REQUEST FOR INFORMATION

February 7, 2014

Questions and Comments Due Date: Wednesday, February 26, 2014, 5:00 pm Washington, DC Time.
Subject: Request for Information RFI-EPT-2-P&R, Emerging Pandemic Threats Program – Prepare and Respond.

Dear Partners:

The United States Government, represented by the Agency for International Development (USAID), Global Health Bureau (GH), Office of Health, Infectious Diseases and Nutrition (HIDN), is seeking comments on a draft program description for a planned new activity, Pandemic Influenza and Other Emerging Threats Program – Prepare and Respond. USAID plans to issue a Request for Applications (RFA) within the next few months. The program description presents the current draft objectives and key elements of the activity. The level of funding allocated for this project will not exceed $45 million over a five-year implementation period.

Issuance of this RFI and posting the draft Program description for comments does not constitute a request for applications, which will come later through a separate process. The RFI does not represent any award commitment on the part of the Government, nor does it obligate the Government to pay for costs incurred in the preparation and submission of any comments or questions.

This RFI can be downloaded from http://www.grants.gov. Interested parties who are not able to retrieve the RFI from the Internet can request a copy by contacting the Office of Acquisition and Assistance via email only at ept-2@usaid.gov. Comments and questions should be submitted to USAID via email to ept-2@usaid.gov no later than Wednesday, February 26, 2014, 5:00 pm Washington, DC Time. Please use exclusively the ept-2@usaid.gov email address. The contact information below is provided just in case you are experiencing problems with the dedicated program mailbox.

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Thank you for your interest in the Emerging Pandemic Threats -2 initiative. We look forward to receiving your comments.

Sincerely,

Boryana Boncheva
Agreement Officer

PREPARE and RESPOND (P&R)

I. USAID Pandemic Influenza and Other Emerging Threats Program

Summary

In 2009 USAID launched the Emerging Pandemic Threats program (EPT-1) – a five year program targeting *the early detection of new disease threats; enhanced "national-level" preparedness and response capacities for their effective control; and a reduction in the risk of disease emergence by minimizing those practices and behaviors that trigger the "spill-over and spread" of new pathogens from animal reservoirs to humans.* EPT-1 complemented an ongoing line of work being supported by USAID since 2005 - to control the threat posed by highly pathogenic H5N1 avian influenza virus (AI).

Both of these efforts grew out of a recognition that we are now in an era of new, re-emerging and recurring global health threats that argue for a longer-term, more strategic approach to global health security. The EPT-1 and AI work have been focused on building those capacities and expanding the evidence base that contribute to mitigating the impact of novel "high consequence pathogens" arising from animals. Using a "risk-based" formula that targeted those places, populations and practices that contribute to the emergence and spread of new microbial threats, our EPT-1 and AI work have laid the foundation for a next generation of investments that seeks to consolidate these efforts into a highly coordinated program spanning pandemic influenza and other emerging threats to further minimize their potential for global impact.

Over the past several decades, many previously unknown human infectious diseases have emerged from animal reservoirs, including agents such as human immunodeficiency virus (HIV), the highly pathogenic avian influenza H5N1, the 2009 H1N1 pandemic virus and more recently the H7N9 virus and the Middle East Respiratory Syndrome (MERS) virus. In fact, more than three-quarters of all new, emerging, or re-emerging human diseases since the beginning of the 21st century have been caused by pathogens originating from animals or animal products. As the interactions between people and animals intensify, driven by increasing human populations, the emergence of new, deadly zoonotic disease threats will increase steadily in the coming decades.

Mindful of the looming challenge posed by emerging diseases, a long-term objective of the EPT-1 Program is an "experiment in action" – intended to answer the two-part question: is it possible to anticipate future pandemic threats before they emerge, and can their emergence be stopped? This section speaks to the significant advances made under USAID's EPT-1 and AI programs in describing the underlying drivers for disease emergence and the opportunities to build upon and extend their accomplishments over the coming five years under a consolidated EPT-2 program that unifies investments in influenza and other emerging viral threats under one strategic umbrella. Importantly, the expected progress to be achieved under EPT-2 will itself lay the foundation for future iterations of EPT and, hopefully, move towards a greater capability to "forecast" and stop" future threats before they fully emerge. This section also addresses how EPT-2 will contribute to the Global Health Security (GHS) Agenda - a White House led effort to

consolidate US Government (USG) efforts across the health and security sectors to more effectively address threats posed by the natural emergence of new disease threats, as well as the intentional and/or accidental release of dangerous pathogens. Beyond consolidating USG efforts, the GHS agenda is also focused on creating a unified global effort to address these threats.

Introduction: A Decade of Learning

In today's globalized world, the speed with which newly emergent diseases can surface and spread, as illustrated by the H1N1 2009 pandemic virus, raises serious public health, economic, security and development concerns. It also underscores the need for the global community to act pre-emptively and systematically to improve individual countries' abilities to earlier identify and quickly mitigate health threats arising within their borders. Most importantly, the threat posed by new infectious diseases arising from animal reservoirs (zoonotic diseases) argues for a rethinking of standard strategies for the "prevention, detection and response" of diseases and their progenitors to reflect a more inclusive and strategic partnership across the public health, animal health and environmental sectors if we are to be able to address emergent disease threats before they pose an overwhelming global threat.

The emergence of the Severe Acute Respiratory Syndrome (SARS) coronavirus in 2003 and the H1N1-2009 pandemic virus illustrate the consequences of not having in place capacities to detect the early stages of emergence of a new disease threat – that is, while it is still circulating (and evolving) principally in animals and before the potential threat has acquired the ability to efficiently transmit among humans. In both instances the public responses came after the viruses had fully emerged as pandemic threats. On the other hand, the emergence of the H5N1 highly pathogenic avian influenza virus in Hong Kong in 1997 and its re-emergence in Southeast Asia in 2003, and the early detection of H7N9 virus in China and the Middle Eastern Respiratory Syndrome (MERS) coronavirus in Saudi Arabia have provided important opportunities to monitor a threat before it has fully emerged – and enable the world a longer window to prepare for the possibility of a new health threat, including the production of vaccines and the stockpiling of antivirals. The early recognition of a potential threat also allows for a global effort to take preemptive steps to bring the spread of the virus under greater control – and by extension possibly reduce the opportunities for it to emerge as a pandemic threat. Importantly, work, in part supported under USAID's Pandemic Influenza and Other Threats (PIOET) portfolio, has advanced our understanding of disease emergence by highlighting the strong correlation between "high risk" geographic areas, animal hosts, microbial agents, and people. This collective body of work, in turn, has led to the recognition that risk-based intervention strategies enable targeting disease detection to those places, populations, times or situations where risk of disease emergence is greatest and the likelihood of finding it is highest.

The "PIOET Portfolio"

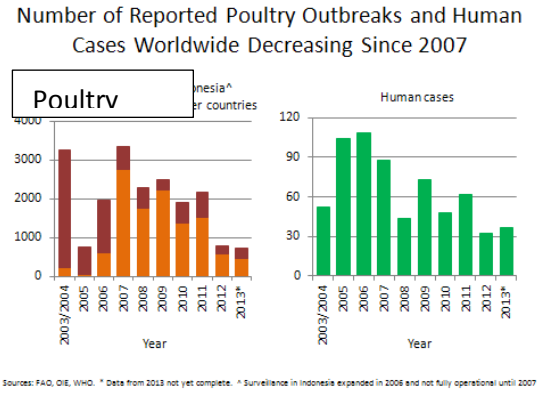
USAID is a major leader in the global response to the dangers posed by emerging pandemic threats. Since 2005, the dual goal of USAID's Pandemic Influenza and Other Emerging Threats (PIOET) program has been to: a) minimize the global impact of existing pandemic influenza threats, particularly from the H5N1 highly pathogenic avian flu, and b) pre-empt the emergence and spread of future pandemic threats. The effectiveness of the three areas of focus by the

PIOET program: 1. H5N1 Avian Influenza; 2. Pandemic Preparedness; and, 3. Emerging Pandemic Threats are described below.

1. H5N1 Avian Influenza: Since mid-2005, USAID, in partnership with the U.N. Food and Agricultural Organization (FAO), the World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC) and national government and non-government counterparts, has strengthened the capacities of more than 50 countries for monitoring the spread of H5N1 avian influenza among wild bird populations, domestic poultry, and humans, to mount a rapid and effective containment of the virus when it is found, and to assist countries prepare operational capacities to mount a comprehensive response in the event a pandemic-capable virus emerges.

USAID's efforts have contributed to dramatic downturns in reported poultry outbreaks and human infections, and a dramatic reduction in the number of countries affected – as illustrated below.

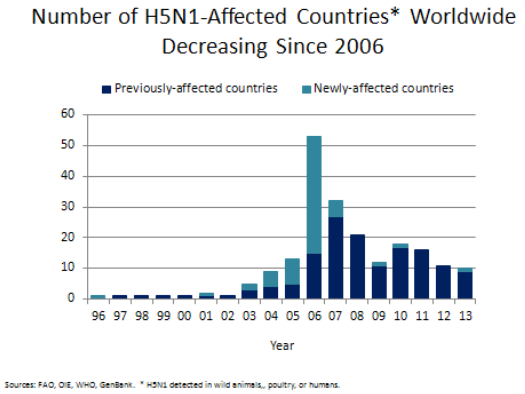
(1) The overall magnitude of the H5N1 avian pandemic has diminished, with reported numbers of poultry outbreaks and human cases having decreased since their peak in 2006.



Over the past several years there has been a substantial decrease in reported poultry outbreaks and human infections. Specifically, poultry outbreaks decreased 79% (between 2006 and 2013) and human cases decreased 66% from a peak of 2006. The success in endemic countries has often been due to improvements in the efficacy of poultry vaccination; in epidemic countries success has been more closely linked to improvements in rapid detection and containment. Generally, behavior change communications has had limited impact as people have been reluctant to change the behaviors that put them at risk of infection when the "risk" of infection is recognized as a very rare event.

Indonesia is the most recent example of how the introduction of effective measures has led to a dramatic reduction in reported outbreaks in poultry and humans. In 2009 USAID initiated an effort with FAO and the OIE/FAO OFFLU *Network for Animal Influenza* to work with Indonesian authorities to develop and produce a poultry vaccine locally that specifically matched the H5N1 viral strain then circulating in Indonesia. In 2011 a highly effective vaccine was introduced and quickly taken up by the large scale poultry producers. By the end of 2012 there was a greater than a 60 percent reduction in reported H5N1 outbreaks among poultry and a similar reduction in reported human infections (see adjacent figure). Both reductions have been sustained through 2013. Importantly, as part of this activity the capacities for both monitoring for long-term efficacy of the vaccine against circulating H5N1 virus and the development of future poultry vaccines were institutionalized within Indonesia. USAID is now working to apply this model in Egypt, another persistent "hot spot" for H5N1.

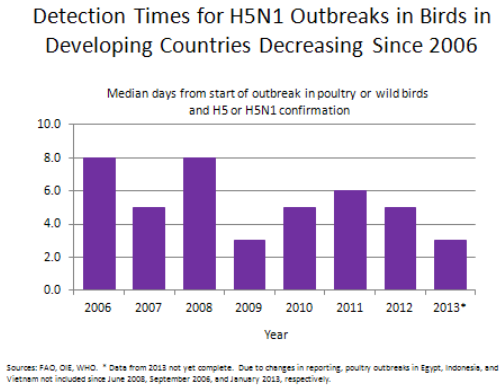
(2) H5N1 appears to have not only stopped spreading to new countries, but there has also been a dramatic contraction of its geographic range.



H5N1 appears largely to have stopped spreading to new countries, at least for now. Between 2003 and mid-2005, nine countries in Southeast Asia reported H5N1 outbreaks. Beginning in late 2005, there was an explosive movement of the virus outside of Southeast Asia to Europe, the Middle East, South Asia, and Africa. At the height of the poultry outbreaks in 2006, a total of 53 countries had reported outbreaks. Since the end of 2010, the number of countries affected has been limited to nine, with five of these countries (Bangladesh, China, Egypt, India, and Vietnam) accounting for more than 95% of all reported outbreaks.

(3) Affected countries have strengthened their capacities to identify and respond to future poultry outbreaks.

USAID has focused on strengthening the capacity of affected countries in three key areas: strengthening laboratories for the early identification of H5N1 infections in both poultry and people; promotion of timely and effective response in containment and elimination of the virus; and education of the general population on the risks associated with avian influenza and steps they can take to protect themselves. These investments have led to improved capacities in early-warning surveillance for AI outbreaks in domestic poultry, wild birds, and humans, have strengthened capacities of veterinary and human health laboratory diagnosis of the H5N1 virus, and have established rapid response teams involving veterinary and public health professionals trained in core principals of field epidemiology. All of these are key capacities that could form the backbone of any effort to address the larger threats posed by emerging zoonotic diseases. Per the adjacent figure, a comparison of AI outbreaks by year indicates that the average number of days between the start of disease outbreak in poultry or wild birds and H5 or H5N1 confirmation has fallen from eight days (in 2006) to three days (in 2013). This is a strong indicator that the worldwide response to AI outbreaks has dramatically improved.



(4) Monitoring the spread of H5N1 and its genetic variants across S.E. Asia has led to an unexpected but important understanding of the role of commercial poultry "value chains" in the emergence, spread, and maintenance of influenza viruses

One consequence of improved laboratory capacities has been the ability to routinely monitor the spread of the H5N1 virus and its genetic variants (clades) across S.E. Asia. This has led to a growing appreciation of the role of commercial poultry trade – from farm to markets - in promoting the evolution of the virus, its spread across the region and its persistence in countries such as Vietnam and Indonesia. As a result, increasingly detailed "value chain" maps have been generated that describe the geographic routes by which poultry are moved from farms to markets, sometimes across thousands of miles. This has led to a better ability to anticipate how new viral variants might spread from an initial point of emergence. This knowledge has proven particularly useful in anticipating how the H7N9 virus, which emerged in eastern China in early 2013 might spread across China and into S.E. Asia. This information has also proven central to recent efforts to better understand the drivers behind the emergence of new influenza threats.

Although these successes against H5N1 are significant, as of 2014 the H5N1 virus remains a serious public health threat and sustained vigilance is required; the virus continues to spread in poultry with a mortality rate among infected humans of nearly 60% - and has an undiminished capacity to re-spread across the world were existing control measures relaxed. As a reminder of the threat it poses, over the past four years several new mutated forms of the H5N1 virus have emerged, principally in China, that have rapidly replaced earlier variants across SE Asia. Most recently a new "recombinant" virus has been detected in Cambodia and is associated with an unprecedented surge in human cases during 2013. Other new variants of the virus have proven to be no longer susceptible to existing poultry vaccines raising concerns that current H5N1 vaccines stockpiled for human use in the event the AI virus becomes an efficient human-to-human transmitter may be no longer efficacious. Mindful of the need for vigilance, USAID, under EPT-2, will continue its efforts to build on its successes while further consolidating our AI programs in the highest risk countries for maximum impact.

2. Pandemic Preparedness In response to a growing concern about the possibility of an influenza pandemic and its potential to cause tens of millions of deaths, USAID launched a series of efforts beginning with the *Humanitarian Pandemic Preparedness Initiative* (H2P) in 2007, a partnership with the U.S. Department of Defense's Pacific and Africa Combatant Commands (PACOM and AFRICOM) in 2008, and in 2009 the *PREPARE* project to support national capacities (civilian and military) to prepare for and respond to the worst consequences of a pandemic. USAID focused its assistance to support national authorities to put in place pandemic preparedness plans that addressed five distinct areas:

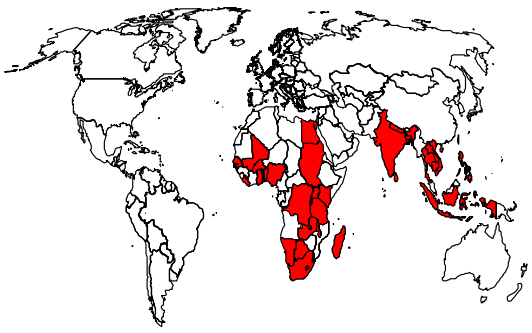
- supportive care and treatment for those with influenza
- limiting transmission from patients with influenza to others in their households and communities

- provision of preventive and/or curative care for those ill with potentially fatal diseases other than influenza, e.g., malaria, diarrhea, bacterial pneumonia, other vaccine-preventable diseases, AIDS, tuberculosis
- ensuring ready access to food
- rapid resumption of income-generating activities following a pandemic.

Underlying USAID's approach to pandemic preparedness was the recognition that while all nations could to be affected by an influenza pandemic, developing countries will likely have limited access to lifesaving vaccines and pharmaceuticals and as a result will be among the most vulnerable. Unlike the aftermath in more common large-scale disasters, access to aid (supplies and manpower) from traditional donor countries could be very limited or even non-existent while the 'industrialised world' struggled against the pandemic within its own borders. In countries where health systems are often not available in poor or remote areas, stockpiling supplies is either extremely complex or simply impossible for people at, or below, subsistence levels. When faced with more immediate threats to daily existence, inevitably, preparing for an influenza pandemic too often takes a low priority.

At the core of USAID's pandemic preparedness agenda was ensuring that local populations can access and benefit from realistic and sustainable 'off-the-shelf' pandemic preparedness plans which district and community leaders have the capability to implement. To assure pandemic preparedness plan sustainability, individual projects were designed to integrate into existing programmes – either health or disaster preparedness – at the community level in the target countries.

USAID's pandemic preparedness work has been critical in enabling more than 25 countries (principally in Africa and Asia) that are at disproportionate risk of the consequences of a global influenza pandemic. USAID also strengthened the capacities of regional bodies such as ASEAN for the purpose of supporting the development of detailed "whole of society" national pandemic preparedness plans that emphasis the role of non-pharmaceutical strategies in protecting vulnerable populations. These plans, tested under simulation exercises highlighted the roles and responsibilities of key stakeholders from government (civilian and military), civil society and non-governmental organizations, and the private sector in responding to a pandemic. In 2009, in the face of the H1N1 pandemic virus, the national Pandemic Preparedness Plans proved extremely valuable in mobilizing an early and effective response to the anticipated threat of this novel virus in many of these countries. In 2011, the lessons learned from USAID's pandemic preparedness work was captured at the *Towards a Safer World Conference* and set the stage for harmonizing this work with the UN's International Strategy for Disaster Reduction and its Hyogo Framework for Action (2005-2015).



3. The Emerging Pandemic Threats Program In 2009, recognizing the threat of new infectious diseases extended beyond the risks posed by avian influenza, USAID launched the

Emerging Pandemic Threats program. EPT-1 was designed to give earlier insight into the emergence of new public health threats (in addition to influenzas) and enhance country-level capacities to mitigate their potential impact. The EPT-1 portfolio initially drew heavily from the experiences and lessons acquired from efforts to address the threats posed by H5N1 – and as such reflects a strategic approach that (1) builds on the understanding that the future well-being of humans, animals and the environment are inextricably linked, (2) promotes a One Health approach that spans the animal health , public health, conservations communities and the environment, (3) targets promotion of those policies and the strengthening of those skills and capacities critical for both minimizing the risk of new disease emergence and the ability to limit their social, economic and public health impact, (4) uses a "risk"-based approach to target investments where the likelihood of disease emergence and spread is greatest.

EPT-1's Strategic Approach provided a framework for USAID investments intended to reduce the risk of emergence of new diseases of animal origin and their potential economic and human toll. At the heart of EPT-1's approach has been the recognition that to be effective USAID cannot be successful on its own and must partner with a range of other US government agencies, multi-lateral, bi-lateral, national, non-governmental, and private sector players. EPT-1's strategic approach has been guided by the following assumptions:

- All populations are vulnerable to new diseases emerging in other countries; it is in our collective interest to strengthen the capacity of all high-risk countries to prevent the emergence and spread of these new disease threats.

- Deadly zoonotic disease threats will increase steadily in the coming decades driven by population growth and expanded interactions between people, animals and the environment.

- Measures are currently available that if properly deployed could greatly reduce the risk of new disease emergence and their impact.

- It is possible, in the event of new disease emergence, to minimize its potential economic and public health impact through enhanced surveillance and early deployment of control measures.

- Enhanced coordination across animal, human, and environmental sectors will contribute to reduced risk of new disease emergence and lead to early and effective control minimizing their impact should they emerge.

At the country level, the EPT-1 partners have been working with governments and other key in-country, regional and international partners to enhance the understanding of distribution of specific "high consequence" viral families across "high risk" animal populations and key drivers of disease emergence—from deforestation and land use change to wildlife trade and livestock product demands. This information, along with other EPT-1 investments to strengthen country-level capacities for routine infectious disease detection and outbreak response, have been used to improve surveillance and response as well as risk-mitigation strategies. Over its life, EPT-1 has significantly refined our understanding of the "drivers" that underlie disease emergence and

established important new partnerships and platforms for even more timely and effective prevention, detection, and control of future threats.

The "Legacy" of EPT-1 EPT-1 is a suite of four capacity building projects (PREDICT, PREVENT, RESPOND and IDENTIFY) that individually and collectively have made significant contributions to national, regional and global capacities to "detect, prevent and respond to" emergent threats. Below are the "End of Project" deliverables expected by the end of EPT-1 for each of the major lines of work supported:

- Viral Discovery
- Risk Characterization
- Risk Mitigation
- Early Detection
- One Health Capacities
- Outbreak Response

Viral Discovery: To address the need for early discovery of new, emergent disease threats the EPT-1 program, through its PREDICT component, has brought together a coalition of experts from wildlife ecology, genetics, virology, informatics and veterinary medicine focused on building a global early warning system for emerging diseases. Advances in genomics and informatics have allowed for investing in collecting genetic and epidemiologic data that tracks changes in select viruses for the purpose of developing a first generation "predictive model" for pathogen emergence. With its focus on detection and discovery of zoonotic diseases at the wildlife-human interface PREDICT has made significant contributions to: strengthening surveillance and laboratory capacities for monitoring wildlife and people in contact with wildlife for novel viral agents that may pose a significant public health threat; characterizing human and ecological drivers of disease spill-over from animals to people; and, strengthening and optimizing models for predicting disease emergence. By the end of EPT-1 the following deliverables will have been achieved:

- 100 percent of the target countries[1] will be capable of conducting appropriate animal sampling in key interfaces
- 100 percent of target countries will have the capacity and/or access to diagnostics for the target (20) high consequence viral families.
- Surveillance data for all countries will be incorporated into the global predictive model.
- Initial characterization of viral and wildlife species diversity in target countries.

Risk Characterization: A key part of USAID's EPT-1 program has been the characterizing the biologic profile of specific high consequence viral families circulating in animal populations and human behaviors and practices that are associated with their potential "spill-over, amplification and spread". These investments have allowed for a better appreciation that the "risk of emergence" is ultimately determined by the interplay between the "biological risk" and the

[1] EPT-1/PREDICT "target" countries: Africa: Cameroun, DR Congo, Republic of Congo, Gabon, Rwanda, Tanzania, Uganda; Asia: Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Nepal, Thailand, Vietnam; Americas (PREDICT only): Brazil, Bolivia, Peru.

"behavioral risk". As a consequence, if a new and potentially deadly virus emerges in animal populations that may never interact with human populations then it will ultimately prove to be of little to no consequence to humans. It is in the understanding of "how, where and when" a potential viral threat circulating in animals will interact with human populations (or their domestic animals) that is key to determining what constitutes a genuine risk to public health. By the end of EPT-1 the following deliverables characterizing risk will have been achieved:

- First iteration of a global model linking land use change, agricultural intensification, livestock production, extractive industries, and climate change to disease emergence in place
- Initial quantification of risks associated with different interfaces completed, including transmission pathways associated with historical and current outbreaks,
- A working model with CDC for monitoring "spill-over" of novel pathogens into humans in a limited number of sites,
- Longitudinal profiling of wildlife trade in a limited number of urban/peri-urban African markets
- Initial monitoring of viruses on wildlife farms in at least one country
- A completed "Africa Livestock Futures" assessment focused on likely livestock production scenarios through 2030 and potential for increase in zoonotic disease "spill-over, amplification and spread", along with policy and regulatory options for risk mitigation

Risk Mitigation: As the "risk mitigation" arm of EPT-1, PREVENT has focused on developing strategies for mitigating the risk of disease "spillover". PREVENT has contributed to a significant increase in our understanding of options for mitigating the risk associated with those practices and behaviors (e.g. habitat change associated with "extractive industry", bush meat hunting and butchering, raising wildlife for trade and consumption, and the marketing of animals) that expose people to zoonotic diseases. End-of-project deliverables include:

- A "risk assessment/mitigation tool" for the Extractive Industry will have been tested in multiple mining sites
- Fora for routine policy-level dialogue with the extractive industry (mining and petroleum) will be established
- Policy framework for minimizing the risks associated with "wildlife farming" in SE Asia will be formulated in at least one Asian country, and
- Through FAO, strategies and practices for mitigating the risk of disease emergence in poultry "value chains" in Asia will be validated

Early Detection: As part of EPT-1's overall strategy to be able to detect early new threats, IDENTIFY, a partnership between WHO, FAO and OIE, has focused on strengthening laboratory capacities to safely diagnose and report common animal and human pathogens. IDENTIFY has been instrumental in improving laboratory assessment tools that allow for better targeting of technical support and training; developing and rolling out training modules on diagnosing highly-infectious diseases; improving laboratory management practices related to

biosafety and biosecurity; "twinning" labs with developed country labs; and expanding monitoring of antimicrobial resistance rates among priority pathogens. Additional support was provided to WHO's Global Influenza Surveillance and Response System (GISRS), with support from CDC, to expand their efforts to strengthen laboratory influenza diagnostic and reporting capacities in the Africa region. Through PREDICT significant effort was made to upgrade laboratory capacities in viral characterization. Among expected deliverables by the end of EPT-1 are:

- 31 human health labs and 39 animal health labs in 20 EPT-1-countries in Africa and Asia have enhanced capacities in safe handling, diagnosis and reporting of major endemic human and animal diseases.
- 25 laboratories in 20 EPT-1-focus countries have enhanced capacities in handling, diagnosing and characterization of known high consequence and novel viruses in wildlife
- Seven labs in the African region have enhanced capacities in influenza diagnosis and reporting as part of the Global Influenza Surveillance and Response network
- National and local public health workers and laboratory staff trained in detecting, reporting, diagnosing and responding to disease threats of zoonotic origin (Uganda, DRC, and Indonesia)
- Strengthened Viral Hemorrhagic Fever surveillance in Uganda

One Health Capacities: Through a strategy that focuses on the central role of local Universities to train professional cadres of leaders responsible for supporting, promoting, and implementing the One Health approach, RESPOND has enabled the networking of 28 schools of public health, veterinary medicine, medicine and environment in both Africa (Uganda, Tanzania, Rwanda, Kenya, Ethiopia and D.R. Congo) and Southeast Asia (Thailand, Vietnam, Malaysia, and Indonesia). In addition, the Southeast Asia One Health University Network (SEAOHUN) partners have established national-level One Health networks involving an additional 45 schools. Working closely with their government counterparts, the university networks ensure not only that the skills they teach will meet the workforce needs of the nations' ministries, but also that these skills are empowered in the workplace. Our One Health capacities strategies also included support for the Field Epidemiological Training Programs of CDC and FAO – with particular focus on targeting animal health specialists.

Expected deliverables by the end of EPT-1 include:

- OH University networks in SE Asia and Central/East Africa spanning 28 schools of public health, veterinary medicine, medicine and environment are in place.
- An additional 45 schools in Vietnam, Malaysia, Thailand and Indonesia are actively engaged in national-level One Health networks that draw from the lessons and materials of the regional network
- Among the topics targeted are:
    - using an agreed-upon set of core professional competencies to develop course content and learning experiences to help students understand how animal-based diseases are evolving and spreading,
    - applied, field-based training programs, and

    - teaching and learning methodologies to improve collaboration across disciplines so that professionals are equipped with the skills needed to respond to outbreaks, and to build and manage cross-disciplinary teams.
- Functional Field Epidemiology Training Programs (FETPs) that strengthen in-service capacity for human and animal health and laboratory professionals in DRC, Uganda, Indonesia, Thailand, Cambodia, Laos and Vietnam

Outbreak Response: One of the major lessons learned under EPT-1 is that timely and effective response "to events of public health significance" is frequently undermined by the absence of clear guidance on how to determine the underlying etiology of the event when it is unknown. While agent-specific guidelines are available for the response to public health events of known etiology, such as yellow fever and cholera, there has been a significant gap in written guidance for the early phases of recognition, reporting, investigation and response when the agent is initially unknown and the cause may be due to an infectious agent, environmental toxin or other factor. The absence of guidance has led to initial responses that are often chaotic and ineffective; it also means any "after-action" review is compromised by the absence of clear performance standards. To address this "gap" RESPOND supported an intensive process led by the WHO and included the participation of the Global Outbreak and Response Network (GOARN) network and CDC to develop and field validate a "tool" to be used by national authorities for identifying, investigating and responding to public health events of initially unknown etiology. More than a half dozen countries in Africa and S.E. Asia, by the end of EPT-1, will have been able to adapt this tool and develop National Outbreak Preparedness Plans – which describe the steps and the roles and responsibilities of national and international partners in responding to the initial signal of an event of public health significance. Importantly, this experience has laid the foundation for elevating outbreak preparedness planning as a major effort under EPT-2. Among the deliverables expected by the end of EPT-1 are:

- Comprehensive Public Health Event (PHE) Preparedness tool developed and field-validated with WHO and the GOARN network.
- The PHE Preparedness tool is incorporated as a core element of WHO outbreak preparedness strategy
- Up to seven countries in Africa have developed national preparedness plans using this tool
- WHO regional offices in Asia have adapted this tool for use in the region and piloted in at least one country

EPT-*plus* The emergence in 2009 of the novel H1N1 pandemic virus in Mexico, after circulating and evolving undetected for over a decade in swine populations underscored a serious gap in global surveillance operations – the monitoring of swine livestock for future influenza threats. It is well established that influenza viruses circulating in swine, poultry and migratory waterfowl act as "mixing vessels" for different influenza viruses. Where animal production systems allow for the "free-flow" of viruses between the different species the genetic enrichment of the swine gene pool is thought to play a critical step in the emergence of new influenza viruses with human-to-human transmissibility. Monitoring of sub-clinical viral evolution in swine, however, has long been inhibited by international regulations which require

notification of viral infection only when there is evidence that a viral infection causes severe illness or death among swine.

While not originally envisioned during the design of EPT-1, what became known as EPT-*plus* came online in 2011 as a *proof-of-principle* to demonstrate that it is possible to routinely monitor swine and other livestock populations under production settings that have characteristically diverse influenza profiles. Implemented by FAO with initial support from CDC, EPT-*plus* is actively working in China and Vietnam to: 1) conduct influenza surveillance in farmed animal systems where virus diversity is considered to be highest (e.g. swine, aquatic waterfowl, backyard poultry); 2) implement surveys to assess biosecurity, epidemiology, animal production characteristics and animal movements in the sectors sampled; and 3) gather detailed information on virus identification and sequence data to better understand the "progenitor" influenza viruses present in swine and the dynamics of evolution.

EPT-2: Building on AI and EPT-1's Operational Platforms, Institutional Partnerships and Expanded Knowledge-Base

EPT-2 – as with its predecessors – AI and EPT-1 – is focused on *mitigating the impact of novel "high consequence pathogens" arising from animals through a suite of One Health investments with the goal of enabling: early detection of new disease threats; effective control of new threats through enhanced "national-level" preparedness; and, a reduction in the risk of disease emergence by minimizing those practices and behaviors that trigger the "spill-over and spread" of new pathogens.* EPT-2 has the distinct advantage of being able to build on those operational platforms built under Avian Influenza, Pandemic Preparedness, EPT-*plus* and EPT-1, as well as the partnerships and knowledge generated by these efforts to more effectively "prevent, detect and respond" to emerging disease threats.

EPT-2: Strategic Areas of Focus

Like its predecessors, EPT-2 has three overarching purposes: the prevention of new zoonotic disease emergence, the early detection of new threats when they do emerge, and their timely and effective control. Under EPT-2 previous AI/EPT-1 work will be refined and/or expanded. EPT-2 will build on the lessons and knowledge from its predecessors and bring heightened focus to those "places and practices" that enable not just "spill-over" of new microbial threats, but potentiate its "amplification and spread", and invest in the One Health policies and capacities needed for their prevention and control. At the core of EPT-2 are seven new areas of strategic focus:

1. **Developing longitudinal data sets for understanding the biological drivers of disease emergence**

Under EPT-1 significant progress was made in identifying the primary wildlife reservoirs involved in "spill-over" of new viral agents and in the profiling of those viral families and some of their genetic variants most commonly circulating in these animal populations. Under EPT-*plus* important progress was made in describing how the interplay between genetics and ecosystems contributes to the emergence of new influenza variants. Under EPT-2 heightened focus will be brought to expanding these efforts by developing longitudinal datasets spanning select high consequence viral families and

their ecologies for the development of models describing the drivers and dynamics that underlie the emergence of new viral variants. Under EPT-2 EPT-*plus* will further refine its scope to address the emergence of new influenza variants. Collectively, this information will be critical to better forecast future threats and further target resources to where the risk of emergence is greatest.

2. Understanding the human behaviors and practices that underlie the risk of "spill-over, amplification and spread" of new viral threats

EPT-1 and AI were important windows for appreciating the central importance of "amplification" and "spread" for a new viral pathogen to pose a significant public health threat. When "spill-overs" involve human populations living in remote, poorly connected geographic areas the end result is frequently an "epidemiologic dead-end". For a new viral agent to pose a significant public health risk the "spill-over" event must be closely linked to conditions which favor the further "amplification and spread" of the virus broadly among human populations. Under EPT-2 particular focus will be brought to identifying those geographic areas where the risks of "spill-over, amplification and spread" are greatest and characterizing those behaviors and practices that underlie disease emergence.

3. Promoting policies and practices that reduce the risk of disease emergence

Under AI and EPT-1 it became increasingly clear that efforts to promote individual behaviors that were intended to lower infection to "rare" disease threats were highly ineffective. At the core of the dilemma was the common and accurate perception that the risks posed by potentially new infectious diseases were very unlikely to affect any one individual. As such, there was little to no motivation for individuals to adopt new behaviors. On the other hand, it became increasingly clear that mitigating the risk posed by new infectious diseases could be more effectively addressed by focusing on policies and regulations that can affect the population-based behaviors and practices that contribute to "spill-over, amplification and spread".

Under EPT-2 there will be particular focus on promoting policies and regulations that can impact on industrial and/or community scale practices that directly or indirectly contribute to "spill-over, amplification and spread" of new infectious diseases. EPT-2 will not focus on individual behavioral change and/or communications work. Under EPT-1 four areas were identified that can directly contribute to such risk, and these will be specifically targeted under EPT-2:

- The Extractive Industry (mining, petroleum, logging, and agri-business) is closely associated with dynamics and practices that contribute to habitat change, changes in population settlements, and increased population mobility – three factors critical to triggering the "spill-over" of a new infectious disease in remote "hot spot" areas and its "amplification and spread" into highly connected population settlements.

- Urban/peri-urban markets in Africa and Asia that actively market wildlife and wildlife products from remote "hot spot" areas to populations living in high density, globally connected locations

- Livestock "value chains" in Asia: A major driver in the emergence "amplification and spread" of new diseases, particularly influenzas, in Asia over the past several decades has been the unabated co-circulation and mixing of novel viral strains among wildlife, poultry and swine, largely potentiated by livestock value chains.

- Africa Livestock Futures: In Africa, the absence of large scale animal production has limited the role of livestock value chains in potentiating viral intermingling of the kind documented in Asia. Dramatic changes in household wealth, exemplified by increasing GDP across Africa, are likely to lead to rapid increase in the demand for animal products and, as a result, increased livestock production. An unmanaged increase in production, as occurred in Asia in the 1960s -90s, could bring adverse consequences. The risk of disease-causing pathogens moving from wildlife into domestic animal populations is significant given the reservoirs of pathogens in African wildlife. This "risk", however, is preventable if increases in livestock production incorporate well-established biosecurity measures. Under EPT-2 (Preparedness and Response) the promotion of policies and regulatory practices consistent with known animal husbandry "best practices" will be a major focus.

4. Supporting national One Health platforms

Under AI and EPT-1 it became clear that sustained and successful One Health practice requires that a broad range of government and non-government stakeholders come together and stay engaged in the collaboration as part of a normative practice, not just during the period when responding to an immediate infectious disease threat. By way of example, USAID has supported national governments in Africa to establish One Health plans or "road maps" to introduce and/or strengthen cross-sectoral collaboration. A number of countries had initiated cross-sectoral One Health collaboration when AI spread to the region. However, when it became apparent that the virus was not taking hold in the region the incentive for cross-sectoral collaboration faded. Under EPT-1 USAID expanded the scope of its support to address the broader threat posed by zoonotic diseases. This in turn has contributed to the ongoing One Health dialog among stakeholders in focus countries and has supported the university network to engage directly with government partners.

The experience from existing One Health Platforms is that they are most effective when they are country-owned and have been officially recognized or sanctioned by the national leadership (e.g. President, Prime Minister, or coordinating Ministry). The role of the One Health Platform is generally one of strategic planning, promoting a positive policy environment, information sharing, assessing national capacity for One Health engagement, and harmonizing systems. More specifically, the One Health Platforms serve as a focal point for assessing One Health capacities and a clearinghouse for new information, technologies, and opportunities. One Health Platforms are also well-placed

to facilitate cross-sectoral dialogue related to One Health policies and or human resource issues; coordinate disease outbreak response; harmonize disease surveillance systems; share data on priority pathogens; identify and fill gaps in One Health workforce capacity; develop and implement a One Health strategy and/or zoonosis prevention and control plan; and plan or coordinate One Health-related research.

Under EPT-2 focused effort will be made to facilitate and support the formation and/or strengthening of One Health Platforms in the EPT-2 focus countries. Particular emphasis will be to support those efforts that play a catalytic role of advancing cross-sectoral collaboration, promoting measures and/or practices that mitigate the risk of disease emergence, sharing of data and best practices, enhancing country preparedness for outbreaks of new or emerging infectious diseases and zoonoses, harmonizing cross-sectoral surveillance, honing cross-sectoral response skills, and/or leading to new opportunities to assess and strengthen related capacities.

5. Investing in the One Health workforce

Under EPT-1 our experiences with the "prevention, detection and response" of disease outbreaks reveal that the traditional skills, approaches, and relationships are inadequate to address the risks the world faces. Recognizing that most emerging diseases evolve through a complex interplay between animals, humans, and the environment, professional skill sets and practices must reflect that complexity, enabling collaboration across disciplines to stop diseases from becoming significant crises – an approach to disease prevention called "One Health". However, since professionals are often educated and work in discipline "silos", they are often less likely to engage one another in problem solving, even during disease outbreaks.

Under EPT-1 we have come to appreciate that universities play a critical role in creating long-term changes to workforce skills. As the primary educators of all health and science professionals, universities are a key catalyst in this transformation. They are working on the cutting edge of their fields, educating students who will comprise tomorrow's workforce. Universities are also testing sites for education, where innovative and trans-disciplinary approaches to training professionals are constantly introduced and refined, including One Health approaches. By investing in universities in developing countries, we are creating a long-term capability for improved human resource capacity.

Under EPT-2 we will build on the One Health University Networks of Africa and Asia to target the long-term workforce needs for an effective implementation of One Health preventive, detection and response capacities. Under EPT-2 we will work closely with university partners and national governments to define national One Health workforce needs and strategies for their realization.

6. Strengthening national preparedness to respond to events of public health significance

Under the International Health Regulations all member states of the World Health Organization (WHO) are required to achieve core capacities for preventing, responding

to, and reporting on Public Health Events of International Concern (PHEIC). A key activity under EPT-1 has been to support WHO, particularly its regional offices in Africa and in the Western Pacific, to develop and test the guidance document for preparing for and responding to Public Health Events of Unknown Etiology. Under EPT-2 expanded support will be provided to assist EPT-2 target countries in the Africa and Asia regions to apply this guidance in the development and implementation of National Preparedness Plans for responding to PHEIC. This work will be done in concert with CDC efforts to develop national-level Emergency Operation Centers and the Defense Threats Reduction Agency (DTRA).

7. Strengthening global networks for real-time bio-surveillance

Under EPT-1 and AI we invested in several distinct streams of laboratory strengthening. Through IDENTIFY we strengthened 31 human health labs and 39 animal health labs in 20 EPT-countries in Africa and Asia capacities in safe handling, diagnosis and reporting of major endemic human and animal diseases; through PREDICT we targeted 25 laboratories in 20 EPT-focus countries for enhanced capacities in handling, diagnosing and characterization of known high consequence and novel viruses in wildlife; and, through WHO's Global Influenza Surveillance and Response System (GISRS) we targeted seven labs in the Africa region for enhanced capacities in influenza diagnosis and reporting. Under EPT-2 we have the opportunity to expand the potential impact of these capacities by aligning our laboratory investments against the following strategic priorities:

- A global database of respiratory pathogens
- Enhanced biosafety
- Linking bio-surveillance data to response

A global database of respiratory pathogens: Over the past half-decade WHO's GISRS has made significant gains in expanding the global reach of its influenza surveillance network, particularly in the Africa region. Further, by strengthening its linkages to clinic-based Influenza-Like Illnesses/Sever and Acute Respiratory Influenza (ILI/SARI) sites they have begun collecting important data sets that will enable better real-time monitoring of the evolution of influenza viruses. Importantly, influenza viruses are implicated in a minority of samples tested. In 2013 only 14% of all influenza-like samples tested by GISRS laboratory network in Africa were influenza positive. As such, the ILI/SARI samples provide an important window into understanding what "non-influenza agents" might be implicated in causing ILI/SARI. Under EPT-1 coronaviruses, which have been implicated in two respiratory-like illnesses, SARS and MERS, were shown to be much more virally diverse and geographically distributed than previously thought - the question remains as to whether they are playing a much larger role in routine respiratory illness. Under EPT-2 we will look to more strategically align our "viral discovery" and "influenza monitoring" activities to build a more longitudinal profiling of respiratory illness and underlying etiologies.

Enhanced biosafety and biosecurity: An important objective of the laboratory work supported under EPT-1 has been in the promotion and adoption of practices and

capacities that ensure the safe handling of dangerous pathogens. Under EPT-2 we will build on this work and include the active promotion of multi-sectoral approaches for managing biological materials to support diagnostic, research and bio-surveillance activities. This effort will target the promotion of biosafety/biosecurity through our training and laboratory partnerships.

Linking bio-surveillance data to response: The emergence of automated electronic information systems for monitoring, organizing, and visualizing reports of global disease outbreaks according to geography, time, and infectious disease agent has greatly enhanced the early identification of events of public health significance, even in areas relatively outside the reach of traditional global health efforts. With the rapid uptake of mobile information technologies, even in communities once considered beyond the reach of the modern information grid, these "IT portals" have the potential to play an increasingly important role in redefining the relationship between "providers and users of information" and in linking bio-surveillance data to response. Under EPT-2 we will explore options for how the One Health University networks can better prepare their graduates to be active "providers and users" of these IT platforms, how our support for national "event preparedness planning" can incorporate these information nodes into their "early warning triggers", as well as explore how One Health policy reforms can better harmonize the flow of information from these portals with those of more traditional health surveillance systems.

EPT-2 Implementation Partners

As with EPT-1, EPT-2 will be composed of a suite of technical assistance projects (described in the attached documents) that draws from across the private sector, universities and non-governmental organizations. In addition, EPT-2 will enter into direct agreements with the U.N. technical agencies - the World Health Organization (WHO) and the Food and Agricultural Organization (FAO), as well as the U.S. Centers for Disease Control and Prevention (CDC). These partnerships will share an overarching strategic vision for achieving the seven "Strategic Areas of Focus" (SAF). Importantly, no one project or partner will be exclusively responsible for achieving any one of the SAFs. As was the case under EPT-1, the work of the projects and partners will be highly interconnected and interdependent. USAID will manage the relationships across EPT-2 to maximize the synergies and the shared effectiveness of the entire EPT program.

EPT-2 Geographic Focus

Under EPT-1 the geographic focus was broadly around demonstrated geographic “hot spots” for new disease emergence in the America’s, Central and East Africa, South and Southeast Asia. EPT-2 will consolidate the PIOET portfolio around “hot spots” in Central and East Africa, and South and Southeast Asia, with heightened focus on the following EPT-2 priority countries (spanning AI and other emerging threats): Africa: Cameroun, DR Congo, Republic of Congo, Egypt,

Ethiopia, Gabon, Kenya, Rwanda, Tanzania, Uganda. Asia: Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand and Vietnam. Much greater effort will be made to further consolidate around those specific geographic areas within countries and "epidemiologic zones" where the risks of "spill-over, amplification and spread" are greatest.

EPT-2 and the Global Health Security Agenda

In early 2014 the United States joined in an international effort in the launch the Global Health Security Agenda. At its core the GHS Agenda recognizes infectious diseases, whether naturally caused, intentionally produced, or accidentally released, are among the foremost dangers to human health and the global security. Limited capacity in many countries to prevent, detect, and rapidly respond to these threats, and the added danger of terrorists using biological material and expertise for their own ends, are among the key reasons for a concerted international effort at a senior leadership level to accelerate progress toward GHS. The GHS agenda elevates nine objectives (see attached file), aimed at preventing, detecting, and responding to biological threats - of which eight are closely aligned with those of EPT-2

At the core of both EPT-2 and the GHS Agenda is a strategic approach that fosters developing multi-sectoral collaboration with partners across health, science, agriculture/veterinary, interior (security), border and trade, and defense agencies. As EPT-2 is implemented every effort will be made to ensure it is maximally synched with other US government agencies, national governments and international partners towards achieving the GHS Agenda objectives.

EPT-2 Program Partnerships

The EPT-2 program, like its predecessor EPT-1, will be implemented through suite of highly integrated technical and operation assistance partnerships that collectively span the seven Areas of Strategic Focus. EPT-2 partnerships will include international and USG partners WHO, FAO, the U.S. CDC, and local platforms and institutions in target countries that will be determined after awards are made and in conjunction with USAID missions and the successful bidders:

> WHO: WHO will be active in four of the strategic areas of focus: strengthening real-time bio-surveillance (WHO/GISRS), particularly in supporting a global database of respiratory pathogens; strengthening the national preparedness to respond to events of public health significance (WHO/AFRO, WHO/Hqs and GOARN; supporting One Health national platforms (WHO Hqts and regional offices); and, investing in One Health workforce (WHO Hqts and regional offices).
>
> FAO: FAO will be actively involved in five of the strategic areas of focus: developing longitudinal datasets for understanding biological drives of disease emergence (FAO/EPT*plus);* promoting policies and practices that reduce the risk of disease emergence (FAO Hqts and FAO/Asia); supporting national One Health platforms (FAO Hqts and regional offices); strengthening national preparedness to respond to events of public health significance (FAO Hqts and regional offices); and strengthening global networks for real-time bio-surveillance (FAO Hqts and regional offices)

CDC: CDC will be actively involved in four of the strategic areas of focus: developing longitudinal data sets for understanding the biological drivers of disease emergence; strengthening national preparedness to respond to events of public health significance; investing in One Health workforce (FETP) ; and, strengthening global networks for real-time bio-surveillance.

EPT-2, also, will be comprised of three technical assistance agreements that will be competitively awarded:

ONE HEALTH WORKFORCE: OH Workforce will build on the partnerships forged through the One Health University Networks (OHUNs) to address the workforce needs of national ministries and the private sector, as well as focus on strengthening the operational capacities of the university networks.

PREDICT-2: This project will assist focus countries in identifying and monitoring "hot spots" for emergence, amplification and spread of pandemic threats. PREDICT-2 consolidates the research scopes of PREDICT-1 and PREVENT-1 to more precisely identify and characterize the zoonotic viruses in animals and people, as well as behaviors associated with zoonotic virus spillover, amplification and spread.

PREPAREDNESS AND RESPONSE (P&R): The P&R Project will assist focus countries to establish One Health Platforms through which they will develop and maintain highly functioning multi-sectoral collaboration. The Project will facilitate and support countries to develop and maintain exemplary cross-sectoral capacity and skills for responding to "public health events" at the regional, national, and subnational levels.

II. Program Description of Prepare and Respond (P&R): strengthening country capacity to prepare and respond to infectious disease outbreaks using a "One Health" approach.

The overall goal of the PREPARE and RESPOND (P&R) project is to strengthen the use of One Health approaches in strategic planning, promoting a positive policy environment, information sharing, assessing national capacity, and harmonizing systems. By promoting the use of One Health approaches, P&R will contribute to: improving coordination of zoonotic disease outbreak response; harmonizing disease surveillance systems; sharing data on priority pathogens; identifying and filling gaps in One Health workforce capacity; developing and implementing a One Health strategy and/or zoonosis control plan; and planning/coordinating One Health-related research. These activities will assist countries in preparing for rapid, efficient, and effective response to harmful Public Health Emergencies (PHEs) to be able to achieve International Health Regulation (IHR) core capacities, to reduce the threat of emerging pathogens, and to fulfill ministry responsibilities to reduce mortality and morbidity from PHE outbreaks.

The P&R project will build on activities conducted by the RESPOND project, WHO and CDC under USAID's EPT-1 program. Because the P&R project is part of the larger EPT-2 program, P&R activities will be closely linked to those conducted by other EPT-2 projects and partners. For example, P&R will:

- closely link with the One Health Workforce project to develop a shared national vision on what the workforce needs to look like and as well as policies that support the creation and maintenance of the workforce;
- closely link with the PREDICT-2 project, CDC, FAO, and WHO regarding One Health research and improving the collecting, analyzing, and sharing biological and behavioral data to assist with preparedness and response.

Specifically, P&R will focus on:

- Enhancing and promoting One Health at a country level; and
- Expanding and adapting the use of the PHE Framework.

Illustrative end-of-project results:

- One Health National Platforms are established or strengthened in all target countries in Africa and Asia with senior government leadership (President, Prime Minister, Coordinating Ministry)
- Functional multi-sectoral, multi-ministerial, and technical One Health National Platforms exist at national level in focus countries in Africa and Asia and these platforms routinely provide cross-sectoral coordination, share data and research, collaborate on outbreak response, advocate for One Health policies and strategies, and work with in-country partners to determine what is an appropriate One Health Workforce.
- Each targeted country in Africa and Asia will have a tested, vetted, and implementable preparedness and response plan for infectious disease outbreaks or other public health events.

The following two objectives and illustrative activities will form the core of P&R:

Objective 1: One Health National Platforms – facilitate/catalyze and support the formation and/or strengthening of One Health National Platforms[2] in the EPT-2 focus countries. One Health National Platforms play a key role in advancing cross-sectoral collaboration, enhancing country preparedness for outbreaks of new or emerging infectious diseases and zoonoses, harmonizing cross-sectoral surveillance, honing cross-sectoral response skills, and creating new opportunities to assess and strengthen related capacities. The intent of One Health National Platforms is to draw on the strengths and strategic advantages of each member for mutual and

[2] One Health National Platforms are formal groups of senior technical and administrative government representatives from a broad range of sectors who meet on a regular basis to coordinate and collaborate for improved health within each sector and for the prevention and control of zoonotic diseases. At a minimum, a One Health National Platform will be composed of public health, animal health, and environment/wildlife ministry representatives. As appropriate and based on the country context, a Platform should include additional ministries (e.g. trade, travel and tourism, economic, internal affairs, mining and natural resources, etc.), parastatal organizations (e.g. national laboratories, research institutes, etc.), universities, and multilateral and bilateral stakeholders (e.g. WHO, FAO, USAID, CDC, World Bank, Red Cross, non-governmental organizations, etc.).

enhanced benefit. The Platforms serve as the nexus of multi-sectoral coordination and collaboration for disease prevention and control. Successful One Health National Platforms are country-owned and address the national and sub-national priorities. As an entity designed for cross-sectoral collaboration, One Health National Platforms serve as a focal point for assessing One Health capacities and a clearinghouse for new information, technologies, and opportunities.

Illustrative activities include:

- Provide catalytic support to facilitate establishment/strengthening of One Health National Platforms working through key government and non-government stakeholders. This includes providing the Platforms with the tools and capacity to function as a self-sufficient entity within the host government.
- Assist Platforms to establish themselves administratively and technically, e.g. establish their administrative processes and their technical strategy and implementation plan.
- Assist Platforms in mapping out strengths, capacities, and gaps. Where gaps are identified, assist Platforms to fill gaps internally and for collective gaps (i.e. no internal solution) to seek assistance from others to fill gaps. Assistance may come from P&R project or from a variety of other sources such as other USAID projects, other USG agencies, WHO, FAO, regional organizations, other countries in the region, and other development partners.
- Support and facilitate sustainable, self-reliant opportunities to fill gaps, examples include one sector within a country supporting another sector (e.g. public health laboratory providing rabies diagnostics for the animal health sector, regional networks where each member country provides a regional center for specialist care).
- Support and facilitate country level activities to maintain engagement of a broad range of One Health stakeholders, e.g. adapting PHE Framework to national context, developing national PHE preparedness and response plan, tabletop exercises to test PHE plan, joint exploration of One Health workforce requirements, etc.
- Seek opportunities for the One Health National Platforms and other EPT-2 projects to engage with each other and to address topics of mutual interest to advance One Health and PHE preparedness and response capacities.
- Engage in global, regional or national advocacy to provide the political will and backing that is needed to enable the cross-sectoral collaboration needed for the One Health National Platform to be viable and successful. In EPT-1 USAID has collaborated with WHO, FAO and other international and USG partners to advocate for One Health at other global and regional high-level forums. Under EPT-2, P&R will engage in One Health discussions and advocacy at Heads of State and Ministers meetings through regional organizations such as the African Union and Regional Economic bodies.

Activity parameters:

- Awardee supported activities should <u>not</u> supersede or replace sectoral ministry functions.

- Awardee supported activities should enhance and/or harmonize cross-sectoral functions such as information sharing, surveillance data sharing, outbreak and PHE preparedness, detecting potential outbreaks, outbreak response coordination, address critical knowledge gaps (linkage with P&P).
- Awardee supported activities should address enabling and disabling structures for One Health such as policy, financial, administrative, and One Health workforce (linkage with OHUN) requirements.
- Awardee supported activities should not be dead end activities that do not advance One Health engagement or do so in a very limited way, e.g. a multi-sectoral response to a rabies outbreak for the sole purpose of containing the outbreak.
- Awardee supported activities may address limited response to endemic zoonotic disease outbreak by coordinating EPT-2 partners if the activity is catalytic and further advances One Health collaboration and preparedness for new emerging infectious disease outbreaks, e.g. response to a confined endemic outbreak event that includes an after action review that identifies lessons learned that are then applied to further improve preparedness and/or that advances One Health Workforce engagement and/or complements research conducted by PREDICT-2.
- Awardee supported activities should take advantage of opportunities to engage other USG investments, such as CDC-supported EOCs, USAID- and CDC-supported FELTP programs, DTRA-supported One Health and PHE.

Objective 2: preparedness and response plan for infectious disease outbreaks or other public health events – facilitate/catalyze and support the formation and/or strengthening of preparedness and response plans in the EPT-2 focus countries. Building national and regional capacity for emerging infectious disease outbreak preparedness, prevention, detection and response, has been an important focus of work for USAID and other USG for many years. A key activity under EPT-1 in the Africa region has been to support WHO' Africa Regional Office develop and test the guidance document Public Health Events of Unknown Etiology: a framework for response in the African region (hereafter referred to as the PHE Framework). The initial draft of the PHE Framework is posted on the AFRO website at http://www.afro.who.int/en/clusters-a-programmes/dpc/epidemic-a-pandemic-alert-and-response/epr-highlights/3833-public-health-events-of-unknown-etiology-a-framework-for-response-in-the-african-region.html. The PHE Framework was Beta-tested in Uganda and DRC to draw on the experience from these countries to strengthen the document to ensure that it provides sound and clear guidance to countries. During the final months of the EPT-1 Program, the PHE Framework will be introduced to a few countries in Sub-Saharan Africa with initial activities/workshops to support national governments to use the PHE Framework to develop tailored national PHE preparedness plans. There are also plans to initiate a roll-out of the PHE Framework within Asia. The P&R Project will continue the collaborative work with WHO and other principle partners to roll-out the PHE Framework in the Africa region and to adapt the document for the Asia region.

The PHE Framework activities provide a concrete application of the One Health approach. As such implementation of PHE Framework activities allow One Health National Platform members to work across sectors in a real world applied environment. For country-level stakeholders who

do not have experience working cross-sectorally, the PHE Framework offers an excellent example of the benefits and added value of the One Health approach. The concrete preparedness and multi-sectoral response benefits of the PHE Framework can be a useful demonstration tool for advocating for high-level support and leadership for the One Health approach. Implementing PHE Framework activities require multi-sectoral dialog that may highlight enabling and disabling policies and systems that need to be addressed by the One Health National Platform or higher levels. Implementing the PHE Framework activities may also highlight skill and resource gaps that the One Health National Platform can document and address through dialog with University networks and other development partners.

The first task of the One Health National Platform will be to coordinate the developing and implementation of the preparedness and response plan for an infectious disease outbreak or other public health events using the PHE Framework. This task will be used to help solidify the importance of One Health National Platforms. The P&R project will support further roll-out to African countries (beyond those in EPT-1) and support their adaptation to Southeast Asia to include testing and rolling-out to focus countries in that region. In the Africa region, the project will introduce the PHE Framework to countries that have not yet received assistance under EPT-1 and support those countries to adapt the PHE Framework to their national and regional context, to develop their own tailored PHE response plan, and to conduct the preparedness activities recommended in the PHE Framework. For countries that have received assistance under EPT-1, the project will assess each country's status in operationalizing the PHE Framework and in implementing preparedness activities and facilitate further implementation as appropriate. In the Asia region, the project will support adaptation of the PHE Framework to the Asia context and its implementation. The project will work with regional partners and countries to roll-out preparedness activities that are appropriate to the regional and national context. In both regions, when PHEs occur, the Project will support select, targeted after action reviews or post-PHE evaluations. Using the PHE Framework and the country's PHE response plan, the Project will support the countries engagement in "after action reviews" following each outbreak response to evaluate how well they performed against the PHE Framework, identify gaps in and lessons learned from the response, develop an improvement plan, and facilitate implementation of the improvement plan. WHO Africa Regional Office has suggested that the PHE Framework should be implemented at the sub-national or district levels in countries, similar to the plans for IDSR[3], and have envisioned a cascade training or training of trainers scenario for sub-national extension of Framework activities. However, the timeline and capacity to implement sub-national activities is to be determined. The PHE Framework will also be used to evaluate the human resources required for its implementation and, consistent with the IHRs, identify workforce development strategies (to be closely linked to the One Health Workforce project).

Illustrative activities include:

- Build on PHE Framework rollout activities from EPT-1. Support and facilitate WHO partners and focus country government partners to:

[3] The full IDSR guidance can be found at http://www.afro.who.int/en/clusters-a-programmes/dpc/integrated-disease-surveillance/features/2775-technical-guidelines-for-integrated-disease-surveillance-and-response-in-the-african-region.html.

    - Facilitate introduction, adaption and tailoring of the PHE Framework in focus countries into national PHE preparedness and response plans.
    - Facilitate and support testing of the PHE plans (e.g. tabletop exercises)
    - Facilitate and support select targeted after-action reviews as a means to further strengthen preparedness and response.
- Support and facilitate catalytic activities to strengthen implementation of national PHE preparedness as defined in the PHE Framework. The P&R Project may fund some preparedness activities that fit within the scope of the Project and EPT-2 priorities, but P&R is not expected fund all activities. The focus will be to support the host government to network, access resources, and problem solve to fill gaps.
- Preparedness actions that may be supported or facilitated by P&R are those highlighted in the PHE Framework and include focus country government efforts/activities to:
    - establish an emergency management committee, which may be synonymous with or at a minimum complementary to the One Health National Platform;
    - establish a database of potential rapid responders;
    - establish a mechanism for cross-sectoral information sharing and linking surveillance systems;
    - develop an outbreak response plan;
    - develop a communications plan;
    - organize access to supplies and logistics system;
    - ensure access to laboratory diagnostic resources;
    - develop research studies that will facilitate response and control of PHEs.
- Facilitate and support adaptation of the PHE Framework to the Asia region.

Activity Parameters:

- As noted above, the PHE Framework is a WHO document. Therefore, it is critical that the P&R project collaborate with and support WHO in implementing activities to achieve this objective. The key collaborating partner will be WHO Headquarters and the GOARN network, the WHO African Regional Office, the Southeast Asia Regional Office, and the Western Pacific Regional Office. The WHO regional offices are also the lead technical partners for implementing the PHE Framework activities and are valuable partners for engaging with host governments. Under EPT-1, WHO African Regional Office provided technical staff and some administrative and logistic support for PHE Framework activities and will likely do the same under EPT-2. [Under its EPT-2 program, USAD will provide resources to each of the different parts of WHO to support their engagement.]
- The role of the P&R Project in preparedness and response will be a combination of facilitation, capacity building, logistics, and technical assistance. A primary role for the Project will be to provide facilitation and related support for team building, planning, conducting workshops, and conducting exercises. With WHO providing the lead technical support, P&R will provide complementary technical support. P&R will also draw on technical support from other EPT-2 projects/partners and may draw on other partners as appropriate, including but not limited to other USG agencies such as CDC,

other multi-lateral organizations such as FAO and AU-IBAR, and other development partners. In coordination with USAID, P&R may also draw on financial support from other development partners such as DTRA, World Bank, etc. to implement PHE Framework rollout activities. The P&R Project will also provide support to WHO and other partners to keep activities on track to meet timelines and benchmarks.

- The balance of facilitation, capacity building, logistics and technical support provided by P&R may vary between the Africa and the Asia regions and by country within those regions.
- A number of other international health organizations are supporting similar preparedness and response capacity building efforts. Some of these efforts have been underway for some time and some of the efforts support similar, but not identical, capacities. Most, if not all of these other efforts can be cumulative and complementary of each other. Another critical role for the P&R Project will be to support USAID in identifying complementary efforts and to work with USAID to engage other organizations in a spirit of melding efforts for the most efficient and effective use of resources, both human and financial.