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RESPOND

EMERGING PANDEMIC THREATS PROGRAM

**ENVIRONMENTAL MANUAL AND FRAMEWORK MITIGATION AND
MONITORING PLAN (EM/FMMP)**

10/14/2013

OCTOBER 2013

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RESPOND

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**ENVIRONMENTAL MANUAL AND FRAMEWORK MITIGATION
AND MONITORING PLAN (PROJECT EMMP OR P-EMMP)**

10/14/2013

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ACRONYMS

Action EMMP or A-EMMP	Action Environmental Mitigation and Monitoring Plan
Action EMMR or A-EMMR	Action Environmental Mitigation and Monitoring Report
ADS	Automated Directives System
AI	Avian Influenza
APHIS	Animal and Plant Health Inspection Service
BEO	Bureau Environmental Officer
BMP	Best Management Practices
BMPR	Best Management Practices Review
CDC	Centers for Disease Control
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Chief of Party
EA or EIA	Environmental Assessment or Environmental Impact Assessment
EDD	Environmental Due Diligence
EM	Environmental Manual
EMMP	Environmental Mitigation and Monitoring Plan
EMMR	Environmental Mitigation and Monitoring Report
ENCAP	Environmentally Sound and Design Management Capacity Building for Partners and Programs in Africa
EPA	Environmental Protection Agency
EPT	Emerging Pandemic Threats Program
ER	Environmental Review
EU	European Union
FAO	Food and Agriculture Organization
Framework EMMP or FEMMP	EMMP for a category of actions
GDA	Global Development Alliance
GH	Global Health

IEE	Initial Environmental Examination (and Threshold Decision)
KAP	Knowledge, Attitudes, and Practice
M&E	Monitoring and Evaluation
MEO	Mission Environmental Officer
MMP	Mitigation and Monitoring Plan
MSDS	Materials Safety Data Sheet
NGO	Non-Profit Organization
OIE	World Organisation for Animal Health
PERSUAP	Evaluation Report/ Safer Use Action Plan
PHQ	Project Headquarters
PIC	Point Infection Control
PPE	Personal Protective Equipment
PR	Population Reduction
Project EMMP or P-EMMP	Project Environmental Mitigation and Monitoring Plan
SA-EMMP	Sub-activity Environmental Mitigation and Monitoring Plan
SOW	Standard of Work
SS	Scoping Statement
STTA	Short Term Technical Assistance
TAMIS	Technical and Administrative Management Information System
TORS	Terms of References
UN	United Nations
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WHO	World Health Organization

EXECUTIVE SUMMARY

This Project Environmental Mitigation and Monitoring Plan (Project EMMP or P-EMMP) describes how the RESPOND project, part of USAID's Emerging Pandemic Threats Program (EPT) will meet or exceed the requirements of the program Initial Environmental Evaluation (IEE) and Threshold Decision, approved by the GH Bureau Environmental Officer on 9/9/2009, complying with USAID environmental regulations (Regulation 216 and ADS 204).

This Project EMMP covers project and regulatory background, the principal issues that affect RESPOND, RESPOND procedures for screening activities and developing mitigation measures, due diligence for partner organizations, mitigation measures for the main types/clusters of activities (in Framework Manual and EMMP for types of activities or Framework EMMPs), sub-activity plans, monitoring recommendations, reporting requirements, and implementation. The annexes to this report provide the forms required for the Project EMMP from screening to reporting, and the cover page of the project IEE/Threshold Decision.

Highlights of this EMMP include the following:

- All sub-activities (grants, direct assistance) are to be screened for environmental risk, with risk categories 2 and 3 requiring additional environmental due diligence (EDD) and Environmental Review (Annex 2.) The environmental screening form is done with the technical lead and is a requirement for obligating funds.
- Grants and direct assistance where partners allocate funds or implement risk categories 2 and 3 require implementing partner due diligence (Annex 8) and environmental clearance form (Annex 9).
- The principal classes of actions under RESPOND are set in the grant agreement and work plan, allowing this Project-EMMP to define Environmental Manuals and Framework Environmental Mitigation and Monitoring Plans for the major classes of actions. The document includes three principal EM/FEMMPs for review (Annex 3,4,5).
- Based on the above, each grant or direct assistance will have an Environmental Mitigation and Monitoring Plan (A-EMMP – Annex 6).
- The IEE (Annex 1) establishes that none of the activities foreseen under RESPOND fall into the high-risk category. Should USAID determine that sub-activities of risk category 4 be

implemented, they would be accompanied by an Environmental Assessment (Annex 7) specific to the activity and approved by USAID.

- For RESPOND training events, appropriate environmental issues and proper mitigation and monitoring measures will need to be addressed. An environmental training workshop (Annex 11) has been developed to be used as either a standalone workshop or a module within an existing training course. The workshop is scalable depending on needs and focus of the training.

This plan will evolve based on experience and review of best practices (Annex 10) for selected issues. These reviews will use literature, case histories and field reconnaissance and they include, but are not limited to, the following:

- o Experience and best practices for medical waste disposal in remote areas lacking health infrastructure (“remote” referring to areas that do not have access to health facilities and standard facilities for disposing medical waste);
- o Experience and best practices for disposing of wildlife and domestic animal carcasses after culling;
- o Experience and best practices when outbreak responses affect livelihoods;
- o Experience and best practices when outbreak responses engender passive or overt resistance;
- o Experience and best practices of countries adopting habitat modification to control vectors. STTA for environmental/social issues as needed during implementation.

RESPOND PROJECT PURPOSE

The goal of RESPOND is to improve the capacity of countries in high-risk areas to respond to outbreaks of emergent zoonotic diseases that pose a serious threat to human health. The objectives of the project are:

- Objective 1: Improve the training capacity within countries and regions for skills necessary to respond to any suspected outbreaks of emergent zoonotic diseases that pose a serious threat to human health.
- Objective 2. Improve the linkages among animal and health organizations in responding to outbreaks of emerging zoonotic diseases of potential public health impact.
- Objective 3. Improve the capacity of countries and regions to conduct investigations of suspected outbreaks of emergent zoonotic diseases that pose a serious threat to human health; this objective includes 1) response support and technical assistance and 2) communication and information sharing.
- Objective 4. Introduce technologies to improve the capability of field epidemiologists to conduct surveillance and outbreak investigations.

RESPOND PROJECT OVERVIEW

The RESPOND project began in October 2009 with the aim of improving worldwide capacity to respond to emerging infectious diseases of zoonotic origin. The project would support governments, universities, and civil society in strengthen training and educational programs using a trans-disciplinary approach known as One Health. One Health brings together multiple disciplines, including medicine, veterinary medicine, public health, ecology and others, to more effectively protect the interdependent health of people, animals, and the environment.

Toward these goals, RESPOND focuses on establishing relationships with, and providing support to, some of the many institutions with a role in disease prevention and response. The RESPOND team established a headquarters office in Bethesda, Maryland and regional offices in Africa (Kampala, Uganda, and Kinshasa, Democratic Republic of Congo) and in Southeast Asia (Bangkok, Thailand) to build a foundation for supporting key outbreak-related activities and initiatives in countries participating in the USAID Emerging Pandemic Threats (EPT) program

Based on the understanding developed in years 1 and 2 of the project, RESPOND has shifted its focus to connect the universities that train disease response professionals into networks that could promote trans-disciplinary and trans-boundary techniques and perspectives. With pledges of funding and support from RESPOND, universities formed networks in both regions: One Health Central and Eastern Africa (OHCEA), and South East Asia One Health University Network (SEAOHUN).

OHCEA and SEAOHUN serve as platforms for providing students, graduate and undergraduate students and faculty, with the trans-disciplinary skill sets and perspectives to build the One Health workforce of

the future. WHO/AFRO, with support from RESPOND, is laying out the approaches that hotspot countries will use to respond to future outbreaks. The focus of the remainder of the project will be on supporting the efforts of OHCEA and SEAOHUN to become long-term, sustainable institutions that are producing better, more trans-disciplinary workforces that can effectively prevent and respond to outbreaks of emerging infectious disease, while supporting WHO's efforts to create a framework for governments to use those workforces most effectively.

RESPOND PROJECT HIERARCHY

In terms of project terminology, the structure (hierarchy) of the project is:

Objectives

 Activities

 Sub-Activities

 Funding Component: Grant and/or Direct Assistance

 Action(s)

PROJECT EMMP OR P-EMMP GUIDANCE

The documents that guide this Project EMMP or P-EMMP are:

- The RESPOND Initial Environmental Evaluation (IEE) and Threshold Decision (Annex 1), approved by the GH Bureau Environmental Officer on 9/9/2009;
- The RESPOND program contract and work plan;
- Title 22 of the Code of Federal Regulations (22 CFR 216 or “Reg 216”) defines USAID’s procedures to evaluate environmental impact and take into account environmental sustainability. Reg 216 covers all USAID projects;
- ADS 204 “Environmental Procedures” (revised 2/19/2009, which explains “how to apply Title 22”);
- Procedures developed and used by multi-lateral or private institutions, when compatible with above sources or where referenced by the IEE (e.g. WHO standards).

PURPOSE OF THE PROJECT EMMP OR P-EMMP

The purpose of the Project EMMP or P-EMMP is to implement the project Initial Environmental Examination/ Threshold Decision (IEE/TD – see cover sheet and approvals in Annex 1) and take other actions in favor of compliance with Regulation 216 and USAID’s environmental guidance.

The project IEE requires review of sub-activities and with conditions to be defined in the current EMMP. This Project EMMP or P-EMMP describes the procedures to be implemented by RESPOND to

- implement the IEE/TD;
- recognize potential negative environmental impacts of program activities;
- avoid, prevent, reduce, mitigate or offset those potential negative environmental impacts;
- positively improve environmental management capacities of partner institutions and beneficiaries;
- plan project activities to meet the above requirements; and
- monitor and report environmental compliance.

Following common USAID practice, “environment” is conceived broadly to include impact on the human population.

To achieve its purpose, the Project EMMP or P-EMMP will apply standard mitigation and monitoring principles (Table 1).

TABLE 1: MITIGATION AND MONITORING PRINCIPLES

Mitigation Measures to Reduce Environmental Impacts from RESPOND Activities	
Recognize potential impact	Review sub-activities Enhance review for actions with potential negative impacts Apply due diligence review for implementing partners Monitor and evaluate impact during implementation
Prevent and control impact	Identify and use standard and feasible best practices to avoid impact Implement conditions set in the IEE Change means, technique or site where required Specify operating practices Adjust work
Compensate for impact	Offset adverse impacts in one area with improvements elsewhere
Remediate impact	Repair or restore the environment if damage is done
Adaptive management	Learn from experiences to adapt program procedures

PROJECT EMMP OR P-EMMP BACKGROUND: THE IEE/TD

The RESPOND Threshold Decision reviews potential environmental risks for the project and provides factual background. It includes an “Evaluation of Project Issues and Possible Environmental Consequences.” The Threshold Decision groups project activities and sets their level of risk as follows:

1. Train capacity within countries and regions for skills necessary to respond to any suspected outbreak of epizoonotic diseases; the Threshold Decision sets risk classification as “negative determination with conditions,” the conditions being that an EMMP be done and that there be an annual Environmental Mitigation and Monitoring Report;
2. Improve the linkages among animal and health organizations in responding to outbreaks of emerging zoonotic diseases of potential public health impact with risk classification “categorical exclusion,” requiring no further actions;
3. Improve the capacity of countries and regions to conduct investigations of suspected outbreaks of emergent epizoonotic diseases that pose a serious threat to human health, including a) response support and technical assistance (with risk classification “negative determination with conditions,” the conditions being that an EMMP be done and that there be an annual Environmental Mitigation and Monitoring Report), and b) communication and information sharing (with risk classification “categorical exclusion,” with no further requirements other than a “Record of Categorical Exclusion”); and
4. Introduce new technologies to improve the capability of field epidemiologists to conduct surveillance and outbreak investigations, with a “deferred” risk category “due to the unknown nature of future technological advances.”

The body of the IEE amplifies the discussion (using slightly different classes of project activities) as follows:

- 0) Activities that do not have direct adverse environmental impacts (technical assistance, information, education, communication, training, research, community mobilization, planning, management and outreach), but which still require attention to indirect consequences.
- 1) Procurement, storage, management and disposal of public health commodities, including pharmaceutical drugs, vaccines, immunizations and nutritional supplements, “family planning products and condoms,” laboratory supplies, reagents, personal protective gear, laboratory and medical supplies, and basic medical equipment.
- 2) Training professional and paraprofessional health care workers in methods that result in exposure to infectious material or to generation and disposal of hazardous or highly hazardous

medical waste (e.g. basic and emergency obstetric care techniques, administration of injectables, HIV or TB testing, malaria diagnosis, etc).

- 3) Small-scale water and sanitation activities.
- 4) Small-scale rehabilitation of health facilities.

This key discussion in the IEE establishes the following:

- Any sub-activity, activity, sub-award, grant or program implementation is subject to screening (generating an Environmental Mitigation and Monitoring Review (EMMR));
- In some cases, the activity requires an Environmental Mitigation and Monitoring Plan (referred to in this document as the “Action Environmental Mitigation and Monitoring Plan” or A-EMMP to distinguish it from the project or framework EMMP); not all activities are required to prepare an A-EMMP (and the screening reports determine whether or not an A-EMMP is required);
- RESPOND mitigates both direct and indirect impacts;
- Identified risks may be unlikely, but still require inclusion in the environmental plan;
- Environmental involvement is to be early, flexible and responsive to environmental conditions.

The remainder of this Project EMMP shows how RESPOND will classify activities to prevent or mitigate any negative impacts.

RESPOND PROCEDURES FOR SCREENING ELIGIBLE ACTIONS AND DEVELOPING MITIGATION MEASURES

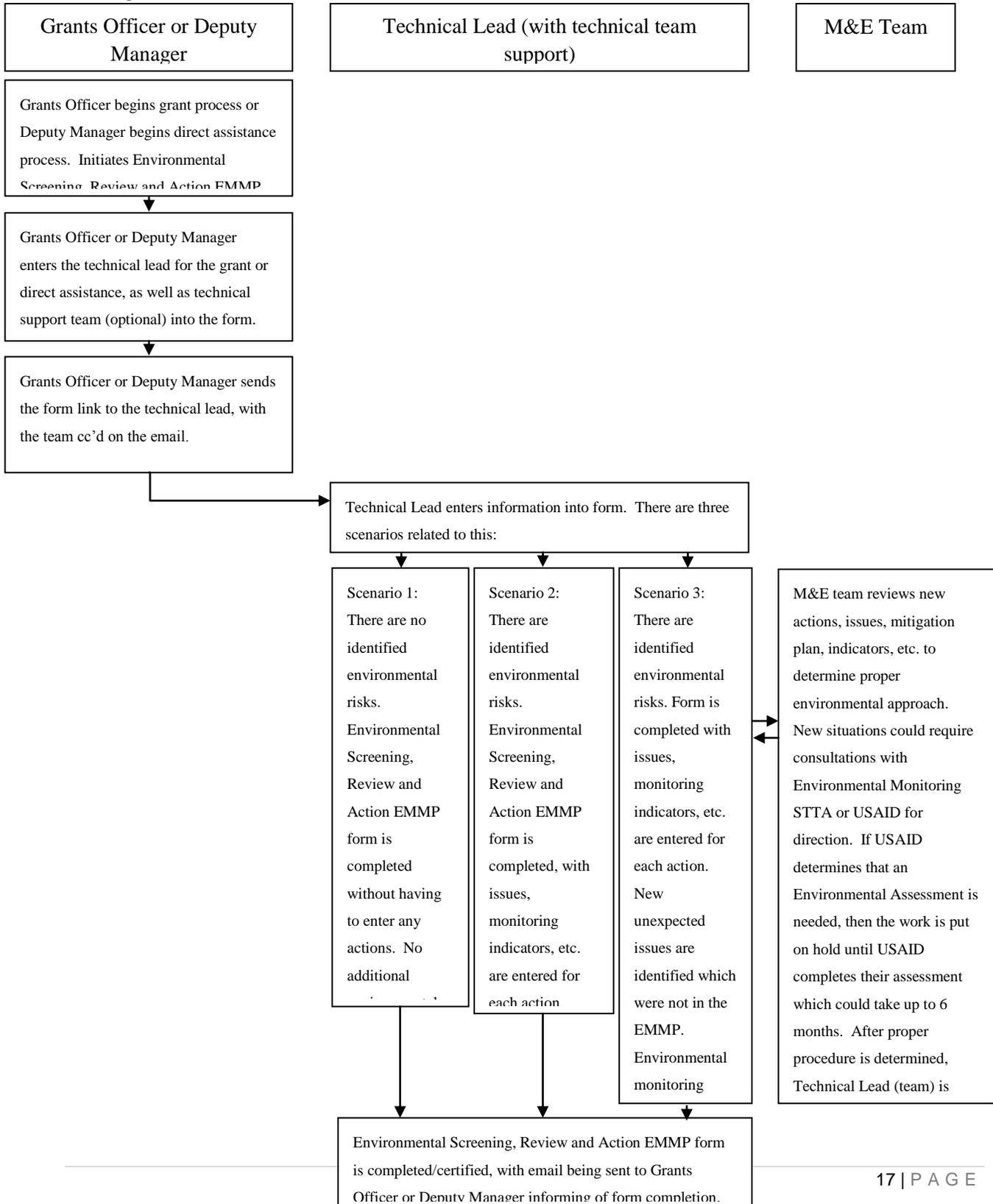
For environmental review/monitoring, RESPOND will use the following process:

1. Grants Officer or Deputy Manager (for direct assistance) initiates the environmental review process by identifying the technical lead/team involved with a specific grant or direct assistance that they are in the process of funding. They forward the Environmental Screening & Review form (Annex 2) to the identified technical personnel.
2. Technical personnel complete the form, with the following sub-steps:
 - a. Category 1 activities proceed to clearance/certification without further environmental review/monitoring. The technical personnel may choose to recommend (but not require) positive environmental steps as part of the proposed action.
 - b. Category 2, 3, 4 actions require additional attention:
 - i. Action EMMP is completed by technical personnel
 - ii. M&E team reviews Action EMMP to confirm or adjust category.
 - iii. Category 4 actions require Environmental Assessment (EA) to be conducted and approved by USAID. Action plan is modified based on EA.
 - c. Form is certified by technical personnel and forwarded back to Grants Officer or Deputy Manager.
3. Grants Officer or Deputy Manager incorporates mitigation measures in sub-activity or revises sub-activity to remove issues (e.g., Category 4 actions.) The sub-activity budget is modified to include all required mitigation measures as grant/direct assistance, project or counterpart expenses, or modifies the sub-activity to remove any item that requires mitigation. Implementing partner agrees.
4. Grants Officer, Deputy Manager and M&E Team sign environmental clearance document (Annex 9) for all grants and direct assistance. All required mitigation and monitoring actions must be included in the sub-activity plan. Sub-activities may proceed to funding as approved by Grants Officer, Deputy Manager and Chief of Party.

The next page has a supporting diagram depicting the process.

RESPOND PRE-FUNDING ENVIRONMENTAL PROCESS

RESPOND will use the following process for environmental monitoring, prior to grant or direct assistance funding:



ENVIRONMENTAL SCREENING AND PLANNING STEPS

These are the official detailed steps, not specific to RESPOND, that take potential sub-activities from screening to planning. For the RESPOND project, we have streamlined this process by combining some of the steps and working documents.

TABLE 3. STEP-BY-STEP ENVIRONMENTAL SCREENING AND PLANNING PROCEDURE

Step	Scope	Working Documents	Purpose
Environmental screening	All sub-activities (grants & direct assistance), prior to funding	Environmental Screening, Review & Action EMMP (See Annex 2) List of screened sub-activities	Classifies proposed sub-activities according to Reg 216 categories, per IEE/TD
Environmental review and assessment checklist (ER)	Not required for category 1 sub-activities	Environmental review and assessment checklist (ER) (See Annex 7) which is incorporated in the Environmental Screening, Review & Action EMMP (Annex 2)	Gathers more detailed data on impact to determine risks and check classification of sub-activity.
Revised action classification (1,2,3,4)	Not required for category 1 sub-activities	List of screened sub-activities	Uses more detailed information to check action risk category.
Terms of reference for Scoping Statement (SS) and Environmental Assessment (EA)	Category 4 only	Terms of reference for SS and EA	Propose review of positive determination sub-activities
USAID approval	Category 4 only	Written approval (email, letter, signature on TORS)	USAID accepts TORS
Scoping statement (SS)	Category 4 only	Scoping statement	Describes the EA to be produced
USAID approval	Category 4 only	Written approval (email, letter, signature on TORS)	USAID accepts product
Environmental assessment (EA)	Category 4 only (others optional)	EA	Assessment of risk, alternatives, mitigation, and recommendations per Reg 216.
USAID approval	Category 4 only	Written approval (email, letter, signature on TORS)	USAID accepts product; category 4 sub-activity may proceed with conditions or is rejected in current state.
Implementing Partner EDD	Only for implementing partners financing and implementing sub-activities	Partner Environmental/social Screening (EDD) (See Annex 8)	Due diligence for reviewing implementing partner capacity to comply with environmental requirements, including training needs; based on

Step	Scope	Working Documents	Purpose
			EDD from ADS 204.
Implementing partner environmental manual	Only for implementing partners financing or implementing sub-activities	Partner environmental manual	For assisting partners to comply with USAID environmental requirements.
Incorporate selection criteria and mitigation measures into the activity.	All activities of more than a certain amount that are covered by FEMMP (or EA).	Technical staff	Applies approved mitigation measures to actions; may be incorporated with other good practices.
Sub-Activity Environmental Mitigation and Monitoring Plan (SA-EMMP)	Not required for category 1	SA-EMMP, which becomes part of sub-activity plan (See Annex 6)	Include mitigation measures from ER, Partner EDD and best practices.
Revised activity plan with A-EMMP	Not required for category 1		Modify sub-activity plan to include mitigation measures. Include environmental session (Annex 11) where appropriate.
Training plan: beneficiaries	Per opportunity or if required as mitigation measure	Training and Communications Plan (optional)	Identifies positive opportunities to train beneficiaries in environmental matters. Include environmental session (Annex 11) where appropriate.
Training plan: partner	Required for partners financing sub-activities categories 2, 3, 4.	See above (Partner environmental manual) (See Annex 8)	Include environmental session (Annex 11) where appropriate.

SCREEN SUB-ACTIVITIES AND ACTIONS

Use the “Environmental Screening, Review and Action EMMP” form (Annex 2) that incorporates criteria from the IEE to classify project sub-activities by risk and threshold decision levels. The risk categories and the required Regulation 216 actions are as follows:

- 1. Categorical Exclusion.** Actions that do not have an effect on the natural or physical environment. No steps required.
- 2. Negative Determination with Conditions.** Actions with no significant adverse effects with normal good practices. Action may go forward with a) screening, b) a Action EMMP and c) environmental reporting. Also, if the action involves grants to institutions that will allocate funds locally, it is prudent to review environmental capabilities of partnering institutions that will allocate funds and implement actions, though not specified in the Threshold Decision.
- 3. Negative Determination with Conditions, with potential negative effect.** Actions requiring Environmental Due Diligence review (EDD) to confirm or disconfirm adverse environmental effects.

- a. If a significant adverse effect is NOT determined, develop Action Environmental Mitigation and Monitoring Plan (Action EMMP) and proceed.
 - b. If a likely and significant adverse effect is found and the activity is not covered under an earlier EA, treat the activity as if it had a Positive Determination.
4. **Positive Determination** for actions that normally have a significant effect on the environment (pursuant to 22 CFR 216.2(d)(2)). The IEE does not classify any RESPOND actions with a positive determination.

Actions that may have a significant effect on the environment require Environmental Due Diligence review (EDD) to confirm or not confirm adverse environmental effects, with possible positive determination.

- a. If a significant adverse effect is NOT determined, develop Action Environmental Mitigation and Monitoring Plan (Action EMMP) and proceed.
- b. If potential significant adverse effect is confirmed, and if the action is not covered by an earlier Environmental Assessment (EA), prepare terms of reference for Scoping Statement (SS) for approval by MEO, do public consultation with potentially affected people and relevant stakeholders, prepare TOR for EA, do EA for approval by MEO and BEO, or request that Positive Determination be reversed.

While the **Environmental Review and Assessment Checklist (ER)** (Annex 7) has been incorporated into the Environmental Screening, Review and Action EMMP form in TAMIS, there may be, at times, the need for additional environmental review for Category 2, 3 or 4 sub-activities. These documents provide the information required to make a “recommended determination” that reviews the risk assessment and classification of the sub-activities based on the additional information gathered during ER. Based on the ER, a Category 2 project might be reclassified as Category 3 with more significant risk or even Category 4, and a Category 4 sub-activity might be downgraded to Category 3. The ER may be filled out at the same time as the classification document.

Environmental Due Diligence (EDD) (Annex 8), according to ADS204 procedures developed for Global Development Alliances, requires that a program review “what is often called the “triple bottom line” — i.e., whether the prospective implementing partner is socially responsible, environmentally accountable and financially sound. In the RESPOND context, we interpret this as suggesting training partners in methods to administer USAID funds according to USAID policy and best practice, adapted to the local situation. Where an implementing partner will be allocating funds, a partner EDD complements the ER. The Partner EDD is a format (developed by DAI) for checking the environmental capacity of implementing partner organizations that will be managing USAID funds.

The next step after screening for Category 2 and 3 activities is to list mitigation measures.

Requirements for **Environmental Assessments (EA) for Category 4 actions** are set in Regulation 216. No current or planned actions are classed as Category 4 in the IEE. Should such actions be required, the scope and cost of the EA will correspond to the gravity of the risk and the complexity of the situation with USAID approval. Part of an EA is to present the needed mitigation measures as an **Action EMMP** for the sub-activity, which will be reviewed and approved by USAID along with the EA when done for a Category 4 project; alternatively, the project may be reformulated to reduce environmental risk to Category 3.

MITIGATION MEASURES FOR MAIN TYPES OF ACTIONS

FRAMEWORK MANUAL AND EMMP FOR PRINCIPLE TYPES OF ACTIONS

This section concerns environmental mitigation and monitoring for the principal types of actions to be undertaken by RESPOND. The IEE discussion of risk and mitigation measures uses a classification of actions that cuts across project components. This EMMP has its categories of actions from the IEE, as follows:

- Training professional and paraprofessional workers in methods that result in the exposure to infectious material, and the generation and disposal of hazardous or highly hazardous medical waste. This EMMP includes additional risks that may result indirectly from certain training activities;
- Procurement, storage, management and disposal of public health commodities. This EMMP includes potential “small-scale rehabilitation of health facilities” and potential “small-scale water and sanitation activities” with procurement;
- Response planning and implementation;
- Future technologies (deferral).

The risks that are identified for each type of action are those that experienced staff believe might be important for actions. In practice, only a smaller number of risks are relevant to a particular action, so the frameworks are simplified prior to implementation.

TRAINING

Annex 3 presents the Training Environmental Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP), which covers training actions. The EM/FEMMP for training incorporates the terms from the IEE, good design practices and knowledge of risk from experienced experts.

PROCUREMENT AND SMALL-SCALE STRUCTURES

Annex 4 presents the Procurement Environmental Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP) for supplies, rehabilitation and water sources (if any), incorporating the terms from the IEE, good design practices and knowledge of risk from experienced experts.

RESPONSE PLANNING AND IMPLEMENTATION

Annex 5 presents the Response Environmental Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP) for planning responses to outbreaks and assistance incorporating the terms from the IEE, good design practices and knowledge of risk from experienced experts.

FUTURE TECHNOLOGIES

At this time, future technology screening is deferred for USAID review/direction.

After environmental review, the next step is to produce the Sub-Activity EMMP -- the EMMP for the specific action (see below).

BEST PRACTICE REVIEWS AND EVOLUTION OF THE ENVIRONMENTAL MANUALS

USAID Environmental Manuals are expected to evolve with experience. In the course of Year 2, RESPOND proposes to review best practices (Annex 10) to most effectively confront issues and to develop appropriate training materials. The initial set of issues was identified in workshops and follow-up discussions with RESPOND technical and monitoring staff as being of practical importance, suitable for inclusion in RESPOND training materials and relevant to IEE or Regulation 216 compliance.

These reviews will be based on literature, case histories and field reconnaissance and they include, but are not limited to, the following:

- o Experience and best practices for medical waste disposal in remote areas lacking health infrastructure (“remote” referring to areas that do not have access to health facilities and standard facilities for disposing medical waste);
- o Experience and best practices for disposing of wildlife and domestic animal carcasses after culling;
- o Experience and best practices when outbreak responses affect livelihoods;
- o Experience and best practices when outbreak responses engender passive or overt resistance;
- o Experience and best practices of countries adopting habitat modification to control vectors. STTA for environmental/social issues as needed during implementation

ENVIRONMENTAL WORKSHOP SESSION

A workshop module (Annex 11) reviews environmental risks that may follow from elements of a response to zoonotic disease outbreak. Risks are the possible negative impacts on the natural or human environment that flow from a response activity or from failure to use best practices. Annex 11 presents

an outline of a general training session about environmental issues and best practices relevant to responses. It covers several risks for typical outbreak responses, and may be modified to cover additional risks.

ACTION EMMPS

The preceding screening, assessment and technological manuals all lead to the Action EMMPs that list the specific measures required for a sub-activity to proceed. The **EMMP for a sub-activity, called an A-EMMP** will show potential issues, mitigation measure(s), monitoring indicator(s), monitoring and reporting frequency, and parties responsible.

The project environmental staff reviews the Framework Manual and EMMP for the proposed sub-activity and selects those items that are relevant and judged to be important risks. The selected items (and any special items that are found to be important risks) become the A-EMMP.

MONITORING RECOMMENDATIONS FOR MITIGATION MEASURES FOR MAIN TYPES OF ACTIONS

Each sub-activity that has an A-EMMP will monitor and document implementation, reporting yearly (if it continues for more than a year) and at the end of the action. When a sub-activity includes environmental training, the training will be documented for reporting.

Quarterly and annual project reports will summarize sub-activity environmental compliance.

The monitoring reports will become a part of overall project monitoring.

TABLE 4. MONITORING IMPLEMENTATION OF MITIGATION MEASURE

Monitoring	Application
Sub-activity monitoring report	Per action EMMP; not required Category 1
Partner sub-activity monitoring report	Per action EMMP; not required Category 1; RESPOND will assist partners and retains right to visit sub-activities
Sub-activity final environmental report	Per action EMMP; not required Category 1
Training report	If applicable
Project monitoring report	Provides tables to quarterly and annual reports

REPORTING DOCUMENTS

This EMMP section covers project archives or working documents and reports submitted to USAID.

WORKING DOCUMENTS

All sub-activities financed by grants and direct assistance require environmental clearance based on review and approval by the Monitoring & Evaluation Officer and technical staff. This generates a series of reports and decisions. This section summarizes the reporting documents that the sub-activity will generate.

ENVIRONMENTAL SCREENING, REVIEW AND ACTION EMMP

The grant or direct assistance Environmental Screening, Review and Action EMMP form (Annex 2) is a requirement for all grants and direct assistance. As noted in the RESPOND Procedures for Screening Eligible Actions and Developing Mitigation Measures, the form is completed for each grant or direct assistance, by the respective technical lead (and team). The M&E team reviews completed forms, as well as supports inquiries related to unplanned environmental situations.

ENVIRONMENTAL REVIEW

The Environmental Review (ER) is used for additional environmental screening, when there are open issues related to the environmental impact for a particular sub-activity. The ER must be completed prior to grant or direct assistance funding if it is deemed necessary to use. The ER is incorporated in the Environmental Screening, Review and Action EMMP in TAMIS

ACTION EMMP

The Action EMMP (A-EMMP) is used for all Category 2 and 3 risks. The A-EMMP must be completed prior to grant or direct assistance funding. The A-EMMP is incorporated in the Environmental Screening, Review and Action EMMP in TAMIS.

ENVIRONMENTAL DUE DILIGENCE

The Environmental Due Diligence (EDD) document (Annex 8) is used when implementing partners allocate funds. This must be completed prior to grant or direct assistance funding, if it is deemed necessary to use.

GRANTS OR DIRECT ASSISTANCE AGREEMENTS

For all sub-activities, the grant or direct assistance agreement must include the following:

- The Grant or Direct Assistance Environmental Clearance Document (Annex 9) is required for all grants and direct assistance funding;

- The A-EMMP should be included in the grant or direct assistance agreement with the implementing partner;
- The implementing partner agrees to implement all required mitigation measures;
- The action budget includes sufficient funding to implement all required mitigation measures;
- The implementing partner agrees to report periodically on implementation of mitigation measures and to allow and support inspections of mitigation measures, including field visits and documentation (financial or technical);
- The implementing partner agrees that failure to implement mitigation measures is sufficient cause to terminate project support for the action.

The following provides draft language for inclusion in grant agreements, subject to review by project authorities:

An environmental mitigation plan specific to this grant has been developed under Title 22 CFR216 "Environmental Procedures" of the Code of U.S. Federal Regulations. The mitigation plan is attached. Under the terms of this grant, you must adhere to this plan. The parties agree that sufficient funds for implementation of the terms of this mitigation plan have been included in the budget for the activities covered by this grant and that no additional funds from USAID will be required for its complete implementation. The grantee agrees to participate in all environmental training provided by the project, maintain records and evidence of compliance with the environmental mitigation plan, report compliance when requested, cooperate with audits of compliance, both in the office and at the site of work, all without additional funding.

GRANT OR DIRECT ASSISTANCE ENVIRONMENTAL CLEARANCE DOCUMENT

This clearance document documents that the activity has been screened and reviewed (Annex 9).

REPORTS TO USAID

The following documentation and reports associated with the environmental compliance are submitted to USAID:

- Annual Work Plans will have a section on the planned actions related to environmental compliance;
- This Project EMMP will be reviewed and approved by USAID. It includes action framework EM/MMPs. Working documents (EDD reports and sub-activity EMMPs as described above) will be available for review at the project office;
- Quarterly Reports will have a section on the status of actions related to environmental compliance and results, including project summaries along with environmental impacts, success or failure of

mitigation measures being implemented, results of environmental monitoring, and any major modifications/revisions to the project. If the actions implemented do not have any negative impact on the environment, this should be documented as well;

- For actions having adverse environmental impact, progress reports should include Environmental Review Reports for each action;
- The project’s annual report will include an annex containing a table indicating the title, date of award, and category of each grant and direct assistance action, and status of mitigation measures and monitoring results, when applicable;
- RESPOND Final Report will have a section that will summarize program actions related to environmental compliance and will describe results, including information on any positive or negative environmental effects of program activities.

TABLE 5. WORKING DOCUMENTS AND REPORTS

Report	Note	Location
Environmental Screening, Review and Action EMMP, Environmental Due Diligence (EDD), Environmental Review (ER), and Action EMMP for sub-activities (grants, direct assistance, discrete actions).	Each sub-activity in Categories 2, 3, 4 has an EMMP (grant, direct assistance, localized action). The A-EMMP should be included in grants and direct assistance agreements. This is a working document kept on file.	At project office
Action report to project files on environmental compliance and to support section of project annual and quarterly reports	Each sub-activity that has an EMMP (grant, direct assistance, localized action) reports to RESPOND. This is a working document.	At project office
Progress Reports section on the status of actions related to environmental compliance and results, including project summaries along with environmental impacts, success or failure of mitigation measures being implemented, results of environmental monitoring, and any major modifications/revisions to the project. If the actions implemented do not have any negative impact on the environment, this should be documented as well.		
Report for section of project annual and quarterly reports		Submitted to USAID
Annual Work Plan environmental section		Submitted to USAID
Revised EM, FMMP for actions		Submitted to USAID

SUMMARY OF WORKING DOCUMENTS KEPT AT PROJECT

- Environmental Screening, Review and Action EMMP (See Annex 2);
- List of screened sub-activities;
- Environmental review and assessment checklist (ER) (See Annex 7);
- List of screened sub-activities (revised);
- Partner Environmental/social Screening (EDD) Annex 8;
- A-EMMP, which becomes part of sub-activity plan (Annex 6);
- Training and Communications Plan for Sub-Activity (optional);
- Partner environmental manual (Annex 8), if required;
- Grant & Direct Assistance agreements.

SUMMARY OF DOCUMENTS PROVIDED TO USAID

- Terms of reference for SS and EA (if required) and written approval (email, letter, signature on TORS);
- Scoping statement (as required) and written approval (email, letter, signature on TORS);
- EA (as required) and written approval (email, letter, signature on TORS);
- Environmental Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP) (Annex 3);
- Environmental Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP) (Annex 4);
- Environmental Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP) (Annex 5).

IMPLEMENTATION

STAFFING

The Monitoring & Evaluation team (PHQ M&E Manager and Regional M&E Officers) will lead the environmental monitoring work. The project will name, for USAID approval:

- STTA for quarterly audits & improvement recommendations;
- STTA (direct and/or via subcontract or grant) for Best Practices Reviews:
 - Experience and best practices for medical waste disposal in remote areas lacking health infrastructure (“remote” referring to areas that do not have access to health facilities and standard facilities for disposing medical waste);
 - Experience and best practices for disposing of wildlife and domestic animal carcasses after culling;
 - Experience and best practices when outbreak responses affect livelihoods;
 - Experience and best practices when outbreak responses engender passive or overt resistance;
 - Experience and best practices of countries adopting habitat modification to control vectors. STTA for environmental/social issues as needed during implementation.
- Other STTA as required;
- Services for TAMIS modifications to include environmental management.

Project technical staff will be required to participate in environmental compliance, as required.

Additional environmental compliance work will be incorporated in grants, direct assistance and other direct costs.

STAFF TRAINING

The following are the initial training required:

- Initial training on environmental compliance: Q1/Q2 2011
- Partners Implementation training: April-May 2011
- Regional offices: June-July 2011

- Review of progress and plans: Annually

REVISION OF THIS DOCUMENT

This manual is an evolving document that may be revised as needed with AOTR participation.

BUDGET

Personnel and Technical Assistance:

- STTA for quarterly audits & improvement recommendations, approximately 3-5 days each quarter
- STTA for Best Practices Reviews, approximately 4 weeks each.
 - o Experience and best practices for medical waste disposal in remote areas lacking health infrastructure (“remote” referring to areas that do not have access to health facilities and standard facilities for disposing medical waste);
 - o Experience and best practices for disposing of wildlife and domestic animal carcasses after culling;
 - o Experience and best practices when outbreak responses affect livelihoods;
 - o Experience and best practices when outbreak responses engender passive or overt resistance;
 - o Experience and best practices of countries adopting habitat modification to control vectors. STTA for environmental/social issues as needed during implementation.
- Other STTA as required;
- Services for TAMIS modifications to include environmental management;
- Project technical staff will be required to participate in environmental compliance, as required.

Other Direct Costs:

Additional environmental compliance costs will be incorporated in grants, direct assistance and other direct costs.

ANNEX 1. COVER AND SIGNATURES OF INITIAL ENVIRONMENTAL EXAMINATION/ THRESHHOLD DECISION (IEE/TD)

Pages 1-4 of the 38 page IEE are included in the following pages.

INITIAL ENVIRONMENTAL EXAMINATION

PROGRAM/ACTIVITY DATA:

Program/Activity Number: RFA # USAID-M-OAA-GH-HSR-GH-09-878
Country/Region: Worldwide
Program Title: RESPOND

Functional Area: Avian and Pandemic Influenza

Estimated Ceiling: \$185 million

Program Components and Funding level:

Funding Begin: 09/31/09	Funding End: Est. 9/31/2014	Total Amount: \$185 million
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IEE Prepared By: Alisa M. Pereira, Senior Public Health Advisor for Strategic Planning and Technical Operations, Avian and Pandemic Influenza Unit (Global Health)

Current Date: June 23 2009

IEE Amendment (Y/N): N If yes, number and date of current IEE:

ENVIRONMENTAL ACTION RECOMMENDED (check all that apply):

Categorical Exclusion: Negative Determination: _____
Positive Determination: _____ Deferral:

ADDITIONAL ELEMENTS:

Negative Determination w/ Conditions:
Environmental Screening Report Required:
PVO/NGO: _____

SUMMARY OF FINDINGS:

The scope of this effort falls into 4 main objectives. Those objectives and determination include:

1. Training capacity within countries and regions for skills necessary to respond to any suspected outbreak of epizootic diseases.
 - a. Negative determination with conditions:
 - b. The implementation of the Environmental Mitigation and Monitoring Plan-EMMP as appropriate will be done in consultation with the MEO, REA and BEO.
 - c. The partner, via the AOTR or manager, will annually (October) submit an Environmental Mitigation and Monitoring Report.
2. Improve the linkages among animal and health organizations in responding to outbreaks of emerging zoonotic diseases of potential public health impact.
 - a. Categorical Exclusion (22 CFR 216 (c)(2)(iv): Studies, projects or programs intended to develop the capability of recipient countries to engage in development planning except to the extent designed to result in activities directly affecting the environment (such as construction of facilities etc.)
3. Improve the capacity of countries and regions to conduct investigations of suspected outbreaks of emergent epizootic diseases that pose a serious threat to human health. This includes response support and technical assistance (negative

determination with conditions) and communication and information sharing (Categorical Exclusion 22 CFR 216 (c)(2)(i).

- a. Negative Determination with conditions and
 - b. Record of Categorical Exclusion
 - c. The implementation of the Environmental Mitigation and Monitoring Plan-EMMP as appropriate will be done in consultation with the MEO, REA and BEO.
 - d. The partner, via the AOTR or manager, will annually (October) submit an Environmental Mitigation and Monitoring Report.
4. Introduce technologies to improve the capability of field epidemiologists to conduct surveillance and outbreak investigations
 - a. Deferral due to the unknown nature of future technological advances.
 - b. As technological advances are considered the partner will institute an independent initial environmental evaluation to recommend a threshold determination and mitigations (via an Environmental Mitigation and Monitoring Plan-EMMP)

SUMMARY OF MONITORING AND REPORTING MEASURES

The AOTR of the RESPOND, in consultation with the Bureau Environmental Officers and any Mission Environmental Officer, as appropriate and implementing partners will actively monitor and evaluate whether environmental consequences unforeseen under activities covered by this IEE arise during implementation, and modify or end activities as appropriate. If additional activities are added that are not described in this document, an amended environmental examination must be prepared.

1. The implementing partners of RESPOND will complete an annual environmental mitigation and monitoring report of all activities, using the guidance and forms in section 5 of this document. This activity should be incorporated into pertinent Monitoring and Evaluation Plans, Detailed Implementation Plan (DIP), and annual work plans/reports. The environmental monitoring report should be completed by October of each year, so that the results can be included in the Operational Plan (OP) reporting process to Congress.
2. USAID procurement should include consideration of the offeror's ability to perform the mandatory environmental compliance requirements as envisioned under RESPOND. The Agreements Officer (AO) shall include required environmental compliance and reporting language into the annual Request for Applications, and ensure that appropriate resources (budget), qualified staff, equipment, and reporting procedures are dedicated to this portion of the project.
3. Any sub-agreements or fund transfers from the implementing partners to other organizations must incorporate provisions stipulating:
 - a) the completion of an annual environmental monitoring report, and
 - b) that activities to be undertaken will be within the scope of the environmental determinations and recommendations of this IEE. This includes assurance that any mitigating measures required for those activities be followed.
4. The AOTR and/or on-site manager of RESPOND will undertake field visits, as possible, and consultations with implementing partners to jointly assess the environmental impacts of ongoing activities, and associated mitigation and monitoring conditions.
5. The implementing partners' Detailed Implementation Plan will identify those activities outlined in this IEE that have potential impacts to the environment and discuss plans for environmental management, mitigation approaches, and monitoring measures. Implementing partners will be required to include Environmental Compliance Monitoring in their project work plan and monitoring and evaluation plan.

6. Based on the process outlined in the Detailed Implementation Plan, the implementing partners' annual reports to USAID will include brief updates on mitigation and monitoring measures being implemented, results of environmental monitoring, and any other major modifications/revisions in the development activities, and mitigation and monitoring procedures.
7. Operating Units will ensure that implementing partners have sufficient capacity to complete the environmental screening process and to implement mitigation and monitoring measures.
8. Implementation will in all cases adhere to applicable host country environmental laws and policies.

APPROVAL OF ENVIRONMENTAL ACTION RECOMMENDED:

Activity Title: RESPOND

The United States Agency for International Development, Global Health Bureau has determined that the proposed effort, as described in the Initial Environmental Evaluation: dated June 2009, is critical to mitigating the emergence of pandemic threats as well as conforms to the requirements established in 22 CFR 216.

USAID has concluded that the environmental determination for the proposed action, while consistent with the Avian and Emerging Pandemic Threats initiative, must be deferred until further information is available for meaningful environmental analysis.

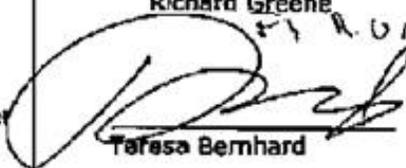
CLEARANCE:

Office Director:

 Date: 9/9/09
Richard Greene

CONCURRENCE:

GH Bureau Environmental Officer:

 Date: 9/9/09
Teresa Bernhard

ANNEX 2. ENVIRONMENTAL SCREENING, REVIEW & ACTION EMMP

The document below is used to screen proposed work using the terms set out in the project IEE and Threshold Decision for RESPOND. While the form is built into TAMIS, and intended to be completed electronically, it can also be used in paper format. The form contains both the initial screening, to determine risk category of the proposed work, as well as space to list actions that could have an environmental impact, which likely would require mitigation plans and monitoring.

RESPOND Environmental Screening, Review & Action EMMP

Status: Pending Certification

I. Autopopulated Administrative Information	
Date of Review	Managing Partner
Subactivity Number	Subactivity Name
Parent grant or project:	Location(s) of proposed activity: Country: Region:
Name of Implementing Organization:	Funding Period for this Award:
Technical Lead:	M&E Manager:
Technical Support Team:	

II. Actions involved in this grant	
Description of Work:	
RESPOND Objective(s) this work relates to:	

<input type="button" value="Add an Action"/> <i>(Please describe the main actions - i.e., components, activities - of this work.)</i>	

III. Additional Information	
USAID Comment	Special Issues of Note

IV. Certification

I certify the completeness and the accuracy of the Environmental Screening Form described above. I agree to implement the mitigation measures put forth in the RESPOND Programmatic IEE for those activities noted in the Environmental Screening Form that have potential environmental threats. I agree to include a mitigation plan in the RESPOND Detailed Implementation Plan (DIP) for any activities with a potential environmental threat (Annex 1) and to submit annual reports on the status of mitigation measures (Annex 2).

Pending Certification

(On: by ,)

Form for the "Add an Action" button above

Link:

Environmental Action: P-UMNKLA-001	
Action Category	
Action	
Risk Category	
Potential Issue	
Mitigation Measure	
Monitoring Indicator	
Monitoring and Reporting Frequency	
Parties Responsible	
Other Initial Comments or Notes:	

Status of Mitigation Measure First Date of Follow-up:	Date: Comments:
Status of Mitigation Measure Second Date of Follow-up:	Date: Comments:
Status of Mitigation Measure Third Date of Follow-up:	Date: Comments:
Status of Mitigation Measure Fourth Date of Follow-up:	Date: Comments:

Pending Closure

The initial form (below) used for screening and criteria has been merged with the Environmental Review and Action EMMP in TAMIS in order to improve the quality of environmental reviews, as well as streamline the review process. The information available in the initial form below is now available in the Environmental Screening, Review and Action EMMP.

Activity Screening Report

A. Applicant information	
Name of Implementing Organization:	Funding Period for this Award:
Parent grant or project:	Location(s) of proposed activity: Country: Region:
Individual contact and title:	Address, phone & email (if available):
Proposed activity (brief description):	Report Prepared By:
B. Please check all the activities involved in this grant	
Proposed activities (defined at the beginning of the RESPOND project)	USAID Determination (defined at the beginning of the RESPOND project)
1. Yes Training Capacity within countries and regions for skills necessary to respond to any suspected outbreak of epizoonotic diseases	Negative Determination w/ conditions
2. Yes Improve the linkages among animal, human and environmental health organizations in responding to outbreaks of emerging zoonotic diseases of potential public health impact	Categorical Exclusion
3. Improve the capacity of countries and regions to conduct investigations of suspected outbreaks of emergent epizoonotic diseases that pose a serious threat to human health: a) Technical assistance Yes b) Communication & information sharing Yes	Negative Determination w/ conditions Categorical Exclusion

<p>4. Yes</p> <p>Introduce technologies to improve the capability of field epidemiologists to conduct surveillance and outbreak investigations</p>	<p>Deferral due to the unknown nature of future technological advances</p>
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C. Will any of these activities have a direct or indirect impact on the environment? If yes, please provide a brief explanation.	
Proposed activities	Environmental Impact?
<p>1. Training Capacity within countries and regions for skills necessary to respond to any suspected outbreak of epizoonotic diseases</p>	<p>Yes</p>
<p>Potential Environmental Threats:</p>	
<p>2. Improve the linkages among animal, human and environmental health organizations in responding to outbreaks of emerging zoonotic diseases of potential public health impact</p>	<p>Yes</p>
<p>Potential Environmental Threats:</p>	
<p>3. Improve the capacity of countries and regions to conduct investigations of suspected outbreaks of emergent epizoonotic diseases that pose a serious threat to human health:</p> <p>a) Technical assistance</p>	<p>Yes</p>
<p>b) Communication & information sharing</p> <p>Potential Environmental Threats:</p>	<p>Yes</p>
<p>4. Introduce technologies to improve the capability of field epidemiologists to conduct surveillance and outbreak investigations</p>	<p>Yes</p>
<p>Potential Environmental Threats:</p>	

RESULTS	Yes	No	REGULATION 216 ACTIVITY
All category 1. Categorical Exclusion. Activities that do not have an effect on the natural or physical environment.			No actions required
Any category 2. Negative Determination with Conditions. Activities with no significant adverse effects with normal good practices.			Continue with EDD and ER
Any category 3. Negative Determination with Conditions, with risk of potential negative effect.			Continue with EDD and ER
Any category 4 Positive Determination for activities that normally have a significant effect on the environment.			Continue with EDD and ER

ANNEX 3. TRAINING ACTIONS ENVIRONMENTAL MANUAL (EM) AND FRAMEWORK ENVIRONMENTAL MITIGATION AND MONITORING PLAN (FEMMP)

PURPOSE

The purpose of this EM/FEMMP is to list the environmental risks that correspond to RESPOND-supported actions and to define mitigation measures for risks.

The following table screens against environmental risk. It is based on best practices and expert opinion from people (e.g., RESPOND team members, implementing partners, contacts) who have worked on outbreak response.

Use of this EM/FEMMP to develop an Action Environmental Mitigation and Monitoring Plan for each proposed grant, direct assistance or localized program is a condition for obligating funds.

TABLE TO DEFINE EMMP AND USE OF THE TABLE

The technical staff and M&E team proposing the action will review the following framework table. Each line (action and risk) should be reviewed for relevance.

The technical staff & M&E team select all actions, risks and mitigation measures pertinent to the proposed work.

“Indirect risk” occurs when a participant in a USAID-financed action goes on to undertake steps that are not financed by USAID. The risks of such steps are not a result of USAID-financed actions, but the IEE instructs that the project look forward to potential outcomes of work indirectly related to the USAID-financed actions.

If the line is relevant, it will be kept. If it is not relevant, it will be discarded.

The set of relevant actions, risks and mitigation measures become the Action Environmental Mitigation and Monitoring Plan (A-EMMP).

Relevant mitigation measures must be included in the action plan.

The reviewer should adapt the suggestion found in the columns for: Monitoring indicator(s), Monitoring and Reporting Frequency and Parties responsible.

USE OF THE A-EMMP

When the relevant actions, risks and mitigation measures have been selected and the A-EMMP has been produced, it will be used to review steps to mitigate risk. Each mitigation measure must be implemented.

TABLE A8. SCREEN AGAINST ENVIRONMENTAL RISK: TRAINING

Framework Action EMMP

Action title:

Implementing Partner:

Date of Review:

Responsible MEO:

Approval:

Action	Potential issue	Mitigation Measure(s)	Monitoring indicator(s)	Monitoring and Reporting Frequency	Parties responsible
Training /enabling workers in response techniques (Objective 1)	Indirect risk: exposure (to people or animals or environment), generation and disposal of infectious and hazardous waste (in performance of activities covered by training).	<p>Provide information and training on how to manage exposure (e.g. to blood), decrease the generation of hazardous materials, pesticides and disinfectants, and properly dispose of pesticides and disinfectants (or "best management practices concerning the proper handling, use and disposal of medical pesticides and disinfectants, including blood, feces, sputum, use PPE materials and sharps). If training involves samples, train in safe sampling, conservation and transport of samples, human and animal remains. Provide personal protective equipment. Train workers in use of PPE (don, doff, disposal). Monitor use of PPE.</p> <p>Other topics to include in training: Review how response teams may generate hazardous, infectious or toxic pesticides and disinfectants and ways to reduce generation of pesticides and disinfectants; Decontamination of public and private property exposed to potentially infectious agents (see also worker safety); Define best practices for handling and disposing of toxic or infectious waste adapted to the resources, motivations, Knowledge, Attitudes and Practices of different actors; Apart from infectious waste, how should a response manage normal waste and garbage, particularly in areas with few or no basic</p>	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.

		<p>services? Identify and train staff.</p> <p>Reference materials: See USAID docs on pesticides and disinfectants management including: Hazardous pesticides and disinfectants storage area siting and design checklist and Burn pit siting and design checklist. http://www.encapafrica.org/EGSSAA/Word_English/medpesticides_and_disinfectants.doc</p> <p>T. Grayling, <i>Guidelines for Safe Disposal of Unwanted Pharmaceuticals In and After Emergencies</i> (guidance on disposal of expired medication)</p> <p>S. Batterman, <i>Assessment of Small-Scale Incinerators for Health Care Pesticides and disinfectants</i>(guidance on incinerator design)</p>			
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<p>Training in methods involving generation of waste with infectious or toxic agents</p>	<p>Indirect risk: Generation and need for disposal of hazardous and medical waste (see Section 3 of IEE)</p> <p>Spread of infectious agent due to failed or lack of containment and decontamination facilities and procedures.</p> <p>Generation of pesticides and disinfectants leading to toxicity or contamination.</p> <p>Generation of unused pharmaceuticals.</p>	<p>Provide information and training on how to manage exposure (e.g. to blood), decrease the generation of hazardous materials, pesticides and disinfectants, and properly dispose of pesticides and disinfectants (or "best management practices concerning the proper handling, use and disposal of medical pesticides and disinfectants, including blood, feces, sputum, use PPE materials and sharps). If training involves samples, train in safe sampling, conservation and transport of samples, human and animal remains.</p> <p>Other topics to include in training: Review how response teams may generate hazardous, infectious or toxic pesticides and disinfectants and ways to reduce generation of pesticides and disinfectants; Decontamination of public and private property exposed to potentially infectious agents (see also worker safety); Define best practices for handling and disposing of toxic or infectious waste adapted to the resources, motivations, Knowledge, Attitudes and Practices of different actors; Apart from infectious waste, how should a response manage normal waste and garbage, particularly in areas with few or no basic services? Identify and train staff.</p> <p>Reference materials: See USAID docs on pesticides and disinfectants management including: Hazardous pesticides and disinfectants storage area siting and</p>	<p>Training materials and record of training on file.</p>	<p>End of action.</p>	<p>Implementing partner, MEO and COP.</p>
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		<p>design checklist and Burn pit siting and design checklist. http://www.encapafrika.org/EGSSAA/Word_English/medpesticidesanddisinfectants.doc</p> <p>T. Grayling, <i>Guidelines for Safe Disposal of Unwanted Pharmaceuticals In and After Emergencies</i> (guidance on disposal of expired medication)</p> <p>S. Batterman, <i>Assessment of Small-Scale Incinerators for Health Care Pesticides and disinfectants</i>(guidance on incinerator design)</p>			
<p>Training in methods involving use of pesticides, disinfectants and detergents.</p>	<p>Indirect risk: improper use of pesticides, disinfectants and detergents.</p> <p>Generation of unused pesticides, disinfectants and detergents.</p>	<p>Provide information and training on how to manage exposure (e.g. to blood), decrease the generation of hazardous materials and waste, and properly dispose of that waste (or "best management practices concerning the proper handling, use and disposal of medical waste, including blood, sputum, and sharps). If training involves samples, train in safe sampling, conservation and transport of samples, human and animal remains.</p> <p>Training should cover: Review necessity for pesticide, disinfectant, antiseptic and detergent use, selection of products and application method; Review possibility to use low-impact methods (e.g. odor-baited traps instead of pesticide); If justified, choose agents and tools with least-risk to humans, animals and the environment;</p>	<p>Training materials and record of training on file.</p>	<p>End of activity.</p>	<p>Implementing partner, MEO and COP.</p>

		<p>Define best practices for pesticide, disinfectant and detergent use. Include rodenticides, if applicable. Identify and train staff.</p> <p>Reference Material: http://www.pesticideinfo.org/ WHO toxicity list, EU/EC list of banned pesticides and disinfectants, PIC POP conventions, US EPA, FAO guidelines for pesticide exclusion. For complex cases, do an EA.</p>			
<p>Training in methods that could result in substantial culling or reservoir/vect or population reduction (PR).</p>	<p>Indirect risk: Risk from improper disposal of animal remains from culling.</p> <p>Risk of dispersal of animals during culling operations.</p>	<p>Provide information and training in safe and humane methods of culling and disposal of livestock, depending on vector, disease. Methods to mitigate risk to workers and other humans. Risk of environmental contamination.</p> <p>Training should take into account: Develop written risk assessment for culling; Compare culling with vaccine or other strategies; Compare PIC (point infection control) vs. areal PR. Develop culling plan with safe and humane methods, including worker safety plan; Assign responsibility to monitor and report environmental and safety issues; Apply key points of best practices; Describe monitoring system to repeat, continue or terminate culling. Follow-up: assess recovery after culling.</p> <p>Reference materials: http://www.fao.org/DOCREP/004/Y0660E/Y0660E00.HT</p>	<p>Training materials and record of training on file.</p>	<p>End of action.</p>	<p>Implementing partner, MEO and COP.</p>

		<p>M</p> <p>Several sources cover methods of incinerating, burning, burial.</p> <p>USDA/APHIS materials: Carcass disposal method selection.</p> <p>Static pile butcher residual composting.</p> <p>Static pile carcass composting.</p> <p>Cleaning and disinfecting AI-infected poultry carcasses.</p> <p>Off-site burial and treatment of AI-Infected poultry carcasses.</p> <p>On-site burial and treatment of AI-Infected poultry carcasses.</p> <p>Outdoor composting of AI-Infected poultry carcasses.</p> <p>Secure transportation of AI-Infected poultry carcasses.</p> <p>Trench burial. Giovannini A (2007) The use of risk analysis to evaluate alternatives to animal destruction. Vet Ital 43: 257–271.</p>			
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<p>Training in methods that could result in substantial culling.</p>	<p>Indirect risk from impact on diet or livelihoods.</p> <p>Application of techniques lead to loss of livestock, animal traction, changes in behavior, health and reproductive capacity of surviving animals, effects on local/regional markets, food supply or livelihoods, including monetary income or diet.</p> <p>Differential social or gender impact.</p>	<p>Training materials on choice of disease control including socio-economic consequences. Possible compensation. Support for compensatory mitigation measures.</p> <p>Training to take into account: Assess social and economic impact of culling and cultural acceptance in preparation for an outbreak or even during an outbreak? Develop written livelihoods risk assessment for culling including assessment of vulnerable populations; Develop culling plan with least impact on livelihoods consistent with health objectives; Plan for recovery as integral part of response management plan. Develop public outreach plan; Train staff in public outreach and local regulations for engaging public; Assign responsibility to monitor and report livelihoods issues; Apply key points of Livelihoods Review; Develop training materials on best practices to mitigate impact on livelihoods based on best practices review.</p> <p>Reference materials: On impact of outbreaks and response: http://www.fao.org/avianflu/en/impact.html</p> <p>http://www.fao.org/docs/eims/upload//251044/aj201e00.pdf</p> <p>On compensation: http://www.fao.org/docs/eims/upload//217838/gui_hpai_compensationsumm_en.pdf</p>	<p>Training materials and record of training on file.</p>	<p>End of action.</p>	<p>Implementing partner, MEO and COP.</p>
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		<p>StopAI material: Tool 9. Food Security and Livelihoods: <i>“Identification of People Most at Risk of Food Insecurity”</i> and <i>“Considerations in Outbreak Recovery”</i></p>			
<p>Training in methods that could result in substantial capture, sampling and release of wildlife</p>	<p>Indirect risk to humans and wildlife; direct risk of injury to humans by the wild animals or risk to humans from the anesthetic drugs and drug delivery systems uses; risk of waste from capture and care; risk to animals, particularly rare</p>	<p>Training on capture, handling and care of wildlife (depending on use or destination of animals); training in use of anesthetic or other drugs.</p> <p>Training to take into account: Separate wildlife from domestic stock. Culling may not be necessary; Develop written risk assessment for wildlife culling; Compare separation, culling, vaccine and other strategies; If culling is required, compare PIC (point infection control) vs. areal PR; Develop culling plan with safe and humane methods, including worker safety plan. How do you know if a rare or endangered species will be affected? What are the most humane ways to capture and sample? Assign responsibility to monitor and report environmental and safety issues; Training on capture,</p>	<p>Training materials and record of training on file.</p>	<p>End of action.</p>	<p>Implementing partner, MEO and COP.</p>

	or endangered species.	handling and care of wildlife (depending on use or destination of animals); Training on use of anesthetic or other drugs. Apply key points of best practices; Describe monitoring system to repeat, continue or terminate culling; Follow-up: assess recovery after culling. Reference materials: Disease monitoring for conservation: http://www.wcs.org/conservation-challenges/wildlife-health/disease-investigations.aspx ; Forthcoming: Document on capture and sampling, CITES summary and references.			
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<p>Training in methods on habitat alteration or use of materials that could affect habitat.</p>	<p>Indirect risk: Effect on sensitive habitat during rapid response; destruction of critical habitats or jeopardy of threatened and endangered species; changes in flora and fauna; impacts on human habitats.</p>	<p>Case histories of selection of habitat modification as control methods, e.g. spraying water sources, clearing vegetation, digging burial and disposal pits, large-scale burning of infected materials, damage to animal holding facilities or foraging areas, gardens/crops, etc.</p> <p>Information should take into account: Develop written risk assessment for natural and human-modified habitat conservation; If habitat modification or use of damaging materials/equipment is required, develop strategy and plan with safe and least destructive methods, including worker safety plan; Assign responsibility to monitor and report environmental and safety issues; Emphasize techniques to minimize damage to habitats during outbreak investigation and response; Apply key points of best practices; Describe monitoring system to assure best practices; Follow-up: if applicable/necessary, assess habitat recovery after operations.</p> <p>See above; review methods to choose least damaging to environment (e.g. odor-baited traps instead of pesticide); for complex cases, do EA.</p>	<p>Training materials and record of training on file.</p>	<p>End of action.</p>	<p>Implementing partner, MEO and COP.</p>
<p>Training in responses to infectious disease.</p>	<p>Indirect risk: Response worker exposure to infectious disease or chemicals.</p>	<p>Training materials to cover: Manage exposure (e.g. to blood, tissue), decrease the generation of hazardous materials and waste, and properly dispose of that waste (or "best management practices concerning the proper handling, use and disposal of medical waste, including</p>	<p>Training materials and record of training on file.</p>	<p>End of action.</p>	<p>Implementing partner, MEO and COP.</p>

	Exposure (to people or animals or environment); generation and disposal of infectious and hazardous waste (in performance of activities covered by training).	<p>blood, sputum, PPE and sharps). If training involves samples, train in safe sampling, conservation and transport of samples, human and animal remains. Provide personal protective equipment. Train workers in use of PPE (don, doff, disposal). Monitor use of PPE.</p> <p>Reference material: Stop AI module on Personal Protective Equipment (PPE)</p>			
Training on animal immobilization methods	Human or animal injury	Training on human and animal safety, instructors have set up strict procedures for animal handling, safety and use of anesthesia, CPR and first aid training, plus procedure for accidental human injection of anesthesia	<p>Experienced instructor/practitioner to student ratio is 1:1.5 as backup. Additional animal control backup identified. AED and CPR materials on hand, experienced instructor on hand, hospital location identified with ready access to vehicles for</p>	End of action.	Implementing partner, MEO and COP.

			transportation, first aid kit on site.		
Training on dart gun use	Human injury from improper dart gun use	Training to include techniques on properly using dart gun and other safety measures. Gun safety officer and one (1) instructor supervising each dart gun station. CPR training.	Gun instructor demonstration, feedback and correction to students. CPR training included. Individual feedback and observation by instructor	End of action.	Implementing partner, MEO and COP.
Training in response activities that may lead to human resistance, passive resistance (e.g.) flight, and human-human violence or conflict	Indirect risk: application of training leads to situations where local populations resist response to outbreak violently or passively (which may spread infected animals)	Train staff in public outreach and methods to respond to protest. Training to take into account: Design programs that are intelligible to local farmers and other actors, based on KAP and participatory studies. Be prepared for extreme behavioral responses (such as fear, flight, internal or external community conflict/ violence, or cessation of services.) Plan feasible recovery to follow response. Train staff in public outreach and methods to respond to protest.	Training materials and record of training on file. Follow-up reports.	End of action.	Implementing partner, MEO and COP.

		<p>Reference materials: http://www.fao.org/docs/eims/upload//241483/ai301e00.pdf</p> <p>Draw materials from: http://www.fao.org/avianflu/en/communication.html</p>			
Training or procurement to manage infectious agents.	Indirect risk: Spread of infectious agent due to failed or lack of containment and decontamination facilities and procedures.	Containment of infectious agents.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Training or procurement to manage infectious agents.	Indirect risk: Exposure to potentially infectious agents.	Decontamination of persons and property exposed to potentially Infectious agents.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Training or procurement to manage infectious agents.	Indirect risk: Generation of waste.	<p>Waste management. See http://www.encapafrika.org/EGSSAA/Word_English/mewaste.doc. To prevent transmitted diseases and ensure correct disposal of medical waste during and after the training on wildlife forensic sciences, the trainers will provide demonstration and high level of safety protocol with close supervision during participants' practices.</p>	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.

Training with classroom demonstrations	Human-human disease transmission	Students practicing assisted breathing on dummies wear masks and dummy is cleaned with alcohol between uses	Trainers provided demonstration of proper safety technique for sanitizing dummy after and before use; Instructor provided feedback on following safety protocol	End of action.	Implementing partner, MEO and COP.
Training in response methods that lead to changes livelihoods.	Indirect risk: application of techniques lead to loss of livestock, animal traction, markets, food supply or livelihoods.	Develop case histories, training materials, assessment methods and documentation of level of impact on food supply, nutrition and livelihoods ¹ . Train staff in public outreach and local regulations for engaging public.	Case histories. Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Training with content to be determined	Activities with risk during training and/or activities with risk during implementation of training	Assessment conducted and inclusion of risk analysis and mitigation measures with each topic or in a separate module	Assessment, training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.

¹ Including differential gender and social impacts.

Training for other activities that inherently affect the environment	None; Positive opportunity	Training will include environmental considerations	Case histories. Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Training with no significant risk (e.g., leadership skills, analysis, One Health concepts)	None	Not Applicable	Not applicable	Not applicable	Not applicable
Assess skills, knowledge, needs	None	Not applicable	Not applicable	Not applicable	Not applicable
Attendance at conference. Not expected to gain specific skills/knowledge.	None	Not applicable	Not applicable	Not applicable	Not applicable
Collaborate with Stakeholders	None	Not applicable	Not applicable	Not applicable	Not applicable
Faculty/student	None - While the information/kno	Not applicable	Not applicable	Not applicable	Not applicable

exchanges in a university setting	wledge shared in an exchange could pose an environmental risk, RESPOND is only supporting the collaboration/exchange itself.				
Field trips/visits intending to familiarize participants with settings	None	Not applicable	Not applicable	Not applicable	Not applicable
Implement & maintain knowledge management system used for training (e.g., coursework, modules, resources, tests)	None	Not applicable	Not applicable	Not applicable	Not applicable
Organizational development	None	Not applicable	Not applicable	Not applicable	Not applicable

(e.g., establishing secretariat, legal issues, workplan development, bylaws)					
Planning for future training	None	Not applicable	Not applicable	Not applicable	Not applicable
Presentation/ speaking at conference/se minar	None	Not applicable	Not applicable	Not applicable	Not applicable
Training content/ material development	None	Not applicable	Not applicable	Not applicable	Not applicable
Translate existing materials/con tent into another language.	None	Not applicable	Not applicable	Not applicable	Not applicable
Workshop for participants to collaborate (e.g., updates, planning)	None	Not applicable	Not applicable	Not applicable	Not applicable

ANNEX 4. PROCUREMENT, STORAGE, MANAGEMENT AND DISPOSAL OF PUBLIC HEALTH COMMODITIES ENVIRONMENTAL MANUAL (EM) AND FRAMEWORK ENVIRONMENTAL MITIGATION AND MONITORING PLAN (FEMMP)

PURPOSE

The purpose of this EM/FEMMP is to list the environmental risks that correspond to RESPOND-supported actions and to define mitigation measures for risks.

The following table screens against environmental risk. It is based on best practices and expert opinion from people (e.g., RESPOND team members, implementing partners, contacts) who have worked on outbreak response.

Use of this EM/FEMMP to develop an Action Environmental Mitigation and Monitoring Plan for each proposed grant, direct assistance or localized program is a condition for obligating funds.

TABLE TO DEFINE EMMP AND USE OF THE TABLE

The technical staff and M&E team proposing the action will review the following framework table. Each line (action and risk) should be reviewed for relevance.

The technical staff and M&E team select all actions, risks and mitigation measures pertinent to the proposed work.

“Indirect risk” occurs when a participant in a USAID-financed action goes on to undertake steps that are not financed by USAID. The risks of such steps are not a result of USAID-financed actions, but the IEE instructs that the project look forward to potential outcomes of work indirectly related to the USAID-financed actions.

If the line is relevant, it will be kept. If it is not relevant, it will be discarded.

The set of relevant actions, risks and mitigation measures become the Action Environmental Mitigation and Monitoring Plan (A-EMMP).

Relevant mitigation measures must be included in the action plan.

The reviewer should adapt the suggestion found in the columns for: Monitoring indicator(s), Monitoring and Reporting Frequency and Parties responsible.

USE OF THE A-EMMP

When the relevant actions, risks and mitigation measures have been selected and the A-EMMP has been produced, it will be used to review steps to mitigate risk. Each mitigation measure must be implemented.

TABLE A9. SCREEN AGAINST ENVIRONMENTAL RISK: PROCUREMENT

Framework Action EMMP

Action title:

Implementing Partner:

Date of Review:

Responsible MEO:

Approval:

Action	Potential issue	Mitigation Measure(s)	Monitoring indicator(s)	Monitoring and Reporting Frequency	Parties responsible
Procure, store, manage, and dispose of lab test kits, pharmaceuticals, other chemicals.	Contamination of soil, sediment, air, water, or groundwater due to failed containment, decontamination, storage and use of chemicals and other hazardous waste.	<p>Chemicals: Train consignees on risks; advise consignees to store the produce according to the information provided on the manufacturer's Materials Safety Data Sheet (MSDS).</p> <p>Advise consignees on preferred method of disposal (return to manufacturer; alternatively apply WHO guidelines*).</p> <p>Solid waste: advise on disposal of non-pharmaceutical solid waste.</p> <p>Arrange to minimize packaging, establish efficient distribution systems (to minimize unnecessary chemicals in the environment) and ensure proper disposal of solid and hazardous waste.</p>	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Procure, store, manage, dispose of personal protective equipment.	Contamination of soil, sediment, air, water, or groundwater due to failed containment, decontamination, storage and use of chemicals and other	Advise and train consignees on hazards related to disposal of used equipment and methods of disposal that are feasible and safe in likely context of use.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.

	hazardous waste.				
Training in use of procured materials.	See Training for risk and mitigation.	See Training.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Training for response planning and implementation.	See Response plan and implementation.	See Response plan and implementation.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Small-scale water treatment for response teams.	Improper siting damages natural ecosystems; depletion of freshwater resources; creation of stagnant water, biological or chemical contamination of sources of drinking water (including arsenic), contamination due to	See http://www.encapafrika.org/EGSSAA/Word_English/wat_san.doc	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.

	poorly- designed plumbing, pipes.				
Small-scale latrines for response teams.	Contamination of surface water, groundwater, soil or food by waste or pathogens; degradation of water quality from latrines or waste; defecation around locked latrines; damage to aesthetics.	See http://www.encapafrica.org/EGSSAA/Word_English/watsan.doc	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Temporary or permanent water and sanitation effort associated with response program.		Consult USAID: "USAID will provide guidance and processes to country and regional teams" (Table 1 of IEE).	Per USAID guidance.	End of action.	Implementing partner, MEO and COP.

Rehabilitate hospitals, clinics, labs or training centers for the purposes of capability building or rapid response team storage, training and implementation.	Expose of healthcare workers, cleaning staff, patients, visitors, waste collectors, disposal site staff, waste pickers, substance abusers and those who use "recycled" contaminated syringes and needles.	Consult USAID: "USAID will provide assistance, guidance as appropriate toward the development, design, rehabilitation or temporary or permanent structures needed to support the Objective" (IEE Table 1).	Per USAID guidance. Environmental review. Baseline, monitoring, end of action records.	End of action.	Implementing partner, MEO and COP.
Rehabilitate hospitals, clinics, labs or training centers for the purposes of capability building or rapid response team storage, training and implementation.	Contamination of water through waste or toxic materials; social impacts due to displacement of local inhabitants, influx of outside workers, inequitable distribution of benefits; damage to aesthetics; improper extraction of rehabilitation materials; use of toxic materials.	See http://www.encapafrica.org/EGSSAA/Word_English/construction.doc	Per USAID guidance. Environmental review. Baseline, monitoring, end of action records.	End of action.	Implementing partner, MEO and COP.
Procurement to	Indirect risk: Spread	Containment of infectious agents.	Training	End of	Implementing

manage infectious agents	of infectious agent due to failed or lack of containment and decontamination facilities and procedures.		materials and record of training on file.	action.	partner, MEO and COP.
Procurement to manage infectious agents	Indirect risk: Generation of waste.	Waste management. See http://www.encapafrika.org/EGSSAA/Word_English/medwaste.doc	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Procurement to manage infectious agents	Indirect risk: Exposure to potentially infectious agents.	Decontamination of persons and property exposure to potentially infectious agents.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Collaborate with Stakeholders	None	Not Applicable	Not applicable	Not applicable	Not applicable
Procurement of bicycles, motorcycles, spare parts, radios	None - Improper use/maintenance (e.g., petrol spill, excessive exhaust) or disposal of equipment could impact the environment. However, assume that recipients have	Not Applicable	Not applicable	Not applicable	Not applicable

	experience with the equipment and are familiar with proper environmental considerations.				
Procurement of office/school related equipment (e.g., computer, server, desk, phone)	None	Not Applicable	Not applicable	Not applicable	Not applicable

Note: If USAID requires RESPOND to procure, store, manage or dispose of animal vaccines or veterinary supplies, RESPOND will manage them with methods drawn from Guidelines for Safe Disposal of Unwanted Pharmaceuticals During and After Emergencies available at www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf . Currently, the project has no plans for acquiring such materials.

ANNEX 5. RESPONSE PLAN AND IMPLEMENTATION ENVIRONMENTAL MANUAL (EM) AND FRAMEWORK ENVIRONMENTAL MITIGATION AND MONITORING PLAN (FEMMP)

PURPOSE

The purpose of this EM/FEMMP is to list the environmental risks that correspond to RESPOND-supported actions and to define mitigation measures for risks.

The following table screens against environmental risk. It is based on best practices and expert opinion from people (e.g., RESPOND team members, implementing partners, contacts) who have worked on outbreak response.

Use of this EM/FEMMP to develop a Action Environmental Mitigation and Monitoring Plan for each proposed grant, direct assistance or localized program is a condition for obligating funds.

TABLE TO DEFINE EMMP AND USE OF THE TABLE

The technical staff and M&E team proposing the action will review the following framework table. Each line (action and risk) should be reviewed for relevance.

The technical staff and M&E team select all actions, risks and mitigation measures pertinent to the proposed work.

“Indirect risk” occurs when a participant in a USAID-financed action goes on to undertake steps that are not financed by USAID. The risks of such steps are not a result of USAID-financed actions, but the IEE instructs that the project look forward to potential outcomes of work indirectly related to the USAID-financed actions.

If the line is relevant, it will be kept. If it is not relevant, it will be discarded.

The set of relevant actions, risks and mitigation measures become the Action Environmental Mitigation and Monitoring Plan (A-EMMP).

Relevant mitigation measures must be included in the action plan.

The reviewer should adapt the suggestion found in the columns for: Monitoring indicator(s), Monitoring and Reporting Frequency and Parties responsible.

USE OF THE A-EMMP

When the relevant actions, risks and mitigation measures have been selected and the A-EMMP has been produced, it will be used to review steps to mitigate risk. Each mitigation measure must be implemented.

Framework Sub-Activity EMMP

Action title:

Implementing Partner:

Date of Review:

Responsible MEO:

Approval:

Action	Potential issue	Mitigation Measure(s)	Monitoring indicator(s)	Monitoring and Reporting Frequency	Parties responsible
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Develop response plan or program.	Indirect risk: destruction of critical habitats or jeopardy of threatened and endangered species.	USAID or IP will coordinate with country and regional environmental authorities.	Training materials and record of training on file.	End of action.	Implementin g partner, MEO and COP.
Develop response plan or program.	Indirect risk: Spread of infectious agent due to failed or lack of containment and decontamination facilities and procedures.	Train to notify appropriate local, national, and/or international health officials by phone, fax or email about potential problem promptly; follow any recommended WHO or CDC guideline for infection control to the extent possible. Project notifies officials upon learning of events.	Training materials and record of training on file.	End of action.	Implementin g partner, MEO and COP.
Distribute personal protective equipment, disinfectants	Contamination of soil, sediment, air, water, or groundwater due to failed containment, decontamination, storage and use of chemicals and other hazardous waste.	Advise and train consignees on hazards related to disposal of used equipment and methods of disposal that are feasible and safe in likely context of use.	Training materials and record of training on file.	End of action.	Implementin g partner, MEO and COP.

Training includes planning for substantial culling of live (non-human) animals.	Indirect risk: Risk from improper disposal of animal remains from culling.	Train to follow appropriate FAO/OIE guidelines for appropriate disposal of carcasses, and/or any WHO occupational health guidelines recommended for workers exposed in these situations.	Training materials and record of training on file.	End of action.	Implementin g partner, MEO and COP.
Training includes planning for substantial culling of live (non-human) animals.	Indirect risk: Risk from impact on diet or livelihoods.	Train to discuss with appropriate community leaders and national and/or FAO/OIE officials to discuss risk and mitigate where possible.	Training materials and record of training on file.	End of action.	Implementin g partner, MEO and COP.
Implement response action.	Indirect risk: Destruction of critical habitats or jeopardy of threatened and endangered species.	Train to work with local and regional environmental and natural resource authorities. Project notifies officials upon learning of events.	Training materials and record of training on file.	End of action.	Implementin g partner, MEO and COP.

Implement response action.	Indirect risk: Spread of infectious agent due to failed or lack of containment and decontamination facilities and procedures; contamination of soil, sediment or groundwater; contamination of persons, property or environment.	Train to respond to contamination: see http://www.sphereproject.org/index.php?option=content&task=view&id=27&itemid=84	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Implement response action.	Indirect risk: Risk from improper disposal of animal remains from culling.	Train proper disposal of animal remains from culling.	Training materials and record of training on file.	End of action.	Implementing partner, MEO and COP.
Training in response methods that lead to	Indirect risk: application of techniques lead to loss of livestock,	Develop case histories, training materials, assessment methods and documentation of level of impact on food supply, nutrition and livelihoods ² .	Case histories. Training materials and	End of action.	Implementing partner, MEO and COP.

² Including differential gender and social impacts.

changes livelihoods.	animal traction, markets, food supply or livelihoods.	Train staff in public outreach and local regulations for engaging public.	record of training on file.		
Training in response activities that may lead to human resistance, passive resistance (e.g.) flight, and human-human violence or conflict.	Indirect risk: application of training leads to situations where local populations resist response to outbreak violently or passively (which may spread infected animals).	Train staff in public outreach and methods to respond to protest.	Training materials and record of training on file. Follow up reports.	End of action.	Implementin g partner, MEO and COP.
Assessment of outbreak response situation (e.g., aerial surveillance)	None	Not Applicable	Not applicable	Not applicable	Not applicable
Assess electronic/technology resources, determine needs, etc.	None	Not Applicable	Not applicable	Not applicable	Not applicable

Collaborate with stakeholders	None	Not Applicable	Not applicable	Not applicable	Not applicable
Communication/public awareness support during outbreak response	None	Not Applicable	Not applicable	Not applicable	Not applicable
Create database which will contain information useful for outbreak response efforts	None	Not Applicable	Not applicable	Not applicable	Not applicable

ANNEX 6. A-EMMP: THE ACTION ENVIRONMENTAL MITIGATION AND MONITORING PLAN AND REPORTS

The A-EMMP is developed following the following steps:

- Begin with appropriate Framework Manual (EM) and Framework Environmental Mitigation and Monitoring Plan (FEMMP) (Annex 3, 4, 5);
- Select only those lines that require mitigation measures;
- Review optional measures (Annex 3, 4, 5) as required;
- Review Environmental review and assessment checklist (ER) (Annex 7) for additional mitigation measures;
- Review Locality Environmental/social Screening (EDD) (Annex 8) for additional mitigation measures;
- Add clarifications as needed.

The format of the A-EMMP table is the following:

TABLE A10. A-EMMP

Action	Potential issue	Opportunity	Mitigation Measure(s)	Monitoring indicator(s)	Monitoring and Reporting Frequency	Parties responsible

Once the report is done, implementation is monitored using the following form:

Date of review					
Form Completion					
Partner					
Sub-activity name					
Sub-activity number					
EMMP done?					
Final report done?					
Date start					
Date end					
Monitoring and Reporting Frequency					
Parties responsible					
USAID comment					
Special issues of note					
	1	2	3	4	5
Action (up to 5 per sub-activity)					
USAID risk category 1, 2, 3, 4					
Potential issue					
Mitigation Measure(s)					
Monitoring indicator(s)					
Status of mitigation measures					
Potential issue					
Mitigation Measure(s)					
Monitoring indicator(s)					
Status of mitigation measures					
Potential issue					
Mitigation Measure(s)					
Monitoring indicator(s)					
Status of mitigation measures					

ANNEX 7. ENVIRONMENTAL REVIEW AND ASSESSMENT CHECKLIST (ER)

IN PROCESS

ENVIRONMENTAL REVIEW AND ASSESSMENT CHECKLIST (ER Checklist)

The purpose of this *Environmental Review and Assessment Checklist (ER Checklist)* is to determine whether the proposed action encompasses the potential for environmental pollution or concern and, if so, to determine the scope and extent of additional environmental evaluation, mitigation, and monitoring necessary to fulfill federal U.S. environmental requirements. The *ER Checklist*, which includes the Leopold matrix, is intended to be used by the AOTR to ensure USAID and the host country take environmental consequences into account. RESPOND has incorporated the ER into the Environmental Screening, Review and Action EMMP in TAMIS.

Date of Review:

Name of Project/Action:

Type of Project/Action:

Location:

Project/Action Description: *(Provide sufficient description and details for environmental impact analysis)*

Baseline Environmental Conditions: *(Provide site specific environmental conditions due to onsite & offsite sources details for impact analysis)*

- A. CHECKLIST FOR ENVIRONMENTAL CONSEQUENCES:** Check appropriate column as Yes (Y), Maybe (M), No (N) or Beneficial (B). Briefly explain Y, M and B checks in next Section, "Explanations". A "Y" response does not necessarily indicate a significant effect, but rather an issue that requires focused consideration.

Y. M. N or B

1. Earth Resources

- a. grading, trenching, or excavation in cubic meters or hectare _____
- b. geologic hazards (faults, landslides, liquefaction, un-engineered fill, etc.) _____
- c. contaminated soils or ground water on the site _____
- d. offsite overburden/waste disposal or borrow pits required in cubic meters or tons _____
- e. loss of high-quality farmlands in hectares _____
- f. Agricultural Land* _____
- g. Soil Erosion Slope Stability* _____

2. Agricultural and Agrochemical

- a. impacts of inputs such as seeds and fertilizers _____
- b. impact of production process on human health and environment _____
- c. other adverse impacts _____

3. Industries

- a. impacts of run-off and run-on water _____
- b. impact of farming such as intensification or extensification _____
- c. impact of other factors _____

4. Air Quality

- a. substantial increase in onsite air pollutant emissions (construction/operation) _____
- b. violation of applicable air pollutant emissions or ambient concentration standards _____
- c. substantial increase in vehicle traffic during construction or operation _____
- d. Demolition or blasting for construction _____
- e. substantial increase in odor during construction or operation _____
- f. substantial alteration of microclimate _____

5. Water Resources and Quality

- a. river, stream or lake onsite or within 30 meters of construction _____
 - b. withdrawals from or discharges to surface or ground water _____
 - c. excavation or placing of fill, removing gravel from, a river, stream or lake _____
 - d. onsite storage of liquid fuels or hazardous materials in bulk quantities _____
 - e. Surface Water Quantity Surface Water Quality* _____
 - f. Ground Water Quantity, Ground Water Quality, Air Quality* _____
- 6. Cultural Resources**
- a. prehistoric, historic, or paleontological resources within 30 meters of construction _____
 - b. site/facility with unique cultural or ethnic values _____
 - c. Land Use or settlement pattern* _____
 - d. Distribution Systems, Employment* _____
 - e. At Risk Population, Migrant Population* _____
 - f. Community Stability* _____
 - g. Cultural/Religious Values* _____
 - h. Tourism/Recreation or livelihoods* _____
- 7. Biological Resources**
- a. vegetation removal or construction in wetlands or riparian areas in hectare _____
 - b. use of pesticides/rodenticides, insecticides, or herbicides in hectare _____
 - c. Construction in or adjacent to a designated wildlife refuge _____
 - d. Aquatic Ecosystems, Wetland Ecosystems, Terrestrial Ecosystems _____
 - e. Endangered Species, Migratory Species, Beneficial Plants, _____
 - f. effect on Beneficial Animals, Pest Plants, Pest Animals _____
 - g. Disease Vectors _____
- 8. Planning and Land Use**
- a. potential conflict with adjacent land uses _____
 - b. non-compliance with existing codes, plans, permits or design factors _____
 - c. construction in national park or designated recreational area _____
 - d. create substantially annoying source of light or glare _____
 - e. relocation of >10 individuals for +6 months _____

- f. interrupt necessary utility or municipal service > 10 individuals for +6 months _____
- g. substantial loss of inefficient use of mineral or non-renewable resources _____
- h. increase existing noise levels >5 decibels for +3 months _____

9. Traffic, Transportation and Circulation

- a. increase vehicle trips >20% or cause substantial congestion _____
- b. design features cause or contribute to safety hazards _____
- c. inadequate access or emergency access for anticipated volume of people or traffic _____

10. Hazards

- a. substantially increase risk of fire, explosion, or hazardous chemical release _____
- b. bulk quantities of hazardous materials or fuels stored on site +3 months _____
- c. create or substantially contribute to human health hazard _____

11. Other Issues (to be used for categories not captured under 1 through 10 above)

- a. Other substantial adverse impact _____
- b. Other adverse impact _____
- c. Other minimal impact _____

B. EXPLANATION OF ENVIRONMENTAL CONSEQUENCES: explain Y, M and B responses

C. RECOMMENDED ACTION (Circle Appropriate Action):

1. The sub-activity has no potential for substantial adverse environmental effects. No further environmental review is required.
2. The sub-activity has little potential for substantial adverse environmental effects; however the recommended mitigation measures will be developed and incorporated in the project design and/or construction, operation and maintenance phases. No further environmental review is required.
3. The sub-activity has substantial, but mitigatable adverse environmental effects and required measures to mitigate environmental effects. A Mitigation and Monitoring (M&M) Plan must be developed.
- 4a. The sub-activity has potentially substantial adverse environmental effects, but requires more analysis to form a conclusion. An environmental review or assessment must be prepared.
- 4b. The sub-activity has potentially substantial adverse environmental effects, and revisions to the project design or location or the development of new alternatives is required.

4c. The sub-activity has substantial and immitigable adverse environmental effects. Mitigation is insufficient to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

D. IDENTIFIED SIGNIFICANT ENVIRONMENTAL IMPACTS (including physical, biological and social), if any: (Use ER tools such as Leopold Matrix to identify significant environmental impacts)

E. RECOMMENDED MITIGATION MEASURES (includes **Public Participation** in case of all types of community and infrastructure projects):

F. RECOMMENDED MONITORING MEASURES (if any):

ANNEX 8. PARTNER ENVIRONMENTAL/SOCIAL SCREENING (EDD)

This table is to assist Environmental Due Diligence when USAID resources flow through a partner organization to beneficiaries. It screens their capacity to implement USAID environmental regulations. The “triple bottom line” for EDD is adapted from ADS 204, where it is required for EDD of GDA partners.

Partner:

Date of review:

Project reviewer:

Partner representative:

Partner Environmental/social Screening (EDD) Including Financial Intermediaries				
<u>EDD financial institutions</u>	<i>Reviews adequacy of the environmental capabilities of the partnering financial institutions. Do this form for every institution that will grant or lend funds from the project. Circle one answer for each question.</i>			
Environmental soundness				
Has a written environmental policy and procedures?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Has staff who screen for environmental and social soundness?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Requires compliance with environmental standards (national or international)?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Maintains evidence that it actually screens proposals?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Promotes feasible, sustainable technologies	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Trains practitioners in safe use of inputs and safe technologies?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Monitors and reports	Yes, all	Yes, for projects	No, but willing train	No, and not

environmental issues	projects	above a fixed amount	and able to implement for project activities	willing to implement for project activities
Conclusion: Is the institution environmentally responsible?	Yes	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
<i>Regulation 216 Activities</i>	<i>None required; training optional; monitor implementation</i>	<i>None required; training optional; monitor implementation</i>	<i>Train. Monitor implementation</i>	<i>Evaluate participation with MEO</i>

Social soundness

Has a written policy to include women in financed programs?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Rejects or modifies proposals that negatively affect human health?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Has procedures that allow low-income people to obtain benefits?	Yes, all projects	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
Conclusion: Is the financial institution socially responsible?	Yes	Yes, for projects above a fixed amount	No, but willing train and able to implement for project activities	No, and not willing to implement for project activities
<i>Regulation 216 Activities</i>	<i>None required; training optional; monitor implementation</i>	<i>None required; training optional; monitor implementation</i>	<i>Train. Monitor implementation</i>	<i>Evaluate participation with MEO for possible rejection</i>

Financial soundness

Does the institution have sufficient resources to meet obligations to support the proposed USAID activities?	Yes		No, but taking appropriate steps	No, and not willing to implement for project activities
Conclusion: Is the financial institution financially sound?	Yes		No, but taking appropriate steps	No
<i>Regulation 216 Activities</i>	<i>None required; training optional; monitor implementation</i>		<i>Train, set conditions in activity agreement.</i>	<i>Evaluate participation with MEO for possible rejection</i>

ANNEX 9. GRANT AND DIRECT ASSISTANCE ENVIRONMENTAL CLEARANCE

Grant or Direct Assistance Environmental Clearance Document		
Name of action:	_____	
Tracking number:	_____	
Implementing party:	_____	
	YES	NO
The sub-activity has: Category 1 Actions	<input type="checkbox"/>	<input type="checkbox"/>
Category 2, 3 Actions	<input type="checkbox"/>	<input type="checkbox"/>
Category 4 Actions	<input type="checkbox"/>	<input type="checkbox"/>
Environmental clauses in direct assistance or grant.	<input type="checkbox"/>	<input type="checkbox"/>

Certification of requirements:

Classification as Action1 has been reviewed and sub-activity may proceed.

Classification as Category 2 and 3 has been reviewed. ER, Partner EDD, and A-EMMP attached and correct. Sub-activity may proceed.

Classification as Category 4 has been reviewed. USAID has reviewed and approved Scoping Statement and Environmental Assessment. ER, Partner EDD, and A-EMMP attached and correct. Sub-activity may proceed.

The grant or direct assistance agreement and budget includes all required environmental mitigation measures, the requirement to monitor and report environmental compliance, the requirement to collaborate with project visits and requirements for environmental monitoring, and acknowledgement that failure to implement mitigation measures is grounds to terminate the action. Sub-activity may proceed.

All requirements have been met:

Name/Signatures

GO or delegate must sign.

Grants Officer (GO)

Date

MEM or COP must sign.

Monitoring & Evaluation Manager (MEM)

Date

COP signs all Category 4 actions; may replace MEM.

Chief of Party (COP)

Date

ANNEX 10. BEST PRACTICE REVIEWS

BACKGROUND

Many environmental issues for responses to zoonotic disease outbreaks are clear and so are the appropriate precautions or mitigation measures. But the best management practices (BMP) to deal with some issues are not completely clear. While there may be reports in the literature or anecdotes about procedures, proposed BMPs and mitigation measures may be lacking, either in general or for the typical contexts in which zoonotic disease outbreaks occur. Practitioners may understand the problem and manage it by varied means, but they do not have consistent and standardized BMPs to guide their response.

The Best Management Practices Review will provide state-of-the-art summary of issues related to specific issues during outbreak responses, provide reference materials for national RESPOND partners, provide training materials for use by RESPOND or others, disseminate knowledge of relevant BMPs to project partners and the wider practitioner community. In doing so, it will meet objectives of RESPOND and of USAID environmental regulations, which require continual review of environmental issues of concern to augment training materials.

These BMP reviews will use publications, written documents and oral reports of practitioners, to be included in project training events and contingency planning.

ACTIVITIES

USAID's RESPOND project has identified several such issues, and USAID environmental manuals are expected to evolve with experience to meet such issues. The project Environmental Mitigation and Monitoring Plan includes provision that in the course of Years 3-4, RESPOND will review best management practices to most effectively confront issues and to develop appropriate training materials.

The project will produce the following reports, action plans and trainings:

1. Best Practice Review and Action Plan: Experience and best practices for medical waste disposal in remote areas lacking health infrastructure ("remote" referring to areas that do not have access to health facilities and standard facilities for disposing medical waste). **Update: Completed February 2012;**
2. Best Practice Review and Action Plan: Experience and best practices for disposing of wildlife and domestic animal carcasses after culling;

3. Best Practice Review and Action Plan: Experience and best practices when outbreak responses affect livelihoods;
4. Best Practice Review and Action Plan: Experience and best practices when outbreak responses engender passive or overt resistance;
5. Best Practice Review and Action Plan: Experience and best practices of countries adopting habitat modification to control vectors.

For each report and action plan, here are estimated team members and roles:

TEAM:

The team will be comprised of:

- Team Leader
- Team Coordinator
- Practitioner Expert
- Environmental Compliance and EIA Expert
- Training Methods and Materials Expert

The RESPOND M&E Manager and technical staff will provide RESPOND Implementing Partner quality assurance.

USAID will be asked to review the draft report, final report, and educational materials, as well as any changes to the project EMMP that result from this activity.

TASKS:

Team Lead:

1. Conduct research related to issue resulting in an annotated bibliography and reference collection;
2. Develop a report that summarizes results, key issues, BMPs and mitigation measures with attached training materials suitable for modification and use in RESPOND training events; review that report with project staff and national practitioner stakeholders;
3. Prepare a summary publication for distribution or journal publication;
 - a. Best management practice review (BMPR)
 - i. Specify concepts for review (including but not limited to BMP, relevant standards, mitigation) and priority areas for BMPR;
 - ii. Review published (paper or internet), institutional (“gray publications”), and unpublished documents;

- iii. Convene video-conference panel of project experts with experience conduct individual interviews; Output: identification of cases for in-depth review, practical or environmental issues, potential mitigation measures, methods for field visits (for M&E) and proposals for use of results;
 - iv. Further research and review cases by communications with practitioners;
 - v. Review issues with USAID health and environmental experts;
 - vi. Visit 3 cases to generate original information on responses, environmental issues, and impact.
- b. Report and materials development
- i. Prepare draft report including review of practical measures, specification of issues, identification of priorities, draft mitigation measures and draft educational materials;
 - ii. Convene video-conference panel of project experts to discuss draft report; summarize minutes of the review;
 - iii. Revise report including 1) analysis, 2) proposed mitigation measures, 3) proposal for educational materials;
 - iv. Prepare educational materials to include 1) annotated bibliography with reference (non-copyrighted or with permission) materials; 2) PowerPoint presentation suitable for inclusion in training events for country officials and experts, 3) printed materials suitable for distribution to officials and local experts, 4) assessment suitable for dissemination via peer-reviewed publication;
 - v. Prepare templates for practitioners to use in assessing and responding to outbreaks and plans to include results in RESPOND activities that will build capacities of practitioners;
 - vi. Propose adjustments to the RESPOND Environmental Mitigation and Monitoring Plan (EMMP) to include BMPs.
- c. Communication
- i. Maintain weekly contact with M&E Manager, providing updates on progress, issues faced, etc.

Team Coordinator:

- 1. Management
 - i. Manage team plan/schedule;
 - ii. Oversee report/materials development, formatting, templates, etc;
 - iii. Providing regular updates to the M&E Manager & team;
 - iv. Support the team with scheduling calls/meetings.
- 2. Best practice review
 - i. Provide written materials and reports; contribute literature and written reports and training materials;

- ii. Participate in interviews as requested by the BMPR team leader;
 - iii. Provide written sections and support the research activities conducted by the best practice review team as required by the BMPR team leader.
3. Report and materials development
 - i. Review created report/materials, provide feedback, edit as needed.

Practitioner Expert:

1. Provide subject matter expertise.

Environmental Compliance and EIA Expert:

1. Become familiar with the SOW for the BMPR, as well as project documents on objectives, activities and environmental management.
2. Participate in practitioner interviews and case studies applying social science techniques.
3. Formulate recommendations for mitigation measures and best practices that comply with the RESPOND Initial Environmental Examination, the RESPOND Environmental Management System and practitioner recommendations (as determined by the BMPR team); incorporate results in the RESPOND environmental management system.
4. Contribute to the report and supporting materials summarizing findings development and anticipate in formulation of training materials.
5. Otherwise support the best practice review team research related to issue at the request of the team leader.

Training methods and materials expert:

1. Review and help enhance educational materials for adult learning situations

DELIVERABLES

- Report including analysis, discussion of issues, proposed mitigation measures, proposal for educational materials, template for assessing and responding to outbreaks using BMPs;
- Educational materials: annotated bibliography, training presentation, printed or electronic materials for distribution, peer-review publication;
- Proposed activities included in Year 3 and Year 4 RESPOND work plan.

ANNEX 11. ENVIRONMENTAL WORKSHOP SESSION

The following workshop module reviews environmental risks that may follow from elements of a response to zoonotic disease outbreak. Risks are the possible negative impacts on the natural or human environment that flow from a response activity or from failure to use best practices. This document presents an outline of a general training session about environmental issues and best practices relevant to responses. It covers several risks for typical outbreak responses, and may be modified to cover additional risks.

INTRODUCTION: RESPOND

THE RESPOND PROJECT

As one of five projects under USAID's Emerging Pandemic Threats program, RESPOND will work to strengthen in-country and regional human and technological capacity to identify and respond to outbreaks of newly emergent diseases in a timely and sustainable manner. RESPOND focuses on the development of outbreak investigation and response training that merges human, animal and environmental health dynamics into a comprehensive capacity for disease detection and control. This project is a cooperative agreement implemented by DAI in collaboration with the University of Minnesota, Tufts University, Training Resources Group, Inc. and Ecology and Environment, Inc.

RESPOND recognizes five necessary components of an effective outbreak response including:

- An effective communication and reporting network;
- Strong logistical coordination and rapid deployment;
- Strong management, capacity for disease identification, prevention and control;
- Data collection, analysis and interpretation; and
- Use of data for policy, education and program development.

RESPOND uses a One Health approach: a sustainable, multi-sectoral, coordinated approach that integrates human, animal, and environmental health to predict, prevent and respond to emerging pandemic threats to human health. The One Health Initiative, a movement to forge co-equal, all inclusive collaborations between physicians, veterinarians, and other scientific-health related disciplines, has been endorsed by various major medical organizations and health agencies. RESPOND interprets the One Health core concept with these beliefs:

- The interactions between humans and animals and their environments form a complex and highly interdependent system that is not wholly understood or managed by any one profession or sector.
- Health and well being of any one component is inseparable from the whole in all areas of the globe, rural and urban.
- Challenges, like diseases that arise at the intersection of animal, human and environmental health benefit from a holistic approach to disease prevention and control that includes the involvement and respects the perspective of many professions and sectors.

- Engaging more professionals (human, animal, and environment) and sectors (public, private) in activities, systems and planning results in more efficient and effective outbreak detection, reporting, management and control.

RESPOND'S SKILLS AND KNOWLEDGE BUILDING STRATEGY

RESPOND's guiding principle is that local engagement and long term sustainability are paramount to successful education and training. RESPOND will provide community-level training, professional development and graduate level training programs that build on existing capacity and national public health objectives in each participating country, and provide practical solutions to the knowledge and skills of different professions. This approach is designed to strengthen the five essential components of an effective outbreak response.

Skills and knowledge building activities will be practical and relevant to the specific needs of the countries where RESPOND activities are offered. The team will monitor and evaluate these activities to determine the extent to which the project reaches its target audience and further determine the extent to which participants and stakeholders judge activities to be effective and successful.

RESPOND's strategy differs from these existing programs by recognizing a critical need for involving entities that focus on animal and environmental health and operate outside core public health ministries. Ministries and departments dedicated to agriculture, wildlife, mining, the environment and other disciplines, require similar competencies as their human health counterparts; so do entities such as universities, nongovernmental organizations, and the private sector. The optimal functioning of the public health system can only be attained by integrating and coordinating the efforts of governmental and nongovernmental stakeholders.

Although the primary goal of RESPOND is to build capacity for emerging pandemic threats, one critical outcome of RESPOND must be the sustainable strengthening of the framework for public health as a system in hotspot regions. This will improve outbreak response for rare emerging zoonoses, but it will also raise day to day quality of life by improving community health through response to common disease outbreaks and common chronic and other disease conditions in humans and animals.

When RESPOND offers assistance to improve one of the components, the project will also seek feedback about how that improvement affects other components and make appropriate, consensus-based adjustments to further improve outcomes.

THIS WORKSHOP SESSION

This workshop module reviews environmental risks that may follow from elements of a response to zoonotic disease outbreak. Risks are the possible negative impacts on the natural or human environment that flow from a response activity or from failure to use best practices. This document presents an outline of a general training session about environmental issues and best practices relevant to responses. It covers several risks for typical outbreak responses, and may be modified to cover additional risks.

Participants should gain or reinforce general idea of identifying issues and mitigation measures as part of a response, plus results of their own thinking about risks that may be applicable to their own work. Participants will be able to consider that outbreak responses can have negative impact (in addition to positive results) and that planners are able to design mitigation measures to the benefit of stakeholders and for feasibility of the response itself.

If the workshop is done with RESPOND staff or some national staff, they will have the basic materials to adapt this module for use in specific local situations, a “training the trainers” approach.

WHY HAVE A WORKSHOP SESSION ABOUT THE ENVIRONMENTAL RISKS OF OUTBREAK RESPONSES?

There are good reasons to consider environmental impact as integral to preparing to respond. By not considering environmental impacts from response actions, we may find that the job becomes harder (negative public response, or failure to cooperate), the disease spreads more quickly (transmission from waste, and, again, local population’s failure to cooperate and flight), the cost to the human population and economy is increased (failure to build recovery into our plans leading to slower recovery or impact on livelihoods), or the natural environment and biodiversity (including wild and domestic animals) is unnecessarily harmed (inefficient or inhuman culling, some habitat modification). Another reason to discuss environmental issues and mitigation measures is that some best practices that address environmental risks are completely appropriate in one context (for example, an incinerator for waste at an urban health facility), but practically inapplicable in another (such as rural settlements far from roads and health care facilities). Discussion and training can contribute to practical, efficient responses with least cost. Responses to outbreaks of zoonotic diseases are so urgent that responders are justified in wanting to get the job done without delay; prior consideration of negative impacts will contribute to smooth operations.

Consideration of environmental risk in training contributes to all of the five necessary components of an effective outbreak response that have been identified by RESPOND and will strengthen the five essential components of an effective outbreak response (Table 1).

TABLE 1. PLANNING FOR ENVIRONMENTAL RISK CONTRIBUTES TO THE RESPOND STRATEGY

<ul style="list-style-type: none"> • An effective communication and reporting network 	<p>Prior consideration of environmental risk allows more realistic reporting of risk and accomplishments.</p>
<ul style="list-style-type: none"> • Strong logistical coordination and rapid deployment 	<p>Prior preparation for best management practices and mitigation measures for environmental risk reduces logistical tasks</p>

	and facilitates deployment.
• Strong management, capacity for disease identification, prevention and control	Best practices, mitigation and recovery are integral to good management.
• Data collection, analysis and interpretation	Identification of risks allows inclusion of impacts in monitoring and reporting systems.
• Use of data for policy, education and program development	More complete reporting including environmental risks can lead to better policy, education and program development.

Finally, USAID policy is that the potential risks of any activity should be considered during training, and this workshop partially satisfies that requirement.

PARTICIPANTS

This workshop session is appropriate for staff of institutions that will plan, fund, implement or monitor responses to zoonotic disease outbreaks, including RESPOND project staff who are developing subprojects professional and ministerial staff who plan and implement responses to disease outbreaks, the educators who train such professionals, and the students who are learning to be such professionals. Environmental ministries or NGOs would be valuable participants. Most (though not necessarily all) participants should have some experience with responses to zoonotic disease outbreaks, should be literate in their own language and should have responsibility for participating in their institution’s responses to disease outbreak.

Participants will enhance their ability to discuss environmental and social issues and mitigation measures with practitioners, educators and students and their ability to propose appropriate environmental training. Participants will be able to improve responses to outbreaks by analyzing and mitigating impacts that may arise from impacts of the responses themselves or from lack of best practices. Planning, budgeting and preparing for response outbreaks will be more complete when such impacts are considered to include mitigation measures in planning. Implementation will be improved by avoiding risks in feasible and practical ways. Monitoring will be more complete by understanding costs and benefits of response implementation. The human population and natural environment (including wild and domestic animals) in the area affected by the outbreak will be positively impacted by avoiding risk of negative impact and fostering positive recovery. RESPOND staff and implementing partners will benefit by being able to include mitigation measures in grant proposals, making the proposals more complete and able to meet USAID requirements.

Participants in a workshop receive ideas and provide ideas, skills and knowledge. Given the One Health approach of the RESPOND project, it is expected that the same person who provides invaluable insight in one discipline may be the recipient of another professional's expertise in a different discipline. Both providers and recipients of RESPOND skills and knowledge building activities may come from ministries, professional and civil society associations, private sector, municipalities, educational institutions and the press. Table A, below, gives some examples of the breadth of stakeholders that RESPOND will invite to participate in its activities.

METHODOLOGY AND EVENT OUTLINE

The current draft workshop design is for a two hour workshop, but it may be adjusted between one hour and one day to fit the time available. The presenter may be a local person with prior review of the workshop materials or RESPOND staff.

This event will combine presentation of general concepts and examples (environmental risk, mitigation measures) with participants' own knowledge of responses to epizootic disease, risk, mitigation and constraint. Following the general RESPOND skills and knowledge building strategy, it promotes consideration of socio-economic, cultural and environmental circumstance, uses key concepts of the One Health approach, identifies potential links with local professionals and decision-makers, incorporates lessons from prior responses, and aims to identify future sessions for skills and knowledge building.

The methodology of this workshop comprises the following steps:

Presentation

1. Presentation of workshop goals (see, Why have a workshop session about the environmental risks of outbreak responses?, above);
2. Presentation of environmental risks and potential mitigation measures; presentation in detail of two or three potential risk (see below);
3. Presentation of USAID environmental policy and national governmental environmental policies relevant to disease responses.

Discussion and reflection

4. Discussion and reflection on the risk in local situations and the applicability of the mitigation measures (group discussion);
5. Participants prepare information on local responses, risks, best practices to mitigate risk (individual or small group);
6. Participant presentations; group discussion of local history, risks, best practices (plenary reports and group).

Conclusion

7. Distribute reference materials for further reflection; explain reference table of actions to incorporate risk in planning (Table 2);
8. Assess learning and utility of workshop (on forms and verbally);
9. Concluding remarks.

This workshop covers risks identified by the project Environmental Mitigation and Management Plan (EMMP), but participants will be asked to name their own issues (and mitigation measures) from real cases, drawing on ideas and experiences to contribute to a group session.

The risks to be covered are the following elements of outbreak response that raise concerns:

- Use of biocides (disinfectants or pesticides) in response to outbreak;
- Generation of waste with infectious or toxic agents;
- Response techniques that expose workers to infectious disease;
- Response techniques that expose the population to hazardous waste;
- Substantial culling or vector population reduction (PR);
- Substantial capture of wildlife, including collection, sampling and release;
- Habitat modification or materials that could affect habitat;
- Activities that may lead to human resistance, passive resistance, flight, and human-human violence or conflict.

The event should be participatory, in that

- a) This outline and presentation materials should be modified to fit the interests of the participants;
- b) The students and technical presenters will be asked to contribute to the topic. In particular, the event outline includes group discussion, individual reflection using written formats, and group presentations;
- c) The conclusions of the session are meant to adapt and improve the content using feedback.

At the end of the session, participants will understand a range of environmental risks pertinent to outbreak responses and elements of a response management plan to mitigate such risks. They will be asked to assess the utility of the topics covered and their interest in further training on environmental risks of response measures, best practices, mitigation measures and incorporation of risk in planning for environmental risk, and they will be asked about the relevance of such training to future professional activities. The RESPOND project will be enriched by better understanding the perceptions of participants concerning environmental risk and training.

MODIFYING THIS OUTLINE

Grantees are encouraged to adjust this outline to their interests and to the materials that they have available. The environmental training session should be tailored to the amount of time available and interests of the students. The event should be participatory, in that the students and technical presenters will be asked to contribute to the topic.

The content is derived from the list of environmental issues developed for the RESPOND Environmental Mitigation and Monitoring Plan (EMMP). The references materials are derived from prior project and outbreak response exercises. Any additional reference materials to be given to students for later reading are welcome.

If the grantee is aware of additional environmental risks relevant to disease outbreak, those risks should be added. If the country has mitigation measures in place (for example, for compensation and recovery), those resources should be noted. If there are national policies (such as those governing pesticide selection), those should be referenced for discussion during the workshop or added to training materials.

These materials on environmental risks may be translated into appropriate languages for the participants. Content may be augmented or simplified to tailor the training material to the audience. A particularly valuable form of modification is to make the risks and mitigation measures more specific and more pertinent to the environment in which they will be used.

RESPOND invites comments on this outline. If the grantee has reference or training materials concerning environmental risk, best management practices that reduce risk or mitigation measures, please provide copies to RESPOND to improve this training document. Documents in English and especially the language of the area where the workshop will be held may be considered. If RESPOND and the institution agree, the materials may be used as reference materials for the participants, and the materials will enrich the training materials available to RESPOND for future events.

Finally, if the grantee has alternative materials for training about the environmental risks of outbreak response, RESPOND recognizes that they may be very useful and invites discussion about how to cover the topic of reducing environmental risk.

RISKS AND MITIGATIONS

When we talk about environmental risk, we use the terms “risk,” “mitigation” and “monitoring.”

Risk. Every time a project or program takes action, there is a risk that the activity will affect the environment in a negative way. The environment may be the natural environment, the human population, the resources of human society, such as domestic animals, or the same people that implement the activity (workers, for example). This is true for responses to disease outbreaks. The risks may be common or very rare, and when they occur, the impact may be negligible or severe.

Mitigation. When we acknowledge risks, we can take other actions to reduce or eliminate the impact. These actions are “mitigation measures.” A mitigation measure may prevent the impact from happening, make it less severe, restore the damaged environment or compensate for the damage. A “best management practice” is a way of implementing an activity that reduces risks or includes mitigation measures.

Monitoring. Procedures to understand and track impacts, mitigation measures and their positive or negative results for the environment.

The activities in response to disease outbreaks known to involve risk of environmental impact include the following:

- Use of biocides (pesticides, rodenticides, disinfectants, detergents) in response to outbreak;
- Generation of waste with infectious or toxic agents;
- Response techniques that expose workers to infectious disease or other risk;
- Response techniques that expose the population to hazardous waste or other risk;
- Substantial culling or vector population reduction (PR) of domestic animals, wild animals;
- Substantial capture of wildlife, including collection, sampling and release;
- Habitat modification or materials that could affect habitat;
- Activities that may lead to human resistance, passive resistance (e.g.) flight, and human-human violence or conflict.

For each of these, the materials in Annex 1 define the following:

- Element of Outbreak Response – this is an activity that is part of an outbreak response.
- Risks – the negative impact on the environment.
- Training Goals – what we need to know or train for reducing risk.
- Reference materials – publications and training materials for practitioners about the risk, best management practices, or mitigation measures.

- Study and strategy questions – what do we need to know about the risk?
- What mitigation measures should you be prepared to implement? -- the measures that will reduce the risk associated with the activity.

Look at the risks discussed in Annex 1. For presentation in this workshop, participants should pick one or two risks for presentation and discussion.

You are welcome to add additional risks that you know have been an issue in your country or region. The format for identifying new risks is the following, and Annex 2 will help you to identify the most important risks in your country and region.

TABLE 2. TRAINING FOR RISK IDENTIFICATION AND STRATEGIES

Element of Outbreak Response (Activity)	Risk	Training Goals	Reference materials	Strategy	What mitigation measures should you be prepared to implement?

PLANNING FOR RISKS AND MITIGATIONS, STEP BY STEP

Planning for environmental risks is not difficult if done in a step-by-step fashion. The first step is to identify risks. In this workshop session, we are counting on your experience and knowledge of past outbreaks. Surveys and meetings with people affected by outbreaks is another method.

Once risks are identified, planning details and specific strategies once an outbreak has been detected is still feasible, if the general plans have been prepared ahead of time. The following table shows activities to be undertaken, step by step (Table 4).

TABLE 3. PLANNING FOR ENVIRONMENTAL RISK ON OUTBREAK RESPONSE

Phase	Mitigation Activities
During staff preparation	Learn to identify environmental risks Recall past issues with outbreak responses Read reference materials and written cases Include environmental risks in training, manuals Assess methods to respond to outbreaks that reduce negative impacts
Preparation for outbreaks	Include materials for mitigation measures to protect human and natural environments Assign responsibility for environmental review to staff Create response teams that have skills for mitigation measures and recovery Plan for monitoring and mitigation measures Plan for recovery as integral part of outbreak response Review donor requirements for environmental compliance
During initial phase or outbreak	Contact staff and institutions with environmental responsibilities: cooperating ministries, governments, NGOs to begin monitoring, mitigation and recovery Implement monitoring and mitigation measures
Continuing during outbreak	Implement mitigation measures Monitor implementation Maintain documentation of implementation and compliance
After outbreak	Implement recovery actions Assess impact on environment Document mitigation measures – write case history for files and for publication Assess lessons learned

PRESENTING YOUR PLAN

USAID has a standard way to present environmental mitigation and monitoring plans. When you have gone through the process that we have described in this session, you will end up with an Action Environmental Mitigation and Monitoring Plan.

Here is a format, based on USAID practices (Table 5). Action = the outbreak response action. Potential issue = environmental or social impact that may result from the action. Opportunity: positive opportunity to improve environment or humans in area of response. Mitigation measures: the specific actions needed to avoid impacts. Monitoring indicators: how you will know that the mitigation measures has been implemented. Frequency: how often you will check to see that the mitigation measures have been implemented. Parties responsible: the institutions and staff who will be required to implement the mitigation measures and the monitoring.

Table 4. A-EMMP

Action	Potential issue	Opportunity	Mitigation Measure(s)	Monitoring indicator(s)	Monitoring and Reporting Frequency	Parties responsible

ANNEXES

Annex 1 provides a detailed look at some environmental risks.

Annex 2 asks the participants to analyze options for preparing for environmental considerations for outbreak responses.

Annex 3 asks you about this workshop session – was it useful? It also asks you to identify further training needs concerning environmental risks for responses to disease outbreaks.

Annex 4 provides some diagnostic tools for specific risks.

ANNEX 1:

The following table (Table 2) covers major environmental risks that have been identified for responses by RESPOND staff.

It specifies the Element of Outbreak Response, the Environmental Risk, Training Goals pertinent to that risk, Reference materials to distribute to workshop participants, Study questions and general mitigation measures.

One or more of the sections will be presented in the workshop so that participants capture examples to understand better the concepts of environmental risk and mitigation measures.

TABLE 5. OUTBREAK RESPONSE, RISKS, TRAINING, REFERENCE MATERIALS, STUDY QUESTIONS, MITIGATION MEASURES

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
Pesticides and disinfectants: use of pesticides and disinfectants in response to outbreak.	Indirect risk: improper use of pesticides and disinfectants. Generation of unused pesticides and disinfectants.	Understand the (potential) environmental issues associated with this element of the outbreak response Understand a range of potential monitoring and mitigation measures Receive illustrative reference materials related to the environmental issue Discuss applicability of the issue in future work	Some or all of the following: http://www.pesticideinfo.org/ WHO toxicity list, EU/EC list of banned pesticides and disinfectants, PIC POP conventions, US EPA, FAO guidelines for pesticide exclusion. [needs rodenticide discussion]	Have pesticides and disinfectants been used in outbreak response in this country or region? When would pesticides and disinfectants be used in outbreak response? What measures would reduce environmental risks of using pesticides and disinfectants? How would you choose the pesticide?	Review necessity for pesticide use, selection of pesticide and application method. Review possibility to use low-impact methods (e.g. odor-baited traps instead of pesticide). If justified, choose agents and tools with least-risk to humans and environment. Define best practices for pesticide use (see attached illustration). Identify and train staff. For complex, high-risk cases, do Environmental Assessment.
“	“	“	Materials on risk and mitigation for disinfectants: TBD	“	Mitigation measures for use of disinfectants:

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
“	“	“	Materials on risk and mitigation for detergents: TBD	“	Mitigation measures for use of detergents:
Generation of waste with infectious or toxic agents.	<p>Spread of infectious agent due to failed or lack of containment and decontamination facilities and procedures.</p> <p>Generation of pesticides and disinfectants leading to toxicity or contamination.</p> <p>Generation of unused pharmaceuticals.</p>	<p>Understand the (potential) environmental issues associated with this element of the outbreak response</p> <p>Understand a range of potential monitoring and mitigation measures</p> <p>Receive illustrative reference materials related to the environmental issue</p> <p>Discuss applicability of the issue in future work</p>	<p>See USAID documents on pesticides and disinfectants management including: Hazardous pesticides and disinfectants storage area siting and design checklist and Burn pit siting and design checklist.</p> <p>http://www.encapafrika.org/EGSSAA/Word_English/medpesticidesanddisinfectants.doc</p> <p>T. Grayling, <i>Guidelines for Safe Disposal of Unwanted Pharmaceuticals In and</i></p>	<p>How could response teams generate pesticides and disinfectants with infectious agents?</p> <p>Unused pharmaceuticals?</p> <p>What measures would reduce environmental risks of infectious pesticides and disinfectants or unused pesticides and disinfectants?</p> <p>Apart from infectious waste, how might a</p>	<p>Provide information and training on how to manage exposure (e.g. to blood), decrease the generation of hazardous materials, pesticides and disinfectants, and properly dispose of pesticides and disinfectants (or "best management practices concerning the proper handling, use and disposal of medical pesticides and disinfectants, including blood, feces, sputum, used PPE materials and sharps). If training involves sampling, train in safe sampling, conservation and transport of samples, human and animal remains.</p> <p>Review how response teams may generate hazardous, infectious or toxic pesticides and disinfectants and ways to reduce generation of pesticides and disinfectants.</p> <p>Decontamination of public and private property exposed to potentially infectious agents (see also worker safety).</p> <p>Define best practices for handling and disposing of toxic or infectious waste adapted to the resources, motivations, Knowledge, Attitudes and Practices of</p>

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
			<p><i>After Emergencies</i> (guidance on disposal of expired medication)</p> <p>S. Batterman, <i>Assessment of Small-Scale Incinerators for Health Care Pesticides and disinfectants</i>(guidance on incinerator design)</p>	<p>response team generate garbage and other waste? Contaminate soils, air or water by presence in wild natural areas, remote human communities and urban areas where basic services are few or lacking?</p>	<p>different actors.</p> <p>Apart from infectious waste, how should a response manage normal waste and garbage, particularly in areas with few or no basic services?</p> <p>Identify and train staff.</p> <p>For complex, high-risk cases, do EA.</p>
<p>Worker safety: Response techniques that expose workers to infectious disease</p>	<p>Indirect risk: exposure (to people or animals or environment); generation and disposal of infectious and hazardous waste (in performance of activities covered by training).</p>	<p>Understand the (potential) environmental issues associated with this element of the outbreak response</p> <p>Understand a range of potential monitoring and mitigation measures</p> <p>Receive illustrative reference materials related to the environmental issue</p>	<p>TBD -- GET FROM WHO?</p> <p>CDC See also the IEE</p> <p>Stop AI module on Personal Protective Equipment (PPE)</p>	<p>Have you heard of cases of workers exposed to infectious agents (e.g. deaths or antibodies to virus)</p> <p>How does one contain infectious agents during an outbreak response?</p> <p>How do you dispose of unused pharmaceutical?</p> <p>What are the risks</p>	<p>Manage exposure (e.g. to blood, tissue), decrease the generation of hazardous materials and waste, and properly dispose of that waste (or "best management practices concerning the proper handling, use and disposal of medical waste, including blood, sputum, PPE and sharps).</p> <p>If training involves samples, train in safe sampling, conservation and transport of samples, human and animal remains.</p> <p>Provide personal protective equipment. Train workers in use of PPE (don, doff, disposal). Monitor use of PPE.</p> <p>For complex, high-risk cases do EA.</p>

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
		Discuss applicability of the issue in future work, acquisition, conservation and transport of samples, disposal or human and animal remains.		<p>and ways to reduce risk?</p> <p>What should be done to reduce such cases or to treat cases?</p>	

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
Culling 1: Substantial culling or reservoir/vector population reduction (PR).	<p>Indirect risk: Risk from improper disposal of animal remains from culling.</p> <p>Risk of dispersal of animals during culling operations.</p>	<p>Understand the (potential) environmental issues associated with this element of the outbreak response</p> <p>Understand a range of potential mitigation measures</p> <p>Receive illustrative reference materials related to the environmental issue</p> <p>Discuss applicability of the issue in future work</p> <p>Provide information and training in safe and humane methods of culling and disposal of livestock, depending on vector, and disease.</p>	<p>Environment mentioned at several points:</p> <p>http://www.fao.org/DOCREP/004/Y0660E/Y0660E00.HTM</p> <p>Several sources cover methods of incinerating, burning, burial</p> <p>USDA/APHIS materials: Carcass disposal method selection</p> <p>Static pile butcher residual composting</p> <p>Static pile carcass composting</p> <p>Cleaning and disinfecting AI-infected poultry carcasses</p> <p>Off-site burial and treatment of AI-Infected poultry carcasses</p> <p>On-site burial and</p>	<p>When is culling the best option for controlling human disease?</p> <p>How do you assess alternatives to culling?</p> <p>What are the risks attendant on disposal of carcasses? What should be done?</p> <p>How do you assess risk of dispersal? What should be done?</p>	<p>Develop written risk assessment for culling. Compare culling with vaccine or other strategies. Compare PIC (point infection control) vs. areal PR.</p> <p>Develop culling plan with safe and humane methods, including worker safety plan.</p> <p>Assign responsibility to monitor and report environmental and safety issues.</p> <p>Apply key points of best practices.</p> <p>Describe monitoring system to repeat, continue or terminate culling.</p> <p>Follow-up: assess recovery after culling.</p> <p>For complex, high-risk cases, do EA.</p>

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
		Methods to mitigate risk to workers and other humans. Risk of environmental contamination.	<p>treatment of AI-Infected poultry carcasses</p> <p>Outdoor composting of AI-Infected poultry carcasses</p> <p>Secure transportation of AI-Infected poultry carcasses</p> <p>Trench burial</p> <p>Giovannini A (2007) The use of risk analysis to evaluate alternatives to animal destruction. Vet Ital 43: 257–271.</p>		

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
Culling 2: Substantial culling affecting livelihoods.	<p>Indirect risk: Application of techniques lead to loss of livestock, animal traction, changes in behavior, health and reproductive capacity of surviving animals, effects on local/regional markets, food supply or livelihoods., including monetary income or diet.</p> <p>Differential social or gender impact.</p>	<p>Understand the (potential) environmental issues associated with this element of the outbreak response</p> <p>Understand a range of potential monitoring and mitigation measures</p> <p>[Receive illustrative reference materials related to the environmental issue]</p> <p>Discuss applicability of the issue in future work</p>	<p>On impact of outbreaks and response: http://www.fao.org/avianflu/en/impact.html</p> <p>http://www.fao.org/docs/eims/upload//251044/aj201e00.pdf</p> <p>On compensation: http://www.fao.org/docs/eims/upload//217838/gui_hpai_compensationsummen.pdf</p> <p>StopAI material:</p> <p>Tool 9. Food Security and Livelihoods: Identification of People Most at Risk of Food Insecurity” and “Considerations in Outbreak Recovery”]</p>	<p>Have responses to outbreaks had social or economic impact in this country or region?</p> <p>Have there been effects on low-income or poorly nourished people?</p> <p>Have economies, households and people recovered?</p> <p>Is there an option for compensation or other measures to reduce impact?</p>	<p>Assess social and economic impact of culling and cultural acceptance in preparation for an outbreak or even during an outbreak?</p> <p>Develop written livelihoods risk assessment for culling including assessment of vulnerable populations.</p> <p>Develop culling plan with least impact on livelihoods consistent with health objectives. Plan for recovery as integral part of response management plan.</p> <p>Develop public outreach plan. Train staff in public outreach and local regulations for engaging public.</p> <p>Assign responsibility to monitor and report livelihoods issues.</p> <p>Apply key points of Livelihoods Review.</p> <p>Develop training materials on best practices to mitigate impact on livelihoods based on best practices review.</p> <p>For complex, high-risk cases, do EA.</p>

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
Wildlife: Substantial capture of wildlife, including capture, sampling and release.	Indirect risk to humans and wildlife; direct risk of injury to humans by the wild animals or risk to humans from the anesthetic drugs and drug delivery systems uses; risk of waste from capture and care; risk to animals, particularly rare or endangered species.	<p>Understand the (potential) environmental issues associated with this element of the outbreak response</p> <p>Understand a range of potential mitigation measures</p> <p>[Receive illustrative reference materials related to the environmental issue]</p> <p>Discuss applicability of the issue in future work</p>	<p>Disease monitoring for conservation: http://www.wcs.org/conservation-challenges/wildlife-health/disease-investigations.aspx</p> <p>CITES references</p>	<p>Have responses to outbreaks involved capture of wildlife in this country or region?</p> <p>Have there been effects on biodiversity?</p> <p>Are rare or endangered species to be captured or affected?</p> <p>What strategies might achieve response goals and reduce impact on wildlife? Is separation between wildlife and stock a viable strategy?</p>	<p>Separate wildlife from domestic stock; culling may not be necessary.</p> <p>Develop written risk assessment for wildlife culling. Compare separation, culling, vaccine and other strategies.</p> <p>If culling is required, compare PIC (point infection control) vs. areal PR. Develop culling plan with safe and humane methods, including worker safety plan.</p> <p>How do you know if a rare or endangered species will be affected?</p> <p>What are the most humane ways to capture and sample?</p> <p>Assign responsibility to monitor and report environmental and safety issues.</p> <p>Training on capture, handling and care of wildlife (depending on use or destination of animals).</p> <p>Training in use of anesthetic or other drugs to be used.</p> <p>Apply key points of best practices.</p> <p>Describe monitoring system to repeat, continue or</p>

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
					<p>terminate culling.</p> <p>Follow-up: assess recovery after culling.</p> <p>For complex, high-risk cases, do EA.</p>
<p>Habitat: habitat alteration or use of materials that could affect habitat.</p>	<p>Indirect risk: Effect on sensitive habitat during rapid response; destruction of critical habitats or jeopardy of threatened and endangered species; changes in flora and fauna; impacts on human habitats.</p>	<p>Understand the (potential) environmental issues associated with this element of the outbreak response</p> <p>Understand a range of potential mitigation measures</p>	<p>Case histories of selection of habitat modification as control methods, e.g. spraying water sources, clearing vegetation, digging burial and disposal pits, large-scale burning of infected materials, damage to animal holding facilities or foraging areas, gardens/crops, etc.]</p>	<p>Have responses to outbreaks involved habitat modification in this country or region?</p> <p>Have there been effects on natural/human habitats?</p> <p>What strategies might achieve response goals and reduce impact on</p>	<p>Develop written risk assessment for natural and human-modified habitat conservation.</p> <p>If habitat modification or use of damaging materials/equipment is required, develop strategy and plan with safe and least destructive methods, including worker safety plan.</p> <p>Assign responsibility to monitor and report environmental and safety issues.</p> <p>Emphasize techniques to minimize damage to habitats during outbreak investigation and response.</p> <p>Apply key points of best practices.</p>

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?
				habitats?	<p>Describe monitoring system to assure best practices.</p> <p>Follow-up: if applicable/necessary, assess habitat recovery after operations.</p> <p>For complex, high-risk cases, do EA.</p>
<p>Conflict: Activities that may lead to human resistance, passive resistance (e.g.) flight, and human-human violence or conflict.</p>	<p>Indirect risk: outbreak response leads to situations where local populations resist response to outbreak violently or passively (which may spread infected animals).</p>		<p>http://www.fao.org/docs/eims/upload//241483/ai301e00.pdf</p> <p>Draw materials from: http://www.fao.org/avianflu/en/communication.html</p>	TBD	<p>Design programs that are intelligible to local farmers and other actors, based on KAP and participatory studies.</p> <p>Be prepared for extreme behavioral responses (such as fear, flight, internal or external community conflict/violence, or cessation of services).</p> <p>Plan feasible recovery to follow response.</p> <p>Train staff in public outreach and methods to respond to protest.</p>

What if the practitioner or expert knows of additional, important risks, based on real experience? The following table is the format for adding a risk that these workshop materials have not considered.

TABLE 6. ADDITIONAL RISKS? FORMAT FOR SUMMARIZING ENVIRONMENTAL RISK FOR OUTBREAK RESPONSE

Element of Outbreak Response	Risk	Training Goals	Reference materials to distribute	Study questions	What mitigation measures should you be prepared to implement?

ANNEX 2. EXERCISE TO THINK ABOUT OUTBREAKS, RESPONSE, RISK AND MITIGATION

Participants [may be individual or in groups] are asked to think about outbreaks and responses in their country to identify environmental risks, mitigation measures and training requirements for future courses or workshops.

TABLE 7A. ENVIRONMENTAL EXERCISE QUESTIONS

1. What are the most urgent outbreak responses that you know about in your country?

[If you can, consider the history of your country and use actual cases. If you do not have experience with actual outbreaks, you may use a hypothetical case. Record one or two on the sheet that follows.]

2. Thinking about the most urgent outbreaks, were there environmental risks to the outbreak responses that you think are likely? What are the main risks?

[Consider the history of your country if you can. You may also consider potential risks resulting from Use of pesticides in response to outbreak; generation of waste with infectious or toxic agents; Response techniques that expose workers to infectious disease; Response techniques that expose the population to hazardous waste; Substantial culling or vector population reduction (PR); Substantial capture of wildlife; Habitat modification or materials that could affect habitat; Activities that may lead to human resistance, passive resistance (e.g.) flight, and human-human violence or conflict.]

3. What mitigation measures were used to reduce the risk of environmental impact or could have been used to reduce those impacts?

[If you can, consider the history of your country and use actual cases. If you do not have experience with actual outbreaks, you may use a hypothetical case. Record one or two on the sheet that follows.]

4. What institutions or professions could contribute to reducing the risks of environmental impact, working with public health authorities?

[If you can, consider the history of your country and use actual cases. If you do not have experience with actual outbreaks, you may use a hypothetical case. Consider Ministries and departments dedicated to agriculture, wildlife, mining, the environment and others; disciplines that might help; universities, nongovernmental organizations, the private sector; local municipalities, villages, tribes or others. Record one or two on the sheet that follows.]

5. Finally, would additional training on environmental risks of response outbreaks be useful to you? What training would you find useful?

[Record one or two on the sheet that follows.]

TABLE 7B. WORK SHEET TO RECORD ENVIRONMENTAL EXERCISE RESPONSES

1. Likely or recent outbreaks and response to the outbreak:

- a.
- b.

2. Environmental Risk Associated with the Response	3. Mitigation Measures (actually used or suggested now)	4. Helpful institutions (actually participated or suggested now)

5. Would further training on environmental risks for response and mitigation measures be helpful? Specify training that you recommend:

- a.
- b.
- c.

[] None, not needed.

ANNEX 3: HOW USEFUL WAS THIS SESSION?

Title of Session: _____ Date: _____

City: _____ Country: _____

Thank you for taking the time to fill out this confidential questionnaire thoughtfully. The information will be used to improve future sessions.

Please circle your response to each of the following:

1. Overall, this session was:
 - a) very poor
 - b) poor
 - c) good
 - d) excellent

2. The session met its stated objectives.
 - a) Strongly disagree
 - b) Disagree
 - c) Agree
 - d) Strongly agree
 - e) Don't know

3. The session met your expectations.
 - a) Strongly disagree
 - b) Disagree
 - c) Agree
 - d) Strongly agree
 - e) Don't know

4. This session was relevant to your work.
 - a) Strongly disagree
 - b) Disagree
 - c) Agree
 - d) Strongly agree
 - e) Don't know

5. The amount of information provided was:
 - a) not enough
 - b) about right
 - c) too much

6. The information presented was new to me.
 - a) Strongly disagree
 - b) Disagree
 - c) Agree

d) Strongly agree

e) Don't know

7. The materials provided were useful.

a) Strongly disagree

b) Disagree

c) Agree

d) Strongly agree

e) Don't know

9. The session logistics were well managed.

a) Strongly disagree

b) Disagree

c) Agree

d) Strongly agree

e) Don't know

10. I intend to take actions in my work as a result of what I learned at this session.

a) Strongly disagree

b) Disagree

c) Agree

d) Strongly agree

e) Don't know

11. Describe what actions, if any, you will take in your work as a result of this session.

12. What were the strengths of the session?

13. What were the weaknesses of the session?

14. Additional comments: _____

15. Your primary field of work:
- a) Medicine
 - b) Nursing
 - c) Public health
 - d) Veterinary medicine
 - e) Wildlife medicine
 - f) Other _____

16. Which sector do you represent?
- a) Government
 - b) Private sector
 - c) Education
 - d) NGO
 - e) Research
 - f) Other (Describe)

17. Gender:
- a) Male
 - b) Female

18. Nationality: _____

ANNEX 4: DRAFT PROTOCOLS FOR REVIEWING SELECTED ISSUES

ANNEX 4a. PESTICIDES AND DISINFECTANTS

If Pesticides and Disinfectants are Needed in Emergency Response: Best Practices for Pesticide and Disinfectant Use in Outbreak Response

The following guidance is based on USAID ENCAP reference materials. Pesticides (including insecticides, herbicides and rodenticides) and disinfectants (including antiseptics and detergents) may be used as part of an outbreak response, but they carry risks to humans and the natural environment. Therefore, the necessity for their use should be evaluated and best practices identified, implemented and monitored.

[] Evaluate necessity of pesticide and disinfectant use – specify objectives, targets, cost, risks, balance of cost and benefit and ways to reduce risk.

[] Select pesticides, disinfectants, and application methods, with least risk to humans and environment. Choose water-based formulations when practical. (National ministries may have assessments of toxicity. US EPA, UN agencies and EU have lists of banned chemicals. WHO grades toxicity. NGOs grade toxicity.)

[] Identify specific staff who will be responsible for storage, treatment and disposal. Train those staff in the safe handling of these pesticides, disposal of waste and cleanup of spills.

[] Define best practices for pesticide and disinfectant use. These may include the following:

- Impermeable gloves and face protection should be worn by anyone handling pesticides and disinfectant products.
- Work in a well-ventilated area so that the vapors can escape.
- Ensure insecticides and disinfectants are safely transported and stored, away from foodstuffs and accidental access by untrained persons and children.
- Provide materials for and operating procedures for cleaning up spills.

- Provide facilities and operating procedures for disposing of excess insecticide and disinfectant solutions, as needed. Leftover solution, if all the solution is not used, should be dumped into a safely sited latrine or garbage pit.
- Empty liquid pesticide and disinfectant containers should be rinsed before disposal, and the rinse water disposed of properly. Empty containers should always be cleaned out, as far as practicable, before disposal; If possible, they should then be disposed of according to UN FAO recommendations or removed from the site.
- As long as they are not heavily contaminated, cardboard and fiberboard containers should be burnt on a fire in the open (except those contaminated with phenoxy acid herbicides).
- Heavily contaminated material and all other containers should be rendered unusable and sent to a central location for disposal by the national authority; if no authority is available glass containers should be broken and plastic or metal containers punctured or crushed. Containers can then be buried in an isolated area at least 50 cm below ground surface.
- Make containers unusable as domestic water containers.
- Other measures that local experience has shown to be important or as defined by local ministries.

Train staff in appropriate emergency response in the case of pesticide and disinfectant poisoning, and make certain treatment facilities have appropriate remedies, soap and water, and medical charcoal available.

Review pesticide and disinfectant use during the response (adaptive management).

Record and assess use of pesticides in the response.

If USAID funds are used to use or procure pesticides, you are likely to need a Pesticide Evaluation Report/ Safer Use Action Plan (PERSUAP). Consult an environmental compliance specialist.

ANNEX 4b. CULLING

If You Need to Cull Domestic or Agricultural Animals in Emergency Response: Best Practices for Culling in Outbreak Response

Culling domestic and agricultural stock is sometimes used as part of an outbreak response, but culling carries risks to humans and the natural environment. Therefore, the necessity for culling should be evaluated and best practices identified, implemented and monitored.

[] Evaluate necessity of culling – specify objectives, targets, cost, risks, balance of cost and benefit and ways to reduce risk.

[] Select culling methods with least risk to humans and environment and which result in least suffering to culled animals.

[] Identify specific staff who will be responsible for culling and disposal. Train those staff in the safe culling and disposal. Identify cooperating agencies who may assist with safe and humane culling.

[] Define best practices for culling use. These may include practices taken from USDA/APHIS materials on the following:

- Carcass disposal method selection;
- Static pile butcher residual composting;
- Static pile carcass composting;
- Cleaning and disinfecting AI-infected poultry carcasses;
- Off-site burial and treatment of AI-Infected poultry carcasses;
- On-site burial and treatment of AI-Infected poultry carcasses;
- Outdoor composting of AI-Infected poultry carcasses;
- Secure transportation of AI-Infected poultry carcasses;
- Trench burial;
- Other measures that local experience has shown to be important or as defined by local ministries.

[] Assess risk that culled animals will be diverted to human or animal consumption and potential risks.

- Train staff in appropriate emergency response in the case of pesticide poisoning, and make certain treatment facilities have soap and water and medical charcoal available.
- Review culling during the response (adaptive management).
- Record and assess culling in the response.
- Follow-up: assess livelihoods recovery.
- If USAID funds are used for substantial culling, you may need an environmental review or environmental assessment. Consult an environmental compliance specialist.

ANNEX 4c. WILD ANIMAL NON-DRUG CAPTURE, COLLECTION, AND SAMPLING

If You Need to Collect and Sample Wild Animals (including Insects) in Emergency Response: Best Practices for Wild Animal Capture in Outbreak Response

Collecting and sampling wild animals and insects may be used as part of an outbreak investigation and response. An investigation begins before and continues after an outbreak. This activity carries risks to humans, animals, and the natural environment. Therefore, the necessity for capture and sampling should be evaluated and best practices identified, implemented and monitored.

[] Evaluate necessity of wild animal capture, collection, and sampling – specify objectives, targets, cost, risks, balance of cost and benefit, and ways to reduce risk.

[] Select capture, handling and sampling methods with fewer potential risks to humans and the environment and which result in least suffering and stress to captured animals.

[] Identify specific staff that will be responsible for capture, handling, sampling, release, and disposal, as well as proper use, maintenance and control of capture and containment equipment (e.g. traps, nets, cages, collection bags, dissection and sampling equipment, etc.). Train those staff in safe and appropriate methods. Identify cooperating agencies which may assist with safe and humane methods.

[] Define best practices for capture, handling, release and/or sacrifice (euthanasia) and disposal of animals. These may include practices on the following topics:

- Safe and humane capture methods;
- Collection, transport, holding and processing of captured animals and insects;
- Safe collection, sampling and processing of wild animal carcasses found in nature during outbreak response operations;
- Handling and care of captured wild animals during outbreak response;
- Appropriate methods for sampling and release or sacrifice and dissection of wild animals;
- Safe storage of samples from mammals, birds, reptiles and insects;
- Carcass disposal method selection;
- Cleaning and disinfecting carcasses;
- Off-site burial and treatment of carcasses;

- On-site burial and treatment of carcasses;
- Other measures that local experience has shown to be important or as defined by government ministries.

Assess potential risk that captured live animals or remains of captured animals will be diverted to human or animal consumption or other uses.

Train staff in appropriate emergency response in the case of poisoning from insecticides used to collect potential insect vectors, or bites from live insects, and make certain treatment facilities have appropriate remedies, soap and water, and medical charcoal available.

Review process of wild animal collection and sampling during the response (adaptive management).

Record and assess wild animal collection and sampling in the response.

If USAID funds are used for substantial capture of rare or endangered species, you may need an environmental review or environmental assessment. Consult an environmental compliance specialist.

ANNEX 4d. LIVELIHOODS

Livelihoods Review: Monetary Income and Diet

FAO estimated the combined losses to Gross National Products of Avian Influenza to be in the billions of USD³. The same source noted that the cost of on-farm biosecurity “... has generally been ignored in estimates and is not included in requests for external assistance because it is assumed that poultry owners should make the necessary investments. Yet, it is by far the largest investment costs in AI control,” with the aggregate costs to farmers also rising to hundreds of millions in just one country. FAO has reviewed costs and impact of AI in several countries⁴

Culling domestic and agricultural stock is sometimes used as part of an outbreak response, but culling carries risks to the diet, income and cultural/social status of humans. Therefore, the necessity for culling should be evaluated and best practices identified, implemented and monitored.

[] Evaluate necessity of culling – what are the targets, costs, risks, balance of cost and benefit from culling?

[] Select culling methods with lesser impact to human income while still meeting technical requirements for outbreak response.

[] Assess risk that culled animals will be diverted to human or animal consumption and potential risks.

[] Assess risk that culling will engender human resistance to culling.

[] Review culling during the response (adaptive management).

[] Record and assess impact on livelihoods in the response.

[] Follow-up: assess livelihoods recovery.

³ <http://www.fao.org/avianflu/documents/Economic-and-social-impacts-of-avian-influenza-Geneva.pdf>

⁴ <http://www.fao.org/avianflu/en/impact.html> See also <http://www.fao.org/docs/eims/upload//251044/aj201e00.pdf>

Assessment: monetary impact of culling:

Will people or enterprises lose monetary income from culling or other response measures?

If so, who will lose income, and how much?

Will members of different social or economic strata be more affected than others?

Are there several strategies for culling, and will some reduce impact on human livelihoods?

Describe any compensation plan and program or other mitigation measures in place to mitigate impact on income and diet?

Will compensation or mitigation reach all people who lose animals?

Are there cooperating programs that can reduce the impact on human livelihoods?

What are the barriers to implementing compensation or mitigation?

What are the feasible and important elements of a mitigation action plan?

How can you monitor impact?

TABLE 8A. ASSESSMENT OF INCOME IMPACT

	Unit	Estimated number who will lose income	How much will each affected unit lose?	Estimated total gross monetary loss	Is there a practical, feasible, funded compensation or mitigation plan?
Non-farm households	Household				
Small-scale farmers	Farm household				
Larger-scale farmers	Farm				

Small and medium scale enterprises	SME enterprise				
Larger enterprises	Enterprise				
Others	Specify:				

Part 2. Assessment: dietary impact of culling:

Will people lose food from culling or other response measures?

If so, who will lose food, and how much?

Are there vulnerable populations for whom culling may be the difference between adequate and inadequate diet? If so, describe.

Are there several strategies for culling, and will some reduce impact on human livelihoods?

Describe any compensation plan and program or other mitigation measures in place to mitigate impact on diet?

Are there cooperating programs that can reduce the impact on human livelihoods?

Will compensation or mitigation reach all people who lose animals?

What are the barriers to implementing compensation or mitigation?

What are the feasible and important elements of a mitigation action plan?

How can you monitor impact?

TABLE 8B. ASSESSMENT OF NUTRITION IMPACT

	Unit	Estimated number who will lose food	How much will each affected	Estimated total gross dietary	Is there a practical, feasible, funded
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			unit lose?	loss	compensation or mitigation plan?
non-farm households	Household				
small-scale farmers	Farm household				
Larger-scale farmers	Farm				
Small and medium scale enterprises	SME enterprise				
Larger enterprises	Enterprise				
Others	Specify:				