1. **Basic Information**

1.1 **CRIS Number (Year 1):**
1.2 **Title:** Avian Influenza Preparedness and Response Project
1.3 **Sector:** Agriculture and Health
1.4 **Location:** Turkey
1.5 **Duration:** 2 years

2. **Objectives**

2.1 **Overall Objective(s):**

The overall objective of the project is to minimize the threat in Turkey posed to humans by Highly Pathogenic Avian Influenza (HPAI) infection in domestic poultry and other animals to diminish the burden of disease and loss of productivity, and to improve influenza pandemic preparedness and the response to this and other infectious disease threats to humans.

2.2 **Project purpose:**

Strengthening of the infrastructure of Veterinary Services for the effective and efficient AI disease control and eradication activities to be carried out, as well as, improving the national public health surveillance and response systems through upgrading diagnostic testing and early response capacities.

2.3 **Accession Partnership (AP) and NPAA priority**

2.3.1 **2003 ACCESSION PARTNERSHIP**

**Animal health**

**Short Term Priorities**

- Adopt a veterinary framework law and *acquis*-harmonised secondary legislation; strengthen the human, technical and information resources of the relevant administrative, scientific, testing and inspection bodies; ensure enforcement of legislation; step up animal disease eradication efforts, contingency planning and monitoring capacity.
- Adopt a programme for transposition of the veterinary and phytosanitary *acquis*; strengthen the administrative, scientific and technical structures enabling the efficient and effective implementation of the *acquis* on plant protection, in particular laboratory testing; strengthen inspection arrangements of both domestic production and imports of plants and plant products, as well as in food-processing establishments.

**Medium Term Priorities**

- Reorganise and strengthen the food safety and control system and upgrade its human, technical and financial resources to ensure that Community food safety standards are complied with.
- Establish an upgrading plan with timetables to modernise food-processing establishments to meet Community hygiene and public health standards, and further establishment of testing and diagnostic facilities.

The following medium term priorities on public health are listed under the chapter of “Employment and Social Affairs”

- Adopt a transposition program of the *acquis* in the areas of public health and, review the capacity of all institutions involved in the transposition of the *acquis* in the field,
- Transpose and implement EU legislation in the field of public health including the communicable disease surveillance and control system,
- Take measures to promote access to and quality of health care and to improve the health status of the population.

2.3.2 NATIONAL PROGRAMME FOR THE ADOPTION OF THE ACQUIS (Official Gazette Dated 24 July 2003 No. 25178 bis)

PRIORITY 7.2 Alignment to the Veterinary Acquis

Priority Description

The harmonization process in the veterinary field is based on the Veterinary Project carried out under the 2002 Financial Cooperation Program. In the Veterinary Project, veterinary legislation, animal health, disease surveillance, control and eradication, veterinary information systems, veterinary border inspection posts, veterinary public health and animal welfare were identified as priority areas. Meanwhile, the Veterinary Framework Law, which is a prerequisite of the Twinning project, is being prepared through the technical assistance provided by the Administrative Cooperation Program. The Veterinary Framework Law will establish the legal basis, for the transposition of main EU regulations, directives and decisions into the Turkish legal system.

In the field of animal health, technical facilities of the Ministry of Agriculture and Rural Affairs will be improved to carry out the monitoring of the diseases listed by the World Organisation for Animal Health (OIE). In addition, national control and eradication programs will be prepared, and the facilities and diagnosis infrastructure of the veterinary laboratories will be improved. For the Blue tongue disease an action plan will be prepared, which will set the basis for the other major infectious and contagious diseases formally included in the list A of the OIE, hereinafter “list A diseases”.

A Veterinary Information System supporting the system on identification and registration of bovine animals, control of animal movements and disease control programmes and containing notification systems such as ANIMO, ADNS and SHIFT will be established. As a result, a network will be set up that will enable information exchange between the central and local organizations of MARA and border inspection posts, laboratories, slaughterhouses and major markets.

PRIORITY 13.2 Alignment with EU Acquis in the Field of Public Health

Priority Description

Turkey as a candidate country, to achieve the objectives stated in the Accession Partnership, has envisaged preventive health care services as a medium term priority within the context of the harmonisation process with EU norms. For this, an effective surveillance and control system of communicable diseases is considered to be one of the main instruments for the protection of public health. The NPAA also confirms Turkey’s commitment for harmonising the existing list of notifiable diseases with EU and strengthening the surveillance through the adoption of the related EU acquis and describes the task as follows. “One of the main systems for the protection of public health is surveillance and control of communicable diseases. Harmonising the current list of communicable diseases for which notification is compulsory with that of EU and strengthening the surveillance and control system in this field is deemed necessary. The necessary institutional change is described as; (i) Strengthening the surveillance and control system for communicable diseases, (ii) Institutional regulations in order to participate in EU network, and (iii) Training and interpretation.”
2.3.3 ACCESSION PARTNERSHIP 2005

Short Term Priorities
– “Food safety, veterinary and phytosanitary policy”: Adopt a strategy to eradicate the main animal diseases.

Medium Term Priorities
– “Food safety, veterinary and phytosanitary policy”: Implement eradication plans for the main diseases


Chapter 12 (page 80):
Efforts have been observed concerning animal diseases control measures. For foot and mouth disease (FMD) a vaccination campaign has been implemented, new actions need to be organised in the context of a global strategy for the control of this crucial disease. In addition vaccination campaigns have been implemented against brucellosis, sheep and goat plague, anthrax, sheep and goat pox, bluetongue, Newcastle disease and rabies. Furthermore, an animal disease strategy for controlling the World Organisation for Animal Diseases (OIE) List-A diseases, has been prepared. Efficient implementation is however linked to the implementation of veterinary control systems.

Chapter 27 Consumer and Health Protection (page 123)
In order to set up a network for the epidemiological surveillance and control of communicable diseases, Turkey has harmonised the list of notifiable diseases under the existing surveillance system with the list of diseases provided under Commission Decisions (2000/96/EC; 2003/534/EC; 2003/534/EC). The definitions of diseases were revised and completed to provide collection and analysis of standardised data covered by community network. A directive for the notification system of communicable diseases is published in the Official Gazette in November 2004. As regards capacity building, an “Outbreak control and Surveillance Unit” has been established under the Primary Health Care General Directorate of the Ministry of Health (MoH). This is an initial step to establish the structures for collecting information. Training and information workshops regarding the new notification system are held at all levels of the health system.

In order to facilitate the adoption of the acquis concerning, administrative capacity should be strengthened in terms of qualified staff and upgrading of the physical infrastructure. The structures for collecting information and dissemination of the relevant surveillance data should be designated at all levels. As in the case of acute flaccid paralysis (poliomyelitis) program, Turkey should set up an Early Warning and Response System for rapid exchange of information on potentially health threatening event.

In the public health area, the institutional and administrative capacity of the Ministry of Health needs to be strengthened to perform the duties related to protect and the health and safety status of the population.

2.4 Contribution to National Development Plan
Not applicable.

2.5 Cross Border Impact
As being non-CBC project, it has no direct cross border impact. In the end of the project the AI cases among poultry will be avoided, which will also minimise the possibility of spreading of the
disease to neighbouring countries and subsequently to Europe. It will also contribute to minimise the risks for human health.

3. **Description**

3.1 **Background and justification:**

The continuing outbreaks of highly pathogenic avian influenza (HPAI), which begun in late 2003 in several Southeast Asian countries and have occurred more recently in parts of Europe, have been disastrous to the poultry industry in the two regions and have raised serious global public health concerns. Nearly 140 million domestic poultry have either died or been destroyed and over 120 people have contracted the infection, of which 78 have died in 6 countries as of 13 January 2006. Recent increases in the number of known cases of avian influenza (AI) transmission have raised concerns over the potential emergence of a pandemic, which could have devastating effects on human health and livelihoods. At the same time, it is important to emphasize that there are many uncertainties about whether and when a pandemic might occur, as well as about its potential impact. Humans are not very susceptible to the disease, but if infected with the Asian H5N1 strain, they could exhibit a high case fatality rate. The geographical spread of HPAI, the human dimension, and the potential enormous social and economic impact are unprecedented. Economic losses to the Asian poultry sector alone are estimated to date at around $10 billion. Despite control measures the disease continues to spread, causing further economic losses and threatening the livelihood of hundreds of millions of livestock farmers, jeopardizing smallholder entrepreneurship and commercial poultry production, and seriously impeding regional and international trade, and market opportunities. The rural poor, who rely for a larger share of their income on poultry, have been particularly hard hit with income losses.

To date Turkey has experienced two outbreaks of avian influenza, the first in the Manyas district of Balikesir province. This outbreak was detected on October 1, 2005 when three turkeys died in a flock of 1,800 turkeys being raised by a medium sized poultry contract farmer in an outdoor grazing environment facility three kilometres south of Manyas Lake. This lake is a natural habitat for migratory birds, which were abundantly present at the time. Most of the rest of the flock died over the next three days, during which time the district veterinary service and a private veterinarian working for the poultry sector developed the diagnosis of avian influenza. Dead and live animals were sent to the Bornova reference laboratory (in Izmir), which detected the presence of the H5 strain (through inoculation and subsequent death in embryonated eggs). The EU reference laboratory in Weybridge (UK) confirmed the presence of the HPAI H5N1 strain on 13 October 2005.

Sanitary measures had been promptly initiated by the provincial veterinary service on October 7, when a three kilometres protection zone was established with road signs and the presence of the military police. All backyard poultry (over 10,000 head) was culled within the protection zone between October 8-16, and compensation was granted by the private poultry industry itself to the affected farmers. Within the protection zone, there were also nine larger commercial holdings, seven of which were empty. The flock of almost 16,000 in the remaining two enterprises was slaughtered on October 9. In addition to the protection zone, a 10 km radius surveillance zone was established, which contained roughly 45,000 backyard poultry, and 10 active larger poultry farms with a stock of over 130,000 animals. Measures taken in the surveillance zone included a ban on the movement of live poultry, regulation of the transport of table and hatching eggs, prohibition of bazaar market trade of poultry and of hunting of wild birds, and an immediate local awareness campaign to instruct farmers to confine backyard poultry and avoid contact with wild birds.
Although the avian influenza outbreak has been quickly contained, and there are no signs of any transmission to humans, the economic impact has been severe. Within two weeks of the outbreak, the consumption of poultry in Turkey (roughly 1.2 kilogram per capita per month) had dropped by 50 percent and retail poultry prices had fallen by 30 percent. (Market capitalization of the traded Turkish poultry firms dropped by over 30 percent in the first week). This is partly owing to the fact that Balikesir and the nearby regions of Bursa, Izmir, Manisa, and Sakarya account for over 40 percent of Turkey’s broiler enterprises and poultry production. Egg production is similarly concentrated in these provinces, and its demand has fallen from 12 eggs per capita per month by a rate similar to that of poultry demand. As a result, the poultry and egg sector is incurring losses of roughly US$ 0.9 million daily (Prior to the outbreak the GDP of the poultry and egg sector ranged US$ 1.2-1.5 billion annually). The second outbreak was experienced in Aralıık district of İğdir province, dead and live animals were sent to the Bornova reference laboratory (in Izmir), which detected the presence of the H5 strain (through inoculation and subsequent death in embryonated eggs) on 26th of December 2005. Sanitary measures had been promptly initiated and 359 animals were killed. The samples are sent to the EU Reference Laboratory for strain confirmation. On January 05, 2006 the first human case observed and two children from Dogubeyazit in the province of Agri were infected with H5N1 avian influenza on January, 2006. 2 of the children have died and another 10 people are hospitalized with suspected avian influenza. The infected children are siblings who helped raise chickens on their family farm and became ill after eating chickens that were sick. These children have had close and intense contact with the chicken slaughtered indoors in their home. The infected children's hometown of Dogubeyazit is located approximately 60 km (40 miles) south of Aralik, İğdir where officials reported an outbreak of H5 avian influenza on 27 December 2005. On January 3, authorities began culling poultry in Erzurum, 200 km (125 miles) west of Aralik, following the deaths of chickens there due to suspected avian influenza. Further tests to determine whether poultry in each of these areas are infected with the highly pathogenic H5N1 strain are pending. Meanwhile, quarantines have been imposed on the towns and hundreds of birds have been culled as a precaution. Samples have been collected and will be sent to the EU Reference Laboratory in Weybridge (UK).

Republic of Turkey is aligning the system of the control of animal contagious diseases with the systems valid at present in the EU Member States. At the same time Turkey is in the process of aligning of the national legislation on Avian Influenza with the provisions of the EU Veterinary Acquis. The movement toward Turkish membership of the European Union gives increased emphasis to the need for more effective control of the disease in the region.

Since the start of January 2006 human cases of H5N1 avian influenza virus have been reported in Turkey, starting with children from Dogubeyazit, district of Agri, in Eastern Turkey, human cases have now been reported from nine of the country’s 81 provinces. However, the virus is more widely distributed in animals with outbreaks reported from up to 32 provinces. Hence there are considerable potential for further human H5N1 infections.

At present WHO maintains its level of pandemic alert remains at phase 3 since there is no evidence as yet of efficient human to human transmission. However the threat to human health is considerable both directly from H5N1 and from the possibility of the virus changing to a pandemic strain.

Public concern about avian flu has greatly increased the numbers of people who are coming forward for diagnosis of influenza-like symptoms. One complicating factor for surveillance at the time of the outbreak is the occurrence of seasonal “influenza-like” illness.

Diagnosis and typing of influenza viruses for epidemiological purposes is undertaken , by two national reference laboratories; one is the National Influenza Centre (NIC)
http://www.who.int/csr/disease/influenza/centres/en/index.html and is located in Ankara (Department of Virology in Refik Saydam National Hygiene Centre -RSNHC-) and the other is in Istanbul (Virology Laboratory of the Department of Microbiology of the Istanbul University School of Medicine). The RSNHC reports to the WHO laboratory surveillance network and the web-based FLUNET http://gamapserv.who.int/GlobalAtlas/home.asp with access to a London-based WHO Collaborating Centre laboratory for confirmation of virus isolation and sub-typing.

In June 2005, the Ministry of Health (MoH) in Turkey, the Ministry of Agriculture and Rural Affairs (MARA) and participating experts both human- and animal health nationwide, prepared a National Action Plan for Pandemic Influenza (NAPPI) compatible with WHO guidance http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_4/en/index.html. The Plan is highly detailed and includes a description of the basic epidemiological features of human infection, the surveillance system, prevention and control measures and the organisational and logistic issues involved in implementing the Plan. Case investigation is through virological surveillance reporting the number of clinical specimens tested for influenza and the number of positive results by virus type. All specimens are to be sent to those two reference laboratories mentioned above for virus isolation and characterisation with the NIC collating the data.

While the institutional arrangements for disease control are well established in Turkey, the effectiveness of the national disease surveillance system varies depending on whether or not there is a special disease-specific vertical program in place. For influenza proper, a surveillance system was put in place in 2004 and became fully operational in 2005. The current laboratory testing capacity at the National Influenza Centre at the Refik Saydam Institute of the MoH is not adequately equipped to address the need for increased testing capacity necessary to respond to high level of diagnostic testing required by National Influenza Centres during a time of crisis. In short it has inadequate ‘surge capacity’.

### 3.2 Sectoral rationale

Influenza is a zoonotic disease (animal to human transmission) of international importance because of the ability of the virus that causes the disease to mutate for a potential wide-scale human-to-human transmission. Outbreaks of influenza in humans occur annually, as a result of antigenic drift in the Influence A virus with a severity which varies from year to year, but is typically moderate to mild. Nonetheless, these outbreaks occur in all countries and exert an impact primarily through morbidity and reduced economic productivity because of illness. In contrast, severe influenza pandemics occur infrequently, as a result of antigenic shift, but have been unprecedented in the number of infections and deaths caused over a short time-period. The worst such event in the 20th Century, the Spanish Flu pandemic of 1918-19, had the highest mortality rate among healthy young people. Less severe pandemics occurred in 1957-58 and 1968-69, but still had high attack rates, high case fatality, and major impact on economic activity. The severity of these influenza pandemics resulted from infection with a sub-type of influenza virus to which humans had not been previously exposed and so had no immunity. Such a new sub-type of influenza (known as H5N1) is currently causing large outbreaks in birds and domestic poultry in East and Central Asia and Europe, creating widespread concern that the risk of a new and potentially severe human pandemic is high.

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1 Antigenic drift refers to a change in surface proteins of a given strain of influence virus in response to antibodies in human hosts who have been exposed to it. It occurs continually in both type A and B influenza strains, thus the reason to re-engineer the influenza vaccine on a regular basis to prevent seasonal outbreaks or epidemics. Antigenic shift refers to the reassortment of the animal influenza strain with the circulating human strain in the process of moving from an animal to humans. This antigenic shift is more of a concern since when it occurs, it results in pandemics due to generalized susceptibility to infection in humans.
A pandemic would have devastating economic and social consequences, including large-scale loss of livelihoods as well as lives. The potential economic costs of avian influenza are apparent in countries such as Vietnam, where impacts are already evident on the poultry sector, associated input and distribution channels, and the rural poor who rely on poultry for a larger share of their income. Even if a pandemic does not occur, there could be important socio-economic effects resulting from the response to the perceived risks. Countries confront choices in balancing preparation versus action since both imply economic costs. At least three types of economic costs or impacts should be considered under a human pandemic scenario: (i) effects of sickness and mortality on potential output; (ii) private preventive responses to an epidemic; and (iii) public sector responses.

Together with the WB, this project will help early diagnosis of the disease and thus will help control measures to be taken earlier. The project will also help to improve the infrastructure of the public health and the veterinary services and to increase public awareness.

3.3 Results

1. Policy development and enabling environment.
2. Epidemiology studies improved and disease information systems strengthened.
3. Improvement of the practices of veterinary services and improvement of coordination between veterinary services and public health services via training.
4. Animal disease surveillance and diagnostic capacity of MARA strengthened.
5. Diagnostic testing response capacity of national public health surveillance system is improved through upgrading the technical infrastructure of the National Influenza Centre for the purpose of microbiological diagnosis, molecular characterization, and genetic analysis for detection of mutation and anti-viral resistance.

Indicators of achievement:

- Detailed assessment report regarding the capacity of veterinary services.
- National AI Strategy established covering the AI contingency plans of the MARA and the MoH.
- BSL-3 attained in two reference laboratories and other regional laboratories of MARA upgraded to reach 75% coverage of at-threat areas.
- Self-assessment of the veterinary services executed.
- Simulation exercises carried out.
- Establish BSL3 facility to allow virus isolation under safe bio-containment.
- Increased sustainable diagnostic testing capacity of MoH National Influenza Centre including surge capacity.
- The equipment and consumable which are necessary to establish and operate the "Outbreak Investigation and response system" and "Epidemic Preparedness" are satisfied.

3.4 Activities (including Means)

Activities will be carried out through supply of laboratory equipment, reagents, rapid test kits and safety gear for both Ministries and technical assistance for the training and joint simulation exercises.
3.4.1. Technical assistance

Technical assistance to obtain result no. 1:

TA team will review existing regulations and policies and fund related policy studies and will prepare a detailed assessment of the capacity of veterinary services and will lay down different disease control options and then will develop a strategy and improve a regulatory framework together with MARA. The strategy and the framework will address key policy issues concerning animal health and public health and will ensure that disease control, prevention and eradication measures are implemented in a uniform and effective way in accordance with OIE and EU standards and guidelines. This strategy has to take into consideration a broad range of epidemiological scenarios that exist in different poultry production systems in the affected country and different levels of incidence (ranging from high incidence with variable flock outbreaks, though low frequency disease outbreaks with partial flock immunity, to sporadic outbreaks). A balanced combination of appropriate disease-control options, tailored to the specific characteristics of Turkey and Turkish farming systems is essential for the achievement of the project objectives. It would address farming systems, presence/absence of ducks and presence of human cases or not, trade orientation, implementation capacity, and wildlife migration patterns.

The TA team will also integrate together with the MARA and MoH the AI contingency plans of both Ministries into one National AI Strategy.

These studies and the strategy will be adopted by the Steering Committee of the project (see section 4, page 7) and then will be presented to the Central Execution Unit of MARA established for “Avian Influenza and Human Pandemic Preparedness and Response Project” financed by World Bank and then will be sent to National Zoonotic Disease Committee and its Secretariat. The TA team will disseminate the strategy adopted to the stakeholders involved in the sector via 3 workshops.

Technical assistance to obtain result no. 2:

Epidemiological studies and surveillance programs will be carried out to improve disease control measures, which will be then adjusted and further developed as new information becomes available. The epidemiological field studies will also include Ornithology and Wildlife Surveys. Also the Veterinary Information System established within the scope of “Support to the Alignment of Turkey to the EU Veterinary Acquis” Project financed from the 2002 EU-Turkey Financial Cooperation Programme (Number -TR 0203.05) will be upgraded according to the outcomes of the epidemiological studies and surveillance programmes carried out. This will also enable Turkey to participate better in global disease information sharing, complying with her obligations as members of the OIE. Within this scope software will be developed for the 8 institutes. The TA team will also provide consultancy for the disposal of carcasses and compensation activities carried out by the WB project.

Technical assistance to obtain result no. 3:

Training will be provided for Veterinary Services which will enable the control and eradication activities to be improved. Training will target the personnel of the MARA General Directorate for Protection and Control as well as the affiliated staff in the Provincial Directorates of Agriculture which will be expected to form the Local Expert Groups of the Local Disease Crisis Centers (LDCCCs). The focus of the training will be on screening, sampling, and test procedures to be applied in case of an AI outbreak, as well as on analyzing epidemiological data and performing risk assessments. Training will also cover an initial self-evaluation of veterinary services, following OIE standards on quality and evaluation of veterinary services to meet international requirements. The training will be designed in the form of training of trainers.
Besides training of veterinary services; training will be provided for the staff at different levels of the health system in epidemiology laboratory reporting, laboratory bio-safety, surveillance, and management to improve the coordination between the public health agencies and the veterinary departments and facilitate joint simulation exercises. This will improve the coordination between veterinary services and public health services via training.

4 Simulation exercises will be organized by the TA team and will be done by MARA and MoH in accordance with the national strategy. The simulation exercises will be conducted on regional basis that will be decided according to the strategy defined. The detailed information regarding the training activities is given at Annex-7.

Means/Inputs

1 services contract

3.4.2. Supply of laboratory equipment to obtain result no. 4:

Laboratory equipment and rapid test kits will be supplied to strengthen animal disease surveillance and diagnostic capacity of MARA, General Directorate for Protection and Control and its affiliated reference and regional diagnostic laboratories in detection, reporting and follow-up of reported AI cases. This will cover the formation and equipping of Bio-Safety Level 3 (BSL3) laboratories in Bornova and Pendik, as well as equipment (incubators, laminar flow cabins, etc.) for two regional laboratories (in Ankara and Konya). Rapid test kits will be purchased as needed for the implementation of the National AI Surveillance Program and for regional laboratories and Provincial Directorates of Agriculture linked to these laboratories for the execution of their relevant roles in the MARA AI Contingency Plan (rapid serological tests and screening surveys and virological tests for confirmation and serotyping of AI strains). The list of equipment to be supplied is given in Annex-8.

Due to highly pathogenic nature of the HPAI virus to humans, particularly the Asian H5N1 strain, human safety should be provided for the people coming in contact with live virus. Therefore safety gear (e.g. appropriate personal protective clothing) for veterinary personnel will be purchased. The list of equipment to be supplied is given in Annex-8.

Means/Inputs

1 supply contract (3 lots for laboratory equipment, rapid test kits and safety gear)

3.4.3. Supply of laboratory and outbreak investigation& preparedness equipment to obtain result no. 5:

Laboratory equipment and consumable supplies will increase diagnostic throughput capacity of the MoH National Influenza Centre. Specifically laboratory functions including sample storage, sample processing, testing and analysis will be enhanced.

Establishment of a P3 Laboratory is essential to allow for research of HPAI and other communicable diseases in Turkey under safe bio-containment conditions as required by EU norms. Consumables such as kits, reagents, PPE etc. are necessary to maintain testing levels critical for emergency outbreak response. In order to cope with the increased demand of specimen collection/transportation sample transportation containers will be necessary. Additional preventive actions such as personal hygiene promotion and distribution and use of masks will be supported.

Means/Inputs

2 supply contracts (4 lots for lab equipment including deep freezers, kit reagents, personal protective equipment and sample transportation container).
3.5 Linked Activities:

Project Number -TR 0203.05 -“Support to the Alignment of Turkey to the EU Veterinary Acquis”: The objective of the project is to support the Turkish Ministry of Agriculture and Rural Affairs in aligning to the relevant EU standards of veterinary legislation and activities in the fields of animal health, veterinary public health and animal welfare. The project includes:

- Animal Health Component,
- Inspection System, Veterinary Information System, Disease Surveillance, Control and Eradication
- Veterinary Public Health Component
- Animal Welfare Component

Within the scope of above-mentioned project the Contingency Plan for AI has been prepared and the draft AI regulation has been prepared to be published after the entry into force of the Veterinary Framework Law.

The programme for "Strengthening the Epidemiological Surveillance and Control of Communicable Diseases System (ESCCDS) in Turkey" is aimed at strengthening the institutional structure, capacity and the legal framework of the current Turkish communicable diseases surveillance system (CDSS) to be in conformity with the EU Directives in terms of structure, function, capacity, effectiveness and resources. ESCCDS is planned to be accomplished in two phases: Project number TR 0403.06 corresponding to the first phase, covers the activities related to mainly capacity building through technical assistance of World Health Organisation (WHO) including needs assessment of the existing surveillance system, laying down the legal infrastructure for establishment of the CDSS in conformity with the related EU acquis and training of the staff. Project number TR 0503.13 to complement the institutional capacity building component, will provide the necessary equipment in support of the establishment of the ESCCDS infrastructure.

“Avian Influenza and Human Pandemic Preparedness and Response Project” has been proposed under the World Bank loan programme and detailed explanation is given at point 3.5 and at point 4.

3.6 Lessons learned:

During the design of this project account has been taken of the final report issued by the twinning team in October 2005 within the context of the project TR0203.05 “Support to Alignment of Turkey to the Veterinary Acquis”. In particular, the outputs and recommendations that are related to AI and animal disease control and eradication have been used as basis to set out the purpose, results, activities and conditionalities of this project. The AI contingency plan prepared during the project was exercised in September 2005 with the Turkish veterinary administration with TAIEX assistance. Both activities led to a very effective management of the first AI outbreak in Turkey in October 2005. The Bornova Veterinary Control and Research Institute, the national reference laboratory on AI, demonstrated a very good understanding of the training contents through an EU wide ring test. This improvement has also been taken into account when defining the further equipment requirements.

Several departments of MARA were involved in the implementation of the above mentioned project. Although coordination problems occurred, the successful results and qualitative
improvements in the system have motivated the staff involved both on the policy level and on the practical level

As experienced after the latest AI outbreaks, Turkey needs to apply a centrally coordinated and country-wide control campaign based on efficient local actions carried out in a transparent manner. Veterinary services should have all the necessary political support and financial means to fully investigate and report any suspicion of AI. It should be ensured that poultry owners in regions most at risk are fully aware of disease symptoms and control measures to apply.

The current AI outbreaks also highlighted several weaknesses in public health services systems, including: poor surveillance at the local level, weak diagnostic capacity, lack of epidemiological expertise and information system, difficulties in combining human and animal surveillance. These issues bring to the forefront the importance of strengthening the technical, scientific and operational capacity of the relevant participating agencies. There is a need to organise an effective national response, including all technical ministries in charge of agriculture\animal health and human health, as well as other relevant sectors, at the national and sub-national level, in case of a human epidemic.

The executive summaries of economic and financial appraisal of AI Eradication, prepared by WHO on the basis of “Global Influenza Preparedness Plan” is given in Annex 4.

4. Institutional Framework

The Ministry of Agriculture and Rural Affairs (General Directorate of Protection and Control) will be the Turkish co-ordinator of the project for the animal health component and will be the direct beneficiary involved in this project within the Ministry of Agriculture and Rural Affairs:

- Animal Health Department (under GDPC-MARA):

The Animal Health Department is responsible for the co-ordination and implementation of the legislation governing veterinary medicine, food safety and animal protection, as well as state supervision and enforcement. This includes the inspection of live animals, producers and processors of food as well as of wholesale services and transport. The Animal Health Department is also the competent authority in the field of animal health and responsible for AI control in Turkey. Elaboration and general coordination of implementation AI eradication programme is responsibility of the central authority of the Animal Health Department. The 81 provincial veterinary office directorates, responsible for animal health in local level, coordinate the implementation of programme. Veterinary officials (81) working for Animal Health Department collect samples and send them to reference and regional institutes for differential diagnosis.

For the human health component of the project, the Ministry of Health (General Directorate of Primary Health Care) will be the responsible unit within the MoH for the implementation of this Project. The Project will be run by together with Refik Saydam National Hygiene Centre (RSNHC), which is the National Reference Laboratory under the MoH. Refik Saydam National Hygiene Centre is a multi-discipliner public health institution which is capable to investigate several different public health issues in terms of communicable diseases, environment, food and drug safety and toxicology.

As mentioned before Avian Influenza and Human Pandemic Preparedness and Response Project has been proposed concurrently, under the World Bank loan programme (budget approx. 30 million US $) by Ministry of Agriculture and Rural Affairs (MARA) and Ministry of Health.
(MoH). And this project will cover some aspects and activities of the said project. Thus the project should be implemented in junction with the WB project. The proposed structure by the WB project is given below:

“The WB Project will be implemented by existing project implementation structures in the MARA (Agricultural Reform Implementation Project-ARIP) and the MOH. However, institutional and implementation arrangements will be coordinated by the Office of the Prime Minister, in which a Secretariat of the existing National Zoonotic Disease Committee is to be established. This Committee has been established to deal with zoonotic emergencies and will provide general policies and guidelines for Project implementation. The Committee comprises representatives of the Ministry of Agriculture and Rural Affairs (MARA) and the Ministry of Health (MOH), but its composition need to be expanded to include representatives of the Ministry of the Interior, the Ministry of Environment and Forestry, and representatives of the poultry industry and consumer groups. The Committee will be responsible for reviewing annual work plans and the Secretariat will be responsible for ensuring coordination and linkages across relevant agencies and international partners. Since the WB is financing both agricultural sector and health sector projects in Turkey, the existing project implementation structures within the MARA (the Central Execution Unit of the Agricultural Reform Implementation Project, CEU) and the MOH (the Health Transformation Project Implementation Unit, HTP PIU) will be entrusted with fiduciary tasks of procurement and financial management. (Additional staff will to be recruited in the MARA CEU and the MOH HTP PIU as needed for these fiduciary tasks.) One senior officer from the MARA and one from the MOH will be designated as Project Coordinators in charge of managing implementation of their relevant ministries’ project activities and liaising with the MARA CEU and MOH HTP PIU, respectively. These Project Coordinators will report to the Secretariat of the Committee and be members of the Committee. The Secretariat will recruit staff responsible for overall administration, public information, coordination of scientific issues related to animal and human health, and administrative support. At the local level, implementation will be the direct responsibility of each Provincial Directorate of Agriculture and Provincial Directorate of Health. The existing provincial level Zoonotic Disease Committees will be strengthened to set up provincial level secretariats (small coordination units) comprising officials from the Provincial Directorate of Agriculture and Provincial Directorate of Health to work under the supervision and guidance of the national Secretariat. Project Operational Manual (POM) is to be prepared to integrate the relevant aspects of each of the Contingency Plans which have been prepared by the MARA and the MOH. This POM will guide the management and implementation of the Project.”

As the proposed project will be implemented together with Avian Influenza and Human Pandemic Preparedness and Response Project and a steering committee will be established within the project and will meet and monitor the project implementation. The committee will be composed of the Project Leader, MARA-GDPC, MARA EU Coordination Department, Ministry of Health, Ministry of Environment and Forestry, European Commission Delegation in Ankara, Central Finance and Contracts Unit and NGO representatives. The committee will meet on quarterly basis and will be chaired by GDPC.

5. Detailed Budget

<table>
<thead>
<tr>
<th>Pre-accession Instrument support</th>
<th>Co-financing</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>€</td>
<td>National Public</td>
<td>Total Co-financing</td>
</tr>
</tbody>
</table>

12
### Year 2006 - Investment support jointly co funded

| Animal Health Supply Contract – (lab equipment+ kits+ vet.pers. safety gear) | 1.650.000 | 550.000 | 550.000 | 2.200.000 |
| Human Health Supply Contracts – Lab equip. + kits+ outbreak invest. and epidemic prep. | 4.500.000 | 1.500.000 | 1.500.000 | 6.000.000 |

**Investment support sub-total**: 6.150.000 2.050.000 2.050.000 8.200.000

### Year 2006 Institution Building support

| Services Contract | 2.200.000 | - | - | 2.200.000 |
| IB support | 2.200.000 | - | - | 2.200.000 |

**Total project 2006**: 8.350.000 2.050.000 2.050.000 10.400.000

---

### Implementation Arrangements

#### 6.1 Implementing Agency

The CFCU will be the implementing agency and will be responsible for all procedural aspects of the tendering process, contracting matters and financial management, including payment of project activities. The Director of the CFCU will act as PAO of the project. His contacts are:

Mr. Muhsin ALTUN  
Programme Authorising Officer  
Central Finance and Contracts Unit  
Tel: + 90 312 472 37 00  
Fax: + 90 312 472 37 44  
e-mail: muhsin.altun@cfcu.gov.tr

The details of the beneficiaries of the project is as follows:

Ministry of Agriculture and Rural Affairs  
Directorate General for Protection and Control  
Dr. Hüseyin Sungur  
General Director  
Tel: 00.90.312.425 77 89 - 425 51 96  
e-mail: huseyins@kkgm.gov.tr
6.2 Twinning
Not applicable.

6.3 Non-standard aspects
Practical Guide to Contract Procedures Financed from the EC General Budget in the context of External Actions will be strictly followed.

6.4 Contracts
There will be minimum 2 supply contracts and 1 service contract (it may be possible to combine some of the supplies under 3.4.2 and 3.4.3 in the same contract). The values of the contracts are given at point 5.

7. Implementation Schedule

<table>
<thead>
<tr>
<th>Supply Contract – (lab equipment + kits+ Vet.pers.safety gear)</th>
<th>ToR’s/Technical Specifications</th>
<th>Start of Tendering/ Call for proposals</th>
<th>Start of Project Activities</th>
<th>Project Completion</th>
</tr>
</thead>
</table>


8. Equal Opportunity
Both MARA and MoH is an equal opportunity employer. Selection of staff and other personnel to work on the projects will be based on objective assessments of qualification and experience, without regard to gender.

9. Environment
Activities under the Project are not expected to generate any adverse environmental effect as a large part of the Project is geared to support prevention activities. The Project would overall have positive environmental and social impacts. The Program’s environmental and social issues relate to two main activities. The Project’s investments in facilities, equipment, and training for laboratories will improve the effectiveness and safety over existing avian influenza handling and testing procedures by meeting international standards established by OIE. Whatever medical waste is generated in health care facilities will be managed using existing guidelines in Turkey. The Project also supports disposal of livestock and medical wastes in line with Turkey’s existing
environmental regulations through the purchase of incineration equipment to be deployed in 30 locations where poultry production is concentrated.

Together with the WB project, the Project will assist the Government to develop a strategy for managing future emerging and re-emerging zoonotic and infectious diseases outbreaks. As such, the Projects will improve environmental and social safeguards, in two areas: (i) mainstreaming environmental safeguards into protocols and procedures for the culling and disposal of animals during an outbreak (in particular by adopting OIE standards in these areas) and improving biomedical waste management systems in health facilities and laboratories; and (ii) development of policies on compensation for poultry farmers affected by future outbreaks.

10. **Rates of return**

Neither the timing nor the severity of the next pandemic can be predicted, but with the virus now endemic in bird populations in Asia the risk will not be easily diminished. Given the recent outbreak in Turkey in Manyas, the situation faced by Turkey is urgent but uncertain, given the unpredictability of a human epidemic or pandemic. It is clear, however, that containing and eradicating the virus will be a desirable objective even if the problem were restricted to one of animal health in Turkey. Thus, economic analysis of the Project, which will be completed at Project Appraisal, will take into account the two main categories of economic impacts: (a) the economic consequences and costs associated with public and private efforts to prevent the emergence or spread of the disease and to treat its effects; and (b) the economic consequences and costs of sickness or death resulting from the disease outbreaks.

These two are clearly related as a greater effort at prevention and/or treatment for a given severity of epidemic would be expected to reduce the spread of sickness and/or the percentage of mortality and thus reduce the economic impact and costs. There are also two “levels” of potential economic costs. The present spread of HPAI of the H5N1 strain involves transmission between animals and (so far) a limited incidence of transmission between animals and humans; as such, given the lethal nature of the virus, especially in poultry, it is principally an animal health crisis. However, the emergence of a human influenza pandemic caused by a lethal virus would have a social and economic impact many times greater.

Thus, actions to be taken by Turkey are analyzed using the traditional “with project” and “without project” scenarios when the issue is to treat HPAI as an animal health issue. These costs and benefits are to be estimated on the basis of the recent outbreak in Manyas. However, the impact of actions to be taken in Turkey in the wider context of the prevention or slowing down of a human influenza pandemic are much more difficult to estimate, since the actions undertaken in one country will have implications for the well-being of the rest of the world’s population.

11. **Investment criteria** (applicable to all investments)

11.1 **Catalytic effect**

EU support is essential for further eradication of AI. As explained in Annex 4, the eradication of the disease constitutes a substantial social, economic and financial burden to Turkey and if it is not eradicated the disease will continue to threaten neighbouring countries and Europe.

11.2 **Co-financing**

The project is financed jointly by EU, the Turkish Government. The Turkish Government will provide 25 % of co-financing of the investment support. 75 % of the total investment will be financed from EU budget.

11.3 **Additionality**
This project is not a substitute for grant funding from private sector sources.

11.4 Project readiness and size

The beneficiary will complete implementation documents needed namely technical specifications for supply contracts and meet all the conditionalities described in section 12.

11.5 Sustainability

Critical to the sustainability of the Project would be the continuous ownership of this initiative by the various stakeholders, coupled with strong political support and the availability of an adequate flow of financial resources to carry out project activities. In addition, institutional sustainability would be ensured by: (i) strengthening of programs to maintain public awareness of the threat of avian influenza and other rapid spreading infectious diseases; (ii) sustained surveillance and prevention and control activities, particularly in high risk regions; (iii) strengthened country capacity to manage at national and local levels the risk factors associated with the spread of avian influenza and other infectious diseases; and (iv) effectiveness of programs to control the spread of avian influenza from birds to the general population. The project has a long-term sustainability since the proper animal health status in the country with respect to the AI will enable proper animal health protection after the accession of Turkey to the EU. The competent authority will gain experience regarding the further eradication efforts of other animal diseases with the implementation of this project.

11.6 Compliance with state aids provisions

Project complies with the state aid provisions

12. Conditionality and sequencing

Before launching the Supply Contract, MARA and MOH should provide adequate preparation of the regional and reference laboratories that are going to receive the equipment.

Before launching service contract a memorandum should be signed with MoH for coordination, training activities and the joint implementation of simulation exercises of the AI contingency plan.

The project will be run for 2 years. 2006 and 2007. 2008 will be an evaluation year.

ANNEXES TO PROJECT FICHE

1. Logframe in standard format
2. Detailed implementation chart
3. Contracting and disbursement schedule, by quarter, for full duration of project
4. The Executive Summaries of Economic and Technical Analysis
5. Reference list of relevant laws and regulations
6. Reference list of relevant strategic plans and studies (may include institution sector strategies, development plans, business development plans, etc)
7. Detailed information regarding training activities
8. List of equipment to be supplied
## Annex 1- Logical Framework

### LOGFRAME PLANNING MATRIX for CONTROL OF FMD IN TURKEY

<table>
<thead>
<tr>
<th>Contracting period expires</th>
<th>Disbursement period expires</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2006</td>
<td>May 2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total budget:</th>
<th>EU Contribution:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,400,000 EUR</td>
<td>8,350,000 EUR</td>
</tr>
</tbody>
</table>

### Overall Objective

The overall objective of the project is to minimize the threat in Turkey posed to humans by Highly Pathogenic Avian Influenza (HPAI) infection in domestic poultry to diminish the burden of disease and loss of productivity in Turkey and to improve influenza pandemic preparedness and the response to this and other infectious disease threats to humans.

### Objectively Verifiable Indicators

The rate of gradual decrease in AI prevalence in animals and humans between years 2008-2011.

### Sources of Verification

- Commission Regular Reports in 2006 onwards
- Notification numbers at EU Commission’s ADNS
- OIE monthly records in year
- MARA Documentation
- MOH surveillance

### Project Purpose

Strengthening of the infrastructure of Veterinary Services for the effective and efficient AI disease control and eradication activities to be carried out as well as, improving the national public health surveillance and response systems through upgrading diagnostic testing and early response capacities.

### Objectively verifiable indicators

- Number of cases of AI in human will be decreased,
- National AI Strategy implemented, simulation exercises
- Gradual decrease in the prevalence of AI between years 2005-2008
- The control measures enforced within the project life time

### Sources of Verification

- Records of GDPC
- Communiqués published
- Project monitoring reports
- Records of MoH

### Assumptions

- Commitment towards Turkish accession to EU continues
- Enforced control measures are properly implemented
- Public awareness concerning AI increased
<table>
<thead>
<tr>
<th>Results</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy development and enabling environment.</td>
<td>✓ Detailed assessment report regarding the capacity of veterinary services</td>
<td>- Monitoring Committee Reports</td>
<td>✓ Commitment towards Turkish accession to EU continues</td>
</tr>
<tr>
<td>2. Epidemiology studies improved and disease information systems strengthened.</td>
<td>✓ National AI Strategy established covering the AI contingency plans of the MARA and the MOH</td>
<td>- Information on GDPC web page</td>
<td>✓ Enforced control measures are properly implemented</td>
</tr>
<tr>
<td>3. Improvement of the practices of Veterinary Services and improvement of coordination between veterinary services and public health services via training.</td>
<td>✓ BSL-3 attained in two reference laboratories and other regional laboratories upgraded to reach 75% coverage of at-threat areas</td>
<td>- Regular Project reports</td>
<td>✓ Public awareness concerning AI increased</td>
</tr>
<tr>
<td>5.</td>
<td>✓ Simulation exercises carried out.</td>
<td>- Documentation of MARA</td>
<td></td>
</tr>
<tr>
<td>6. Diagnostic testing response capacity of national public health surveillance system is improved through upgrading the technical infrastructure of the National Influenza Centre for the purpose of microbiological diagnosis, molecular characterization, and genetic analysis for detection of mutation and anti-viral resistance.</td>
<td>✓ Gradual decrease in the number of AI outbreaks</td>
<td>- Laboratory analysis reports</td>
<td></td>
</tr>
<tr>
<td>✓ Increased sustainable diagnostic testing capacity of National Influenza Centre including surge capacity.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Activities
Activities will be carried out through supply of laboratory equipment and technical assistance for the training and joint simulation exercises.

#### 3.4.1. Technical assistance

### Means

### Assumptions

✓ The strategy adopted by MARA and MoH
Technical assistance to obtain result no. 1:

TA team will review existing regulations and policies and fund related policy studies and will prepare a detailed assessment of the capacity of veterinary services and will lay down different disease control options and then will develop a strategy and improve a regulatory framework together with MARA. The strategy and the framework will address key policy issues concerning animal health and public health and will ensure that disease control, prevention and eradication measures are implemented in a uniform and effective way in accordance with OIE and EU standards and guidelines. This strategy has to take into consideration a broad range of epidemiological scenarios that exist in different poultry production systems in the affected countries and different levels of incidence (ranging from high incidence with variable flock outbreaks, though low frequency disease outbreaks with partial flock immunity, to sporadic outbreaks). A balanced combination of appropriate disease-control options, tailored to the specific characteristics of Turkey and Turkish farming systems is essential for the achievement of the project objectives. It would address farming systems, presence/absence of ducks and presence of human cases or not, trade orientation, implementation capacity, and wildlife migration patterns.

The TA team will also integrate together with the MARA and MoH the AI contingency plans of the MARA and the MOH into one National AI Strategy.

These studies and the strategy will be adopted by the Steering Committee of the project (see section 4, page 7) and then will be presented to the Central Execution Unit of

<table>
<thead>
<tr>
<th>Means/Inputs</th>
<th>2.200.000 EUROS</th>
</tr>
</thead>
</table>

- Commitment for cooperation between MARA and MoH continues
- Timely implementation of WB Project
- Trained personnel continues to work for MARA and train relevant parties.
MARA established for “Avian Influenza and Human Pandemic Preparedness and Response Project” financed by World Bank and then will be sent to National Zoonotic Disease Committee and its Secretariat. The TA team will disseminate the strategy adopted to the stakeholders involved in the sector via 3 workshops.

**Technical assistance to obtain result no. 2:**

Epidemiological studies and surveillance programs will be carried out to inform the improvement of disease control measures, which will be then adjusted and improved as new information becomes available. The epidemiological field studies will also include Ornithology and Wildlife Surveys. Also the Veterinary Information System established within the scope of Support to the Alignment of Turkey to the EU Veterinary Acquis Project financed from the 2002 EU-Turkey Financial Cooperation Programme (Number -TR 0203.05) will be upgraded according to the outcomes of the epidemiological studies and surveillance programmes carried out. This will also enable Turkey to participate better in global disease information sharing, complying with her obligations as members of the OIE. Within this scope software will be developed for the 8 institutes. The TA team will also provide consultancy for the disposal of carcasses and compensation activities carried out by the WB project.

**Technical assistance to obtain result no. 3:**

Training will be provided for Veterinary Services which will enable the control and eradication activities to be improved. Training will target the personnel of the MARA General Directorate for Protection and Control as well as the affiliated staff in the Provincial Directorates of
Agriculture which will be expected to form the Local Expert Groups of the Local Disease Crisis Centers (LDCCs). The focus of the training will be on screening, sampling, and test procedures to be applied in case of an AI outbreak, as well as on analyzing epidemiological data and performing risk assessments. Training will also cover an initial self-evaluation of veterinary services, following OIE standards on quality and evaluation of veterinary services to meet international requirements. The training will be designed in the form of training of trainers.

Besides training of veterinary services; training will be provided for the staff at different levels of the health system in epidemiology laboratory reporting, laboratory bio-safety, surveillance, and management to improve the coordination between the public health agencies and the veterinary departments and facilitate joint simulation activities. This will improve the coordination between veterinary services and public health services via training.

4 Simulation exercises will be organized by the TA team and will be done by MARA and MoH in accordance with the national strategy. The simulation exercises will be conducted on regional basis that will be decided according to the strategy defined. The detailed information regarding the training activities is given at Annex-7.

3.4.2. Supply of laboratory equipment to obtain result no. 4:

Laboratory equipment and rapid test kits will be supplied to strengthen animal disease surveillance and diagnostic capacity of MARA, General Directorate for Protection and Control and its affiliated reference and regional diagnostic laboratories in detection, reporting and follow-up of
reported AI cases. This will cover the formation and equipping of Bio-Safety Level 3 (BSL3) laboratories in Bornova and Pendik, as well as equipment (incubators, laminar flow cabins, etc.) for two regional laboratories (in Ankara and Konya). Rapid test kits will be funded as needed for the implementation of the National AI Surveillance Program and for regional laboratories and Provincial Directorates of Agriculture linked to these laboratories for the execution of their relevant roles in the MARA AI Contingency Plan (rapid serological tests and screening surveys and virological tests for confirmation and serotyping of AI strains). The list of equipment and the is given in Annex -8.

Due to highly pathogenic nature of the HPAI virus to humans, particularly the Asian H5N1 strain, human safety should be provided for the people coming in contact with live virus. Therefore safety gear (e.g. appropriate personal protective clothing) for veterinary personnel will be purchased. The list of equipment to be supplied is given in Annex -8.

<table>
<thead>
<tr>
<th>3.4.3. Supply of laboratory equipment to obtain result no.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory equipment and consumable supplies will increase diagnostic throughput capacity of the MoH National Influenza Centre. Specifically laboratory functions including sample storage, sample processing, testing and analysis will be enhanced. Establishment of a P3 Laboratory is essential to allow for research of HPAI and other communicable diseases in</td>
</tr>
<tr>
<td>Means/Inputs</td>
</tr>
<tr>
<td>2 supply contracts at least (4 lots for lab equipment including deep freezers, kit reagents personal protective equipment and sample transportation</td>
</tr>
</tbody>
</table>
Turkey under safe bio-containment conditions as required by EU norms. Consumables such as kits, reagents, PPE etc. are necessary to maintain testing levels critical for emergency outbreak response. In order to cope with the increased demand of specimen collection/transportation sample transportation containers will be necessary. Additional preventive actions such as personal hygiene promotion and distribution and use of masks will be supported.

Table: Pre-conditions

<table>
<thead>
<tr>
<th>Pre-conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before signing the Supply Contract, MARA should provide adequate preparation of the regional and reference laboratories that are going to receive the equipment.</td>
</tr>
<tr>
<td>Before signing the service contract a memorandum should be signed with MoH for coordination, training activities and the joint implementation of simulation exercises of the AI contingency plan.</td>
</tr>
</tbody>
</table>
## Annex 2 – Implementation Schedule

<table>
<thead>
<tr>
<th>Components</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Contract (lab. equipment +kits+vet.pers. safety gear ) *</td>
<td>C I I I I I I I I I I I I I I I I I I I I I I I</td>
<td>I I I I I I I I I I I I I I I I I I I I I I I I</td>
<td>I I I I I I I I I I I I I I I I I I I I I I I I</td>
</tr>
<tr>
<td>Human Health Supply Contracts – Lab equip. + kits+ outbreak invest. and epidemic prep.</td>
<td>C I I I I I I I I I I I I I I I I I</td>
<td>I I I I I I I I I I I I I I I I I I</td>
<td>I I I I I I I I I I I I I I I I I I</td>
</tr>
<tr>
<td>Service Contract*</td>
<td>C I I I I I I I I I I I I I I I I I</td>
<td>I I I I I I I I I I I I I I I I I I</td>
<td>I I I I I I I I I I I I I I I I I I</td>
</tr>
</tbody>
</table>

P – Preparation
T – Tendering
C – Contracting
I – Implementation

* Preparations, tendering and contracting will be carried out end January- mid February 2006.
### Annex 3 – Cumulative Contracting and Disbursement Schedule (quarterly-in euro; EU contribution)

<table>
<thead>
<tr>
<th></th>
<th>March 2006</th>
<th>30-Jun-06</th>
<th>30-Sep-06</th>
<th>31-Dec-06</th>
<th>31-Mar-07</th>
<th>30-Jun-07</th>
<th>30-Sep-07</th>
<th>31-Dec-07</th>
<th>31-Mar-08</th>
<th>30-Jun-08</th>
<th>30-Sep-08</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contracted</strong></td>
<td>8,350,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Contract</td>
<td>1,650,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Service Contract</td>
<td>2,200,000</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Human Health Supply Contracts – Lab equip. + kits+ outbreak invest. and epidemic prep.</td>
<td>4,500,000</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Disbursed</strong></td>
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<td>5,010,000</td>
<td>5,010,000</td>
<td>7,590,000</td>
<td>7,590,000</td>
<td>7,810,000</td>
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<td>8,350,000</td>
<td>0</td>
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</tr>
<tr>
<td>Supply Contract</td>
<td>990,000</td>
<td>990,000</td>
<td>990,000</td>
<td>1,485,000</td>
<td>1,485,000</td>
<td>1,485,000</td>
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<td>1,485,000</td>
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</tr>
<tr>
<td>Service Contract</td>
<td>1,320,000</td>
<td>1,320,000</td>
<td>1,320,000</td>
<td>1,980,000</td>
<td>1,980,000</td>
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<td>2,200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Human Health Supply Contracts – Lab equip. + kits+ outbreak invest. and epidemic prep.</td>
<td>2,700,000</td>
<td>2,700,000</td>
<td>2,700,000</td>
<td>4,125,000</td>
<td>4,125,000</td>
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<td>4,125,000</td>
<td>4,125,000</td>
<td>4,500,000</td>
<td></td>
</tr>
</tbody>
</table>
Annex 4

The Executive Summaries of Economic and Technical Analysis

Economic Analysis

Neither the timing nor the severity of the next pandemic can be predicted, but with the virus now endemic in bird populations in Asia the risk will not be easily diminished. Given the recent outbreak in Turkey in Manyas, the situation faced by Turkey is urgent but uncertain, given the unpredictability of a human epidemic or pandemic. It is clear, however, that containing and eradicating the virus will be a desirable objective even if the problem were restricted to one of animal health in Turkey. Thus, economic analysis of the Project, which will be completed at Project Appraisal, will take into account the two main categories of economic impacts: (a) the economic consequences and costs associated with public and private efforts to prevent the emergence or spread of the disease and to treat its effects; and (b) the economic consequences and costs of sickness or death resulting from the disease outbreaks.

These two are clearly related as a greater effort at prevention and/or treatment for a given severity of epidemic would be expected to reduce the spread of sickness and/or the percentage of mortality and thus reduce the economic impact and costs. There are also two “levels” of potential economic costs. The present spread of HPAI of the H5N1 strain involves transmission between animals and (so far) a limited incidence of transmission between animals and humans; as such, given the lethal nature of the virus, especially in poultry, it is principally an animal health crisis. However, the emergence of a human influenza pandemic caused by a lethal virus would have a social and economic impact many times greater.

Thus, actions to be taken by Turkey are analyzed using the traditional “with project” and “without project” scenarios when the issue is to treat HPAI as an animal health issue. These costs and benefits are to be estimated on the basis of the recent outbreak in Manyas. However, the impact of actions to be taken Turkey in the wider context of the prevention or slowing down of a human influenza pandemic are much more difficult to estimate, since the actions undertaken in one country will have implications for the well-being of the rest of the world’s population.

Technical Analysis

Animal Health. The successful implementation of the program depends on a phased multi-disciplinary strategy based on a sound epidemiological approach to control HPAI outbreaks. This strategy has to take into consideration a broad range of epidemiological scenarios that exist in different poultry production systems in the affected countries and different levels of incidence (ranging from high incidence with variable flock outbreaks, though low frequency disease outbreaks with partial flock immunity, to sporadic outbreaks). A balanced combination of appropriate disease-control options, tailored to the specific characteristics of each country and its farming systems is essential for the achievement of the program objectives.

The implementation of the program and of each of the individual country projects raises important technical issues and presents substantial challenges. The main issues are:

The capacity of Veterinary Services. The General Directorate for Protection and Control (and its associated regional laboratories) is under-equipped to deal with the scope, severity and rapid spread of the HPAI outbreaks. This is particularly evident in the area of surveillance and diagnostic capacity needed for the early detection and reporting of an outbreak and to monitor the disease.

Bio-security measures. These are essential to prevent the spread of the virus from infected premises (bio-containment) and to exclude the virus from uninfected locations (bio-exclusion). These have proven to be successful to date in Turkey, but local capacity and experience in practicing effective measures still needs strengthening.

Epidemiological expertise. The incorporation of epidemiological studies linked to disease control programs, to generate quantitative and geo-referenced data on infection and transmission dynamics, is another key success factor. These are part of the Project’s supported activities.
Harmonized disease information systems. The importance of harmonized disease information systems, linked to disease surveillance and epidemiological programs is widely accepted. Turkey participates in the WAHIS, and the upgrading of Turkey’s WAHIS module under the Project will support long-term control programs.

Wildlife species and reservoirs are a source of HPAI. Epidemiological studies suggest that some species of migratory wild birds have played a role in the transmission of H5N1 viruses to domestic poultry. There is major difficulty in applying bio-security measures aiming at avoiding the contact between the migratory and other wild birds and domestic poultry. However, the small share of backyard poultry (less than 5 percent) in Turkey appears to indicate that the eradication of the virus to prevent HPAI infection may achievable.

Poor coordination between public agencies and weak linkages with the private sector. Less than efficient coordination between government ministries and agencies, as well as weak linkages with private sector actors, have hampered long-term planning for infectious disease control in a number of countries. Given the zoonotic and transboundary nature of this disease, a well coordinated public-private response is essential. Turkey is expected to build on the close cooperation which was evidenced during the October 2005 AI outbreak.

Public Health - Technical Considerations. In terms of public health, the swine influenza experience provides a benchmark for decision-making and public health response to the threat of an influenza pandemic. Yet, how relevant are the experiences and lessons of 1976 for a pandemic response today? Substantial changes in public health preparedness and infrastructure, in vaccine manufacturing and delivery, and in society have occurred which will affect a pandemic response. International surveillance for influenza and the strains that cause infection is much stronger than in 1976. The additional surveillance data available today will provide a much stronger basis for assessing the likelihood of a pandemic. Experience has shown that new influenza strains can cause clusters of human diseases without becoming widespread. Improvements also have been made in public health preparedness planning, and communications between the different levels of a health system.

Despite these changes, many of the lessons from the swine influenza experience remain relevant and, as demonstrated by the experience implementing smallpox vaccination, remain as significant challenges. The need to identify adverse effects following vaccination as coincidental or causal also remained problematic. Separating risk assessment and risk management, conduct of external program reviews, improved communications planning, and strong surveillance for vaccine safety all are areas where the lessons of swine influenza were appropriately applied in the smallpox program.

Lessons from swine influenza also were considered in developing the pandemic influenza preparedness and response plan under the GPAI. The importance of planning by Turkey’s MOH at the different levels of the system during the inter-pandemic period of strengthening key infrastructures, and of exercising response plans needs greater emphasis and will be addressed by the Project.

Economic Analysis

1. Evidence shows that the H5N1 strain of Highly Pathogenic Avian Influenza (HPAI) is now endemic in parts of Southeast Asia, where Cambodia, Indonesia, Laos, Thailand and Indonesia are the worst-affected countries. The continuing outbreaks that began in late 2003 and early 2004 have been disastrous for the poultry industry in the region. By mid-2005, more than 140 million birds had died or been destroyed and losses to the poultry industry are estimated to be in excess of US$10 billion. The costs were related to the death of poultry from the disease itself, the culling of poultry to stem its spread, and the costs to governments of containing the epidemic in terms of equipment, materials, transport and personnel.
2. In Vietnam, one of the most seriously affected countries, some 44 million birds or 17 percent of the total population of poultry, were culled at an estimated cost of $120 million (0.3 percent of GDP). The costs would have been substantially higher if there had been a serious impact on tourism, where an estimated 5 percent drop in tourist and business arrivals would reduce GDP by a further 0.4 percent. (Fortunately, there has been only a small impact on tourism so far; the number of tourist arrivals in Vietnam increased by 20.5 percent in 2004 and rose further by 23 percent in the first seven months of 2005.) In Indonesia, an FAO survey indicates that in the most seriously affected parts of the country, more than 20 percent of permanent industrial and commercial farm workers lost their jobs. So although the overall macro-economic effects have been relatively small, the impact on the poultry sector and on associated input and distribution channels has been severe.

3. Although HPAI is mainly an animal health problem, more than half of the 120 human cases have been fatal. Moreover, it is widely believed in the scientific community that a global pandemic of human influenza is overdue. Such a pandemic would be the result of the emergence of a strain of virus to which the world’s population had little or no immunity. A widespread epidemic needs not be severe or particularly deadly; the pandemics of 1957-1958 and 1968-1969 were relatively mild. However, there is the possibility that the H5N1 strain could, through genetic reassortment or a more gradual process of adaptive mutation, become readily transmissible from human-to-human and become the basis of a global pandemic comparable to that of 1918-1919, the “Spanish” influenza, which recent research has shown to have had its origin in an avian influenza virus.

4. Neither the timing nor the severity of the next pandemic can be predicted, but with the virus now endemic in bird populations in Asia the risk will not be easily diminished. Given the recent outbreak in Turkey in Manyas, the situation faced by Turkey is urgent but uncertain, given the unpredictability of a human epidemic or pandemic. It is clear, however, that containing and eradicating the virus will be a desirable objective even if the problem were restricted to one of animal health in Turkey. Thus, economic analysis of the Project, which will be completed at Project Appraisal, will take into account the two main categories of economic impacts: (a) the economic consequences and costs associated with public and private efforts to prevent the emergence or spread of the disease and to treat its effects; and (b) the economic consequences and costs of sickness or death resulting from the disease outbreaks.

5. These two are clearly related as a greater effort at prevention and/or treatment for a given severity of epidemic would be expected to reduce the spread of sickness and/or the percentage of mortality and thus reduce the economic impact and costs. There are also two “levels” of potential economic costs. The present spread of HPAI of the H5N1 strain involves transmission between animals and (so far) a limited incidence of transmission between animals and humans; as such, given the lethal nature of the virus, especially in poultry, it is principally an animal health crisis. However, the emergence of a human influenza pandemic caused by a lethal virus would have a social and economic impact many times greater.

6. Thus, actions to be taken by Turkey are analyzed using the traditional “with project” and “without project” scenarios when the issue is to treat HPAI as an animal health issue. These costs and benefits are to be estimated on the basis of the recent outbreak in Manyas. However, the impact of actions to be taken Turkey in the wider context of the prevention or slowing down of a human influenza pandemic are much more difficult to estimate, since the actions undertaken in one country will have implications for the well-being of the rest of the world’s population.

**Losses to the Poultry Sector, Related Industries, and Involved Populations.**

7. The economic analysis follows a with-project scenario / without-project scenario approach to estimate net benefits of the Project to Turkey. The analysis focuses on the benefit of averting significant expected costs to the economy of a catastrophic spreading of the disease in Turkey’s poultry flock due to a reduction in the probability of such a catastrophic event. The main costs averted that are considered in this analysis are:

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2 World Bank. (2004). *Avian Influenza Emergency Recovery Project. Technical Annex.* Appendix 2. Other earlier and widely cited estimates by Oxford Economic Forecasting had been rather higher, suggesting costs of over $200 million or around 0.6 percent of GDP for Vietnam, and costs of $10-15 billion for East Asia as a whole, about 0.3-0.5 percent of regional GDP.
(i) dramatic reductions in poultry prices and quantities demanded (adjusted however for the positive substitution effect into other sources of protein, notably red meat and fish);

(ii) poultry sector value added lost in the culling of animals or in their death from AI;

(iii) the cost of culling itself (and other activities to stem the further spreading above and beyond what would be done in the with project scenario). Costs related to illness or death of humans (either in Turkey or internationally) as a result of infection from a continual AI outbreaks in Turkey are not estimated owing to the current lack of adequate information on the probabilities of virus mutation and transmissability.

Scenarios Considered

8. The without-project scenario: As a result of the low capacity of government and the poultry industry to deal with outbreaks, the sector is vulnerable to a catastrophic AI occurrence. This event would be characterized by multiple, simultaneous outbreaks leading to a spread of the disease to large sections of the country’s poultry flock. Significant numbers of poultry would have to be culled with associated costs of culling and compensation to the farmers incurred by the state and the private sector. Subsequently, there would be massive public aversion to poultry consumption leading to a significant and sustained drop in prices and demand for poultry.

9. In turn, the poultry sector remains depressed in the medium term, leading to large sunk costs in the form of abandoned facilities. The public substitutes red meat, fish and other sources of protein for poultry. Prices of such substitutes go up, leading to increased net revenues for those sectors. Overall consumer surplus decreases. (In the long term the sector recovers partially.) The economic analysis assigns the catastrophic event described above an annual probability of occurrence. Under this scenario, this probability increases annually as the virus in the environment becomes endemic.

10. The with-project scenario. The project builds capacity on the part of local government agencies and the private sector to respond effectively to outbreaks in such a way that multiple and simultaneous outbreaks may be contained with much higher efficiency, leading to a lower annual probability of the worst case scenario occurring. This is achieved through: (i) the adoption of a country-specific strategy (and its corresponding information system) to control and eradicate HPAI in areas of risk; (ii) the strengthening of disease surveillance and diagnostic capacity; (ii) the implementation of an outbreak containment plan, including deployment of supplies and incineration investments in field and certification of readiness for rapid response in areas at risk (all under the Animal Health Component).

11. Significant support to public awareness raising (under Component 3) will also help to: (i) increase the level of information among producer groups and their families and hence support the containment of the disease in risk areas; and, (ii) increase public confidence that the outbreaks will be contained effective and hence not lead to widespread illness among humans, which should reduce the risk of significant drops in demand for poultry products. The positive impact under this with project scenario is measured through a decrease in the annual probability of a catastrophic event.

Estimation of Benefits and Costs of the Project

3 In the medium run, the red meat sector may expand, leading to a reduction in price levels.

4 CS of those consumers who have to switch to substitutes decreases because (i) those products are not their first choice; (ii) the price increase in the other products. Consumers who are risk averse and continue to consume poultry products experience an increase in CS in the short run as poultry prices go down before the sector adjusts and supply decreases. Consumer surplus related to substitutes decreases as a result of price increases, at least in the short run before the sector adjusts and supply expands. The overall impact on CS is expected to be negative as consumers are forced to consume a mix that does not represent their first preference.

5 There are several reasons for the focus in this analysis on a catastrophic event rather than multiple events of varying degrees of severity: (i) a probability distribution for events of varying severity is not available; (ii) related to the first point, employing an approach of the worst case scenario allows for simplicity in the analysis through the use a single variable probability. One can vary the assumed probability and see the impact on the net benefit due to the project.
12. This section will provide a brief explanation on assumptions made in estimating the costs and underline that the objective is to provide an order of magnitude approximation rather than precise estimates. To be completed at appraisal and include:

- Impact of reduced demand for poultry (impact on poultry sector – minus substitution effect)
- Cost of culling
- Value of lost animals
- Project cost to Turkey (exclude grants)

13. **The effects of sickness and mortality on output:** one main set of economic effects results from increased sickness and death among humans and their impact on the potential output of the world economy. Recent estimates suggest that the Spanish influenza of 1918/9 killed about 2.5 percent of the world population. In Turkey this would mean over 1.5 million deaths. The most direct impact on output would be through the effect of increased illness and mortality on the size and productivity of the world labor force. In addition there will also be a general decline in labor productivity due to illness and sick leave among the labor force at large. Such productivity losses due to illness during normal annual influenza episodes are estimated to be ten times as large as all other flu-related costs combined. Other long-term impacts would play out as the increased costs of preventing and treating disease reduced savings and investment. The impact on output at the national level would vary widely, depending on the extent of the epidemic, the country’s demographic structure, the extent of unemployed resources and other key variables.

14. **Private preventive responses to an epidemic:** Another set of economic impacts would result from the uncoordinated efforts of private individuals to avoid becoming infected or to survive the results of infection. Private individuals will take action to avoid infection, based on their perceptions of factors such as the disease’s transmission mechanism, the probability of infection, the probability of death once infected, and the availability of preventive or curative measures.

15. The SARS outbreak in East Asia provides a good example. There were approximately 800 deaths - and thus no discernible impact on output - but actual economic losses were estimated at 0.5 percent of annual East Asian GDP in 2003, concentrated in the second quarter of the year, when there was a much sharper loss of around 2 percent of quarterly GDP. (Note that a 2 percent loss of Turkey’s GDP during an influenza epidemic would represent around $6 billion per year). Why such a severe economic loss? Given the spread of the disease through droplet transmission, people tried to minimize face-to-face interactions. The result was a severe demand shock for services sectors such as tourism, mass transportation, retail sales, hotels and restaurants. Business costs no doubt also increased due to workplace absenteeism, disruption of production processes and shifts to more costly procedures.

16. However, while such private actions were economically costly, they likely also played a role in breaking the chain of transmission of the disease. Thus an interesting policy question is how to minimize the ratio of costs to benefits of the inevitable private preventive actions that occur during an epidemic. Note that, at least initially, there was a dearth of public information about SARS, contributing to a large over-estimate by private individuals of the perceived probabilities of infection and death from SARS, a fact documented in opinion survey data. This could have led to over-reactions in the preventive actions taken by the population at large. One lesson from the SARS episode is that a prompt and transparent public information policy could help reduce the economic costs of an epidemic.

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7 Use of a simple Cobb-Douglas production function to make an crude calculation of the loss in world output due to a 2.5 percent decline in the size of the world labor force, leaving aside all issues of differences in the intensity of the epidemic in different countries, availability of unemployed labor, changes in labor productivity, etc. suggests a drop in world potential output of $500-700 billion.
17. **Public policy responses to epidemic threats:** A last set of economic impacts are those associated with the policy efforts of the government to prevent the start of an epidemic, to contain the epidemic once it has begun, and to mitigate its harmful effects on the health of the population. These policy actions can be oriented towards the short, medium or long term, and, in spatial terms, towards national, regional or global levels. FAO-OIE (2005, *op. cit.*) elaborates policies to curb transmission among animals, including enhanced surveillance, diagnosis, bio-security measures, culling and vaccination of poultry. WHO (2005) sets out policies covering situation monitoring, assessment, prevention, containment and health system strategies during six stages before and during a human pandemic. These include, among many other measures, expanding production and targeted use of antiviral medicines and vaccines, as well as ‘social distance measures’ such as closures of schools and quarantines. Ferguson *et al* (2005) use a detailed simulation model of influenza transmission in Thailand to argue that targeted mass prophylactic use of antiviral medicines and social distance measures could halt a pandemic in its earliest stages.

18. All these public policy measures entail economic costs. Even though the human and economic benefits of preventing or containing an influenza pandemic are overwhelming, governments may still be daunted by the cost of various policy measures, especially when these measures are in the nature of global public goods that benefit many more than just the citizens of that nation. The cost of significantly scaling up anti-viral medicine and vaccine research and production would be a case in point. Thus, careful economic analysis of different incentive schemes that could foster greater anti-viral medicine and vaccine production in efficient, cost-effective ways could make a large contribution in the effort to prevent or contain a pandemic. Similarly, the use of blanket measures to curb movement within and between countries could cause major economic disruption due to the increasingly globalized nature of modern production processes. Again, careful analysis of critical logistical chains in the world economy could allow consideration of targeted prophylactic use of antiviral medicines to protect transport and other key groups of workers.

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Annex - 5

List of relevant EU Legislation /OIE Recommendations

- Chapter 2.7.12. of the Terrestrial Animal Health Code
  (http://www.oie.int/eng/normes/mcode/en_chapitre_2.7.12.htm)

Control of Communicable Diseases and strengthening the surveillance related EU acquis;

- Decision No 2119/98/EC of the European Parliament and of the Council of 24 September 1998 setting up a network for the epidemiological surveillance and control of communicable diseases in the Community
- Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regards to the procession of personal data and on the free movement of such data.

List of relevant TR Legislation

✓ “Common Law of Hygiene” No: 1593.
✓ “Law Concerning the Socialization of Health Services, No: 224)
Annex - 6
Reference list of relevant strategic plans and studies

Key Facts (by CDC) about Avian Influenza (bird flu) and Avian Influenza A (H5N1) Virus

What is Avian Influenza (bird flu)?
1. Bird flu is an infection caused by avian (bird) influenza (flu) viruses. These flu viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, bird flu is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Do bird flu viruses infect humans?
2. Bird flu viruses do not usually infect humans, but several cases of human infection with bird flu viruses have occurred since 1997.

What is an avian influenza A (H5N1) virus?
3. Influenza A (H5N1) virus – also called “H5N1 virus” – is an influenza A virus sub-type than occurs mainly in birds. It was first isolated from birds (terns) in South Africa in 1961. Like all bird flu viruses, H5N1 virus circulates among birds worldwide, is very contagious among birds, and can be deadly.

What is the H5N1 bird flu that has recently been reported in Asia?
4. Outbreaks of influenza H5N1 occurred among poultry in eight countries in Asia (Cambodia, China, Indonesia, Japan, Laos, South Korea, Thailand, and Vietnam) during late 2003 and early 2004. At that time, more than 100 million birds in the affected countries either died from the disease or were killed in order to try to control the outbreak. By March 2005, the outbreak was reported to be under control. Beginning in late June 2004, however, new deadly outbreaks of influenza H5N1 among poultry were reported by several countries in Asia (Cambodia, China, Indonesia, Malaysia (first time reports), Thailand, and Vietnam). It is believed that these outbreaks are ongoing. Human infections of influenza A (H5N1) have been reported in Thailand, Vietnam and Cambodia.

What is the risk to human from the H5N1 virus in Asia?
5. The H5N1 virus does not usually infect humans. In 1997, however, the first cause of spread from a bird to a human was seen during an outbreak of bird flu in poultry in Hong Kong. The virus caused severe respiratory illness in 18 people, 6 of which died. Since then, there have been other causes of H5N1 infection among humans. Most recently, human cases of H5N1 infection have occurred in Thailand, Vietnam and Cambodia during large H5N1 outbreaks in poultry. The death rate for these reported cases has been about 50 percent. Most of these cases occurred from contact with infected poultry or contaminated surfaces; however, it is thought that a few cases of human-to-human spread of H5N1 may have occurred.

6. So far, spread of H5N1 virus from person to person has been rare and spread has not continued beyond one person. However, because all influenza viruses have the ability to change, scientists are concerned that the H5N1 virus could one day be able to infect humans and spread easily from one person to another. Because these viruses do not commonly infect humans, there is little or no immune protection against them in the human population. If the H5N1 virus were able to infect people and spread easily from person to person, “influenza pandemic” (worldwide outbreak of disease) could begin. No one can predict if and when a pandemic might occur. However, experts from around the world are watching the H5N1 situation in Asia very closely and are preparing for the possibility that the virus may begin to spread more easily and widely from person to person.
How are bird flu viruses different from human flu viruses?
7. There are many different sub-types of type A flu viruses. These sub-types differ because of certain protection on the surface of the flu A virus (hemagglutinin \{HA\} and neuraminidase \{NA\} proteins). There are 16 different HA sub-types and 9 different NA sub-types of flu A viruses. Many different combinations of HA and NA proteins are possible. Each combination is a different sub-type. All sub-types of flu A viruses can be found in birds. However, when one talks about “bird flu” viruses, one usually refers to flu A sub-types that continue to occur mainly in birds. They do not usually infect humans, even though we know they can do so. Human flu viruses are referred to as those sub-types that occur widely in humans. There are only three known sub-types of human flu viruses (H1N1, H1N2, and H3N2); it is likely that some genetic parts of current humans flu A viruses came from birds originally. Flu A viruses are constantly changing, and they might adapt over time to infect and spread among humans.

What are the symptoms of bird flu in humans?
8. Symptoms of bird flu in humans have ranged from typical flu-like symptoms (fever, cough, sore throat and muscle aches) to eye infections, pneumonia, severe respiratory diseases (such as acute respiratory distress), and other severe and life-threatening complications. The symptoms of bird flu may depend on which virus caused the infection.

How does bird flu spread?
9. Infected birds shed flu virus in their saliva, nasal secretions, and feces. Susceptible birds become infected when they have contact with contaminated excretions or surfaces that are contaminated with excretions. It is believed that most causes of bird flu infection in humans have resulted from contact with infected poultry or contaminated surfaces.

What is the risk to humans from bird flu?
10. The risk from bird flu is generally low to most people because the viruses occur mainly among birds and do not usually infect humans. However, during an outbreak of bird flu among poultry (domesticated chickens, ducks, turkeys), there is a possible risk to people who have contact with infected birds or surfaces that have been contaminated with excretions from infected birds. The current outbreak of avian influenza A among poultry in Asia is an example of a bird flu outbreak that has caused human infections and deaths. In such situations, people should avoid contact with infected birds or contaminated surfaces, and should be careful when handling and cooking poultry.

How is infection with H5N1 virus in humans treated?
11. The H5N1 virus currently infecting birds in Asia that has caused human illness and death is resistant to amantadine and rimantadine, two antiviral medications commonly used for influenza. Two other antiviral medications, oseltamivir and zanamavir, would probably work to treat flu caused by the H5N1 virus, though studies still need to be done to prove that they work.

Is there a vaccine to protect humans from H5N1 virus?
12. There is currently no vaccine to protect humans against the H5N1 virus that is being seen in Asia. However, vaccine development efforts are underway. Research studies to test a vaccine to protect humans against H5N1 virus began in April 2005. Researchers are also working on a vaccine against H9N2, another bird flu virus sub-type.

What does CDC recommend regarding the H5N1 bird flu outbreak in Asia?
13. In February 2004, CDC provided U.S. health departments with recommendations for enhanced surveillance (“detection”) in the U.S. of avian influenza A (H5N1). Follow-up messages (Health Alert Network) were sent to the health departments on August 12, 2004, and February 4, 2005, both
reminding health departments about how to detect (domestic surveillance), diagnose, and prevent the spread of avian influenza A (H5N1). It also recommended measures for laboratory testing for H5N1 virus. CDC currently advises that travelers to countries in Asia with known outbreaks of influenza A (H5N1) avoid poultry farms, contact with animals in live food markets, and any surfaces that appear to be contaminated with feces from poultry or other animals.
1. **Vision and goal.** The long-term vision of the strategy is to minimize the global threat and risk of HPAI in humans and domestic poultry, through progressive control and eradication of HPAI, particularly that caused by H5N1 virus, from terrestrial domestic poultry in Asia. Achieving this goal will diminish the global threat of a pandemic, stabilize poultry production, enhance a robust regional and international trade in poultry and poultry products, increase human and food safety, and improve the livelihoods of the rural poor.

2. **A phased approach.** The global strategy will be implemented over three time frames: immediate to short (1-3 years), short to medium (4-6 years) and medium to long term (7-10 years). During this period the spread of HPAI, mainly of the H5N1 strain, will have been progressively controlled in domestic poultry of all infected countries of Asia, and prevented from affecting those Asian countries not currently infected, but at high risk.

3. The immediate to short-term objective is to reduce the risk to humans by preventing further spread of HPAI in those countries that are currently infected by H5N1.

4. Over the medium to long-term (7-10 years), a more focused approach to HPAI will be mounted to progressively eradicate the disease from the remaining compartments of infected domestic terrestrial poultry in the region. The medium-to-long term strategy will consider all control measures, including vaccination, zoning and compartmentalization as defined in the OIE Terrestrial Animal Health Code. For the long-term success of this strategy, restructuring of the poultry sectors in the region will need to be seriously considered.

5. To prevent the threat of HPAI from spreading to avian influenza-free countries, the long-term strategy supports the development of active surveillance programs and emergency preparedness plans for non-infected, at risk countries. The application of OIE standards relating to the international trade of poultry and poultry products will further assist in preventing the spread of HPAI virus across continents.

6. **Capacity building.** Inadequate capacity in many countries is the principal limiting factor for effectively and quickly stamping out and controlling infectious diseases. Thus, the strategy suggests building a strong and sustainable human and physical resource capacity in the countries, to respond in a more effective and timely manner in stamping out not only HPAI outbreaks, but also other newly-emerging infectious zoonotic and trans-boundary animal diseases. Capacity building will be wide ranging and include all aspects of disease control as well as policy development and socio-economic impact analysis.

7. **Strategic research.** The global strategy recognizes that the dynamics of the current rapid spread and persistence of HPAI remain unclear. Therefore, the strategy will facilitate strategic research to investigate the epidemiology of avian influenza, evaluate the efficacy of vaccines in domestic ducks to reduce the virus shedding in domestic duck reservoirs, and work in close collaboration with regional and international advanced research institutions to promote the development of improved vaccines and rapid diagnostic tests. Risk analysis of various poultry production systems and along marketing chains will be carried out to better target effective disease control.

8. **Implementation.** Implementation will be at the national, regional and international levels. At the national level, well-defined country specific projects will be formulated, which will be underpinned by the formation of sub-regional HPAI support units. Through these units, sub-regional disease diagnosis and surveillance and socio-economic and policy analysis networks will be established. These sub-regional networks will provide the lead in the development of harmonized technical standards and regional policies related to the management of live animal movement, compensation plans, capacity building, disease reporting requirements and long term planning to restructure poultry sectors.
9. At the international level, coordination of the national programs and sub-regional networks will be under the umbrella of GF-TADs (global framework for the control of trans-boundary animal diseases), a joint FAO/OIE initiative. The international coordination will provide technical backstopping to the sub-regional networks and national programs, promote international cooperation, and mobilize and coordinate resources for HPAI control.

10. **Partners.** The main partners in implementation of the strategy will be infected and non-infected at-risk countries, and regional organizations, all of which are committed to controlling trans-boundary animal and zoonotic diseases. Given the zoonotic nature of the HPAI, and the complex interface between farming systems, livestock trade, food safety and public health, a strong international partnership among FAO, OIE and WHO will be continued. A number of other partners will be involved, important among these would be the private sector, NGOs, and regional national agriculture extensions systems (NARES).

11. **Resources.** The implementation of the strategy will require funding to support the national, regional and international HPAI control programs as outlined above.

**Framework for Implementation**

12. A Framework for Implementation has been developed by FAO/OIE, promoting national, regional, and international initiatives. It includes the following:

**National initiatives:**
- Development of a National Strategy for each country specific to its own conditions. It would address farming systems, presence/absence of ducks, presence of human cases or not, trade orientation, implementation capacity, and wildlife migration patterns;
- Preparation of contingency and emergency preparedness plans;
- Development of economic impact and policy frameworks;
- Prevention of avian influenza to non-infected at-risk countries through awareness, reporting, and early detection; and
- Improvement in epidemiological information on source of infection and transmission dynamics in farming system and marketplaces.

**Regional initiatives:**
- Standardization of diagnosis and reporting techniques among countries;
- Sharing of disease information between countries;
- Development of a regulatory framework for management of animal movements; and
- Promotion of adherence to OIE guidelines to facilitate regional trade.

**Global initiatives:**
- Strengthening of partnerships (FAO, OIE, WHO, UNDP, donors);
- Support for global networks (OIE Global Service Center supported by WB/DGF and donors);
- Support for sub-regional networks -- OIE/FAO epidemiology collaborating centers and Avian Influenza Network (OFFLU);
- Further development of control strategies for trans-boundary animal diseases (utilizing the GF-TADs mechanism);
- Development of a Global Early Warning System (FOA/OIE/WHO);
- Coordination of research on improved tools for avian influenza control;
- Provision of global vision for avian influenza control; and
- Mobilization of resources through donor liaison and advocacy.
Summary of the World Health Organization (WHO) Strategy

1. The strategic plan lays out activities for individual countries, the international community and WHO to prepare for a pandemic and mitigate its impact. The objectives of the plan correspond to the opportunities to intervene and are structured in the following three phases:

Phase - Pre-Pandemic:

(i) Reduce opportunities for human infection. An immediate priority is to halt spread in poultry to reduce human exposure to the virus. More intensive collaboration is needed between the animal and health sectors. Communication activities targeting stakeholders, particularly rural poultry holders, should be strengthened. Workers carrying out the culling of poultry must be protected against infection by clothing and equipment.

(ii) Strengthen the early warning system. To assess risks to public health and guide protective measures, information is needed on the extent of influenza infection in animals and humans and on circulating viruses. National surveillance systems must be improved urgently in potentially affected countries. When outbreaks in animals occur, active human case detection should be pursued by a coordinated animal-human health team.

Phase - Emergence of a Pandemic:

(iii) Contain or delay spread at the source. Aggressive containment measures such as isolation and prophylactic use of antiviral drugs may slow pandemic spread and allow time for response measures. An international stockpile of antiviral drugs for an emergency response should be established, starting with a stockpile for targeted early use.

Phase – Pandemic Declared and Spreading Internationally:

(iv) Reduce morbidity, mortality, and social disruption. Although mass vaccination is the preferred intervention, serious issues related to the time lag between emergence of the virus and vaccine production as well as production capacity constraints must be addressed. Anti-viral supply and production capacity are also limited. Therefore, the main responses in the immediate term should be classic “social distancing measures” such as quarantine, bans on mass gatherings, and travel restrictions, backed up by a well-designed communication strategy. For the longer term, options with industry to improve antiviral and vaccine capacity need to be explored.

(v) Conduct research during pandemic. Research is needed for policy development and adjustments for current and future epidemics. The main elements include: assessing the epidemiologic characteristics; monitoring the effectiveness of the interventions; and evaluating the medical and economic consequences.

Recommended Strategic Actions

2. In view of the immediacy of the avian influenza threat, WHO recommends that all countries undertake urgent action to prepare for a pandemic. Advice on doing so is contained in the recently revised *WHO global influenza preparedness plan (2005)* and a new *WHO checklist for influenza pandemic preparedness planning (2005)*. Table 1 describes the phases of increasing public health risk associated with the emergence of a new influenza virus subtype that may pose a pandemic threat, and the overarching public health goals under each phase.

Table : Phases of Increasing Public Health Risk Associated with the Emergence of a New Influenza Virus Subtype that May Pose a Pandemic Threat

<table>
<thead>
<tr>
<th>PHASES</th>
<th>OVERARCHING PUBLIC HEALTH GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpandemic period</td>
<td></td>
</tr>
<tr>
<td>Phase 1. No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.</td>
<td>Strengthen influenza pandemic preparedness at the global, regional, national and sub-national levels.</td>
</tr>
<tr>
<td>Phase 2. No new influenza virus subtypes have been detected</td>
<td>Minimize the risk of transmission to humans;</td>
</tr>
</tbody>
</table>
in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease. detect and report such transmission rapidly if it occurs.

<table>
<thead>
<tr>
<th>Pandemic alert period</th>
<th>Pandemic period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 3.</strong> Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact. Ensure rapid characterization of the new virus subtype and early detection, notification and response to additional cases. <strong>Phase 4.</strong> Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans. Contain the new virus within limited foci or delay spread to gain time to implement preparedness measures, including vaccine development. <strong>Phase 5.</strong> Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk). Maximize efforts to contain or delay spread, to possibly avert a pandemic, and to gain time to implement pandemic response measures.</td>
<td></td>
</tr>
<tr>
<td>Pandemic: increased and sustained transmission in general population. Minimize the impact of the pandemic.</td>
<td></td>
</tr>
</tbody>
</table>

a The distinction between phase 1 and phase 2 is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localized or widespread, and/or other scientific parameters.

b The distinction between phase 3, phase 4 and phase 5 is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strain (if derived from an animal strain), and/or other scientific parameters.

Source: WHO 2005

In order to accomplish the public health goals described for each phase, WHO recommends strategic actions that can be undertaken to capitalize on each opportunity to intervene. Given the many uncertainties about the evolution of the pandemic threat, including the amount of time left to prepare, a wise approach involves a mix of measures that immediately address critical problems with longer-term measures that sustainably improve the world’s capacity to protect itself against the recurring pandemic threat.

3. The strategic actions are:

**Reduce opportunities for human infection,** including:

- Support to the FAO/OIE control strategy;
- Intensify collaboration between the animal and public health sectors;
- Strengthen risk communication to rural residents; and
- Improve approaches to environmental detection of the virus

**Strengthen the early warning systems,** including:

- Improve the detection of human cases;
- Combine detection of new outbreaks in animals with active searches for human cases;
- Support epidemiological investigation;
- Coordinate clinical research;
- Strengthen risk assessment;
- Strengthen existing national influenza centers throughout the risk-prone regions; and
- Give risk-prone countries an incentive to collaborate internationally.
Contain or delay spread at the source, including:
- Establish an international stockpile of anti-viral drugs;
- Develop mass delivery mechanisms for anti-viral drugs; and
- Conduct surveillance of antiviral susceptibility.

Reduce morbidity, mortality and social disruption, including:
- Monitor the pandemic in real time;
- Introduce non-pharmaceutical interventions;
- Use of antiviral drugs to protect priority groups;
- Augment vaccine supplies;
- Ensure equitable access to vaccines; and
- Communicate risks to the public.

Conduct research to guide response measures, including:
- Assess the epidemiological characteristics of an emerging pandemic;
- Monitor the effectiveness of human interventions; and
- Evaluate the medical and economic consequences.
Summary and Review of the Avian Influenza Contingency Plans of the Republic of Turkey

1. To have maximum impact on reducing the spread and cost of a pandemic influenza, it is critical that Turkey begin implementing its own country preparedness and response plans. Achieving this is one of the development objectives of the proposed project. As a first step, the Avian Influenza contingency plans of Turkey have been reviewed and summarized.

Pandemic Preparedness Assessment Tool

2. To evaluate the preparedness status and readiness in Turkey, the existing tools prepared by the European Center for Disease Prevention and Control (ECDC), in collaboration with WHO and the European Commission have been used10. In using these tools, the objectives have been to:
   a) To evaluate the status of pandemic influenza preparedness in the country
   b) To determine a baseline of preparedness, or to determine progress made since an earlier assessment.
   c) To identify weaknesses and strengths of pandemic influenza preparedness.
   d) To identify steps for improvement.

3. The assessment has focused on the following issues:

I. Avian Influenza Preparedness (Animal Component)
   - Is there awareness of the current situation in the work regarding avian influenza/concern about its introduction into the country? YES
   - Contingency plan for an outbreak among birds available, including protection of people living in the area and workers handling or killing affected birds? YES
   - Collaboration arrangements established with international agencies such as FAO? YES
   - Is there laboratory capacity to test animal specimens for influenza? YES
   - Is the Ministry of Agriculture involved in pandemic preparedness/member of national pandemic committee? YES
   - Have exercises been conducted on how to respond to an outbreak in birds? YES

II. Public Health Preparedness

Seasonal Influenza:
   - Seasonal influenza surveillance systems in place and functional? YES
   - Seasonal influenza vaccination program for target groups in place? YES

Pandemic Influenza (national level)

Planning and Coordination
   - Relevance of pandemic planning recognized by decision makers and preparedness policies developed and adopted? YES
   - Legal and ethical frameworks established coherent with international legislation (International Health Regulations)? YES
   - National Pandemic Planning Committee established? YES
   - Command and control structure in place outlining management and decision-making processes of all organizations involved in response to a health emergency? YES

10 ECDC with WHO and the EC, 2005, draft Assessment Tool for National Pandemic Influenza Preparedness.
• Country has national influenza pandemic preparedness plan that is consistent with international plans and periodically updated? YES

_Situation Monitoring and Assessment_

• National system available for influenza surveillance in both humans and animals? YES (humans)
• Access to at least one laboratory able to offer routine influenza diagnosis, typing and sub-typing, but not necessarily strain identification? YES
• Outbreak investigation capacity available (inventory of resources available)? LIMITED
• Contingency plans developed for ongoing monitoring of impact and resources needs during the pandemic phase. PARTIALLY (resources not identified nor costed)

_Prevention and Containment_

• National guidance for public health response developed? YES
• National guidance for civil emergency response developed? TO BE DETERMINED
• Anticipated resource implications for implementation addressed? TO BE DETERMINED
• Tabletop exercises conducted and results used to improve planning? YES
• Strategy to access antivirals for national use (e.g., stockpiling) developed? YES
• Priorities and criteria for deployment and use of antivirals defined? YES
• Strategy to access pandemic vaccines explored/developed; regulatory issues, liability, intellectual property rights addressed? YES
• Priorities and criteria for use of pandemic vaccines defined; preliminary priorities for pandemic vaccines use developed, based on expected availability? NO
• Logistic and operational needs for implementation of pandemic vaccines strategy reviewed? NO

_Health System Response_

• Health services are informed about national pandemic influenza policies including preparedness plan? NO
• Contingency plans developed on how to maintain essential services? NO
• Authorities, responsibilities and pathways identified for command and control of health systems in the event of a pandemic? YES
• Pharmaceutical and other material supply needs estimated; arrangements to secure supply commenced? YES
• Plans for health workers training in pandemic influenza response developed? NO

_Communication_

• National communication strategy for pandemic influenza established? YES
• Capacity planned and tested for meeting expected domestic information demands for diverse audiences, including professional/technical groups, the news media and general public? NO
• Networks among key response stakeholders established, including risk communicators, non-health government departments, and professional and technical groups? NO
• News media with national plans familiarized, including preparedness activities and decision-making related to seasonal and pandemic influenza? NO

_Categorization of Country Readiness_

11 Pending Minister’s approval.
4. On the basis of the results of the preparedness assessment, Turkey is assessed as: MODERATE

5. **Advanced**: An eligible country would have a well developed and approved national preparedness and response plan showing understanding of the issues and goals for addressing them, actions adapted from international guidelines and best practices to meet national priorities, evidence of strong public support and a well balanced range of stakeholders. It would have identified investment priorities to support the implementation of the plans, have included financing estimates of the needs; defined key indicators for monitoring and evaluating the implementation of national programs; and be conducting ongoing public dialogue and/or involvement.

6. **Moderate**: As for “Advanced” but missing some key elements in the plans and without reliable financial estimations.

7. **Low**: Many key aspects missing, especially public dialogue and establishment of goals, requiring significant additional identification of implementable actions and direction.
Annex 7 - Consultancy Services and Training Needs
(estimated cost: 2.200.000 €)

<table>
<thead>
<tr>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinary Services Capacity Assessment, National AI Strategy</td>
</tr>
<tr>
<td>Disease Information System (Software for 8 Institutes)</td>
</tr>
<tr>
<td>Epidemiological Studies (Ornithology and Wildlife Surveys)</td>
</tr>
<tr>
<td>Veterinary Services Training of Trainers</td>
</tr>
<tr>
<td>Operational Costs: Training of Veterinary Staff by VC Research Institutes</td>
</tr>
<tr>
<td>Consultancy for Slaughter of Animals</td>
</tr>
<tr>
<td>Ministry of Health- Training for Laboratory Technicians</td>
</tr>
<tr>
<td>Ministry of Health-Other Training Needs</td>
</tr>
</tbody>
</table>
Annex 8- List of Equipment, Rapid Test Kits and Veterinary Personnel Safety Gear  
(estimated cost: 8.200.000 €)

A) NATIONAL REFERENCE LABORATORIES (Bornova and Pendik)
Laboratory Equipment  
(estimated cost: 760.000 €)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolator</td>
<td>6</td>
</tr>
<tr>
<td>Egg hatching Machine (for 400 eggs)</td>
<td>4</td>
</tr>
<tr>
<td>System for ELISA (automated ELISA workstation)</td>
<td>2</td>
</tr>
<tr>
<td>Laminar Flow Cabins Class 2</td>
<td>6</td>
</tr>
<tr>
<td>Ultra Centrifuge</td>
<td>1</td>
</tr>
<tr>
<td>Autoclave</td>
<td>2</td>
</tr>
<tr>
<td>Orbital Shaker</td>
<td>1</td>
</tr>
<tr>
<td>Real time RT-PCR</td>
<td>7</td>
</tr>
<tr>
<td>Dry Sterilized</td>
<td>3</td>
</tr>
<tr>
<td>Water Bath (Ben-Marie)</td>
<td>1</td>
</tr>
<tr>
<td>Digital and Analytical Scales</td>
<td>3</td>
</tr>
</tbody>
</table>

Rapid Test Kits  
(estimated cost: 255.000 €)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avian Influenza antigen detect Rapid test kit (1Unit=20 test) (5,000 flock/20)</td>
<td>300</td>
</tr>
<tr>
<td>Reagents as needed for the implementation of National Avian Influenza Surveillance Programme (1 Unit= 450 tests)</td>
<td>200</td>
</tr>
<tr>
<td>Avian Influenza Panel Antiserum</td>
<td>300</td>
</tr>
<tr>
<td>common consumables for laboratory of molecular biology</td>
<td>2</td>
</tr>
</tbody>
</table>
B) NEEDS OF THE LABORATORIES FOR THE DIAGNOSIS OF POULTRY DISEASES OF THE REGIONAL LABORATORIES (Etlik, Konya, Adana, Samsun, Erzurum and Elazig)

Laboratory Equipment
(estimated cost: 385.000 €)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg hatching Machine (for 400 eggs)</td>
<td>10</td>
</tr>
<tr>
<td>Laminar Flow Cabins Class 2</td>
<td>14</td>
</tr>
<tr>
<td>Ultra Centrifuge</td>
<td>2</td>
</tr>
<tr>
<td>Dry Sterilized</td>
<td>5</td>
</tr>
<tr>
<td>Water Bath (Ben-Marie)</td>
<td>1</td>
</tr>
<tr>
<td>Autoclave</td>
<td>4</td>
</tr>
<tr>
<td>Analytic Scales</td>
<td>1</td>
</tr>
<tr>
<td>Digital Scales</td>
<td>2</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>4</td>
</tr>
<tr>
<td>Orbital Shaker</td>
<td>1</td>
</tr>
<tr>
<td>Magnetic Shaker</td>
<td>1</td>
</tr>
<tr>
<td>Incubators</td>
<td>2</td>
</tr>
<tr>
<td>pH meter</td>
<td>1</td>
</tr>
<tr>
<td>Vortex</td>
<td>2</td>
</tr>
<tr>
<td>Type Mixer</td>
<td>2</td>
</tr>
<tr>
<td>Equipment for Eggs Control</td>
<td>8</td>
</tr>
<tr>
<td>CO2 Incubators</td>
<td>1</td>
</tr>
<tr>
<td>Binoculars Microscope</td>
<td>1</td>
</tr>
<tr>
<td>Deep Freeze</td>
<td>3</td>
</tr>
<tr>
<td>Dish Washer</td>
<td>1</td>
</tr>
<tr>
<td>Multichannel Automatic Pipette</td>
<td>12</td>
</tr>
<tr>
<td>Singlechannel Automatic Pipette</td>
<td>12</td>
</tr>
<tr>
<td>bucket centrifuge</td>
<td>7</td>
</tr>
</tbody>
</table>

Test Kits
(estimated cost: 105.000 €)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagents as needed for the implementation of National Avian Influenza Surveillance Programme (1 Unit= 450 tests) (25,000/450)</td>
<td>150</td>
</tr>
<tr>
<td>Avian Influenza antigen detect Rapid test kit (1 Unit=20 test ) (1,000 flock/20)</td>
<td>150</td>
</tr>
</tbody>
</table>
### C) VETERINARY PERSONNEL

**SAFETY GEAR**

*(estimated cost: 695,000 €)*

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Units/ team (Number of Teams = 982*)</th>
<th>Units/ staff member (Total Staff = 2,946*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Vacumal Injector</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>2- 2.5 cc Plastic Injector</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>3- Head Lamp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7- Sample Deep freeze</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10- Gear</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11- Glasses</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12- Mask</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1- Special Gloves</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>15- Plastic Gloves</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>18- Disposal Bag</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

*Number of Provincial Directorates (A): 81
Number of District Directorates (B): 901
Number of Teams (A+B): 982
**Composition of Team: (1 Veterinarian + 2 Animal Health Technicians)
Total staff = 982 X 3 = 2,946*
D. HUMAN HEALTH
(estimated cost: 6.000.000 €)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Laboratory Equipment (Ankara RSHI) (estimated cost: 1.680.000 €)</td>
<td></td>
</tr>
<tr>
<td>P3 Laboratory for research of AI and other communicable diseases (in Ankara NIC)</td>
<td>1</td>
</tr>
<tr>
<td>Laminair flow Class II A</td>
<td>2</td>
</tr>
<tr>
<td>Deep Freezer - 20 degrees C</td>
<td>2</td>
</tr>
<tr>
<td>Deep Freezer -80 degrees C</td>
<td>2</td>
</tr>
<tr>
<td>Computerized ELISA System (reader, washer, printer, PC and software)</td>
<td>1</td>
</tr>
<tr>
<td>Real time PCR Equipment</td>
<td>2</td>
</tr>
<tr>
<td>Automated Sequencer</td>
<td>1</td>
</tr>
<tr>
<td>Benchtop Refrigerated centrifuge</td>
<td>2</td>
</tr>
<tr>
<td>Benchtop microcentrifuge</td>
<td>3</td>
</tr>
<tr>
<td>Centrifuge for 15 ml screwcap centrifuge tube, 15 ml X 68</td>
<td>2</td>
</tr>
<tr>
<td>Automatic Pipette set with adjustable volume,( 0.1-10 µl, 2-20 µl, 10-100 µl, 100-1000 µl )</td>
<td>10</td>
</tr>
<tr>
<td>Automatic Pipette with adjustable volume and dispenser, 0.1-50 µl</td>
<td>3</td>
</tr>
<tr>
<td>Automatic multichannel (12 channel) Pipette with adjustable volume and dispenser, 0.1-50 µl and 0.1-300 µl</td>
<td>2</td>
</tr>
<tr>
<td>Spin (microfuge)</td>
<td>3</td>
</tr>
<tr>
<td>Vortex</td>
<td>3</td>
</tr>
<tr>
<td>Micro plate shaker</td>
<td>3</td>
</tr>
<tr>
<td>Heater with shaker (for 1.5 ml -2 ml micros centrifuge tubes)</td>
<td>3</td>
</tr>
<tr>
<td>PH Meter</td>
<td>1</td>
</tr>
<tr>
<td>Multi Channel Pipette (repeater)</td>
<td>3</td>
</tr>
<tr>
<td>PCR cabinet (UV box)</td>
<td>2</td>
</tr>
<tr>
<td>Personel Computer</td>
<td>1</td>
</tr>
<tr>
<td>Automated nucleic acid extraction system</td>
<td>1</td>
</tr>
<tr>
<td>Item</td>
<td>Cost</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Kit Reagent (primer/ extraction/amplification/detection) real time</td>
<td>20000</td>
</tr>
<tr>
<td>per test</td>
<td></td>
</tr>
<tr>
<td>Aerosol plug tips for automatic pipette, DNase, RNAse free 10 µl /set of 100</td>
<td>600</td>
</tr>
<tr>
<td>Aerosol plug tips for automatic pipette, DNase, RNAse free 20 µl /set of 100</td>
<td>600</td>
</tr>
<tr>
<td>Aerosol plug tips for automatic pipette, DNase, RNAse free 200 µl /set of 100</td>
<td>400</td>
</tr>
<tr>
<td>Aerosol plug tips for automatic pipette, DNase, RNAse free 1000 µl</td>
<td>1000</td>
</tr>
<tr>
<td>Viral transport medium</td>
<td>25000</td>
</tr>
<tr>
<td>Cryo vials (set of 1000)</td>
<td>24</td>
</tr>
<tr>
<td>HEPA Filter Mask</td>
<td>4500</td>
</tr>
<tr>
<td>Lab Coat</td>
<td>4500</td>
</tr>
<tr>
<td>Cap</td>
<td>4500</td>
</tr>
<tr>
<td>Glasses (Visar)</td>
<td>100</td>
</tr>
<tr>
<td>microcentrifuge tube, DNase RNAse free 1.5ml</td>
<td>30000</td>
</tr>
<tr>
<td>PCR tube DNase RNAse free 0.2 ml for realtime PCR, strips of 8 tubes</td>
<td>20000</td>
</tr>
<tr>
<td>Optic cap for real time PCR tube DNase RNAse free 0.2 ml strips of 8 tubes</td>
<td>20000</td>
</tr>
<tr>
<td>Cryo box</td>
<td>100</td>
</tr>
<tr>
<td>Gloves for PCR (set 100)</td>
<td>700</td>
</tr>
<tr>
<td>Centrifuge tube 15ml</td>
<td>40000</td>
</tr>
<tr>
<td>0.5ml storage screw cap tubes for RNA</td>
<td>1000</td>
</tr>
<tr>
<td>0.2 ml workstation</td>
<td>5</td>
</tr>
<tr>
<td>Coolerbox</td>
<td>5</td>
</tr>
<tr>
<td>3. Outbreak investigation and epidemic preparedness supply /Primary Health Care</td>
<td>80000</td>
</tr>
<tr>
<td>(estimated cost: 2.940.000 €)</td>
<td></td>
</tr>
<tr>
<td>Protective clothing set (including, eye glasses, 1 mask, 1 protective clothing, 5 sterile gloves, 5 shoe coven, 500ml hand disinfecter)</td>
<td>80000</td>
</tr>
<tr>
<td>Sample transportation container (short distance)</td>
<td>2000</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Sample transportation container (long-distance)</td>
<td>500</td>
</tr>
</tbody>
</table>