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Congressional Research Service

Report RL33349

*International Efforts to Control the Spread of the Avian  
Influenza (H5N1) Virus: Affected Countries' Responses*

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August 24, 2006

**Abstract.** This report focuses on the efforts of overseas governments to combat the spread of avian influenza, specifically on the response of those countries which have confirmed human deaths from the virus. As of August 2006, the vast majority of fatal and total cases have been in East Asia, including Vietnam (42/93), Indonesia (44/57), Thailand (16/24), China (14/21), and Cambodia (6/6). In 2006, human cases and deaths from H5N1 were newly reported in Azerbaijan (5/8), Turkey (4/12), Egypt (6/14), Iraq (2/2), and Djibouti (0/1). Appearance of the disease in animals has spurred prevention efforts on three continents, including the slaughter or vaccination of millions of domestic poultry.

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**Updated August 24, 2006**

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# International Efforts to Contain the Spread of the Avian Influenza (H5N1) Virus: Affected Countries' Responses

## Summary

A strain of the avian influenza virus known as H5N1 threatens to develop into a human pandemic. First appearing in birds and humans in Hong Kong in 1997, the virus re-surfaced in late 2003 and since has spread throughout Asia, causing over 100 reported human deaths from Vietnam to Turkey and appearing in birds in Africa and Europe. The strain is considered particularly dangerous because of its human fatality rate to date of over 50% and because of the risk that the virus may develop the ability to pass efficiently between humans.

This report focuses on the efforts of overseas governments to combat the spread of avian influenza, specifically on the response of those countries which have confirmed human deaths from the virus. As of August 2006, the vast majority of fatal and total cases have been in East Asia, including Vietnam (42/93), Indonesia (44/57), Thailand (16/24), China (14/21), and Cambodia (6/6). In 2006, human cases and deaths from H5N1 were newly reported in Azerbaijan (5/8), Turkey (4/12), Egypt (6/14), Iraq (2/2), and Djibouti (0/1). Appearance of the disease in animals has spurred prevention efforts on three continents, including the slaughter or vaccination of millions of domestic poultry.

For more information on H5N1, U.S. domestic preparedness efforts, agricultural issues, and U.S. international assistance to countries struggling with the virus, please see CRS Report RL33219, *U.S. and International Responses to the Global Spread of Avian Flu: Issues for Congress*, by Tiaji Salaam-Blyther; CRS Report RS21747, *Avian Influenza: Agricultural Issues*, by Jim Monke; and CRS Report RL33145, *Pandemic Influenza: Domestic Preparedness Efforts*, by Sarah A. Lister.

This report will be updated periodically.

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# International Efforts to Control the Spread of the Avian Influenza (H5N1) Virus: Affected Countries' Responses

## Introduction

A strain of the avian influenza virus known as H5N1 threatens to develop into a human pandemic. First appearing in birds and humans in Hong Kong in 1997, the virus re-surfaced in late 2003 and since has spread throughout Asia, causing over 130 reported human deaths from Vietnam to Turkey and appearing in birds in Africa and Europe. The strain is considered particularly dangerous because of an apparent fatality rate of well over 50% and because of the risk that the virus may develop the ability to pass efficiently between humans. International health officials fear that some countries could constitute a weak link in prevention efforts by allowing the disease to spread through birds to humans, and possibly mutating into a form that can be passed easily among humans.

Though varying widely, the typical national response to a confirmed outbreak of H5N1 has included quarantining the area of infection, culling or vaccinating exposed or at-risk poultry and wild birds, restricting the movement of poultry for trading purposes, testing and treating exposed humans, initiating public information campaigns, and seeking access to anti-viral medication. The most effective government responses have established clear directives for which ministries are in charge of prevention and containment, mobilized resources and political authority to enhance surveillance efforts, and have worked closely with international health authorities and neighboring countries.

Congress provided \$31.3 million for international avian flu activities through FY2005 emergency supplemental appropriations. FY2006 emergency supplemental appropriations reserved \$280 million for global H5N1 initiatives. The Administration requested \$215 million for global H5N1 containment activities in FY2007.

This report focuses on the efforts of overseas governments to combat the spread of avian influenza. For more information on H5N1, U.S. domestic preparedness efforts, agricultural issues, and U.S. international assistance to countries struggling with the virus, please see CRS Report RL33219, *U.S. and International Responses to the Global Spread of Avian Flu: Issues for Congress*, by Tiaji Salaam-Blyther; CRS Report RS21747, *Avian Influenza: Agricultural Issues*, by Jim Monke; and CRS Report RL33145, *Pandemic Influenza: Domestic Preparedness Efforts*, by Sarah A. Lister.

## Overview of International Responses

### East Asia

In East Asia, the epicenter of the H5N1 outbreak, the degree and sophistication of preparation for avian influenza varies widely among the affected countries. In many cases, government response and openness to international health authorities appear to have improved from the experience of dealing with the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003.<sup>1</sup> The more affluent governments have undertaken extensive measures and have committed national resources to hedge against the risk of a pandemic. Japan and Taiwan reportedly have accumulated stockpiles of antiviral medication for human treatment and are preparing to manufacture their own supply. Singapore has reportedly stockpiled antivirals for 15% of its population, enhanced surveillance, and put a detailed contingency plan in place. WHO (World Health Organization, the health agency of the United Nations) officials praised an exercise run by South Korea that simulated how the government would respond to an outbreak.<sup>2</sup> Outbreaks in birds reported in Japan and South Korea were subsequently controlled and both are now considered free of the disease.

Among the hardest-hit countries, Thailand and Vietnam struggled to control initial outbreaks but largely have been praised by health officials for containing the virus through the commitment of government resources and international assistance. Continuing to report new human cases in 2006, the central governments in Indonesia and China have launched determined campaigns but face considerable challenges in poor public health infrastructure, limited resources for compensation of farmers, and a lack of government transparency. Cambodia and Laos, with little capacity for reporting cases because of minimal transportation and communication networks, represent possible gaps in documented cases given their geographic proximity to Thailand and Vietnam, which struggle with ongoing outbreaks in poultry. On the far end of the spectrum, the closed governments of Burma (Myanmar) and North Korea offer little reliable information about the presence of bird flu within their borders. Although both Yangon and Pyongyang have provided limited cooperation with international organizations, outbreaks within their borders could constitute a weak link in the event of a pandemic.

### Central Asia and the Middle East

No human cases were reported outside of East Asia until early 2006. Confirmed human deaths from H5N1 in Turkey, Iraq, and Azerbaijan heightened international concern about the scope of a potential pandemic. Turkish authorities, although slow to respond to the initial outbreak, have welcomed international help and taken strong measures to contain the virus in the infected areas. The ongoing instability in Iraq

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<sup>1</sup> SARS first appeared in China in 2002, and eventually infected at least 8,098 people in 26 countries, according to the WHO. The disease died out later in 2003.

<sup>2</sup> "The Front Lines in the Battle Against Avian Flu Are Running Short of Money," *The New York Times*, October 9, 2005.

has prevented H5N1 from being a top priority for authorities in Baghdad, and public information on the cases is limited.

## H5N1 in Animals Continues to Spread

Fear of human deaths and economic damage from H5N1 has spurred other countries to step up national and multilateral efforts as the disease has spread rapidly among birds through three continents. In February 2006, the World Organization for Animal Health (known by its French acronym OIE) reported a spike in the number of countries confirming the H5N1 virus in birds, all outside of the Asia epicenter.<sup>3</sup> As of August 2006, the total number of countries with confirmed cases in birds was approaching 60. Many cases in birds have been confirmed outside the developing world in countries with relatively poor public health infrastructure and veterinary services to cope with a widespread outbreak.

**Table 1. Total Number of Human Cases and Deaths by Country Through August 14, 2006**

Country	Human cases	Deaths
Azerbaijan	8	5
Cambodia	6	6
China	21	14
Djibouti	1	0
Egypt	14	6
Indonesia	57	44
Iraq	2	2
Thailand	24	16
Turkey	12	4
Vietnam	93	42
Total	238	139

**Source:** World Health Organization: Cumulative Number of Confirmed Human Cases of Avian Influenza A/H5N1 Reported to the World Health Organization as of August 14, 2006. See [[http://www.who.int/csr/disease/avian\\_influenza/country/cases\\_table\\_2006\\_08\\_14/en/index.html](http://www.who.int/csr/disease/avian_influenza/country/cases_table_2006_08_14/en/index.html)].

<sup>3</sup> OIE, Update on Avian Influenza in Animals, January 26, 2006. See [<http://www.oie.int/>].

## Profiles of Country and Regional Responses

The profiles below focus primarily on countries that have had WHO-confirmed cases of human infection. Although there have been no confirmed human cases to date in Russia, Laos, or African countries, updates are included because of the crucial geographical link that the countries represent. Iraq is not included in this section because of the dearth of available information.

### Africa<sup>4</sup>

In early July, the presence of H5N1 in poultry had been confirmed in seven sub-Saharan African countries: Nigeria, Niger, Cameroon, Sudan, Burkina Faso, Cote d'Ivoire, and Djibouti have reported poultry outbreaks. The outbreak in Nigeria is seen as notable because Nigeria is the most populous country in Africa<sup>5</sup> and because it is seen as a likely source of the H5N1 detected in Niger and Cameroon. In May 2006, Djibouti confirmed the first human case of avian flu infection.<sup>6</sup>

**Nigeria's Response.** Nigerian authorities responded to the detection of H5N1 by quarantining affected farms, destroying suspected infected birds, and testing poultry and people who have close contact with poultry on commercial farms. Policies call for all birds within three kilometers of each infected site to be culled — though this was reportedly not taking place in all instances — and for presumptive H5N1 cases to be treated as actual cases, pending testing. National and state authorities formed integrated response teams, though initially national ministries (primarily Health and Agriculture) reportedly coordinated their H5N1 responses separately. Officials have launched public information campaigns providing safety and education messages about bird flu and advising the public to report bird deaths, and have begun to compensate farmers for losses due to H5N1 control measures.<sup>7</sup>

Extensive sell-offs of poultry nationwide by bird owners seeking to minimize potential economic losses followed the reported detection of H5N1. In response, in

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<sup>4</sup> This section prepared by Nicolas Cook, Specialist in African Affairs, 7-0429, and updated by Tom Coipuram, Information Research Specialist, 7-4296.

<sup>5</sup> Nigeria, just over twice as large as California, has between an estimated 128.7 million (U.S. Census, 2005) and 139 million people (World Bank, 2004). For general background, see CRS Report RL33594, *Nigeria in Political Transition*, by Ted Dagne.

<sup>6</sup> *Open Source Center Report* [<http://www.opensource.gov>], "Sub-Saharan Africa Government Positions, Media Coverage of Avian Flu," June 12-July 5, 2006.

<sup>7</sup> Culling, however, reportedly began before compensation policies had been developed, and compensation being offered is reportedly substantially below market-value losses and is not being distributed evenly. In part due to lack of government capacities, only the owners of large commercial farms subject to losses as a result of ordered culls undertaken by government veterinary teams are reportedly receiving compensation, though such farms are the reported source of only 25% of Nigerian poultry production. Small-scale poultry owners, who produce 60% of poultry, are reportedly not being compensated, and there is no compensation for birds that die naturally of H5N1. See IRIN, "Nigeria: Poorest Forgotten in Bird Flu Compensation Pay-outs," March 9, 2006.



order to prevent the further spread of the disease, officials tried to ban sales and intra-state trade of poultry, but with reportedly mixed results. International experts found that such efforts were not being implemented uniformly or completely. Joint federal-state Nigerian healthcare teams are testing suspected H5N1-exposed persons, such as poultry workers. Such testing has reportedly been stymied by lack of bird flu testing kits (only symptoms of flu and respiratory infections were initially being checked) and lack of knowledge by those being tested about what would happen if they test positive for H5N1. Some are said to fear detainment. Nigeria requested international aid in the form of protective clothing and disinfectants.<sup>8</sup>

**U.S. and International Responses.** USAID is working with the U.S. Department of Agriculture (USDA) and other organizations to respond to H5N1 in Djibouti and Nigeria and has deployed thousands of Personal Protective Equipment (PPE) sets for surveillance and culling purposes and is also supporting communications and public awareness efforts in the country.<sup>9</sup> In addition, USAID has disseminated more than 25,000 public awareness tool kits and supported the reproduction of these kits in sub-Saharan Africa. The kits include key messages and educational materials for preventing the spread of H5N1 in animals and for limiting human exposure, and communications guides for community workers.

**Region: Cases and Context.** H5N1 has been confirmed in Niger and Cameroon in areas along the northern Nigerian border, which is known to be porous and often minimally controlled. The virus was initially detected in farm ducks in both countries, but has affected other types of poultry. In early April, H5N1 was found in Burkina Faso, which borders Niger, in samples from a farm near capital city, Ouagadougou. USAID's West Africa Regional Program (WARP), located in Accra, Ghana, is responding to the outbreak in Niger and has deployed a communications expert to assist with Niger's avian flu response. USAID is also working with the U.S. embassy to dispatch a U.S. team to Niger, in coordination with FAO, to aid in the further development of an emergency H5N1 response plan. Limited funding will be programmed toward FAO-led efforts to combat the spread of H5N1. USAID has sent 2,000 PPE kits to Niger for use in culling and/or sampling of birds, and is coordinating the U.S. response with other U.S. and international agencies, such as CDC and WHO. Two CDC epidemiologists working on other health issues in Cameroon are monitoring H5N1-related developments in concert with U.S. embassy, Cameroonian government, and international officials. USAID is dispatching PPE kits and has provisionally programmed \$200,000 to aid Cameroon's government in its response to the virus. The FAO and OIE have deployed an assessment and advisory team to Burkina Faso, which has an H5N1 response plan and is increasing border and market surveillance for bird flu.

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<sup>8</sup> U.N. Integrated Regional Information Networks (IRIN) reports, February, 2006; AFP, "Nigerian bird flu..."; Olukayode Oyeleye, et al., "Suspected Infected Kids Test Negative to Bird Flu," *Guardian* [Nigeria], February 15, 2006; BBC News, "Nigeria Bird Flu Plan 'Failing,'" February 14, 2006.

<sup>9</sup> USAID Situation Update #37, "Avian and Pandemic Influenza Management and Response Unit," May 20 - June 9, 2006. See [[http://www.usaid.gov/our\\_work/global\\_health/home/News/ai\\_docs/ai\\_update\\_060906.pdf](http://www.usaid.gov/our_work/global_health/home/News/ai_docs/ai_update_060906.pdf)].

Multiple African countries banned imports of poultry from Nigeria after H5N1 was reported there and many have implemented measures, in many cases starting several months ago, to monitor and detect outbreaks in their territories, and to monitor imports of poultry, in line with advice from OIE, WHO, and FAO. In January 2006, at the 24<sup>th</sup> FAO Regional Conference for Africa in Mali, 18 West African countries reportedly discussed bird flu contingency planning. In late February, 12 West African countries agreed to launch a coordinated regional effort to counter H5N1, to include the creation of a joint tracking committee and a group of experts tasked with drafting a regional avian flu response. They also discussed creation of an African Development Bank-based emergency regional H5N1 intervention fund. Southern African Development Community (SADC) and African Union (AU) health experts attended a USAID-supported, FAO and WHO-hosted expert conference, held February 28-March 3 in South Africa, to assess regional avian flu preparedness. Conferees found that all participating countries had created national H5N1 preparedness plans. Most, however, lacked adequate resources, notably for surveillance and veterinary and human health service responses, required for fully implementing them. Many said that they lacked information about how to access donor funds pledged for H5N1 preparedness (see section on *International Avian Flu Conference in Beijing*). There are reportedly four African countries with laboratories in Africa that are part of the WHO Global Influenza Network and are able to diagnose H5N1. Lab personnel from several other countries are being trained to detect H5N1, and labs in several other countries reportedly possess trained workers but lack adequate equipment and supplies.

On June 23, 2006, the Economic Community of West African States (ECOWAS) organized a one-day meeting in Nigeria of West African ministers to develop measures to combat the outbreak of H5N1 in the region. One of the main items agreed to by the West African ministers was to start an avian flu emergency fund and response system.<sup>10</sup> In late June, the World Organization for Animal Health (OIE) set up its first regional control center in Bamako, Mali, through partnerships with the U.N. and the African Union with the aim of coordinating measures to control H5N1. At present, the center is the only such regional OIE facility in Africa. According to the OIE, its mission will be to “collate and disseminate veterinary information and safeguard world trade by producing health guidelines for international trade in animals, among others.”<sup>11</sup>

## Azerbaijan<sup>12</sup>

In mid-March 2006, U.S. Navy medical personnel collaborating with a WHO team identified the first three fatalities in Azerbaijan resulting from human infection

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<sup>10</sup> *Paris AFP*, “Nigeria: West African Ministers Meet on Strategies to Fight Bird Flu,” June, 23, 2006.

<sup>11</sup> U.N. Integrated Regional Information Networks (IRIN) News, “Mali: New Centre to Tackle Bird Flu Across Africa,” July 4, 2006, See [IRINnews.org].

<sup>12</sup> This section prepared by Jim Nichol, Specialist in Russian and Central Asian Affairs, 7-2289, and updated by Mari-Jana “M-J” Oboroceanu, Information Research Specialist, 7-6329.

with the H5 subtype of avian influenza virus. The three fatalities followed in the wake of reports of H5N1 avian influenza in wild bird carcasses found near the capital of Baku in early February and massive poultry deaths in several parts of the country over the next few weeks. As of July 4, 2006, WHO had confirmed eight cases of H5N1 infection in Azerbaijanis, of which five were fatal. In some of the cases, the patients may have been working together to gather feathers from wild bird carcasses.

After confirmation of the outbreak, several measures were taken by the government. A State Commission to Prevent the Spread of Bird Flu coordinated the government response, with its members including the ministers of agriculture, economic development, ecology, finance, public health, and interior, the chairman of the State Customs Committee, and the director of the State Border Service. The commission was charged with providing information on the flu to the public and to formulate preventive measures. Authorities banned all imports of live poultry or poultry meat and allocated \$3.3 million from the reserve fund of the state budget to improve veterinary services and purchase disinfection equipment and protective clothing. Some observers accused Azerbaijani authorities of being inadequately prepared to respond to the avian flu outbreak. The head of one Azerbaijani NGO criticized the government for allegedly moving too slowly to inform the public about possible human cases.

### **Cambodia**<sup>13</sup>

Since February 2005, five Cambodians have died from the H5N1 avian flu virus, four in Kampot province in 2005 and one in Kompong Speu province near Phnom Penh in March 2006. All Cambodian victims lived in areas where poultry had fallen ill and died. OIE has confirmed more cases in birds in 2006.

Health experts predict that more cases in Cambodia are likely. Compared to Thailand, poultry farms are smaller but more numerous, and many chickens roam freely, while transportation and communications links are far less developed; hence monitoring the nation's poultry stocks is more difficult. Despite warnings, many villagers have eaten birds that had been sick because food is not plentiful. Furthermore, the Cambodian government has limited capacity to contain outbreaks.

The United States government assessment team that visited Laos, Cambodia, and Vietnam in July 2005 reported that the U.S. government, FAO, and WHO have strong working relationships with relevant ministries in the Cambodian government, while over 200 international donors and NGOs operating in the country could play an effective role in mobilizing an effective response to an outbreak of avian flu. On October 12, 2005, U.S. Secretary of Health and Human Services Michael Leavitt, on a visit to Southeast Asia, signed a cooperation agreement with Cambodian officials pledging \$1.8 million to Cambodia to help the country guard against the spread of H5N1.<sup>14</sup> United Nations experts estimated that Cambodia needs \$18 million to

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<sup>13</sup> This section prepared by Thomas Lum, Specialist in Asian Affairs, 7-7616.

<sup>14</sup> "U.S., Cambodian Health Ministers Sign Deal on Bird Flu Cooperation," *Agence France* (continued...)

develop programs to stem the spread of the virus. In December 2005, Germany announced that it would provide \$3 million to the kingdom to help fight the disease.<sup>15</sup>

## China, Including Hong Kong<sup>16</sup>

The November 2005 confirmation of the first human cases and deaths from H5N1 in the People's Republic of China (PRC) renewed fears that the spread of H5N1 could accelerate within China. The close proximity of millions of people, birds, and animals in southern China has made it a common breeding ground for deadly viruses, including the H5N1 avian flu virus, that jump the species barrier to humans. Additionally, the PRC's poor public health infrastructure and the communist government's traditional lack of transparency have made international health specialists particularly concerned about the PRC as a possible contributor to an H5N1 global flu pandemic. Health care specialists have cited the PRC government's early lack of cooperation during the outbreak of Severe Acute Respiratory Syndrome, or SARS — a previously unknown virus that surfaced in southern China in 2003 — as a principal cause for that virus' quick global spread before it was contained.<sup>17</sup>

As of August 14, 2006, 21 cases of human H5N1 infection had been reported in China, of which 14 were fatal. The most recent of these deaths involved a 62-year-old male farmer from the Xinjiang Uigur Autonomous Region in the north-western part of the country. No recent poultry outbreaks have been reported in the vicinity of the man's home. The Zining Uigur Autonomous Region had not previously reported a human case.<sup>18</sup> The World Organization for Animal Health has also confirmed a continuing outbreak of H5N1 infections in birds in China in 2006.

In Hong Kong in late 1997, the H5N1 avian flu virus was recorded as jumping directly from its traditional animal species to humans for the first time, infecting 18 people in Hong Kong and killing six. Although the Hong Kong government responded aggressively at that time — in three days exterminating its entire poultry population of 1.5 million birds — the 1997 outbreak marked the beginning of the cycle of H5N1 outbreaks that expanded on a much wider scale throughout Asia in late 2003 and early 2004. According to WHO, H5N1 is now considered endemic in parts of China. In addition to afflicting domestic poultry and migratory birds in

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<sup>14</sup> (...continued)

*Press*, October 11, 2005.

<sup>15</sup> “Cambodia Needs \$18 Million for Bird Flu Fight — UN,” *Reuters*, December 16, 2005.

<sup>16</sup> This section was prepared by Kerry Dumbaugh, Specialist in Asian Affairs, 7-7683, and updated by Hannah Fischer, Information Research Specialist, 7-8989.

<sup>17</sup> For more on SARS — Severe Acute Respiratory Syndrome — see CRS Report RL32227, *SARS, Avian Flu, and other Challenges for China's Political, Social, and Economic Transformation*, by Kerry Dumbaugh and Wayne Morrison.

<sup>18</sup> *Ibid.*

isolated parts of China, H5N1 also has been documented in parts of China's pig population.<sup>19</sup>

The 2003 SARS experience appears to have made PRC leaders more sensitive to potentially catastrophic health issues. Consequently, Beijing has been far more assertive in enacting measures to combat the H5N1 virus. But even with the positive steps that have been taken, PRC officials face enormous problems in implementation. The PRC Ministry of Health reports it has established 63 influenza monitoring labs throughout most of China<sup>20</sup> and has crafted and published an emergency plan for an influenza pandemic, including a four-color-coded notification system.<sup>21</sup> In November 2005, PRC agricultural officials at a press conference further announced the adoption and immediate implementation of contingency regulations to combat the spread of the disease and to punish government officials that delay or obfuscate medical and scientific reports about the virus. The regulations include requirements that provincial and municipal level officials notify the central government within four hours after a new flu outbreak.

By November 2005, PRC officials confirmed that they had either destroyed or vaccinated millions of healthy domestic poultry and that they were planning to inoculate the entire Chinese poultry population, a massive effort which would include as many as 14 billion chickens, geese, and ducks.<sup>22</sup> As a logistical effort, the initiative faces daunting difficulties — first among them the sheer size of China's poultry population and the fact that the poultry industry is widely scattered, including millions of rural households with a dozen or fewer chickens that roam free. Second, according to medical experts, to be fully effective, the poultry vaccine must be given in two separate doses about a month apart, meaning the entire undertaking has to be performed twice.<sup>23</sup> In addition, some health officials have expressed concern that such a broad campaign could backfire and actually contribute to spreading the disease further. Potential problems include the use of unlicensed or substandard vaccines (a problem announced in Liaoning Province in 2005) which could mask flu symptoms in birds but leave them still contagious,<sup>24</sup> and the possibility that vaccinators

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<sup>19</sup> U.S. Centers for Disease Control, Avian Influenza: Current Situation at [<http://www.cdc.gov/flu/avian/outbreaks/current.htm>].

<sup>20</sup> *Beijing Liaowang* in Chinese. Translated on September 26, 2005, in FBIS, CPP20051018050001.

<sup>21</sup> PRC Ministry of Health, "Preparations and Plan for an Influenza Pandemic Emergency," September 28, 2005, translated in FBIS, CPP20051012335002.

<sup>22</sup> Edward Cody, "China to Vaccinate Billions of Birds; Campaign Aims to Stem Avian Flu," *The Washington Post*, November 16, 2005.

<sup>23</sup> Henry Fountain, "How to Vaccinate 14 Billion Birds," *The New York Times*, November 20, 2005.

<sup>24</sup> Alan Sipress, "Bird Flu Experts Warn Against Bad Vaccines; Improper Poultry Inoculation May Spread Virus," *The Washington Post*, November 22, 2005.

themselves could spread the virus on their clothing or shoes unless rigid decontamination procedures are followed.<sup>25</sup>

In another anti-flu initiative, on November 2, 2005, the Chinese government announced an earmark of 2 billion yuan (\$420 million) from China's current budget to fight avian flu and the banning of poultry imports from 14 countries affected by avian flu. The Swiss manufacturer of the antiviral Tamiflu, Roche, also announced it had reached an agreement with China on developing a generic version of Tamiflu.<sup>26</sup> In addition, the Ministry of Health of China, the Guangdong Provincial Government and the World Health Organization Regional Office for the Western Pacific announced a joint venture to establish the WHO Collaborating Center for Surveillance, Research and Training on Emerging Infectious Diseases at the Center for Disease Control and Prevention of Guangdong Province (GCC).<sup>27</sup> The GCC will focus on a number of emerging diseases, including influenza and severe acute respiratory syndrome (SARS).

Despite these preparations, some international health experts have concerns about the PRC's transparency on avian flu issues. In late April and June 2005, PRC officials reported an unknown cause for the suspicious sudden deaths of thousands of migratory birds in western China's Qinghai Lake. In July 2005, a virology team from Hong Kong reported in a scientific journal that their research showed the Qinghai bird deaths were from an H5N1 strain genetically similar to that originating in south China. The Hong Kong report was vigorously criticized as inaccurate by Jia Youling, an official with the PRC Ministry of Agriculture charged with coordinating avian flu eradication.<sup>28</sup> In June 2005, *The Washington Post* reported that Chinese farmers had been using one of two types of anti-influenza drugs (amantadine, a drug meant for humans) to treat poultry for the H5N1 bird flu virus, potentially rendering the drug ineffective against the virus strain in humans — a story that PRC officials have denied.<sup>29</sup>

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<sup>25</sup> Donald McNeil, Jr., "Health Experts Fear Chinese Flu Vaccination Plan Could Backfire," *The New York Times*, November 20, 2005.

<sup>26</sup> Tom Wright, "Roche to Let Chinese Producer Make Flu Drug," *The New York Times*, December 13, 2005.

<sup>27</sup> World Health Organization, "Press releases china and WHO collaborate to fight emerging infectious diseases," June 12, 2006, at [[http://www.wpro.who.int/media\\_centre/press\\_releases/pr\\_12062006.htm](http://www.wpro.who.int/media_centre/press_releases/pr_12062006.htm)].

<sup>28</sup> The independent virology team was from the University of Hong Kong and included Dr. Guan Yi, a co-author of the scientific report published in *Nature* magazine on July 7, 2005. For reference to PRC official Jia Youling's comments, see Sipress, Alan, "China Has Not Shared Crucial Data on Bird Flu Outbreaks, Officials Say," *The Washington Post*, July 19, 2005.

<sup>29</sup> *The Washington Post*, June 18, 2005. Some sources also have suggested that the virus' apparent new resistance to known drugs may be the result of renegade pharmaceutical labs in China dispensing the wrong anti-viral medications, raising additional questions about the PRC government's ability to exert control over a potential pandemic. *International Herald Tribune*, July 5, 2005.

In its anti-flu efforts, China also remains burdened by perennial problems involving local and regional compliance with central government directives. This takes on new dimensions when potential remedies — such as the mandatory destruction of infected poultry flocks — may rob indigent farming families of their principal source of food or cash.

**International Avian Flu Conference in Beijing.** On January 17-18, 2006, the PRC, along with the World Bank and the European Commission, co-hosted the “International Pledging Conference on Avian and Human Influenza.” The conference’s stated goal was to raise from the global community the \$1.2 — \$1.4 billion in financial resources that the World Bank estimated would be necessary to combat the avian flu virus in developing and middle-income countries.<sup>30</sup> Representatives from approximately 100 countries and 20 international organizations attended, ultimately pledging \$1.9 billion in avian flu assistance.<sup>31</sup>

**U.S.-PRC Cooperation.** President George Bush and PRC President Hu Jintao have discussed greater avian flu coordination on several occasions — during a meeting at the U.N. summit in September 2005, during a visit by President Hu to Washington, DC, and during Bush’s visit to Beijing in November 2005.<sup>32</sup> During the latter visit, the two sides initialed a joint initiative on avian flu, promising to participate in joint research on human and animal virus samples, establish a mechanism to share influenza strains for research purposes, and cooperate actively on a number of regional and international levels, including the WHO, the FAO, and the OIE.<sup>33</sup> The agreement marked an important step, as world health officials consider sharing flu virus samples a key step in tracking the virus’ mutation and devising an effective vaccine; the PRC had shared no flu samples with the international community in 2005.<sup>34</sup> In March 2006, press accounts reported an announcement by WHO officials that China had agreed to provide up to 20 virus samples from infected poultry for study in WHO labs.<sup>35</sup>

The level of U.S.-PRC cooperation appears uncertain in another key area of the bilateral agreement — that involving cooperation on “influenza vaccine development.” China appears to have advanced on vaccine development — the

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<sup>30</sup> “Avian and Human Influenza: Financing Needs and Gaps,” World Bank, January 12, 2006, [<http://siteresources.worldbank.org/PROJECTS/Resources/40940-1136754783560/AHIFinancingGAPSFINAL.pdf>].

<sup>31</sup> The U.S. pledged \$334 million; the E.U. and European Commission \$260 million; and China \$10 million.

<sup>32</sup> Neil King, Jr., “Hu Pledges Efforts to Ease U.S. Strains,” *Asian Wall St. Journal*, September 15, 2005.

<sup>33</sup> [<http://lists.state.gov/SCRIPTS/WA-USIAINFO.EXE?A2=ind0511c&L=us-china&D=1&H=1&O=D&P=625>].

<sup>34</sup> This appears still to be the case as of January 23, 2006; Ramirez, Luis, “WHO negotiates with China for handover of bird flu samples,” *Voice of America*, January 24, 2006.

<sup>35</sup> According to a report citing Beijing WHO official Julie Hall, the breakthrough came after WHO negotiated an agreement with China’s agriculture ministry that will give PRC scientists recognition for their work and involve them in future avian flu research.

PRC's State Food and Drug Administration approved clinical trials for a Chinese-developed human avian flu vaccine in November 2005 — and the United States is separately working on a vaccine of its own.

## **Egypt<sup>36</sup>**

On May 4, 2006, the Ministry of Health in Egypt announced the 13th case of human infection of H5N1. There have been 5 deaths since mid-February 2006 when avian influenza was first detected in Egypt. Since then, it has spread to 19 of Egypt's 26 provinces. In response, the government has reportedly ordered the mass culling of poultry, banned the transportation of live poultry between provinces, closed markets of birds in all villages and towns, and banned the slaughtering or selling of poultry in private stores. The government estimates that at least 10 million birds have been culled. The Egyptian government believes that avian flu was first spread by infected birds mixing with chickens, ducks, and pigeons, which are raised on people's apartment rooftops to supplement their income.

As a developing country with the largest population in the Arab world, Egypt has an estimated 25 million people employed in the agricultural sector with the majority of these workers farming small plots of land. Many rural workers are illiterate and have little or no access to government services, including quality health care. Under these circumstances, containing the spread of bird flu has been particularly troublesome, as government awareness campaigns may be ineffective in the Egyptian countryside, and some farmers may be unwilling to slaughter their chickens. Several children were reportedly infected after playing with infected poultry. In addition, many Egyptians continue to improperly dispose of bird carcasses, and after carcasses were found in the Nile, rumors spread that the Nile had been infected with the virus and sales of bottled water skyrocketed.

## **Indonesia<sup>37</sup>**

Although Indonesia was initially viewed as a weak link in the effort to curb an outbreak of avian flu, Jakarta has made strides in stepping up its prevention and containment campaign as the outbreak has become more severe. Still, a lack of resources, expertise, and a slow recognition of the problem has hindered Indonesia's response. Indonesia has a population of some 1.3 billion chickens with as many as 400 million of those in "informal settings," such as family farms or, in some cases, balconies of urban apartment buildings. In 2003, when H5N1 was first seen in the bird population, there was not much alarm in Indonesia as the virus was not generally viewed as a significant threat to humans. The virus is now considered endemic in the bird population of Indonesia and outbreaks in birds have been reported in most of Indonesia's provinces. Concern grew in June 2005 when Indonesia saw its first

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<sup>36</sup> This section prepared by Jeremy Sharp, Analyst in Middle Eastern Affairs, 7-8687, and update by Angel Young, summer intern with the Knowledge Services Group, 7-8690.

<sup>37</sup> This section prepared by Bruce Vaughn, Analyst in Asian Affairs, 7-3144, and updated by Julissa Gomez-Granger, Information Research Specialist, 7-8981.



human H5N1 fatality. In 2006, deaths from H5N1 jumped in Indonesia, surpassing Vietnam in number of fatalities from the virus.

While Indonesia was viewed as initially trying to cover up the outbreak, the government has more recently moved to address the problem. Plans to stem the spread of the disease, should it mutate into a pandemic strain and spread more widely among human populations, involve rapid reaction and vaccine distribution. Such an approach is dependent on early detection and reporting by local health officials, as well as the availability of resources necessary to treat an outbreak. In addition, the government announced plans to establish a national commission for bird flu control that includes all ministries, private and non-governmental agencies, and the Red Cross.<sup>38</sup>

In December 2005, Indonesia announced a three-year national strategic plan to contain the avian flu virus. The plan calls for culling, vaccination, and community-based surveillance of bird populations. Critics of the plan have pointed out that it does not address birds kept in non-commercial settings.<sup>39</sup> In March 2006, Indonesia, Singapore, and the United States announced a trilateral effort based in Java to contain the avian flu. The three-year plan will include site surveys and data collection and aims to test implementation schemes that will then be replicated in other areas if successful. International health organizations are also included in the pilot project.<sup>40</sup>

The Indonesian government appears to be making limited progress in acknowledging and dealing with a large scale outbreak. Although earlier reports stated that the government did not have enough money to compensate farmers for their slaughtered animals, Agriculture Minister Anton Apriyanto has indicated that the government will slaughter poultry to stem serious outbreaks. The government reportedly spent \$13 million in 2005 to cull infected livestock.<sup>41</sup> According to WHO expert Gina Samaan, Indonesian hospitals are increasingly prepared and “the surveillance system has been enhanced ... to ensure that surveillance of the health department in the provincial and district levels can respond and can initiate an investigation.”<sup>42</sup> Eleven companies in Indonesia account for 60% of Indonesian poultry and reportedly have been reluctant to allow government monitoring for fear that they will not be compensated for culling. Indonesia’s poultry industry generated \$3.75 billion in revenue in 2004.<sup>43</sup>

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<sup>38</sup> “Indonesia Set to Form National Commission for Bird Flu Control,” *Thai News Service*, January 10, 2006.

<sup>39</sup> “Toll Up but Indonesia Ready for Bird Flu,” ISI Emerging Markets, January 2, 2006.

<sup>40</sup> “Singapore, Indonesia, US to Start Work on US\$ 4.5m Bird Flu Pilot Project,” *Channel NewsAsia*, March 3, 2006.

<sup>41</sup> Alan Sipress, “Indonesia Warns of Possible Bird Flu Epidemic,” *The Washington Post*, September 21, 2005.

<sup>42</sup> “Indonesia Making Progress in Fight Against Bird Flu - WHO,” *AFXAsia*, September 30, 2005.

<sup>43</sup> Phelim Kyne and Fitri Wulandari, “Indonesian Poultry Cos Hobble Avian Flu Control Ops,” *Dow Jones Newswires*, October 5, 2005.

Health experts believe Indonesia does not have a sufficient supply of antiviral treatments for a country with more than 224 million people should a human pandemic occur. In September 2005, Indonesia's Minister of Health asked for international assistance and expressed concern that the country is not capable of containing the spread of H5N1.<sup>44</sup> The international community has pledged \$140 million in assistance, and the Indonesian government allotted just over \$60 million for bird flu prevention.<sup>45</sup> WHO officials have also called for countries to donate antiviral drugs to Indonesia. Australia has pledged funding to Indonesia for the purchase of Tamiflu tablets to treat about 40,000 people<sup>46</sup> and signed an assistance agreement of more than \$US7 million for combating the spread of the H5N1.<sup>47</sup> India has also reportedly agreed to provide 1,000 doses, adding to Indonesia's own supply of 10,000 doses.<sup>48</sup>

Reporting indicates that Indonesian officials were aware of H5N1 in the bird populations for two years but suppressed the information until humans began to become infected. Some claim that the outbreak was suppressed due to lobbying by the poultry industry in Indonesia. There are also allegations that the Indonesian government has not funded its announced policy to vaccinate poultry against the virus.<sup>49</sup> Other reports indicate that while the government's national team to combat the virus has reached out in the capital and in major cities, it is dependent on under-resourced and poorly coordinated volunteers in the provinces<sup>50</sup>. Secretary of State Rice reportedly discussed the avian flu outbreak with President Yudhoyono during her mid-March 2006 trip to Indonesia.<sup>51</sup> The government has avoided the mass slaughter of poultry in affected areas and has relied instead on the more limited approach of selected slaughters and vaccination of poultry.<sup>52</sup>

Indonesia faces several obstacles in containing H5N1. A lack of public awareness about the dangers of the disease has resulted in an ignorance of the

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<sup>44</sup> Reuters, "Indonesia Says Bird Flu Outbreak May Become Epidemic," September 21, 2005, [<http://www.alertnet.org>].

<sup>45</sup> "Indonesia Set to Form National Commission for Bird Flu Control," *Thai News Service*, January 10, 2006.

<sup>46</sup> Nicholas Zaminska, "Asian Nations Start Critical Bird Flu Preparations," *The Wall Street Journal*, October 3, 2005.

<sup>47</sup> Sydney ABC Radio National, "Assistance package to fight bird flu in Indonesia," [[http://abcasiapacific.com/news/stories\\_to/1671364.htm](http://abcasiapacific.com/news/stories_to/1671364.htm)], Accessed June 25, 2006.

<sup>48</sup> Dan Eaton, and Nathalia Telly, "Indonesia Says Bird Flu Outbreak May Become Epidemic," *Reuters*, September 21, 2005.

<sup>49</sup> Alan Sipress, "Indonesia Neglected Bird Flu Until Too Late," *The Washington Post*, October 20, 2005.

<sup>50</sup> T. Soetjipto, "Indonesia Bird Flu Campaign Exposes Loopholes," *Reuters*, March 22, 2006.

<sup>51</sup> "Rice in Jakarta for Talks on Region, Middle East, Avian Flu," *Thai News Service*, March 16, 2006.

<sup>52</sup> "Indonesia Vows Faster Response After new Avian Flu Deaths," *Dow Jones Newswire*, March 11, 2006.

possibility of human-to-human transmission. Many Indonesians have not voluntarily culled their sick poultry or improved sanitation in their backyard farms. Without the help of new legislation, the prevalence of backyard chickens will continue to make the containment of H5N1 difficult. Geography has also been an obstacle. Indonesia's sprawling topography of many islands has resulted in a highly decentralized national government, and poor coordination among the different levels of government. The WHO criticized this lack of central authority to institute mandatory culling of infected birds, and accused the country of using "band-aid" solutions rather preventative measures.<sup>53</sup>

In June 2006, Indonesia's National Committee for Avian Influenza Control and Pandemic Influenza Preparedness held a three-day consultation with international experts in order to review the spread of the virus in animals and humans, as well as review strategies for its control. The conference brought together experts from the WHO, Indonesia's Ministries of Health and Agriculture, the FAO, UNICEF, and other U.N. agencies. The experts decided not to raise the global pandemic alert based on the evidence that the virus has not substantially changed to become more transmissible. The WHO announced that human-to-human transmission of the H5N1 virus had occurred in Indonesia.<sup>54</sup> Because of significant interest in how the virus might pass between humans, in August 2006 Indonesia agreed to give full access to its H5N1 data to foreign scientists.<sup>55</sup>

## Laos<sup>56</sup>

An outbreak of H5N1 in poultry was confirmed in early 2004, but Laos has had no known cases in humans, and no new outbreaks reported. In June 2005, the Lao government estimated that 60,000 birds had been lost to the infection and another 98,000 to culling. However, this number reflects only documentation from commercial farms; the vast majority of poultry-rearing in Laos takes place in smaller, family-run farms.

Some experts argue that there is an urgent need for foreign health organizations to focus upon and assist Laos, given its proximity to other countries with the disease and the lack of government capacity, particularly its weakness in surveillance. The central and local governments have limited capabilities for collecting and disseminating information, monitoring avian populations, and conducting laboratory analysis to confirm cases of the virus. In addition, according to a U.S. government assessment team that visited Laos, Cambodia, and Vietnam, the country's health care system faces "severe limitations" and would be "quickly overwhelmed" in the event

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<sup>53</sup> "WHO Says Indonesia Using Band-Aid Methods to Fight Bird Flu," *Hong Kong AFP*, June 6, 2006.

<sup>54</sup> Christine T. Tjandraningsh, "WHO Confirms Human-to Human Transmission of Avian Flu," *Tokyo Kyodo World Service*, June 6, 2006.

<sup>55</sup> Arie Rukmantara, "Government defends its bird flu measures," *The Jakarta Post*, August 10, 2006.

<sup>56</sup> This section prepared by Thomas Lum, Specialist in Asian Affairs, 7-7616, and updated by Hannah Fischer, Information Research Specialist, 7-8989.

of a large-scale human outbreak.<sup>57</sup> Some experts caution, however, that the focus on bird flu in Laos, where no outbreaks of H5N1 have been reported in two years, may unnecessarily distract foreign and domestic public health attention away from the control and treatment of other infectious diseases.<sup>58</sup> The FAO and the WHO reportedly have strong working relationships with the Lao government.<sup>59</sup> In October 2005, U.S. Secretary of Health and Human Services Michael Leavitt, on a visit to Southeast Asia, signed a cooperation agreement with Lao officials pledging \$3.4 million to Laos for controlling outbreaks of avian flu.<sup>60</sup> In February 2006, FAO signed an agreement with the Lao government to establish a \$2.9 million bird flu control program funded by Germany.

## Russia<sup>61</sup>

The H5N1 strain spread into Central Asia in 2005 and was first detected in southern Russia (in the Novosibirsk region) in July 2005. Outbreaks were attributed to contact between domestic birds and waterfowl migrating from Southeast Asia. There have been no confirmed human cases in Russia. The avian flu spread to eight southern regions of Russia, including two regions bordering the Caspian Sea but did not spread north toward Moscow.<sup>62</sup>

Most observers judged Russia as fairly efficient in identifying avian influenza and working with international health organizations, at least at the outset. The areas where the outbreaks occurred were quarantined. No poultry or products were permitted to be exported beyond the areas, poultry in these areas exposed to H5N1 were slaughtered, and many people were examined. Other observers raised concerns about Russia's ultimate capacity to respond to the spreading virus, or to deal with human cases. They warned that since Russia has devoted few budgetary resources in recent years to improving public health services, it has not adopted many newer disease-control measures, such as employing fewer and more highly trained staff, using advanced disease-detection equipment, and relying more on primary healthcare. Among measures taken by Russian federal and local officials, a directive was issued in August 2005 to implement the May 2005 WHO recommendations on controlling a possible influenza pandemic. Regional officials complained that the regions had strained to shoulder the financial burden of compensating owners for the destruction of birds and of other containment measures. Some observers have also noted that the

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<sup>57</sup> "U.S. Government Emergency Response to Avian Influenza: A Plan for Vietnam, Laos and Cambodia: Report from Country Planning Visits," July 2005.

<sup>58</sup> Keith Bradsher, "In Laos, Flu Overkill," *The New York Times*, January 16, 2006.

<sup>59</sup> "WHO Urges Laos to Prepare for Deadly Human Version of Bird Flu," *Agence France Presse*. August 27, 2005.

<sup>60</sup> "Intl Donors Pledge More Than \$17M to Help Southeast Asia Combat Bird Flu," *Forbes.com*, October 13, 2005.

<sup>61</sup> This section prepared by Jim Nichol, Specialist in Russian and Central Asian Affairs, 7-2289.

<sup>62</sup> The eight administrative areas are the Astrakhan, Chelyabinsk, Kurgan, Novosibirsk, Omsk, and Tyumen oblasts (regions), the Kalmyk republic, and the Altay kray (territory).

federal government could have played a greater role in coordinating regional outbreak responses. Analysts have noted that responses in each region were often divergent and not coordinated.<sup>63</sup> Russian President Vladimir Putin called in November 2005 for the legislature to approve Russian membership in the FAO, in order to facilitate cooperation with member countries in combating epidemics, including avian influenza.

## Thailand<sup>64</sup>

Thailand, among the earliest and hardest hit by H5N1, has emerged as a leader in fighting the spread of the virus. After suffering several fatalities from the initial outbreak in 2004, Thailand has been successful in containing the spread of the disease, with seven new human cases and four deaths reported since 2004. As a major poultry exporter, Thailand's economy has suffered significantly from the impact on the industry. Thailand's poultry exports, the fourth largest in the world, bring in over \$1 billion annually; both domestic and international demand for chicken fell due to fears of infection. After an initially sluggish response, including allegations by the press that government officials covered up evidence of an outbreak,<sup>65</sup> the Thai authorities have led the effort to respond to the problem and particularly to facilitate regional cooperation. During a meeting with Prime Minister Thaksin in September 2005, President Bush praised Thailand as a leader in fighting the disease and pledged further U.S. cooperation.

Officials in Bangkok have taken several steps to contain the spread of avian influenza. The Department of Livestock Development, Ministry of Agriculture and Cooperatives is the focal point for combating the virus, while Department of Disease Control, Ministry of Public Health is also a key player. The National Committee on Avian Influenza Control, under the supervision of a Deputy Prime Minister, was established in 2004 to map out national strategy. As part of the plan, over 40 million birds are said to have been exterminated, and surveillance teams have been deployed throughout the country. In December 2005, the Ministry of Public Health announced that oseltamivir (Tamiflu), an antiviral treatment for influenza, would be produced and distributed to the public at subsidized prices.<sup>66</sup> The Government Pharmaceutical Organization (GPO) manufactured the first 200,000 generic tablets of Tamiflu in early February 2006.<sup>67</sup> Bird smuggling from Cambodia was targeted by border

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<sup>63</sup> *FBIS*, August 18, 2005, Doc. No. CEP-19027.

<sup>64</sup> This section prepared by Emma Chanlett-Avery, Analyst in Asian Affairs, 7-7748, and updated by Julissa Gomez-Granger, Information Research Specialist, 7-8981.

<sup>65</sup> "Thai Authorities Should Take Strong Action Against Bird Flu," *Bangkok Post* editorial, October 4, 2005.

<sup>66</sup> "Thai Public Health Minister Announced that Thailand Can Produce Oseltamivir," *Thai News Service*, December 8, 2005.

<sup>67</sup> "First 200,000 Tablets of Thai Anti-bird Flu Drug Produced," *Malaysian National News Agency*, February 10, 2006.

authorities.<sup>68</sup> By mid-2005, over 11,000 poultry farms reportedly met the government's biosecurity standards. Thai officials acknowledge, however, that small farms with open-air facilities, which increase the risk of contamination, remain less regulated. Unlike China, Thailand bans the use of H5N1 vaccines in its poultry population. Law enforcement authorities cracked down on illegally imported bird flu vaccines from China; the H5N1 vaccine is prohibited because the government believes that its use in poultry could lead to further mutation of the virus.<sup>69</sup>

After the re-surfacing of the flu in July 2005, the Agriculture and Cooperatives Ministry established guidelines for poultry farmers to get permission from local leaders before moving their flocks. The movement of fowl is considered to be a key concern of livestock officials. Mobile checkpoints were set up in the provinces most affected to enhance scrutiny of such movements.<sup>70</sup> Fighting cocks have been implicated as one of the main transmitters to humans. The sport is intensely popular in Thailand, with up to 30 million spectators annually.<sup>71</sup> The industry, resistant to any form of government control, eventually struck a compromise with the Thai government which allows for the registration of the birds and the stadiums, as well as measures to control their movement.<sup>72</sup>

Thailand has promoted regional cooperation on containing the flu by leading an effort to establish a regional stockpile of human vaccines in the event of a pandemic, and proposing an ASEAN animal hygienic fund, along with a pledge of \$300,000 to start the project. The proposed center would enhance cross-border surveillance and control measures, as well as serve as an information distribution center for all ASEAN countries on the spread of the virus.<sup>73</sup> Public Health Minister Suchai Charoenratanakul pledged that Thailand would contribute a minimum of 5% of its own supply to a proposed regional stockpile of antiviral drugs.<sup>74</sup> As of May 2006, Thailand had stockpiled 1.5 million capsules of the antiviral drug Tamiflu. Thailand and Indonesia pledged to exchange information on influenza prevention and vaccine development, and both countries are participants in a two-year study initiated by WHO and HHS to test what dosage of Tamiflu is most effective against the virus. Thailand received one million baht (\$25,000) from the FAO to set up laboratories and serve as a coordinating center for avian experts, and has received technical assistance from the European Union to improve networking between laboratories working on the avian influenza. The OIE has designated Thailand to be the center

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<sup>68</sup> "Squawking at the Bird Flu Warning," *The Los Angeles Times*, September 1, 2005.

<sup>69</sup> "Thailand Cracks Bird Flu Vaccine Smuggling Syndicate," *BBC Monitoring Asia Pacific*, September 20, 2005.

<sup>70</sup> "Avian Flu - Fresh Outbreak," *Bangkok Post*, July 14, 2005.

<sup>71</sup> "Squawking at the Bird Flu Warning," *The Los Angeles Times*, September 1, 2005.

<sup>72</sup> "Ministry Cuts Deal of Fighting Cock Zoning," *Bangkok Post*, July 15, 2005.

<sup>73</sup> "Thailand Proposes Regional Bird Flu Control Center," *Thai News Service*, September 27, 2005.

<sup>74</sup> "Bird Flu Pandemic Risk 'Very High'," CNN.com, October 11, 2005.

of avian flu prevention and control efforts in Asia.<sup>75</sup> Thailand also hosts platforms that are cited as key to the U.S. government response, including two Bangkok-based organizations that are crucial implementing partners for USAID.<sup>76</sup>

Thailand has become a role model for other countries in its efforts to control avian influenza outbreaks. Thailand has been praised by United Nations System Influenza Coordinator David Nabarro as a “successful case” in avian flu control measures.<sup>77</sup> In addition, Thailand has also actively helped neighboring countries by providing aid and training in combating H5N1. It has contributed 100 million baht to ACMES (Ayeyawady-Chao Phya-Mekong Economic Cooperation Strategy) member countries Myanmar, Laos, Vietnam and Cambodia.<sup>78</sup>

## Turkey<sup>79</sup>

In early January 2006, the WHO confirmed four cases of H5N1 virus in humans in Turkey; two of them in young siblings, were fatal. The deaths were the first from the virus outside of China and Southeast Asia, and researchers assume the virus was carried by migratory birds from Asia. After another eight cases and two deaths, most of them in the eastern rural district of Dogubayazit, Turkey appeared to stem the spread of the virus.

Critics say that the Turkish authorities were slow to detect the virus. Since confirmation of the outbreak, several measures have been taken by the government in Ankara. Turkey’s Ministry of Agriculture and Rural Affairs has overseen efforts to contain the spread of H5N1 in the regions afflicted with the virus by quarantining local areas and prohibiting people and animals from moving in or out the identified districts; instituting culling drives; and stepping up surveillance efforts. According to the Bird Flu National Coordination center, nearly 1.5 million birds have been culled, and the virus has been detected in 24 different cities. The central government has also initiated public awareness campaigns, restricted the transportation of poultry, prohibited hunting of winged animals, and established a national illness control center and local illness control centers.

WHO has been actively engaged with the Turkish authorities to contain the spread of the virus and provide additional support for laboratory diagnostic work. Imports of birds from Greece, Iran, and Romania have been banned. According to press reports, the Turkish Health Ministry has 15,000 courses of Tamiflu and has ordered an additional 100,000.

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<sup>75</sup> “OIE Announces to Designate Thailand as Center,” *Thai News Service*, March 27, 2006.

<sup>76</sup> “U.S. Government Emergency Response to Avian Influenza: A Plan of Action for Vietnam, Laos, and Cambodia - Report from Country Planning Visits July 11-24, 2005,” United States Agency for International Development.

<sup>77</sup> “UN Urges Thailand to ‘Work Harder’ to Fight Bird Flu,” *Global News Wire*, April 11, 2006.

<sup>78</sup> “Thailand to Host Regional Meeting on Bird Flu,” *Bangkok Thai Day*, April 2006.

<sup>79</sup> This section prepared by Emma Chanlett-Avery, Analyst in Asian Affairs, 7-7748.

There is widespread concern that the virus will spread from Turkey into several other countries. FAO, citing weak surveillance mechanisms along the border, urged Armenia, Azerbaijan, Georgia, Iraq, Iran and Syria to be on high alert for signs of infection. Seemingly confirming FAO's fears, fatal H5N1 cases were confirmed in Iraq and Azerbaijan in subsequent months.

## Vietnam<sup>80</sup>

WHO reports that there have been 93 confirmed human cases — including 42 deaths — of avian influenza in Vietnam since late December 2003. According to USAID, the H5N1 virus is believed to be endemic in Vietnam's waterfowl population. The Vietnamese government estimates the country's total poultry population to be around 250 million birds, including 20 million to 60 million ducks and geese. Between 60% and 70% of the poultry population is raised in "backyard farms," in close proximity to other birds, and the government estimates that 65% of farm households nationwide raise poultry. Poultry generally is sold live in local markets and is slaughtered at home. U.N. agencies in 2005 estimated that disease containment, including culling of poultry, cost the Vietnamese economy an estimated \$200 million.<sup>81</sup>

In 2005, the Vietnamese government began intensifying its response to the disease by establishing an interagency working group that includes the FAO and WHO. At the local level, inter-ministerial steering committees have been established within the Vietnamese Communist Party's people's committees, which operate throughout the country. However, the quality of inter-ministerial coordination, in addition to the capacity of Vietnam's local institutions to monitor, report, and handle disease outbreaks, have been called into question. The central government in Hanoi is developing a national pandemic preparedness plan, and as of mid-October 2005 had presented a draft to international health agencies and foreign aid donors. Since the first outbreak of avian influenza was reported, over 40 million birds are said to have been culled, though low compensation for farmers appears to have acted as a disincentive for farmers to report signs of infection. In August 2005, Vietnam began a mass poultry vaccination program. In early January 2006, the Ministry of Agriculture and Rural Development (MARD) declared that under the program, all provinces and cities had completed two phases of vaccinations for over 240 million birds. Critics have called Vietnam's previous poultry vaccination programs ineffective. In October 2005, the government signed a bilateral health cooperation agreement with the United States and agreed with a number of U.N. agencies to conduct a joint prevention program.

There are conflicting reports on the willingness of the Vietnamese government to cooperate with international health workers. Many accounts praise the government for responding quickly and cooperatively, particularly in the winter and spring of 2005, when two sets of initial blood tests by Vietnamese and WHO officials

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<sup>80</sup> This section prepared by Mark Manyin, Specialist in Asian Affairs, 7-7653, and updated by Hannah Fischer, Information Research Specialist, 7-8989.

<sup>81</sup> USAID, "U.S. Government Emergency Response to Avian Influenza: A Plan of Action for Vietnam, Laos and Cambodia. Report from Country Planning Visits," July 11-24, 2005.



indicated that dozens, and perhaps scores, of Vietnamese might have been infected with the virus. Subsequent testing revealed that the initial test results had been false positives.<sup>82</sup> Other accounts, which appear to be in the minority, have charged that the Vietnamese government has been uncooperative with international health agencies, particularly in the first months of the outbreak in 2004.<sup>83</sup>

## Responses by East Asian Regional Organizations<sup>84</sup>

**APEC.** At the 2005 Asia Pacific Economic Cooperation (APEC) Leaders' Meeting, held in Busan, South Korea, in November 2005, special attention was given to the threat of a pandemic influenza in the region. Efforts by the WHO, the FAO, the OIE, and the U.S.-led IPAPI (the International Partnership on Avian and Pandemic Influenza) were endorsed and reinforced at the Leaders' Meeting. The APEC Initiative on Preparing for and Mitigating an Influenza Pandemic calls for collective, transparent measures to exchange expertise and information to prevent a possible pandemic. Regional cooperation has been spurred by fear of massive economic and human costs: an Asian Development Bank (ADB) report concluded that a pandemic in Asia could kill three million people and cost the region close to \$300 billion, nearly 6.5% of gross domestic product.

In May 2006, after a ministerial meeting in Da Nang City, Vietnam, APEC adopted a five-part Action Plan on the Prevention and Response to Avian and Influenza Pandemics, in which members pledged:

- Multi-sectoral cooperation and coordination on avian and pandemic influenza;
- Establishment of best practices and common approaches for risk communications;
- Mitigation of the negative effects of avian influenza on agriculture and trade;
- Cooperation with the private sector to ensure continuity of business, trade, and essential services; and
- Strengthened regional and international cooperation.

The plan also called for "improved early detection capacity, increased cooperation between veterinary and human health sectors, development and implementation of practical biosecurity guidelines, cooperation with media to assure

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<sup>82</sup> See, for instance, Nicholas Zamiska, "Pandemic Watch: Inside U.N. Agency, Flu Data Sparked A Tense Debate," *The Wall Street Journal*, October 18, 2005.

<sup>83</sup> See, for instance, Adrian Levy and Cathy Scott-Clark, "Flu on the Wing," *The Guardian*, October 15, 2005.

<sup>84</sup> This section was prepared by Emma Chanlett-Avery, 7-7748, and updated by George Mangan, Information Research Specialist, 7-5970.

accurate and timely dissemination of information, regional projects to improve risk communication, and reform of poultry production practices.”<sup>85</sup>

In early June 2006, APEC members participated in a disaster exercise designed to test communications capabilities during a simulated outbreak of avian influenza, utilizing Australia’s National Emergency Management Coordination Center. Australian officials announced that the exercise was a success, and cited “creative responses” to the hypothetical outbreak by some participants.<sup>86</sup>

**ASEAN.** As Southeast Asia’s major multinational forum, the Association of Southeast Asian Nations (ASEAN) has taken some steps to improve transnational coordination in combating the spread of a potential pandemic, and limiting the spread of the H5N1 virus. To this end, ASEAN members have created a number of institutional arrangements, including a Highly Pathogenic Avian Influenza (HPAI) Taskforce, an ASEAN Expert Group on Communicable Diseases, the ASEAN Animal Health Trust Fund, and the ASEAN Plus Three Emerging Infectious Diseases Programme. At the eleventh ASEAN summit in Kuala Lumpur, Malaysia in December 2005, ASEAN leaders agreed to establish a regional human vaccine stockpile in the event of a pandemic that would channel the stocks to the most affected countries in order to control the spread as quickly as possible. Implementation details were not specified. Malaysia announced that it would set up a WHO headquarters to help coordinate regional plans to contain the disease, and Japan pledged \$135 million to ASEAN to help fight H5N1.

ASEAN, in association with the Asian Development Bank (ADB), the U.N. Food and Agriculture Organization, and the World Health Organization, in March 2006 announced a \$38 million grant program designed to aid member nations in controlling the spread of avian flu in poultry and in mitigating its effect on humans.

In May 2006, Japan and ASEAN announced a program of cooperation and coordination in controlling avian influenza, with Japan providing a stockpile of 500,000 doses of Tamiflu and 700,000 sets of protective clothing for health care workers in the region.

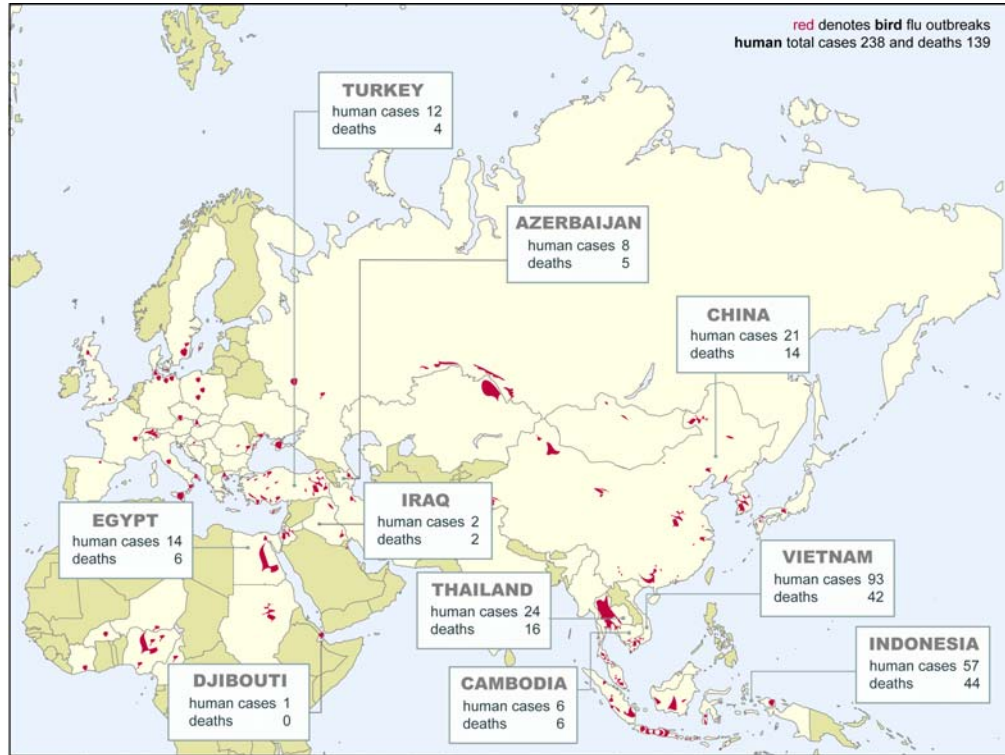
**East Asia Summit.** Drafting an avian influenza declaration was a tangible achievement of the inaugural meeting of East Asia’s newest regional grouping, the East Asia Summit (EAS), which met in Kuala Lumpur in December 2005 immediately following the ASEAN summit. In their Summit Declaration on Avian Influenza Prevention, Control and Response, EAS leaders committed to “ensure rapid, transparent and accurate ... communications,” establish information sharing protocols among member countries and multilateral organizations, to create a regional network of stockpiles of antiviral drugs, and to establish regional avian influenza and pandemic preparedness strategies backed by supporting national legislation.

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<sup>85</sup> *APEC Ministers Endorse Action Plan to Counter Bird Flu*, U.S. State Department Press Release, May 5, 2006.

<sup>86</sup> “APEC Bird Flu Exercise Successful: Australian Ministers,” *Xinhua News Agency*, June 13, 2006.

Figure 1. Map of Human and Animal H5N1 Cases



Source: Information based on the World Health Organization (WHO) website, and the World Organization for Animal Health (OIE) website. Adapted by CRS. (K.Yancey 8/17/06)