiles of essential medicines, protective equipment and other consumables	Negotiations with suppliers, management procurement, maintenance of stockpiles and management of logistics for distribution and monitoring	SOPs for management, deployment and distribution for stockpiles	Operating costs, staff costs
Effective international response to pandemic consequences	Cross-country action to prepare for pandemic consequences and anticipate response to economic (finance, trade, communications, and transport), human (access to basic needs and lifelines) and governance (rule of law, security) consequences	Meetings to agree on policy, governance and operational issues related to pandemic response	Operating costs, training

DEFINITIONS

A. Country Income Groupings

1. The World Bank comprises two unique development institutions owned by 184 member countries: the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD). IDA focuses on the world's poorest countries, while IBRD focuses on middle-income and creditworthy poor countries.

2. In this analysis, IDA countries are divided into two income groupings: IDA countries and countries facing the greatest institutional challenges (CGICs), a group of predominantly low-income countries facing especially severe institutional challenges. In addition, there are some countries with characteristics that make them eligible for both IDA and IBRD assistance, and they form a fourth category known as blend countries. Table B1 lists IDA, CGIC, IBRD, and blend countries.

1. IDA

3. IDA, established in 1960, provides long-term interest-free loans (credits) and grants to the poorest developing countries, to support economic growth, reduce poverty, and improve living conditions. IDA's financing pays for programs that build the policies, institutions, infrastructure, and human capital needed for equitable and environmentally sustainable development.

4. ***Eligibility to Borrow IDA Resources.*** Three factors determine whether—and to what extent—countries are eligible for IDA assistance:

- Relative poverty, defined as gross national product (income) per person below an established threshold, currently $965 per year.
- Lack of creditworthiness to borrow on market terms and therefore a need for concessional resources to finance the country's development program.
- Good policy performance, defined as the implementation of economic and social policies that promote growth and poverty reduction.

5. The main factor that determines the allocation of IDA resources among eligible countries is each country's performance in implementing policies that promote economic growth and poverty reduction. Per capita income is also a determinant, with the poorest of the eligible countries receiving higher allocations for a given performance level. Every year, World Bank staff assess the quality of each borrower's policy against 16 assessment criteria that focus on the areas of economic management, structural policies, policies for social inclusion/equity, and public sector management and institutions.

2. IBRD and Blend Countries

6. IBRD provides loans and development assistance to middle-income countries in Latin America, Asia, Africa, and Eastern Europe. Some countries, such as India and Indonesia, are eligible for IDA assistance because of their low per-person incomes, but are also creditworthy for some IBRD borrowing; they are in the category known as blend borrowers.

Table B1. Country Groupings by Income

IDA	*CGIC*	*Blend*	*IBRD*
Albania; Armenia; Bangladesh; Benin; Bhutan; Burkina Faso; Cameroon; Cape Verde; Chad; Côte d'Ivoire; Djibouti; Eritrea; Ethiopia; Gambia, The; Georgia; Ghana; Guinea; Guyana; Honduras; Kenya; Kiribati; Kyrgyz Republic; Lesotho; Madagascar; Malawi; Maldives; Mali; Mauritania; Moldova; Mongolia; Mozambique; Nepal; Nicaragua; Niger; Rwanda; Samoa; Senegal; Sierra Leone; Sri Lanka; Tanzania; Tonga; Uganda; Vanuatu; Vietnam; Yemen; Zambia	Afghanistan; Angola; Burundi; Cambodia; Central African Republic; Comoros; Congo, Democratic Republic of; Congo, Republic of; Equatorial Guinea; Guinea-Bissau; Haiti; Lao PDR; Liberia; Myanmar; Nigeria; Papua New Guinea; Sao Tome and Principe; Solomon Islands; Somalia; Sudan; Tajikistan; Timor-Leste; Togo; Uzbekistan; Zimbabwe	Azerbaijan; Bolivia; Bosnia and Herzegovina; Dominica; Grenada; India; Indonesia; Pakistan; Serbia and Montenegro; St. Lucia; St. Vincent and the Grenadines	Algeria; Antigua and Barbuda; Argentina; Belarus; Belize; Botswana; Brazil; Bulgaria; Chile; China; Colombia; Costa Rica; Croatia; Dominican Republic; Ecuador; Egypt, Arab Republic of; El Salvador; Fiji; Gabon; Guatemala; Hungary; Iran, Islamic Republic of; Iraq; Jamaica; Jordan; Kazakhstan; Korea; Latvia; Lebanon; Libya; Lithuania; Macedonia, FYR; Malaysia; Marshall Islands; Mauritius; Mexico; Micronesia, Federated States of; Morocco; Namibia; Palau; Panama; Paraguay; Peru; Philippines; Poland; Romania; Russian Federation; Seychelles; Slovak Republic; South Africa; St. Kitts and Nevis; Suriname; Swaziland; Syrian Arab Republic; Thailand; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Ukraine; Uruguay; Venezuela

B. Country Risk Categories

7. For the purpose of this analysis, countries were divided into four categories related to the risk of the introduction/spread of High Pathogenic Avian Influenza HPAI (Asian strain H5NI) at a specific point in time (December 20, 2005). It should be noted that classification of country risk was not easy; different agencies have developed different approaches, and their lists may vary depending on the objective (e.g., all countries are at risk for a pandemic). The current method builds on the work of FAO, OiE, and WHO. The categories used are infected, newly infected, high risk, and low/moderate risk. FAO uses five categories (endemic, newly infected, high risk, moderate risk, and low risk); however, in this paper we have grouped low and moderate risk under one category to simplify the costing exercise. Moreover, risk assessment is a dynamic process; countries may move from one category to another over time. The current

classification is only a snapshot for the estimation work and is not meant to be a static classification of any specific country. Table B2 lists the countries in each category.

8. **Infected countries** are countries where initial outbreaks of HPAI were not contained, resulting in the further spread of HPAI to a large proportion of poultry sector and to other areas of the country. Infected countries where human cases have been recorded will require significant assistance to control and eradicate the disease progressively from the poultry sector and prevent further human cases.

9. **Newly infected** countries are those where recent outbreaks of HPAI have occurred and the disease has not yet been eradicated from the poultry sector. These countries require substantial investments to contain and eradicate these outbreaks and prevent the further spread of HPAI, thus reducing the risk of a human influenza pandemic.

10. Countries are categorized as at **high risk** if they have one of the following risk factors:

- Have recently contained/eradicated outbreaks of HPAI; or
- Are contiguous to areas known to be infected or newly infected; or
- Are contiguous to countries where trade occurs with areas known to be infected or newly infected, or where contraband movement of poultry and other birds is high; or
- Are situated along the pathways of wild migratory birds, or close to nesting and over-wintering areas for wild birds that are close to poultry production areas; and in which poultry production systems that are exposed to frequent contact with wild birds, or where poultry is raised in open spaces.

11. Countries categorized as at **low to moderate risk** if they have the following criteria:

- Are distant from areas known to be infected or newly infected; and
- Have restricted trade with areas known to be infected or newly infected, or where contraband movement of poultry and other birds is not high; and
- Are not contiguous to countries situated along the pathways of migratory wild birds, or where nesting and over-wintering areas used by wild birds are distant or separate from poultry production areas; and the poultry production systems are not exposed to frequent contact with wild birds; or
- Have national veterinary services with sufficient capacity to ensure effective surveillance, early detection, and rapid response and control.

Countries at risk (high or moderate/low) would require minimum investments to combat incursions of HPAI (enhanced early detection and rapid response capacity) and prepare for the occurrence of a human influenza pandemic.

Table B2. Country Groupings by Risk Level

Infected countries	*Newly infected countries*	*High-risk countries*	*Low- or moderate-risk countries/territories*
Cambodia;China Indonesia;Lao PDR; Thailand; Vietnam	Mongolia; Romania; Russian Federation; Ukraine	Albania; Algeria; Armenia; Azerbaijan; Bangladesh; Belarus; Bosnia & Herzegovina; Bulgaria; Burundi; Cameroon; Central African Republic; Chad; Congo, Dem. Rep; Congo, Rep; Côte d'Ivoire; Croatia; Egypt, Arab Republic; Eritrea; Ethiopia; Gabon; Gambia, The; Georgia; Ghana; Guinea; Guinea-Bissau; Iran, Islamic Rep.; Israel; Jordan; Kazakhstan; Kenya; Korea, Dem. Rep.; Kyrgyz Republic; Lebanon; Liberia; Libya; Malawi; Malaysia; Morocco; Myanmar; Nigeria; Pakistan; Papua New Guinea; Philippines; Rwanda; Senegal; Serbia and Montenegro; Sierra Leone; Sri Lanka; Syrian Arab Republic; Tajikistan; Tanzania; Timor-Leste; Turkey; Turkmenistan; Uganda; Uzbekistan; Yemen Rep.; Zambia; Zimbabwe	Afghanistan; Angola; Argentina; Benin; Bhutan; Bolivia; Botswana; Brazil; Burkina Faso; Cape Verde; Chile; Colombia; Comoros; Costa Rica; Cuba; Djibouti; Dominica; Dominican Republic; Ecuador; El Salvador; Equatorial Guinea; Fiji; Guatemala; Guyana; Haiti; Honduras; India; Iraq; Jamaica; Kiribati; Lesotho; Macedonia, FYR; Madagascar; Maldives; Mali; Marshall Islands; Mauritania; Mauritius; Mexico; Moldova; Mozambique; Namibia; Nepal; Nicaragua; Niger; Panama; Paraguay; Peru; Samoa; Sao Tome and Principe; Solomon Islands; Somalia; South Africa; Sudan; Suriname; Swaziland; Togo; Tunisia; Uruguay; Venezuela, West Bank and Gaza.

[a] These classifications were done around December 20, 2005. Countries may shift from one category to another over time; hence this listing should not be interpreted as a static classification but a snapshot for the estimation process.

C. Combined Groupings

7. Table B3 lists the countries in combined groupings—by risk and income level—and Table B4 lists the countries in each of the World Bank's geographic Regions.

Table B3. Country Groupings by Risk and Income Level

	Risk category			
Income level	***Infected countries***	***Newly infected countries***	***High-risk countries***	***Low- or moderate-risk countries***
CGIC	Cambodia, Lao PDR		Burundi, Central African Republic; Congo, Dem. Rep.; Congo, Rep; Guinea-Bissau; Myanmar; Nigeria; Papua New Guinea; Tajikistan; Timor-Leste; Uzbekistan; Zimbabwe	Afghanistan; Angola; Comoros; Equatorial Guinea; Haiti; Liberia; Sao Tome and Principe; Solomon Islands; Somalia; Sudan; Togo.
IDA	Vietnam	Mongolia	Albania; Armenia; Bangladesh; Cameroon; Chad; Côte d'Ivoire; Eritrea; Ethiopia; Gambia, The; Georgia; Ghana; Guinea; Kenya; Korea, Dem. Rep.[1]; Kyrgyz Republic; Malawi; Rwanda; Senegal; Sierra Leone; Sri Lanka; Tanzania; Uganda; Yemen, Rep.; Zambia	Benin; Bhutan; Burkina Faso; Cape Verde; Cuba; Djibouti; Guyana; Honduras; Kiribati; Lesotho; Madagascar; Maldives; Mali; Mauritania; Moldova; Mozambique; Nepal; Nicaragua; Niger; Samoa; West Bank and Gaza
Blend	Indonesia.	..	Azerbaijan; Bosnia and Herzegovina; Pakistan[2]; Serbia and Montenegro	Dominica; India
IBRD	China, Thailand	Romania; Russian Federation; Ukraine	Algeria; Belarus; Bulgaria; Croatia[3]; Egypt, Arab Rep.[2]; Gabon; Iran, Islamic Rep.; Israel; Jordan; Kazakhstan[1]; Lebanon; Libya; Malaysia; Morocco; Philippines[2]; Syrian Arab Republic; Turkey; Turkmenistan	Argentina; Bolivia; Botswana; Brazil; Chile; Colombia[2]; Costa Rica; Dominican Republic; Ecuador; El Salvador; Fiji; Guatemala; Iraq; Jamaica; Macedonia, FYR; Marshall Islands; Mauritius; Mexico[2]; Namibia; Panama; Paraguay; Peru; South Africa[2]; Suriname; Swaziland; Tunisia; Uruguay; Venezuela

[1] Countries previously infected with H5N1 virus where the disease has been stamped out but which are still considered at risk.
[2] Countries that have been infected with LPAI.
[3] In swans only.
Note: Afghanistan, Mauritania, Mali, Niger, and Sudan, could be considered high-risk countries. This will be adjusted during specific country assessments.

Table B4. Countries by World Bank Region

Africa (AFR) 47 countries	***East Asia & Pacific (EAP)*** 21 countries	***Europe & Central Asia (ECA)*** 29 countries	***Latin America and the Caribbean (LCR)*** 30 countries	***Middle East and North Africa (MNA)*** 21 countries	***South Asia (SAR)*** 8 countries
Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Chad; Comoros; Congo, Democratic Republic of; Congo, Rep. of Côte d'Ivoire; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya Lesotho; Liberia; Madagascar; Malawi Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; São Tomé and Principe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; Sudan; Swaziland; Tanzania; Togo; Uganda; Zambia Zimbabwe	Cambodia; China; Fiji; Indonesia; Kiribati; Korea; Lao PDR; Malaysia; Marshall Islands; Micronesia, Federated States; Mongolia; Palau; Papua New Guinea; Philippines; Samoa; Solomon Islands; Thailand; Timor-Leste; Tonga; Vanuatu; Vietnam	Albania; Armenia Azerbaijan; Belarus; Bosnia & Herzegovina; Bulgaria; Croatia; FYR Macedonia; Georgia; Hungary; Kazakhstan; Kosovo; Kyrgyz Republic; Latvia; Lithuania; Moldova; Poland; Romania; Russian Federation; Serbia & Montenegro; Slovak Republic; Slovenia; Tajikistan; Turkey; Turkmenistan; Ukraine; Uzbekistan	Antigua and Barbuda; Argentina; Barbados; Belize; Bolivia; Brazil; Chile; Colombia; Costa Rica; Dominica; Dominican Republic; Ecuador; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; St. Kitts and Nevis; St. Lucia; St. Vincent and the Grenadines; Suriname; Trinidad and Tobago; Uruguay; Venezuela	Algeria; Bahrain; Djibouti; Egypt; Iran; Iraq; Israel; Jordan; Kuwait Lebanon; Libya; Malta; Morocco; Oman; Qatar; Saudi Arabia; Syrian Arab Republic; Tunisia; United Arab Emirates; West Bank and Gaza; Yemen	Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka

TECHNICAL NOTE: COSTING OF AHI FOR COUNTRIES

1. The World Bank developed the integrated country program costing framework for animal and human health in consultation with WHO, FAO, and OiE. The exercise involved four steps:

- Development of templates (see Annex A)
- Classification of countries by income level and risk status for AHI (see Annex B)
- Estimation of unit costs for country profile, by income and risk categories
- Projection of the total costs, adjusting for population and inflation.

2. ***Development of the Templates.*** The templates have been discussed at length in the text and Annex A.

3. ***Classification of Countries by Risk Status for AHI.*** Because risk for AHI affects the type and scale of the interventions needed in a particular country, countries were grouped into four categories of risk: infected, newly infected, high risk, and low or moderate risk. (The countries in each category are listed in Annex B.)

4. ***Classification of Countries by Income Level.*** World Bank country groupings were adopted as a proxy for the level of economic development in countries:[1] (a) countries facing the greatest institutional challenges; (b) other countries eligible for financing from the International Development Association (IDA); (c) "blend" countries—that is, countries eligible for funding from both IDA and the International Bank for Reconstruction and Development (IBRD); and (d) IBRD-only countries. In addition, the unit costs were adjusted for in-country activities (such as training) to take into account differences in prices across countries.

5. ***Estimation of Costs for Selected Country Profiles.*** For some countries, especially those where AHI programs are under preparation or have started, available data were used. In other cases, data from projects that included similar activities and that gave an indication of cost estimates in certain types of countries were used. The goal was to get a costing profile for eight country typologies (by risk and income levels). There was access to useful data in a few countries—Cambodia, Indonesia, Thailand (through its published strategy), and Vietnam. Vietnam provided the most detailed information and helped provide a baseline for several categories of expenditures. There was also data from such newly infected countries and countries at high risk which also provided key estimates for an important profile of countries.

- ***Cross-cutting issues.*** For cross-cutting issues, such as preparedness plans and coordination, an overall estimate, adjusted for the size of the country was used. The unit costs provided by the technical agencies for laboratory and equipment for surveillance and early warning systems was used. Based on previous Bank projects, operating expenses of 20 percent of total investment costs for 2.5 years were assumed. For training—which can vary by type, cost, and duration—an average unit cost of $50 per person and adjusted the unit costs for each country by the differential

[1] For a listing of countries by these groupings, see Annex B.

in prices was used.[2] To estimate the costs for animal-health-related training, a certain proportion of veterinarians trained was assumed; and for human health training, a certain proportion of doctors and nurses trained was assumed. A standard package of technical assistance and studies of $250,000 for an average-size country, adjusting the amounts for country size, was assumed.

- ***Culling and compensation.*** To cost a culling and compensation package, culling and compensation were separated because compensation rates (as a share of market price) vary widely across countries.[3] The costs for culling include identification of infected and at-risk flocks, culling and disposal of animals, and post-culling disinfection and decontamination, following OiE standards on animal welfare. The unit costs derived in Vietnam were assumed, and it was assumed that 10 percent of infected and at-risk flocks are culled and compensated at 50 percent of market price for all infected countries except Thailand, where the compensation rate is 75 percent.[4] These two activities constitute the major share of the program costs. It was assumed that 5 percent of infected and at-risk flocks are culled and compensated in newly infected countries.

- ***Vaccines.*** For vaccines, it was assumed that flocks were vaccinated two times a year at a unit cost of $0.06.[5] It was assumed that 10 percent of the at-risk flock is vaccinated in infected countries, and 5 percent in newly infected countries.

- ***Contingency.*** A contingency of 20 percent of total costs was allowed, which would include expenditures for stockpiles of emergency for essential personnel in countries and other changes in the costs that may not have been anticipated, including higher culling rates.

- ***Extrapolation to all countries.***[6] The country models were used to extrapolate the global estimates, with adjustments for the following:

    a. animal health components and culling and compensation were adjusted by poultry count;
    b. human health components were adjusted by population size;
    c. cross-cutting activities were adjusted by country size (very small, small, average, and large); and
    d. absorption capacity and price differential for blend and IDA countries (two categories) were adjusted on a declining scale using the PPP conversion factors described above.

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2 This is done by using the PPP conversion factors from World Bank, *World Development Indicators 2005.*

3 Currently Vietnam is paying a compensation of 50 percent of market price while Thailand is paying 75 percent and Indonesia is paying less than 50 percent. See World Bank draft report, *Assessment on Vietnam's Strategy, Responses and Preparedness to the Threat of a Potential Avian Influenza Pandemic* (draft, October 16, 2005), p. 5.

4 This is the average of poultry losses estimated in EAP countries, which ranged from 0.2 percent in Cambodia to 18 percent in Thailand and Vietnam. See Brambhatt, "Avian Influenza: Economic and Social Impacts," presentation to the Geneva Meeting on Avian Influenza and Human Pandemic Influenza, November 7-9, 2005.

5 Unit costs jointly determined by FAO, OiE, and the World Bank, prior to the Geneva conference.

6 China was constrained at $250 million only.

GUIDANCE NOTE FOR APPRAISAL OF AVIAN INFLUENZA CONTROL PROPOSALS — COUNTRY PROGRAMS

The following general principles should underpin appraisal of project proposals:

Project Objective. It is critical that the proposals are based on **common objectives across various sectors**, with emphasis on agriculture and health, and with a three-year timeframe. This objective should be addressed through an integrated, coordinated set of plans. It will also be important that senior representatives from ministries of finance, planning, and home affairs/ interior have been involved in decisionmaking on important dimensions of a national response.

Bearing the above in mind, appraisal teams are asked to base their assessments on the following:

A. Key Areas for Assessment of the Country's Overall Preparedness

In *planning and organizing the overall response* to the threat of a pandemic, what is the situation with regard to:

A.1 Current Status of avian influenza (AI) in the country

- Is there a known and recorded outbreak? What is its nature and extent? Is there evidence of cross-breed infection and animal-to-human transmission?
- To what extent are senior officials aware of the potential risks of AI and amenable to working with external partners to address it?

A.2 National Strategic Plan for Addressing AI

- Is there a National Strategic Action or Preparedness Plan ("the plan") in place? If not, are steps being taken to prepare such a plan? When will it be ready?
- Does the plan clearly articulate common objectives across both the animal and human health sectors for responding to the epidemic (as compared to a list of unconnected activities in each sector)?

  If so, what are they?
  - Are they appropriate from a technical perspective?
  - Are they feasible from an implementation perspective?
  - Are short- and long-term objectives differentiated?

- Is the plan based on what is known about the likely course of the epidemic?
- Is it genuinely strategic with respect to the identification, coordination, and sequencing of activities?
- To what extent does action on the plan depend on very senior political intervention, and how likely is it that senior politicians will be willing to be involved?

- Have communication plans been developed for providing essential messages to key actors involved as well as the general population on the nature of the epidemic and the way the country plans to respond (is the public aware of the AI problem and do people have some knowledge of how to protect themselves)?

A.3 Institutional arrangements for coordination and implementation.

- Have these been established? For coordination? For implementation?
- If not, what are the main impediments? When will these mechanisms be in place?
- If so, what are they? If not, what should they be? Examples for coordination include:

    - Is there a national coordinating body for AI?
    - Has a leading person or agency been identified with mandated TOR?
    - Have roles and responsibilities been assigned to ensure that relevant parties stay up to date

- To what extent do the institutional arrangements being acted upon depend on senior political intervention, and how likely is it that senior politicians will be willing to be involved?
- Is there a donor coordination body (e.g., Working Group) on AI? Does it interact with the national coordinating body?
- Are workable institutional arrangements for decentralized decisionmaking and implementation in place?
- Are fund flow, financial management, and procurement arrangements that will allow a rapid and flexible response with adequate accountability in place?

A.4 Within *animal health*, what plans have been made or activities initiated to:

- Evaluate and strengthen Veterinary Services to respond to HPAI. Has an auto-evaluation of Veterinarian Services (VS) quality (as defined by OIE) been undertaken? Has it been validated by OIE? Has an assessment of the technical, human, and financial capacity for early detection and rapid response been undertaken? Has a national training program for official VS and private sector leaders been undertaken or developed? Has an assessment of public-private sector issues, information, communication, and coordination been undertaken?

- Evaluate and adjust (as needed) the **policy and regulatory framework** regarding HPAI to support: establishment of direct chain of command for early detection and rapid response; compensation policies for farmers; bio-security levels and measures; animal movement control (national and transboundary); disease reporting; communication and public information; appropriate destruction and disposal of affected poultry;[1]

[1] Culling to be undertaken in accordance with OiE guidelines for animal welfare.

compartmentalization and zoning (where relevant) and restructuring plans of the poultry sector industry (where needed).

- What **surveillance system** is currently in place to monitor chickens, ducks, other domestic fowl, and wild or migratory birds? What is known regarding the status of the following: diagnostic capacity of national laboratories; poultry diseases that are currently monitored; time lag between field identification and the reporting of results nationally and internationally to decisionmakers and to the OiE; progress made with respect to monitoring, surveys, laboratory testing, data management, and wild habitat monitoring.

- **Control Measures.** What plans exist or are proposed for reviewing past experience of measures used to address other highly pathogenic diseases, especially regarding culling and disposal of infected flocks; compensation arrangements; vaccination of at-risk flocks and associated measures, and; development of appropriate coordination mechanisms.

A.5 Within *human health*, what plans have been made or activities initiated for:

- **Surveillance** of human cases? This includes case reporting, contact tracing and monitoring, laboratory testing, and data management and reporting:

  - What surveillance is in place now?
  - Is the system functioning? If not, why not? What is required to improve the system for surveillance of AI?
  - Are there adequate diagnostic and laboratory facilities in place? If not, how will the project strengthen these capacities?
  - How long does it take for information to get from the field to the place where decisions have to be taken? For a decision to be taken? For action to be taken following a decision? Is this adequate for functioning as an Early Warning System? Are systems and channels in place for managing and sharing this information?
  - If there are problems, how might the system be improved in the short- and long term and in terms of coordination between animal and human health?

- **Control measures.** What plans have been made or activities initiated for:

  - "Social distancing measures" (e.g., quarantine of infected and exposed individuals and the closing of markets and schools, border control measures, etc. in case of human-to-human transmission)?
  - What systems and plans are in place for sharing this information among concerned government offices, development partners, and the public? Are these strategies and channels for communication adequate?
  - Purchase/stock-piling of antivirals (oseltamivir or Tamiflu®)?
  - Use of antivirals in case of human-to-human transmission, in particular which population groups will be targeted (exposed people, groups such as health care workers or police, etc.)?
  - Acquisition and use of vaccines, when and if available?

- Specific safety measures for high-risk populations – e.g., hospital staff, poultry industry staff?
- What policies are in place to ensure the implementation and monitoring of the relative efficiency of these control measures? Are they adequate? If not, why not? What needs to be done to improve the situation? Are others needed? Is more than one ministry involved? Are there adequate coordination mechanisms in place?

B. Major Aspects of Project Appraisal

Appraisal of projects is critical for two main reasons.

- It is the process to ensure that resources allocated for specific programs make a significant impact in terms of achievement of project objectives and on the economic and social development of the key beneficiaries.
- It provides the vehicle to examine and evaluate the objectives which a project is designed to meet, to assess whether the proposed project is likely to meet these objectives efficiently, and to recommend conditions that should be met to ensure that the purposes of the project will be achieved.

In practice, project appraisal includes the investigation of six different aspects of projects:

- economic, e.g., project costs and the size and distribution of benefits;
- technical, e.g., quality of the surveillance system, system capacity, and so forth;
- institutional, e.g., management and organizational issues;
- financial, e.g., requirements for funds and the financial situation of the implementing agency and of other beneficiaries affected by the project;
- commercial, e.g., procurement and marketing arrangements; and
- social aspects, e.g., socio-cultural factors and impact on specific target groups such as women.

A vital part of the technical appraisal is to review the estimates of investment and operating costs of the project, and to ascertain whether sufficient allowance has been included for contingencies, for changes in the general level of costs during the implementation period; whether the timing of the estimates corresponds with the implementation program; whether they are properly broken down to identify the costs of the project's main elements.

Institutional aspects of projects are also critical part of the appraisal process. They usually comprise (a) the organizational, managerial, administrative and legal requirements for implementation and operation, and (b) the longer-term institutional development objectives. Institutional objectives generally aim at strengthening the capacity of an agency (or agencies) with regard to (a) management methods and techniques, including monitoring and evaluation; (b) organizational arrangements; (c) planning; (d) staffing and training; (e) financial management systems and performance; (f) operation and maintenance systems; (g) interagency coordination; and (h) sectoral policies.

As for the financial aspects of an appraisal, it is usually expected to look into the financial viability of the project and financial management capacity of the project agencies. The country context also has an important bearing on the type of analysis undertaken and on the judgments reached.

In the case of avian and human influenza, given the nature of the issues at hand and the uncertainties facing countries, regions, and the world, the technical agencies play a key role. Primarily they provide norms, standards, and strategies to guide the investments at the country level. They also play key regional and global roles to support the country work but also to respond to cross-country issues and key regional and global goods that have been outlined in the regional and global templates. They are also key partners to other development agencies at the country level in many countries and are important players in promoting and supporting the integrated country approach.

C. Resource Implications and Inventory of Development Partner Activities

Estimate the resource requirement agreed activities for the next three years. For each of the major activities identify the sources of financing as follows:

- Current government expenditure
- Current development partner expenditure
- Incremental government funding
- Incremental development partner funding.