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

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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 April 2006, the vast majority of fatal and total cases have been in East Asia, including Vietnam (42/93), Indonesia (23/30), Thailand (14/22), China (11/16), and Cambodia (5/5). In 2006, human cases and deaths from H5N1 were newly reported in Azerbaijan (5/7), Turkey (4/12), Egypt (2/4) and Iraq (2/2). 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 100 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 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 2003.¹ 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.² 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 early 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 has prevented H5N1 from being a top priority for authorities in Baghdad, and public

¹ 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.

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

information on the cases is limited. Reliable evaluations of Azerbaijan's response to an outbreak in March 2006 were not available as this report was written.

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.³ March saw another up-tick, with the total number of countries with confirmed cases in birds approaching 50. The detection of the flu in several European countries prompted a meeting of EU agricultural ministers, but representatives were unable to agree on a coordinated response, with some states urging aggressive measures such as widespread commercial poultry vaccination and others fearful of the economic consequences of trade embargoes. Outside of the developed world, cases in birds were confirmed in Nigeria, Niger, Cameroon, Afghanistan, and India, all countries with relatively poor public health infrastructure and veterinary services, surrounded by countries with even less capacity to cope with a widespread outbreak.

Table 1. Number of Human Cases and Deaths by Country Through April 4, 2006

Country	Human cases	Deaths
Azerbaijan	7	5
Cambodia	5	5
China	16	11
Egypt	4	2
Indonesia	30	23
Iraq	2	2
Thailand	22	14
Turkey	12	4
Vietnam	93	42
Total	191	108

Source: World Health Organization: Cumulative Number of Confirmed Human Cases of Avian Influenza A/H5N1 Reported to WHO. April 4, 2006. See [http://www.who.int/csr/disease/avian_influenza/en/].

³ 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.

Africa⁴

By late March, the presence of H5N1 in poultry had been confirmed in three sub-Saharan African countries: Nigeria, Niger, and Cameroon. No human cases had been confirmed in the region. The outbreak in Nigeria is seen as notable because Nigeria is the most populous country in Africa⁵ and because it is seen as a likely source of the H5N1 detected in Niger and Cameroon.

H5N1 in Nigeria. On February 7, 2006, OIE confirmed the presence of H5N1 in caged chickens and other birds on a commercial farm in Nigeria's northern Kaduna state after tests by Nigerian officials were positive for H5N1. Subsequent H5N1 outbreaks in poultry on farms in multiple states, initially in the north, have been reported. U.S. officials in Nigeria reported that H5N1 was spreading rapidly in poultry and that resulting bird mortality rates were high. The Kaduna outbreak reportedly began weeks before H5N1 was detected. Large numbers of poultry had died from unidentified causes in preceding weeks, prompting the initial Nigeria testing.⁶

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.⁷

⁴ This section prepared by Nicolas Cook, Specialist in African Affairs, 7-0429.

⁵ 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 Issue Brief IB98046, *Nigeria in Political Transition*, by Ted Dagne.

⁶ OIE and WHO press releases; multiple U.N., AFP, AP, and other news reports, February 2006; and USAID information. The origin of H5N1 in Nigeria has not been determined; see "Transmission" section, above, for further information on this issue.

⁷ Culling, however, reportedly began before compensation policies had been developed, and compensation being offered is reportedly substantially below market-value losses and is not (continued...)

Extensive sell-offs of poultry nationwide by bird owners seeking to minimize potential economic losses followed the reported detection of H5N1. In response, in 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.⁸

U.S. and International Responses. Upon confirmation of H5N1 in Nigeria, the Center for Disease Control (CDC) and U.S. Department of Agriculture (USDA) banned U.S. imports of poultry from Nigeria.⁹ U.S. officials are working with the Nigerian government to create an integrated, national H5N1 action plan and prioritized lists of needs for donors. The United States sent 2,000 Personal Protective Equipment units (PPEs, external protective garment and disinfectant kits, supplied by USAID) to Nigeria and dispatched a CDC-led technical team to set up a mobile rapid diagnosis laboratory and to evaluate Nigerian laboratory testing capacities and potential upgrade needs, among other activities. The United States has provided technical advice, supplies, or other aid on an as-needed basis, as information on the outbreak develops. The U.S. embassy in Abuja has formed an inter-agency avian flu working group, and is working with other international donors and the Nigerian government to respond to the outbreak. Provisional USAID plans call for a quick-impact, 30-day program focused on containment and culling, prevention, eradication, and recovery. USAID has also drafted plans for longer-term assistance and has deployed a veterinarian, an expert in agricultural policy and strategy, and a communications/behavioral change specialist to Nigeria. USAID's Nigeria mission provisionally plans to use about \$9 million in unobligated funds to support its H5N1-related activities. In addition to assisting Nigeria, U.S. embassy officials are assessing the potential need for protecting U.S. personnel as they respond to H5N1

⁷ (...continued)

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.

⁸ 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.

⁹ See [<http://www.cdc.gov/flu/avian/outbreaks/embargo.htm>] for current list of embargoes.

in Nigeria, notably in the eventuality that human infections are detected, or if the virus becomes transmissible from human to human.¹⁰

CDC officials are working closely with the FAO (the Food and Agriculture Organization of the United Nations),¹¹ OIE, and WHO in Nigeria, assisting with testing for H5N1, and providing virus control and public health policy advice and other technical assistance. These international agencies have called for an intensification of measures that Nigerian officials already are implementing, such as quarantining affected sites, culling infected flocks, undertaking disinfection and hygiene measures, and closing poultry markets in affected states. The WHO has offered to aid Nigeria's public information efforts and to provide assessment teams and H5N1 testing, prevention, and logistical aid, leveraging the infrastructure for the ongoing WHO-backed national polio immunization efforts. WHO has provided 10,000 doses of Tamiflu (antiviral medication) to Nigeria and plans to deliver 250,000 doses. The U.N. office in Nigeria is facilitating frequent donor coordination meetings, and the World Bank has provisionally agreed to provide up to \$50 million in emergency credit to help Nigeria to counter H5N1, possibly through a poultry vaccination campaign. The UK has reportedly provided several thousand PPE units to Nigeria.¹²

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.

Multiple African countries banned imports of poultry from Nigeria after H5N1 was reported there and many have implemented measures, in many cases starting

¹⁰ Press accounts and U.S. government information.

¹¹ The FAO has allocated about US \$1 million to support surveillance and control activities in 20 West and North African countries.

¹² FAO, OIE, and WHO press releases and statements; and U.S. government information.

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 24th 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.

In October 2005, the WHO issued an H5N1 risk assessment for Africa. It found that “there are multiple opportunities for human exposure” to H5N1 in Africa, mostly associated with widespread domestic poultry husbandry, processing, and consumption. It noted that domestic poultry in Africa typically run free, “often mingle freely with wild birds,” and that close domestic poultry-human contact is common. Were even a few human cases to occur, technically weak and resource-poor public health systems already overburdened by AIDS, tuberculosis and malaria, WHO found, would face “enormous new challenges.” Early detection and drug treatment would likely be inaccessible to most affected people. A severe lack of disease surveillance, assessment, and specialized treatment capacities, it stated, might both imperil local H5N1 containment and result in a failure to discover “critical early warning” signs of potential H5N1 mutations that might signal a global pandemic. WHO also suggested that African governments’ lack of resources to compensate farmers for poultry lost to culling might discourage “early and open reporting,” increasing chances that H5N1 might become endemic.¹³ The reported weakness of African veterinary services could also hinder responses to H5N1 in Africa, according to some observers.

Azerbaijan¹⁴

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

¹³ WHO, *Avian Influenza and the Pandemic Threat in Africa: Risk Assessment for Africa*. October 28, 2005.

¹⁴ This section prepared by Jim Nichol, Specialist in Russian and Central Asian Affairs, 7-2289.

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 March 22, 2006, WHO had confirmed seven 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. Patients suspected of having the H5N1 infection are being given the antiviral drug oseltamivir (Tamiflu), but the quantities of this drug in Azerbaijan are limited.

Since confirmation of the outbreak, several measures have been taken by the government. On April 3, 2006, Azerbaijani President Ilkham Aliyev of Azerbaijan set up a State Commission to Prevent the Spread of Bird Flu to coordinate the government response, and appointed Deputy Prime Minister Abbas Abbasov as its chairman. Other members include 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. Aliyev directed the commission to provide information on the flu to the public and to formulate preventive measures.

Among other measures, authorities tried in February-March 2006 to contain the virus by attempting to eliminate all migratory and domestic birds within a three-mile radius of outbreaks at poultry farms. In mid-March, Azerbaijan banned all imports of live poultry or poultry meat. The government 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 increasing level of public concern, spurred by private media reports and rumors, led the State Veterinary Service on March 8 to announce that it was preparing brochures and posters for distribution in Baku, but that there would not be enough for the whole city. The head of one Azerbaijani NGO criticized the government for allegedly moving too slowly to inform the public about possible human cases.

Cambodia¹⁵

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. Medical experts also discovered the virus in several ducks in Kompong Cham province in March 2006¹⁶. All Cambodian victims lived in areas where poultry had fallen ill and died. In September 2005, more than 1,000 water birds reportedly were found dead in poultry farms in Batambang and several other provinces, although none of the birds tested were confirmed to have the virus.

¹⁵ This section prepared by Thomas Lum, Specialist in Asian Affairs, 7-7616.

¹⁶ "Girl Dies of Bird Flu in Cambodia, Seven Other Suspected Cases," *Agence France Presse*. March 23, 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 H5N1.¹⁷ United Nations experts estimated that Cambodia needs \$18 million to 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.¹⁸

China, Including Hong Kong¹⁹

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. Added to this, the PRC's poor public health infrastructure and the traditionally secretive, un-transparent policy approach of its communist government 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.²⁰ As of April 3, 2006, 16 cases of human H5N1 infection had been reported in China, of which 11 were fatal. The most recent of these deaths involved a female migrant worker who died in Shanghai on March 21, 2006, in the first avian flu case reported in that city.

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

¹⁷ "U.S., Cambodian Health Ministers Sign Deal on Bird Flu Cooperation," *Agence France Press*. October 11, 2005.

¹⁸ "Cambodia Needs \$18 Million for Bird Flu Fight — UN," *Reuters*. December 16, 2005.

¹⁹ This section was prepared by Kerry Dumbaugh, Specialist in Asian Affairs, 7-7683.

²⁰ 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.

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 isolated parts of China, H5N1 also has been documented in parts of China's pig population.²¹

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 China²² and has crafted and published an emergency plan for an influenza pandemic, including a four-color-coded notification system.²³ 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.²⁴ 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.²⁵ 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

²¹ According to the U.S. CDC. See [<http://www.cdc.gov/flu/avian/outbreaks/asia.htm>].

²² *Beijing Liaowang* in Chinese. Translated on September 26, 2005, in FBIS, CPP20051018050001.

²³ PRC Ministry of Health, "Preparations and Plan for an Influenza Pandemic Emergency," September 28, 2005, translated in FBIS, CPP20051012335002.

²⁴ Cody, Edward, "China to Vaccinate Billions of Birds; Campaign Aims to Stem Avian Flu," *Washington Post*. November 16, 2005.

²⁵ Fountain, Henry, "How to Vaccinate 14 Billion Birds," *The New York Times*. November 20, 2005.

in birds but leave them still contagious,²⁶ and the possibility that vaccinators themselves could spread the virus on their clothing or shoes unless rigid decontamination procedures are followed.²⁷

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.²⁸

Despite these preparations, some international health experts have concerns about the PRC's transparency on avian flu issues. In late April and June 2005, for instance, 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.²⁹ 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 also have denied.³⁰

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.

²⁶ Sipress, Alan, "Bird Flu Experts Warn Against Bad Vaccines; Improper Poultry Inoculation May Spread Virus," *Washington Post*. November 22, 2005.

²⁷ McNeil, Donald Jr., "Health Experts Fear Chinese Flu Vaccination Plan Could Backfire," *The New York Times*. November 20, 2005.

²⁸ Wright, Tom, "Roche to Let Chinese Producer Make Flu Drug." *New York Times*. December 13, 2005.

²⁹ 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," *Washington Post*. July 19, 2005.

³⁰ *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.

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 countries³¹. Representatives from approximately 100 countries and 20 international organizations attended, ultimately pledging \$1.9 billion in avian flu assistance.³²

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 and during Bush’s visit to Beijing in November 2005.³³ 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.³⁴ 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 2005.³⁵ On March 22, 2006, press accounts reported an announcement by WHO officials that China had agreed to provide, within the next few weeks, up to 20 virus samples from infected poultry for study in WHO labs.³⁶

At this point, the level of U.S.-PRC cooperation also 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 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.

³¹ “Avian and Human Influenza: Financing Needs and Gaps,” World Bank. January 12, 2006. [<http://siteresources.worldbank.org/PROJECTS/Resources/40940-1136754783560/AHIFinancingGAPSFINAL.pdf>].

³² The U.S. pledged \$334 million; the E.U. and European Commission \$260 million; and China \$10 million.

³³ King Jr., Neil, “Hu Pledges Efforts to Ease U.S. Strains,” *Asian Wall St. Journal*. September 15, 2005.

³⁴ [<http://lists.state.gov/SCRIPTS/WA-USIAINFO.EXE?A2=ind0511c&L=us-china&D=1&H=1&O=D&P=625>].

³⁵ 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.

³⁶ 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.

Egypt³⁷

On April 3, 2006, the WHO confirmed that four Egyptians have contracted H5N1, including two who died from the virus. The Egyptian government has said that a total of eight Egyptians are infected. Avian influenza was first detected in Egypt in mid-February 2006. 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. To date, 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.

Indonesia³⁸

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 human H5N1 fatality. In the first quarter of 2006, deaths from H5N1 jumped in Indonesia, making it second only to 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

³⁷ This section prepared by Jeremy Sharp, Analyst in Middle Eastern Affairs, 7-8687.

³⁸ This section prepared by Bruce Vaughn, Analyst in Asian Affairs, 7-3144.

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 plans to establish a national commission for bird flu control that includes all ministries, private and non-governmental agencies, and the Red Cross.³⁹

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.⁴⁰ 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.⁴¹

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.⁴² 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.”⁴³ 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 2004.⁴⁴

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

³⁹ “Indonesia Set to Form National Commission for Bird Flu Control,” *Thai News Service*. January 10, 2006.

⁴⁰ “Toll UP but Indonesia Ready for Bird Flu,” *ISI Emerging Markets*. January 2, 2006.

⁴¹ “Singapore, Indonesia, US to Start Work on US\$ 4.5m Bird Flu Pilot Project,” *Channel NewsAsia*. March 3, 2006.

⁴² Sipress, Alan, “Indonesia Warns of Possible Bird Flu Epidemic,” *Washington Post*. September 21, 2005.

⁴³ “Indonesia Making Progress in Fight Against Bird Flu - WHO,” *AFXAsia*. September 30, 2005.

⁴⁴ Phelim Kyne and Fitri Wulandari, “Indonesian Poultry Cos Hobble Avian Flu Control Ops,” *Dow Jones Newswires*. October 5, 2005.

containing the spread of H5N1.⁴⁵ Since then, the international community has pledged \$140 million in assistance, and the Indonesian Government has allotted just over \$60 million for bird flu prevention.⁴⁶ 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.⁴⁷ India has also reportedly agreed to provide 1,000 doses, adding to Indonesia's own supply of 10,000 doses.⁴⁸

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.⁴⁹ 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 provinces⁵⁰. Secretary of State Rice reportedly discussed the avian flu outbreak with President Yudhoyono during her mid-March 2006 trip to Indonesia.⁵¹ 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.⁵²

Laos⁵³

An outbreak of H5N1 avian flu in poultry was confirmed 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

⁴⁵ Reuters, "Indonesia Says Bird Flu Outbreak May Become Epidemic." September 21, 2005. [<http://www.alertnet.org>].

⁴⁶ "Indonesia Set to Form National Commission for Bird Flu Control," *Thai News Service*. January 10, 2006.

⁴⁷ Zaminska, Nicolas, "Asian Nations Start Critical Bird Flu Preparations," *The Wall Street Journal*. October 3, 2005.

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

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

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

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

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

⁵³ This section prepared by Thomas Lum, Specialist in Asian Affairs, 7-7616.

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 of a large-scale human outbreak.⁵⁴ 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.⁵⁵ The FAO and the WHO reportedly have strong working relationships with the Lao government⁵⁶. 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.⁵⁷ In February 2006, FAO signed an agreement with the Lao government to establish a \$2.9 million bird flu control program funded by Germany.

Russia⁵⁸

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,⁵⁹ but did not spread north toward Moscow.

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

⁵⁴ "U.S. Government Emergency Response to Avian Influenza: A Plan for Vietnam, Laos and Cambodia: Report from Country Planning Visits." July 2005.

⁵⁵ Keith Bradsher, "In Laos, Flu Overkill," *New York Times*. January 16, 2006.

⁵⁶ "WHO Urges Laos to Prepare for Deadly Human Version of Bird Flu," *Agence France Presse*. August 27, 2005

⁵⁷ "Intl Donors Pledge More Than \$17M to Help Southeast Asia Combat Bird Flu," *Forbes.com*. October 13, 2005.

⁵⁸ This section prepared by Jim Nichol, Specialist in Russian and Central Asian Affairs, 7-2289.

⁵⁹ The eight administrative areas are the Astrakhan, Chelyabinsk, Kurgan, Novosibirsk, Omsk, and Tyumen oblasts (regions), the Kalmyk republic, and the Altay kray (territory).

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 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.⁶⁰ 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.

Thailand⁶¹

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 five new human cases and two 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,⁶² 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

⁶⁰ *FBIS*, August 18, 2005, Doc. No. CEP-19027.

⁶¹ This section prepared by Emma Chanlett-Avery, Analyst in Asian Affairs, 7-7748.

⁶² "Thai Authorities Should Take Strong Action Against Bird Flu," *Bangkok Post* editorial. October 4, 2005.

and distributed to the public at subsidized prices.⁶³ Bird smuggling from Cambodia was targeted by border authorities.⁶⁴ 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.⁶⁵

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.⁶⁶ 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.⁶⁷ 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.⁶⁸

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.⁶⁹ 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.⁷⁰ 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

⁶³ "Thai Public Health Minister Announced that Thailand Can Produce Oseltamivir," *Thai News Service*. December 8, 2005.

⁶⁴ "Squawking at the Bird Flu Warning," *Los Angeles Times*. September 1, 2005.

⁶⁵ "Thailand Cracks Bird Flu Vaccine Smuggling Syndicate," *BBC Monitoring Asia Pacific*. September 20, 2005.

⁶⁶ "Avian Flu - Fresh Outbreak," *Bangkok Post*. July 14, 2005.

⁶⁷ "Squawking at the Bird Flu Warning," *Los Angeles Times*. September 1, 2005.

⁶⁸ "Ministry Cuts Deal of Fighting Cock Zoning," *Bangkok Post*. July 15, 2005.

⁶⁹ "Thailand Proposes Regional Bird Flu Control Center," *Thai News Service*. September 27, 2005.

⁷⁰ "Bird Flu Pandemic Risk 'Very High'," *CNN.com*. October 11, 2005.

working on the avian influenza. The OIE has designated Thailand to be the center of avian flu prevention and control efforts in Asia.⁷¹ 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.⁷²

Turkey⁷³

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 at least temporarily 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. No vaccine development is underway in Turkey.

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.

⁷¹ "OIE Announces to Designate Thailand as Center," *Thai News Service*. March 27, 2006.

⁷² "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.

⁷³ This section prepared by Emma Chanlett-Avery, Analyst in Asian Affairs, 7-7748.

Vietnam⁷⁴

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.⁷⁵ The wartime and tsunami supplemental appropriation (P.L. 109-13), which the House passed on May 5, 2005 and the Senate on May 10, 2005, provides \$25 million to help combat the disease, including approximately \$7 million to be used in Vietnam.

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 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

⁷⁴ This section prepared by Mark Manyin, Specialist in Asian Affairs, 7-7653.

⁷⁵ 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.

positives.⁷⁶ 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 2004.⁷⁷

Responses by East Asian Regional Organizations

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.

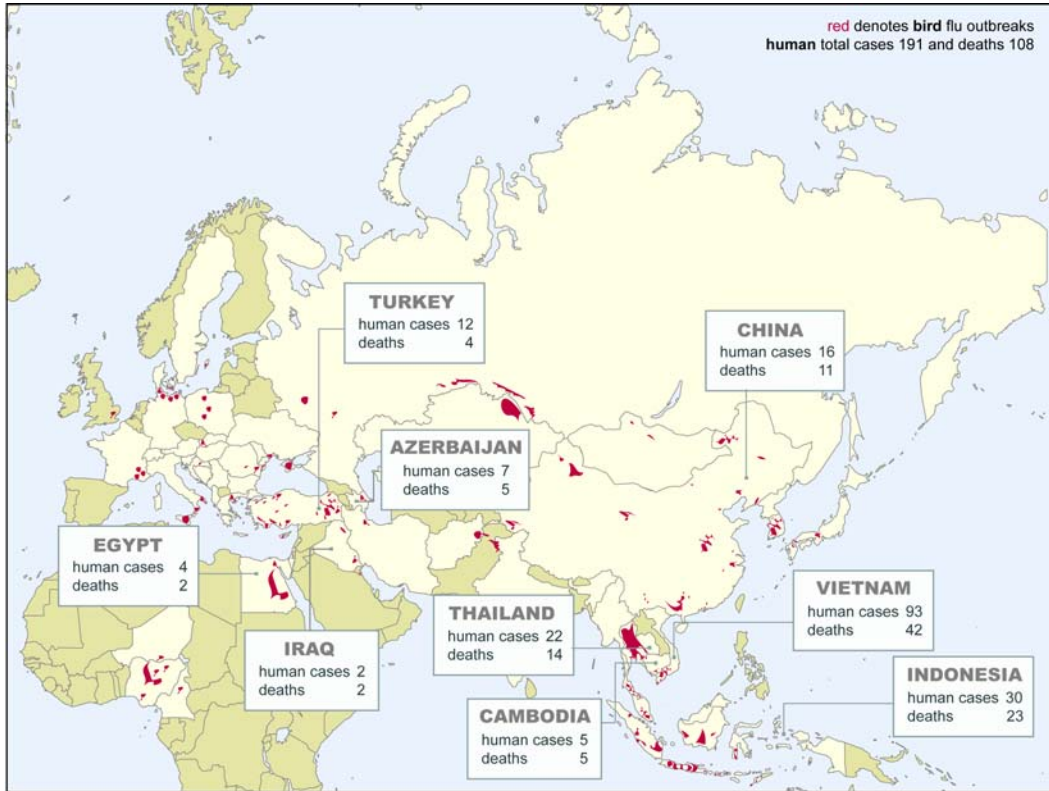
ASEAN. As Southeast Asia's major multinational forum, the Association of Southeast Asian Nations (ASEAN) has taken some steps to improve transnational coordination in combating the spread of a potential pandemic, and limiting the spread of the H5N1 virus. To this end, ASEAN members have created a number 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.

East Asia Summit. Drafting an avian influenza declaration was the single 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.

⁷⁶ See, for instance, Nicholas Zamiska, "Pandemic Watch: Inside U.N. Agency, Flu Data Sparked A Tense Debate," *The Wall Street Journal*. October 18, 2005.

⁷⁷ See, for instance, Adrian Levy and Cathy Scott-Clark, "Flu on the Wing," *The Guardian*. October 15, 2005.

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 4/5/06)